SUPERIOR COURT OF CALIFORNIA

COUNTY OF SACRAMENTO

STATE WATER BOARD CASES

Westlands Water District v. SWRCB
(Fresno Sup. Ct. Case No. 19CECG00165)

Merced Irrigation District v. SWRCB, et al.
(Merced Sup. Ct. Case No. 18CV-05111)

City of Modesto v. SWRCB, et al.
(Sacramento Sup. Ct. Case No. 34-2019-80003051)

Modesto Irrigation District v. SWRCB, et al.
(Sacramento Sup. Ct. Case No. 34-2019-80003052)

North Coast Rivers Alliance, et al. v. SWRCB
(Sacramento Sup. Ct. Case No. 34-2019-80003063)

Cal. Farm Bureau Federation v. SWRCB, et al.
(Sacramento Sup. Ct. Case No. 34-2019-80003076)

United States of America v. SWRCB
(Sacramento Sup. Ct. Case No. 34-2019-80003111)

San Francisco Baykeeper, et al. v. SWRCB, et al.
(Sacramento Sup. Ct. Case No. 34-2019-80003127)

Stockton East Water District v. SWRCB
(San Joaquin Sup. Ct. Case No. STK-CV-UWM-2019-472)

South Delta Water Agency, et al. v. SWRCB
(San Joaquin Sup. Ct. Case No. STK-CV-UWM-2019-4461)

San Joaquin Tributaries Authority, et al. v. SWRCB
(Tuolumne Sup. Ct. Case No. CV62094)

Judicial Council Coordinated Proceeding No. 5013

ORDER ON THE MERITS OF PETITIONERS' CLAIMS

Judge: Hon. Stephen Acquisto
Department 36

INTRODUCTION

In December 2018, respondent State Water Resources Control Board ("the Board") revised the 2006 water quality control plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary ("Bay-Delta Plan" or "Plan") and certified a substitute environmental document ("SED") supporting the amendments. The Revised Plan, as it will be referred to in this order, updated two objectives of the 2006 Bay-Delta Plan to: (1) increase flows in the Lower San Joaquin River ("LSJR") and its three major tributaries, which are the Stanislaus, Tuolumne, and Merced Rivers; and (2) increase the level of salinity allowed in the southern Delta.

The new flow objectives provide for increased flows below the major dam (or "rim dam") on each of the three tributaries to help revive and protect native fall-run migratory fish populations. With more water being released into the tributaries and required to remain in the rivers to support the ecosystem for these fish populations, there will be less water available for diversion by existing license and permit holders for agricultural and municipal uses.

The salinity objective limits salt levels in southern Delta waters to protect crops. Waters with too much salinity are harmful to crops. Under the 2006 Bay-Delta Plan, a lower level of salinity was required from April through August, and a higher level of salinity was allowed from September through March. The amendment *increases* the level of salinity allowed from April through August to match the higher level of salinity already allowed at the other times of year.

Writ petitions were filed in several counties against the Board challenging its adoption of the Revised Plan and SED. Most of the petitioners hold water rights on the tributaries or represent interests reliant on water from the tributaries for agricultural or municipal uses. A few petitioners represent environmental interests. Collectively, petitioners' claims are brought under the Porter-Cologne Water Quality Control Act ("the Porter-Cologne Act"), the California Environmental Quality Act ("CEQA"), the public trust doctrine, and article X, section 2 of the California Constitution. The lawsuits were coordinated in Sacramento County and designated as State Water Board Cases, Judicial Council Coordination Proceeding No. 5013. There are now twelve writ petitions that comprise this coordinated proceeding. All petitioners seek a writ of mandate ordering the Board to set aside its approval and adoption of the SED and Revised Plan.

Most petitioners challenge the flow objectives. Petitioners representing municipal and agricultural interests contend the Board erred by adopting new flow objectives that require *too much* water to be released into the tributaries without leaving enough for agricultural and

municipal uses. Petitioners representing environmental interests contend the Board erred because the new flow objectives *do not require enough* water be released into the tributaries to adequately protect native fish populations. A few petitioners challenge the revised salinity objective based on concerns that tolerating higher levels of salinity in the southern Delta will degrade the water quality and harm crops.

Collectively, the twelve petitioners have 116 pending claims. The administrative record totals over 770,000 pages. The parties' merits briefing totals approximately 1500 pages. The Court heard argument from counsel over the course of eleven days of hearings. Having carefully reviewed and considered the record and the parties' arguments, the Court now issues this written decision addressing all pending claims and related arguments.

This decision is lengthy not just because of the volume of the record, briefing, and claims, but because the subject matter involves highly technical and complex analyses of ecological, hydrological, biological, and economic matters as well as the logistics of water storage, management, and delivery. There are also instances in which the same factual basis is used to support different legal claims. For example, the contention that the Board failed to adequately evaluate impacts to agricultural water supplies is used to support Porter-Cologne Act claims *and* CEQA claims. Analyzing these claims requires the Court to examine and discuss the same areas in the administrative record. To avoid unnecessary repetition, the Court, at times, references a prior discussion on the same substantive topic. There are other points, however, where the Court includes discussions of the record that repeat substantive information discussed earlier. This is done so each section can be read and evaluated on its own without needing to refer back to earlier sections of the order.

For the reasons explained in this order, the Court finds that the Board complied with its obligations under CEQA, the Porter-Cologne Act, the state constitution, and the public trust doctrine. Accordingly, the Court denies all of petitioners' claims.

THE PARTIES

Petitioner Merced Irrigation District ("Merced ID") holds senior water rights on the Merced River and provides irrigation and drinking water to its customers in Merced County. Approximately 70% of Merced ID's customers are family farms with an average parcel size of 50 acres. Merced ID diverts most of its water from Lake McClure, which is a reservoir formed by New Exchequer Dam on the Merced River. Merced ID challenges the SED and Revised Plan

with regard to the flow objectives under the Porter-Cologne Act, CEQA, and article X, section 2 of the California Constitution.

Petitioner Modesto Irrigation District ("Modesto ID") holds senior water rights on the Tuolumne River and supplies the City of Modesto with almost half its drinking water. Modesto ID and Turlock Irrigation District co-own and operate New Don Pedro Dam and powerhouse on the Tuolumne River and facilitate the delivery of irrigation water to more than 2,300 agricultural customer accounts and electric service to more than 121,000 homes and businesses. Modesto ID challenges the Revised Plan and SED with regard to the flow objectives under CEQA.

Petitioner City of Modesto has a population of over 210,000 people and is located in the San Joaquin Valley. The city receives water from the Tuolumne River, which runs through the city, and from groundwater. City of Modesto challenges the Revised Plan and SED with regard to the flow objectives under the Porter-Cologne Act and CEQA.

Petitioner Westlands Water District ("Westlands") primarily provides water to farmers in western Fresno and Kings Counties across approximately 600,000 acres. Westlands gets most of its water from the Central Valley Project ("CVP"), which is a federal water management project, under a contract with the United States Bureau of Reclamation ("USBR"). Westlands challenges the validity of the SED and Revised Plan with regard to the flow objectives under the Porter-Cologne Act, CEQA, and article X, section 2 of the California Constitution.

Petitioner San Joaquin Tributaries Authority is a joint powers authority, comprised in part of Petitioners Oakdale Irrigation District, South San Joaquin Irrigation District, Turlock Irrigation District, and the City and County of San Francisco (collectively referred to as "SJTA"). Modesto ID is also part of SJTA. San Francisco acts through the San Francisco Public Utilities Commission ("SFPUC"), which operates its Regional Water System ("RWS"). Oakdale and South San Joaquin Irrigation Districts hold water rights, and own and operate dams (up and downstream from New Melones Dam) on the Stanislaus River. Turlock Irrigation District holds water rights and co-owns and operates (with Modesto ID) New Don Pedro Reservoir on the Tuolumne River. All three of these irrigation districts provide water for agricultural and municipal purposes. San Francisco holds water rights on the Tuolumne River. The SFPUC's RWS is the third largest supplier for domestic and municipal purposes in California, providing water service to 2.7 million people in San Francisco, Alameda, Santa Clara, San Mateo, and Tuolumne counties. Of the water delivered by the RWS, 85% comes from the Tuolumne River.

The RWS provides water directly to San Francisco residents, and to 26 "wholesale customers" in San Mateo, Santa Clara, and Alameda counties. Collectively, the 26 wholesale customers, which are represented in this matter by Bay Area Water Supply and Conservation Agency ("BAWSCA"), receive over 66% of the water delivered by RWS. SJTA challenges the SED and Revised Plan with regard to the flow objectives under the Porter-Cologne Act, CEQA, and article X, section 2 of the California Constitution.

Intervenor-Petitioner BAWSCA was formed in 2002 to enable the counties of Alameda, San Mateo, and Santa Clara to better plan for and acquire supplemental water supplies, encourage water conservation on a regional basis, and assist in financing essential repairs and improvements to San Francisco's RWS. BAWSCA is comprised of 26 member agencies, including 16 cities, 8 water districts, and 2 private utilities that purchase water from RWS. In March 2019, the Tuolumne County Superior Court granted BAWSCA's motion for leave to intervene in the action filed in that court by SJTA. BAWSCA challenges the SED and Revised Plan with regard to the flow objectives under the Porter-Cologne Act and article X, section 2 of the California Constitution.

Petitioner Stockton East Water District ("Stockton East") is a state water conservation district formed by a special legislative act. Stockton East receives water supplies under a contract with USBR from the New Melones Project on the Stanislaus River. Stockton East challenges the SED and Revised Plan with regard to the flow objectives under CEQA and the Porter-Cologne Act.

Petitioner California Farm Bureau Federation ("Farm Bureau") is a non-profit membership corporation representing the interests of farmers and ranchers throughout California. Farm Bureau is comprised of 53 county farm bureaus representing approximately 36,000 agricultural, associate, and collegiate members in 56 counties. Farm Bureau challenges the SED and the Revised Plan with regard to the flow objectives under CEQA.

Petitioners South Delta Water Agency and Central Delta Water Agency are political subdivisions in the Sacramento-San Joaquin Delta and western San Joaquin County charged with protecting the water supply of the lands within their respective boundaries against intrusion of ocean salinity and to assure a dependable supply of water of suitable quality sufficient to meet present and future needs. Petitioner Rudy Mussi Investments L.P. is engaged in farming in the San Joaquin Delta and uses water from southern Delta channels to irrigate. These petitioners

(collectively, "the Delta Water Agencies") challenge the SED and Revised Plan with regard to the southern Delta salinity objective.

Petitioner the United States of America ("US") holds water rights and owns the New Melones Dam and Reservoir project ("New Melones") on the Stanislaus River.[1] New Melones is a federal facility and a component of the CVP. USBR, which is part of the federal Department of the Interior, operates New Melones and manages the US's water rights. The US challenges the Revised Plan and the SED with regard to the flow objectives under CEQA.

Petitioner North Coast Rivers Alliance is a non-profit unincorporated association with members throughout Northern California. It works to protect California's rivers and their watersheds from adverse effects of excessive water diversions, ill-planned urban development, harmful resource extraction, pollution, and other forms of environmental degradation. Petitioner Institute for Fisheries Resources is a non-profit, tax-exempt organization that works to protect and restore salmon and other fish populations. Petitioner Pacific Coast Federation of Fisherman Associations is a non-profit membership organization representing commercial fishermen, and advocating for the protection of Pacific Salmon. Petitioner Winnemem Wintu Tribe is a Native American Tribe whose aboriginal territory encompasses the upper water sheds of the Sacramento River. The tribe was traditionally dependent on salmon fishing, and maintains a deep cultural, spiritual, and recreational interest in the continued viability of the salmon runs that pass through the Sacramento-San Joaquin River Delta. Collectively, these petitioners will be referred to as "NCRA." NCRA challenges the SED and Revised Plan with regard to the flow and salinity objectives under the Porter-Cologne Act, CEQA, and the public trust doctrine.

Petitioners San Francisco Baykeeper and Bay.org d/b/a The Bay Institute (collectively, "Baykeeper") are non-profit organizations advocating for the environmental protection of the Bay-Delta watershed. Baykeeper asserts Porter-Cologne Act claims challenging the adequacy of the numeric flow objectives to support and maintain viable native fish populations.

---

[1] The Court uses the nomenclature taken from the US's petition and brief to reference this petitioner as the "US." In Water Right Decision D-1641 ("D-1641"), however, the Board references the water rights permit holder as the United States Bureau of Reclamation or "USBR." (See, e.g., *D-1641* at p. 5, fn. 3 [00177737].) The SED also uses "USBR" to reference the water right holder with control of the CVP facilities.

Intervenor-Respondent State Water Contractors is a non-profit mutual benefit corporation comprised of 27 public water agencies, which receives water from the State Water Project ("SWP") pursuant to contracts with the Department of Water Resources. In April 2022, the Court allowed State Water Contractors to intervene as respondents to the petitions filed by NCRA, Baykeeper, and the Delta Water Agencies.

Respondent the Board is responsible for the adjudicatory and regulatory functions of the State in the field of water resources and is authorized to adopt water quality control plans for the waters of the state. (Water Code § 13170.)[2] The Board disputes petitioners' claims, and contends that it fully complied with all legal requirements.

STATUTORY AND REGULATORY FRAMEWORK

In developing and adopting the amendments to the 2006 Bay-Delta Plan and certifying the SED, the Board was responsible for complying with the Porter-Cologne Act and CEQA. The legal frameworks of these laws are explained below.

I. The Porter-Cologne Act

The Porter-Cologne Act (§ 13000 et seq.) is the state law that vests the Board with the legal authority to develop, adopt, and periodically amend plans to protect the quality of state waterways. The Board and regional boards together comprise "the principal state agencies with primary responsibility for the coordination and control of water quality." (§ 13001.) The act "establishes a comprehensive statewide program for water quality control administered by nine regional boards and coordinated by the state Board. The regional boards are primarily responsible for formulation and adoption of water quality control plans covering the state's 16 planning basins (§ 13240) subject to the Board's review and approval (§ 13245). But the Board alone is responsible for setting statewide policy concerning water quality control (§§ 13140-13147)." (*United States v. State Water Resources Control Bd.* (1986) 182 Cal.App.3d 82, 109 (*US v. SWRCB*).)[3] "And in its capacity as the designated state water pollution control agency for purposes of the [Clean Water Act] (§ 13160), the Board is empowered to formulate its own water quality control plans which supersede conflicting regional basin plans. (§ 13170.)" (*Ibid*.)

[2] All statutory references are to the Water Code unless stated otherwise.

[3] To reduce clutter, the Court has removed internal citations and quotation marks from quoted passages from caselaw where their inclusion does not affect the quote's substance or accuracy.

The Porter-Cologne Act provides for the regulation of "activities and factors" to protect the quality of "all the waters of the state[.]" (§ 13000.) Its goal is "to attain the highest water quality which is reasonable, considering all demands being made and to be made on those waters and the total values involved, beneficial and detrimental economic and social, tangible and intangible." (*Ibid*.)

In formulating a water quality control plan, section 13241 requires the Board to "establish such water quality objectives . . . as in its judgment will ensure the reasonable protection of beneficial uses []; however, it is recognized that it may be possible for the quality of water to changed to some degree without unreasonably affecting beneficial uses." (§ 13241.) The Board must also designate or establish: (1) beneficial uses to be protected; (2) water quality objectives (to protect those uses); and (3) a program of implementation needed to achieve those objectives. (§ 13050, subd. (j). In establishing a plan's water quality objectives, the Board is required to consider several factors, of which the following are relevant here:

(a) Past, present, and probable future beneficial uses of water.

(c) Water quality conditions that could reasonably be achieved through the coordinated control of all factors which affect water quality in the area.

(d) Economic considerations.

(e) The need for developing housing within the region.

(§ 13241, subds. (a), (c), (d), and (e).)

After establishing a plan's objectives, the Board is required by section 13242 to formulate and adopt a program of implementation (sometimes referred to as "POI") for achieving those objectives. The program of implementation must include at a minimum: (a) A description of the nature of actions which are necessary to achieve the objectives, including recommendations for appropriate action by any entity, public or private; (b) A time schedule for the actions to be taken; and (c) A description of surveillance to be undertaken to determine compliance with objectives. (§ 13242.)

II. CEQA

In exercising its authority to develop and adopt a water quality control plan under the Porter-Cologne Act, the Board must also adhere to the requirements of CEQA. As the Court of Appeal recently explained, "CEQA serves to ensure that public agencies will consider the environmental consequences of discretionary projects they propose to carry out or approve. To

that end, absent an exemption, an agency proposing to carry out or approve a project generally must conduct an initial study to determine if the project may have a significant effect on the environment. If, after performing an initial study, the agency responsible for CEQA compliance, … finds substantial evidence that a project may have a significant environmental impact, the agency must prepare and certify an EIR [environmental impact report] before approving or proceeding with the project. … An EIR is often called the heart of CEQA." (*County of Butte v. Dept. of Water Resources* (2023) 90 Cal.App.5th 147, pp. 157-158 ("*County of Butte*").)

The EIR "serves to (1) inform the government and public about a proposed activity's potential environmental impacts; (2) identify ways to reduce, or avoid, those impacts; (3) require project changes through alternatives or mitigation measures when feasible; and (4) disclose the government's rationale for approving a project." (*County of Butte, supra,* 90 Cal.App.5th at p. 158.) To fulfill these purposes, an EIR must include detail sufficient to enable those who did not participate in its preparation to understand and to consider meaningfully the issues raised by the proposed project. But that does not mean an EIR must be exhaustive on all topics." (*Ibid.*) "CEQA Guidelines further provide that "the sufficiency of an EIR is to be reviewed in the light of what is reasonably feasible. … The courts have looked not for perfection but for adequacy, completeness, and a good faith effort at full disclosure." (*In re Bay-Delta etc*. (2008) 43 Cal.4th 1143, 1175 ("*Bay-Delta*").)[4] The "sufficiency of an EIR is to be reviewed in the light of what is reasonably feasible. Technical perfection is not required." (*Rio Vista Farm Bureau Center v. County of Solano* (1992) 5 Cal.App.4th 351, 368.) CEQA "does not mandate perfection, nor does it require an analysis to be exhaustive." (*Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 712.)

The Board adopts water quality control plans as part of a certified regulatory program under CEQA. (*CEQA Guidelines*, § 15251, subd. (g).) The SED adopted under the Board's regulations is considered the "functional equivalent" of the EIR required under CEQA, and the Board's certified regulatory program "is subject to the broad policy goals and substantive standards of CEQA." (*City of Arcadia v. State Water Resources Control Bd*. (2006) 135 Cal.App.4th 1392, 1421-23 (*"Arcadia I"*); *CEQA Guidelines*, § 15252.)

[4] California Code of Regulations, title 14, sections 15000-15387 are ordinarily referred to as the CEQA Guidelines. This Court will use that shorthand to refer to these regulations.

FACTUAL AND PROCEDURAL BACKGROUND

I. The Bay-Delta Estuary and the Bay-Delta Plan

The history of the water distribution and water quality protection efforts in California and specifically in the Bay-Delta has been set forth in several published opinions, including *US v. SWRCB, supra,* 182 Cal.App.3d 82 (often called "the Racanelli decision" in reference to its author Justice John Racanelli), *State Water Resources Control Bd. Cases* (2006) 136 Cal.App.4th 674 ("*SWRCB Cases,*" often called "the Robie decision" in reference to its author Justice Ronald Robie), and *Bay-Delta, supra,* 43 Cal.4th 1143. Taking a cue from Justice Robie, the Court will draw on those opinions for the historical background, "rather than reinvent the wheel." (*SWRCB Cases, supra,* 136 Cal.App.4th at p. 691.)

"California's two largest rivers, the Sacramento and the San Joaquin Rivers, meet to form a delta [] near the City of Sacramento, and their combined waters, if not diverted, flow through the Delta, Suisun Bay, and San Francisco Bay, to the Pacific Ocean. The flow of water through this region, commonly known as the Bay-Delta, forms the largest estuary on the West Coast of the United States. It is also the hub of California's two largest water distribution systems, supplying drinking water for two-thirds of California's residents and irrigation water for seven million acres of agricultural land." (*Bay-Delta, supra,* 43 Cal.4th at p. 1151.)

As Justice Racanelli explained, "while over 70 percent of the [state's] stream flow lies north of Sacramento, nearly 80 percent of the demand for water supplies originates in the southern regions of the state. And because of the semiarid climate, rainfall is at a seasonal low during the summer and fall when the demand for water is greatest; conversely, rainfall and runoff from the northern snowpacks occur in late winter and early spring when user demand is lower. Largely to remedy such seasonal and geographic maldistribution, while simultaneously providing relief from devastating floods and droughts, the California water projects were ultimately conceived and formed." (*US v. SWRCB, supra,* 182 Cal.App.3d at p. 98.)[5]

California's two major water distribution systems are the CVP and SWP. The CVP was completed in 1945 with the construction of the Shasta and Friant Dams, and serves to store,

[5] In an oft-quoted line from his 1986 opinion, Justice Racanelli observed that "*California's critical water problem is not a lack of water* but uneven distribution of water resources." (*Ibid.*, [emphasis added].) While achieving optimal water distribution remains a challenge, perhaps the state has reached the point where it also lacks enough water to fully satisfy all beneficial uses.

regulate, and transfer water from the Sacramento River and its northern tributaries to the water-deficient areas of the San Joaquin Valley. (*US v. SWRCB, supra*, 182 Cal.App.3d at pp. 98-99.) The SWP began operations under management of the Department of Water Resources ("DWR") in 1967. Through the SWP, "[w]ater from the Feather River is stored behind Oroville Dam and is released into the Feather River and its eventual confluence with the Sacramento River. The water flow continues through the Delta … where a portion of it [is delivered via aqueduct] to the Santa Clara Valley. A much greater portion is lifted into the California Aqueduct for transport through the San Joaquin Valley and … over the Tehachapi Mountains for delivery and use in the Southern California region." (*Id.* at pp. 99-100.)

"Competition for the Bay-Delta's resources, pollution of Bay-Delta water, draining and filling of tidal marshes and other wetlands, and diversion of Bay-Delta water for urban and agricultural uses throughout the state have, however, resulted in a decline in Bay-Delta wildlife habitat, the threatened extinction of plant and animal species, an increasing risk of failure of Bay-Delta levees, and degradation of the Bay-Delta as a reliable source of high quality water." (*Bay-Delta, supra,* 43 Cal.4th at p. 1151.)

Efforts to address water quality problems began in the early 1960's. (*SWRCB Cases, supra*, 136 Cal.App.4th at p. 695.) Following enactment of the Porter-Cologne Act, the Board first adopted a water quality control plan for the Bay-Delta estuary in 1978. (*Id.* at p. 698.) The Board then periodically amended the Bay-Delta Plan in 1991, 1995, and 2006. The details of those prior versions of the Bay-Delta Plan are more fully set forth in the referenced opinions. For the purposes of this decision, however, it is useful to provide some explanation of the 1995 version of the plan.

The Board first established flow objectives for the San Joaquin River ("SJR") in the 1995 Bay-Delta Plan. The flow objectives were "primarily intended to protect anadromous species (ocean-going fish that migrate upstream to spawn), such as fall-run Chinook salmon, which use the three eastside tributaries. They were also intended to provide incidental benefits to Central Valley steelhead." (*Ch. 1*, p. 1-6 [00468842].)[6] Regarding the flow objectives, Justice Robie

[6] The voluminous record in this matter consists of numerous studies, reports, and other material, including the SED. Each page of the record has been sequentially bates stamped with an 8-digit number, beginning with 00000001 and ending with 00775136. To navigate a record of this size, the Court maintained it electronically. The parties submitted their merits briefs embedded with hyperlinks to their record citations. In this order, the Court's citations to the record include a

explained, "[w]ater flow can be regulated as a water quality objective because, as the Board explained in the 1995 Bay-Delta Plan, the rate and quantity of flow are physical properties or characteristics of the water which have an impact on the beneficial uses of water in the Bay-Delta. Thus, a flow objective sets the amount of water that must be flowing in a watercourse at a given time for the reasonable protection of beneficial uses of [the] water. Obviously, meeting such an objective may be achieved, among other ways, by reducing the amount of water that upstream water right holders divert from the watercourse or by increasing the amount of water released into the watercourse." (*SWRCB Cases, supra,* 136 Cal.App.4th at pp. 701-702.)

The 1995 Plan had three numeric flow objectives: (1) minimum spring fresh water flows from February through June (excluding April 15–May 15) to improve habitat; (2) "pulse" flows from April 15–May 15 to support the outmigration of Chinook salmon smolt from the SJR through the Bay-Delta; and (3) fall flows in October to attract adult salmon returning to the SJR to spawn. (*Ch. 1*, p. 6–7 [00468842-843].) The 1995 numeric flow objectives were gauged at Vernalis, which is the confluence of the Stanislaus and San Joaquin Rivers. (*Ibid*.)

In addition to numeric flow objectives, the 1995 Bay-Delta Plan included a narrative objective to protect salmon, which provided: "Water quality conditions shall be maintained, together with [other] measures in the watershed, sufficient to achieve a doubling of natural production of chinook salmon from the average production of 1967–1991, consistent with the provisions of State and federal law." (*SWRCB Cases*, *supra*, 136 Cal.App.4th at p. 703.) The narrative objective was consistent with the anadromous "fish doubling" goals of the Central Valley Project Improvement Act that federal, local, and state agencies (other than the Board) were required to implement. (*Ch. 1*, p. 6, fn. 5 [00468842]; *Ch. 7*, p. 52–53 [00470022-23].)

The 1995 Bay-Delta Plan also maintained the salinity objectives which were first established in the 1978 Plan. (*Ch. 1*, p. 9, [00468845].) The salinity objectives were established "for the reasonable protection of [agriculture as a beneficial use] from the effects of salinity intrusion and agricultural drainage in the western, interior, and southern Delta." (*SWRCB Cases, supra,* 136 Cal.App.4th at p. 701.) The salinity objectives regulate electrical conductivity ("EC"),

---

shorthand name of the cited document, the cited internal page number(s) of the document, and the corresponding bates stamped page number(s). Because the Executive Summary ("ES"), Introduction ("Intro"), Chapters ("Ch."), Master Responses ("MR"), and Appendices ("App.") are all components of the SED, they will be cited without noting the SED. For example, page 5 of chapter 19 of the SED is cited simply as (*Ch. 19*, p. 5 [00473502]).

which is generally expressed in deciSiemens per meter (dS/m), and is a widely accepted indirect method to determine the salinity of water, which is the concentration of dissolved salts. (*Ch. 1*, p. 9, fn. 7 [00468845].) The objectives focused on two important salt-sensitive crops grown in the southern Delta: beans in the summer and alfalfa in the winter. (*Ibid.*) The salinity objectives were set at 0.7 dS/m during the summer irrigation season (April 1–August 31) based on the salt sensitivity and growing season of beans; and at 1.0 dS/m during the winter irrigation season (September 1–March 31) based on the salt sensitivity and growing season of alfalfa. (*Ibid.*) In other words, the objectives allowed for less salinity during the 5-month summer irrigation season, and for more salinity during the 7-month winter irrigation season.

The 1995 salinity and flow objectives were not fully successful. Compliance with the salinity objective following its implementation in 1995 was not easily or consistently accomplished. There were delays in implementing the salinity objectives, many instances of exceedance of the salinity limits, and litigation over the Board's failure to achieve compliance with the objectives. (*Ch. 1*, p. 9–13, fn. 7 [00468845-849].) And although the 1995 flow objectives were meant to support and protect native fish in the SJR, the population of Chinook salmon and other native species in the SJR continued to decline.

In 2006, the Board again updated the Bay-Delta Plan, keeping the flow objective at Vernalis, and identifying SJR flows and southern Delta salinity as emerging issues for additional consideration. (*Ch. 1*, p. 6 [00468842].) In 2008, the Board issued a Strategic Bay-Delta Workplan expressing its intent to review and potentially modify the SJR flow and southern Delta salinity objectives. (*Ibid.*) The Board again expressed this intention in its 2009 Staff Report on the Periodic Review of the 2006 Bay-Delta Plan. (*2009 Staff Report*, p. 13 [00746420].)

II. CEQA Process Leading to the Approval of the Revised Plan and SED

In 2009, the Board issued a Notice of Preparation ("NOP") to initiate the CEQA process to amend the 2006 Bay-Delta Plan. The NOP stated that the Board intended to evaluate revisions to southern Delta salinity and SJR flow objectives. (*2009 NOP* [00000016].)

In November 2009, the legislature enacted the Delta Reform Act (§ 85020 et seq.), which established a directive for the Board that was consistent with the CEQA process Board had already begun. Specifically, the Delta Reform Act required the Board to "develop new flow criteria for the Delta ecosystem necessary to protect public trust resources [and] review existing water quality objectives and use the best available scientific information. The flow criteria for

the Delta ecosystem shall include the volume, quality, and timing of water necessary for the Delta ecosystem under different conditions." (§ 85086, subd. (c)(1).)

To comply with the Delta Reform Act, in August 2010, the Board issued a report entitled, "Development of Flow Criteria for the Sacramento-San Joaquin Delta Ecosystem" ("Flow Criteria Report") [00522604-793].) The report reviewed existing water quality objectives and, using available scientific information, determined the level of flow needed to protect native fish in the Delta ecosystem. The Board cautioned readers that the Flow Criteria Report was narrowly focused on making a technical assessment of the level of flows that would be needed in the Delta as "if fishery protection was the *sole* purpose for which its waters were put to beneficial use." (*Id.,* "*Note to Readers*" [00522603] (emphasis added; see also pp. 2-3 [00522617-618].) The Board explained, "We know however, that there are many other important beneficial uses that these waters support such as municipal and agricultural water supply and recreational uses. The State Water Board is required by law to establish flow and other objectives that ensure the reasonable protection of beneficial uses. In order for any flow objective to be reasonable, the State Water Board must consider and balance all competing uses of water in its decision-making." (*Ibid.*) After evaluating scientific resources, the Board determined that 60% of unimpaired flow in the SJR from February through June was needed to protect emigrating juvenile Chinook salmon. (*Flow Criteria Report*, pp. 120-121 [00522735-736].)

The Board revised the NOP in 2011 and supplemented it in 2012. (*2011 NOP* [00000160]; *2012 NOP* [00001078].) The scope of the project was defined in the 2011 NOP as "review of and potential amendments to water quality objectives for the protection of southern Delta agricultural beneficial uses; San Joaquin River flow objectives for the protection of fish and wildlife beneficial uses; and the program of implementation for those objectives included in the 2006 Bay-Delta Plan." (*2011 NOP*, p. 4 [00000162].) This is the scope that ultimately defined the project the Board evaluated under CEQA.

In 2012, the Board issued a report entitled, "Technical Report on the Scientific Basis for Alternative San Joaquin River Flow and Southern Delta Salinity Objectives" ("Technical Report"). (*Tech. Rep.* [00474114-402].)[7] The purpose of the Technical Report was to provide

[7] The first draft of the Technical Report was issued in October 2010, after which the Board received public comments and other technical information, and held a public workshop. The Board then made edits and issued a revised draft report, which it submitted for independent peer

the scientific information and analytical tools needed for the Board to consider potential changes to the SJR flow objectives, the southern Delta salinity objective, and the corresponding program of implementation. (*Id.* at p. 1-1 [00474130].) The report analyzed the impact that the construction of dams and diversions have had on the flows in the SJR and its major tributaries, and noted that the magnitude, frequency, duration, timing, and rate of change of the natural flows in those rivers have been vastly altered. (*Tech. Rep.*, pp. 1-3 [00474132], 2-1 [00474134], and 2-57 – 2-58 [00474190-191].) The report determined that the "[o]bserved flows from February through June as percentages of unimpaired flows have fallen well below medians of 41%, 21%, and 26% in the Stanislaus, Tuolumne, and Merced Rivers respectively, with April, May, and June values generally far lower, especially May and June flows on the Tuolumne and Merced Rivers." (*Id.* at p. 2-57 [00474190].)

The Technical Report then analyzed the scientific basis for developing alternative flow objectives for the SJR and its major tributaries for the protection of fish and wildlife, as well as a program for implementing those objectives. (*Tech. Rep*., pp. 1-4 [00474133], 3-1 [00474192].) The report explained that fall-run Chinook salmon and Central Valley steelhead were used as indicator species because those anadromous species are among the most sensitive to inflows from the SJR basin to the Bay-Delta. (*Id.* at p. 3-1 [00474192].) The report observed that the "SJR basin once supported large spring-run and fall-run Chinook salmon populations; however, the basin now only supports a declining fall-run population." (*Id.* at p. 3-2 [00474193].)[8] The report observed that despite the implementation of flow objectives for several decades, the fall-

---

review in October 2011. The Board issued a further revised report in February 2012, addressing peer review comments it had received. The Board again updated the report in June 2016. It is attached as Appendix C to the SED, and for simplicity will be cited as *Tech. Rep*.

The Technical Report consists of six numbered sections, each separately paginated with the section number followed by the page number. For example, page 4 of section 1 is paginated as 1-4. When citing to the report, the Court will use a hyphen to separate section and page number and a longer dash to separate starting page from ending page. For example, pages 1 through 5 of section 3 of the Technical Report is cited as: (*Tech. Rep.*, pp. 3-1 – 3-5 [00474192-196].)

[8] "Spring-run Chinook salmon were extirpated from the SJR following the construction of impassible dams on the mainstream SJR and major SJR tributaries . . . due, in part, to [their] need . . . to migrate to higher elevations in the watershed, where cooler water temperatures provided suitable over summering habitat." (*Tech. Rep.*, p. 3-14 [00474205].) Because fall-run Chinook salmon are the only type of salmon relevant to these proceedings, for brevity, the Court will sometimes refer to them simply as "salmon."

run Chinook populations have continued to decline. (*Ibid.*) In discussing the Technical Report, the Board explained, "[t]he Stanislaus, Tuolumne, and Merced Rivers (individually or combined) have had larger reductions in the natural production of adult fall-run Chinook salmon than any of the other tributaries (or combination of three tributaries) to the Sacramento or San Joaquin Rivers[.]" (*Ch. 19*, p. 3 [00473500].)

The Technical Report determined that increased unimpaired flows are needed in February through June when juvenile fall-run Chinook are in the critical freshwater-rearing phase of their life cycle and migrating from the SJR basin through the Delta and out to the ocean. (*Tech. Rep.*, pp. 3-28 – 3-29 [00474219-220].) Based upon pertinent scientific studies, the report concluded that higher and more variable flows in February through June would be needed to support and maintain the natural production of fall-run Chinook salmon. (*Id.* at pp. 3-1 – 3-2 [00474192-193], 3-18 – 3-20 [00474209-211], 3-29 – 3-30 [00474220-221].) The report specifically noted studies showing that (1) additional flow is needed to significantly improve production of fall-run Chinook in the SJR and its tributaries; (2) the primary influence on adult Chinook abundance is flow 2.5 years earlier during the juvenile rearing and outmigration phase; and (3) the primary limiting factor for tributary abundance are reduced spring flow. (*Id.* at p. 3-30 [00474221].) The report also discussed studies indicating that while there are many habitat factors that impair the viability of the native fish population in the SJR, flow is the "master variable" because it positively affects several other factors necessary to support fish abundance. (*Id.* at p. 3-57 – 3-58 [00474248-249]; pp. 3-40 – 3-50 [00474231-241] (analyzing and detailing the positive effects of more natural flow on fish communities, food web, aquatic habitat, migration cues, water temperature, water quality, and reduced predation from non-native fish).

The Technical Report evaluated river flows using the metric of "unimpaired flow," which is defined as the flow that would occur if there were no dams, reservoirs, or diversions. (*Tech. Rep.*, p. 2-6 [004741339].) The report concluded that draft flow objectives providing for unimpaired flows ranging from 20%–60% from February through June in the SJR and its three eastside tributaries of the Stanislaus, Tuolumne, and Merced Rivers would be needed to support and maintain native migratory fish populations. (*Id.* at pp. 3-56 – 3-59 [00474247-250].)

In the Technical Report, the Board also re-evaluated the scientific basis for the existing salinity limits in the southern Delta, relying in large part on the conclusions and modeling methodologies from a January 2010 report by Dr. Glenn Hoffman entitled, "Salt Tolerance of

Crops in the Southern Sacramento-San Joaquin Delta" ("Hoffman Report"). (*Tech. Rep.*, p. 4-12 [00474266].)[9] The Hoffman Report reviewed current scientific literature on crop salt tolerance, and was developed with input from public and agency stakeholders. (*Id.* at p. 4-13 [00474267].) Hoffman issued a draft report in July 2009 after which he held a public workshop in August to discuss his preliminary findings; he then solicited input from stakeholders regarding his draft report, and held a follow-up presentation in November 2009 to address those comments. (*Ibid*.) With consideration to the feedback he received, Hoffman finalized his report. (*Ibid.)*

As explained in the Hoffman report, too much salinity in the soil or irrigation water can cause crops to suffer "salt stress" which can be damaging in three ways. (*Tech. Rep.*, p. 4-2 [00474256].) First, salt stress can stunt the growth and decrease the size of crop plants. (*Ibid*.) Second, crop sensitivity to soil salinity continually changes throughout the growing season, with many crops being most sensitive to soil salinity during emergence and early seedling development. (*Ibid.*) Finally, when crops are irrigated with saline water from sprinklers, their foliage can be damaged. (*Ibid*.) Ultimately, based on Hoffman's analysis and data from the last nine years, the Board determined that the salinity levels could be raised to 0.9 to 1.1 dS/m while still being protective of all crops normally grown in the southern Delta. (*Id.* at p. 4-13 [00474267].) For comparison, the level set for the winter irrigation season under the 2006 Plan was 1.0 dS/m.

From the adoption of the first Bay-Delta plan in 1978 through the 2006 amendments, the Board evaluated revisions to the Plan in a *single* consolidated environmental review process. (*2006 Bay-Delta Plan* [00263072]; *1995 Bay-Delta Plan* [00506929]; *1991 Bay-Delta Plan* [00506639]; *1978 Bay-Delta Plan* [00506431].) In prior versions of the Plan, the flow requirements were measured at fixed points in the Delta, not upstream in the tributaries that contribute flow to the Delta (*2006 Bay-Delta Plan,* Table 3 [00263097], *1995 Bay-Delta Plan,* Table 3 [00506956].) With the 2018 amendments, however, the Board diverged from its past practice of conducting a single comprehensive environmental review of amendments to the Plan. After initially considering amending the Plan in four stages (*2012 NOP,* p. 4 [00001080]), the Board ultimately decided to update the 2006 plan in three phases. Phase I consists of the amendments challenged in these coordinated proceedings. In the second phase, the Board "is

[9] The Hoffman Report is attached as Appendix E to the SED and is cited as: (*Hoffman Rep.* [00474589-728]).

reviewing and considering updates to other elements of the Bay-Delta Plan, including Delta outflows, Sacramento and tributary inflows (other than the SJR inflows), and ecosystem regime shift." (*ES*, p. 2 [00468636].) The Board noted that the "two water quality proceedings, Phase I and Phase II, [] involve different water quality objectives, largely different geographic areas, and can be developed and implemented independently of each other. Phase II is not dependent on the completion of Phase I." (*Ibid.*) In the final phase, the Board will conduct water rights proceedings to implement the flow and salinity objectives established in the first two phases. The Board has stated that the implementation phase will "occur later in time and would in most cases be subject to project-specific environmental review, in compliance with CEQA." (Att. 1 to *Board Res. No. 2018-0059*, adopting amendments to Bay-Delta Plan and SED, p. 4 [00741261].)

The Board's consideration of amendments to the Bay-Delta Plan is a discretionary project that has the potential to result in direct physical changes, or reasonably foreseeable indirect physical changes, to the environment. (*ES*, p. 2 [00468636].) The Board's water quality control planning program is a certified regulatory program authorized by the Secretary of the California Natural Resource Agency. The Board is exempt from preparing an EIR because the certified regulatory program requires written documentation meeting certain CEQA requirements. (Pub. Resources Code § 21080.5; *CEQA Guidelines*, § 15251, subd. (g).) Thus, the Board was authorized to issue a SED assessing the proposed changes to the Plan to comply with its obligations under CEQA. (*ES*, p. 2 [00468636].) The Board conducted its assessment of environmental effects of the plan amendments under CEQA at a programmatic level, reasoning that the adoption of amendments to the Plan "will not result in direct physical changes in the environment. Rather, it is through the implementation of the Bay-Delta Plan that physical changes in the environment potentially may occur. Accordingly, all potential environmental effects evaluated in this SED are indirect effects associated with implementation, which would occur later in time and would be subject to project-specific environmental review, in compliance with CEQA." (*ES*, p. 3 [00468637].)

The Board issued a draft SED in December 2012 for public review and comment. (*MR 1.1*, at p. 10 [00501722, *describing the public engagement process for the SED*].) The Board substantially revised the SED following the 2013 comment period and passage of the Sustainable Groundwater Management Act ("SGMA") and recirculated the draft SED in September 2016, responding to public comments and considering additional information, including information

related to the drought. (*MR 1.1*, p. 11 [00501724]; *ES*, at p. 7 [00468643].) The Board stated that the "underlying fundamental purpose and goal of the plan amendments is twofold.

- To establish flow water quality objectives during the February-June period and a program of implementation for the reasonable protection of fish and wildlife beneficial uses in the LSJR Watershed, including the three eastside, salmon-bearing tributaries.

- To establish SDWQ objectives for the reasonable protection of southern Delta agricultural beneficial uses and a program of implementation to achieve the objectives.

(*Ch. 3*, p. 2 [00469737].)[10]

In addition to the two fundamental purposes and goals of the amendments, the Board identified eight purposes and goals specifically for the LSJR flow objectives and associated POI:

1. Maintain inflow conditions from the SJR Watershed sufficient to support and maintain the natural production of viable native fish populations migrating through the Delta.

2. Provide flows that more closely mimic the natural hydrographic conditions (including frequency, timing, magnitude, and duration of natural flows) in the LSJR and three eastside, salmon-bearing tributaries—the Stanislaus, Tuolumne, and Merced Rivers—to which these migratory native fish species are adapted.

3. Provide flows in a quantity necessary to achieve functions essential to native fishes such as increased floodplain inundation, improved temperature conditions, improved migratory conditions, and promote other conditions that favor native fishes over nonnative fishes.

4. Allow adaptive implementation of flows that will afford maximum flexibility in establishing beneficial habitat conditions for native fishes, addressing scientific uncertainty and changing conditions, developing scientific information that will inform future management of flows, and meeting biological goals, while still reasonably protecting the fish and wildlife beneficial uses.

5. Promote transparency in decision-making and provide certainty to the regulated community by expressing flow requirements for the protection of fish and wildlife as a share of the total quantity of water available for all beneficial uses.

[10] The Board uses the acronym "SDWQ" (for southern Delta water quality) to denote the salinity objective. There is only one salinity objective at issue in this proceeding, and for brevity, the Court will often refer to it simply as "the salinity objective."

6. In establishing flow water quality objectives to reasonably protect fish and wildlife, take into consideration all of the demands being made and to be made on waters in the LSJR and the three eastside, salmon-bearing tributaries and the factors to be considered for establishing water quality objectives in Water Code Section 13241, including, but not limited to, past, present and probable future beneficial uses and economic considerations.

7. Provide for the development and implementation of an appropriate monitoring and evaluation program to inform adaptive implementation of LSJR flows and future changes to the Bay-Delta Plan.

8. Provide for, and encourage, collaboration, coordination, and integration of regulatory, scientific, and management processes related to LSJR flows.

(*Ch. 3,* pp. 2-3 [00469737-738]

The Board identified five additional purposes and goals specifically for the salinity objective and the associated program of implementation as follows:

1. Provide salinity conditions that reasonably protect agricultural beneficial uses of surface waters in the southern Delta.

2. In establishing salinity water quality objectives to reasonably protect agricultural beneficial uses, take into consideration all of the demands being made and to be made on waters in the southern Delta, the LSJR and the three eastside, salmon-bearing tributaries and the factors to be considered for establishing water quality objectives in Water Code Section 13241, including, but not limited to, past, present and probable future beneficial uses and economic considerations.

3. Establish a salinity objective, supported by existing scientific information, that is not lower than necessary to reasonably protect the most salt sensitive crops currently grown or suitable to be grown on saline- and drainage-impaired soils in the southern Delta.

4. Maintain or improve salinity conditions in the southern Delta to comply with state and federal antidegradation policies.

5. Provide for development and implementation of monitoring and modeling studies needed to better understand the characteristics of salinity conditions in the southern Delta and the dynamics of factors controlling or contributing to those conditions.

(*Ch. 3,* p. 3 [00469738].)

In the SED, the Board analyzed four LSJR flow alternatives during the February through June time frame. (*Ch. 3*, p. 8-10 [00469743-745]). Alternative 1 was the "no project" (or no modification to the 2006 Plan) option. Alternative 2 would implement unimpaired flows starting at 20% with an adaptive range of 20% to 30%. Alternative 3 would implement unimpaired flows starting at 40% with an adaptive range of 30% to 50%. Alternative 4 would implement

unimpaired flows starting at 60% with an adaptive range of 50% to 60%. (*Ibid.*) Paired with each of these unimpaired flows was a base flow at Vernalis of 1000 cubic feet per second ("cfs") with an adaptive range of 800 to 1200 cfs, completing a pathway for the migration of salmon from the rim dams on the three eastside salmon-bearing tributaries to the LSJR near Vernalis. (*Id.* at pp. 14-16 [00469749-752]; *Revised Plan*, p. 29 [00741351].) The Board explained that using an adaptive range for each flow alternative will afford maximum flexibility to account for changing riverine conditions, scientific uncertainty, and consideration of competing beneficial uses. (*ES*, p. 12 [00468648]; *Ch. 3*, pp. 10-13 [00469745-748].)

On July 6, 2018, the Board released the proposed final SED which included the proposed final amendments to the Plan and "written responses to comments on the Recirculated SED and the 2016 Draft Amendments." (*Board Res. No. 2018-0059*, p. 3 [00741398]; *SED*, Table of Contents [00468793-805].) The Board held a public meeting on August 21 and 22, 2018 to hear oral comments on the proposed final SED. (*Board Res. No. 2018-0059*, p. 3 [00741398].)

