

1 ALAMEDA COUNTY WATER DISTRICT  
2 ALAMEDA COUNTY FLOOD CONTROL AND  
3 WATER CONSERVATION DISTRICT, ZONE 7  
4 CONTRA COSTA WATER DISTRICT  
5 KERN COUNTY WATER AGENCY  
6 METROPOLITAN WATER DISTRICT OF  
7 SOUTHERN CALIFORNIA  
8 STATE WATER CONTRACTORS  
9 SAN LUIS & DELTA-MENDOTA WATER  
10 AUTHORITY  
11 SANTA CLARA VALLEY WATER DISTRICT  
12 WESTLANDS WATER DISTRICT



13 *See List of Counsel for Water Agencies in*  
14 *Attachment 1*

15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
BEFORE THE  
CALIFORNIA STATE WATER RESOURCES CONTROL BOARD

13 In the Matter of the Sacramento Regional County  
14 Sanitation District's Petition for Review of Action  
15 and Failure to Act by Regional Water Quality  
16 Control Board, Central Valley Region, in Adopting  
17 Waste Discharge Requirements Order No.  
18 R5-2010-0114 (NPDES No. CA0077682) and  
19 Time Schedule Order No. R5-2010-0115 for  
20 Sacramento Regional County Sanitation District,  
21 Sacramento Regional Wastewater Treatment Plant.

SWRCB/OCC File Nos. A-2144(a) and  
A-2144(b) (Consolidated)

**PUBLIC WATER AGENCIES'  
COMMENTS ON DRAFT ORDER**

## TABLE OF CONTENTS

		Page
1		
2		
3	I. INTRODUCTION .....	1
4	II. THE DRAFT ORDER PROPERLY AFFIRMS THAT THE PERMIT LIMITS	
5	ON HARMFUL HUMAN PATHOGENS ARE AMPLY SUPPORTED BY THE	
6	ADMINISTRATIVE RECORD AND APPLICABLE LAW, AND THE	
7	ADMINISTRATIVE RECORD CONTAINS ADDITIONAL SUPPORTING	
8	LINES OF EVIDENCE .....	3
9	III. THE DRAFT ORDER PROPERLY AFFIRMS THAT THE PERMIT LIMITS	
10	ON AMMONIA ARE AMPLY SUPPORTED BY THE ADMINISTRATIVE	
11	RECORD AND APPLICABLE LAW, AND THE ADMINISTRATIVE RECORD	
12	CONTAINS ADDITIONAL SUPPORTING LINES OF EVIDENCE.....	6
13	A. The Draft Order Properly Affirms The Regional Water Board’s Findings	
14	That The Thousands Of Tons Of Ammonia Discharged By The SRWTP	
15	Inhibit Nitrogen Uptake By Diatom Phytoplankton And Harm Copepods	
16	Essential To Listed Fish Species And Aquatic Life In The Delta .....	8
17	B. The Draft Order Properly Affirms The Regional Water Board’s	
18	Determination That Ammonia Concentrations Downstream Of The	
19	Proposed Mixing Zone Would Cause Acute And Chronic Toxicity To	
20	Copepods And Adversely Impact Threatened And Endangered Fish	
21	Species.....	10
22	C. The Draft Order Properly Affirms That The Regional Water Board	
23	Correctly Used The Most Recent Science Underlying U.S. EPA’s Draft	
24	Water Quality Criteria For Ammonia As One Of Multiple Reasons To	
25	Deny A Mixing Zone .....	11
26	D. The Administrative Record Provides Additional Support For The Setting	
27	Of Stringent Ammonia Effluent Limits And The Denial Of A Mixing Zone .....	12
28	1. The Scientific Research By Dr. Patricia Glibert Provides Additional	
	Record Support To Require Total Ammonia And Nitrate Removal .....	13
	2. The Record Shows Ammonia Removal Also Is Required To Stop	
	The Discharger From Causing Ongoing Violations Of The	
	Dissolved Oxygen Objective Essential To Protecting Aquatic Life.....	14
	IV. THE DRAFT ORDER PROPERLY AFFIRMS THAT A PERMIT LIMIT ON	
	NITRATE IS REQUIRED TO PROTECT BENEFICIAL USES, AND THE	
	ADMINISTRATIVE RECORD CONTAINS MULTIPLE LINES OF EVIDENCE	
	SUPPORTING A FINAL NITRATE LIMIT NO HIGHER THAN THE 10 MG/L	
	LIMIT APPROVED BY THE REGIONAL WATER BOARD .....	14
	A. The Final Order Should Affirm The Permit’s 10 Mg/L End-Of-Pipe Nitrate	
	Effluent Limit.....	15
	