III. The 2018 Revised Plan and final SED

On December 12, 2018, nine years after issuing the initial NOP and following numerous public hearings, workshops, outreach meetings, and written public comment periods, the Board certified the SED and adopted the Revised Plan on December 12, 2018. (*Board Res. No. 2018-0059*, pp. 6-7 [00741401-402].)

The SED includes 24 chapters, 14 appendices, and 22 "master responses" to public comments. In the chapters, the Board analyzes and discusses topics including: water resources (*Ch. 2*); surface hydrology and water quality (*Ch. 5*); aquatic biological resources (*Ch. 7*); groundwater resources (*Ch. 9*), agricultural resources (*Ch. 11*); service providers (*Ch. 13*); energy and greenhouse gases (*Ch. 14*); impacts and alternatives (*Chs. 3, 17, and 18*); benefits to native fish populations from increased flow between February through June (*Ch. 19*); economic analysis (*Ch. 20*); drought evaluation (*Ch. 21*); municipal and domestic water supply management options (*Ch. 22*); and antidegradation analysis (*Ch. 23*). In the master responses, the Board responded to comments on topics including data and modeling results (*MR 2.3*); alternatives (*MR 2.4*); fish protection (*MR 3.1*); surface water (*MR 3.2*); agricultural resources (*MR 3.5*); and the role of non-flow measures (*MR 5.2*). The Appendices include supporting studies, modeling, and other materials, including the Technical Report (App. C), the Hoffman

Report (App. E), analyses of agricultural economic effects (App. G), and the Revised Plan itself (App. K).

The Revised Plan updates two aspects of the 2006 Bay-Delta Plan. The Board formulated new numeric and narrative flow objectives to encompass not just Vernalis but the LSJR and its three eastern tributaries—the Merced, Tuolumne, and Stanislaus Rivers. The Board also revised the salinity objective in the southern Delta. Within the Revised Plan, the LSJR flow objectives are set forth in Table 3 (*Revised Plan*, p. 18, Table 3 [00741340]) and the Salinity Objective is set forth in Table 2 (*Id.* at p. 15, Table 2 [00741337].) The Revised Plan also includes an updated program of implementation for the new and updated objectives. (*Id.* at p. 26-72 [00741348-394].)

A. *The LSJR Flow Objectives*

The new flow objectives seek to "[m]aintain inflow conditions from the San Joaquin River watershed to the Delta at Vernalis sufficient to support and maintain the natural production of viable native San Joaquin River watershed fish populations migrating through the Delta." (*Revised Plan*, Table 3, p. 18 [00741340].) Numerically, the objectives are to "[m]aintain 40% of unimpaired flow, with an allowed adaptive range between 30%–50%, inclusive, from each of the Stanislaus, Tuolumne, and Merced Rivers from February through June." (*Ibid.*) The objectives also provide that "[a]t all times during February through June, the flow at Vernalis … shall be no lower than the minimum base flow value of 1,000 cfs with an allowed adaptive management range between 800–1200 cfs, inclusive." (*Ibid.*)

As the Board explained, "[t]he use of a percent of unimpaired flow assigns an explicit percent of unimpaired flow to fish and wildlife, with the remaining percent of unimpaired flow available for other uses. … For example, if the flow requirement is 40 percent of unimpaired flow from February through June, the remaining 60 percent is available for all other uses." (*ES*, p. 14 [00468650].) Thus, under the new flow objectives, 40 percent of the unimpaired flow of the Stanislaus, Tuolumne and Merced Rivers will remain in the rivers to support and maintain native fish populations, leaving the remaining 60 percent available for other uses. The Board also recognized, "[t]he primary effect of the flow proposal is that it would decrease the quantity of surface water available for diversion for other uses compared to the current condition." (*ES*, p. 21 [00468657].) The Board estimated that under the new flow objectives, surface water available for other uses could be reduced by 7% to 23%. (*Ibid.*) It also noted that "[t]his

reduction in availability of surface water could affect water users who obtain their water from … anywhere within the Stanislaus, Tuolumne, and Merced River Watersheds." (*ES*, p. 23 [00468659].)

The Board also established the following *narrative* flow objective in the Revised Plan:

> Maintain inflow conditions from the San Joaquin River watershed to the Delta at Vernalis sufficient to support and maintain the natural production of viable native San Joaquin River watershed fish populations migrating through the Delta. Inflow conditions that reasonably contribute toward maintaining viable native migratory San Joaquin River fish populations include, but may not be limited to, flows that more closely mimic the natural hydrographic conditions to which native fish species are adapted, including the relative magnitude, duration, timing, and spatial extent of flows as they would naturally occur. Indicators of viability include population abundance, spatial extent, distribution, structure, genetic and life history diversity, and productivity. []
>
> Flows provided to meet these numeric objectives shall be managed in a manner to avoid causing significant adverse impacts to fish and wildlife beneficial uses at other times of the year.

(*Revised Plan*, Table 3, p. 18 [00741340].)

B. *The Program of Implementation for the LSJR Flow Objectives*

The program of implementation for the LSJR flow objectives requires certain actions that are within the Board's authority to implement and recommends other actions which are outside the Board's authority. It requires the reservoirs created by the rim dams on the three eastside tributaries to include minimum carryover storage targets. To comply with these targets, each reservoir will need to maintain a cold water pool to help ensure that flows released to meet the LSJR flow requirements will not have significant adverse temperature impacts on native fish like at other times of the year beyond the February through June months. (*Revised Plan*, p. 28 [00741350]; *MR 3.2*, pp. 3-4 [00516622-23].)

The program of implementation also allows four types of adaptive adjustments for the numeric flows if best available scientific information supports the adjustments:

> (a) The percent of unimpaired flow may be adjusted to any value between 30% and 50% on an annual or long-term basis;
>
> (b) The percent of unimpaired flow for February through June may be managed as a total volume of water and released on an adaptive schedule during that period where scientific information indicates a different flow pattern would better protect fish and wildlife beneficial uses (during oral argument, counsel referred to this process as "flow shaping");

(c) The release of a portion of the February through June unimpaired flow may be delayed until after June to prevent adverse temperature effects on fisheries, including temperature, that would otherwise result from implementation of the February through June flow requirements (during oral argument, counsel referred to this process as "flow shifting"); and

(d) The base flow for February through June at Vernalis may be adjusted to any value between 800 and 1,200 cfs.

(*Revised Plan*, pp. 30-31 [00741352-353]; *ES*, pp. 17-18 [00468653-654].) The program of implementation indicates that the adaptive adjustments in (a) through (d) may be made on the Stanislaus, Tuolumne, and Merced Rivers independently of each other so long as the flows are coordinated to achieve beneficial results in the LSJR related to the protection of fish and wildlife beneficial uses. (*Revised Plan*, p. 31 [00741353].)

The program of implementation provides a number of mechanisms to monitor and evaluate implementation of the LSJR flow objectives, and provides for the creation of a Stanislaus, Tuolumne and Merced Working Group ("STM Working Group"), composed of state and federal agency personnel and water users with expertise on fisheries management of the three tributaries, to assist with implementation, monitoring, and effectiveness assessment of the LSJR flow requirements. (*Revised Plan*, p. 32 [00741354].) The program of implementation also provides for the creation of a SJR Monitoring and Evaluation Program to provide monitoring, evaluations, reports and special studies on the implementation of the flow objectives. (*Id.* at p. 35 [00741357].)

In addition, the program of implementation requires the development of biological goals to inform adaptive implementation and evaluate the effectiveness of the program of implementation as well as future changes to the Bay-Delta Plan. (*Revised Plan*, p. 32-33 [00741354-355].) The biological goals are to be developed specifically for LSJR salmonids, which are the species most sensitive to LSJR flow modifications, and are to include "abundance; productivity as measured by population growth rate; genetic and life history diversity; and population spatial extent, distribution and structure." (*Ibid*.) Other information may also inform adaptive implementation, including temperature targets, and measurements of the quality and quantity of spawning, rearing, migration habitat and juvenile outmigration survival to the confluence of each tributary with the LSJR. (*Ibid*.)

The program of implementation also identifies and evaluates an array of non-flow actions and programs outside the Board's authority that are complimentary to the LSJR flow objectives for the protection of fish and wildlife and that are being planned or performed by federal, state and local public agencies and by local landowners in the SJR, Stanislaus, Tuolumne, and Merced watershed. (*Revised Plan*, pp. 62-66 [00741384-388]; *Ch.16*, pp. 94-214 [00472997-3117]; *MR 1.2*, p. 6 [00504029]; *MR 5.2*, pp. 7-14 [00528333-340].) These non-flow actions and programs support native fish by restoring floodplain and riparian habitat, reducing vegetation-disturbing activities in floodplains, augmenting gravel, improving temperature conditions, facilitating fish passage by installing fish screens and removing human-made barriers to fish migration, and controlling predatory fish and invasive aquatic vegetation. (*Ibid*.) The Board explained most of these "non-flow actions depend on a more natural flow regime to be successful, and … address constraints to ecosystem function that flow measures cannot resolve alone." (*MR 5.2*, p. 5 [00528331].)

C. *The Salinity Objective*

Before the adoption of the Revised Plan, the salinity objective in the southern Delta allowed for a maximum salinity level of 0.7 dS/m from April through August, and a higher maximum level of 1.0 dS/m from September through March. (*Revised Plan*, Table 2, p. 15 [00741337]; *ES*, pp. 48-50 [00468684-686].) The amended salinity objective adopted in the Revised Plan allows for a salinity level of 1.0 dS/m year-round, with the exception that USBR must continue to meet the 0.7 dS/m standard from April through August at Vernalis, as currently required under D-1641. (*Ibid.*) The Revised Plan also changes the compliance locations for measuring salinity. (*Ibid*.) The Court will discuss the salinity objective in greater detail in the section addressing petitioners' challenges to it.

PORTER-COLOGNE ACT CLAIMS[11]

I. Standard of Review and Governing Legal Principles

"When an administrative agency establishes regulations to implement state policy its action is subject to review by traditional mandamus under Code of Civil Procedure section 1085. Subdivision (a) of that statute declares 'a writ of mandate may be issued by any court to any

[11] The Court categorizes the claims challenging the LSJR flow objectives in sections corresponding to the law (e.g., the Porter-Cologne Act, CEQA, etc.) on which they are based. The Court then addresses the claims challenging the salinity objective in a separate section.

inferior tribunal, corporation, board, or person, to compel the performance of an act which the law specially enjoins, as a duty resulting from an office, trust, or station. Review is limited to an inquiry into whether the action was arbitrary, capricious or entirely lacking in evidentiary support, and the petitioner has the burden of proof to show that the decision is unreasonable or invalid as a matter of law." (*City of Arcadia v. State Water Resources Control Bd.* (2010) 191 Cal.App.4th 156, 170 (*Arcadia II*).)

A final decision by the Board may be challenged by a petition for writ of mandate in the superior court. (*City of Duarte v. State Water Resources Control Bd.* (2021) 60 Cal.App.5th 258, 268 (*City of Duarte*).) If a claim is made that the Board's findings are not supported by the evidence, then, in accordance with Code of Civil Procedure section 1094.5, subdivision (c), the court exercises independent judgment on the evidence. (*Ibid.*) In exercising its independent judgment, a trial court must afford a strong presumption of correctness concerning the administrative findings, and the party challenging the administrative decision bears the burden of convincing the court that the administrative findings are contrary to the weight of the evidence. (*Ibid*.) The Board abused its discretion if the court determines, in light of the whole record, that the Board's findings are not supported by substantial evidence. (*Ibid.*)

"[I]n carrying out its water quality planning function, the Board possesses broad powers and responsibilities in setting water quality standards." (*US v. SWRCB*, *supra*, 182 Cal.App.3d at p. 110.) Amending a water quality control plan is a quasi-legislative action, and the plan, itself, is a quasi-legislative document. (*Id.* at p. 112.) "Accordingly, great deference must be given to the Board's determination, and appellate review thereof is narrowly limited[.]" (*Ibid*.) "A reviewing court will ask three questions: first, did the agency act within the scope of its delegated authority; second, did the agency employ fair procedures; and third, was the agency action reasonable. Under the third inquiry, a reviewing court will not substitute its independent policy judgment for that of the agency[.] A court will uphold the agency action unless the action is arbitrary, capricious, or lacking in evidentiary support. Moreover, absent any indication of arbitrariness or evidentiary or procedural defect, in these technical matters requiring the assistance of experts and the collection and study of statistical data, courts let administrative boards and officers work out their problems with as little judicial interference as possible." (*Id.* at pp. 112-113; *California Assn. of Sanitation Agencies v. State Water Resources Control Bd.* (2012) 208 Cal.App.4th 1438, 1453-54 (*CASA*).)

"[T]he standard of review of quasi-legislative actions is not synonymous with substantial evidence review. Rather, the appropriate degree of judicial scrutiny in any particular case is perhaps not susceptible of precise formulation, but lies somewhere along a continuum with nonreviewability at one end and independent judgment at the other. Since the ultimate question is whether the agency has abused its discretion, the answer is one of degree. In each case the court must satisfy itself that the order was supported by the evidence, although what constitutes reasonable evidentiary support may vary depending upon the nature of the action. A proceeding which has determined individual rights in a factual context will warrant more exacting judicial review of the evidence. Otherwise courts will tend to defer to the presumed expertise of the agency acting within its scope of authority. [Judicial review of a quasi-legislative action] lies towards that end of the continuum, where the focus is on the reasonableness of the agency's action as a whole." (*CASA, supra*, 208 Cal.App.4th at p. 1454.)

II. Whether the Flow Objectives are Necessary

Stockton East contends that the Board violated the Porter-Cologne Act by erroneously determining that the LSJR flow objectives are necessary to provide protection for the LSJR salmon population. (Stockton East Op. Br., pp. 26-27.) Stockton East interprets the record as *not showing a decline* in the salmon population but rather a pattern of population highs and lows. Stockton East reads the record as showing that the salmon population is already supported by the *current* LSJR flow regimes, and any benefits from the new flow objectives, including instream water temperature benefits, would be insignificant.

Stockton East bases its contentions, in part, on Table 19-32 in Chapter 19 of the SED. (Stockton East Op. Br. at pp. 26-27, 44, 47.) Chapter 19 analyzes the benefits to native fish from increased flows. Table 19-32 displays results from a salmon population model called SalSim indicating the annual total adult fall-run salmon production for baseline flow and various unimpaired flow percentages on the Stanislaus, Tuolumne, and Merced Rivers. (*Ch. 19*, p. 84 [00473581].) Stockton East notes that the table shows an average annual production of 13,373 adult fall-run salmon as a baseline (without the new LSJR flow objectives), and an increase of only 1,103 salmon with the 40% flow objective. (Stockton East Op. Br., pp. 26-27, 44, 47.)

The Board, however, addressed the relatively small size of SalSim's projected increase to the salmon population. The Board explained that during its "exploration and use" of the SalSim model, it discovered that "two of the most important salmon habitat attributes related to flow,

water temperature and floodplain inundation, are not represented in the model in a manner that is consistent with current scientific information. Consequently, SalSim appears to underrepresent the benefit of habitat improvements related to floodplain and water temperature conditions during the spring time period that result from different flow scenarios[.]" (*Ch. 19*, p. 74 [00473571].) The Board elaborated that SalSim did not account for the fact when juvenile salmon are in larger floodplains that result from increased flows, their growth rates increase, which in turn increases their survival rates. (*Ibid.*) The Board explained that SalSim did not factor in the improved temperatures that stem from increased flows and increased floodplains, both of which contribute to improved survival rates. (*Id.* at p. 75 [00473572].) Thus, the Board expressed a reasoned basis for determining that due to its limitations, the Board "did not rely upon SalSim, either for impact determinations in the SED or for its conclusion regarding fish benefits." (*MR 3.1*, p. 63 [00510993].)[12]

Stockton East also asserts the record does not establish that the salmon population is in decline. (Stockton East Op. Br., p. 26.) In support of this assertion, Stockton East points to Figure 3.5 in the Technical Report (*Tech. Rep.*, p. 3-22 [00474213] and a related peer comment submitted by Thomas Quinn, a professor of Aquatic and Fishery Sciences at the University of Washington. (*Tech. Rep.*, Att. 2, p. 27–28 (*Quinn Comment #19*) [473395-396]). Figure 3.5 is a bar chart displaying the estimated yearly natural production and in-river escapements of SJR fall-run salmon from 1952 to 2007. The chart appears to show a pattern of ups and downs, yet a draft of the Technical Report characterized the chart as showing a "steady decline" in salmon escapement since 1952. Quinn took issue with that characterization, commenting that the chart seems to show a series of pronounced peaks with distinct troughs in between, and inquiring whether there could be a more sophisticated analyses of the peaks and troughs. (*Ibid.*)

Stockton East asserts that the Board did not address Quinn's comment. (Stockton East Op. Br. p. 26.) But this is incorrect. Right after restating Quinn's comment, the Board responded to it by explaining it removed the "steady decline" reference from the revised Technical Report, and added a clarifying explanation that the peaks and troughs likely reflected the variable hydrological conditions that occur in the SJR. (*Tech. Rep.*, Att. 2, p. 28 (*Quinn Response #19*) [00474396].) The Board also revised the text accompanying Figure 3.5 to more

[12] SJTA also argues the flow objectives do not protect LSJR fish due, in part, to the fact that the Board "disavowed" SalSim. (SJTA Op. Br., p. 25.) This argument fails for the same reasons.

precisely explain the chronology of the fall-run Chinook salmon's decline in the SJR basin. (*Tech. Rep.*, pp. 3-21 – 3-22 [00474212-213].)

More importantly, there is abundant scientific evidence in the record showing that decreased flows caused by rim dams and reservoir operations have caused a significant decline in the LSJR salmon population. (*Tech. Rep*., pp. 3-1 – 3-63 [00474192-254].) Quinn's comment asking for a "more sophisticated analyses" of the data to explain the "peaks and troughs" does not express rejection of the determination that the salmon population has declined. In fact, other comments by Quinn make clear that he does not dispute the Board's determination that the LSJR salmon population has substantially declined due to changes in the flow regime caused by the construction and operation of the rim dams. For example, Quinn commented that, "[t]he river's flow regime has been so radically altered that I have no hesitation whatsoever in agreeing with the report's conclusion that the changes are impairing the river from the fishes' standpoint." (*Tech. Rep.*, Att. 1, (*Review by Thomas Quinn*), p. 3 [00474354].) He acknowledged that "I find the report very convincing in its conclusion that, while there are other stressors to fish, a more natural flow regime is necessary if the fish are to recover. Indeed, I would further conclude that the other stressors such as contaminants and non-native fishes will be less consequential for salmon and steelhead in a more natural flow and thermal regime, so the benefits of flow enhancement will likely be both direct and indirect." (*Id.* at p. 4 [00474355].)

Similarly, peer reviewers Jager and Olden also agreed that the hydrologic analysis and previous research cited in the Technical Report support the findings that dam development has resulted in reduced flows which are insufficient to support fall-run salmon. (*Tech. Rep.*, Att. 1 (*Review by Julian Olden* [professor of Aquatic and Fishery Sciences]), pp. 1-4 [00474340-343]; (*Review by Henriette Jager* [environmental scientist]), pp. 2-11 [00474324-333]. The other two peer reviewers express no disagreement with this assessment as it was beyond their areas of expertise. (*Ibid.*, (*Review by John Dracup* [civil engineer and hydrologist]), p. 1 [00474314]; (*Review by Mark Grismer* [professor of hydrology and engineering]), pp. 1-2 [00474317-318].) Thus, contrary to Stockton East's contention, the scientific evidence in the record shows that the decreased flows in the LSJR and its three eastside tributaries resulting from the development and operation of dams and reservoirs are insufficient to support fall-run Chinook salmon.

III. Whether the Plan Area was Properly Drawn

The Stanislaus, Tuolumne, and Merced Rivers all generally run parallel to each other from east to west, down from the Sierra to where they join the LSJR. Of the three rivers, the Stanislaus is the most northern, the Merced is the most southern, and the Tuolumne is in the middle. The LSJR generally flows south to north into the Delta. The flow objectives apply to the mainstem of the LSJR between its confluence with the Merced River and downstream to Vernalis at its confluence with the Stanislaus River, and to these three tributaries from their rim dams down to the LSJR. (*ES*, p. 6, Figs. ES-1, ES-2 [00468640-643]; *Ch. 1*, pp. 1-2 [00468837-838].) In addition, the flow objectives apply to an extended plan area above the rim dams of the three tributaries which may be affected by the objectives. (*Ibid*.)

Three petitioners contend the Board designated an improper plan area. SJTA contends the Board violated its obligation under section 13241 subdivision (c) to consider all factors which affect water quality by narrowly drawing the plan area as "a small circle around a select few water rights holders" while excluding diverters upstream from the rim dams, in the upper SJR watershed, in the Sacramento River watershed, or in the statutory boundaries of the Delta. (SJTA Op. Br., pp. 21-23.) Stockton East contends that the Board is "piecemealing" the Bay-Delta Plan because the narrative LSJR flow objective targets the portion of the SJR watershed that includes only the Stanislaus, Tuolumne, and Merced Rivers instead of the entire watershed. (Stockton East Op. Br., pp. 27-28.) And Merced ID argues, on one hand, that because the LSJR flow objectives only apply below the rim dams, the burden of complying with the flow objectives was unreasonably placed on the operators of those dams while water diverters upstream, downstream, and on the west side of the SJR were excluded from sharing in the burden. (Merced ID Op. Br., pp. 29-31.) On the other hand, Merced ID argues the Board exceeded its authority by including waters (specifically, the LSJR upstream from Vernalis and the three tributaries) that fall outside the statutory boundaries of the Sacramento-San Joaquin Delta as specified in section 12220.[13] (Merced ID Op. Br., pp. 28–29.)

But section 12220 does not support Merced ID's position. That statute, which is part of the Delta Protection Act (§§ 12200-12220), establishes the legal boundaries of the Delta for the purpose of preventing the SWP and CVP from exporting Delta water to which Delta users are

[13] These contentions overlap with petitioners' CEQA segmentation claims, addressed later.

entitled and that is needed for salinity control. (§§ 12202, 12203, 12204.) Section 12220 does not restrict the Board from drawing the plan area beyond the boundary of the Delta. In fact, there are no precise restrictions on the Board's authority to establish geographic areas for its water quality control plans. Rather, the Board is vested with broad authority to adopt water quality control plans for *any* waters in the state that fall under the purview of the federal Clean Water Act. (§ 13170.)

Moreover, the record supports the conclusion that the Board drew the plan area in a reasonable way. The flow objectives are designed to protect existing native fish, specifically fall-run Chinook salmon, in the three eastside, salmon-bearing LSJR tributaries. (*Ch. 3*, pp. 3-4 [00469738-739]; *Ch. 7*, pp. 30-47 [00469996-00470016].) The flows of these tributaries support native fish populations rearing in the tributary streams and migrating through the Delta. (*Ibid*.; *MR 2.1*, pp. 16-18 [00504795-797]; *MR 2.4*, pp. 24-25 [00507288-889]. Neither the Upper SJR nor the tributaries on the west side of the SJR currently support salmon populations. (*Ibid*.; *MR 1.1*, p. 48 [00501761].) And the Sacramento watershed and northern Delta are hydrologically and geographically distinct from the SJR watershed and have migrating native fish populations with different life history patterns requiring increased riverine flows for viability, thereby restricting their contribution of water resources to the LSJR tributaries. (See *MR 1.2*, p. 17 [00504040]; *Phase II Update of 2006 Bay-Delta Plan*, pp. 3-15 [00558770].) Accordingly, the Court rejects petitioners' claims that the Board improperly drew the plan area.

IV. Whether the Flow Objectives Provide Reasonable Protection of Beneficial Uses

Petitioners raise a variety of arguments that the Board violated section 13241 by improperly determining that the flow objectives will protect beneficial uses. Some petitioners argue the record does not support the Board's determination that the numeric flow objective will provide reasonable protection for native LSJR fish. Some argue the Board could not have made a valid reasonable-protection determination without first delineating the biological goals. Some argue the Board was obligated to devise a flow objective that would also protect other categories of fish and wildlife beneficial uses (including, for example, the protection of clams and oysters). And some argue the analytic methodologies the Board employed to study the efficacy of the flow alternatives were flawed, thereby undermining the Board's reasonable-protection determination. Each contention is addressed below.

A. *The Efficacy of the Board's Numeric Unimpaired Flow Objective*

Westlands contends that the Board failed to do the analysis needed to determine whether the flow objectives will actually provide reasonable protection for fish and wildlife. (Westlands Op. Br., pp. 52-53.) According to Westlands, the "Board focused on securing a block of water as an end in itself, and deferred to later figuring out how much water was needed and how to use it." (*Id.* at p. 52.) Merced ID contends that no evidence supports the Board's determination that the unimpaired flow objectives will serve to protect native migratory fish in the SJR watershed. (Merced ID Op. Br., pp. 23-28.) In Merced ID's view, non-flow measures like predation control will provide protection but were not adequately considered by the Board. Merced ID relies upon its own 302-page comment letter that it submitted to the Board during the plan preparation process. (*Merced ID Comment Letter,* filed March 17, 2017, pp. 51-54 [00400664-666], 81 [00400693], 84 [00400697].)

Baykeeper asserts that the record conclusively shows that the flow objective will *not* provide a reasonable level of protection for fish. Baykeeper asserts that multiple scientific studies show that unimpaired flows of 50% to 60% are the minimum necessary to reestablish and sustain fish and wildlife uses. (Baykeeper Op. Br., pp. 48-50.) Similarly, Baykeeper asserts that the Vernalis baseflow requirements of 1000 cfs (with an adaptive range of 800–1200 cfs) is less than what native fish need. (*Id.* at pp. 41-42.) Baykeeper contends that while the Board suggested that non-flow measures will also help protect fish, the Board failed to require any of them. (*Id.* at p. 51.) Baykeeper asserts that the record shows there are certain thresholds of river flows below which fish will simply not be able to survive. (*Id.* at p. 52.) Baykeeper contends because the numeric flow objective is set below those thresholds, native fish populations will continue to decline towards extinction. For this reason, Baykeeper argues the numeric flow objective violates the narrative objective of supporting and maintaining viable native fish populations.[14] (*Id.* at pp. 52-54.)

[14] The Court grants two requests for judicial notice ("RJN") by Baykeeper of the following two documents that were inadvertently left out of the administrative record: (1) a 2010 Department of Fish and Game report, *Quantifiable Biological Objectives and Flow Criteria for Aquatic and Terrestrial Species of Concern Dependent on the Delta* (Ex. 1 to Baykeeper's RJN, filed Sept. 20, 2022); and (2) Appendix E to a public comment letter dated Mar. 16, 2017, submitted to the Board by Baykeeper and three other organizations (Ex. 1 to Baykeeper's RJN, dated Mar. 3, 2023). The Board has agreed that these documents are part of the administrative record. The RJNs filed by Merced ID and BAWSCA pertain to a revised Notice of Preparation and of the

Scientific studies in the record provide the following: "Rearing and outmigration typically occurs between February and June; however, peaks in fry outmigration occur in February and March and smolt [] outmigration occurs in April and May." (*Tech. Rep*., pp. 3-18 – 3-19 [00474209-210].) "Successful rearing is associated with the magnitude, timing, and duration of flows, and connectivity with associated riparian and floodplain habitat." (*Id.* at p. 3-19 [00474210].) "Understanding the relationship between freshwater flows and juvenile survival during migration is complicated by the fact that flow often operates indirectly through its effects on other environmental factors that directly influence survival[.] In the Bay-Delta, these include (but are not limited to): water temperature, dissolved oxygen, salinity, pollutant concentrations, and predation[.]" (*Tech. Rep*., p. 3-20 [00474211].) Achieving optimal water temperatures is important to the "distribution, health, survival, and reproduction of native salmonids[.]" (*Ch. 19*, p. 17 [00473514].)

The scientific studies in the record detail myriad ways increased river flows help support and sustain native LSJR fish populations. (*Tech. Rep.,* pp. 3-29–2-30 [00474220-221]; 3-40 – 3-50 [00474231-241]; *Ch. 19*, pp. 3-5 [00473493-502].) The SED explains: "Improving flows that mimic the natural hydrographic conditions including related temperature and floodplain regimes to which native fish species are adapted, are expected to provide many juvenile salmonids with additional space, time, and food resources which are necessary for required growth, development, and survival." (*Ch. 19*, p. 2 [00473499].) "Extending spatial, temporal, and nutritional opportunities available to juvenile fall-run Chinook salmon and steelhead in the Stanislaus, Tuolumne, and Merced Rivers is expected to improve abundance, productivity, diversity, and spatial structure of the SJR Basin and Central Valley populations, and should also provide substantial benefits to other native fish in the SJR Watershed." (*Ibid*.)

There is more than enough valid scientific evidence in the record to support the Board's general conclusion that increased flows in the LSJR and its three eastside tributaries are of critical importance to reviving and sustaining native migratory fish populations. With that conclusion reached, the question then becomes whether unimpaired flows of 40% (with an adaptive range of 30% to 50%) are sufficiently robust to provide reasonable protection for native

---

August 10, 2022 Scoping Meeting are denied. The document relates to a separate Board proceeding outside the scope of the record, and is not relevant to the issues in this matter.

fish. The answer to this question lies in the analysis and modeling of the temperature and floodplain effects stemming from different levels of unimpaired flow.

1. *Flow effects on instream temperatures*

The Board modeled the effects that unimpaired flows of 20%, 30%, 40%, 50%, and 60% would have on instream temperatures on each of the three eastside tributaries and the LSJR over a 34-year period from 1970 through 2003. (*Ch. 19*, p. 18 [00473515].) The Board ran its temperature model using monthly temperature data and criteria recommended by the US Environmental Protection Agency for the protection of salmonids. (*Ibid.*) The modeling results are complex and vary by river, but essentially show that 40% unimpaired flows would yield some significant instream temperature benefits, while 50% and 60% unimpaired flows would yield more significant temperature benefits.

The Board summarized the results as indicating "that significant temperature benefits to Central Valley fall-run Chinook salmon and Central Valley steelhead will occur on the Stanislaus, Tuolumne, Merced, and LSJ Rivers under *some* of the unimpaired flow alternatives which were evaluated." (*Ch. 19*, p. 20 [00473518] (emphasis added).) The Board elaborated significant temperature improvements primarily in the Stanislaus River under 50%–60% unimpaired flows; in the Merced River under 30%–60% unimpaired flows; and in the Tuolumne River under all alternative unimpaired flows with benefits increasing as flow levels increase. (*Ibid.*) The Board explained, however, that "modeling results indicate that significant temperature benefits to the smoltification life stage will occur only with 50% and 60% unimpaired flows on the Stanislaus and Merced Rivers during April and May (Tables 19-3 and 19-9). In the LSJR, significant temperature improvements … occur during March under the 60% unimpaired flow, with other months and other unimpaired flows not expected to produce significant benefits or impacts on optimal salmonid temperature habitat." (*Ibid.*) The Board explained that although there are "limited benefits to optimal salmonid temperature habitat in the LSJR, there are substantial reductions in average temperatures and 90th percentile temperatures primarily during the March through June time period with higher unimpaired flows providing greater reductions to these measures of temperature." (*Ibid.*)

The modeling shows that the Revised Plan reduces the number of times there are instream temperatures that are harmful or lethal to migrating juvenile salmonids. (*MR 3.1*, p. 53 [00510983].) The Board found that 40% unimpaired flows would reduce the frequency of

harmful temperatures on the Merced and Tuolumne Rivers and the SJR during April, May, and June; and would reduce the frequency of *lethal* temperatures in June. (*Ibid.*) Regarding the Stanislaus River, the Board related that it already functions near 40% unimpaired flows on average from February through June under existing conditions, and typically avoids harmful temperatures in February through May. (*Ibid*.) The Board identified more consistent flow management (instead of flow management that has been erratic in the past) as potentially yielding temperature benefits on the Stanislaus in June, when it currently experiences harmful instream temperatures 40% of the time. (*Ibid.*)

The Board acknowledged that under the 40% unimpaired flows the modeling indicated that there will still be times where instream temperatures at various river locations are in the harmful range. (*MR 3.1*, p. 55 [00510985].) The Board, however, rejected the assertion from commenters that "if temperatures are a fraction over the optimal criteria then the habitat is useless and there are no benefits." (*Ibid.*) The Board explained, that "it is important to consider that there is not one perfect temperature threshold or criterion that explains every temperature related effect for a specific species and life stage, and that works the same for every individual fish. For example, the thermal responses of fish to increasing water temperatures within the harmful rage are often described as a continuum of effects[.]" (*Ibid*.) Ultimately, the Board concluded that "[t]he overwhelming body of evidence presented in the SED and modeling files indicates that a reasonable water operation that is consistent with the requirements of the plan amendments will provide tremendous water temperature benefits for native fish without unintended temperature consequences." (*Ibid.*)

2. *Flow effects on floodplain inundation*

The Board modeled flow outputs to predict the frequency and magnitude of any increases in floodplain inundation on the LSJR and three eastside tributaries, using 82 years of flow data for each month during the February through June time period from 1922 to 2003. (*Ch. 19*, p. 55 [0473552].) The results of the model's "floodplain analysis indicate that improvements (compared to baseline) to the frequency of floodplain inundation can be achieved by implementing the 20%, 30%, 40%, 50%, or 60% unimpaired flows. The improvements to the frequency of floodplain inundation events primarily occur during April, May, and June, although higher unimpaired flows (40%–60%) provide some benefit in February and March. During April through June, most of the unimpaired flows evaluated provide some benefit compared to

baseline, with … the higher unimpaired flows providing greater benefit." (*Ch. 19*, p. 62 [00473559].)

The Board explained that, when considering the floodplain results on different rivers at different times of year, using the metric of "acre-days" is helpful in getting an overall picture of the effects from different unimpaired flows that were modeled. Acre-feet measures the number of acres inundated each day, then summed over an identified time period. (*Ch. 19*, p. 71 [00473568].) On an annual basis, the modeling shows that "[t]here is an overall 35 percent increase in floodplain inundation … at 40 percent unimpaired flow. The percent increase in floodplain inundation is 16 percent and 74 percent, respectively, for 30 and 50 percent of unimpaired flow." (*Ibid.*) The Board further explained that a "critically important time period for floodplain inundation, and also the time period that achieves the greatest benefit from the flow proposal, is the April through June period. Floodplain inundation does not change much during February and March because flows are relatively high during those months already under baseline. … There is an overall 82 percent increase in floodplain inundation … at 40 percent of unimpaired flow in the three tributaries. The percent increase in floodplain inundation is 37 percent and 152 percent, respectively, for 30 and 50 percent of unimpaired flow." (*Id.* at pp. 71-72 [00473568-569].)

3. *The Vernalis base flow requirement*

The Board explained that the February–June Vernalis base flow requirement (1000 cfs with an adaptive range of 800–1200 cfs) is supported by the same scientific evidence that supports the LSJR unimpaired flow alternatives (discussed above). (*MR 2.1*, pp. 46-47 [00504825-826].) The Board's modeling shows that "Vernalis flows under the LSJR flow alternatives are generally greater than 1200 cfs during February–June." (*Ch. 5*, p. 72 [00469884].) "There are a small number of occurrences, in the 82-year hydrologic period, that result in the LSJR flow objectives providing flows at Vernalis that are lower than the base flow requirement. For LSJR Alternative 3, only 1 year in 82 resulted in flows at Vernalis that were lower than 800 cfs, the lowest flow in the base flow range." (*MR 2.1*, p. 47 [00504826].) The Board explained that the Vernalis base flow requirement is meant to complement the LSJR unimpaired flow objective to ensure that in critically dry years, the flows at Vernalis "do not fall below the minimum flow threshold needed to protect fish and wildlife beneficial uses." (*Id.* at pp. 46-47 [00504825-826].)

4. *Analysis of whether the record supports finding of reasonable protection*

The Court finds that the record demonstrates that the Board formulated the numerical flow objective to maintain instream flows that more closely mimic the natural hydrographic conditions to which the migrating native fish are adapted, including cold instream temperatures and inundated floodplain habitat. (*Tech. Rep.*, pp. 3-40 – 3-50 [00474231-441]; *Revised Plan*, p. 18 [00741340].) The Board's decision to implement a numeric flow objective from February through June corresponds to the period when higher flows are critical to LSJR fish survival.

The more specific question is whether the evidence supports the Board's determination that Alternative 3 will provide enough flow to revive and sustain native LSJR fish populations. As Baykeeper contends, the scientific evidence in the record clearly shows that unimpaired flows of 50% or 60% would be more effective in achieving that goal. The Court agrees that Alternative 4 with unimpaired flows of 60% (with an adaptive range of 50%–60%) would have better protected native LSJR fish. But the Porter-Cologne Act requires the Board, when endeavoring to better protect one beneficial use, to also consider and balance the impacts to other beneficial uses.

The pertinent question is whether the evidence supports the Board's determination that Alternative 3 will *reasonably* protect native LSJR fish, not whether it will *best* protect native LSJR fish. The analyses and modeling performed on Alternative 3 shows it will provide benefits that will better protect native LSJR fish than current objectives. This same evidence supports the Board's adoption of the Vernalis base flow objective to complement the unimpaired flow objective by ensuring that flows do not drop too low in critically dry years. Accordingly, the Court cannot gainsay the Board's decision given the scientific evidence in the record. Therefore, the Court denies Baykeeper's challenge to the Board's determination that the numeric LSJR unimpaired flow and Vernalis base flow objectives will reasonably protect fish and wildlife. For these same reasons, the Court denies the claims asserted by Westlands and Merced ID that no evidence supports the Board's reasonable-protection determination. The Court does not find that Merced ID's comment letter, on which it relies for support, undermines the evidentiary basis the Board's determination.

B. *Deferred Delineation of Biological Goals*

Westlands and Baykeeper argue that the Board failed to ever define "reasonable protection of fish and wildlife" because it deferred establishment of biological goals. (Westlands

Op. Br., pp. 52; Baykeeper Op. Br., pp. 28-29, 48.) In their view, the biological goals define the conditions necessary to reasonably protect fish and wildlife beneficial uses and must be developed in the course of formulating the flow objectives under section 13241. (*Ibid.*)

The Board explained in response to comments that "[i]t is premature … to include specific numeric targets for biological goals because the relevant scientific information has not yet been developed. Waiting for the development of biological goals for inclusion in the Bay-Delta Plan would further delay implementation of the LSJR flow objective. Moreover, adaptive implementation can proceed before additional information is available[.]" (*MR 2.2*, p. 22 [00505912].)

The Court can see how it would have been reasonable for the Board to have developed the biological goals for inclusion in the Revised Plan. But even without them, the record supports the Board's determination that the numeric flow objective will provide reasonable protection for native LSJR fish. The Court finds the Board's reasons for deferring development of the biological goals to the implementation phase to be rational. That the biological goals had not yet been quantified does not undermine the evidentiary basis for the Board's conclusion that the flow objectives will provide reasonable protection for native LSJR fish. The Court, therefore, rejects the contentions regarding the deferral of biological goals.

C. *Other Categories of Fish-and-Wildlife Beneficial Uses*

SJTA and Baykeeper argue that the Board erred in formulating the LSJR flow objectives without analyzing their impact on *all* categories of beneficial uses affecting fish and wildlife carried over from earlier versions of the Bay-Delta Plan. (SJTA Op. Br., p. 24; Baykeeper Op. Br., p. 47-48, 50, citing *Revised Plan*, pp. 10-11 [00741332-333].) The Board analyzed the flow objectives with respect to the beneficial uses of (1) cold freshwater habitat and (2) spawning, reproduction, and early development of fish. SJTA and Baykeeper argue, however, that the Board erred by not also analyzing the objectives with respect to the other categories of beneficial uses including shellfish harvesting, commercial and sport fishing, warm freshwater habitat, migration of aquatic organisms, estuarine habitat, wildlife habitat, and rare, threatened or endangered species. (SJTA Op. Br., pp. 24-25, citing *Ch. 19* [00473493-571]; Baykeeper Op. Br., pp. 47-48, 50.)

These petitioners provide no legal or factual basis for their argument that the Board was required to evaluate whether the flow objectives protect *all* identified fish and wildlife beneficial

uses, and none is apparent. The Board developed and analyzed the flow objectives specifically to maintain the natural production of viable native fish populations migrating between the three eastern tributaries of the LSJR and the Delta. The Board was not obligated to analyze other beneficial uses identified in the plan that were not the focus of the flow objectives.

D. *The Board's Analytic Methodologies*

SJTA also contends that the Board's analysis of whether the flow objectives would sufficiently benefit water temperature was flawed because it incorporated assumptions about certain implementation measures that are not required by the flow objectives. (SJTA Op. Br., pp. 25-27.) Specifically, SJTA takes issue with the fact that the Board's analysis of temperature impacts included assumptions about carryover storage requirements and flow shifting from the POI. (*Ibid.*) In SJTA's view, these adaptive implementation measures are not required by the numeric flow objective, and therefore, it was improper for the Board to analyze temperature impacts by assuming these measures would be in place. (*Ibid.*)

Stockton East and SJTA contend that no evidence indicates the flow objectives actually provide reasonable protection for fish and wildlife because the Board only conducted analyses with assumptions built in that are not part of the flow objectives. (Stockton East Op. Br., pp. 28-29; SJTA Op. Br., pp. 48-54.) Specifically, they contend it was improper for the Board to only analyze and model the numeric flow objective while taking into account the flow shifting and carryover storage components from the program of implementation because those implementation measures are not part of the objective itself. (*Ibid.*) They assert the determination that the numeric flow objective actually protects fish and wildlife was arbitrary because rather than model the actual objective, "the Board radically altered the modeling … to create an artificial scenario that it believed would provide that protection." (SJTA Op. Br., p. 55; accord Stockton East Op. Br., pp. 28-29.)

Petitioners misconstrue both the Revised Plan and the scope of the Board's discretion. The Revised Plan states that "flows provided to meet these numeric objectives *shall be managed in a manner to avoid causing significant adverse impacts to fish and wildlife beneficial uses at other times of the year*." (*Revised Plan*, Table 3, p. 18 [00741340] (emphasis added).) The program of implementation specifically establishes minimum reservoir carryover storage targets and flow-shifting measures as mechanisms to help ensure that compliance with the unimpaired flow requirements will not have adverse temperature impacts at other times of the year. (*Id.* at

pp. 28 [00741350], 30-31 [00741352-353].) Thus, contrary to SJTA's contentions, carryover storage and flow-shifting measures *are* part of the Revised Plan related to the flow objectives.

As explained in the Technical Report, reservoir operations, including the volume of water stored in a reservoir, and the timing and volume of water released from a reservoir, affect temperatures in the waters flowing below the reservoir. (*Tech. Rep.*, pp. 3-47 – 3-48 [00474238-239].) Also, as SJTA acknowledges, the Board did, in fact, model temperature impacts of the 40% unimpaired flow objective on the Stanislaus River, both with and *without* carryover storage. (SJTA Op. Br., pp. 26-27; *MR 3.2*, pp. 56-57 [00516675-676].) The Court concludes the Board had a scientific basis for including carryover storage and flow-shifting measures in the POI. And the Board properly exercised its discretion in primarily focusing its temperature analysis of the flow objectives by factoring in how they were designed to be implemented.

SJTA and Stockton East also contend it was improper for the Board to model the flow objective using *monthly* averages for flow when the objective itself is based on a minimum 7-day running average that would require daily flow changes. (Stockton East Op. Br., pp. 28-29; SJTA Op. Br., pp. 27, 54-55.) SJTA faults the Board for analyzing water temperature using monthly flow data, which it converted to daily temperature values by simply dividing by 30, thereby yielding the same temperature every day in a given month. (SJTA Op. Br., p. 27.)

The Board used average monthly temperature data for the three tributaries over a 34-year period. (*Ch. 19*, pp.17-18 [00473514-515.) The Board explained that "what is important" about its temperature modeling is that "the water volume and source temperature is accurately estimated for each flow scenario." (*MR 3.2*, p. 56 [00510986].) The Board stated that using average monthly data is "appropriate for comparison of alternative management scenarios on a basin-wide and long-term scale." (*Ibid.*) The Board explained that although there are "innumerable ways" a certain quantity of flow could be shaped over a given month, "modeling every possibility is not necessary because an alternative either provides more coldwater flow or less coldwater flow over a given month" relative to baseline conditions. (*Ibid.*) The Board's reasoning and explanation is rational. Although there certainly were other ways the Board could have modeled the temperature effects of the flow objectives, the Board did not act arbitrarily in analyzing temperature effects in the manner it did.

Next, SJTA argues the Board used the "unsupported metric" of instream temperature changes of 10% as being significant. (SJTA Op. Br., pp. 28-29.) SJTA's argument involves the

Board's use of 34-years of temperature data to model the flow objectives against temperature criteria recommended by the federal EPA for the protection of salmonids. (*Ibid.* citing *Ch. 19*, p. 18 [00473515].) The Board determined that a 10% change in the amount of time instream temperatures met the EPA criteria, in combination with professional judgment, would be considered a significant impact or benefit. (*Ch. 19*, p. 18 [00473515].) The Board explained that "[t]en percent was selected because it accounts for a reasonable range of potential error associated with the assumptions used in the various analytical and modeling techniques." (*Ibid*.) The Board's rationale for using a metric of 10% to denote significance is reasonable and falls well within the bounds of its discretion.

Finally, SJTA argues that the Board's analysis of improved floodplain benefits to fish was conclusory. (SJTA Op. Br., pp. 29-30.) SJTA contends that the Board erred by simply assuming that all newly inundated areas on the banks of the tributaries will provide suitable habitat for salmon because creating a suitable habitat requires more than just inundation. (*Ibid.*)

In Chapter 19, the Board discussed its floodplain analysis, and explained that increased floodplain habitats in the Central Valley have been found to have a positive effect on the growth rates and survivorship of juvenile salmonids, especially in their outmigration period in winter to mid-spring. (*Ch. 19,* p. 53 [00473550].) The Board explained that a suitable habitat requires not just the proper timing, frequency, magnitude, and duration of floodplain inundation, but also sufficient heterogeneity and habitat complexity. (*Id.* at p. 55 [00473552].) The Board's floodplain study showed that the 40% unimpaired flow objective will result in an 82% increase in floodplain inundation in the months of April, May, and June, which are especially important for juvenile salmon rearing. (*Id.* at p. 71 [00473568].) The Board acknowledged that floodplain inundation does not take into account other attributes needed for a suitable habitat, and that it generally overestimates the amount of optimal habitat for salmonid rearing. (*MR 3.1*, p. 58 [00510988].) Nonetheless, the Board considered floodplain inundation as a "sufficiently robust indicator" of floodplain habitat because its data showed a close correspondence between inundation and habitat. (*Id*. at pp. 58-59 [00510988-989].)

The Court finds that the Board exercised reasonable judgment in the methodology it used to study the potential benefits from increased floodplain habitat. Accordingly, SJTA has not satisfied its burden to show the Board acted arbitrarily or capriciously in this regard.

V. Whether the Board Properly Considered the Section 13241 Factors

Petitioners contend the Board did not satisfy its obligations under section 13241 by failing to adequately consider the following subjects:

- impacts from the flow objectives causing reductions in municipal, industrial, and agricultural water supplies, and the importance of these competing beneficial uses;
- economic impacts from reduced municipal and agricultural water supplies caused by the flow objectives and the carryover storage requirement for reservoirs;
- impacts to the Bay Area from reduced municipal and industrial water supplies, including impacts to the economy and the need to develop housing;
- incorporation of non-flow measures as required, rather than recommended, actions;
- fish viability and environmental criteria

The Court will address petitioners' section 13241 contentions about impacts to competing beneficial uses, the economy, and the Bay Area together, before addressing their contentions about non-flow measures, and fish viability and environmental criteria.

A. *Contentions About Impacts to Water Supplies and Other Beneficial Uses*

Stockton East and SJTA contend the Board failed to consider impacts to water supplies used for other beneficial uses including municipal, industrial, and agricultural uses. (Stockton East Op. Br., pp. 29-32; SJTA Op. Br., p. 30-34.) Stockton East contends the Board made incorrect assumptions about the ability of farmers improve irrigation efficiency to reduce the acreage of cropland that will need to be converted to non-agricultural uses due to water shortages. (Stockton East Op. Br., p. 30.)

Regarding municipal and industrial water supplies, SJTA contends the Board incorrectly assumed that those water supplies would not be cut in times of surface water shortage. (SJTA Op. Br., p. 30, citing *App. G, Agricultural Economic Effects of LSJR Flow Alternatives*, p. 6; *Ch. 11*, p. 36.) SJTA contends that the Board incorrectly assumed that: (1) during water shortages, farmers would automatically shift their limited agricultural water to higher value crops; (2) there is some "omniscient and omnipotent force to infallibly manage" limited water supply; (3) under the SWAP model, reduced water supplies would not result in loss of any permanent crops; and (4) groundwater would be available to supplement reduced surface water supplied despite the likely limiting impact SGMA will have on groundwater supplies. (SJTA Op. Br., p. 31-34.) In sum, SJTA contends that by making these false assumptions, the Board artificially lessened the

impacts to agricultural water supply, and evaded engaging in any actual consideration of this impact as required under section 13241. (*Ibid.*)

City of Modesto contends the Board failed to consider the impacts that reduced water diversions from the Tuolumne River will have on municipal uses. (City of Modesto Op. Br., pp. 34-35.) Merced ID contends the Board failed to consider the impacts that reduced diversions from the Merced River will have on other beneficial uses. (Merced ID Op. Br., pp. 13-15.)

Merced ID also asserts that although Merced County's dairy and cattle ranches depend on its high value permanent crops, the Board did not evaluate the economic impacts fallowed crops will have on those animal operations. (Merced ID Op. Br., p. 22.) Merced ID also argues that the Board failed to evaluate economic impacts to its residents living in poverty, and in particular to their water supply which relies on more shallow private domestic wells. (*Ibid.*) SJTA contends the Board improperly deferred any consideration of the cost of compliance to the implementation phase. (SJTA Op. Br. at pp. 35-36.)

Westlands contends the Board failed to account for the impacts of SGMA on available groundwater supplies, which would then have an impact of agricultural water supplies. (Westlands Op. Br., p. 54.) Westlands and SJTA contend the Board's consideration of impacts was deficient because it deferred adequate evaluation and determination of the carryover storage requirements to the implementation phase. (*Id.* at pp. 54-55; SJTA Op. Br., p. 34-35.) SJTA also contends the Board failed to consider impacts to hydropower generation from reservoir operations. (SJTA Op. Br., p. 35.)

1. *SED's description of agricultural water supply impacts*

Chapter 11 (*Agricultural Resources*) evaluates potential impacts of the alternatives on agricultural resources in Merced, Stanislaus, and parts of San Joaquin counties, and identifies the locations and types of affected farmland. (*Ch. 11*, pp. 1-2 [00470532-533].) The chapter examines "the potential conversion of irrigated farmland to nonagricultural uses as a result of a reduction in surface water supplies" associated with the LSJR alternatives. (*Id.* at p. 3 [00470536].) The chapter identifies where an alternative could potentially cause conversion of certain types of farmland to nonagricultural use, or create conflicts with zoning, Williamson Act protection, or other agricultural land use policies or regulations. (*Id.* at p. 34 [00470567].)[15]

[15] The Williamson Act "discourages premature and unnecessary conversion of agricultural land to urban uses through an interrelated set of property tax, land use, and conversion measures[,]"

For each alternative, Chapter 11 also analyzes the acreage of select crops and their response to reduced water availability compared to baseline. For LSJR flow Alternative 2, the analysis projects an average cropped acreage reduction compared to baseline of 5,990 acres, representing a 1.2% reduction in average cropped acreage. (*Ch. 11*, pp. 50 [00470589].) For Alternative 3, the analysis projects an average cropped acreage reduction compared to baseline of 24,902 acres, representing a 4.8% reduction in average cropped acreage. (*Id.* at pp. 53-54 [00470598-599].) For Alternative 4, the analysis projects an average cropped acreage reduction compared to baseline of 64,038 acres, representing a 12.4% reduction in average cropped acreage. (*Id.* at pp. 57 [00470637].) The SED shows the impact for individual affected entities by crop type. (*Id.* at p. 53 [00470598].)

The Board relied on four models to assess agricultural impacts, describing the models in general in Chapter 11 and more specifically in various appendices. (*Ch. 11*, pp. 35-45 [00470568-584].) The models include the Statewide Agricultural Production ("SWAP") model, which is based on economic behavior to maximize crop production profit and reflects grower behavior observed during times of limited water supply.[16] (*MR 3.5*, p. 2 [00524414].) Appendix G describes the "methods and modeling results that estimate the potential effects of the LSJR alternatives on groundwater and agricultural production, as well as the associated economic effects in the LSJR Watershed," and includes a lengthy discussion of the inputs to and results generated by the SWAP model, including results by water year type (wet, above normal, below normal, dry, and critically dry). (*App. G*, beginning at 00478184.) In response to comments the Board received during the CEQA process that the SWAP model did not analyze the effect of consecutive dry years on permanent crops, the Board stated that the purpose of the "SWAP modeling was to help inform a programmatic analysis of whether or not the conversion of Designated Farmland to nonagricultural uses could result in potentially significant adverse physical impacts on the environment. The model was not meant to predict with accuracy how

---

and protects over 16.4 million acres or nearly one-third of all privately owned land in California. (*Ch. 11*, p. 13 [00470546].)

[16] The SWAP model is a widely used agricultural production model for estimating the response of agricultural production and associated revenues to changes in water supply. SWAP uses estimates of the relative applied water delivery along with crop distribution information for each irrigation district to estimate agricultural production and associated revenues under baseline conditions and for LSJR Alternatives 2, 3, and 4. (*Ch. 20*, p. 15 [00473795].)

growers might manage permanent crops, but rather to provide a relative idea of the scope of potential acreage that would receive reduced irrigation when compared to a baseline condition." (*MR 3.5*, p. 12 [00524424].)

The Board established a 4% threshold for designating the conversion of agricultural land to nonagricultural uses as significant. The Board referenced a 2013 California Water Plan Update for the San Joaquin Hydrologic Region which projected permanent conversion of agricultural land to non-agricultural uses in the region affecting between 6% and 14% of irrigated acreage annually by 2050 due to urbanization. (*Ch. 11*, p. 40 [00470573].) The Board explained that after considering the factors involved in urban development and the impact of reduced water supplies on agricultural land conversion, the Board determined that a reduction of 4% or greater in any one district was a conservative threshold for determining significance for irrigated agriculture. (*Ibid.*) The SED concludes that for Alternative 3 "according to the number of acres that would no longer be considered Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as predicted by the SWAP model, and the possibility of conversion of these acres to nonagricultural uses, impacts on agricultural resources would remain significant and unavoidable." (*Id.* at p. 55 [00470612].)

2. *SED's description of groundwater supply impacts*

Chapter 9 (*Groundwater Resources*) analyzes "increased groundwater pumping, reduced groundwater recharge from surface water percolation, and related effects (e.g., subsidence) that may occur as a result of the effect of the LSJR alternatives on surface water supplies to the irrigation district service areas."[17] (*Ch. 9*, p. 1 [00470396].) The chapter describes the geologic and geographic reasons why the impacts on groundwater cannot be determined with certainty. (*Id.* at p. 2 [00470397]). The chapter addresses SGMA's potential effect on the analysis, noting that "since the groundwater protections that will be afforded by SGMA cannot be determined at this time with precision, this chapter evaluates the potential impacts on groundwater levels from the LSJR alternatives without including SMGA as an ameliorating factor, which means that

[17] Subsidence occurs when stored water is extracted and the surrounding fine-grained silts and clays compress and collapse, causing the ground level to sink. "Land subsidence from inelastic (non-recoverable) compaction is a common consequence of the significant groundwater level changes that can result from dependence on groundwater." (*Ch. 9*, p. 15 [00470413].)

estimates of impacts are likely more conservative (i.e., worse) than would occur in the groundwater basins over time." (*Id.* at p. 3 [00470399].)

Chapter 9 defines *significant* groundwater impacts as impacts that would either "[s]ubstantially deplete groundwater supplies or interfere substantially with groundwater recharge," or that could "cause subsidence as a result of groundwater depletion." (*Ch. 9*, p. 42 [00470442].) The chapter quantifies the threshold of significance as a "1-inch decrease in the irrigation district groundwater balance across a subbasin caused by the LSJR alternatives," because this could "eventually produce a measurable decline in groundwater levels and a substantial depletion of groundwater resources prior to the full implementation of SGMA. Therefore, a threshold of 1-inch reduction in reduction in the irrigation district groundwater balance is used in the impact analysis[.]" (*Id.* at p. 46 [00470446].) The Board explains that it determined the 1-inch reduction threshold after analyzing the specific yield estimates for groundwater basins. (*Ibid.*)

Chapter 9 discusses how the models produced estimates of diversions, assesses the groundwater pumping by irrigation district, and illustrates these results in graphs. (*Ch. 9*, pp. 45-52 [00470445-452].) For Alternative 3, the chapter concludes that "average reduction in net irrigation district groundwater balance under LSJR Alternative 3 could exceed 1 inch across the Modesto, Turlock, and Extended Merced Subbasins" leading the Board to conclude that "LSJR Alternative 3 could potentially substantially deplete groundwater supplies and interfere with groundwater recharge and affect groundwater quality in these subbasins. Therefore, impacts on groundwater resources would be potentially significant and unavoidable." (*Id.* at p. 62 [00470462].)

3. *SED's description of* impacts to service providers

Chapter 13 (*Service Providers*) examines potential impacts on service providers, which are the "public providers of water supply for municipal, industrial, and agricultural uses, and providers of wastewater treatment." (*Ch. 13*, p. 1 [00470693].) The chapter specifically evaluates impacts on the irrigation districts which receive water from the Stanislaus, Tuolumne, and Merced Rivers, including Modesto ID, Merced ID, as well as other water users including Stockton East, City of Modesto, and the City and County of San Francisco (CCSF). (*Id.* at pp. 8-9 [00470701-702].)

The following description by the Board of its modeling reveals the interconnected factors involved in evaluating water supply impacts: "Results from the Water Supply Effects (WSE) model were used to estimate the potential surface water diversion reductions on each of the three eastside tributaries[.] … While substantially reducing existing surface water supplies of service providers can be considered an impact, the extent to which service providers are affected is a function of their ability to use existing alternative supplies (e.g., groundwater) or develop alternative water supplies. Therefore, surface water diversion reductions are then compared to service providers' reliance on surface water[.] The reductions are considered within the general context of water supply agreements and contracts to qualitatively determine whether service providers may need new and expanded water supply treatment facilities or water supply infrastructure." (*Id.* at p. 47 [00470742].)[18] The chapter defines the impacts that would be considered potentially significant as those that would (1) "require or result in the construction of new water supply facilities or wastewater treatment facilities" or their expansion; (2) "[v]iolate any water quality standards such that drinking water quality" in either public water systems or domestic wells would be affected; or (3) would "[r]esult in substantial changes to SJR inflows to the Delta such that insufficient water supplies would be available to service providers relying on CVP/SWP exports." (*Id.* at p. 46 [00470741].)

For flow Alternative 2, the WSE model predicts surface water reductions compared to baseline conditions in the amount of 2% on the Stanislaus, 2% on the Tuolumne, and 6% on the Merced Rivers. (*Ch. 13*, p. 59 [00470754].) For Alternative 3, the WSE model predicts surface water reductions compared to baseline of 12% on the Stanislaus, 14% on the Tuolumne, and 16% on the Merced Rivers. (*Ch. 13*, p. 65 [00470760].) For Alternative 4, the WSE model predicts surface water reductions compared to baseline of 32% on the Stanislaus, 35% on the Tuolumne, and 32% on the Merced Rivers. (*Ch. 13*, p. 68 [00470763].)

Regarding Alternative 2, the SED projects less than significant impacts on service providers without adaptive implementation, but significant and unavoidable impacts with adaptive implementation. (*Ch. 13*, p. 3 [00470695]).) For Alternatives 3 and 4, the SED reports the impacts on service providers (both with and without adaptive implementation) will be

[18] The Board developed the WSE model to evaluate the effects of the LSJR alternatives on reservoir operations, water supply diversions, and river flow for each eastside tributary and flow and salinity at Vernalis. (*App. F.1* (*Hydrologic and Water Quality Modeling*), p. 1 [00477233].)

significant and unavoidable. (*Ibid.*) The SED projects that "as a result of the substantial reduction of surface water supply on the rivers, it is expected that there would be a substantial depletion of groundwater supplies in the Modesto, Turlock, and Extended Merced Subbasins." (*Id.* at p. 3-4 [00470695-696]).) The SED explains that these reductions are likely to lead service providers to need to replace or expand infrastructure facilities to replace reduced water supplies, which would be a significant impact. (*Id.* at pp. 66-69 [00470761-764].) The SED also states that "[t]he storage capacities for the reservoirs are fixed. Accordingly, there is no possibility of increasing total water supply to provide more water for surface water diversions as mitigation" under Alternative 3 or 4. (*Ibid.*) "More water released to the river would leave less water for surface water diversions." (*Ibid.*)

4. *SED's description of economic impacts from water supply reductions*

Chapter 20 (*Economic Analyses*) evaluates potential economic impacts from the LSJR flow objectives. The chapter explains that its analysis of agricultural production and related economic effects "follows three primary steps. First, total agricultural applied water for the irrigation districts is estimated based on the allowable surface water diversions calculated by the WSE model and the available groundwater pumping capacities of the irrigation districts. Second, the [SWAP] model is used to estimate how changes in applied water directly affect agricultural production and associated revenues. Finally, the Impact Analysis for Planning (IMPLAN) input-output model is used to estimate how changes in agricultural production revenues, predicted by SWAP for the study area, could impact regional economic output and jobs. The IMPLAN analysis considers the effects on all interconnected sectors of the regional economy to estimate the total economic effect, including direct, indirect, and induced effects." (*Ch. 20*, p. 15 [00473794].) The Board explained, "[i]f surface water supplies are reduced, diverters would likely increase groundwater pumping to help mitigate shortage and to meet their demands. Therefore, implementation of LSJR Alternatives 2, 3, and 4 also would be expected to affect the need for and costs of additional groundwater pumping by farm operators."[19] (*Ibid.*)

With respect to LSJR Alternative 2, the Board predicted decreases in agricultural production causing annual loses of 5,990 in irrigated acreage (-1.1%), $10 million in lost crop

[19] The IMPLAN model relies on a snapshot of the interrelationships among sectors and institutions in a regional economy; it is widely used to assess the regional economic effects resulting from changes in the availability and use of resources. (*Ch. 20*, p. 21 [00473801].)

revenues (-0.7%), $0.4 million in lost tax revenues (-0.7%), and an additional $1.3 million in groundwater pumping costs (+8.5%). The Board also projected the regional economy would annually lose 123 jobs (-1%) and have reduced regional output $18 million (-1%). (*Ch. 20*, Table 20.2-1, p. 4 [00473784].)

With respect to LSJR Alternative 3, the Board predicted decreases in agricultural production causing annual loses of 24,905 in irrigated acreage (-4.8%), $39 million in lost crop revenues (-2.6%), $1.6 million in lost tax revenues (-2.6%), and an additional $6.3 million in groundwater pumping costs (+41.2%). The Board also projected the regional economy would annually lose 458 jobs (-2%) and have reduced regional output $69 million (-3%). (*Ch. 20*, Table 20.2-1, p. 4 [00473784].)

With respect to LSJR Alternative 4, the Board predicted annual loses of 64,038 in irrigated acreage (-12.3%), $108 million in lost crop revenues (-7%), $4.3 million in lost tax revenues (-7.1%), and an additional $14.7 million in groundwater pumping costs (+96.1%). The Board also projected the regional economy would annually lose 1,287 jobs (-7%) and have reduced regional output $190 million (-7%). (*Ch. 20*, Table 20.2-1, p. 4 [00473784].)

The Board explained that under Alternatives 2, 3, and 4, reductions in water deliveries to agricultural users would also affect several other sectors of the economy: "When farm production decreases as a result of reduced water availability, farmers often would hire fewer seasonal workers and may lay off some year-round workers. Without jobs, household spending by these workers is likely to decrease, affecting retailers and other businesses in the area. In addition, farmers would likely reduce purchases of equipment, materials, and services from local businesses, reducing jobs and income for these suppliers. The total regional economic effect is the sum of the direct effects on agriculture and the associated indirect and induced effects." (*Ch. 20*, p. 21 [00473801].)

With regard to economic impacts related to municipal and industrial water supply reductions, the Board described that for Alternatives 2, 3, and 4, "reductions in deliveries by irrigation and water districts would be district-specific, and would depend on consideration of established water rights or contracts, types of planned uses for the water, and district (and other) policies concerning distribution of water supplies." (*Ch. 20*, Table 20.2-2, p 5 [00473785].) The Board projected costs would be more under Alternative 4 than under alternative 3, and the costs under Alternative 3 would be more than under Alternative 2. (*Ibid.*)

With regard to carryover storage, the Board explained that the term "refers to the quantity of water stored in a reservoir at the end of a water year, September 30. Guidelines or targets for carryover storage are one factor determining how much water is available for diversion in a given water year." (*MR 3.2*, p. 48 [00516667].) Because the Board designed the flow alternatives to be implemented with carryover storage requirements, the Board's modeling of water supply effects incorporates assumptions and parameters to account for carryover storage requirements. (*Id.* at pp. 48-55 [00516667-674].) In other words, the Board's modeling showing reductions under the flow alternatives to available water supplies factored in the effect carryover storage requirements would have. Also, as already discussed, the Board analyzed how reservoir operations, including the volume of water stored in a reservoir, and the timing and volume of water from a reservoir, affect temperatures in the waters flowing below the reservoir. (*Tech. Rep.*, pp. 3-47 – 3-48 [00474238-239].) The Board modeled temperature impacts of the 40% unimpaired flow objective on the Stanislaus River, both with and *without* carryover storage. (*MR 3.2*, pp. 56-57 [00516675-676].)

In Appendix J, the Board analyzed impacts from the LSJR flow alternatives to the electric grid and numerous hydropower facilities, including the major facilities associated with the rim dams on the three eastside tributaries. (*App. J* [00478363-390].) The Board's analysis used the WSE model to estimate the effects of the flow alternatives on reservoir releases and storage, and allowable diversions to off-stream generation facilities, and then calculated the associated change in monthly and annual energy production. (*Id.* at p. 1 [00478367].) The Board's analysis projected that the amount of energy generated annually is slightly reduced as unimpaired flows increase from 20% to 60%. "Relative to baseline, hydropower generation is expected to increase with LSJR Alternative 2, remain about the same with LSJR Alternative 3, and decrease with Alternative 4." (*Id.* at p. 5 [00478371].) Under all of the flow alternatives, there would be "an increase in energy produced in February–June, greatest in May, due to increases in flow relative to baseline (i.e. reservoir releases) in those months[.]" (*Id.* at p. 6 [00478372].) In general terms, the Board's analysis determined that the flow alternatives would have an adverse but less than significant impact on the reliability of California's electric grid. (*Id.* at p. 23 [00478389].)

5. *SED's description of impacts to disadvantaged communities*

The Board analyzed and addressed impacts from the flow objectives on disadvantaged communities ["DACs"]. (*Ch. 22*, p. 20-21 [00473939-940].) The Board explained: "In California, communities of color and low-income people living in tribal, rural, and farming communities often disproportionately experience impacts on drinking water supplies. While the public water systems serving DACs are still required to maintain essential public health and resources, public water supply systems serving DACs are less likely to have the resources to adequately respond to water supply or water quality emergencies." (*Ibid*.) For this reason, the Board explained that disadvantaged communities "may be more vulnerable than other municipalities and cities to impacts from the LSJR alternatives." (*Id.* at p. 21 [00473940].) The Board also found that domestic well owners, who represent a small percentage of water users within the plan area, may be more significantly impacted by the flow objectives. (*Ibid.*) The Board explained that domestic wells are shallower than publicly operated wells, and domestic well owners often lack the resources to respond to reduced drinking water supplies. (*Ibid.*)

The Board also prepared a separate master response devoted to addressing concerns about the impacts to disadvantaged communities and lower-income people dependent on domestic wells. (*MR 2.7* [00510377-402].) The Board explained that SGMA will establish procedures that will provide protections to DACs in times of water shortages. (*Ibid.*) The Board also explained that it is committed to assisting DACs in the plan area to deal with water supply shortages and water quality emergencies by providing financial and technical assistance. (*Ibid.*)

6. *Bay Area impacts: BAWSCA's contentions and the SED's description*

BAWSCA asserts that the Board violated section 13241 by conducting such flawed assessments of the Bay Area's "past, present and probable future beneficial uses of water" under subdivision (a); economic considerations under subdivision (d); and need to develop housing under subdivision (e), that the Board's analysis was "arbitrary, capricious and totally lacking in evidentiary support." (BAWSCA Op. Br., pp. 18, 14-54.)[20] BAWSCA's arguments implicate three complex subject areas in the record: (1) the underpinnings and mechanics of how the Bay

[20] SJTA also argues the Board violated its obligation to consider economic factors by conducting a deeply flawed evaluation of the impacts on water supply in the Bay Area. (STJA Op. Br., p. 37.) These arguments overlap with BAWSCA's arguments, and incorporated in the Court's discussion of BAWSCA's Porter-Cologne arguments.

Area receives its water; (2) the Board's methodology in analyzing impacts to the Bay Area's water supply and economy; and (3) the methodology behind the competing analyses advanced by the SFPUC. In its Opening Brief, BAWSCA devotes 40 pages in support of its Porter-Cologne Act arguments, much of which seeks to explain the technical aspects of how the Bay Area receives its water supply, and why the Board's analytical methodologies are unsound. (BAWSCA Op. Br., pp. 14-54.) In opposition, the Board devotes 34 pages responding to these arguments, much of which is focused on the technical details of the Board's analysis. (Board's Br., pp. 18-52.) The Court has carefully considered the parties' briefs, as well as the portions of the SED relevant to the Board's consideration of Bay Area impacts. The Court, however, is not going to describe these matters with the same level of detail used by the Board in the SED or by the parties in their briefs. For the purposes of this order, an overview will suffice.

The Board evaluated and addressed the potential effects of the LSJR Flow Objectives on the Bay Area's municipal water supply in several parts of the SED, and conducted a separate study focused on the Bay Area, entitled, "*City and County of San Francisco Analyses*," which it attached as Appendix L. (*App. L* [00478471-519].) In the study, the Board gave an overview of the complex legal, contractual, and logistical framework of the Bay Area's water supply in detail. "SFPUC is a department of the City and County of San Francisco (CCSF) that provides retail drinking water and wastewater services to San Francisco, wholesale water to three Bay Area counties, and green hydroelectric and solar power to San Francisco's municipal departments. The Hetch Hetchy Watershed, in the Tuolumne River Watershed, provides approximately 85 percent of San Francisco's total water needs. The LSJR alternatives may affect the amount of surface water diversions to the SFPUC service area." (*App. L*, p. 1 [00478477].) The Board further explained, "CCSF's water rights for the Hetch Hetchy water system on the Tuolumne River are junior to the most senior rights held by Turlock Irrigation District (TID) and Modesto Irrigation District (MID). Under the Raker Act, which authorized the construction of the Hetch Hetchy water system, CCSF must recognize the prior rights of TID and MID. Based on these prior rights and the Raker Act, CCSF cannot store water in Hetch Hetchy or directly divert water unless they first bypass minimum flows during spring and summer. Various agreements between CCSF and MID/TID, made in conjunction with the construction of New Don Pedro Reservoir, have reduced the effects of the storage and diversion constraints imposed on CCSF's reservoirs by the Raker Act by allowing CCSF to obtain storage credits in New Don

Pedro Reservoir. These storage credits allow CCSF to store and directly divert water, within prescribed limits, when Raker Act constraints would not otherwise allow them to do so. There is some question, however, regarding how the latest of these agreements, (i.e., 'Fourth Agreement'), could affect CCSF's water supply during periods of extended drought, especially when combined with the increased instream flow requirements under LSJR Alternatives 2, 3, and 4." (*App. L*, p. 1 [00478477].)

The Board then explained the purposes of Appendix L are as follows:

> 1. To generally describe how CCSF's water supply could be affected by changed flow objectives.
>
> 2. To quantify the potential water supply effects on CCSF based on two different interpretations of how the Fourth Agreement could affect CCSF's responsibility to contribute to instream flows if new flow objectives are imposed as a condition of water quality certification associated with the Federal Energy Regulatory Commission (FERC) relicensing process for the New Don Pedro Project.
>
> 3. To describe the water transfer and other actions CCSF could take to meet water supply demand if water supplies are reduced.
>
> 4. To summarize the potential economic effects of water supply changes associated with a water transfer.

(*Ibid*.) The Board explained that "[a]lthough this appendix quantifies and describes how CCSF's water supply could be affected by changed flow objectives, the specific ultimate effect cannot be determined. The ultimate effect would likely be determined as it has in the past during times of water shortage—changes in overall water availability for the CCSF would most likely be resolved through agreements to purchase water. This appendix, therefore, includes analyses of the economic effects in the SFPUC service area that would result from the need for SFPUC to purchase water (i.e., water transfer) from willing sellers in the Central Valley. This appendix also summarizes information from other parts of [the SED] that analyze actions CCSF may take to develop alternative water supplies: transfers, in-Delta diversions, and desalination." (*Ibid*.)

The Board explained that if SFPUC were to experience water supply shortages stemming from the flow objectives, it could potentially enter into water transfer agreements with the irrigation districts which would cause an adverse economic impact on the Bay Area because the SFPUC would need to expend additional dollars for the needed water supply. (*App. L*, pp. 22-23 [00478498-499].) The Board also discussed that in the event of a water supply shortage, the SFPUC could potentially divert additional water from the Sacramento-San Joaquin Delta, which

could have additional water from the increased instream flows under the Revised Plan. (*Id.* at pp. 23-24 [00478499-500].) The Board recognized that this option would require construction and operation of an in-Delta diversion (including an intake and pumping plant, new pipeline, and treatment plant), with a cost of $357.1 million. (*Ibid.*) Finally, the Board examined the possibility that SFPUC could construct a water supply desalination plant, and reviewed costs associated with other recently constructed plants. (*Id.* at pp. 24-25 [478500-501].)

Chapter 20 (*Economic Analyses*) also examines how the flow objectives could potentially affect Bay Area water supply costs, the regional economy, and ratepayers in the SFPUC service area. (*Ch. 20*, pp. 35-51 [00473-815-831].) In analyzing these issues, the Board made certain cost assumptions, and recognized the uncertainty and future variables inherent in these types of assessments. (*Ibid*.) For example, the Board explained that, "[t]he magnitude of the effect under drought conditions [on the Bay Area] depends on how the parties involved interpret the Fourth Agreement between CCSF and the MID and TID, which currently governs the New Don Pedro Reservoir water bank account on the Tuolumne River." (*Ch. 20*, p. 39 [00473819].) The Board's analysis concluded that in drought years under the Revised Plan, there may be water shortages that SFPUC would need to address by securing additional water supplies, the cost of which would likely be passed on to individual ratepayers. (*Id.* at pp. 39-42 [00473819-822].)

Chapters 13 (*Service Providers*) and 16 (*Evaluation of Other Indirect and Additional Actions*) specifically examine how the flow objectives could cause reductions in surface water diversions, which in turn could reduce municipal water supply in the SFPUC RWS service area. (*MR 8.5*, p. 2 [00540848].) Chapter 13 evaluates potential environmental impacts on service providers in the SFPUC RWS service area. (*Ch. 13*, p. 43 [00470738], pp. 65-66 [00470760-761].) Chapter 16 evaluates indirect actions members of the regulated community could take to address reductions in water supply caused by the Revised Plan. (*Ch. 16*, pp. 4-93 [00472907-996].) The Board explained, however, that the precise combination of future actions that water users could take is uncertain and speculative. (*MR 8.5*, p. 3 [00540849].)

The Board addressed the potential effects on housing development, observing that the plan amendments "do not directly restrict the development of housing in the plan area and the extended plan area. (*ES*, p. 65 [00468701].) The Board recognized that "[d]epending on the alternative, however, the flow objectives could result in reduced surface and groundwater supplies such that additional infrastructure to treat or provide alternative sources of water may

need to be constructed, as explained in Chapter 13, Service Providers. Where alternative sources are not provided, it may affect new housing development because there may be insufficient supplies to serve the development." (*Ibid*.)

In response to public comments expressing concern about the potential impacts on Bay Area municipal water supplies, the Board acknowledged the importance of reliable water supplies to maintain "the economic viability of the Bay Area" and "to foster future growth and economic activity." (*MR 8.5*, p. 46 [00540892].) The Board explained, however, that "water supplies are just one of many factors affecting regional growth and housing development. The availability of an adequately trained labor pool, quality infrastructure for transportation of goods, availability of support services for key basic industries, and a host of quality-of-life conditions also are important []." (*Ibid.*) The Board then identified multiple other key factors that have been identified as leading to economic growth. (*Ibid.*) The Board also observed that "during the recent drought, limited water supplies and increases in water rates to encourage conservation do not appear to have materially affected current levels of economic growth" or housing development. (*Id.* at p. 47 [00540893].)

The Board also explained why it did not subscribe to the assumption advanced by the SFPUC that, during drought conditions, the flow objectives would leave the Bay Area with no other option than to impose stringent water-rationing measures. (*MR 8.5*, pp. 48-52 [00540894-898].) The Board explained that the SFPUC's view that rationing would be its only recourse during droughts is premised on the incorrect assumption that there would be no opportunities for the SFPUC to obtain alternative water supplies. As a result, the Board considered the rationing-only approach to be based on an analysis that provides a very narrow and incomplete assessment of potential water supply effects. The Board explained, "a water rationing-only approach is nether reasonably foreseeable nor credible in light of information in the record, including SFPUC's own water supply planning program, that water agencies will take other actions in response to potential water supply reductions resulting from the Revised Plan." (*Id.* at pp. 48-49 [00540894-895].)

BAWSCA asserts that the Board's analyses are fraught with faulty assumptions and severely understate the harmful impacts the Revised Plan will have on the Bay Area. (BAWSCA Op. Br., pp. 26-41, 43-54.) BAWSCA asserts the Board was given a detailed, reliable study conducted by the SFPUC showing that the flow objectives will cause severe water supply

shortages and drastic water rationing in the Bay Area during sequential drought years. (*Id.* at pp. 14-25, 41-43.) It argues the Board chose to ignore this study as well as other reliable data provided by BAWSCA member agencies. (*Id*. at pp. 15-25.)

BAWSCA also disputes the Board's analysis to the extent it indicates that Bay Area water shortages could be addressed by obtaining replacement water supplies through water transfers, in-Delta diversions, or construction of a desalination project. (BAWSCA Op. Br., pp. 18-36.) BAWSCA explains at length the reasons all of these potential alternate sources of municipal water supply are, in its view, infeasible. (*Ibid.*) In BAWSCA's view, implementation of the flow objectives will cause the Bay Area to suffer such severe water shortages in drought years that stringent water rationing requirements will need to be imposed. As a result, the Bay Area will suffer devastating economic impacts and will be unable to develop additional housing to accommodate its anticipated population growth. (*Id.* at pp. 15, 43-50.)

In sum, BAWSCA contends, that by irrationally choosing flawed studies over valid, reliable ones, the Board arbitrarily failed to consider (or even recognize) the devastating impacts the Revised Plan will have on the Bay Area. As a consequence, the Board's consideration of the required section 13241 factors was "arbitrary, capricious, and totally lacking in evidentiary support." (BAWSCA Op. Br., pp. 15, 18.)

7. *The Board's consideration and balancing of the section 13241 factors*

The Board summarized its deliberative process by referencing a few of the eight goals and purposes specific to the LSJR flow objectives (set forth on page 19 of this order):

> There is, however, a difficult tradeoff between providing sufficient inflow to support and maintain the natural production of viable native fish populations migrating through the Delta or flows in a quantity necessary to achieve functions essential to native fishes, as is reflected in goals 1 and 3, and taking into consideration all of the demands being made of the water, as reflected in goal 6. The degree to which goals 1 and 3 are achieved reduces the amount of water available for other beneficial uses, and vice versa. LSJR Alternative 3, with adaptive implementation, strikes a balance between goals 3 and 6 more fully than the other LSJR alternatives. LSJR Alternative 3 provides flows in a quantity necessary to achieve functions essential to native fishes, such as increased floodplain inundation, improved temperature conditions, improved migratory conditions, and other conditions that favor native fishes over nonnative fishes (Chapter 19, *Analyses of Benefits to Native Fish Populations from Increased Flow Between February 1 and June 30,* Tables 19-3 through 19-14 [temperature] and Tables 19-19 through 19-24 [floodplain]). LSJR 3 also satisfies goal 6 because it takes into consideration the potential costs and economic effects of the flow

> objective (Chapter 20, *Economic Analyses*). Thus, LSJR Alternative 3, with adaptive implementation, meets more of the purposes and goals of the plan amendments more fully than the other LSJR alternatives.

(*Ch. 18,* pp. 26-27 [00473467-468].)

8. *Legal principles governing section 13241 claims*

As Justice Racanelli explained, "[i]n formulating a water quality control plan, the Board is invested with *wide authority* to attain the highest water quality *which is reasonable, considering all demands* being made and to be made on those waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible. In fulfilling its statutory imperative, the Board is required to 'establish such water quality objectives . . . *as in its judgment* will ensure the reasonable protection of beneficial uses[.]" (*US v. SWRCB, supra,* 182 Cal.App.3d at p. 109-110 (emphasis added).) In performing this function, the Board must consider "*all* competing demands for water in determining what is a reasonable level of water quality protection[.]" (*Id.* at p. 118.)

In reference to the Bay-Delta Plan specifically, Justice Robie explained the Board's duty and discretion under section 13241 factors as follows:

> While the Board had a duty to adopt objectives to protect fish and wildlife uses and a program of implementation for achieving those objectives, in doing so the Board also had a duty to consider and protect all of the other beneficial uses to be made of water in the Bay-Delta, including municipal, industrial, and agricultural uses. *It was for the Board in its discretion and judgment to balance all of these competing interests in adopting water quality objectives and formulating a program of implementation to achieve those objectives*.

(*SWRCB Cases, supra,* 136 Cal.App.4th 674, 778 (emphasis added).)

"The manner in which the Water Control Boards consider and comply with Water Code section 13241 is within their discretion. (*City of Duarte, supra,* 60 Cal.App.5th at p. 273.) Section 13241 "only requires consideration of the listed factors when establishing water quality objectives." (*Arcadia II, supra,* 191 Cal.App.4th at p. 177.) "Section 13241 does not specify how a water board must go about considering the specified factors. Nor does it require the board to make specific findings on the factors." (*Ibid.*) Where the statute does not define a particular factor (e.g. "economic considerations") or specify how the board should make its determination of the factor, "the matter is within [the] board's discretion." (*Arcadia I, supra,* 135 Cal.App.4th at p. 1415.)

City of Duarte, supra, 60 Cal.App.5th 258, is particularly instructive. That case concerned a challenge under the Porter-Cologne Act to a permit issued by state and local water control boards that required numerous Southern California municipalities to reduce or prevent pollutants discharged through storm sewer systems. The trial court granted the writ petition upon finding that the water boards had not sufficiently considered the economic considerations factor in section 13241, subdivision (d). On appeal, the appellate court noted that the water boards had not provided estimates of the costs for any of the individual permittees to comply with the permit, but had made extensive findings on, among other things, the nature, extent, ranges, averages, and variability of the costs to be incurred by the permittees. The Court of Appeal reversed the trial court, and published the opinion because "we believe it is important to provide an example of the level of consideration of the factors that is sufficient—especially the economic considerations factor that is not defined by section 13241." (*Id.* at p. 264.)

The *Duarte* Court noted that in analyzing the economic considerations, the water boards recognized that the cost of regulating the prohibited discharges "is highly variable among the Permittees, provided ranges and averages of cost data and economic impacts in several categories, considered how much more the Permittees' costs might be under the Permit's terms, identified potential sources of funds to cover the costs of the Permit, and concluded the failure to regulate would increase health-related expenses." (*Id.* at p. 275.) Thus, the water boards' analysis of economic considerations complied with its obligations under section 13241, subdivision (d) and "was well within its discretion." (*Ibid.*) The *Duarte* Court further explained, "every case arising under this statute will differ as to what economic considerations must be evaluated. [] Our discussion of the Water Control Boards' consideration of the section 13241 factors is intended to provide an analytical framework. This opinion illustrates by example the extent of the Water Control Boards' discretion; that discretion is not unlimited and is subject to judicial review. Here, the record showed that the Water Control Boards explained their reasoning and acted within their discretion." (*Id.* at pp. 275-276.)

9. *Analysis of whether the Board adequately considered water supply impacts*

Upon applying these principles of judicial review, the Court does not find that the Board's evaluation and consideration of the water supply impacts (both in the plan area and in the Bay Area), or the related economic or housing development impacts were either arbitrary or irrational. Each of these considerations calls for complex, predictive evaluations involving

myriad uncertain and highly variable factors. Petitioners' briefing demonstrates that reasonable minds can and do differ as to the best methodologies to evaluate these issues. The Court, however, does not find that the Board employed unreasonable analytic methodologies which would have rendered its analysis arbitrary or capricious. To the contrary, the numerous sections of the SED, only some of which are discussed above, demonstrate that the Board engaged in rational, sophisticated, and thoughtful analyses of the potential impacts the flow objectives will have on municipal, industrial, and agricultural water supplies, as well as the related economic and housing-development impacts.

Moreover, although petitioners challenge the Board's analytic methodologies, the Court does not find that the Board's modeling or analyses artificially or arbitrarily understated the potential water supply or economic impacts from the Revised Plan. As the Board's impacts evaluations described, with more water remaining in the rivers, there would be less water available to divert for municipal, industrial, and agricultural uses. Those competing beneficial uses, therefore, would be less protected under the flow objectives. But the Board was not at liberty to call off the effort to revive native LSJR fish populations once it determined other beneficial uses would be negatively impacted. Rather, the Board's obligation to balance competing uses called upon it to assess whether the other important uses of water would still be *reasonably* protected even though their level of protection would be reduced under the flow objectives.

The record demonstrates that the Board performed competent and thorough evaluations of impacts from the flow objectives to the competing uses of the water. Having performed these evaluations, the Board understood that the flow objectives would cause several significant and unavoidable impacts to other important beneficial uses. But it also understood that native LSJR fish populations were not being reasonably protected under the current flow regimes. The Board exercised its judgment to select Alternative 3 over both Alternative 2, which would have been less beneficial to native fish populations but less impactful to the competing beneficial uses, and Alternative 4, which would have been more beneficial to native fish populations but more detrimental to competing beneficial uses. In the Board's judgment, the other important beneficial uses of water from the eastside tributaries would still have a reasonable (albeit lesser) level of protection under the flow objectives. Making those difficult determinations is exactly what the Board is vested with the duty and discretion to do. Although petitioners have shown

that reasonable minds can disagree about how the Board exercised its discretion, they have not shown that the Board's consideration and evaluation of these factors under section 13241 was arbitrary or flawed in any meaningful way. The record here shows that the Board explained its reasoning and acted within its discretion. (See *City of Duarte, supra,* 60 Cal.App.5th at pp. 275-276.) Petitioners' section 13241 claims related to impacts are, therefore, denied.

B. *Consideration of Non-Flow Measures*

Three petitioners point to the Board's consideration of non-flow measures to support the argument that the Board failed to adequately consider the "water quality conditions that could reasonably be achieved through the *coordinated control of all factors* affecting water quality in the area" under subdivision (c) of section 13241. Westlands contends the Board failed to consider adopting a plan that *required* not just flow measures but also non-flow measures. (Westlands Op. Br., pp. 49-51.) Westlands argues the Board's inability to carry out non-flow measures itself does not justify its decision to not require them. (*Ibid.*) Stockton East argues the Board erred by failing to explain why non-flow measures were not required. (Stockton East Op. Br., p. 41.) Baykeeper contends the Board erred by simply assuming that non-flow measures would help achieve the flow objectives. Baykeeper also contends the Board was required to quantify the impact that non-flow measures would have on the magnitude of flows needed. (Baykeeper Op. Br., pp. 32-34.)[21]

In Chapter 16, the Board evaluated additional actions that could be taken to serve the LSJR flow objectives, including non-flow actions. (*Ch. 16*, pp. 94-214 [00472997-3117].) Specifically, the Board evaluated non-flow measures that would: restore floodplains and riparian habitats; reduce activities that disturb vegetation; augment gravel needed for salmonid spawning and rearing; enhance in-channel complexity; improve temperature conditions; improve fish

[21] Baykeeper contends the Board failed to consider several matters: non-flow measures, fish viability criteria, environmental conditions, and the needs of *all* native LSJR fish populations. Baykeeper, however, casts these arguments under section 13242, rather than section 13241, asserting that the Board established flow requirements in "two separate parts" of the Plan: in the flow objectives *and* in the POI. (Baykeeper's Op. Br., p. 27.) This is incorrect. Section 13241 requires the Board to consider certain factors in establishing water quality objectives, while section 13242 describes the elements of a POI. Section 13242 does not impose a separate duty to consider factors. Because these arguments by Baykeeper all essentially contend that the Board failed to consider certain matters in developing the flow objectives, the Court addresses them under section 13241, not section 13242.

passage; and control predatory fish and invasive aquatic plants. (*Ibid.*) The Board explained that while these actions may inform adaptive implementation, it "would not be undertaking these actions since these non-flow measures are beyond its regulatory authority to undertake[.]" (*Id.* at p. 94 [00472997])

The Board received public comments expressing concern that non-flow measures should have been required, rather than just recommended, by the Plan. In Master Response 5.2, the Board stated that it "recognizes the importance of implementing non-flow measures to support and maintain the different habitat needs of fish and wildlife. For this reason, [the Board] incorporates and recommends [in the Revised Plan] a range of non-flow actions complementary to the flow objectives[.]" (*MR 5.2*, p. 1 [00528327].) Citing to the Technical Report, the Board explained, however, that restoration of more natural flow regimes is critical to restoring the native LSJR fish population, and non-flow measures are not effective in the absence of that foundation. (*Id.*, pp. 1-14 [00528327-340].) "Creating habitat features and other engineered solutions is insufficient to restore a healthy ecosystem if the key driver of functional habitat remains unrestored." (*Id.* at p. 1.) "[N]on-flow measures alone will not be sufficient to support and maintain the natural production of viable native [SJR] fish populations migrating through the Delta; therefore, water quality objectives based on flow are needed." (*Ibid.*) The Board explained, that "[n]on-flow measures, which in most cases depend on sufficient flow for successful implementation, cannot substitute or be prioritized over the need for flow requirements, and therefore, cannot be considered alternatives to the plan amendments[.]" (*Ibid.*)

The program of implementation recommends that other agencies take certain actions or conduct studies to benefit native fish and wildlife in the Bay-Delta estuary. (*Revised Plan*, pp. 57-62 [00741380-384].) The Board stated that it "will use its authority, as needed and appropriate, under section 13165 … to require that the [recommended] actions and studies be conducted." (*Id.* at p. 58 [00741380].) The recommendations include: reviewing and modifying commercial and sport fishing regulations; reducing illegal harvesting of fishery resources; reducing impacts of non-native species in the Bay-Delta estuary; improving hatchery programs ; expanding gravel replacement and maintenance programs for salmonid spawning habitat; evaluating alternative water conveyance and storage facilities of the SWP and CVP; developing an experimental study program on the effects of pulse flows on fish eggs and larvae in the Delta;

implementing measures to restore and preserve marsh, riparian, and upland habitat in the Delta; and measures to improve Suisun Marsh soil and channel water salinity. (*Ibid.*)

In addition, with respect to the SJR specifically, the program of implementation recommends the following non-flow actions: restoration, enhancement, and protection of floodplain and riparian habitat; reduction of vegetation disturbing activities (such as grazing) in the floodplains and floodways; provide and maintain course sediment for salmonid spawning and rearing; enhance in-channel complexity by adding boulders and large woody debris; improve reservoir operations to better maintain adequate temperature conditions; expand fish screening on diversions on the three tributaries and the LSJR; improve fish passage above dams; improve fish and water barrier programs; reduce predation and competition by non-native fish; and reduce invasive species. (*Revised Plan*, pp. 62-66 [00741384-388].)

The record, therefore, demonstrates that the Board evaluated and discussed how numerous non-flow measures could be taken to advance the LSJR flow objectives. The Board was not obligated to quantify projected impacts on non-flow measures or to include them as requirements. Section 13241 requires the Board to *consider* the "coordinated control of all factors which affect water quality in an area. But it does not dictate the manner in which those factors are to be incorporated in the resulting plan, or even that the factors be incorporated at all. As already explained, the manner in which the Board considers and complies with section 13241 is within its discretion. (*City of Duarte, supra,* 60 Cal.App.5th at p. 273.) Section 13241 "only requires consideration of the listed factors when establishing water quality objectives[.] … [It] does not specify how a water board must go about considering the specified factors." (*Arcadia II, supra,* 191 Cal.App.4th at p. 177.)

The Board explained that it included non-flow measures as recommendations rather than requirements both because of the essential role that flow plays, as well as the lack of the Board's authority over non-flow measures. In the Court's view, the Board engaged in a reasonable analysis and consideration of non-flow measures, and its decision to incorporate them in the plan as recommendations, rather than requirements, fell within the bounds of its discretion. Accordingly, these claims are denied.

C. *Consideration of Biological and Environmental Criteria Affecting Fish Viability*

SJTA and Baykeeper contend that the Board violated section 13241 by deferring development of the biological goals to the implementation phase. (SJTA's Op. Br., pp. 46-47;

Baykeeper Op. Br., pp. 28-29.) The biological goals serve as indicators of salmonid viability, and include "population abundance, spatial extent, distribution, structure, genetic and life history diversity, and productivity." (*Revised Plan,* Table 3, p. 18 [00741340] 32-33 [00741354-355].) They argue that when developing the LSJR flow objectives, the Board needed to have already quantified the specific target levels of these viability indicators.

The Court has already concluded that the Board's decision to defer the development of the biological goals did not undermine the Board's determination that the flow objectives will reasonably protect native LSJR fish. It was appropriate for the Board to use these salmon-viability indicators as an adaptive implementation tool, and to develop them in the implementation phase. That the Board deferred quantification of the target values for the biological goals does not mean that the Board did not understand the value of these metrics in guiding adaptive implementation. The reason the Board recognized that "population abundance, spatial extent, distribution, structure, genetic and life history diversity, and productivity" would serve as useful metrics in guiding adaptive implementation is because the Board had studied the needs of native LSJR fish populations. (See *Tech Rep*., pp. 3-40 – 3-42 [00474231-233].) Because it was appropriate to treat the biological goals as an implementation tool, the Board was not required under section 13241 to first quantify those metrics when developing the flow objectives. Therefore, the Court rejects these contentions.

Baykeeper also contends the Board failed to consider the necessary environmental conditions including water temperatures and floodplain habitat. (Baykeeper Op. Br., pp. 29-32.) The Court has also already discussed (in the reasonable protection section), the Board's evaluation of the flow objectives' effects on instream water temperature and floodplain inundation. The Court has found that these studies provide a scientific basis for the Board's determination that the LSJR flow objectives would provide a reasonable level of protection for native LSJR fish populations. These studies also show that the Board satisfied its obligations under section 13241 to consider environmental conditions in formulating the flow objectives.

Lastly, Baykeeper contends the Board failed to consider the particular flow levels and temperatures needed by native species other than fall-run Chinook salmon and Central Valley steelhead because the needs of those two species are not representative. (Baykeeper's Op. Br., pp. 34-35.) By way of example, Baykeeper indicates that Green Sturgeon, White Sturgeon, and Sacramento Splittail may not benefit from the flows that benefit fall-run Chinook because of

differences in the timing of their life histories. (*Ibid*.) On that basis, Baykeeper argues the Board's decision to use fall-run Chinook salmon and steelhead as indicator species deprived it of accurately analyzing the flow conditions that support and maintain other native fish populations.

The SED explains, however, that fall-run Chinook salmon and steelhead were selected as indicator species for analyses of flow effects because of "their sensitivity to potential changes in environmental conditions in the [plan] area and their utility in evaluating broader ecosystem and community-level responses to environmental change." (*Ch. 3*, p. 4 [00469793]; *Ch. 7*, p. 3 [00469969]; *Ch. 19*, pp. 17 [00473514], 88 [00473585]; *Tech. Rep.*, pp. 3-1 [00474192], 3-13 [00474204].) "In particular, the responses of Central Valley fall-run Chinook salmon to changes in flow, water temperature, and other flow-related variables have been well studied and provide a general indication of the overall response of the ecosystem to hydrologic change." (*Ch. 7*, pp. 3 [00469969], 60 [00470029]; *MR 3.2*, p. 3 [00516622].) Thus, the habitat benefits of higher and more variable flows applicable to the indicator species are expected to apply to other native fish species, including such imperiled Delta species such as sturgeon and splittail. (*Ch. 19*, p. 88 [00474585]; see also *Ch. 7*, pp. 100-102 (increased flows that improve spawning and juvenile rearing conditions for fall-run Chinook salmon would also improve spawning and rearing conditions for sturgeon, splittail, and other fish).) The Court, therefore, rejects Baykeeper's argument because the Board had a science-based rationale for using fall-run Chinook salmon and steelhead as indicator species to evaluate how flows benefit native LSJR fish populations.

VI. Whether the Board Established a Legally Adequate POI

Section 13242 requires three components in a POI: a "description of the nature of actions which are necessary to achieve the objectives, including recommendations for appropriate action by any entity, public or private;" as well as a "time schedule for the actions to be taken;" and a "description of surveillance to be undertaken to determine compliance with objectives." (§ 13242, subds. (a)-(c).) Petitioners contend the program of implementation does not comply with these requirements for the reasons discussed below.

A. *Adequacy of the Implementation Measures*

Merced ID argues that the provisions of the program of implementation are too broad and do not describe any actual or specific implementation measures. (Merced ID Op. Br., p. 32.) Merced ID further contends the program of implementation is invalid

because while it states the Board *may* take actions in a water rights proceeding that could affect Merced ID, it needed to state that it would *definitely* hold such a water rights hearing. (*Id.* at pp. 32-33.) Merced ID also contends the program of implementation is deficient because it does not include any recommended actions for other agencies to take, and does not include a time schedule or surveillance methods for the recommended non-flow actions. (*Id.* at pp. 34-35.) The Board did not address these contentions by Merced ID in opposition. Nonetheless, contrary to Merced ID's argument, the Board was not required to mandate water rights hearings in the program of implementation. The program includes required actions to implement the flow objectives in specific timeframes within a framework of parameters and adaptive measures. The program also includes monitoring provisions, as well as recommended actions for other entities to take. (*Revised Plan,* pp. 26-72 [00741348-394].) This claim by Merced ID, therefore, fails.

SJTA acknowledges that the program of implementation states that it pertains to the "LSJR water quality objectives for the reasonable protection of fish and wildlife beneficial uses, referred to as the LSJR flow objectives, includ[ing] *all of the LSJR flow objectives for February through June*, the LSJR base flow objective for February through June at Vernalis, and the October pulse flow objective, as set forth in Table 3." (*Revised Plan,* p. 27-28 [00741349-350] (emphasis added); SJTA Op. Br., p.38.) SJTA faults the Board, however, because the program of implementation contains "no reference to the Narrative Objective, nor the Year-Round Objective." (SJTA Op. Br., p. 38.) This argument is not persuasive because the program of implementation makes clear that its provisions are intended to implement all the LSJR flow objectives, including achieving the broader objectives of supporting "the viability of native LSJR watershed fish populations throughout the year[.]" (*Revised Plan,* p. 35.)

B. *Whether the Implementation Measures Are Sufficiently Defined*

SJTA next argues that the program of implementation fails to describe actions necessary to achieve the 40% unimpaired flow objective or provide for surveillance to be undertaken because the program references that certain necessary measures still need to be developed. (SJTA Op. Br., pp. 38-39.) Specifically, SJTA points to language in the program of implementation stating that implementation of the flow objectives "will require the development of information and specific measures to achieve the flow objectives and to monitor and evaluate compliance." (*Ibid*; *Revised Plan,* p. 33 [00741355].) SJTA relies on a line from the Robie

decision stating that under section 13242, "actions to be taken to achieve objectives . . . must be included *as part of the plan itself*." (*SWRCB Cases*, *supra*, 136 Cal.App.4th at p. 727 (emphasis in original).) In that portion of the opinion, however, Justice Robie was observing that where the program of implementation itself does not contain any of the three required components, the Board cannot satisfy section 13242 by referencing documents outside of the POI. Here, in contrast, the program of implementation itself describes several measures that will be used to implement the flow objectives, as well as certain measures and metrics that will be developed prior to implementation of the flow objectives. The Court does not read section 13242 or the Robie decision as prohibiting the Board from describing in the program of implementation any metrics or measures that still need to be developed. Accordingly, this argument also fails.

C. *Whether Implementation Actions will Achieve the Vernalis Base Flow Requirement*

SJTA also points to the POI's provision that when the unimpaired flow requirements are insufficient to meet the minimum Vernalis base flow of 1000 cfs, each of the three tributaries will provide additional flows in specified percentages. (SJTA Op. Br., p. 39 referencing *Revised Plan*, p. 29 [00741351].) SJTA acknowledges that the program of implementation states that the Board "will exercise its water right and water quality authority to help ensure that the flows required to meet the LSJR flow objectives are used for their intended purpose and not diverted for other purposes." (*Ibid.* referencing *Revised Plan*, p. 28 [00741350].) SJTA contends these provisions do not constitute an adequate description under section 13242 of actions needed to achieve the Vernalis base flow objective. The Court disagrees. These provisions provide a reasonable action plan for achieving compliance with the Vernalis base flow requirement when existing flows are inadequate.

D. *Whether Duties were Improperly Delegated to the Board's Executive Director*

SJTA and Merced ID contend that the Board improperly delegated authority over the adaptive implementation to its executive director. (SJTA Op. Br., pp. 39-43; Merced ID Op. Br. pp. 33-34.) They point to the POI's adaptive implementation components, including the provision authorizing the executive director to manage the "required percent of unimpaired flow for February through June … as a total volume of water and release … flows on an adaptive schedule during that period where scientific information indicates a flow pattern different from that which would occur by tracking the unimpaired flow percentage would better protect fish and wildlife beneficial uses." (*Revised Plan*, p. 30 [00741352].) The program of implementation

specifies that "[t]he total volume must be at least equal to the volume of water that would be released by tracking the unimpaired flow percentage from February through June." (*Ibid.*) SJTA also points to the program of implementation provision that allows the executive director to delay the release of a portion of the February through June unimpaired flow "until after June to prevent adverse effects to fisheries, including temperature, that would otherwise result from implementation of the February through June flow requirements." (*Ibid.*) SJTA and Merced ID cite the program of implementation provision that allows the executive director to "approve changes to the compliance locations and gage station numbers set forth in Table 3 if information shows that another location and gage station more accurately represent the flows of the LSJR tributary at its confluence with the LSJR." (*Id.* at p. 29 [00741351].) Finally, they cite to provisions allowing the Board or the executive director to approve procedures for allowing adaptive adjustments and "specific measures to achieve the flow objectives and to monitor and evaluate compliance." (*Revised Plan*, p. 33 [00741355].)

SJTA argues these adaptive provisions do not describe actions to achieve the objectives, but effect changes to the objectives in the program of implementation without a properly noticed hearing or the required balancing that only the Board is authorized to perform. (SJTA Op. Br., p. 43.) SJTA further argues that since these adaptive implementation measures constitute changes to the plan itself, it was improper to delegate authority to the executive director as to how to implement them. (*Id.* at pp. 47-48.) Merced ID sees these measures as constituting important policy decisions that the Board could not delegate to its executive director. (Merced ID Op. Br., pp. 33-34.)

SJTA relies on *CASA, supra,* 208 Cal.App.4th 1438 and *SWRCB Cases, supra,* 136 Cal.App.4th at p. 729, in support of its argument. But neither case holds that the Board cannot design a program of implementation to include adaptive measures to achieve the plan objectives, or that the inclusion of adaptive measures constitutes an unauthorized change to objective they purport to serve. The Court does not read the Porter-Cologne Act as prohibiting implementation measures with some degree of flexibility within defined parameters when needed to best address a dynamic challenge.

Moreover, the Board designed the flow objectives to include an adaptive numeric range coupled with a narrative objective that requires the flows to "be managed in a manner to avoid causing significant adverse impacts to fish and wildlife beneficial uses at other times of the

year." (*Revised Plan,* Table 3, p. 18 [00741340].) This design was based upon analysis and modeling that expressly contemplated adaptive implementation provisions. (*MR 3.2*, pp. 2-4 [00516621-623], 50-52 [00516669-671].) The Board explained that although it could have designed the flow objectives to consist of prescriptive numeric objectives for instream temperature and reservoir storage objectives, doing so would have eliminated the flexibility needed in implementation to "better maximize water resources for all beneficial uses." (*Id.* at p. 4 [00516623].) Thus, the adaptive implementation measures do not constitute changes to the flow objectives they serve. Rather, the flow objectives were designed to be implemented in an adaptive manner, and the Board properly exercised its discretion by including these adaptive implementation measures in the POI.

The determination of whether an improper delegation of power has occurred depends on whether the challenged provisions modify the terms of the objective or merely serve to determine how to enforce it. (See *Malaga County Water Dist. v. Central Valley Regional Water Quality Control Bd.* (2020) 58 Cal.App.5th 396, 414-15). Courts have repeatedly upheld a water board's delegation of authority to its executive officer where the board has established methods for the executive director to measure or otherwise monitor compliance on the grounds that such provisions do not constitute a modification of the plan objective. (*Ibid.*) Here, the Board vested its executive director with specific authority to measure and monitor compliance with the flow objectives, and to make adaptive adjustments within a range of defined parameters. This was a proper delegation of authority.

E. *Propriety of Including Carryover Storage Reservoir Provisions in the POI*

SJTA contends that the Board violated the Porter-Cologne Act by placing the carryover storage provision in the program of implementation to be developed after adoption of the Revised Plan. (STJA Op. Br., pp. 43-47.) SJTA's argument is premised on the view that the carryover storage provision constitutes a separate objective which the Board was required to evaluate by balancing the factors under section 13241. The Court disagrees. The narrative flow objective specifically provides that flows are to be managed in a manner to avoid significant adverse impacts at other times of the year. (*Revised Plan,* Table 3, p. 18 [00741340].) The carryover storage provision is an implementation measure "to help ensure that providing flows to meet the flow objectives will not have significant adverse temperature or other impacts on fish and wildlife, or, if feasible, on other beneficial uses." (*Id.* at p. 28 [00741350].) Because the

carryover storage provision serves the narrative objective, the Board acted within its discretion by using it as an implementation measure rather than treating it as a separate objective itself.

F. *Adequacy of Implementation Measures to Achieve the Narrative Objective*

Baykeeper claims the program of implementation violates section 13242 ostensibly on the grounds that it does not describe actions necessary to achieve the narrative objective.[22] (*Id.* at pp. 36-47.) Baykeeper essentially restates the same arguments it raises in support of its contention that the numeric flow objective does not provide reasonable protection to native LSJR fish, that the Board failed to consider certain criteria when developing the flow objective. The Court, having already addressed and rejected many of these points in earlier sections of this decision, will not extensively rehash them here.

For example, Baykeeper's arguments under section 13242 are premised on its view that both the Vernalis base flow of 1000 cfs and the numeric LSJR flow objective of 40% unimpaired flows are deficient because they are too low to achieve the narrative objective. (*Id.* at pp. 36-43.) The Court, however, has already rejected the contention concerning the Vernalis and LSJR flow objectives, finding that the scientific evidence in the record supports the Board's conclusion that the 40% unimpaired flows, with an adaptive range of 30%–50% and complemented by the Vernalis base flow requirement, will provide reasonable protection for native LSJR fish populations. Baykeeper also contends that the deferred development of biological goals and environmental criteria would undermine rather than achieve the narrative objective. (*Id.* at pp. 43-45.) The Court has already concluded that it was appropriate for the Board to defer development of the biological goals and environmental criteria to the implementation phase. Section 13242 contains no provision requiring that every implementation action be precisely quantified prior to adoption of the plan. And Baykeeper contends because the biological goals are designed for salmonids they will not help support other native LSJR fish species. (*Id.* at p. 45.) The Court, however, has already concluded that the scientific evidence in the record supports the Board's decision to use fall-run Chinook salmon and steelhead as indicator species for the protection of all native LSJR fish.

Baykeeper contends the program of implementation is flawed because it does not specifically require non-flow actions, including defined carryover storage requirements, to

[22] In its briefing, Baykeeper refers to the narrative flow objective as the "viability objective."

achieve the narrative objective. (*Id.* at pp. 45-47.) As discussed in the section of this decision addressing claims related to the Board's balancing under section 13241, the Court has concluded that it was appropriate for the Board to place non-flow actions in the program of implementation as recommended actions. And it was appropriate for the Board to decide that carryover storage requirements would be used as an implementation measure in service to the narrative flow objective.

Baykeeper contends that the adaptive implementation actions in the program of implementation are inadequate to achieve the narrative objective because the numeric objective itself is inadequate to achieve the narrative objective. Baykeeper contends the record shows that at least 2000 cfs is needed at Vernalis, and the cap on unimpaired flows at Vernalis of 50% is likely deficient. (*Id.* at p. 43.) These arguments are not persuasive because the program of implementation specifically states that a change in the adaptive implementation of the flow objectives may only be made if: (1) it will be sufficient to support and maintain the natural production of viable native SJR fish populations migrating through the Delta; and (2) it will meet the existing approved biological goals. (*Revised Plan*, p. 30 [00741352].) Thus, the program of implementation prohibits any adaptive implementation change that would undermine either the narrative objective or the biological goals.

G. *Adequacy of Implementation Measures to Achieve the Salmon-Doubling Objective*

In the 1995 Bay-Delta Plan, the Board established a narrative objective to double the natural production of Chinook salmon in the watershed from the average productions of 1967-1991. This salmon-doubling objective is implemented by design through D-1641, which assigns responsibility for achieving the objective to USBR and DWR. The Revised Plan did not amend the salmon-doubling objective.

Baykeeper, in addition to contending that the program of implementation will not achieve the narrative objective, also contends the program of implementation will not achieve the salmon-doubling objective from the 1995 Bay-Delta Plan. (Baykeeper Op. Br., 39-41, 44; Reply, pp. 32-33.) Baykeeper contends the program of implementation is flawed because it allows flows to be adjusted downward within the adaptive range without regard to achieving the salmon-doubling objective. (*Id.* at p. 44.) Baykeeper's contentions concerning the salmon-doubling objective are rejected because they are outside the scope of this litigation.

In its original petition, Baykeeper challenged the Revised Plan exclusively on the ground that the numeric flow objective would be inadequate to achieve the 1995 salmon-doubling objective. In other words, Baykeeper's original claims did not challenge whether the numeric flow objective would be sufficient to achieve narrative flow objective. The Board demurred to Baykeeper's claims on ground that its challenges to the 1995 salmon-doubling objective are untimely, and fail to state facts constituting a cause of action. The Court sustained the Board's demurrer finding that the claims about the salmon-doubling objective are "outside the scope of the issues in this proceeding[.]" (Order, issued Nov. 15, 2021, p. 8.) The Court granted Baykeeper leave to amend its petition to remove any claims about the salmon-doubling objective, and to state claims challenging whether the Revised Plan is adequate to achieve the updated flow objectives. (*Id.* at p. 9.) The amended petition Baykeeper filed, however, includes a claim challenging the adequacy of the program of implementation's actions to achieve the narrative objective as well as the salmon-doubling objective.

The Court does not believe Baykeeper intentionally disregarded the Court's order by filing an amended petition that still included a claim about the salmon-doubling objective. Upon reviewing the order sustaining the Board's demurrer, the Court believes there may have been some ambiguities. For example, after noting Baykeeper's *exclusive* focus on the salmon-doubling objective, the order observed that the Revised Plan states that the biological goals will contribute to achieving the salmon-doubling objective. (Order, issued Nov. 15, 2021, pp. 8-9.) After noting this link between the Revised Plan and the salmon-doubling objective, the Court granted Baykeeper leave to amend its "claims of inadequacies in the flows to achieve the salmon doubling objective to state a cause of action based on the LSJR narrative and numeric flow objectives." (*Ibid.*) Perhaps this phrasing could be interpreted as allowing for an amended salmon-doubling cause of action if it is based on the updated LSJR flow objectives.

Nonetheless, the Court has already ruled that Baykeeper's challenge to the Revised Plan based on an alleged failure to achieve the salmon-doubling objective, established almost 20 years ago, is outside the scope of this litigation. Even if Baykeeper's salmon-doubling claim was cognizable, however, it would only be so to the extent it asserts the flow objectives *will not contribute* to achieving the salmon-doubling objective. As already explained, the Court has determined that the evidence supports the Board's conclusion that the flow objectives will provide a reasonable level of protection for native LSJR fish, including fall-run Chinook salmon.

In other words, the evidence supports the conclusion that the actions in the program of implementation will *contribute* to achieving the salmon-doubling objective because they will provide *better* support and *better* sustenance for LSJR salmon populations than under current conditions. Baykeeper's salmon-doubling claim fails on this basis as well.

VII. Whether the Board was Required to Conduct a Use Attainability Analysis

SJTA contends that the Porter-Cologne Act required the Board to conduct a "use attainability analysis" to comply with the Clean Water Act because the Revised Plan supersedes the Sacramento River and San Joaquin River Basin Plan, and in doing so, removed protections for certain species covered by the basin plan. (SJTA Op. Br., p. 58.) SJTA argues that the Revised Plan supersedes the Sacramento River/San Joaquin River Basin Plan by "operation of law" given the terms of Water Code section 13170. (*Id.* at pp. 58-59.)

Section 13170 provides that a water quality control plan by the Board supersedes any regional plans for the same waters "to the extent of any conflict." (§ 13170.) The Board made clear in the Revised Plan, however, that it does not intend for the updated objectives to conflict with the Sacramento River/San Joaquin River Basin Plan. The Revised Plan states that the "fish and wildlife beneficial uses designated in the 'Water Quality Control Plan for the Sacramento River Basin and San Joaquin River Basin' for the Stanislaus River, Tuolumne River, Merced River, and the San Joaquin River from the mouth of the Merced River to Vernalis remain in effect and this plan includes measures to protect those uses." (*Revised Plan*, p. 10 [00741332].) The Revised Plan also states that "[t]his plan is complementary to the other water quality control plans adopted by the State and Regional Water Quality Control Boards [] and State policies for water quality control adopted by the State Water Board." (*Id*. at p. 4 [00741326].) In response to comments, the Board noted that the "*Water Quality Control Plan for the Sacramento River Basin and the San Joaquin River Basin* designates fish and wildlife beneficial uses for the LSJR, Stanislaus, Tuolumne, and Merced Rivers. The designations remain in effect and the Bay-Delta Plan includes measures to protect them. This is consistent with the Bay Delta Plan's recognition of the complementary nature of water quality control plans." (*MR 2.1*, p. 55 [00504834].)

In other words, the Revised Plan explicitly references the regional basin plan, includes provisions to protect the designations in that plan, and expresses an intent to complement that plan. Given these circumstances, the Court does not find that the Revised Plan with conflicts

with or overrides the Sacramento River/San Joaquin River Basin Plan. Therefore, no use attainability analysis was required.

CEQA CLAIMS

I. Standard of Review and Governing Legal Principles

The standard of review for compliance with CEQA is abuse of discretion. "In reviewing an agency's compliance with CEQA in the course of its legislative or quasi-legislative actions, the courts' inquiry shall extend only to whether there was a prejudicial abuse of discretion. Such an abuse is established if the agency has not proceeded in a manner required by law or if the determination or decision is not supported by substantial evidence. Judicial review of these two types of error differs significantly: While we determine de novo whether the agency has employed the correct procedures, scrupulously enforc[ing] all legislatively mandated CEQA requirements, we accord greater deference to the agency's substantive factual conclusions." (*North County Advocates v. City of Carlsbad* (2015) 241 Cal.App.4th 95, 100-101; see also *Save Our Capitol! v. Department of General Services* (2023) 87 Cal.App.5th 655, 669 (*Save Our Capitol!*) ("We determine abuse of discretion using different standards depending on the nature of the alleged CEQA violations.").)

"In applying the substantial evidence standard, the reviewing court must resolve reasonable doubts in favor of the administrative finding and decision. The [CEQA] Guidelines define 'substantial evidence' as 'enough relevant information and reasonable inferences from this information that a fair argument can be made to support a conclusion, even though other conclusions might also be reached.'" (*Stanislaus Natural Heritage Project v. County of Stanislaus* (1996) 48 Cal.App.4th 182, 194.) In reviewing "the agency's substantive factual decisions for substantial evidence," courts "may not set aside an agency's approval of an EIR on the ground that an opposite conclusion would have been equally or more reasonable, for, on factual questions, our task is not to weigh conflicting evidence and determine who has the better argument." (*Save Our Capitol!, supra,* 87 Cal.App.5th at p. 669.)

A petitioner challenging an EIR for insufficient evidence "must lay out the evidence favorable to the other side and show why it is lacking. Failure to do so is fatal. A reviewing court will not independently review the record to make up for appellant's failure to carry his burden." (*Tracy First v. City of Tracy* (2009) 177 Cal.App.4th 912, 934-935.)

Petitioners raise a variety of CEQA claims, all of which concern the new LSJR flow objectives rather than the updated salinity objective. For that reason, the Court's discussion of the SED in this section will focus on the flow objectives.

II. Whether the Board Erred by Conducting a Programmatic Review

Merced ID takes issue with the Board's decision to conduct a program-level review for the SED rather than a project-level review. Generally speaking, CEQA Guidelines state that a program-level review is appropriate for large projects that encompass a series of actions (*CEQA Guidelines*, § 15168, subd. (a)), while project-level review is appropriate for a specific development project (*id.*, § 15161). Merced ID argues there "is absolutely no reason for the Board to delay or avoid analyzing the significant impacts that will necessarily result from the imposition of the Plan on [Merced ID]." (Merced ID Op. Br., p. 39). According to Merced ID, the Board "could have and should have undertaken a more detailed project level review of the impacts of the Plan on the environment prior to its approval of the Plan and the SED, and on [Merced ID] in particular, without the need for further action or approvals." (*Ibid.*) Merced ID also argues that the Board violated CEQA by delaying or avoiding review of water supply impacts in the SED. (*Ibid.*)

The Board issued a program-level SED for the plan amendments pursuant to its authority under its certified regulatory program. (*Intro*, p. 3 [00468839].) The Board explains that the "SED, specifically the Executive Summary through Chapter 18, has been prepared pursuant to the State Water Board's certified regulatory program and is a program-level, not project-level, first-tier evaluation, consistent with the State CEQA Guidelines, section 15168." (*MR 1.1*, p. 46 [00501759].) The Board stated in response to comments that the "plan amendments establish the broad policy and the water quality objectives that will apply to future water right and water quality proceedings for implementing the water quality objectives consistent with the program of implementation. The Bay-Delta Plan does not itself approve any water right, or for that matter, any particular project-specific construction activity. It provides a framework for the next steps in the regulatory process. Subsequent State Water Board activities in the program, such as discretionary actions to implement the plan amendments, will be examined in light of the SED to determine whether an additional environmental document must be prepared []." (*Ibid.*) The Board explained that the plan amendments "will not result in direct physical changes in the environment. Rather, it is through the implementation of the Bay-Delta Plan that physical

changes in the environment potentially may occur. Accordingly, all potential environmental effects evaluated in this SED are indirect effects associated with implementation, which would occur later in time and would be subject to project-specific environmental review, in compliance with CEQA." (*ES,* p. 3 [00468637].)

This is not the first time the Board has conducted a program-level environmental review for amendments to the Bay-Delta Plan, which is then followed by a project-level environmental review for the implementing decision. The Board prepared a programmatic environmental report for amendments to the 1995 Plan, followed by an EIR evaluating the environmental impacts of the decision implementing the 1995 Plan, D-1641, that "tiered off" the programmatic environmental report. (*MR 1.1,* p. 47 [00501760].)

CEQA Guidelines define a program EIR as one "prepared on a series of actions that can be characterized as one large project and are related either: (1) Geographically, (2) As logical parts in the chain of contemplated actions, (3) In connection with issuance of rules, regulations, plans, or other general criteria to govern the conduct of a continuing program, or (4) As individual activities carried out under the same authorizing statutory or regulatory authority and having generally similar environmental effects which can be mitigated in similar ways." (*CEQA Guidelines,* §15168, subd. (a).) CEQA Guidelines identify several advantages of using a program EIR, including that doing so can: "(1) Provide an occasion for a more exhaustive consideration of effects and alternatives than would be practical in an EIR on an individual action, (2) Ensure consideration of cumulative impacts that might be slighted in a case-by-case analysis, [and] (3) Avoid duplicative reconsideration of basic policy considerations." (*Id.,* §15168, subd. (b).) "Under CEQA's tiering principles, it is proper for a lead agency to use its discretion to focus a first-tier EIR on only the general plan or program, leaving project-level details to subsequent EIR's when specific projects are being considered." (*Bay-Delta, supra,* 43 Cal.4th at pp. 1174-1175.)

In *Cleveland National Forest Foundation v. San Diego Assn. of Governments* (2017) 17 Cal.App.5th 413, 425-426 ("*Cleveland II"*), the Court of Appeal explained, "[w]here an agency prepares a program EIR for a broad policy document, Guidelines section 15168, subdivision (c)(2) allows agencies to limit future environmental review for later activities that are found to be within the scope of the program EIR." *Cleveland II* explains that further environmental review for such activities is only required where: (a) substantial changes are proposed in the project

which will require major revisions of the EIR; (b) substantial changes occur with respect to the circumstances under which the project is being undertaken which will require major revisions in the EIR; or (c) new information, which was not known and could not have been known at the time the EIR was certified as complete, becomes available. (*Ibid.*, citing Pub. Resources Code § 21166.) *Cleveland II* also explains that "designating an EIR as a program EIR does not by itself decrease the level of analysis otherwise required in the EIR. All EIR's must cover the same general content. The level of specificity of an EIR is determined by the nature of the project and the rule of reason, rather than any semantic label accorded to the EIR." (*Id.* at p. 426)

As described above, the Board conducted a program-level review of the plan amendments which establish broad policy objectives that will be implemented in subsequent water right proceedings subject to further environmental review. Given the nature of the plan amendments and the intent of the Board to address implementation in subsequent proceedings, just as it did with the 1995 Bay-Delta Plan and its subsequent implementation, the Board's decision to use a program-level environmental review is consistent with CEQA and its standard for using a program-level review and tiered environmental analysis. The Revised Plan establishes the water quality objectives that the Board will implement at a subsequent stage. The Supreme Court approved a similar use of a programmatic EIR by CALFED in *Bay-Delta*, where CALFED had established objectives that would be achieved through later implementing actions subject to second-tier environmental review. (*Bay-Delta, supra,* 43 Cal.4th at p. 1169.)

The court will address arguments by Merced ID and others about the *adequacy* of the Board's programmatic review of impacts to water supply and other uses in subsequent sections.

III. Whether the Board Properly Described the Project

Petitioners raise a number of challenges to the project description. Westlands asserts that the project description is deficient because it "focuses narrowly on securing a block of water" but omitted a fundamental project component—its biological goals." (Westlands Op. Br., pp. 34-35.) Westlands disagrees with the Board's decision to the place the development of biological goals and other performance standards, which will guide implementation of the flow objectives, in the POI, rather than explicitly in the project description. (*Id.* at pp. 35-37.) Merced ID argues that the SED provides "confusing, contradictory and inconsistent descriptions of the 'project' analyzed in the SED[.]" (Merced ID. Op. Br., pp. 40-42.) Merced ID contends there is confusion over the use of the term "implementation" and confusion over the flow objectives

under the adaptive implementation proposal.[23] (*Ibid.*) The US argues that the Board analyzed a project that was materially different than the project description because the Revised Plan requires minimum carryover storage targets to be developed but the Board does not disclose the nature of these targets in the project description. (US Op. Br., pp. 31-36.) The US argues that by addressing the reservoir control measures in modeling but not identifying them as part of the project description, the Board deprived the public of information necessary to make informed decisions. (*Id.* at p. 31.)

Challenges to the SED's project description are reviewed as an issue of law with no deference to the agency's determination. (*Washoe Meadows Community v. Dep't of Parks & Recreation* (2017) 17 Cal.App.5th 277, 286.) If an EIR "does not adequately apprise all interested parties of the true scope of the project for intelligent weighing of the environmental consequences of the project, informed decision making cannot occur under CEQA and the final EIR is inadequate as a matter of law." (*Communities for a Better Environment v. City of Richmond* (2010) 184 Cal.App.4th 70, 82-83 (*Communities II*).)

The project description must contain certain elements but *not* "extensive detail beyond that needed for evaluation and review of the environmental impact." (*CEQA Guidelines,* § 15124.) The project description must include the location and boundaries of the proposed project; a statement of objectives that should include the underlying purpose of the project; a general description of the project's technical, economic, and environmental characteristics; and a statement briefly describing the intended uses of the EIR. (*Id.* at § 15124, subds. a–d.) A lead agency uses the statement of the project objectives to "develop a reasonable range of alternatives to the proposed project to evaluate in the EIR." (*We Advocate Through Environmental Review v. County of Siskiyou* (2022) 78 Cal.App.5th 683, 691 (*"WATER"*) [citing *CEQA Guidelines,* § 15124].) The Board's certified regulatory program requires that an SED include a "brief

[23] During the merits hearings, Merced ID filed a request for judicial notice of Board Resolution 2023-0028, which approved the Final Initial Biological Goals for the LSJR on September 6, 2023. Merced ID argued the resolution is relevant because it rebuts the Board's argument that all components of the program of implementation would be subject to project-level CEQA review prior to their approval. Merced ID observed that the Board did not conduct a CEQA review of the biological goals prior to approving them. This resolution, however, post-dates the Board's adoption of the Revised Plan and is not part of the administrative record on which the Board based its approval of the Revised Plan. The Court, therefore, denies the judicial notice request because the resolution is not relevant to these proceedings.

description of the proposed project." (Cal. Code Regs., tit. 23, § 3777, subd. (b)(1).) An "accurate description of the proposed project is the heart of the EIR process." (*Rio Vista Farm Bureau Center, supra,* 5 Cal.App.4th at pp. 369-370.) "Only through an accurate view of the project may affected outsiders and public decision-makers balance the proposal's benefit against its environmental cost, consider mitigation measures, assess the advantage of terminating the proposal (i.e., the 'no project' alternative) and weigh other alternatives in the balance." (*County of Inyo v. City of Los Angeles* (1977) 71 Cal.App.3d 185, 192-193.)

As detailed in this order's background section, and as relevant to the new flow objectives, the SED describes the project as updating the 2006 Bay-Delta Plan to include: new LSJR flow objectives; a program of implementation to achieve these objectives; and monitoring and special studies needed to fill information needs and determine the effectiveness of, and compliance with, the new objectives. (*Ch. 1*, p. 1 [00468837].) The SED describes the fundamental underlying purposes and goals of the amendments, as well as a more specific set of purposes and goals for the flow objectives. The flow objectives themselves are expressed in both numeric and narrative terms. (*Revised Plan*, Table 3, p. 18 [00741340].) Finally, the SED describes and includes maps of the location and boundaries for where the plan amendments apply, as well as the extended plan area and other areas where the plan amendments will have an effect. (*ES*, p. 6; Figure ES-1 and ES-2 [00468640-642].)

The SED's project purpose accurately describes the plan amendments when it spells out objectives of "maintaining inflow to support and maintain the natural production of viable native migratory fish population," more closely mimic natural hydrographic conditions" and in a quantity necessary to "support native fish" by "improving temperatures and migratory conditions." (*Ch. 3*, pp. 2-3 [00489727-728].) The Revised Plan provides for the development of biological goals for salmonids as part of the program of implementation. (*Revised Plan*, p. 32-33 [00741354-355] ("Biological goals will be used to inform the adaptive methods, evaluate the effectiveness of this program of implementation, the [SJR Monitoring and Evaluation Program], and future changes to the Bay-Delta Plan. … The salmonid biological goals for this program of implementation will be specific to the LSJR and its tributaries and will contribute to meeting the overall goals for each population, including the salmon doubling objective established in state and federal law").) The Board discussed the role of the biological goals in the program of implementation in response to comments made by participants during the CEQA

process, responding to comments similar to those raised by Westlands here. (*MR 3.1*, pp. 38-39 [00510968-969].)

Fundamentally, Westlands argues that the Board could not have adopted adequate flow requirements without considering the biological goals. While there is a certain appeal to this argument, the framework the Board developed involved evaluating flows that supported the viability of salmon and steelhead, and as the Court has already discussed in addressing petitioners' Porter-Cologne Act claims, the Board demonstrated that its methodology for establishing the unimpaired flow regime has scientific support for improving the conditions for fish and demonstrating the use of flows for protecting fish and wildlife beneficial uses. Since the program of implementation is a key part of this framework, using the biological goals to inform adaptive management under changing hydrological conditions makes sense for a complex endeavor like this where annual and seasonal variations need to be addressed. As the Board explained in responses to comments, the program of implementation:

> provides a flexible framework with three absolute and overarching requirements: (1) to maintain flows in the LSJR equal to the total volume of water represented by the required percent of unimpaired flow within the adaptive range of 30-50 percent of unimpaired flow; (2) to be sufficient to support and maintain the natural production of viable native SJR Watershed fish populations migrating through the Delta (sometimes referred to as 'attaining the narrative objective'); and (3) to meet any existing biological goals approved by the State Water Board. Adaptive adjustments must be supported by best available scientific information. [] This structure allows a working group of informed professionals with local expertise to identify flow schedules intended to achieve biological goals more efficiently and effectively than rigidly tracking of the seasonal hydrograph at 40 percent unimpaired flow, or some other percent unimpaired flow value.

(*MR 2.1*, pp. 33 [00504813].)

Westlands cites to *Vineyard Area Citizens for Responsible Growth v. City of Rancho Cordova* (2007) 40 Cal.4th 412 (*Vineyard*), to support the argument that "fundamental matters such as biological goals—the basic objectives of the proposed action—must be identified and addressed in the first tier EIR." (Westlands Op. Br., p. 37.) In that case, the California Supreme Court concluded that the City of Rancho Cordova's EIR failed to address long term water supplies for a community plan for a large mixed-use development project. The Supreme Court held that the EIR "failed to disclose the impacts of providing the necessary supplies in the long term" and that it failed to address "how the long-term demand is likely to be met with those sources, the environmental impacts of exploiting those sources, and how those impacts are to be

mitigated." (*Vineyard,* at p. 422.) The Supreme Court also held that the informational purposes of an EIR involving a proposed land use project are not served where the EIR "simply ignores or assumes a solution to the problem of supplying water." (*Id.* at p. 431.) The Supreme Court addressed tiering in the context of the City of Rancho Cordova's failure to address reasonably foreseeable environmental impacts in the first tier. (*Ibid.*) In contrast to the circumstances in *Vineyard,* the Revised Plan provides that biological goals will be developed as part of the program of implementation to evaluate the "population viability status of Pacific salmonids," including population abundance, population grown rate, population spatial structure, and diversity. (*MR 3.1,* p. 38 [00510968].) The biological goals are not environmental impacts that required analysis in the SED, as was the case of the water supply for the development project in *Vineyard.*

Westlands also argues that the project description is missing pieces that are fundamental and necessary to inform an understanding of the environmental impacts, and should have developed a "detailed management plan" to monitor the performance of the flow objectives on salmon viability, citing to *Preserve Wild Santee v. City of Santee* (2012) 210 Cal.App.4th 260, 281 and *POET LLC v. State Air Resources Bd.* (2013) 218 Cal.App.4th 681, 739-740 (*POET I*). The referenced portions of these cases relate to standards applicable to deferred mitigation measures under CEQA. The implementation measures in the POI, however, are not deferred mitigation measures, and neither of these cases addresses what information should be included in a project description.

Westlands cites, without discussion, *Habitat & Watershed Caretakers v. City of Santa Cruz* (2013) 213 Cal.App.4th 1277, 1299-1300 ("*Habitat*"), as support for its position that the biological goals needed to have been included in the project description. (Westlands Op. Br., pp. 36-37.) *Habitat*, however, does not support Westlands' argument. In that case, the Court of Appeal found that the project description in the *draft* EIR was deficient because its vague description failed to convey that the plan's underlying purpose was to provide water and sewer services to portions of the U.C. Santa Cruz campus. The final EIR, however, corrected this deficiency by stating the project's objectives in a "more illuminatory" way, which the court found adequate under CEQA. (*Ibid*.) Here, just as with the corrected project description in *Habitat,* the Board's project description accurately and adequately conveys the underlying purpose of the flow objectives for CEQA purposes. *Habitat* does not support the notion that

implementation metrics like the biological goals needed to be conveyed in the project description.

Westlands also cites to *POET I* as support for its argument that the Board was required by CEQA to include the biological goals in the project description, rather than placing them in the program of implementation to be developed later. (Westlands Op. Br., pp. 36-37.) But Westlands cites to a portion of *POET I* dealing with deferral of mitigation measures. (*POET I*, *supra*, 218 Cal.App.4th at pp. 739-740.) In contrast here, the biological goals are not mitigation measures.

The Court finds that the Board accurately described the project with sufficient detail for all concerned to understand the project's scope. The Court disagrees with Westland's characterization that the development of biological goals to guide implementation of the flow objectives are such a "fundamental" or "critical" component of the project that they needed to have been expressly referenced in the project description. The Court finds that the Board properly determined the biological goals can be developed as part of the POI.

Merced ID takes issue with the flow objectives and the adaptive implementation element of the SED in challenging the SED's project description. (Merced ID Op. Br., pp. 40-42.) While the Court agrees that the adaptive implementation component is complex, the Court does not see this complexity as rendering the project definition deficient. Merced ID cites cases generally setting out the requirements for a project description but does not cite any cases specifically addressing the type of deficiencies it alleges in the SED's project description. The SED is clear as to what the Board will be considering in the implementation phases.

The US contends that because the project description did not address carryover storage targets, the SED failed to convey sufficient information for those who did not participate in the process to meaningfully consider issues raised by the plan amendments. (US Reply Br., p. 17.) This argument is not persuasive for a few reasons. First, as already stated, the Court finds the project description accurately and adequately conveys the objectives and underlying purpose of the Plan. The carryover storage targets did not need to be included in the project description.

In addition, while the carryover storage component was not described under a section designated as the project description or objectives, it certainly was described in the Plan. The Board makes clear in describing the program of implementation in the Revised Plan itself that, "[w]hen implementing the LSJR flow objectives through water right actions or water quality

actions, the State Water Board will require the development and implementation of minimum reservoir carryover storage targets or other requirements to help ensure that providing flows to meet the flow objectives will not have significant adverse temperature or other impacts on fish and wildlife or, if feasible, on other beneficial uses." (*Revised Plan*, p. 28 [00741350].)

In the SED chapter addressing surface hydrology and water quality, the Board further describes the impact to certain water rights holders in the extended plan area as reservoirs are drawn down to lower storage levels, noting that the Board will address the impacts in the POI, including creation of minimum reservoir carryover storage targets. (*Ch. 5*, p. 64 [00469875].) Chapter 5 also discusses the minimum carryover storage guidelines deployed in the LSJR alternatives analysis. (*Id.* at pp. 78-79 [00469889-890].) Also, in Appendix F, the Board modeled certain reservoir constraints and parameters, and described the reasons for inclusion of carryover storage guidelines. (*App. F-1*, pp. 30-31 [00477262-263].) The Board explained that the operational constraints that were used modeled were not the final carryover storage targets, but "elements of the modeling simulation to evaluate impacts of the LSJR alternatives. Implementation in a future proceeding would need to identify and evaluate supply, storage, and temperature conditions and appropriate operational objectives, to be protect beneficial uses and avoid adverse effects where feasible." (*Id.* at p. 31 [00477263].)

The US acknowledges that the SED does actually describe the carryover storage component of the Plan, but argues that the descriptions in the Revised Plan and Chapter 5 are too general. (US Op. Br., p. 32; US Reply Br., p. 17.) Although the US acknowledges that the more detailed explanation and modeling in Appendix F convey the "true nature and extent" of the contemplated carryover storage targets, the US seems to suggest this information does not count for CEQA purposes because it is in a "highly technical modeling appendix." (*Ibid.*) These arguments are not persuasive.

Master Response 3.2 describes, in plain English, how the modeling accounted for carryover storage, and provides charts to illustrate the modeling results. (*MR 3.2*, pp. 43-61 [00516662-680] (describing the modeling results contained in Appendix F-1).) The Board provides examples of the temperature effects of carryover storage for each reservoir showing a "no carryover storage" or "NCS" result against the results of the alternatives with carryover storage, illustrating that without carryover storage temperatures in the fall exceed those recommended for spawning and incubation. In the illustration for the New Melones Reservoir, a

chart shows the reservoir storage levels with and without carryover storage, showing reservoir levels hovering above 700,000 AF with carryover storage and below 200,000 AF under the 40% flow objective without carryover storage. (*MR 3.2*, p. 56 [00516675].) The results on the Stanislaus illustrate that "[l]ower reservoir storage in October of the worst years results in temperatures that exceed 65 degrees Fahrenheit (°F) in the baseline and NCS, and in LSJR Alternative 3, the worst years are less than 60°. In many years with higher storage, release temperatures remain from 51 to 57° F because of adequate cold-water pool." (*Id.* at p. 57 [00516676].)

The Court finds these descriptions to be clear and understandable and finds that the SED contains a sufficient discussion of carryover storage to inform the public and decision makers of the plan to develop carryover storage targets as part of the implementation phase, and the general implications of establishing the targets. Indeed, because the Board disclosed, described, and modeled carryover storage, the public was able to submit comments during the CEQA process, which the Board considered.[24] Thus, fairly construed, the SED *did* describe for the public that the program of implementation will include implementation of carryover storage targets, and even provided modeling simulations to evaluate how those targets might affect reservoir operations.

It seems the US's real bone of contention may be that the Board did not fully develop the carryover storage targets in the Plan itself, but instead decided that the targets should be developed during the implementation phase. But in Master Response 3.2, the Board explained: "Although the plan amendments could have included prescriptive numeric objectives for instream temperature and reservoir storage objectives, such prescriptive objectives, once established through a rulemaking would preclude water operators from using the flexibility that is inherent in the program of implementation to achieve the flows in ways that would better maximize water resources for all beneficial uses." (*MR 3.2*, p. 4 [00516623].) The Board's reasoning is rational, and its decision to defer development of the carryover storage targets to the implementation phase was well within its discretion.

[24] The public and decision makers will have a further opportunity to assess a more detailed impact assessment in the next tier of environmental review once the actual carryover targets have been established in the implementation phase.

IV. Whether the Board Failed to Recirculate the SED

Stockton East alleges that the Board violated its obligations under CEQA by "refusing to recirculate the SED and new revisions to the Bay-Delta Plan for formal review and public comment" after it added a year-round objective and new information and analysis associated with "requiring exactly 40% unimpaired flow with an adaptive range between 30% and 50% unimpaired flow." (Stockton East Op. Br., p. 25.) Stockton East cites to one page in the record in support of its argument, a page from the Executive Summary, showing revisions to the numeric element of the flow objective, where the description was revised from "A percent of unimpaired flow between 30%–50%, inclusive, from each of the Merced, Tuolumne, and Stanislaus Rivers shall be maintained from February through June" to "Maintain 40% of unimpaired flow with an allowed adaptive range between 30%–50% inclusive, from each of the Stanislaus, Tuolumne, and Merced Rivers from February through June." (*ES*, p. 12 [00468648].) Stockton East also alleges that the SED "included significant information, new analysis and new modeling of the project in response to comments," and this compelled recirculation under CEQA. Stockton East does not provide any citations to the record in support of this argument. (*Ibid.*). Stockton East also asserts that the Board notified the public that it would not reject any comments on the SED, that "the public comment period on the adequacy of that document concluded in March 2017," and that the Board provided the public with 21 days to respond to new changes to the Bay-Delta Plan, "including the Year-round Objective," again without including any citations to the record. (*Ibid.*)

Stockton East's briefing does not supply sufficient information or citations to the record for the Court to fully evaluate its assertions. To the extent that Stockton East makes arguments regarding the Board's failure to recirculate the SED without supporting citations to the record, Stockton East forfeits the argument. (See *SWRCB Cases*, *supra*, 136 Cal.App.4th at pp. 749-750 ("[I]f appellants fail to present us with all the relevant evidence, then the appellants cannot carry their burden of showing the evidence was insufficient to support the agency's decision because support for that decision may lie in the evidence the appellants ignore.") In *North Coast Rivers Alliance v. Kawamura* (2015) 243 Cal.App.4th 647, 677-678, the Court of Appeal concluded that a petitioner did not support its arguments where the court was "hard pressed to find support for [petitioner's] position in the few pages of the record cited," and "the record contains much evidence [] not cited by [the petitioner]," leading to the petitioner forfeiting its substantial

evidence claim. (*Id.* at p. 677.) The Court of Appeal also held that the "burden to provide a fair summary of the evidence grows with the complexity of the record," noting the administrative record in that case exceeds 70,000 pages. (*Id.* at pp. 677-678.) This reasoning is certainly applicable here where the record is more than 10 times the size of the record in *North Coast Rivers Alliance.*

To address Stockon East's argument with respect to the one page of the record cited in its brief, the language that was revised for the numeric element of the flow objective clarified language that did exist in the version of the SED circulated in 2012. (See, e.g., *ES,* p. 12 [00070869] ("LSJR Alternative 3 is 40 percent of unimpaired flow, which represents a mid-point for the analysis."), and p. 14 [00070873] ("LSJR Alternative 3 would require minimum 14-day running average unimpaired flows February-June of 40 percent from the Stanislaus, Tuolumne, and Merced Rivers."); *Intro,* p. 7 [00070692] ("LSJR Alternative 3 would establish 40 percent of the unimpaired flow equally on the three eastside tributaries."); *Ch. 3,* p. 6, under the heading "LSJR Alternative 3: 40% Unimpaired Flow" the description is "LSJR Alternative 3 would require minimum 14-day running average unimpaired flows February–June of 40 percent from the Stanislaus, Tuolumne, and Merced Rivers.") Thus, the Court finds that the Board was merely clarifying the numeric objective to align with the clear intent of the version of the SED that was circulated for public review. The Board did not violate CEQA by making the clarifications without recirculating the document.

V. Whether the Board Improperly Segmented the Project

During the public comment period, the Board received comments expressing the concern that it was improperly segmenting the Plan. Specifically, the comments raised concerns that: (1) the Board did not fully evaluate the environmental impacts because it is considering updates to the Bay-Delta in independent proceedings that address different watersheds; (2) the Board failed to consider the whole of the action; (3) performing separate environmental reviews for these different watersheds is improper piecemealing or segmenting prohibited under CEQA; and (4) the Board should have defined the scope of the project more broadly to better protect flows through the Delta by addressing exports. (*MR 1.2,* p. 16 [00504039].)

The Board responded that its ultimate decision to evaluate the amendments in separate proceedings reflects the independent and segregable nature of the planning activities, and that the Board's watershed-based strategy accounts for the "unique and distinct characteristics of the San

Joaquin River watershed relative to the Sacramento River watershed and other Delta tributaries." (*MR 1.2,* p. 16 [00504041]). The Board stated that the "environmental conditions in the [LSJR] are different than those in the Sacramento River and Delta tributaries, with fish populations generally doing worse in the [LSJR watershed]. (*Id.* at p. 17 [00504040].) The Board went on to note that the separate proceedings to amend the 2006 Bay-Delta Plan "are both large in scale, involve different water quality objectives and largely different geographic areas, each has its own purpose, and each can be developed and implemented independently of each other." (*Ibid.*) The Board also stated that the SJR watershed now only supports fall-run Chinook salmon and that the general timing of important life stages of these salmon differ from the fall-run Chinook in the Sacramento River as "migration timing, residence times, and habitat use by juvenile Chinook salmon are highly variable and reflective of the differences in their juvenile habitat (including temperature) in the different watersheds (Table 1.2-1)." (*Id.* at p. 18 [00504041].)

> As noted in the Board's response to comments,
>
> > Salmon and steelhead that spawn and rear in the LSJR tributaries and migrate through the Delta to the Pacific Ocean have steeply declined and remain at historically low abundance levels. Scientific studies show that the freshwater flow in rivers is a principal factor in the survival of migratory fish like salmon and other resident fish species in the Bay-Delta Estuary. Reduced flow is recognized as a primary driver of the decline of the riverine ecosystem conditions and fish species abundance and distribution. Nearly every feature of habitat that affects native fish and wildlife is to some extent, determined by flow (e.g., temperature, water chemistry, physical habitat complexity). The 2013 Delta Plan[25] states that 'Without adequate water flow (the right mix of timing and amount), we cannot expect fisheries to recover, no matter how well we deal with the range of other stressors.' The 2013 Delta Plan also highlights the need to 'act now.' 'While all parties agree the status quo is not acceptable, failure to take action only prolongs a worsening status quo[.]'

(*MR 2.1,* pp. 1-2 [00504780-781].)

The Board prioritized the plan amendments over other planned revisions to the Bay-Delta Plan because the Stanislaus, Tuolumne, and Merced Rivers have had "larger reductions in the

[25] The Legislature established the Delta Stewardship Council to take responsibility for the directives in the 2009 Delta Reform Act, where the Legislature set the state policy of "coequal goals" of providing more reliable water supply for California and protecting, restoring and enhancing the Delta. The Delta Stewardship Council issued its first Delta Plan in 2013 addressing topics like improving and securing water supply, revitalizing the Delta ecosystem, and improving levees, among others. (*2013 Delta Plan,* pp. ES-2 – ES-3 [00247687-688].)

natural production and returns from the ocean of adult fall-run Chinook than that of the other tributaries (or combination of tributaries) to the Sacramento or SJR," when comparing specific time periods. (*MR 1.2*, pp. 18-19 [00504041-042].)

NCRA, Merced ID, Modesto ID, and Stockton East contend that the Board's decision to consider the flow objectives for the LSJR and its three eastside tributaries separate from those of the Delta and the Sacramento River constituted improper segmenting or "piecemealing" under CEQA. Petitioners allege that the plan amendments, by not including the Sacramento River or Delta flows, fail to consider the interrelationships, interdependencies, and cumulative effects, and that addressing the LSJR and its tributaries as a separate project from the rest of the Plan violates CEQA's requirement for a unified and comprehensive environmental review (NCRA's Op. Br., pp. 28-29; Merced ID Op. Br., p. 49; Modesto ID Op. Br., p. 9). Petitioners also argue that segmentation minimizes and avoids review of the plan amendment's impacts and limits alternative and mitigation measures necessary to address the impacts. (Modesto ID Op. Br., p. 12; Stockton East's Op. Br., p. 20.)

When assessing a claim that an agency has improperly segmented its environmental review and not evaluated the "whole of an action," judicial review is one of law reviewed de novo based on the undisputed facts in the record. (*McCann v. City of San Diego* (2021) 70 Cal.App.5th 51, 84, citing *Communities II, supra,* 184 Cal.App.4th at p. 98; *see also Aptos Council v. County of Santa Cruz* (2017) 10 Cal.App.5th 266, 278 ("*Aptos Council*") (whether the challenged project constitutes a single project under CEQA and whether the agency improperly engaged in piecemeal environmental review are questions of law to be reviewed independently).)

Under CEQA, an agency must evaluate the entire project or the "whole of an action" in assessing the project's significant environmental impacts and there is "no dispute that CEQA forbids 'piecemeal' review of the significant environmental impacts of a project." (*Aptos Council, supra,* 10 Cal.App.5th at p. 277.) Environmental analysis does not properly evaluate the "whole of an action," and thus constitutes improper segmentation, when the purpose of the project is to be the first step towards future development or when the reviewed project legally compels or practically presumes completion of the other. (*Banning Ranch Conservancy v. City of Newport Beach* (2012) 211 Cal.App.4th 1209, 1223).

In *Laurel Heights Improvement Assn. v. Regents of University of California* (1988) 47 Cal.3d 376 ("*Laurel Heights*"), the California Supreme Court held that "an EIR must include an

analysis of the environmental effects of future expansion or other action if: (1) it is a reasonably foreseeable consequence of the initial project; and (2) the future expansion or action will be significant in that it will likely change the scope or nature of the initial project or its environmental effects." (*Id.* at p. 396). In *Aptos Council,* the Court of Appeal explained that the "key term" in *Laurel Heights'* first prong is "consequence." (*Aptos Council, supra,* 10 Cal.App.5th at p. 282.) Thus, a reviewing court must assess whether the future projects are "reasonably foreseeable *consequences*" of the challenged project, or conversely, whether the two projects "operate independently of each other and can be implemented separately." (*Ibid.*) The Court finds the latter description accurately applies to the different phases of amendments to the Bay-Delta Plan.

The Board's future adoption in Phase II of amendments to the water quality standards in the Sacramento River and Delta watersheds are not foreseeable *consequences* of the LSJR flow objectives and southern Delta salinity standards. Rather, the LSJR flow and southern Delta salinity objectives operate independently of any future amendments in the Sacramento River or Delta watersheds, and can be implemented separately. Even if the Board decided to pursue no further amendments to other regions of the Bay-Delta in Phase II, it could still proceed with implementing the plan amendments in subsequent water rights proceedings.

In *McCann,* the court concluded that the separate environmental review of two utility undergrounding projects did not constitute improper piecemealing or segmentation because each project was "independently functional," did not rely on future projects to operate and if no other undergrounding project occurred the functionality of the challenged projects was not affected. (*McCann, supra,* 70 Cal.App.5th at p. 85; see also *Paulek v. Department of Water Resources* (2014) 231 Cal.App.4th 35, 48 (holding that separate environmental review of two phases of a dam remediation project was not improper segmentation under CEQA.) In reviewing the record in these proceedings, the Court concludes that the plan amendments are independently functional from other amendments contemplated to the Bay-Delta Plan.

The second phase of amendments to the Bay-Delta Plan are not a "future expansion" of the plan amendments nor, despite the interrelationships in the Delta, are they an "integral part of the same project." (*Paulek supra,* 231 Cal.App.4th at p. 47.) The plan amendments are not the first stage of a project or "the first domino to fall in a causally related series of events to follow." (*Id.* at p. 46). The plan amendments do not rely on the Board completing Phase II for the flow or

salinity objectives to be implemented. There is also no evidence that the contemplated Phase II amendments will affect the nature or scope of the Phase I amendments.

A single environmental document is not required under CEQA simply because the same agency contemplates two projects at the same time. (*Aptos Council*, *supra*, 10 Cal.App.5th at 282, fn. 4). Two projects "may properly undergo separate environmental review (i.e., no piecemealing) when the projects have different proponents, serve different purposes, *or* can be implemented independently." (*Banning Ranch Conservancy*, *supra*, 211 Cal.App.4th at 1223 (emphasis added).) Here, the plan amendments serve the purpose of improving flows on the LSJR and its salmon-bearing tributaries to benefit the habitat, temperatures, and overall conditions for salmon during the out-migration months. This is not the same purpose as the amendments considered under Phase II, which affect other river systems and the Delta itself.

The Court recognizes that the Delta ecosystem contains interrelationships and interdependencies between the river systems that flow into the Delta and affect the anadromous species that must migrate through the Bay-Delta to spawn in the tributaries and then migrate back through the Bay-Delta to reach the ocean. The record is clear that the river systems converge in the Delta and that the Board is working to protect water quality that affects beneficial uses of water in the Bay-Delta, which is common to both phases. The Notices of Preparation themselves acknowledge that the area of potential environmental effects for both phases is the same—affecting "most of the State, including: 1) the watershed of the Bay-Delta, 2) the Trinity River watershed from which water is diverted into the watershed of the Bay-Delta, and 3) areas receiving water exported from the Bay-Delta." (*2011 NOP*, p. 3 [00000161]; *2012 NOP*, p. 6 [00001082].)

The fact that the Bay-Delta contains interconnected ecosystems, however, does not mean the Board needed to formulate revisions to the Plan in a single environmental review process. The Board properly exercised its discretion to evaluate revisions to the Bay-Delta Plan in phases with separate environmental reviews because the phases pertain to separate rivers and watersheds in hydrologically distinct geographic areas with native fish that have different viability needs. Although the different river systems all end up affecting the Bay-Delta, the flow requirements in the Revised Plan are specific designed for the LSJR watershed to improve the environment for the native fish in those rivers.

Finally, with respect to the argument that the Board's decision to conduct a separate environmental review for the plan amendments led to the Board failing to analyze mitigation such as eliminating additional Delta exports, the Court agrees with the Board that it appropriately determined to handle Delta exports in the Sacramento/Delta proceeding where the Board will examine interior Delta flows and export limitations, given that the SJR system only contributes about 14% of outflow to the Delta exports. (*App. F.1*, p. 297 [00477529].)

VI. Whether the Board Used the Correct Baseline

Some petitioners allege the SED's baseline is legally deficient. Stockton East asserts the baseline is flawed because it improperly *includes* flows related to the Vernalis Adaptive Management Plan per the San Joaquin River Agreement even though both ended in 2011, and improperly *excludes* flows from the San Joaquin River Restoration program.[26] (Stockton East Op. Br., p. 5.) Stockton East also alleges that the baseline improperly includes flows associated with a biological opinion issued by the National Marine Fisheries Service four months following the issuance of the NOP, and improperly assumes that USBR will comply with permit conditions under D-1641. (*Id.*, pp. 5-6.) Merced ID argues the baseline conditions should have been established as of September 2016 rather than 2009, and that use of a 2009 baseline resulted in an incomplete and deceptive analysis. (Merced ID Op. Br., p. 45.)

CEQA requires that a lead agency "include a description of the physical environmental conditions in the vicinity of the project" which "will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant." (*CEQA Guidelines*, § 15125, subd. (a).) "Generally, the lead agency should describe the physical environmental conditions as they exist at the time the notice of preparation is published." (*Ibid.*) Describing the physical environment in an environmental review document for establishing a baseline for CEQA review is a factual determination to be reviewed for support by substantial evidence. (*Communities for a Better Environment v. South Coast Air Quality Mgmt. Dist.* (2010) 48 Cal.4th 310, 328 (*Communities I*).) A reviewing court does not "pass upon the correctness of the EIR's environmental conclusions, but only its sufficiency as an informative document." (*Cherry Valley Pass Acres & Neighbors v. City of Beaumont* (2010) 190 Cal.App.4th 316, 328.)

[26] The San Joaquin River Agreement ("SJRA") was a settlement agreement proposing an allocation of responsibility for meeting the April-May objective for pulse flows from the SJR, discussed in and incorporated into D-1641. (See, e.g., *D-1641*, pp. 12-15 [00177744-747].)

The California Supreme Court has explained that "[t]he fundamental goal of an EIR is to inform decision makers and the public of any significant adverse effects a project is likely to have on the physical environment. To make such an assessment, an EIR must delineate environmental conditions prevailing absent the project, defining a baseline against which predicted effects can be described and quantified." (*Neighbors for Smart Rail v. Exposition Metro Line Construction Authority* (2013) 57 Cal.4th 439, 447.) "Neither CEQA nor the CEQA Guidelines mandates a uniform, inflexible rule for determination of the existing conditions baseline. Rather, an agency enjoys the discretion to decide, in the first instance, exactly how the existing physical conditions without the project can most realistically be measured." (*Communities I, supra,* 48 Cal.4th at p. 328.) Also, the baseline must ordinarily reflect physical conditions that actually exist rather than hypothetical conditions that could have existed under applicable permits or regulations. (*Id.* at pp. 320-322.)

Here, the Board established a baseline that generally reflected the environmental conditions, facilities, and programs that existed as of February 2009 when the Board issued its initial NOP for the plan amendments. (*MR 2.5*, p. 7 [00508357]; *Ch. 4*, p. 22 [00496806].) The Board's baseline was designed to account for numerous complex and variable interactions and conditions, including surface hydrology, water diversions, water quality, aquatic resources, and model changes under the alternatives considered in the SED. (*MR 2.5*, p. 8 [00508358].) The Board used the WSE model to "represent reservoir operations, river flow, and surface water diversions [that existed in 2009] for a comparative analysis between baseline conditions and plan amendments alternatives." (*MR 2.5*, p. 9 [00508539]; *Ch. 4*, p. 22 [00469806]; *App. F.1*, showing baseline summary tables for the tributaries (Tables i–iii [00477549-557]) and reservoirs (Tables 16, 18, and 20 [00477604-606; 00477610-612; 00477616-618]).) The WSE model relied on inputs from the CALSIM model for establishing the water balance modeling, relying on an 82-year hydrologic record to evaluate water supply effects during different types of water years, including drought. (*Id.* at p. 10 [00508360].) The baseline included flows and programs that existed in 2009, including the VAMP flows that ended in 2011. (*Ch. 4*, p. 22 [00469806].)

In response to public comments on the 2012 Draft SED, the Board modified its assumptions by adjusting the WSE baseline condition using the CALSIM II module and calibrating the WSE model "for best match to the … CALSIM baseline diversions, stream flows, and reservoir levels after all of the revisions." (*MR 2.5*, p. 11 [00508361]; *Ch. 4*, pp. 2-3

[00469786-787].) The Board concluded that the "WSE model is sufficiently representative of baseline conditions under different alternatives for a programmatic-level planning tool used to assess the plan amendments in the SED," and described at length its inputs, processes, and assumptions associated with the baseline model in its response to comments. (*MR 2.5,* p. 10 [00508360] and more generally, pp. 8-17 [00508358-367].)

During the public comment process, the Board addressed the contention, made here by Stockton East, that the baseline improperly includes VAMP flows because the VAMP program ended in 2011. The Board explained that "including VAMP as part of the baseline is a reasonable representation of the physical environment with respect to flow conditions at the time of the NOP" because even after VAMP ended, "federal, state, and local agencies have continued to coordinate or attempt to coordinate … releases of water to meet Vernalis flow objectives[.]" (*MR 2.5,* pp. 13-14 [00508363–64].) Stockton East's contention that the baseline improperly includes certain flows released by USBR was also expressed in public comments to the Board, noting that USBR has an ongoing responsibility for meeting the flow objective under its permit requirement. (*Id.* at p. 23 [00508373].) The Board explained its assumptions behind its modeling of the baseline assumptions at length and ultimately concluded that the "WSE model is sufficiently representative of baseline and conditions under different alternatives for a programmatic-level planning tool used to assess the plan amendments in the SED." (*Id.* at p. 10 [00508360].)

The Board's selection of the 2009 NOP date as the date for setting the baseline is consistent with CEQA Guidelines. And the Board's reasoning for including the VAMP and USBR flows referenced above is rational and supported by substantial evidence. The environmental conditions that prevailed absent the plan amendments were those that existed under the operational conditions established by the 2006 Bay-Delta Plan. If no amendments to the Plan were adopted, the Board would continue (and has continued) to operate under the terms of the Plan as approved in D-1641.

Stockton East's contention that the baseline improperly includes flows required by a June 2009 National Marine Fisheries Biological Opinion ("NMFS BiOP") even though that opinion was issued four months *after* the NOP was issued was also expressed in public comments. (Stockton East Op. Br., p. 5). In its response, the Board explained that the NMFS BiOp "had been issued in draft form to agencies for peer review in December 2008," and that the Board

included the results because "it was anticipated to take final form in the near future and thus was expected to partly define the existing environment for purposes of ascertaining the impacts of the plan amendments and alternatives evaluated in the SED." (*MR 2.5*, pp. 11-12 [00508361-362].) The Supreme Court has explained that "in appropriate circumstances an existing conditions analysis may take account of environmental conditions that will exist when the project begins operations." (*Neighbors for Smart Rail*, *supra*, 57 Cal.4th at p. 452.) The Board noted that the Ninth Circuit ultimately upheld the NMFS BiOp in its entirety. (*MR 2.5*, p. 12 [00508362].) The Court finds that including the flows required by the NMFS BiOP in the baseline did not violate CEQA.

Stockton East also alleges that the baseline should have included flows resulting from the San Joaquin River Restoration Program ("SJRRP"). The SJRRP, which resulted from a settlement reached in 2006, pertains to the restoration of fish habitat in the SJR below the Friant Dam. The SJRRP provided for interim flows to be released from Friant Dam beginning in October 2009. (*MR 2.5*, p. 15 [00508365].) The Board states that the interim flows were designed to provide data to inform the longer-term restoration flows, slated to begin in January 2014. (*Ibid.*) In response to public comments that the SJRRP flows should have been included in the baseline, the Board began by explaining that those flows were not scheduled to begin for several years. (*Ibid*.) The Board decided to consider the SJRRP flows in its cumulative impact assessment rather than the baseline because "neither the interim flows nor the restoration flows were part of the existing environment at the time of the 2009 NOP." (*Ibid*.)

Stockton East cites *Woodward Park Homeowners Assn., Inc. v. City of Fresno* (2007) 150 Cal.App.4th 683, 691 ("*Woodford Park"*), as support for its argument that the SJRRP flows should have been included. But *Woodford Park* is distinguishable. In that case, the baseline was held to be misleading because it measured the environmental impact of a proposed development against a hypothetical office park rather than the vacant land "that actually exists at the project site." (*Ibid*.) In contrast, the SED here contains extensive analysis of how the Board determined the baseline including explanations for the judgment calls the Board made in either including or excluding specific data under the conditions at the time. With respect to Stockton East's argument that the Board improperly accounts for releases that USBR is obliged to make under the permit terms of D-1641, Stockton East cites to temporary urgency change petitions that did not amend the permit requirements under D-1641. As the Board explained in response to

comments on this point, the Board's conditional approval to temporarily modify permit terms did not "amend, suspend, or relax the water quality objectives in the Bay-Delta Plan." (*MR 2.5,* p. 16 [00508366].) It was reasonable for the Board to model the baseline using the conditions that existed at the time in 2009, without taking into account temporary changes to the flow requirements, and assuming compliance with existing permit terms. The Board modeled the environmental conditions that were "prevailing absent the project, defining a baseline against which predicted effects can be described and quantified." (*Neighbors for Smart Rail, supra,* 57 Cal.4th at p. 447.)

Merced ID argues that using the 2009 baseline "essentially turns back the clock" and fails to take into account changed circumstances since 2009, citing *Citizens for East Shore Parks v. State Lands Commission* (2011) 202 Cal.App.4th 549, 559 (*Citizens*). But in *Citizens,* the plaintiffs argued that the baseline should have reflected conditions that "have not existed at the locale for more than a century." (*Id.* at p. 560-61.) In rejecting this argument, *Citizens* emphasized that "CEQA Guidelines require a 'description of the physical environmental conditions . . . *as they exist at the time of the notice of preparation [of an EIR] is published' and specify '[t]his environmental setting will normally constitute the baseline[.]"* (*Id.* at p. 561, citing with emphasis *CEQA Guidelines,* § 15125, subd. (a).) *Citizens* does not support Merced ID's position.

In this case, the Board made a reasonable effort to define the physical environment that existed in 2009. The SED established a baseline as of the date of the issuance of the NOP that represented the conditions in effect under the Plan prior to the amendments, and the record supports the Board's choices in defining numerous complex and variable interactions and conditions evaluated in the baseline to define the physical environmental conditions that existed in 2009. The Board did not abuse its discretion in establishing the baseline used in the SED, and the baseline determinations are supported by substantial evidence.

VII. Whether the Board Analyzed a Reasonable Range of Alternatives

Several petitioners argue the Board violated CEQA because aside from the no-project alternative, it only considered different unimpaired *flow* alternatives, but not any *non-flow* alternatives. They argue the alternatives should have been designed around the overarching purpose of protecting fish and wildlife, and that the focus on flow ignored non-flow options that would have advanced that goal. (Farm Bureau Op. Br., pp. 38-39; Modesto ID Op. Br., pp. 23-

25; Stockton East Op. Br., p. 7; Westlands Op. Br., pp. 39-43.) Petitioners argue the Board should have included alternatives encompassing the entire basin, the upper SJR, and the Friant Division; an alternative with reduced Delta exports (Modesto ID Op. Br., pp. 17-25); non-flow alternatives such as improving riparian habitat, reduced ocean harvest, gravel enhancement, and predator suppression (Stockton East Op. Br., p. 8); and alternative projects and options that do not involve flow restrictions (Merced ID Op. Br., p. 54).

Modesto ID asserts that the Board abused its discretion by deciding not to rely on SalSim to test the efficacy of the unimpaired flow requirements. (Modesto ID Op. Br., p. 15.) Westlands argues that the Board should have addressed other methods of defining flow rather than relying exclusively on the unimpaired flow approach. (Westlands Op. Br., p. 41-43.) Merced ID also argues that the SED failed to adequately analyze a "no project" alternative because "the no project alternative should not just be a continuation of the 2006 Bay-Delta Plan but the absence of the Plan." (Merced ID Op. Br., p. 55).

NCRA contends the Board violated CEQA by selecting Alternative 3 over Alternative 4 since both alternatives have the same significant and unavoidable impacts, but Alternative 4 is the only one that would provide temperature benefits and flow levels close to those recommended in the Flow Criteria Report. (NCRA Op. Br., p. 31.) NCRA argues that by not selecting Alternative 4, the Board violated CEQA's mandate to select the "least impactful of feasible alternatives that attain most of the Project's goals." (*Ibid.*)

The Board evaluated four alternatives in the SED: a no project alternative, which is the continuation of the flow requirements as established in the 2006 Bay-Delta Plan as implemented through D-1641; Alternative 2, evaluating an unimpaired flow range between 20%–30%, with 20% as the starting percentage; Alternative 3, evaluating an unimpaired flow range between 30%–50%, with 40% as the starting percentage; and Alternative 4, evaluating a range between 50%–60%, with 60% as the starting percentage. (*ES* at p. 15 [00468651].) Alternatives 2 through 4 are comprised of narrative and numeric flow objectives and an associated program of implementation. (*Ch. 3,* p. 8 [00469743].) The narrative objective calls for inflow conditions from the SJR watershed to be maintained to support the "natural production of viable native San Joaquin River Watershed fish" with indicators of viability to include "population abundance, spatial extent, distribution, structure, genetic and life history diversity, and productivity." (*Id.*). In addition to adaptive implementation, other elements common to all alternatives include

biological goals; planning, monitoring and reporting; state of emergency provisions; and non-flow measures. (*ES*, p. 16 [00468652].) Alternatives 2 through 4 also require that a minimum base flow of 800–1,200 cfs at Vernalis be maintained between February and June. (*ES*, p. 15 [00468651].)

Chapter 3 of the SED explains why the Board chose to evaluate only flow alternatives, noting that the Board "focused on establishing flow water quality objectives because the best available science identifies flow as a major factor affecting fisheries and other instream uses of water in the Delta." (*Ch. 3*, p. 4 [00469739].) The Board also discussed the importance of flow to the various life stages of fall-run salmon in Chapter 19, stating that "[a]nalysis of historical abundance indicate that late winter and spring flows (February through June) in the tributaries and mainstem SJR have had a strong influence on survival and abundance of SJR Basin salmon since records began in the 1940s or 1950s." (*Ch. 19*, pp. 3-4 [00473500-501].) The Board concluded that "[s]cientific evidence indicates that in order to protect fish and wildlife beneficial uses in the SJR Basin, including increasing the populations of SJR Basin fall-run Chinook salmon and Central Valley steelhead to sustainable levels, changes in the current flow regime of the SJR Basin are needed." (*Id.* at p. 4 [00473501].)

The Board explained that it selected the three eastside salmon-bearing tributaries because "that portion of the watershed supports an existing fishery that can be maintained and improved." (*Ch. 3*, p. 4 [00469739). The Board stated that it focuses on the SJR basin fall-run Chinook salmon and Central Valley steelhead "because these anadromous species are among the most sensitive to inflows from the SJR basin to the Bay-Delta. Flows that benefit these species will also generally benefit other species in the SJR Watershed." (*Ibid.*)

With respect to the geographic scope of the alternatives, the Board explained that the flow alternatives focused on the Stanislaus, Tuolumne, and Merced Rivers, rather than just Vernalis, because these rivers support a variety of critical life history stages, including juvenile rearing in the tributary streams. (*Ch. 3*, p. 5 [00469740].) The Board explained that it eliminated alternatives that would expand the geographic area because those alternatives would not support native fish populations or reduce or avoid impacts. (*Ibid*.)

The Board also discussed why the unimpaired flow methodology was used, rather than other alternative flow regimes, noting that using a percentage of unimpaired flow, combined with adaptive implementation, will allow for the relative quantities of water required to vary by month

and year and will more closely mimic the natural hydrographic conditions to support the migratory fish species. (*Ch. 3*, p. 5 [00469740].) The Board described alternative flow methodologies, including alternatives proposed by commenters during the CEQA process, and discussed why each alternative methodology was not selected over the unimpaired flow methodology. (*Id.* at pp. 20-33 [00469756-769].) For example, the Board considered but eliminated fixed monthly flow-based programs as alternatives, explaining that "the historical practice of developing fixed monthly flow objectives to be met from limited sources has been shown to be less than optimal in protecting fish and wildlife beneficial uses in the SJR Basin." (*Id.* at p. 20 [00469756].)

Finally, the Board discussed the SalSim model, described as a "life-history population simulation model for fall-run Chinook salmon," developed by the California Department of Fish and Wildlife to provide "insight into potential management decisions being evaluated for this Bay-Delta Plan update." (*Ch. 19*, p. 74 [00473571].) The SED notes that during the staff's exploration of the model they discovered that "the treatment of two of the most important salmon habitat attributes related to flow in the project area, water temperature and floodplain inundation, are not represented by the model in a manner that is consistent with current scientific information." (*Ibid.*). The SED proceeds to discuss the SalSim model at length, including how the Board used SalSim, as well as the model's limitations. (*Id.* at pp. 75-87 [00473572-584].)

CEQA requires that an EIR describe a "range of reasonable alternatives to the project [] which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives." (*CEQA Guidelines*, § 15126.6, subd. (a).) The EIR need only set out a range of alternatives necessary to permit a reasoned choice and "examine in detail only the ones that the lead agency determines could feasibly attain most of the basic objectives of the project." (*Id.* at § 15126.6, subd. (f).) "There is no ironclad rule governing the nature or scope of the alternatives to be discussed other than the rule of reason." (*Id.* at § 15126.6, subd. (a).)

"An EIR need not consider every conceivable project alternative or alternatives that are infeasible." (*Bay-Delta, supra,* 43 Cal.4th at p. 1163.) "Nor is it required to consider specific alternatives proposed by members of the public or other outside agencies. But it must consider a reasonable range of potentially feasible alternatives that will foster informed decisionmaking and public participation." (*Save Our Capitol!, supra,* 87 Cal.App.5th at p. 703.) "Although a lead

agency may not give a project's purpose an artificially narrow definition, a lead agency may structure its EIR alternative analysis around a reasonable definition of underlying purpose and need not study alternatives that cannot achieve that basic goal." (*Bay-Delta,* at p. 1166.)

When evaluating a challenge to the alternatives assessment under CEQA, courts first "review whether the EIR's alternatives analysis complies with CEQA's procedural mandates and then decide whether substantial evidence supports the decisions made." (*Save Our Capitol!, supra,* 87 Cal.App.5th at p. 703.) Petitioners "must show that the alternatives are manifestly unreasonable and that they do not contribute to a reasonable range of alternatives." (*Ibid.*)

Whether the Board erred by framing the objective in numeric terms of increased flow rather than more fundamentally in terms of achieving the ultimate goal of better protecting fish is an interesting question. Increased flows are not desirable in their own right, but rather because of their beneficial impact on fish. Essentially, the act of increasing unimpaired flows *could* be viewed as simply a *means* to achieving the true objective of protecting fish, rather than the objective itself. If that is the case, then as Stockton East contends, the goal should be expressed in terms of providing for the "reasonable protection of fish and wildlife in the LSJR Watershed." (Stockton East Op. Br., p. 7.) If the objective was so framed, one might argue that non-flow alternatives could be considered alongside flow alternatives to meet the objectives, if the non-flow alternatives could serve as effective replacements for the flow objectives. The record, however, establishes that flows are essential to the reasonable protection of fish, eliminating the option of considering a non-flow alternative as a substitute for requiring flows.

The basic principles on which petitioners' argument rests finds support in case law. *WATER, supra,* 78 Cal App. 5th 683, concerned a county's approval of a project to revive a shuttered water bottling plant. In assessing the subsequent challenge under CEQA, the Court of Appeal observed that the county had "largely defined the project objectives as operating the project as proposed." The court explained:

> [I]f the principal project objective is simply pursuing the proposed project, then no alternative other than the proposed project would do. All competing reasonable alternatives would simply be defined out of consideration. In taking this artificially narrow approach for describing the project objectives, the County ensured that the results of its alternatives analysis would be a foregone conclusion. It also, as a result, transformed the EIR's alternatives section—often described as part of the "core of the EIR"—into an empty formality.

(*Id.* at p. 692.)

With these principles in mind, the Court has reviewed the record and history of the Plan related to the flow requirements to determine whether the Board violated CEQA by devising an artificially narrow project objective that improperly excluded consideration of any non-flow alternatives. The Court begins by recognizing that the Board did not *create* an objective defined in terms of flow for the first time in December 2018. Rather, the Board *amended* an existing objective that had already been defined in terms of flow.

Flow objectives have been part of the Bay-Delta Plan's framework for decades. "The State Water Board first established the flow objectives for the San Joaquin River at Vernalis in the 1995 Bay-Delta Plan to protect fish and wildlife beneficial uses," designing the flow regime "based on the limited scientific information available at the time." (*2009 NOP*, p. 9 [00000023].) The Board implemented the flow objectives in its Decision 1641. (*Ibid.*) Parties challenged D-1641 and the Board's CEQA compliance, resulting in coordinated proceedings and ultimately the issuance of the *SWRCB Cases, supra*, 136 Cal.App.4th at p. 674. The Board then amended the Bay-Delta Plan to address the Court of Appeal's ruling regarding the pulse flow objectives. (*Intro*, p. 12 [00468848].) The resulting 2006 Bay-Delta Plan is the currently operative flow regime and is the basis of the no project alternative. (*Intro*, p. 8 [00468844].) The Board described in detail the procedural history of the instream flow requirements and the various agreements, rules, and orders addressing the flow requirements: "The existing and historical instream flow requirements for the major SJR tributaries consist of requirements set forth in water quality control plans, water right decisions, Federal Energy Regulatory Commission (FERC) proceedings, agreements and settlements, and biological opinions (BO) issued pursuant to the Federal Endangered Species Act." (*Tech. Rep.*, pp. 3-3 – 3-13 [00474194-204].)

Had the Board's action in 2018 been the first time the Board ever created an objective partially framed in terms of numeric flow rather than the ultimate objective of better protecting fish, the parties' contentions might have been more tenable. But given how ingrained flow objectives are in the Bay-Delta Plan, it would be unreasonable and unfair at this point to fault the Board for seeking to modify the existing flow objectives with alternate flow regimes.

Moreover, greater unimpaired river flows are more accurately viewed not as simply one of several interchangeable means of protecting fish but as an inextricable component of the ecosystem fish need. The notion that flows are essential to the health of fish and the ecosystem

necessary to sustain them is reflected in a Legislative requirement that the Board "develop new flow criteria for the Delta ecosystem necessary to protect public trust resources. … The flow criteria for the Delta ecosystem shall include the volume, quality, and timing of water necessary for the Delta ecosystem under different conditions." (§ 85086, subd. (c)(1).) The report issued in response to this Legislative direction acknowledges the complexity of addressing the ecosystem challenges:

> While folks ask 'How much water do fish need?' they might well also ask, "How much habitat of different types and locations, suitable water quality, improved food supply and fewer invasive species that is maintained by better governance institutions, competent implementation and directed research to fish need?' The answers to these questions are interdependent. We cannot know all of this now, perhaps ever, but we do know things that should help us move in a better direction, especially the urgency for being proactive. We do know that current policies have been disastrous for desirable fish.

(*Flow Criteria Report*, p. 1 [00522616].) The Board stated in response that "the State Water Board concurs with this cautionary note [and] further cautions that flow and physical habitat interact in many ways, but they are not interchangeable. The best available science suggests that current flows are insufficient to protect public trust resources." (*Id.* at pp. 1-2 [00522616-617].)

The Board's intent with the plan amendments was to revise existing flow requirements to design a flow regime that better protects fish, given the persistent decline in fish populations. (See, e.g., *2009 NOP* [00000021] ("Since the adoption of the 2006 Bay-Delta Plan, concerns related to protection of beneficial uses in the Bay Delta have escalated. Central Valley salmonids have experienced significant declines at the same time various pelagic species continue to decline.").) The Board noted that "[n]early every feature of habitat that affects native fish and wildlife is, to some extent, determined by flow (e.g., temperature, water chemistry, physical habitat complexity. These habitat features, in turn, affect risk of disease, risk of predation, reproductive success, growth, smoltification, migration, feeding behavior, and other physiological, behavioral, and ecological factors that determine the viability of native fish." (*ES*, p. 9 [00468645].) The record includes technical reports and testimony to support the conclusion that flows are essential for addressing the ecological crisis in the tributary watersheds and for the viability of anadromous fish. (See, e.g., *Tech. Rep.*, p. 3-28 [00474219] ("Analyses indicate that the primary limiting factor for salmon survival and abundance is reduced flows during the late

winter and spring when juveniles are completing the freshwater rearing phase of their life cycle and migrating from the SJR basin to the Delta," citing various scientific reports.).)

The Board held workshops to provide the public the opportunity to participate in discussions of the Technical Report, releasing a draft in the Fall of 2010 and holding public workshops in early 2011 to receive input on the value of the information and analytical tools for informing the Board's decision making. (*Tech. Rep.*, p. 1-1 [00474130].) The Board revised the Technical Report and reissued it for public review, also seeking scientific peer review of the report at that time. (*Id.* at p. 1-2 [00474131].) In one response to the request for peer review, a scientist working for the Oak Ridge National Laboratory reported that "[t]hree aggravating factors that previously contributed to declining numbers [of fall Chinook salmon] have recently been mitigated to some extent. These include availability of spawning gravel, mortality at export facilities in the Delta, and harvest. By a process of elimination, flow remains as a leading causal factor to consider." (November 14, 2011, report from Dr. Henrietta Yager, p. 5 [00020820].) She also notes that "[h]igher flows can reduce predation risk by allowing smolts to occupy a larger volume of water, by increasing turbidity (pulse flows) and by decreasing temperatures." (*Id.* at p. 8.) The Board revised the Technical Report to address peer-review comments in 2012 and appended it to the SED. (*Tech. Rep.* [00474114 *et seq*.].)

The record also discusses that other actions, including many suggested by the parties as potential alternatives, should be taken along with adjustments to the flow requirements to support the viability of the fish populations. However, nothing in the record supports the conclusion that any of those options alone, without revising the flow requirements, would be sufficient to achieve the narrative objectives of the plan amendments. (See, e.g., *MR 2.4*, p. 17 [00507281] ("there is no evidence of the efficacy of non-flow measures to protect fish and wildlife beneficial uses, the amount of water that would be saved through non-flow measures, or how the non-flow measures would achieve the plan amendment's goals and objectives described in Chapter 3, *Alternatives Description*.").)

The Board's decision to only consider flow alternatives also finds support in caselaw. In *Bay-Delta*, the Supreme Court evaluated a program EIR developed by a consortium of eighteen federal and state entities ("CALFED") for a program to restore the Bay-Delta's ecological health and improve management of Bay-Delta water for the various beneficial uses. (*Bay-Delta, supra*, 43 Cal. 4th at 1151-52.) Parties challenged the EIR for failing to assess an alternative that would

reduce Delta exports. CALFED staff had considered comments from parties suggesting an option for reduced exports and had concluded that the option would "exacerbate rather than reduce the conflicts that the CALFED Program was seeking to address." (*Id.* at p. 1164.) Citing the response to comments, the Supreme Court concluded that "an EIR need not study in detail an alternative that is infeasible or that the lead agency has reasonably determined cannot achieve the project's underlying fundamental purpose." (*Id*. at p. 1165.)

Here, after determining that "eliminating or reducing flow as an element of the plan amendments would not achieve their established purpose and goals," the Board discussed the fact that the program of implementation will include non-flow measures that will "complement protections afforded by the LSJR flow objectives; thus, the plan amendments include recommendations for non-flow measures, such as floodplain and riparian habitat restoration, predatory control, fish hatchery development or modifications, and fishing restrictions, and fish transportation[.]" (*MR 2.4*, p. 17 [00507281].) Consistent with the reasoning in *Bay-Delta*, the Board properly exercised its discretion when declining to include a non-flow measure alternative and determining instead to include such measures as part of the POI. The record supports the conclusion that instream flows have been a fundamental part of the Bay-Delta Plan for many years and thus designing a project to modify flows is consistent with the framework of the Bay-Delta Plan and past practice. The Board did not need to reframe decades of precedent and state the project objectives without reference to flows to comply with CEQA.

Having concluded that the Board did not violate CEQA by specifically addressing flow in the project description and designing alternatives around unimpaired flow scenarios, the Court turns to the question of whether the range of alternatives considered was reasonable. The alternatives "are to be limited to ones that would avoid or substantially lessen any of the project's significant effects, and of those alternatives, the EIR need examine in detail only those alternatives that the lead agency determines could feasibly attain most of the project's basic objectives." (*Save Our Capitol!, supra,* 87 Cal.App.5th at pp. 702-703.)

In this case, the Board evaluated a no-project alternative, the current flow regime under the 2006 Bay-Delta Plan, which is measured only at the SJR at Vernalis. (*Ch. 3*, p. 4 [00469739].) The no project alternative "assumes that the flows would continue to be the responsibility of USBR and that the objectives would be met with additional releases from New Melones Reservoir on the Stanislaus River." (*Ch. 3*, p. 14 [00469749].) CEQA Guidelines

provide that the "purpose of describing and analyzing a no project alternative is to allow decision makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project." (*CEQA Guidelines*, § 15126.6, subd. (e)(1).) "When the project is the revision of an existing land use or regulatory plan, policy or ongoing operation, the 'no project' alternative will be the continuation of the existing plan, policy or operation into the future." (*Id.* at § 15126.6, subd. (e)(3)(A).) Absent the proposed amendments, the 2006 Bay-Delta Plan represents the status quo. The Board was not required to pretend as if there is not an existing, operable Plan in evaluating the no project alternative, as suggested by Merced ID.

In designing the three unimpaired flow alternatives to the status quo, the Board explained that there are two principal methods for developing a flow objective which could be considered as alternatives: *fixed monthly flows* on one hand, and on the other, *a percent of unimpaired flow*, defined as the "water production of a river basin, unaltered by upstream diversions, storage, or by export or import of water to or from other watersheds." (*Ch. 3*, p. 5 [00469740].) The Board chose the unimpaired flow methodology, with a range of options for the February through June timeframe for the three salmon-bearing tributaries and the LSJR. "The unimpaired flow percentages, 20, 40, and 60 percent, were selected as alternatives to capture a range of potential flow alternatives that the State Water Board may implement, thus allowing an examination of alternatives that would feasibly obtain most of the goals of the plan amendments while avoiding or substantially lessening any significant impacts." (*Id.* at p. 90 [00469744].) The Board described at length its consideration, and ultimate rejection, of alternative flow regimes. (*See id.* at pp. 20-33 [00469756-769]). The Board concluded that the three options evaluating different percentages of unimpaired flows, with adaptive implementation, would "feasibly attain most of the basic goals of the plan amendments" while avoiding or substantially lessening their significant environmental effects. (*Id.* at p. 8 [00469743].) "Unimpaired flow clearly identifies the allocation of a seasonally and annually variable quantify of water between the reasonable protection of fish and wildlife and other beneficial uses of water. Establishing the percent of unimpaired flow reflects the State Water Board's explicit balancing of competing beneficial uses—the allocation of water to environmental uses relative to other, primarily agricultural, uses." (*ES*, p. 14 [00468650].)

The record contains extensive technical discussions and modeling results from the different flow regimes considered under Alternatives 2, 3, and 4, evaluating the impact of each

alternative in each resource chapter (Chapters 5–14). The record also contains detailed modeling illustrating the impacts of the alternatives on the Merced, Tuolumne, Stanislaus, and SJR Rivers, temperature, and water supply effects (*App. F.1* [00477207-374], "Hydrologic and Water Quality Modeling" and on areas like groundwater pumping and recharge and agricultural production; *App. G* [00478175-279], "Agricultural Economic Effects of Lower San Joaquin River Flow Alternatives: Methodology and Modeling Results".)

The record demonstrates that the Board conducted a meaningful analysis of alternatives and evaluated a reasonable range of potentially feasible alternatives that allowed for informed decision making and public participation. (*CEQA Guidelines*, § 15126.6, subd. (a).) The Board's selection of unimpaired flow alternatives, including the decision to reject other flow regime frameworks offered by commenters, is supported by substantial evidence and consistent with the rule of reason. (*Bay Delta, supra,* 43 Cal.4th at p. 1167.) Petitioners have failed to carry their burden of demonstrating that the alternatives are "manifestly unreasonable" or that they fail to "contribute to a reasonable range of alternatives." (*Save Our Capitol!, supra,* 87 Cal.App.5th at p. 703.)

Further, Modesto ID has not shown that the Board acted arbitrarily in deciding to rely on the WSE rather than SalSim. The Board described the limitations of SalSim, noting that it is "inherently limited" because it does not "explain how each environmental variable affects growth, movement, survival, and reproduction of fall-run Chinook salmon," and that there were results in the modeling that did not "represent a complete comparative result between baseline and the flow cases that were evaluated." (*Ch. 19*, p. 85 [00473582].) Given the deference afforded the Board under the substantial evidence standard of review for technical decisions, the Court concludes the Board's decision to rely on the output of the WSE model for its alternatives analysis is supported by the record.

Finally, NCRA argues that the Board erred by selecting Alternative 3, which requires an unimpaired flow of between 30%–50%, rather than Alternative 4, which would have required an unimpaired flow of between 50%–60%. NCRA is correct that the record contains evidence that 60% unimpaired flow would be most beneficial to fish and wildlife. The Flow Criteria Report "determined that approximately 60 percent of unimpaired flow at Vernalis from February–June would be fully protective of fish and wildlife beneficial uses in the three eastside tributaries and LSJR when considering flow alone. This level of unimpaired flow, however, also represents the

upper bound above which there would be unacceptably high adverse effects on water supply and temperature control." (*Ch. 3*, p. 10 [00469745].)

But there was also evidence that Alternative 3 with adaptive implementation "provides flows in a quantity necessary to achieve functions essential to native fishes, such as increased floodplain inundation, improved temperature conditions, improved migratory conditions, and other conditions that favor native fishes over nonnative fishes (Chapter 19, *Analysis of benefits to Native Fish Populations from Increased Flow Between February 1 and June 30,* Tables 19.3 through 19-14 [temperature] and Tables 19-19 through 19-24 [floodplain])." (*Ch. 18*, p. 27 [00473468].) The Board acknowledged the "difficult tradeoff between providing sufficient inflow to support and maintain the natural production of viable native fish populations migrating through the Delta or flows in a quantity necessary to achieve functions essential to native fishes, as is reflected in goals 1 and 3, and taking into consideration all of the demands being made of the water, as reflected in goal 6." (*Id*. at p. 26 [00473467] (referencing some of the 8 specific goals for the flow objectives).) After explaining these competing considerations, the Board concluded that "LSJR Alternative 3, with adaptive implementation, strikes a balance between goals 3 and 6 more fully than the other LSJR alternatives." (*Id*. at p. 27 [00473468].)

In 2016, Board staff specifically acknowledged the 2010 Flow Criteria Report and the reasons the Board moved away from Alternative 4 in a workshop discussing the impacts: "[The 2010 Report] concluded that 60% of the flow should be left in the river to protect fish and wildlife, but it didn't consider uses like ag, municipal, drinking water or hydropower. … So how do you balance that? So that is the hard thing the board has to deal with. So unlike the 2010 report, the SED that we released back in September does all of the analysis. And that is what this technical analysis is about is, 'How do you balance the flow proposal, the benefits of the flow against other uses of the water,' and 'What are the water supply effects, the ag effect, the economic effects?'" (Transcript from December 2016 workshop, pp. 7-8 [00408088-089].) The record shows that the Board studied, analyzed, and grappled with the various countervailing considerations in selecting among the four alternatives. Substantial evidence supports the Board's decision to select Alternative 3 as the preferred alternative.

VIII. Whether the Board's Analysis of Impacts was Adequate under CEQA

Several petitioners raise arguments that the SED fails to adequately consider environmental impacts. Included in the concerns raised about impacts is the assertion that the

SED failed to adequately study the direct and indirect water supply impacts associated with the unimpaired flow requirements. (Merced ID Op. Br., pp. 45-49; City of Modesto Reply Br. 17-19). Some argue that the WSE model did not accurately quantify impacts on city and municipal users and that it contains faulty assumptions with unreasonable operational parameters that misrepresent the impact on water supply. (City of Modesto Op. Br., pp. 15-20; Stockton East Op. Br., pp. 11-12; Modesto ID Op. Br., p. 33-34). Some argue that the SED underestimates the water supply impacts because the Board makes unreasonable assumptions that increased groundwater pumping will be able to replace the reduced surface water supplies; understates long-term reductions in water supply by averaging shortages by tributary; fails to account for cumulative and indirect impacts; and fails to analyze impacts to domestic wells. (Stockton East Op. Br., pp. 5, 12,13; Modesto ID Op. Br., pp. 40-47; Merced ID Op. Br., pp. 50-52; Westlands Op. Br., 45-48; City of Modesto Op. Br., pp. 20-32.) Stockton East also asserts that the SED incorrectly concludes that municipal water supplies will not be affected while ignoring that the project would produce "drastic adverse impacts on Stockton East municipal users, completely eliminating their supply in dry years or rendering it unstable in wet years." (Stockton East Op. Br., 13.)

Petitioners also raise concerns about the adequacy of the SED's assessment of impacts on agriculture and groundwater. They take issue with the thresholds of significance and methods the Board used to evaluate agricultural land conversion and the impact on groundwater and argue that the Board did not appropriately consider SGMA's impacts on farmland conversion. (Farm Bureau Op. Br., pp. 26-29; Modesto ID Op. Br., pp. 34-36.) Stockton East argues that the SED fails to accurately disclose the environmental effects of implementing the project, falling short in analyzing impacts on groundwater and agricultural resources. (Stockton East Op. Br., p. 12.) Some petitioners also argue the Board did not adequately analyze the impact of implementation provisions regarding reservoir operations and carryover storage targets. (Modesto ID Op. Br., 28-30; Westlands Op. Br., pp. 44-45).

Modesto ID also argues that the SED fails to analyze the impacts of the plan amendments in sequentially dry years, asserting that the Board was not permitted to evaluate the environmental impact of the alternatives in successive dry years by relying on averaged data. (Modesto ID Op. Br., pp. 26-28.) Modesto ID asserts that the SED fails to analyze impacts to water temperature (*id.* at p. 28); domestic wells (*id.* at p. 30); and Williamson Act contracts (*id.*

at pp. 35-36). Finally, Modesto ID argues that the SED contains an inadequate climate change analysis. (*Id.* at pp. 36-39).

A lead agency is required to prepare an EIR with a "sufficient degree of analysis to provide decisionmakers with information which enables them to make a decision which intelligently takes account of environmental consequences." (*CEQA Guidelines*, § 15151.) The determination whether a project may have a significant effect on the environment "calls for careful judgment, based to the extent possible, on scientific and factual data." (*CEQA Guidelines*, § 15064, subd. (b)(1).) In reaching a conclusion about whether a project has significant impacts, the lead agency must show the "analytic route the … agency traveled from evidence to action." (*Sierra Watch v. County of Placer* (2021) 69 Cal.App.5th 86, 101-102, quoting *Laurel Heights, supra,* 46 Cal.3d at p. 404.)

In determining the standard of review when analyzing challenges to an agency's discussion of significant project impacts, whether substantial-evidence review is appropriate depends on the nature of the challenge. The California Supreme Court's guidance is that a substantial-evidence review is appropriate under circumstances where an agency chose to "use a particular methodology and reject another." (*Sierra Club v. County of Fresno* (2018) 6 Cal.5th 502, 514.) In contrast, where the claim is that the description of an environmental impact is insufficient because it "lacks analysis or omits the magnitude of the impact is not a substantial evidence question. A conclusory discussion of an environmental impact that an EIR deems significant can be determined by a court to be inadequate as an informational document without reference to substantial evidence." (*Id.* at p. 515.) As the Supreme Court explained, "three basic principles" that apply when evaluating an impacts analysis:

> (1) An agency has considerable discretion to decide the manner of discussion of potentially significant effects in an EIR. (2) However, a reviewing court must determine whether the discussion of a potentially significant effect is sufficient or insufficient, i.e., whether the EIR comports with its intended function of including detail sufficient to enable those who did not participate in its preparation to understand and to consider meaningfully the issues raised by the proposed project. (3) The determination whether a discussion is sufficient is not solely a matter of discerning whether there is substantial evidence to support the agency's factual conclusions. The ultimate inquiry . . . is whether the EIR includes enough detail to enable those who did not participate in its preparation to understand and to consider meaningfully the issues raised by the proposed project.

(*Id*. at pp. 515-516.)

Finally, the agency's evaluation of an impact's significance is subject to substantial evidence review. "A lead agency has the discretion to determine whether to classify an impact described in an EIR as 'significant,' depending on the nature of the area affected." (*League to Save Lake Tahoe v. County of Placer* (2022) 75 Cal.App.5th 63, 94.) Substantial evidence to support the impact analysis means "enough relevant information and reasonable inferences from this information that a fair argument can be made to support a conclusion, even though other conclusions might also be reached." (*Ibid.*, citing *CEQA Guidelines* § 15384, subd. (a).)

The Board analyzed and discussed the impacts to each affected resource in separate chapters in the SED devoted to each impacted resource area, including aquatic biological resources (*Ch. 7*, pp. 58-151 [00470027-120]; terrestrial biological resources (*Ch. 8*, pp. 37-69 [00470354-386]); groundwater resources (*Ch. 9*, pp. 42-69 [00470442-469]; recreation resources and aesthetics (*Ch. 10*, pp. 20-52 [00470496-528]); agricultural resources (*Ch. 11*, pp. 34-66 [00470567-646]); and energy and greenhouse gases (*Ch. 14*, pp. 27-54 [00471132-159]). In each chapter, the SED discusses the modeling results and the anticipated impacts on the specific resource areas and identifies the thresholds by which the SED measures whether the impacts may be significant. The Court highlights below the key resource areas challenged by the parties and where the Board has concluded that LSJR Alternative 3 would have a "significant and unavoidable impact." (*Ch. 17*, p. 2 [00473369].)

A. *Impacts to Agricultural Resources*

In the chapter addressing agricultural resources, the SED assesses potential impacts of the alternatives on agricultural resources in Merced, Stanislaus, and parts of San Joaquin counties, and identifies the locations and types of affected farmland. (*Ch. 11*, pp. 1-2 [00470532-533].) The SED focuses on "the potential conversion of irrigated farmland to nonagricultural uses as a result of a reduction in surface water supplies" associated with the LSJR alternatives. (*Id.* at p. 3 [00470536].) It identifies where an alternative could potentially cause conversion of certain types of farmland to nonagricultural use, or create conflicts with zoning, Williamson Act protection, or other agricultural land use policies or regulations. (*Id.* at p. 34 [00470567].)

For each alternative, the SED also analyzes the acreage of select crops and their response to reduced water availability compared to baseline. For Alternative 3, the analysis shows an average cropped acreage reduction compared to baseline of 24,902 acres, representing a 4.8 percent reduction in average cropped acreage. (*Ch. 11*, p. 54 [00470599].) The SED shows the

impact for individual affected entities by crop type (*see Id.*, beginning at p. 53 [00470598] for the Figures addressing the impacts of Alternative 3.)

The Board relied on four models to assess agricultural impacts, describing the models in general in Chapter 11 and more specifically in various appendices. (*Ch. 11*, pp. 35-45 [00470568-584].) The models include the SWAP model, which is based on economic behavior to maximize crop production profit and reflects grower behavior observed during times of limited water supply. (*MR 3.5*, p. 2 [00524414].) Appendix G of the SED describes the "methods and modeling results that estimate the potential effects of the LSJR alternatives on groundwater and agricultural production, as well as the associated economic effects in the LSJR Watershed," with a lengthy discussion of the inputs to and results generated by the SWAP model, including results by water year type (wet, above normal, below normal, dry, and critically dry). (*App. G*, beginning at 00478184.) In response to comments the Board received during the CEQA process that the SWAP model did not analyze the effect of consecutive dry years on permanent crops, the Board stated that the "purpose of the State Water Board's SWAP modeling was to help inform a programmatic analysis of whether or not the conversion of Designated Farmland to nonagricultural uses could result in potentially significant adverse physical impacts on the environment. The model was not meant to predict with accuracy how growers might manage permanent crops, but rather to provide a relative idea of the scope of potential acreage that would receive reduced irrigation when compared to a baseline condition." (*MR 3.5*, p. 12 [00524424].)

The Board established a 4 percent threshold for designating the conversion of agricultural land to nonagricultural uses as significant. The Board referenced a 2013 California Water Plan Update for the San Joaquin Hydrologic Region which projected permanent conversion of agricultural land to non-agricultural uses in the region affecting between 6 and 14 percent of irrigated acreage annually by 2050 due to urbanization. (*Ch. 11*, p. 40 [00470573].) The Board explained in the SED that after considering the factors involved in urban development and the impact of reduced water supplies on agricultural land conversion, the Board determined that a reduction of 4 percent or greater in any one district was a conservative threshold for determining significance for irrigated agriculture. (*Ibid.*) The SED concludes that for Alternative 3 "according to the number of acres that would no longer be considered Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as predicted by the SWAP model, and the

possibility of conversion of these acres to nonagricultural uses, impacts on agricultural resources would remain significant and unavoidable." (*Id.* at p. 55 [00470612].)

B. *Impacts to Groundwater Resources*

In the chapter addressing groundwater resources, the SED analyzes "increased groundwater pumping, reduced groundwater recharge from surface water percolation, and related effects (e.g., subsidence) that may occur as a result of the effect of the LSJR alternatives on surface water supplies to the irrigation district service areas." (*Ch. 9*, p. 1 [00470396].) The SED describes the geologic and geographic reasons why the impacts on groundwater cannot be determined with certainty. (*Id.* at p. 2 [00470397]). The SED addresses SGMA's potential effect on the analysis, noting that "since the groundwater protections that will be afforded by SGMA cannot be determined at this time with precision, this chapter evaluates the potential impacts on groundwater levels from the LSJR alternatives without including SMGA as an ameliorating factor, which means that estimates of impacts are likely more conservative (i.e., worse) than would occur in the groundwater basins over time." (*Id.* at p. 3 [00470399].)

The SED assesses groundwater impacts to be significant that would either "[s]ubstantially deplete groundwater supplies or interfere substantially with groundwater recharge," or impacts that could "cause subsidence as a result of groundwater depletion." (*Ch. 9*, p. 42 [00470442].) The SED quantifies the threshold of significance as a "1-inch decrease in the irrigation district groundwater balance across a subbasin caused by the LSJR alternatives," because this could "eventually produce a measurable decline in groundwater levels and a substantial depletion of groundwater resources prior to the full implementation of SGMA. Therefore, a threshold of 1-inch reduction in reduction in the irrigation district groundwater balance is used in the impact analysis[.]" (*Id.* at p. 46 [00470446].) The Board explains that it determined the 1-inch reduction threshold after analyzing the specific yield estimates for groundwater basins." (*Ibid.*)

The SED discusses how the models produced estimates of diversions, assesses the groundwater pumping by irrigation district, and illustrates these results in graphs. (*Ch. 9*, pp. 45-52 [00470445-452].) For Alternative 3, the SED concludes that "average reduction in net irrigation district groundwater balance under LSJR Alternative 3 could exceed 1 inch across the Modesto, Turlock, and Extended Merced Subbasins" leading the Board to conclude that "LSJR Alternative 3 could potentially substantially deplete groundwater supplies and interfere with

groundwater recharge and affect groundwater quality in these subbasins. Therefore, impacts on groundwater resources would be potentially significant and unavoidable." (*Id.* at p. 62 [00470462].)

C. *Impacts to Service Providers*

Chapter 13 addresses potential impacts on service providers—the "public providers of water supply for municipal, industrial, and agricultural uses, and providers of wastewater treatment. Private wells that provide domestic water supply are also included in this chapter." (*Ch. 13,* p. 1 [00470693].) The chapter defines the impacts that would be considered potentially significant as those that would (1) "require or result in the construction of new water supply facilities or wastewater treatment facilities" or their expansion; (2) "[v]iolate any water quality standards such that drinking water quality" in either public water systems or domestic wells would be affected; or (3) would "[r]esult in substantial changes to SJR inflows to the Delta such that insufficient water supplies would be available to service providers relying on CVP/SWP exports." (*Id.* at p. 46 [00470741].)

The analysis for Alternative 3 concludes that the WSE model results "predict surface water diversions would be generally reduced when compared to baseline conditions on the Stanislaus [12 percent reduction], Tuolumne [14 percent reduction], and Merced Rivers [16 percent reduction]." (*Ch. 13*, p. 65 [00470760].) It also concludes that "as a result of the substantial reduction of surface water supply on the rivers, it is expected that there would be a substantial depletion of groundwater supplies in the Modesto, Turlock, and Extended Merced Subbasins." (*Id.* at p. 3 [00470695]).) The SED concludes that these reductions are likely to lead service providers to need to replace or expand infrastructure facilities to replace reduced water supplies, which would be a significant impact. (*Id.* at p. 66 [00470761].) The SED also states that "[t]he storage capacities for the reservoirs are fixed. Accordingly, there is no possibility of increasing total water supply to provide more water for surface water diversions as mitigation under LSJR Alternative 3. More water released to the river would leave less water for surface water diversions." (*Ibid.*)

D. *Energy and Greenhouse Gas Impacts*

In the chapter addressing energy and greenhouse gas impacts, the Board identified potentially significant impacts, including in the reduction of hydropower production during the months of July to September due to less water stored in the reservoirs (*Ch. 14,* p. 32 [00471137];

increased electric consumption if groundwater pumping is increased as a result of lower diversions available from the river systems (*id.* at pp. 34-35 [00471139-140]); and greenhouse gas (GHG) emissions due to offsetting power production from gas-fired resources (*id.* at p. 36 [00471141]). The Board determined that GHG impacts would be significant if the LSJR alternatives result in the generation of GHG emissions above the threshold for significant impacts on GHG emissions using the AB 32 threshold of 10,000 metric tons of carbon dioxide per year or if the alternative leads to a conflict with a plan or regulation adopted to reduce GHG emissions.[27] (*Id.* at pp. 27, 47 [00471132, 00471152].) The SED concludes that for Alternative 3, the greenhouse emissions may be significant and unavoidable, with the predicted increase coming from increases in groundwater pumping. (*Id.* at p. 42 [00471147].)

The SED determined that energy impacts would be significant if the LSJR alternatives "[a]dversely affect the reliability of California's electric grid" or "[r]esult in inefficient, wasteful, and unnecessary energy consumption." (*Ch. 14,* p. 27 [00471132].) For the energy assessment, the SED evaluated the likely reduction in hydropower generation during the summer months of July through September "because less water would be stored during those months in the reservoirs as a result of being released earlier in the year[], thereby reducing the amount of water available for hydropower generation," which has the potential to stress the California electric grid which generally experiences peak demand during the summer months. (*Id.* at p. 32 [00471137].) To assess whether the impact on the grid would present a significant impact, the Board conducted a power flow assessment which tests the resilience of the grid during normal and contingency conditions when grid experiences unplanned outages of major power system equipment. (*Id.* at p. 33 [00471138].) The SED presents a power flow analysis for Alternative 3 showing that no power grid impacts would result. (*Id.* at pp. 33-34 [00471138-139].)

E. *Use of the WSE Model to Evaluate Impacts*

WSE is a water balance model designed to allow the Board to assess the impacts of the flow alternatives to "streamflow and water supply, and surface water hydrology effects such as hydropower, flooding, sedimentation, and erosion." (*MR 3.2,* p. 1 [00516620].) The WSE is a planning model, "not meant to model precise conditions, but rather aid in planning by presenting

[27] The Legislature enacted Assembly Bill 32, "the California Global Warming Solutions Act," in 2006, establishing "a cap on statewide GHG emissions" and creating "the regulatory framework to achieve the corresponding reduction in statewide emissions." (*Ch. 14,* p. 16 [00471121].)

a set, or sets of conditions that represent the likelihood of future conditions based on actual hydrological events that span both drought and flood sequences." (*App. F-1*, p. 3 [00477235].) "The primary utility of a planning-level model is in comparative analysis, where the physical system is represented at a sufficient level of precision in order to accurately represent the most important effects of perturbations in the system. In this case, the WSE model is configured to determine … the change from baseline of water supply stored and available to meet diversion demands as a result of alternatives incorporating streamflow requirements." (*Ibid.*)

In Appendix F-1 to the SED, entitled "Hydrologic and Water Quality Modeling," the Board provided a detailed discussion of the WSE model and how it worked to supply the data that supported the Board's analysis of environmental impacts. The Board explained how it assessed and determined WSE baseline and alternatives, flow targets, monthly surface water demand, water availability for diversion, and the appropriate balance between river and reservoir water. The Board reviewed minimum monthly flows at various points on the tributaries. (*App. F.1*, pp. 13-19 [00477245-251]). The Board calculated monthly *surface water demand*, including assumptions about groundwater pumping, irrigation district diversions, and CVP contractor demands (*id.* at pp. 19-30 [00477251-262]); and calculated *available water for diversion*, using assumptions about reservoir constraints and operational parameters (*id.* at pp. 30-40 [00477262-272]). The Board explained its calculation methodologies for balancing river and reservoir water (*id.* at pp. 40-56 [00477272-288]) before discussing the modeling results, as well as reservoir storage, baseline conditions, river flows, surface water diversions, and a comparison of the alternatives (*id.* at pp. 57-142 [00477289-374]). The Board explained:

> The model results in the SED present a range of potential operations that are generalized but sufficient in detail to evaluate water supply and other effects of the project from a programmatic perspective. . . . Models are necessarily limited in their representation of implementation-specific operations details. . . . For example, the WSE model shows that the proposed LSJR flow objectives would reduce water diversions for agricultural and municipal uses. . . . However, it is difficult to predict with certainty the ultimate mixture of surface and groundwater conjunctive use, and such details are speculative because they are dependent on local decisions and approvals. For this reason, the programmatic analysis does not, and cannot, attempt to show exactly how water system operators will respond because . . . a complex water-storage and water-delivery system can be operated in many different ways. . . . Specific future responses will depend on many unknowable decisions. Nevertheless, the modeling analysis for the LSJR alternatives provides a reasonable representation of system operations that fully disclose the potential ranges of effects of additional flow requirements.

(*MR 3.2*, p. 2 [00516621].)

F. *Cumulative Impacts*

In Chapter 17, the Board analyzed potential cumulative impacts a variety of areas, including: surface hydrogeology and water quality (*Ch. 17*, pp. 23-26 [00473390-393]); groundwater resources (*id.* at pp. 37-40 [00473404-407]; agricultural resources (*id.* at pp. 45-52 [00473412-419]; service providers (*id.* at pp. 55-61 [00473422-428]; and energy and greenhouse gases (*id.* at pp. 61-65 [00473428-431]).

With regard to agricultural resources, the Board explained that it considered surface water reductions "cumulatively significant" when in combination with past, present, and future projects … [they] could in turn lead to the conversion of agricultural land, including Important Farmland, to nonagricultural uses." (*Ch. 17*, p. 50 [00473417].) With regard to service providers, the Board concluded that there may be significant cumulative effects due to "reduction in surface water availability in the three eastside tributaries substantially," with an increase "in groundwater pumping to compensate … such that groundwater resources are substantially depleted and groundwater levels are lowered." (*Id.* at p. 57 [00473424].) The Board further explained these impacts to service providers could cause "[d]egradation of water quality such that water quality from public water systems and domestic (i.e., private) wells violate drinking water standards," and leave insufficient water supplies to "service providers relying on CVP/SWP exports." (*Ibid.)*

G. *The Board's Impacts Analysis*

Petitioners take issue with the WSE model, arguing that it fails to take into account the effects on water supply and makes improper assumptions about supplies. As the Board explains in response to comments, the WSE model was designed to evaluate flows and the consequences of alterations in the flow regimes, so the model held constant the assumed supply for drinking water as part of the water balance model, using the 2009 baseline values of surface water deliveries. (*MR 3.2*, p. 29 [00516648].) The Board explained that it held supply for municipal surface water demands constant for the purpose of the WSE model (which was then used to evaluate the effects of different flow regimes on the ecosystem, fish, agriculture, groundwater, etc. throughout the SED) because the amount of municipal supply is relatively small compared to agricultural uses and "precise determinations about reductions in supply would be speculative and would depend on either existing or future agreements with the irrigation districts. *For*

purposes of the modeling analysis, these values do not change." (*Ibid.* (emphasis added).) The WSE model is designed to "[m]aximize the quantify of district diversion delivered, and minimize the annual average reduction from baseline (i.e., average water supply effects)" when the model is run to evaluate impacts, and the "surface water supply effects are evaluated by assessing the reduction in surface water availability for diversions *relative to baseline* and the temperature effects." (*Id.* at p. 43 [00516662].) "Once the baseline model run is complete, the WSE model is run again for the LSJR alternatives," and the Board describes that the model operates to allocate water based on demand: "The amount of water available for diversion is often insufficient to meet overall gross demands in a year with low inflow and low reservoir storage. Under these conditions, the WSE model will prioritize allocations of available water based on generalized groups of water rights." (*Id.* at p. 45 [0051664].)

The Court concludes that substantial evidence exists in the record to support the use of the WSE model, as well as the assumptions that went into applying the model, including the decision to hold constant the assumed supply for drinking water as part of the water balance model for purposes of establishing the baseline. "[U]nderlying factual determinations—including, for example, an agency's decision as to which methodologies to employ for analyzing an environmental effect—may warrant deference." (*League to Save Lake Tahoe, supra*, 75 Cal.App.5th at p. 94, citing *Sierra Club v. County of Fresno, supra*, 6 Cal.5th at p. 516.) "When a court determines an agency's decision was supported by substantial evidence, it grants greater deference to the agency's substantive factual conclusions." (*San Diego Citizenry Group v. County of San Diego* (2013) 219 Cal.App.4th 1, 16.)

Turning to the question of whether the Board's assessment of impacts on municipal water supply was adequate, as described generally above, the Board explained in Chapter 13 that it used the WSE model to "estimate potential surface water diversion reductions on each of the three eastside tributaries." (*Ch. 13*, p. 47 [00470742].) The SED discusses the alternatives and model results for Alternative 3, noting that "[t]he extent to which service providers' surface water supplies would actually be reduced is a function of the mechanisms by which they receive the water (e.g., water rights or contracts), existing policies, regulations, and the type of water use they supply." (*Id.* at p. 60 [00470755].) The SED goes on to analyze the potential impact of the flow alternatives on municipal water supply and discusses potential mitigation actions. (*Id.* at pp. 60-69 [00470755-764].) Ultimately, the Board concluded that "if [Modesto] ID experiences

water shortages, its deliveries to service providers serving urban uses (e.g., City of Modesto) could be cut back proportionally, as described in [Modesto] ID's various plans and policy documents." (*Id.* at p. 60 [00470755].) And "[i]f surface water diversions were reduced on the Tuolumne and Merced Rivers, … [Modesto ID, Turlock ID, Merced ID, and the City of Modesto] would be greatly affected." (*Id.* at p. 61 [00470756].)

The SED also discusses the potential impact on Stockton East's source of water within the Plan Area, New Melones Reservoir and the Stanislaus River via transfer agreement with Oakdale Irrigation District and South San Joaquin Irrigation District. (*Ch. 13*, p. 9, Table 13.2 [00470702]; pp. 41-42 [00470736-737].) The SED discusses the shortfall that diverters from the Stanislaus (like Stockton East) are likely to experience under Alternative 3, concluding, as noted above, that the average percentage of reduction in water supply from the Stanislaus is estimated at 12 percent. (*Id.* at p. 65 [00470760].) In response to comments, the Board analyzed the contract allocations to Stockton East under the "New Melones Index" and discussed the impact of meeting demand under different water years compared to baseline levels, including taking into account the modeled carryover storage levels (*MR 3.2*, pp. 61-65 [00516680-684]), concluding that at low reservoir levels, Stockton East's allocations are "drastically reduced." (*Id.* at p. 64, fn. 42 [00516683].) This conclusion contradicts Stockton East's assertion that the use of averages masks potentially serious adverse impacts on municipal water supply. (Stockton East Reply Br., p. 5.)

The SED shows that water supply impacts of the Revised Plan on service providers could be significant, and the record is clear that there will be supply reductions where mitigation will not be possible because of the limitations of the reservoir capacity. (*See, e.g., Ch. 13*, p. 66 [00470761].) When the Board implements the Revised Plan and determines how existing water rights will need to be amended to accommodate the new unimpaired flow requirements, it will have more information about the specific reductions to drive a further evaluation of impacts under the subsequent CEQA review, where appropriate. The Court concludes that the Board satisfied its obligations under CEQA to analyze the impacts on water supplies given the information available. In the SED, the Board's discussion is sufficiently clear and its analysis sufficiently detailed to inform decision makers about the potential consequences of reduced supply from surface and groundwater on municipal uses. (See, e.g., *League to Save Lake Tahoe, supra,* 75 Cal.App.5th at 94 (when determining the adequacy of an EIR's discussion of an impact,

the question is whether the environmental document "includes enough detail to enable those who did not participate in its preparation to understand and to consider meaningfully the issues raised by the proposed project.")

Petitioners also argue that the Board failed to sufficiently analyze the impacts on agriculture. They argue that the Board established a threshold to measure significance without supporting it, relied on a model that did not sufficiently evaluate the impacts, and failed to assess the impact of sequential dry years on agricultural land conversion. Farm Bureau argues that the Board did not support the threshold of significance (a 4-percent conversion) that it established for evaluating potential conversion of agricultural land, asserting that the SED does not contain substantial evidence to support the threshold or satisfy the informational disclosure provisions of CEQA. (Farm Bureau Op. Br., p. 27). Farm Bureau cites to *Sierra Watch v. County of Placer, supra,* 69 Cal.App.5th 86, to support its argument that the SED's thresholds for agricultural land conversion were not supported. In that case, Placer County conducted an environmental review of a project to develop a resort in Olympic Valley near Lake Tahoe. The petitioner alleged that the EIR failed to properly assess the project's traffic impacts on Lake Tahoe and the basin's air quality. Placer County had included a discussion of thresholds for measuring traffic impacts set by the Tahoe Regional Planning Agency, but then did not use those or any other thresholds for determining whether the traffic impacts were significant. (*Id.* at pp. 100-101.)

In contrast here, the Board not only established and explained its threshold determination, but also *applied* that threshold to analyze the significance of potential agricultural land conversion. (*Ch. 11*, p. 55 [00470612].) After doing so, the Board concluded that the Revised Plan would have a potentially significant impact on agriculture. (*Ibid.*) While Farm Bureau takes issue with the particular percentage the Board set to determine significance for agricultural land conversion, Farm Bureau does not present any evidence that a different threshold would have been more appropriate. (See, e.g., *Tracy First v. City of Tracy, supra*, 177 Cal.App.4th at pp. 934-35 ("As with all substantial evidence challenges, an appellant challenging an EIR for insufficient evidence must lay out the evidence favorable to the other side and show why it is lacking. Failure to do so is fatal.").) The Board's determination and application of the significance threshold for agricultural impacts is supported by substantial evidence, and constituted a reasonable exercise of the Board's discretion. *Sierra Watch* does not support any different conclusion because in that case, Placer County's EIR failed to apply *any* standard to

evaluate the significance of traffic and air quality impacts and even failed to come to any "clear conclusion" on whether there would be significant impacts. (*Sierra Watch, supra*, 69 Cal.App.5th at p. 101.)

Farm Bureau and Modesto ID argue that the SED does not contain reliable estimates of agricultural impacts because the Board relied on the SWAP model which has certain limitations. (Farm Bureau Op. Br., p. 27; Modesto ID Op. Br., p. 44.) The Board describes how the SWAP model works and why the Board chose it to evaluate local agricultural economic effects in Master Response 8.1, "Local Agricultural Economic Effects and the SWAP Model." The Board explained that the "SWAP model was selected … to evaluate local agricultural effects because the model is peer reviewed and already widely used by state and federal agencies to model cropping decisions." (*MR 8.1*, p. 1 [00530790].) "Using the SWAP model, one can modify the amount of available water and land in a specific area, and the model will estimate grower responses, including changes in cropping patterns." (*Ibid.*) The Board described the SWAP model's configuration and assumptions, its application to various crops, and its results. (*Id.* at pp. 4-38 [00530793-827].) The Board also explained the SWAP model in Chapter 11, describing the model's assumption that farmers will make decisions to maximize profits subject to given constraints, and how the model accounts for land, water availability and production prices while calibrating to yearly values of land, labor and water supplies, and how the baseline was modeled to determine the impacts of the LSJR alternatives, with tables showing results. (*Ch. 11*, pp. 39-44 [00470572-583].)

The Board addressed the limitations of the SWAP model in Master Response 3.5:

> SWAP models what a grower would have in production in each year of the 82-year period of the model run, 1 year at a time. In other words, each year's applied water deliveries are used to develop the annual crop mix independent of any other year. The model has no knowledge of the crop mix in the previous year or what is expected in the future. This limits the SWAP model from modeling crop effects that may extend over more than 1 year, such as yield reductions for permanent crops in successive dry years. However, this is a limitation shared by all similar crop modeling tools reviewed and no other tools were suggested by commenters. Despite this limitation, the SWAP model is the best available tool for modeling the economic and other physical effects of the LSJR alternatives on agricultural resources.

(*MR 3.5*, p. 14 [00524426].) In Chapter 11, the Board noted another limitation of the model, namely that it uses a "simplified assumption that water use will shift from lower net revenue

crops to high-value crops," meaning that the model "likely presents a more conservative estimate than may actually occur." (*Ch. 11*, p. 2 [00470533].) Although the SWAP model has limitations, the Board concluded that "SWAP is the best available model for estimating the regional agricultural response to a change in water availability in the LSJR area of potential effects. (*Ibid.*)

Farm Bureau cites *Cleveland II, supra,* 17 Cal.App.5th 413, as support for its argument that the Board's use of the SWAP model with its admitted limitations led to a deficient impact assessment. In *Cleveland II,* the lead agency evaluated agricultural impacts from a San Diego transportation plan using data that did not capture information for farmland under 10 acres, even though 68% of the farmland in the county is less than 10 acres. (*Id.* at pp. 444-45.) The appellate court concluded that the impacts analysis was not supported by substantial evidence because gaps in the data was significant enough that it yielded unreliable estimates of existing farmland and of project impacts. (*Id*. at p. 445.)

In contrast here, as noted by the Board, the SWAP model is "widely used by state and federal agencies to model cropping decisions" (*MR 8.1,* p. 1 [00530790]) and there is no evidence in the record that the limitations in the model resulted in significant gaps in understanding the impacts of the Revised Plan on agricultural land. Unlike the EIR in *Cleveland II,* the Court does not find that the limitations in the SWAP model were so significant that the model yielded unreliable estimates of the Plan's agricultural impacts. Rather, the record supports the Board's decision to use the SWAP model because it yielded useful projections for evaluating regional impacts. The Court finds that the Board's discussion of the model and its projected impacts were sufficient to meet the Board's obligation under CEQA to adequately inform decision makers and the public.

Modesto ID argues that in evaluating the agricultural impacts the Board improperly relied on averaged data in violation of its regulations because "data for impacts in successive dry years is readily available." (Modesto ID Op. Br., p. 27.) The Board's regulations state that in preparing an environmental analysis "the board may utilize numerical ranges or averages where specific data are not available; however, the board shall not be required to engage in speculation or conjecture." (Cal. Code Regs., tit. 23, § 3777, subd. (c); see also Pub. Resources Code, §21159, subd. (a).) The Board describes at length its presentation of data and modeling results and rationale for using averages, medians, percentages, cumulative distributions and exceedance

distributions to quantify, analyze and present the impacts analysis in its responses to comments. (*MR 2.3*, pp. 9-23 [00505941-955].) The Board explains that it used exceedance charts to "disclose the full range of effects on irrigated agriculture, including how agriculture will be affected over the entire range of hydrologic conditions. … Exceedance plots and cumulative distributions are industry standard for analyzing programmatic changes." (*Id.* at pp. 22-23 [00505954-55].) Addressing the comments that annual averages "do not fully describe the impacts during critically dry years," the Board stated that "[t]o provide fully disclosure of the range of effects in all years, the SED included exceedance plots, cumulative distributions, and time series of results throughout the SED," allowing "readers to observe the estimated frequency and magnitude of, for example, irrigation reductions to various crop types or changes in flow as compared to baseline." (*Id.* at p. 23 [00505955].) The exceedance plots and cumulative distributions "go beyond simple averages and averages by water year types; show varying degrees of impact and the relative likelihood that the degree of impact may occur along a continuum from minimum to maximum effects." (*Ibid.*)

Chapter 11 shows the impact of the alternatives under the driest conditions on crops grown in the districts within the Plan Area. (*Ch. 11,* Figures 11-9 – 11-14 [00470590-595].) For South San Joaquin Irrigation District, for example, the irrigated acreage stays the same, approximately 60,000 acres, in most years under baseline, but irrigated acreage "starts dropping at the 95 percent exceedance probability—this means that irrigated acreage drops below 58,558 acres about once in every 20 years and can be as low as approximately 47,900 acres." (*Id.* at p. 49 [00470588].) For Alternative 3, while "there would be no reduction in crop acreage about 66 percent of the time," under the lowest irrigated acreage, Alternative 3 would be "slightly lower than baseline (43,930 acres under LSJR Alternative 3 compared with 47,900 acres under baseline)" with crop acreage "lower than baseline in about 34 percent of all years." (*Ibid.*) The SED's presentation of data is accounting for impacts modeled based on "82 years of historic hydrologic conditions from 1922 to 2003," with the models evaluating the alternatives and impacts use a variety of observed data from different sources, described in Appendix F1. (*MR 8.1,* p. 4 (00530793].) The SED relies on actual historic data and then models the potential impacts under various conditions, presenting more than just averaged data to analyze the results, and provides a detailed explanation of the methodology used to analyze impacts on agricultural resources. (*Ch. 11,* pp. 35-48 [00470568-587].)

Modesto ID cites to *San Joaquin Raptor Rescue Center v. County of Merced* (2007) 149 Cal.App.4th 645, in arguing that evaluating environmental impacts by using averages is "unlawful because the average does not reflect the widely variable potential impacts." (Modesto ID Op. Br., p. 27.) In that case, the Court of Appeal took issue with County of Merced's conclusion that a permit for expanded mine activities would not lead to an annual increase in production, where the County relied on historic production numbers rather than the peak annual allowable production numbers under the new permit, which were about double the historic average production. (*San Joaquin Raptor Rescue Center*, *supra,* 149 Cal.App.4th at p. 655.) The Court of Appeal concluded that the nature of the project presented in the environmental document was "fundamentally inadequate and misleading" because of the conflicting signals sent to decision makers and the public about the nature and scope of the activity being proposed. The Court of Appeal, however, did not broadly hold that evaluating environmental impacts using averaged data is unlawful. Rather, it simply concluded that in that case, County of Merced's use of averages, rather than analyzing the impacts if the mine were to produce up to its peak allowable production, was misleading.

The circumstances presented here are not similar to those in *San Joaquin Raptor Rescue Center*. The Court finds that the SED assesses the impacts using actual historic data and other measured inputs to model potential effects of the various alternatives compared to baseline, providing a fair representation of impacts on agriculture in a variety of ways for the public and decision makers. The results presented show a reduction in agricultural production under Alternative 3 under dry conditions, which was assessed to be a significant and unavoidable impact. (See, e.g., *Ch. 11*, p. 55.)

Petitioners argue that the Board violated CEQA by failing to adequately account for the impacts of SGMA on groundwater pumping. The administrative record describes the implementation timeline of SGMA, starting with its passage in 2014 and compliance requirements by 2020 and 2022, depending on the priority of the groundwater basin. (*MR 3.4*, p. 7 [00522806].) SGMA's implementation did not occur on a timeline that permitted the Board to fully account for the law's impact. Any prediction about how SGMA's implementation might translate into impacts, would have been speculative for the Board to predict. In *King & Gardiner Farms v. County of Kern* (2020) 45 Cal.App.5th 814, the appellate court rejected the same type of impacts argument related to SGMA, explaining, "[t]he information about the uncertainty created

by SGMA and the implementation of groundwater sustainability plans for the project area's largest water source provides substantial evidence supporting the determination that a more localized analysis of water supply impacts would be speculative. Accordingly, we conclude that the EIR, when it was prepared and circulated, did not violate the requirement that it analyze water supply impacts to the extent reasonably possible." (*King & Gardiner Farms,* at p. 845.)

The Board provided a master response devoted to discussing groundwater resources, anticipated changes under SGMA, and the limitations on information available regarding SGMA's implementation at length. (*MR 3.4* [00522800-828].) While the Board discussed groundwater pumping as potential mitigation for loss of surface water supplies, the Board recognized the limitations of SGMA whiling noting that SGMA requires "sustainable groundwater management, "not a moratorium on pumping." (*Id.* at p. 20 [00522819].)

Farm Bureau alleges that the Board abused its discretion in selecting and applying the threshold of significance for evaluating groundwater impacts. To assess the potential groundwater impacts associated with the flow alternatives, the Board estimated the net annual change in irrigation district groundwater balance for each groundwater subbasin, using information from a DWR publication. (*Ch. 9,* pp. 45-46 [00470445-46].) The SED shows the average annual net change in irrigation district groundwater balance by subbasin area for each alternative in Chapter 9, Table 9-12. (*Id.*, p. 57 [00470457].) The table shows reductions assuming maximum groundwater pumping based on 2009 and 2014 infrastructure, with the reductions in groundwater balance ranging from 6/10ths of an inch to 2.2 inches. (*Ibid.*) The Board set a 1-inch decline in groundwater balance as the threshold of significance for the impact analysis because it translates into a reduction of groundwater levels of about 10 inches. (*Ibid;* see also p. 62 [00470462].) The historic estimates of groundwater decline and overdraft in the basins within the plan area are depicted in Table 9-4, showing water level declines ranging from 2.8 to 27 inches per year. (*Ch. 9*, p. 16 [00470414] (Table 9-4).)

The Board concluded that a 1-inch reduction in groundwater balance, which translates to reduction in groundwater levels of about 10 inches, could eventually produce "measurable decline in groundwater levels and a substantial depletion of groundwater resources prior to the full implementation of SGMA." (*Ch. 9*, p. 46 [00470446].) Thus, the Board set a threshold of a 1-inch reduction in the irrigation district groundwater balance for use in the impact analysis.

Using this threshold, the Board concluded that impacts under Alternative 3 to groundwater would be potentially significant and unavoidable. (*Ch.* 9, p. 62 [00470462].)

The Board responded to comments critiquing its approach for determining the threshold of significance for groundwater impacts by explaining that "[t]he use of a length-equivalent indicator instead of a volumetric indicator is reasonable because it standardizes the volumetric reduction by subbasin area in order to make meaningful comparisons that take into account difference in subbasin size." (*MR 3.4,* p. 21 [00522820].) The Board also addressed questions about its 1-inch threshold by explaining that the while Board did not conduct a formal scientific study it selected a conservative number taking into account (meaning it overestimated impacts) by assuming an impact on the high end of the historic range of 7-10 inches in groundwater level decline. "The 1-inch value was carefully chosen by experts who analyzed the impacts of groundwater resources and used their best professional judgment after reviewing relevant data and considering CEQA requirements, the scope of the SED, and the need for a reasonably understandable and meaningful indicator." (*Ibid.*)

The Court concludes that the record contains substantial evidence to support the Board's treatment of SGMA given that the final SED was adopted in 2018, before the groundwater sustainability plans were to be due to be developed and implemented under SGMA for critically overdrafted basins (2020) and all other basins (2022). (*MR 3.4,* p. 7 [00522806].) The Court anticipates that, as was the case in *King & Gardiner Farms*, because new information regarding compliance with SGMA will be available for the next tier of environmental review, the Board's environmental assessment at the implementation phase will include new analyses about groundwater supplies and their potential use to offset loss of surface water supply. (See *King & Gardiner Farms, supra*, 45 Cal.App.5th at p. 899.) The Court also concludes that the record contains substantial evidence to support the threshold of significance set for measuring impacts to groundwater, and that there is sufficient information provided to support the analytic route leading to the 1-inch threshold.

Modesto ID argues that the SED's analysis of impacts to domestic wells is insufficient, asserting that the SED should have included maps of the location of wells related to known contaminant plumes and more detailed information about impacts on domestic wells. (Modesto ID Op. Br., pp. 30-32.) The SED discusses domestic wells in Chapter 13, noting that about 133,000 people in the four main groundwater sub-basins in the Plan Area rely on private wells

for their water supply. (*Ch. 13*, pp. 9-10 [00470702-703].) The SED states that information on private wells is limited, but that well depth information was available for 66 private wells, showing a depth ranging from 46 to 580 feet. (*Id.* at p. 10 [00470703]; Figure 13-2 [00470705].) Over pumping of groundwater has been depleting groundwater resources in the San Joaquin Valley, with one effect being the degradation of groundwater quality. (*Id.* at p. 16 [00470711].) In the section analyzing the potential impact of Alternative 3, the SED explains that if the reduction in surface water supplies due to implementing the plan amendments leads to increased groundwater pumping and reductions in groundwater levels, this could "affect the direction of groundwater flow, and localized groundwater contamination could move in undesirable locations [] potentially affecting groundwater as a source for drinking water. The change in groundwater flow is dependent on the location of pumping, the amount of groundwater pumped and the frequency at which pumping occurs, and hydrogeological characteristics of the aquifer[.]" (*Id.* at p. 86 [00470781].) The SED further explains that due to many different variables, it is not possible to predict how parties with wells affected by lowered groundwater levels will respond. (*Ibid.*) However, the SED states that the "average annual groundwater balance is expected to be substantially reduced in the Modesto, Turlock, and Extended Merced Subbasins under LSJR Alternative 3, which would eventually produce a measurable decrease in groundwater elevations," with the effect being more severe in dry years. (*Id.* at p. 67 [00470762].) The SED also states that "[p]rivate goundwater users are also at risk because domestic wells are typically more shallow and older than public municipal wells. Impacts would be significant and unavoidable." (*Ibid.*)

The SED further describes that a "substantial increase in groundwater pumping may result in the use of drinking water by private domestic wells that does not meet water quality standards due to the potential for changes in groundwater quality from the migration of contaminants in the Modesto, Turlock, and Extended Merced Subbasins and also the Eastern San Joaquin Subbasin," concluding that "there is a potential for the quality of groundwater used in private domestic wells to be affected such that violations of water quality standards would occur. Accordingly, impacts would be significant." (*Id.* at pp. 86-87 [00470781-782].) Given the number of factors that may affect how parties would respond to reduced surface water supplies and the variables that influence groundwater quality and availability, the SED concludes that "while groundwater pumping can affect groundwater flow and quality, for all of the foregoing

reasons, it is speculative to specifically determine what that change in groundwater flow and its impact on groundwater quality would be from the increased groundwater pumping." (*Id.* at p. 86 [00470781].)

Modesto ID cites to *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, in support of its argument that the Board should have offered additional analysis of the impact on domestic wells including "when the region's domestic wells will start going dry or likely to become contaminated." (Modesto ID Op. Br., p. 32.) In that case, the City of Hanford approved an EIR for a coal-fired cogeneration plant. The portion of the opinion cited by Modesto ID deals with alternatives, where the appellants argued that the EIR should have considered the environmental impacts of natural gas as an alternative to coal as a fuel source. (*Kings County Farm Bureau*, at pp. 733-34.) The appellants argued that there was data readily available regarding secondary emissions from truck and train traffic associated with transporting coal, and data available regarding emission levels associated with burning natural gas versus coal for the cogeneration plant. (*Id.* at p. 734.) The Court of Appeal held that the "discussion in the EIR in several respects omits substantial information about the use of natural gas, and the omissions subverted the purposes of CEQA." (*Ibid.*)

There are many distinctions between the circumstances in *Kings County Farm Bureau* and this case. Here, the SED contains a lengthy and detailed discussion of available information regarding groundwater in the Plan Area and discusses possible impacts should groundwater pumping be relied upon to replace reductions in surface water supply. The SED explains the variables but justifiably concludes that more specific analysis is not possible given the many directions the response to reduced surface water could take vis-à-vis groundwater pumping, and the challenges with analyzing and predicting impacts on any given well, even when data is available. The Board's obligation under CEQA is to provide information in sufficient detail to allow those who did not participate in the SED's preparation to "understand and to consider meaningfully the issues raised by the proposed project." (*League to Save Lake Tahoe, supra,* 75 Cal.App.5th at p. 94.) The Board is not required to "engage in sheer speculation as to future environmental consequences of a project," and has "considerable discretion to decide the manner of the discussion of potentially significant effects" in the SED. (*Id.* at pp. 139-140.) The SED's analysis of potential impacts on domestic wells meets these standards.

Some petitioners argue that the SED should have analyzed the environmental impact of imposing carryover storage targets. (Modesto ID Op. Br., pp. 28-30; US Op. Br., pp. 36-38; Stockton East Op. Br., pp. 11-13.) The SED uses numerical constraints representing minimum carryover storage as part of the water balance modeling but does not establish carryover targets. (*See, e.g., MR 1.1*, p. 55 [00501768].) The Board will establish carryover targets "in future proceedings based on site-specific information that integrates location conditions." (*MR 3.2*, p. 44 [00516663].) The Court concludes that the direct impacts of establishing carryover storage targets are appropriately evaluated in the second-tier project review under CEQA, when the actual targets will be established. At that point, the Board will have the information needed to analyze the environmental impacts of the carryover storage targets, which it does not possess now, so analysis at this juncture would be speculative. This approach is consistent with case law applicable to tiering under CEQA. (*See, e.g., Rio Vista Farm Bureau Center, supra,* 5 Cal.App.4th at p. 373 ("Where, as here, an EIR cannot provide meaningful information about a speculative future project, deferral of an environmental assessment does not violate CEQA.")

Regarding the remainder of the challenges to the SED related to its impacts analysis, the Court concludes that the SED contains sufficient information about the environmental impacts of the plan amendments in each of the resource areas to satisfy the informational requirements of CEQA. The Court has reviewed the SED and the record at length, considered the arguments in the briefs and the arguments of counsel during hearings held in the late summer and fall of 2023, and concludes that the SED provides sufficiently detailed information about the effect of the plan amendments such that public agencies and the public in general can understand their anticipated effects on the environment. (Pub. Resources Code § 21061.) To the extent not addressed here, the Court does not find the remaining points raised by the petitioners in their briefs persuasive. The Court concludes that the Board's work to address the environmental effects in the SED is "reasonably feasible" and the SED represents an adequate and complete document that reflects a good faith effort at full disclosure by the Board. (*CEQA Guidelines*, § 15151.)

IX. The Identification and Evaluation of Mitigation Measures

Several petitioners take issue with the adequacy of mitigation measures addressed in the SED. Farm Bureau contends the mitigation identified for agricultural impacts are inadequate because the measures would not be undertaken by the Board itself but would instead be optional actions that local land use agencies could take if they so chose. (Farm Bureau Op. Br., pp. 34-

38.) The US argues that the Board improperly masked the potential environmental impacts of the Plan by including significant mitigation measures in its WSE model analysis in the form of carryover storage targets and other reservoir control measures at New Melones Dam. (US Op. Br. at pp. 23-30.) Stockton East contends the SED does not provide the requisite mitigation analysis and improperly defers actions to be taken under SGMA. (Stockton East Op. Br., p. 14). Merced ID contends that the SED does not identify measures to mitigate significant impacts, including measures to address the reduced water supplies to Merced ID and other diverters. (Merced ID Op. Br., pp. 52-53.) Westlands contends that the SED fails to adequately evaluate the impacts of carryover storage and runs afoul of the CEQA requirement to establish performance criteria by which to measure success of deferred mitigation measures. (Westlands Op. Br., pp. 44-45.)

A lead agency may require "feasible changes in any or all activities involved in the project in order to substantially lessen or avoid significant effects on the environment." (*CEQA Guidelines*, § 15041, subd. (a); *see also* § 15126.4, subd. (a)(1) ("An EIR shall describe feasible measures which could minimize significant adverse impacts[.]")[28] CEQA Guidelines define mitigation as including actions to: (1) avoid the impact altogether; (2) minimize impacts "by limiting the degree or magnitude of the action and its implementation;" (3) rectify the impacts "by repairing, rehabilitating or restoring the impacted environment;" (4) reduce or eliminate the impact "over time by preservation and maintenance operations;" and (5) compensate for the impact "by replacing or providing substitute resources or environments[.]" (*CEQA Guidelines*, § 15370 subds. (a)–(e).)

As the Court of Appeal has explained:

> [A public] agency "cannot approve a project that will have significant environmental effects unless it finds as to each significant effect, based on substantial evidence in the administrative record, that (1) mitigation measures required in or incorporated into the project will avoid or substantially lessen the significant effect; (2) those measures are within the jurisdiction of another public agency and have been adopted, or can and should be adopted, by that agency; or (3) specific economic, legal, social, technological, or other considerations make the mitigation measures or alternatives identified in the EIR infeasible, and specific overriding economic, legal, social, technological, or other benefits outweigh the significant environmental effect.

[28] The terms "effects" and "impacts" are used synonymously in CEQA Guidelines and this decision. (*CEQA Guidelines*, § 15358.)

(*Federation of Hillside & Canyon Assns. v. City of Los Angeles* (2004) 126 Cal.App.4th 1180, 1197, citing Pub. Resources Code §§ 21081, 21081.5 and *CEQA Guidelines*, § 15091, subds. (a), (b).) Finally, the Board's regulations applicable to exempt regulatory programs require that the SED "identify feasible mitigation measures for each significant environmental impact identified in the SED." (Cal. Code. Regs., tit. 23, § 3777 subd. (b)(3).)

As discussed in the impacts section of this order, the SED devotes a chapter to each resource area that will likely be adversely affected by the plan amendments. In each of those chapters, the Board identified potential impacts to the subject resource area and examined potential mitigation measures for those impacts. The Board also reached a conclusion as to whether each mitigation measure would be feasible and sufficient to render the identified impact insignificant. Chapter 18 contains tables summarizing the SED's CEQA significance determinations for impacts to all resource areas after mitigation measures were taken into account. (*Ch. 18*, pp. 5–13 [00473446-454].)

In the specific resource chapters in the SED, the Board discussed its assessment of the potential mitigation actions, including whether the action could be taken by the Board itself or by another agency. For example, in the chapter addressing energy and greenhouse gas impacts, the Board described the work it did to assess what steps could be taken to mitigate the greenhouse gas emissions, including several measures to improve energy and irrigation efficiency. (*Ch. 14*, pp. 42-45 [00471147-150].) The Board explained in the SED that these mitigation measures are under the control of local water suppliers, regional groundwater management agencies, and irrigation districts, and suggested the measures would be feasible for those entities to employ. (*Ibid.*) The Board further explained that at the programmatic level, it is infeasible for the Board itself to impose these mitigation measures because it "does not now have specific facts associated with an individual project to legally and technically apply the above mitigation measures in an adjudicative proceeding." (*Id.* at p. 45 [00471150].) The Board also noted that the its resources are limited to program activities related to the diversion and use of water subject to the permit and license system, and it does not have the resources to pursue irrigation or energy efficiency regulations that might mitigate some of the impacts. (*Ibid.*) The Board concluded that the greenhouse gas emission impacts associated with Alterative 3 are therefore significant and unavoidable. (*Ibid.*)

In another example in the SED, with respect to the significant impacts identified for the potential conversion of agricultural land to nonagricultural uses, the Board discussed the feasible mitigation measures that could be undertaken by local land use agencies, local water suppliers, regional groundwater management agencies, and irrigation districts to "reduce potential conversion of agricultural land due to reduced surface water availability by requiring modifications to existing agricultural practices that increase irrigation efficiency." (*Ch. 11*, p. 52 [00470587].) The Board acknowledged, however, that it is not known whether these types of mitigation would reduce the impacts to a less-than-significant level, concluding that the impacts of implementing Alternative 3 on agricultural land would remain significant and unavoidable. (*Id.* at p. 55 [00470612].) The Board also discussed its authority to act to prevent waste or unreasonable use of water, concluding it would be infeasible to deploy its authority on a programmatic level, particularly given its limited resources and funding for program activities. (*Id*. at pp. 52-53 [00470597-598].) There are a number of other SED sections as well where the Board discussed the potential mitigation for the identified impacts, described areas where other agencies could take mitigation measures, and then explained it would not be feasible for the Board itself to adopt regulations establishing mitigation measures, thereby concluding that the impacts are significant and unavoidable. (*See SED*, impacts and mitigation measures discussed for (1) aquatic and biological resources, extended plan area (*Ch. 7*, pp. 150-151 [00470119-120]); (2) terrestrial biological resources, extended plan area (*Ch. 8*, pp. 62-69 [00470379-386]); and (3) recreation, extended plan area (*Ch. 10*, pp. 49-52 [00470525-528]). Chapter 16 also discusses potential mitigation measures that "could be applied by other lead agencies and responsible entities to reduce potentially significant impacts," and discusses potential actions, and their potential environmental effects, at length in a 384-page chapter. (*Ch. 16*, [00472904-00473287].)

The Board approved some mitigations measures for adoption when it passed the resolution approving the plan amendments. The mitigation and monitoring program the Board approved is intended to "reduce significant impacts on aquatic biological resources, terrestrial biological resources, including wetlands and sensitive plant species, recreation and aesthetics, and hydropower and greenhouse gases identified in the Final SED (Chapters 7, 8, 10, and 14)[.]" (Att. 2 to *Board Res. 2018-0059, Draft Mitigation and Monitoring Program*, pp. 1-2 [00741315-316].) The SED explains that there could be reduced water levels in the smaller reservoirs

upstream of the rim dams, which could adversely impact terrestrial species that rely on water from those upstream reservoirs for "foraging, hunting, and fishing by avian and mammal species (e.g., shore birds, ducks, hawks and bears)." (*Ch. 8*, p. 68 [00470385].) In mitigation, the Board explained "[w]hen considering carryover storage and other requirements to implement the flow water quality objectives in a water right proceeding, [the Board] will ensure that reservoir levels upstream of the rim dams do not cause significant impacts" on these resources. (Att. 2 to *Board Res. 2018-0059*, pp. 1-2 [00741315-316].) The Board will also "ensure that reservoir levels in the upper watersheds do not cause significant recreation and aesthetic impacts, unless doing so would be inconsistent with applicable laws," when considering water transfer petitions in response to the plan amendments. (*Id.* at p. 2 [00741316].)

Finally, consistent with CEQA requirements related to significant and unavoidable impacts, the Board issued a statement of overriding considerations for direct and indirect impacts on resource areas including aesthetics, agricultural and forestry resources, air quality, aquatic and terrestrial biological resources, cultural resources, geology and soils, greenhouse gases and energy, hazards and hazardous materials, hydrology and water quality, groundwater resources, land use planning, noise, mineral resources, public services, recreational resources, transportation and traffic, and service providers and utilities and service systems. (Att. 1 to *Board Res. 2018-0059*, pp. 6–37 [00741265-00741294].) The Board also addressed cumulative impacts for the same resource areas. (*Id*. at pp. 37-52 [00741294-309].) The Board then made eleven findings as to the benefits of the amendments, concluding that the benefits of the plan outweigh the unavoidable significant environmental impacts. (*Id*. at pp. 55-57 [00741312-314].)

The US argues that the carryover storage requirements modeled in the SED to address temperature impacts should have been addressed as mitigation and the impact of the plan amendments should have been evaluated without modeling the carryover storage targets. (US Op. Br., pp. 23-30.) The US asserts that the "reservoir control measures are specifically designed to address problems uniquely created by the Plan Amendments themselves." (US Reply Br. at p. 7). As the US notes, the language used to revise the Plan sounds like it is discussing mitigation when referencing carryover storage to address temperature impacts. (US Reply Br., pp. 7-8.) For example, Appendix F states that "as a result of instream flow requirements in the February-June period, reservoir levels in modeling scenarios are generally lower than baseline, which can cause a reduced magnitude and frequency of reservoir spill in wet

years. … The combined effects of smaller, less frequent spills and lower reservoir levels would cause an undesirable result of elevated temperatures when compared to baseline, in the absence of additional flow measures, for alternatives of 40 percent unimpaired flow or greater." (*App. F.1*, p. 43 [00477275].)

At first glance, this argument by the US seems persuasive. The Court agrees that employing reservoir storage requirements during the remainder of the year to avoid adverse temperature impacts to instream waters sounds like mitigation. However, on closer examination of the project's framework, and considering what constitutes mitigation under CEQA, the Court finds the reservoir storage targets to be a legitimate component of the project, rather than a measure to mitigate the projects adverse impacts. A fundamental reason is that the reservoir storage targets are essential to accomplishing the very purpose of the flow objectives themselves (i.e. providing reasonable protection for native migratory fish) as opposed to avoiding or reducing harm caused by the flow objectives to some *other* resource or beneficial use.

When looking at the function of reservoir storage targets in the context of the project—amending the flow regime to improve the conditions for native migratory fish—the reservoir operations are an integral part of the project to control and manage flow for the beneficial use of fish and wildlife. The narrative objectives adopted by the Board in the plan amendments describe an objective to "[m]aintain flow conditions from the San Joaquin River watershed to the Delta at Vernalis sufficient to support and maintain the natural production of viable native San Joaquin River watershed fish populations migrating through the Delta." (*Revised Plan*, Table 3, p. 18 [00741340].) The narrative objectives also provide that "[f]lows provided to meet these narrative objectives shall be managed in a manner to avoid causing significant adverse impacts to fish and wildlife beneficial uses at other times of the year." (*Ibid.*) The project is to design a flow regime to support the natural production of native fish populations, which means supporting them year-round, not just from February through June.

The project's purpose would be defeated if it was not implemented in a way that supported the fish populations at all stages of their migration to and from the tributaries to the Delta. The modeling results are clear that without the carryover storage targets, the flow objectives cannot be met without resulting in temperatures that would harm fish under certain conditions. The record includes examples of instream temperatures that would result from implementing the flow alternatives both with and without carryover storage, illustrating that

without carryover storage, temperatures in the fall exceed those recommended for spawning and incubation. (*MR 3.2*, p. 56 [00516675].) Had the reservoir storage requirements been designed to avoid or reduce an adverse impact to some *other* resource or beneficial use, distinct from the primary purpose of the flow objectives, perhaps agricultural or groundwater resources, then they could correctly be seen as mitigation.

Examining the history of the Bay-Delta Plan is also useful to analyzing this issue. Specifically, the Board's implementation of amendments to the Bay-Delta Plan in 1995 via D-1641 helps inform the conclusion that reservoir operations are part of the overall framework for managing flows for fish. D-1641 contains numerous references to reservoir operations and carryover storage including:

- VAMP provides "a unique opportunity for collecting data under controlled conditions because of the commitment of [the Bureau] to control exports and releases from New Melones Reservoir" (*D-1641*, p. 21 [00177753]);
- "[Turlock ID and Modesto ID] will meet the SJRA releases from stored water, and will incur reductions in carryover storage of surface water if necessary during a drought" (*Id.* at p. 36 [00177768]);
- licenses for Merced ID, Turlock ID and Modesto ID contain limits on total withdrawal from storage for beneficial uses and an obligation to submit an annual report to the Board "accounting for reservoir operations" (*Id.* at p. 40 [0177772]);
- "[t]o ensure that the actual conditions are as close as possible to the predicted instream flow and water quality, the petitioned changes will be conditioned to preclude reservoir refill diversions when New Melones Reservoir is releasing water . . . this will help ensure that downstream legal users of water are not harmed by refill operations resulting from the petitioned changes" (*Id.* at p. 41 [00177773]); and
- "[c]hanges in carryover storage in New Melones Reservoir, New Don Pedro Reservoir, and Lake McClure, which may affect the temperature of water releases to the San Joaquin River tributaries, were also evaluated for each of the flow alternatives" (*Id.* at p. 47 [00177779]).

This history indicates that reservoir storage requirements have long been an integral component of the flow objective itself.

The US relies on *Lotus v. Department of Transportation* (2014) 223 Cal.App.4th 645, 655-656, to support its view that carryover storage targets are mitigation. (US Op. Br., pp. 24-25.) *Lotus* involved a Caltrans highway construction project that passed through a park with old growth redwoods. Caltrans had drafted the EIR's project description to include measures to mitigate damage the construction would cause to the root zones of the trees. And then because mitigation had already been woven into the project's description, Caltrans concluded that the potential impacts of the project would be less than significant. *Lotus* held that embedding mitigation measures into the EIR's project description is a "structural deficiency," and that the EIR needed to "separately identify and analyze the significance of the impacts to the root zones of old growth redwood trees before proposing mitigation measures." (*Id.* at p. 656-658.)

In contrast to *Lotus,* the carryover storage provisions are not designed to mask impacts from the flow objectives to *other* resources. Their function is to avoid increased water temperatures at other times of the year that would harm the very fish the increased flows are designed to protect. As already explained, the carryover storage provisions do not constitute mitigation, but are integral component to achieve the project's objective of protecting native migratory fish. *Lotus* does not support a different conclusion.

Save the Plastic Bag Coalition v. City and County of San Francisco (2013) 22 Cal.App.4th 863, is instructive. In that case, plaintiffs challenged an ordinance requiring use of compostable or reusable checkout bags and imposing a 10-cent fee for single-use bags, arguing that the fee was a mitigation measure. The appellate court disagreed, concluding that the 10-cent fee was "from the very beginning, an integral part of the overall project designed to help the San Francisco environment, i.e., it was clearly a significant part of the ordinance from its inception." (*Id.* at p. 883.) As in that case, the carryover storage targets are part of the overall project design to help the fish, not mitigation for an impact caused by the project.

Similar to the US, Westlands also argues that the Board failed to comply with CEQA because it did not consider the impacts of carryover storage targets, including establishing performance criteria to measure the benefits and costs of carryover storage. (Westlands Op. Br., pp. 44-45.) This argument fails for the same reason as the US's argument. The carryover storage targets are not deferred mitigation, but, as noted above, will be established in "a future, project-level proceeding, rather than the programmatic evaluation in the SED." (*MR 2.1*, p. 35 [00504814].) This will allow the Board to establish the carryover storage targets using "project-

specific information that considers local conditions." (*Ibid*; see also *MR 3.2*, pp. 44-45 [00516663-64] ("The more detailed evaluations may identify carryover storage targets that meet the numeric LSJR flow objectives and avoid significant adverse temperature impacts on fish and wildlife while maximizing water deliveries. … Such further operations analyses would need to occur at the project-specific level and may require additional environmental analysis.").)

With respect to Stockton East's argument that the Board failed to adopt mitigation measures addressing impacts to groundwater basins, improperly deferring to "future actions to be taken under SGMA" (Stockton East Op. Br., p. 14), the Board concluded that it would be infeasible for the Board to exercise its authority with respect to groundwater impacts "at this time because it is undertaking a programmatic analysis of the potential groundwater resource impacts and does not have specific facts associated with an individual project to legally and technically apply requirements to prevent waste and unreasonable use in an adjudicative proceeding." (*Ch. 9*, pp. 60-61 [00470460-461].)

The Board will be required to address any necessary mitigation for impacts fully in the second tier of environmental review when it implements the plan amendments. As the Supreme Court has explained, "tiering is properly used to defer analysis of environmental impacts *and mitigation measures* to later phases when the impacts or mitigation measures are not determined by the first-tier approval decisions but are specific to later phases." (*Bay-Delta, supra,* 43 Cal.4th at p. 1170 (emphasis added).) *Bay-Delta* cautions that reviewing courts that require more detailed analysis than is ripe for review at a first-tier programmatic stage, "undermine[] the purpose of tiering and burden[] the program EIR with detail that would be more feasibly given and more useful at the second-tier stage. Such details [are] properly deferred to second tier [], when specific projects can be more fully described and are ready for detailed consideration." (*Id.* at p. 1173.)

Finally, NCRA contends that because the Board's adaptive management parameters are "undeveloped," the SED "fails to adequately disclose the Project's potentially significant impacts, or the appropriate feasible mitigations thereto, at the critical time: before the Project's approval," arguing that the adaptive management actions are "mitigation measures" that are improperly deferred.[29] (NCRA Op. Br., p. 33.) To the extent that NCRA argues that the SED

[29] NCRA cites to the sections of the Revised Plan detailing the four adaptive implementation adjustments that can be made to the flow criteria as part of the program of implementation (See

fails to disclose impacts associated with adaptive implementation, as discussed above, the SED evaluates each LSJR alternative with and without adaptive implemention, noting the differences between the impacts of each alternative on the various resource areas. (See, e.g., *Ch. 18,* Tables 18-1 through Table 18-5 [00473446-454].) Thus, the Court does not agree that the SED fails to address the impacts of adaptive implementation. In addition, the adaptive implementation provisions were designed as part of the program of implementation to achieve Plan objectives to give the Board flexible tools to manage a multifaceted and dynamic challenge. The Court does not agree with the characterization of the adaptive implementation provisions as deferred mitigation measures and therefore denies the CEQA challenge articulated on this basis.

The remaining allegations brought by the parties take issue with how the SED addressed potential mitigation measures. The SED clearly discloses and discusses which impacts are significant and unavoidable in the applicable resource sections, as summarized above. The Court concludes that the SED adequately describes the potentially significant impacts and potential mitigation measures to address these impacts (discussed above), including measures that may be taken by other agencies. Where the SED finds that a mitigation measure is infeasible, the SED adequately discusses the reasons for that finding.

X. The Statement of Overriding Considerations

Farm Bureau contends that the Board's Statement of Overriding Considerations is inadequate because it does not "provide any specific information from the record to weigh the unmitigated impacts to agricultural resources against potential benefits to fish and wildlife resources." (Farm Bureau Op. Br., p. 40.) As a result, Farm Bureau argues "the statement does not come to any conclusion that the Project's purported benefits to instream beneficial uses outweigh its significant environmental impacts to agricultural resources." (*Ibid.*)[30]

CEQA Guidelines require a decision-making agency to balance the benefits of a project against its unavoidable environmental risks when deciding whether to approve a project. (*CEQA*

Revised Plan, pp. 30-31 [00741352-53].) Thus, the Court references NCRA's arguments as related to adaptive implementation, not adaptive management, which is a distinct concept. (See *MR 2.2,* pp. 11-13 [00505901-903].)

[30] Farm Bureau also contends the Statement of Overriding Consideration is inadequate because the SED's failure to properly address project impacts and mitigation measures is inadequate. This contention fails for the reasons discussed in the sections of this decision discussing mitigation measures and project impacts.

Guidelines § 15093, subd. (a).) The Guidelines provide that if the benefits "outweigh the unavoidable adverse environmental effects, the adverse environmental effects may be considered 'acceptable.'" (*Ibid*.) "Before approving a project with significant unavoidable environmental impacts, a public entity must make an express written determination that the project's benefits outweigh any potential environmental harm." (*California Native Plant Society v. City of Santa Cruz* (2009) 177 Cal. App.4th 957, 983.) In contrast to mitigation and feasibility findings, overriding considerations are "larger, more general reasons for approving the project[.]" (*Ibid*.)

The override decision "lies at the core of the lead agency's discretionary responsibility under CEQA and is, for that reason, not lightly to be overturned. (*City of Marina v. Board of Trustees of California State University* (2006) 39 Cal.4th 341, 368.) The statement of overriding considerations is sufficient if it "demonstrate[s] the balance struck by an agency in weighing the benefits of a proposed project against its unavoidable adverse impacts[,]" and is supported by substantial evidence in the record. (*California Native Plant Society, supra,* 177 Cal. App.4th at p. 983*; CEQA Guidelines,* § 15093, subd. (b).)

The SED concludes that LSJR Alternative 3 with adaptive implementation results in significant and unavoidable impacts to groundwater resources, agricultural resources, recreational resources and aesthetics, service providers, and energy and greenhouse gases. (*ES*, Table 20, p. 52 [00468688]; *see also Ch. 18*, Table 18-3, p. 7, ("Summary of LSJR Alternatives CEQA Significance Analysis by Geography in Chapters 5-15") [00473448-451].) For the extended plan area, the SED identifies significant and unavoidable impacts associated with LSJR Alternative 3 to aquatic and terrestrial biological resources, recreational resources and aesthetics, service providers, and energy and greenhouse gases. (*ES*, Table 21, p. 53 [00468689].)

The Board issued a Statement of Overriding Considerations as an attachment to the resolution approving the plan amendments and the SED in December 2018. (Att. 1 to *Res. 2018-0059* [00741258-314]; *Res. No. 2018-0059* [00741396-402].) In the Statement of Overriding Considerations, the Board noted that it was making "findings specific to each area of significant and unavoidable impact, referencing the relevant chapters in the SED, to support its decision to proceed with the project despite the adverse consequences. (Att. 1 to *Res. 2018-0059*, pp. 6-52 [00741263-309].)

Contrary to Farm Bureau's contentions, the Court finds the Statement of Overriding Considerations more than adequately weighs the plan amendments' benefits against their

unavoidable adverse impacts. The statement explains the Board's policy decision to adopt Alternative 3 and represents a "good faith effort to inform the public." (See *Woodward Park Homeowners Assn., Inc. v. City of Fresno* (2007) 150 Cal.App.4th 683, 718.)

Moreover, the record contains extensive discussions of the benefits associated with the plan amendments. (See, e.g., *Ch. 19*, discussing the benefits of higher and more variable flows to fish and wildlife [00474114-403]; *Tech. Rep.*, discussing the scientific basis for relying on flow for fish and wildlife beneficial uses.) The record also contains an extensive discussion of the Alternative 3's impact on agriculture. (See *Ch. 11*, [00470532-652].) The Board's Statement of Overriding Considerations discusses the impact on agricultural resources at length, describing both direct and cumulative impacts. (Att. 1 to *Res. 2018-0059* at pp. 8-11 [00741265-268] and pp. 39-40 [00741296-297].) It also lists eleven reasons why the Board has determined that the benefits of the plan amendments outweigh the unavoidable significant environmental impacts, including that the "Plan Amendments would help address the ecological crisis in the Bay-Delta and tributary watersheds where native fish face a high risk of extinction because too much water is being diverted. The Plan Amendments would provide increased flows critical to reasonably protecting native fish and restoring ecosystem functions, thus preventing further ecological collapse of Bay-Delta fisheries." (Att. 1 to *Res. 2018-0059*, p. 56 [00741313].)

A statement of overriding considerations is meant to demonstrate the balance struck by the body in weighing against its unavoidable environmental risks." (*CEQA Guidelines*, § 15093, subd. (a).) The Board's Statement of Overriding Considerations does just that. It informs the public of the balance the Board struck in approving Alternative 3 despite the unavoidable significant environmental impacts and is supported by substantial evidence in the record. For these reasons, Farm Bureau's claim on this point is denied.

XI. The Board Complied with its Obligations under CEQA

There are some arguments by petitioners that are not specifically addressed in this order. The Court has considered and evaluated those arguments, however, and has not found them persuasive. After carefully reviewing the record, the briefing, and all of petitioners' CEQA claims, the Court concludes that the Board complied with its obligations under CEQA. Accordingly, petitioners' CEQA claims are denied.

THE CALIFORNIA CONSTITUTION

Several parties contend that the plan amendments violate article X, section 2 of the California Constitution, which establishes a "rule of reasonableness" as the "overriding principle governing the use of water in California." (*Stanford Vina Ranch Irrigation Co. v. State of California* (2020) 50 Cal.App.5th 976, 994.) Westlands argues the plan amendments violate this constitutional provision because the Board is "requiring flows now and figuring out later whether that is the right quantity or provides reasonable protection, or how to best use flow with non-flow measures." (Westlands Op. Br., p. 56.) Merced ID contends that the Board is unreasonably favoring one use of water "over multiple established reasonable and beneficial uses." (Merced ID Op. Br., p. 19.) Stockton East argues that the SED "dispenses with estimating or analyzing the level of benefit provided to viable fish populations by the Project" and that the plan amendments do not constitute reasonable and beneficial use of water under the Constitution. (Stockton East Op. Br., p. 33.) Stockton East also argues that the Board violated the Constitution by failing to include predation control and other non-flow measures, given the inadequacy of flow measures alone. (*Id.* at pp. 36-39.) SJTA argues that requiring 40% unimpaired flow on the tributaries in June "constitutes a waste and unreasonable use of water because there are few, if any, Central Valley fall-run Chinook salmon present and migrating in the system at that time." (SJTA Op. Br., p. 56.) BAWSCA argues that the SED "admits that the increase in flows in the tributaries to the San Joaquin River alone will not satisfy the objectives of the Plan" and thus "the increase in flows and transfer of water away from the RWS and BAWSCA member agencies does not constitute a beneficial use of water because the water does not "serve" (or meet) the beneficial use." (BAWSCA Op. Br., p. 56.)

Under the California Constitution, article X, section 2, "[a]ll water rights, including appropriative, are subject to the overriding constitutional limitation that water use must be reasonable." (*US. v. SWRCB, supra,* 182 Cal.App.3d at p. 129). "The Board is expressly commissioned to carry out that policy [under Water Code section 1050]. To that end, the Board is empowered to institute necessary judicial, legislative or administrative proceedings to prevent waste or unreasonable use." (*Ibid.*) Article X, section 2 "radically altered water law in California and led to an expansion of the powers of the Board." (*Stanford Vina Ranch, supra,* 50 Cal.App.5th at p. 985; see also *Nat. Audubon Society v. Super. Ct.* (1983) 33 Cal.3d 419, 443-444 (statutory and judicial developments since the enactment of article X, section 2 "have greatly

enhanced the power of the Water Board to oversee the reasonable use of water and, in the process, made clear its authority to weigh and protect public trust values.")

> The Supreme Court has . . . describe[ed] the Board's regulatory authority in the broadest terms. The Legislature, consistent with its authority under article X, section 2, has established a thorough statutory system insuring reasonable water allocation and safeguarding water purity, commensurate in scope with the constitutional provision. The statutes vest the Board with full authority to exercise the adjudicatory and regulatory functions of the state in the field of water resources. It has been granted broad authority to control and condition water use, insuring utilization consistent with public interest. This authority incudes protection of the environment.

(*Light v. State Water Resources Control Bd*. (2014) 226 Cal.App.4th 1463, 1485 (*Light*).)

Article X, section 2, however, "does not equate "beneficial use" with "reasonable use." (*Joslin v. Marin Municipal Water Dist.* (1967) 67 Cal.2d 132, 143.) "[W]ater must be conserved in California with a view of the reasonable *and* beneficial use thereof in the interest of the people, that the right to use water shall be *limited* to such water as shall be *reasonably* required for the beneficial use to be served." (*Ibid.* (emphasis in original).) The decision regarding what is unreasonable use "is essentially a policy judgment requiring a balancing of the competing public interests, one the Board is uniquely qualified to make in view of its special knowledge and expertise and its combined statewide responsibility to allocate rights to, and to control the quality of, state water resources." (*US v. SWRCB, supra*, 182 Cal.App.3d at p.130.) "[T]he Board's power to prevent unreasonable methods of use should be broadly interpreted to enable the Board to strike the proper balance between the interests in water quality and project activities in order to objectively determine whether a reasonable method of use is manifested." (*Ibid*.)

Adopting the plan amendments is a quasi-legislative act and therefore judicial review of the claims that the Board violated article X, section 2 is by ordinary mandamus under the arbitrary and capricious standard. (*Stanford Vina Ranch, supra*, 50 Cal.App.5th at p. 996; see also *SWRCB Cases, supra*, 136 Cal.App.4th at p. 697 ("In performing its regulatory function of ensuring water quality by establishing water quality objectives, the Board acts in a legislative capacity. Water quality control plans are quasi-legislative.")

Petitioners allege that the Board has not demonstrated that the plan amendments provide a beneficial use and question the scientific support behind the determination that increasing flows provides benefits to fish. The SED includes scientific evidence to support the conclusion that the "primary limiting factor for salmon survival and subsequent abundance is reduced flows

during the late winter and spring when juveniles are completing the freshwater rearing phase of their life cycle and migrating from the SJR basin to the Delta." (*Tech Rep.*, p. 3-28 [00474219].) One way that increasing flows helps improve survival rates of salmon is by improving water temperature, found to be the "physical factor with the greatest influence on Central Valley salmonids, short of a complete absence of water." (*Ch. 19*, p. 11 [00473508].) In Chapter 19, the Board showed how the models were used to demonstrate temperature benefits during different the life stages of fish, and the benefits on the river systems under the flow alternatives. (*Id.* at pp. 20-52). The Board concluded that "[t]his temperature evaluation indicates that increasing flows during the February through June time period can provide significant temperature benefits to juvenile Fall-run Chinook salmon and steelhead." (*Id.* at p. 47.)

As already described, the SED discusses at length the scientific basis for determining that increasing the flows in the tributaries and LSJR to between 30%–50% of unimpaired flow will support the Chinook salmon and steelhead populations. The SED contains substantial evidence to support the conclusion that increased flows are necessary for the beneficial use of fish.

The SED also recognizes, as some petitioners note, that flow objectives *alone* will not address all of the impediments to a sustainable native fish population: "Although increasing flow and providing a more natural flow regime is expected to provide substantial and necessary benefits to native fishes; flow alone cannot solve the many issues that native fish populations face in the SJR Watershed. To achieve the goal of achieving and maintaining viable populations of native fish, many other non-flow actions (see Program of Implementation []) must be taken." (*Ch. 19*, p. 88 [00473585].) In the program of implementation, the Board recognized "that Recommended Actions, including non-flow measures, such as habitat restoration, must also be part of efforts to comprehensively address Delta aquatic ecosystem needs as a whole." (*Revised Plan*, p. 28 [00741350].)

This recognition is not at odds with the article cited by Stockton East for the proposition that "scientific information provided to the State Board clearly show higher flows do not equate to an increase in salmon smolt production or survival through the Delta, or an increase in escapement." (Stockton East Op. Br., p. 33). The article states that "increased flows *alone* may not resolve the low survival through the Delta." (July 27, 2018 SJTA comment letter, Att. 1, unpaginated article titled "Survival of Juvenile Fall-Run Chinook Salmon through the San Joaquin River Delta, 2010-2015 (emphasis added) [00561868].) The article also notes that the

mortality rate of the fish studied in the high-flow year (2011) might be explained by the study fish missing "the period of primary benefit of high flows for Delta survival" because the fish were released after the end of peak river flow at Vernalis. (*Ibid.* [00561881].) The article also notes that "the removal of up to 60% of the river water either upstream or in the Delta [] may limit any benefits of additional management actions on salmon survival." (*Ibid.* [00561885].) These statements are consistent with the discussion and conclusions in the SED, namely that flow is required to support the ecosystem needed for the migratory fish to spawn and for the juvenile fish to return ocean, and non-flow measures are also needed in tandem with the flow requirements to support a sustainable fish population.

Chapter 16 discusses a variety of non-flow measures, including floodplain and riparian habitat restoration, reducing vegetation-disturbing activities in floodplains and floodways, gravel augmentation, enhancing in-channel complexity, fish passage improvements, and predatory fish control, among others, and identifies the participating entities that could support these actions through various means, including permit conditions, guidelines, and new policies. (*Ch. 16*, pp. 94-214 [00472997-00473117].) The plan amendments encourage non-flow actions as part of voluntary agreements (*Revised Plan*, pp. 36-37 [00741358-359]), and incorporate the specific recommendations for non-flow actions discussed in Chapter 16 to complement the flow objectives, identifying the responsible entities for each area. (*Id.* at pp. 62-66 [00741384-388].)

With respect to SJTA's argument that the plan amendments violate article X, section 2 because there are "few if any" fish in the river in June, the record does not support this characterization.

The Board demonstrated that flows are required to improve the ecosystem conditions to support migratory salmon, recognized that non-flow actions are also important, and acted in the plan amendments to address both factors to support the use of water for the beneficial use of fish and wildlife. The Water Code establishes that "beneficial uses" for water include the "preservation and enhancement of fish, wildlife, and other aquatic resources or preserves," along with domestic, municipal, and agricultural uses. (§ 13050, subd. (f).) The courts interpreting article X, section 2 have recognized the Board's "unique qualifications" to balance the competing public interests under this Constitutional provision. (See, e.g., *US v. SWRCB, supra*, 182 Cal.App.3d at p. 130.)

In *Light*, the court concluded that "in regulating the unreasonable use of water, the Board can weigh the use of water for certain public purposes, notably the protection of wildlife habitat, against the commercial use of water by riparian users and early appropriators." (*Light, supra,* 226 Cal.App.4th at pp. 1472-73.) In that case, plaintiffs challenged the Board's action to limit water diversions from the Russian River to spray on grapevines to prevent frost damage under circumstances where water is needed in the river to support young salmon. The court discussed the Water Code provisions giving the Board the authority to consider the preservation and enhancement of fish and wildlife as a beneficial use, noting that "[t]hese sections represent a legislative declaration that the welfare of wildlife is a beneficial use on a par with the type of commercial use that has traditionally been recognized as beneficial. Because . . . the responsibility of the Board is to regulate the use of water for beneficial purposes, balancing the use of water for frost protection against its use for salmon habitat is simply an application of this fundamental policy decision." (*Id.* at p. 1493.)

The Court finds that the Board did not act in an arbitrary or capricious manner in violation of article X, section 2 in adopting the plan amendments. The Court also finds that in selecting Alternative 3, the Board weighed the benefit of increased flows to support the beneficial use of fish and wildlife against the identified impacts associated with reduced diversions and exercised its constitutional obligation to balance the competing needs for this valuable resource.

THE PUBLIC TRUST DOCTRINE

Stockton East and NCRA both argue that the Board has violated the public trust doctrine in adopting the plan amendments. Stockton East asserts that the Board cannot rely on the public trust doctrine to "curtail" a "vested appropriative right" without concluding that the "particular diversion is 'harmful to the interests protected by the public trust,'" citing *US v. SWRCB.* (Stockton East Op. Br., p. 35.) Stockton East argues that the SED's "truncated analysis" fails to show how the plan amendments protect fish and wildlife. (*Ibid*.) Stockton East also argues that the Board's failure to include predation control and other non-flow measures, violated the public trust doctrine, given the inadequacy of flow measures alone. (*Id.* at pp. 36-39.)

NCRA argues that the Board violated the public trust doctrine because the Board "allowed diversions of water for irrigation—a non-public trust use—that deprive the Delta of the flows that the Board and related agencies have found to be 'necessary' to protect public trust

resources." (NCRA Op. Br., p. 36.) NCRA also argues that the Board violated the public trust doctrine by not selecting Alternative 4 because the Flow Criteria Report concludes that 60% of unimpaired flow provides the best chances of success and survival for fish. NCRA asserts that lower courts have expanded the "reach and implementation" of the public trust doctrine since *National Audubon Society, supra,* 33 Cal.3d. 419, under two *San Francisco Baykeeper* cases (*San Francisco Baykeeper, Inc. v. State Lands Com*. (2015) 242 Cal.App.4th 202 (*Baykeeper I*) and *San Francisco Baykeeper, Inc. v. State Lands Com*. (2018) 29 Cal.App.5th 562 (*Baykeeper II*).) (*Id.* at pp. 35-36.) NCRA's argument is essentially that the public trust doctrine can no longer be applied as interpreted under the *SWRCB Cases* to recognize the Board's "duty to consider and protect all of the other beneficial uses to be made of water in the Bay-Delta, including municipal, industrial, and agricultural uses" because the *Baykeeper* cases have expanded the public trust doctrine.

The public trust doctrine "recognizes that the sovereign owns all of its navigable waterways and the lands lying beneath them as trustee of a public trust for the benefit of the people." (*SWRCB Cases, supra,* 136 Cal.App.4th at 778 (quoting from *National Audubon Society, supra,* 33 Cal.3d at 434 (internal quotations omitted).) "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." (*Ibid.*). With respect to the public trust doctrine, the Board's actions to carry out its statutory duties under Porter-Cologne are tested against its obligations under the public trust doctrine, and if the Board satisfies its responsibilities under Porter-Cologne, it also satisfies its obligations under the public trust doctrine. In the *SWRCB Cases*, the court stated "[i]f the Board's adoption of a water quality control plan fulfills the Board's duties under the public trust doctrine, then the Board's implementation of that plan—as long as the Board *does* implement that plan—likewise fulfills the Board's duties." (*SWRCB Cases, supra,* 136 Cal.App.4th at p. 778 (emphasis in original).)

This Court has found that the Board satisfied its obligations under the Porter-Cologne Act and thus does not find merit in Stockton East's arguments, given the rationale of the *SWRCB Cases*. As described above, this Court has concluded that the SED contains support for the Board's decision to adopt the plan amendments and establish unimpaired flow requirements for the protection of fish and wildlife. Thus, the Court does not agree with Stockton East's

characterization of the SED as containing a "truncated analysis" that fails to demonstrate why the plan amendments protect fish and wildlife.

Stockton East also argues that the public trust doctrine does not "justify curtailing water rights to implement the LSJR Flow Objectives," referencing a regulation applicable to water permits (Cal. Code Regs., tit. 23, § 780, subd. (a).) That section addresses the Board's continuing authority to exercise control of water right permits and licenses "with a view to eliminating waste of water and to meeting the reasonable water requirements of permittee without unreasonable draft on the source." (*Ibid.*) It requires notice and opportunity for hearing if action is taken pursuant to that paragraph where the Board would impose "further limitations on the diversion and use of water by the permittee in order to protect public trust uses." (*Ibid.*) This is not the type of action the Board is taking in adopting the plan amendments.

Stockton East also cites to *US v. SWRCB* in support of its argument that Board violated the public trust doctrine in adopting the plan amendments. Again, Stockton East relies on precedent that relates to a water rights adjudication rather than a water quality control plan. And Stockton East cites to a part of the decision where the court holds that the Board has a continuing obligation in protecting the public interest to supervise the use of appropriated water and is not "confined by past allocation decisions which may be incorrect in light of current knowledge or inconsistent with current needs." (*US v. SWRCB, supra,* 182 Cal.App.3d at p.150). The actual quote that Stockton East relies on at page 35 of its opening brief appears to be from *National Audubon* which reaches the opposite conclusion of the point Stockton East seems to be making: "the state as trustee of the public trust retains supervisory control over the state's waters such that no party has a vested right to appropriate water in a manner harmful to the interests protected by the public trust." (*Id.* at p. 151.) *US v. SWRCB* notes the distinction between the Board's promulgation of water quality standards, "a quasi-legislative action for which findings of fact were not required," and the Board's authority to issue water rights decision which is a "quasi-judicial act for which findings are required to show the underlying factual bases." (*Id.* at p.150). The Board is exercising its quasi-legislative authority in adopting the plan amendments, and the SED makes clear that the plan amendments do not modify specific permit terms. The Board will be making modifications to water right permits when it implements the plan amendments. (See, e.g., *Intro,* p. 3 [00468839].)

Turning to NCRA's arguments, in *SWRCB Cases*, the court addressed an argument by the Audubon Society parties that "conflicts between public trust values and competing water uses must, whenever possible, be resolved in favor of public trust protection." (*SWRCB Cases, supra,* 136 Cal.App.4th at p. 778.) *SWRCB Cases* rejected that argument, explaining that "[e]ssentially, the position of the Audubon Society parties appears to be that notwithstanding the flow objectives of the 1995 Bay-Delta Plan, the Board was obligated under the public trust doctrine to implement more generous flow objectives in this water rights proceeding because it would have been "feasible" to do so. What is "feasible," however, is a matter for the Board to determine." (*Ibid.*) Further, "[w]hile the Board had a duty to adopt objectives to protect fish and wildlife uses and a program of implementation for achieving those objectives, in doing so the Board also had a duty to consider and protect all of the other beneficial uses to be made of water in the Bay-Delta, including municipal, industrial, and agricultural uses. It was for the Board in its discretion and judgment to balance all of these competing interests in adopting water quality objectives and formulating a program of implementation to achieve those objectives." (*Ibid.*)

The argument NCRA makes here is similar to that made by the Audubon Society parties in *SWRCB Cases*. NCRA asserts that "[b]y approving the Project despite the fact that feasible alternatives exist that would preserve public trust resources to a far greater extent than the Project, the Board abdicated its affirmative statutory and constitutional 'duties to take the trust into account and protect public trust uses whenever feasible,' and impermissibly promoted a non-public trust use—farm irrigation—at the expense of public trust resources." (NCRA Op. Br., p. 37 (citing *Baykeeper II*).) NCRA's argument is at odds with the ruling in *SWRCB Cases*, and this Court does not read the *Baykeeper* cases as creating an interpretation of the public trust doctrine that would override the holding of *SWRCB Cases.*

NCRA's brief takes some license when it cites to *Baykeeper II* for the proposition that the Board "does not have discretion to promote non-public trust uses over 'legitimate trust uses.'" (NCRA Op. Br., p. 36.) The *Baykeeper II* court was addressing the argument that sand mining is a public trust use and concluded it was not. The language the court used regarding "legitimate trust uses" states "[w]hen a proposed action constitutes a public trust, the state trustee has broad discretion to permit that use and even to promote it over other legitimate trust uses. However, the state may not employ an overbroad conception of a public trust use that would undermine the primary function of the common law doctrine, which is to protect the right of the public to access

and enjoy public trust lands." (*Baykeeper II, supra*, p. 577.) This clarification of the public trust doctrine does not contradict the holding of *SWRCB Cases* that the Board has a duty to "consider and protect all other beneficial uses to be made of water in the Bay-Delta, including municipal, industrial, and agricultural uses."

As discussed above, the Board considered the conclusions of the Flow Criteria Report but chose Alternative 3 over Alternative 4, acknowledging that it was balancing the benefits of the flow for fish against other competing uses of water. The fact that the Board took into account competing uses (which it was required to do) in selecting Alternative 3 over Alternative 4, does not undermine the evidentiary basis supporting its conclusion that Alternative 3, with adaptive implementation, "provides flows in a quantity necessary to achieve functions essential to native fishes." (*Ch. 18*, p. 27 [00473468].) The Court concludes that the Board did not violate the public trust doctrine in adopting the plan amendments and denies both Stockton East's and NCRA's claims under the public trust doctrine.

SALINITY OBJECTIVE CLAIMS

The salinity objective for the southern Delta serves to protect agricultural beneficial uses of surface water because "salt stress can damage crops in several different ways, including stunting growth, diminishing seedling success, and causing foliar damage, thus reducing yield of crops. (*Ch. 3*, p. 3 [00469738]; see also *MR 3.3*, p. 1 [00521861].) About 100,000 acres within the southern Delta are used for irrigated farmland. (*Hoffman Rep.*, p. 1 [00474601].) The salinity problems in the southern Delta that affect irrigated farmland "primarily result from low flows, tidal action, diversions by the CVP, SWP and local water users, agricultural return flows, poor circulation, and channel capacity." (*Revised Plan*, p. 46 [00741368].) "As early as the 1991 Bay-Delta Plan, the State Water Board recognized the need to meet the salinity objectives largely through regulation of water flow." (*Ibid*.)

In addition to protecting agricultural beneficial uses of southern Delta waters, the Board's goals for the salinity objective include establishing "a salinity objective, supported by existing scientific information, that is not lower than necessary to reasonably protect the most salt sensitive crops currently grown or suitable to be grown on saline- and drainage-impaired soils in the southern Delta" and maintaining or improving "salinity conditions in the southern Delta to comply with state and federal antidegradation policies." (*Ch. 3*, p. 3 [00469738].) The goals

also include developing and implementing monitoring and modeling studies to better understand salinity in the southern Delta and the factors affecting it. (*Ibid.*)

A salinity objective for the southern Delta was first developed in the 1978 Bay-Delta Plan by determining the "water quality needs of significant crops grown in the area, the predominant soil type, and local irrigation practices." (*Intro*, p. 9 [00468845].) The Board "calculated the maximum salinity of applied water (assuming no precipitation) that sustains 100 percent yields of two important salt-sensitive crops grown in the southern Delta (beans and alfalfa)." (*Ibid.*) The salinity objective in the 2006 Plan is 0.7 dS/m from April through August, and 1.0 dS/m from September through March.[31] (*Intro,* p. 10 [00468846].)

The Revised Plan eliminates the seasonal difference established in the prior Bay-Delta Plan by increasing the salinity objectives to 1.0 dS/m from April through August and retaining the 1.0 dS/m objective for September through March, except that US will still be required to meet an EC level of 0.7 mmhos/cm from April through August as a condition of its water right.[32] (*Revised Plan,* p. 42 [00741364].) Requiring the US to meet the 0.7 salinity objective at Vernalis from April through August "will provide assimilative capacity for salinity inputs downstream of Vernalis and help maintain salinity levels that meet the revised objective and reasonably protect agricultural beneficial uses in the southern Delta. Continuation of this requirement will assure that the proposed change to the salinity objective will not result in the lowering of water quality at and downstream of Vernalis in the southern Delta." (*Ch. 23,* p. 7 [00473954].)

The Revised Plan also changes where the water is tested to evaluate compliance with the salinity objective. Compliance with the former objective was measured at four stations, one at Vernalis and three in the southern interior Delta. (*MR 3.3,* p. 2 [00521862].) The Revised Plan measures compliance over "larger river segments that better characterize southern Delta salinity conditions," and the Board notes that since "[s]pecific compliance points may not be reflective of conditions in the larger area of the southern Delta," the Board will place conditions on certain water rights in the implementation phase to "determine the appropriate locations and methods to assess attainment of the salinity objectives in the interior southern Delta." (*Ibid.*)

---

[31] The Board uses "EC" and "salinity" interchangeably and this Order will do the same.

[32] The "mmhos/cm" unit of measure was used for decades but is now outmoded; it is numerically equivalent to the unit of deciSiemens per meter ("dS/m"), which is the preferred measurement unit for salinity in current literature. (*Hoffman Rep.,* p. 5 [00474605].)

As described in the Robie decision, efforts to address water quality objectives in the Delta and set requirements and responsibility for meeting salinity standards extend back to the 1960s and have been the subject of extensive regulatory and court proceedings over the years. (*SWRCB Cases*, *supra,* 136 Cal.App.4th at pp. 694-705.) Controlling salinity for the purposes of agriculture in the southern Delta is challenging due to many factors, including "low flows; tidal action; diversions by the CVP, SWP, and local water users; agricultural return flows, poor circulation; and channel capacity. … Attainment of these salinity objectives proved difficult because of the complex interaction of the factors that affect salinity levels in the southern Delta and use of compliance locations in the interior Delta that are not optimally located to assess salinity over a wide area." (*MR 3.3*, p. 6 [00521866].)

The 2006 Bay-Delta Plan had identified several "emerging issues" that the Board was charged with reviewing, including "the salinity requirements of the beneficial uses of water in the southern Delta." (*2006 Bay-Delta Plan*, p. 6 [00530583].) As noted above, to comply with the directive from the 2006 Bay-Delta Plan, the Board selected a consultant to prepare a report evaluating southern Delta salinity, Dr. Glenn J. Hoffman, who produced the report that is included in the SED as Appendix E, "*Salt Tolerance of Crops in the Southern Sacramento-San Joaquin Delta*" (*MR 3.3*, p. 2 [00521862].) The Board's charge to Hoffman was to recommend a southern Delta salinity objective to the Board "that would provide full protection of the most salt sensitive crop type on drainage-impaired soils in the study area." (*Id.* at p. 6 [00521866].) The Board released a draft of the Hoffman Report in 2009 and held two public workshops where the Board solicited comments and then responded to them. (*Id.* at p. 8 [00521868].) Hoffman included responses to the written comments he received on the draft report in the final version issued on January 10, 2010. (*Ibid.*)

The record also contains a study commissioned by the Delta Water Agencies to analyze southern Delta leaching fractions, resulting soil salinity, and crop yield for alfalfa. (*MR 3.3*, p. 3 [0051863].) This 2016 study, "*Leaching Fractions Achieved in South Delta Soils under Alfalfa Culture*," by Michelle Leinfelder-Miles, a farm advisor for the UC Cooperative Extension ("Leinfelder-Miles Study"), involves sampling at alfalfa fields in the southern Delta in 2013 and 2014. (*Leinfelder-Miles Study*, p. 5 [00745220].) While the parties disagree how this study should be weighed for purposes of evaluating the Board's decision to adopt the salinity

objective, the Court will reference the Leinfelder-Miles Study where its explanation of the methodology used to assess the effect of salinity on crops is helpful.

Many factors affect the soil and growing conditions, including "plant response to soil salinity, effective rainfall, irrigation management and method, uniformity of water applications, crop root water update distribution climate, preferential (bypass) flow of applied water through the soil profile, leaching fraction, salt precipitation/dissolution in the crop root zone, and extraction of water by crops from shallow groundwater." (*Hoffman Rep.,* p. 4 [00474604].) Salinity affects crop yields because excess salt forces the plants to spend more energy to acquire water from the soil, and this diversion of energy to water extraction affects the plant's rate of growth. (*Id.* at p. 24 [00474624].) Irrigation practices affect salinity management and crop response, and the pattern of salt distribution in any given field varies depending on "soil properties, variances in water management, and the design of the irrigation system." (*Id.* at p. 34 [0047634].)

When applied water containing salt "is evaporated and transpired—known as evapotranspiration—salts accumulate in the root zone." (*Leinfelder-Miles Study,* p. 1 [00745216].) To prevent salt accumulation, more water than that used by evapotranspiration must be applied—the "root zone must be leached to maintain salts below crop tolerance thresholds." (*Ibid.*) There are two terms related to how this is evaluated for purposes of establishing a salinity standard: the "leaching fraction" and the "leaching requirement." "The leaching fraction is the fraction of the total applied water that passes below the root zone. The leaching requirement is the minimum amount of the total applied water that must pass through the root zone to prevent a reduction in crop yield from excess salts." (*Ibid.*) A higher leaching fraction means a greater percentage of the irrigation water is passing through the root zone — "the higher the leaching fraction, the lower the soil salinity." (*Hoffman Rep.*, p. 79 [00474670].)

The Hoffman Report states that the "leaching fraction in the South Delta is difficult to estimate because measurements of soil salinity or salt concentration of drainage water are not measured routinely." (*Hoffman Rep.,* p. 51 [00474651].) However, there are several subsurface drains where the electrical conductivity of water collected from agricultural drainage has been measured and the data included in published reports over time. (*Ibid.*) The Hoffman Report surveys the published reports and the EC values of the drainage water and calculates the leaching

fraction for the years of sampled data using an EC value for irrigation water of 0.7 dS/m, the standard in the 2006 Plan. (*Hoffman Rep.*, pp. 52-54 [00474652-654].)

The Hoffman Report then discusses the various models used to evaluate the effect of irrigation water salinity on crops and how each model accounts for the numerous variables that affect determining an EC value for applied (irrigation) water. (*Hoffman Rep.*, pp. 57-67 [00474657-668].) The Report also discusses the modeling for the south Delta and discusses the reasons why beans, alfalfa and almonds were modeled and how the various inputs to the model are determined. (*Id.* at pp. 68-78 [00474668-678].) The Report then discusses the model results for each of the crops evaluated, showing the values for "total, growing season, and non-growing season precipitation, off season evaporation, and crop evapotranspiration for 57 water years" and running the models using a range of EC values from 0.5 to 2.0 dS/m for irrigation water salinity and with a leaching fraction of 0.15, 0.2 and 0.25. The Report also calculates the relative yield for the crops as a function of irrigation water salinity for the different leaching fractions, selecting three crops for the Report's focus: "bean because it is the most salt sensitive crop in the South Delta with any significant acreage; alfalfa, a perennial crop, was used to set the current salinity objective for the time of year not governed by bean; and almond because it is a salt sensitive, perennial tree crop." (*Hoffman Rep.*, p. 68 [00474668].)

The Hoffman Report concluded that "all of the models presented in this report predict that the water quality standard could be increased to as high as 0.9 to 1.1 dS/m and all of the crops normally grown in the South Delta would be protected." (*Hoffman Rep.*, p. 202 [00474701].) The Board relied on the scientific information and analysis in the Hoffman Report to support the Revised Plan related to the salinity objective. (*Ch. 23*, p. 7 [004739540] ("The analysis in Appendix E concludes that the proposed 1.0 dS/cm [*sic*] EC objective provides for 100 percent yields under most hydrological conditions, and 95 percent yields for the most salt-sensitive crop grown in the region (i.e., dry beans) under dry year conditions and, therefore, adequately protects agricultural beneficial use in the southern Delta. Consequently, the existing April–August water quality of 0.7 dS/m, which has never been consistently achieved at all of the required locations, is over protective.") The Board states that the Hoffman Report's conclusion "was based on thorough literature review of southern Delta salinity conditions and the effects of salinity on crops, as well as detailed steady-state modeling of how irrigation water salinity could reduce yield." (*MR 3.3.*, p. 6 [00521866].)

The Board submitted the Hoffman Report for external peer review, consistent with the Board's peer review process. (*MR 3.3*, p. 13 [00521873].) Mark E. Grismer, PhD, PE, Professor of Hydrology and Engineering at U.C. Davis, provided the peer review, concluding that the Hoffman Report "provides an excellent summary of the state of current knowledge about soil salinity impacts on irrigated agricultural production. … Overall, I support his Conclusions in Section 6 and Recommendations in Section 7." (Grismer, *Peer Review*, Nov. 10, 2011, p. 4 [00020807].)

The Board notes that maintaining a salinity objective that is lower than needed to protect agriculture would require additional releases from reservoirs that reduce the water available for other water users and reservoir storage. (*MR 3.3*, p. 7 [00521867].) For example, for the US to meet the 0.7 dS/m salinity objective at the interior Delta stations would require about 60,000 acre-feet of releases from New Melones Reservoir, primarily between June and August, to meet what the Board characterizes as an "overprotective salinity objective." (*Ibid.*)

The Board states that the salinity and flow objectives are "connected components" of the Revised Plan since the "[i]ncreased flows under the LSJR flow objectives would have the incidental benefit of providing low salinity irrigation water supply that would flush salts early in the irrigation season and, thus, provide better salinity conditions during germination of crops in the springtime," providing "a comprehensive solution for maximizing the beneficial uses of water." (*MR 3.3*, p. 3 [00521863].)

I. Whether the Record Supports the Salinity Objective

Petitioners the Delta Water Agencies contend that the Board relied on incorrect data in calculating the leaching fraction, and that the Board's reliance on the Hoffman Report to set the salinity objective was arbitrary, capricious and lacking in evidentiary support.[33] (Delta Water Agencies Op. Br., pp. 7-8.) They argue that in using the water quality standard of 0.7 dS/m, Hoffman used a value for salinity that is lower than the actual salinity level of irrigation water applied to crops in the southern Delta. They assert that neither Board staff, nor Hoffman "made any effort to conduct a field test to determine if salts were accumulating in the soils." (*Id.* at p.

[33] The Delta Water Agencies assert this claim in their first cause of action, which is not brought under the Porter-Cologne Act, but under Code of Civil Procedure section 1085, seeking a writ of mandate to correct an abuse of discretion.

14.) As a consequence, they argue "Hoffman's calculations are simply wrong" whether the quality of applied water was higher or lower than the assumed level of 0.7 EC. (*Id.* at p. 16.)

The Delta Water Agencies also assert that Hoffman should not have relied on the data from the tile drains to determine the denominator of the leaching fraction, contending that "it is imperative to use the applied water quality that existed when the drain water was produced." (Delta Water Agencies Op. Br., p. 15.) They argue that the data regarding salinity from the tile drains did not represent the salts leaching from applied water but rather was influenced by groundwater quality. (*Id.* at p. 17.) The Delta Water Agencies reference the Leinfelder-Miles study, which used sampled data from alfalfa fields and calculated leaching fractions that ranged between 3% and 26%, as evidence that the Hoffman Report contained faulty conclusions. (*Id.* at pp. 19-26.)

The Hoffman Report employed a methodology similar to that employed by the Board to determine the salinity objective to protect agricultural beneficial uses in 1978, where the Board determined the "water quality needs of significant crops grown in the area, the predominant soil type, and local irrigation practices" using "the calculated maximum salinity of applied water" that sustains 100% yields of beans and alfalfa "in conditions typical of the southern Delta." (*Intro*, p. 9 [004668845].) Responding to comments during the public review of the SED regarding the need for field testing, the Board explained that field testing "could be informative but it is not necessary in light of the overall conclusion of the Hoffman Report." (*MR 3.3*, p. 9 [00521869].) The Board stated that "while the Board did not conduct any additional field testing in light of Dr. Hoffman's conclusion, other field studies have been conducted (i.e., Leinfelder-Miles's study), which the Board has considered, and they reinforce the Hoffman [Report's] conclusion that salinity conditions in the southern Delta are suitable for all crops." (*Ibid.*)

The Court finds that the Hoffman Report contains a thorough survey of available data from a variety of studies and reports that Hoffman relied upon in modeling salinity, the leaching fraction, and the relationship to crop yields. The record contains sufficient evidence to support the reasonableness of the Board's reliance on the surveyed data, rather than data created through new field testing, in establishing the salinity objective.

Turning to the issue of the inputs used by the Hoffman Report to opine on a salinity objective "that is not lower than necessary to reasonably protect the most salt sensitive crops" grown in the southern Delta, one fundamental question raised by the Delta Water Agencies'

argument is whether it was reasonable for the Hoffman Report to run models using an EC value for irrigation water of 0.7 dS/m when the record contains evidence that the salinity of the applied water may differ from that value.

Data from the four compliance locations measured over time shows that the 0.7 dS/m standard at Vernalis is almost always met. Vernalis "exceeded 0.7 dS/m EC only once during April-August, just barely in July of 2015." (*Ch. 23,* p. 9 [00473956].) However, for the three compliance measuring stations in the interior Delta, "the average monthly EC exceeded 0.7 dS/m more frequently over the last 2 decades." (*Ibid.*) "The standards at the interior south Delta stations are more difficult to achieve because of high salinity runoff from agricultural land downstream of Vernalis. There are also additional sources of salinity between Vernalis and the other locations, as well as diversions and other hydrodynamic factors that may increase salinity concentrations at the interior locations compared to Vernalis." (*Ibid.*) The SED states that "[t]ypically exceedance occurs due to dry hydrologic conditions in the Sacramento River and SJR Basins and degradation occurring downstream of Vernalis." (*Intro,* p. 11 [00468847].) Further complicating the assessment of translating a salinity objective into water quality for agriculture in the southern Delta, "there is often insufficient SJR flow to meet the consumptive demand of all the diversions in the Southern Delta. The result is that Sacramento River water is drawn across the Delta into channels of the southern Delta where it mixes with the SJR flow." (*MR 3.3,* p. 20 [00521880].)

The SED, however, also notes that "[t]here is a strong relationship between EC values at Vernalis and EC at downstream monitoring locations under most flow regimes." (*Ch. 23,* p. 9 [00473956].) The Board is retaining the objective of 0.7 dS/M at Vernalis from April-August for the US precisely for the reason that it provides "assimilative capacity for salinity in the southern Delta during the irrigation season," defining "assimilative capacity" as the ability of a body of water to absorb salinity without exceeding the objectives. (*MR 3.3,* p. 2 [00521862].) With the increased flow in the SJR established by the flow objectives, overall salinity concentrations would improve in the southern Delta based on modeled baseline conditions and the change in EC value based on percent of unimpaired flow, with minor increases in salinity primarily in December and January. (*MR 3.3,* p. 18 [00521878].)

The Leinfelder-Miles Study notes that the irrigation water for the seven alfalfa sites where the samples for that study were taken "is sourced from the San Joaquin River, including

Old River, Middle River, and connecting canals and sloughs. Water quality from these sources varies temporally with flows but also spatially depending on tidal and current influences." (*Leinfelder-Miles Study*, p. 3 [00745220].) The Leinfelder-Miles Study also recognizes that because the study involved surveying current conditions, "other sources of variability that affect yield—like pest pressure or stand quality, among others—could not be statistically controlled. Thus, a statistical relationship between salinity and yield was not evident." (*Id.* at p. 13 [00745228].) In response to public comments, the Board noted that "[d]espite low leaching fractions observed in the Leinfelder-Miles study, alfalfa yields associated with these low leaching fractions are the same or higher than statewide average yields, and not correlated with soil salinity. This shows that even with low leaching fractions, current water quality conditions are adequate to support the agricultural production in the southern Delta." (*MR 3.3*, p. 4 [00521864].)

Hoffman modeled crop yield results using values of 0.7 dS/m and 1.0 dS/m for applied water, leaching fractions ranging from 15% to 25%, and using varied assumptions about annual precipitation. (*Hoffman Rep.*, pp. 79-85 [00474679-685] (beans); pp. 86-91 [00474686-691] (alfalfa); pp. 92-97 [00474692-697] (almonds).) He deployed different models to assess the impacts on crop yields and charted the results against crop tolerance thresholds for salinity surveyed in the study. (*Ibid*.) The results of his calculations show that even at EC levels for applied water higher than 0.7 dS/m there would be no yield losses if the leaching fraction was higher than 0.20, meaning that 20% of the applied water passes through the soil and helps to leach salts that pass into the irrigation discharge. This would be within the average leaching fraction Hoffman calculated for the Delta of 21% to 27%. (*Id.* at p. 100 [00474700].) The Hoffman Report concludes that "no loss in bean yield would occur even at the lowest annual rainfall amounts from 1952 to 2008 if the leaching fraction was higher than 0.20 with an [irrigation water salinity] of 1.0 dS/m. At a leaching fraction of 0.15, yield losses would be predicted at rainfall below the median value of 10.5 inches. At the 5 percentile for rain, yield losses would be 5%." (*Ibid.*) He notes that the results for the bean is "substantiated by the observation that bean is furrow irrigated with an irrigation efficiency of about 70% which results in a high leaching fraction." (*Id.* at p. 101 [00474701].)

The Board addressed its decision to request that Hoffman model the salinity impacts on agriculture using a 0.7 dS/m standard. The Board explained that "assuming applied water quality

of 0.7 dS/m was a conservative assumption to help avoid overestimating leaching fractions … because it would mean that less irrigation water passed through the root zone to achieve the salt concentration seen in the drainage data. If a higher irrigation water salinity was assumed and used with the tile drain data, the estimated leaching fractions would have been larger." (*MR 3.3*, p. 10 [00521870]; see also *Hoffman Rep.*, p. 5 [00474605] ("High levels of salinity reduce swelling and aggregate breakdown (dispersion) and promote water penetration); p. 127 [00474727] ("[I]t is well known that the rate of water penetration into and through a soil is increased as the salt content of the water increases. Thus, increasing the water quality objective will decrease the soaking time.").)

The record establishes that the conditions in the interior southern Delta that affect salinity of irrigation water are complex and varied and, as a result, deriving a single standard that will be met by managing flows on the SJR is a complicated undertaking. The record also demonstrates that the Board made reasonable assumptions in modeling the impact of salinity on crops grown in the southern Delta and that modeling impact on yields using EC values of applied water of 0.7 dS/m and 1.0 dS/m, as Hoffman did in his study, was reasonable.

The Delta Water Agencies also challenge Hoffman's reliance on data taken from tile drains for the salinity values of irrigation water that leaches from the soil. Tile drains are "subsurface drains installed to provide drainage for soils that otherwise do not drain adequately to support irrigated agriculture. They are installed to lower shallow groundwater below the root zone of crops and to remove high salinity water." (*MR 3.3*, p. 3 [00521863]; see also *Hoffman Rep.*, p. 51 [00474651] ("[T]here are several areas where subsurface drains have been installed and the electrical conductivity of the drainage water measured for various periods of time.")

In discussing the data on sampled tile drain discharge used to calculate the leaching fraction, the Hoffman Report describes the various studies and sample locations for tile drain water EC levels, noting that the data are "relatively consistent from one year to the next with values from the different drains ranging from 1.6 to 6.2 dS/m with an overall average of 3.0 dS/m. (*Hoffman Rep.*, p. 51 [00474651].) The Hoffman Report concludes that data from one set of the tile drains indicates that "[r]egardless of the applied water quality, the leaching fractions are relatively high and indicative of surface irrigation systems managed to prevent crop water stress and avoid excess salinity." (*Ibid.*) Discussing a separate source of tile drain discharge where measurements were taken over 17 years and were found to be "relatively stable," the

average EC of drainage water was 2.6 dS/m. Using the applied water EC of 0.7 dS/m, the average annual leaching fraction would be 0.27. (*Hoffman Rep.*, p. 53 [00474653].)

The Delta Water Agencies point to the Leinfelder-Miles Study that shows relative low leaching fractions for the alfalfa fields she sampled, as evidence that the Hoffman Report's conclusions are flawed. However, Leinfelder-Miles notes that "alfalfa is often grown on soils with a lower water infiltration rate, and as a perennial crop, it has a high ET [evapotranspiration] demand, generally over 48 inches annually." (*Leinfelder-Miles Study*, p. 3 [00745218], citing the *Hoffman Rep*.) The Board noted that "[t]he assertion that the observed low leaching fractions cited in the Leinfelder-Miles Study invalidates the conclusions in Appendix E is unfounded because the data presented in the Leinfelder-Miles study itself shows that alfalfa yields can and are maintained at very high levels in spite of low leaching fractions," and the yield results "do not show a correlation between leaching fractions and yield." (*MR 3.3*, p. 11 [00521871].) The Board also noted that "[t]here was little information available on shallow groundwater, surface runoff, and subsurface drainage to go with the tile drain data used to calculate leaching fractions in the southern Delta." (*MR 3.3*, p. 10 [00521870].) The Board stated that "[f]ocusing exclusively on the data and methods used to estimate leaching fractions misses the relevant point of the [Hoffman] report. Based on available scientific literature, Appendix E shows how crops are affected by salinity, based on a number of factors, including crop salt tolerance thresholds, irrigation water salinity, and leaching fractions." (*Ibid*.) The Board also states that the "analysis and steady-state modeling were intended to show how these factors influence crop productivity and yields. The analysis does not consider all the agricultural management practices that must be employed to maintain crop yields in areas with very low leaching fractions or shallow groundwater." (*Ibid*.)

This Court must "resolve all reasonable doubts and accept all reasonable inferences supporting the administrative findings. The fact that different inferences or conclusions could be drawn, or that different modes of gathering and compiling statistics could have been employed, it is not determinative in a substantial evidence review." (*County of Los Angeles v. Glendora Redevelopment Project* (2010) 185 Cal.App.4th 817, 835-836.) The Court agrees with the Board's conclusions that differences between the data in the Leinfelder-Miles study and that in the Hoffman Report can be explained. (*See MR 3.3*, pp. 10-13 [00521870-871] (data from the Leinfelder-Miles study was collected during observed during two severe drought years; data was

obtained from fields that are generally not of a soil type used for cultivation of crops like beans; despite low leaching fractions, the alfalfa yields are very high; leaching fractions vary spatially and temporally because soil conditions are not uniform, and weather conditions are always changing.) The Court finds that there is adequate support in the record for the reliance on tile drain EC values to establish the leaching fractions used in the Hoffman Report. The Court has reviewed the Hoffman Report, the Leinfelder-Miles Study, and the discussions in the SED and Master Responses carefully and concludes that the Board's reliance on the Hoffman Report to support establishing the revised salinity objective is reasonable and not arbitrary or capricious.

II. Whether the Salinity Objective Violates the Porter-Cologne Act

Stockton East contends that the Revised Plan relies "exclusively on flow measures" to "dilute pollution" rather than addressing it through non-flow measures and contends that the salinity standard absent "other implementable controllable factors to address salinity" is "neither acceptable nor legal." (Stockton East Op. Br., p. 40.) Stockton East also asserts that the program of implementation fails to show why flows are necessary to achieve the Salinity Objective and that the Board is "required by law" to first implement non-flow measures to reach water quality objectives, citing to regulations related to standard permit terms. Finally, Stockton East argues that the Board violated section 13242 (a) because it "imposes a more stringent standard on the New Permit (0.7 dS/m) than is identified to meet the beneficial use (1.0 dS/m)" and this is not "necessary to achieve the objectives." (Stockton East Op. Br., p. 43.)

As noted above, the salinity and flow objectives are "connected components" of the Revised Plan, providing "a comprehensive solution for maximizing the beneficial uses of water." (*MR 3.3,* p. 3 [00521863].) This comprehensive solution includes the program of implementation and the non-flow measures recommended in the SED. The Revised Plan requires special studies to evaluate salinity conditions in the southern Delta waterways, including local salt discharges, and requires continued operations of agricultural barriers that affect southern Delta salinity, as well as conditions on water right permits to address modifications to the design and operation of the barriers. (*Revised Plan*, pp. 44-46 [00741366-68].) Thus, the Court disagrees with Stockton East's characterization that the Revised Plan relies "exclusively" on flow to meet the salinity standards.

The causes of salinity in the Delta are due to the interaction of multiple factors, including diversion of water from the rivers and agricultural return flows. (*See, e.g., Ch. 3,* p. 35

[00469771] ("Salinity levels in the southern Delta are affected primarily by the salinity of water flowing in to the southern Delta from the SJR near Vernalis, which is affected by flows; the evapoconcentration of salts in water diverted and discharged back into the channels by the [SWP and CVP], and local water users; agricultural return flows; poor circulation; and channel capacity.") D-1641 recognized the influence of irrigation return flows on the water quality in the southern Delta and has held the US responsible for addressing the salinity levels with flow because contractors that receive water from the US "are the principal cause of the salinity concentrations exceeding the objectives at Vernalis." (*D-1641*, p. 83 [00177815].) "The salinity problem at Vernalis is the result of saline discharges to the river, principally from irrigated agriculture, combined with low flows in the river due to upstream water development. The source of much of the saline discharge to the San Joaquin River is from lands on the west side of the San Joaquin Valley which are irrigated with water provided from the Delta by the CVP . . . [Reclamation], through its activities associated with operating the CVP in the San Joaquin River Basin, is responsible for significant deterioration of water quality in the southern Delta." (*Ibid.*) The Board has addressed the impacts of salinity on agriculture in the southern Delta primarily by dilution. (*See, e.g., Ch. 3*, p. 36 [00469772] ("Although there are a number of projects that have been developed and are currently under development to reduce salt loading in the SJR, release of stored water by [Reclamation] will continue to be the principal means to comply with the salinity objective at Vernalis.")

The Board discussed the possibility of other measures that would allow for more localized control over salinity in the SED, such as site-specific irrigation requirements. Ultimately the Board concluded that "[s]ite specific salinity requirements would allow the salinity objective to be higher in some areas, but implementing such a set of variable objectives would be infeasible because of the mixed nature of the water supply." (*Ch. 3*, p. 38 [00469774].) The Board also discusses the complexity of managing salinity in the southern Delta and dismisses as infeasible other alternatives to the salinity objective for protecting the beneficial use of agriculture in the southern Delta. (*Id.* at pp. 35-38 [00469771-774].)

The record establishes that flows are required to meet the salinity objectives in the southern Delta, and that the Board has balanced the need for flows for assimilative capacity with alternatives and the costs of doing so. In addition, the record establishes the reasons for retaining the US's obligation to meet the 0.7 dS/m EC standard at Vernalis to protect beneficial use of

agriculture in the southern Delta, and the record contradicts Stockton East's assertion that imposing the requirement on the US is not necessary to achieve the objectives.

Finally, neither of the cases cited by Stockton East involves the Board's water quality control planning functions. Stockton East's reference to the standard permit terms is also inapposite to this case. The Court does not find Stockton East's arguments persuasive and denies its claims that the salinity objective violates the law.

III. Whether the Board Violated its Antidegradation Policy

The Board's antidegradation policy regulates "the disposal of wastes into the waters of the state so as to achieve the 'highest water quality consistent with the maximum benefit to the people of the state.'" (*Asociation de Gente Unida por el Aqua v. Central Valley Regional Water Quality Control Bd.* (2012) 210 Cal.App.4th 1255, 1259, citing to the Board's *Res. No. 68-16,* commonly referred to as the antidegradation policy, October 28, 1968.) "To this end, existing high quality water must be maintained unless any change will be consistent with the maximum benefit to the people of the state, will not unreasonably affect the beneficial use, and will not result in water quality that is below that prescribed by water policies." (*Ibid; see also Res. No. 68-16,* beginning at 00773993.) The measure of "existing high quality water" is "the best water quality achieved since the adoption of the antidegradation policy by the [Board] in 1968." (*Ibid.*)

The Board adopted the antidegradation policy to be consistent with the "spirit, intent, and goals" of the federal water quality standard regulations under the Clean Water Act. (*Res. No. 68-16,* App. I-3 [00774005].) The policy provides that the Board may determine it is not necessary to do a complete antidegradation analysis if the Board determines that the "discharge will not be adverse to the intent and purpose of the State and federal antidegradation policies." (*Id.* at p. 2 [00773994].)

The Board concluded that the Revised Plan "would not result in a lowering of water quality in the Stanislaus, Tuolumne, and Merced Rivers, the LSJR, and the southern Delta. As such, a complete antidegradation analysis is not required." (*Ch. 23,* p. 7 [00473954].) Despite this, the Board performed an antidegradation analysis for the revised Salinity Objective "because raising the April-August 0.7 dS/m salinity water quality objective to 1.0 dS/m may appear to allow water quality degradation." (*Ibid.*) The Board established a baseline water quality for salinity concentrations, consistent with the directives of Resolution No. 68-16, selecting 1995-2015 as the appropriate time period for the antidegradation analysis because it "represents water

quality conditions for a range of wet and dry water years" and "is consistent with [Board] guidance that baseline water quality should be representative of the water body, accounting for temporal and spatial variability." (*Id.* at p. 12 [00473959].)

The Board used the WSE model to simulate water operations, describing the inputs and assumptions made to run the model in Chapter 23. (*Ch. 23*, pp. 12-14 [00473959-961].) The analysis concluded that "overall, the baseline salinity in the southern Delta would not only be maintained under the proposed plan amendments, consistent with antidegradation requirements, but would generally improve during the irrigation season." (*Id.* at p. 14 [00473961].)

SJTA and Merced ID contend that the Board failed to perform the necessary analysis to comply with its antidegradation policy. (SJTA Op. Br., p. 57; Merced ID Op. Br., p. 35.) SJTA also asserts that the Board "takes the position" that scientific analysis will be performed later rather than performing scientific analysis in advance of changing the salinity objectives. (*Id.* at p. 58.) NCRA asserts that the Revised Plan, in relaxing the salinity standard from 0.7 dS/m to 1.0 dS/m for certain months, will unreasonably affect present and anticipated beneficial uses of water and result in water quality less than that prescribed in current policies, in violation of the Porter-Cologne Act and the antidegradation policy. (NCRA Op. Br., pp. 34-35.)

The Board's antidegradation analysis shows that salinity conditions in the southern Delta would be maintained under the new flow and salinity objectives. (*Ch. 23*, p. 7 [00473954].) The CEQA analysis, where the Board evaluated the status quo as the "no project" alternative, shows that by keeping the US's obligations unchanged, which means maintaining its obligation to meet the 0.7 dS/M at Vernalis from April through August, salinity levels in the southern Delta will be maintained at levels "generally no higher than approximately 1.0 dS/m." (*Ch. 3*, p. 36 [00469772].) The Court finds that the scientific evidence in the record, including the Hoffman Report, supports the Board's decision to establish the salinity objective. The Board's analysis of the scientific evidence was rational, and the Board's decision to establish the salinity objective was within its discretion. SJTA's claims are, therefore, denied.

As to NCRA's characterization that changing the salinity standards at the interior compliance points to 1.0 dS/m year-round will "substantially lower" water quality, the record demonstrates otherwise. As noted in the previous paragraph, because the Board is retaining the 0.7 dS/m requirement for the US at Vernalis, the salinity levels in the southern Delta will be generally maintained at 1.0 dS/m. As discussed earlier, many factors affect salinity in the

southern Delta, and the Board has determined that it would not be reasonable to release additional water at New Melones to meet levels lower than 1.0 dS/m. "Objectives lower than 1.0 were eliminated from consideration because if such low salinities were required in the interior southern Delta this would require much lower salinity at Vernalis to account for the degradation of water quality that occurs downstream, and thus the release of more stored water." (*Ch. 3*, p. 27 [00469773].) If this were the case, "[w]ater released from storage would not be available for other uses of water. Salinity objectives lower than 0.7 dS/m at Vernalis were eliminated from consideration because of the unreasonably high water costs." (*Ibid.*) In addition, the Board's modeling shows that the "baseline salinity in the southern Delta would not only be maintained under the proposed plan amendments, consistent with antidegradation requirements, but would generally improve during the irrigation season." (*Ch. 23*, p. 14 [00473961].) As discussed above, the Board has also demonstrated that it is maintaining a salinity standard in the southern Delta that is sufficient to protect agricultural beneficial uses. (See *Ch. 23*, p. 24 [00473972].)

The Board's determination that the Revised Plan will not lower existing water quality conditions is supported by the record and complies with the antidegradation policy. Petitioners' antidegradation claims are, therefore, denied.

CONCLUSION

The Court has endeavored to address all of petitioner's pending 116 claims. But given the volume of claims, and the nuanced points many of them present, it is possible that not all claims have been addressed to the satisfaction of all parties. It is also possible that certain claims were not specifically addressed. The Court, however, has carefully considered all pending claims, and if any claims were not specifically addressed in this order, the Court did not find them persuasive. Accordingly, as discussed in this order, petitioners' claims are all denied.

Date: March 15, 2024

_____

HONORABLE STEPHEN ACQUISTO
Coordination Trial Judge

***

This is the Court's final and formal order. Counsel for the Board is directed to prepare a judgment, attaching this order as an exhibit, submit it to petitioners' counsel for approval as to form, and then submit it to the Court for signature, in accordance with California Rules of Court, rule 3.1312.

southern Delta, and the Board has determined that it would not be reasonable to release additional water at New Melones to meet levels lower than 1.0 dS/m. "Objectives lower than 1.0 were eliminated from consideration because if such low salinities were required in the interior southern Delta this would require much lower salinity at Vernalis to account for the degradation of water quality that occurs downstream, and thus the release of more stored water." (*Ch. 3*, p. 27 [00469773].) If this were the case, "[w]ater released from storage would not be available for other uses of water. Salinity objectives lower than 0.7 dS/m at Vernalis were eliminated from consideration because of the unreasonably high water costs." (*Ibid.*) In addition, the Board's modeling shows that the "baseline salinity in the southern Delta would not only be maintained under the proposed plan amendments, consistent with antidegradation requirements, but would generally improve during the irrigation season." (*Ch. 23*, p. 14 [00473961].) As discussed above, the Board has also demonstrated that it is maintaining a salinity standard in the southern Delta that is sufficient to protect agricultural beneficial uses. (See *Ch. 23*, p. 24 [00473972].)

The Board's determination that the Revised Plan will not lower existing water quality conditions is supported by the record and complies with the antidegradation policy. Petitioners' antidegradation claims are, therefore, denied.

CONCLUSION

The Court has endeavored to address all of petitioner's pending 116 claims. But given the volume of claims, and the nuanced points many of them present, it is possible that not all claims have been addressed to the satisfaction of all parties. There are also certain claims that were not specifically addressed. The Court, however, has carefully considered and evaluated those claims as well, and did not find them to be persuasive. Accordingly, as discussed in this order, petitioners' claims are all denied.

Date: March 15, 2024

SUPERIOR COURT OF CALIFORNIA COUNTY OF SACRAMENTO

HONORABLE STEPHEN ACQUISTO
Coordination Trial Judge

***

This is the Court's final and formal order. Counsel for the Board is directed to prepare a judgment, attaching this order as an exhibit, submit it to petitioners' counsel for approval as to form, and then submit it to the Court for signature, in accordance with California Rules of Court, rule 3.1312.

CERTIFICATE OF ELECTRONIC SERVICE

I, the Clerk of the Superior Court of California, County of Sacramento, certify that I am not a party to this cause, and on the date shown below I served the foregoing ORDER by electronic service to the below addresses:

Mark W. Poole Mark.poole@doj.ca.gov	Adrian G. Cadoppi acadoppi@duanemorris.com
Tamara T. Zakim Tamara.zakim@doj.ca.gov	Alan N. Bick abick@bicklawllp.com
Dylan K. Johnson Dylan.johnson@doj.ca.gov	Corrie L. Plant cplant@bicklawllp.com
Lindsay Walter Lindsay.walter@doj.ca.gov	Lauren Partch lpartch@bicklawllp.com
Phillip R. McMurray pmcmurray@mercedid.org	Tamara Grant tgrant@bicklawllp.com
Daniel J. O'Hanlon dohanlon@kmtg.com	Tommi R. Saghatelian tsaghatelian@wwd.ca.gov
Carissa M. Beecham cbeecham@kmtg.com	Jennifer T. Buckman jtb@bkslawfirm.com
Jenifer N. Ryan jryan@kmtg.com	Gregory J. Newmark gnewmark@meyersnave.com
Andrea A. Matarazzo andrea@pioneerlawgroup.net	Timothy J. Wasiewski Tw@pariskincaid.com
Kathryn L. Patterson kathryn@pioneerlawgroup.net	Valerie C. Kincaid vkincadid@pariskincaid.com
Colin L. Pearce clpearce@duanemorris.com	Jonathan R. Marz jmarz@pariskincaid.com

Bryan A. Boersma bboersma@pariskincaid.com	Nicholas A. Jacobs njacobs@somachlaw.com
Nathan A. Metcalf nmetcalf@hansonbridgett.com	Kelley M. Taber ktaber@somachlaw.com
Sean G. Herman sherman@hansonbridgett.com	Romney Philpott Romney.Philpott@usdoj.gov
Lilliana Selke lselke@herumcrabtree.com	Holly Jacobson hjj@bkslawfirm.com
Jeanne M. Zolezzi jzolezzi@herumcrabtree.com	Kelli L. Taylor Kelli.l.taylor@usdoj.gov
Mia S. Brown mbrown@ssjid.com	John Herrick jherrlaw@aol.com
Tim O'Laughlin Tim@olaughlinplc.com	Dante John Nomellini, Sr. ngmplcs@pacbell.net
Arthur F. Godwin afg@rbgmlaw.com	Dante J. Nomellini, Jr. dantejr@pacbell.net
Robb W. Kapla Robb.Kapla@sfcityatty.org	Christopher Pisano Christopher.Pisano@bbklaw.com
Christian C. Scheuring cscheuring@cfbf.com	Kira Johnson Kira.Johnson@bbklaw.com
Erika Norman Erika.Norman@usdoj.gov	Miles Krieger Miles.Krieger@bbklaw.com
Stephan C. Volker svolker@volkerlaw.com	S. Dean Ruiz dean@mohanlaw.net
Stephanie L. Clarke Sclarke@volkerlaw.com	Nina C. Robertson Nrobertson@earthjustice.org

Jamey M.B. Volker Jvolker@volkerlaw.com	Anna K. Stimmel Astimmel@earthjustice.org
Marie E. Logan Mlogan@earthjustice.org	Joseph Griffin jgriffin@earthjustice.org
Katrina Tomas ktomas@earthjustice.org	Michelle Chester mchester@somachlaw.com
Aja Lynch alynch@pariskincaid.com	Gerie Johnson gjohnson@somachlaw.com
Pennie MacPherson pmacpherson@somachlaw.com	Jules Tran jtran@cfbf.com
Jennifer Estabrook jestabrook@somachlaw.com	Heather McCoy Heather.mccoy@bbklaw.com
Mary Halverson Mary.halverson@bbklaw.com	Houda Matar Houda.matar@bbklaw.com
Gloria Loomis gloomis@somachlaw.com	

I, the undersigned deputy clerk, declare under penalty of perjury that the foregoing is true and correct.

Dated: March 15, 2024

Superior Court of California,
County of Sacramento

By: B. Pollock

Deputy Clerk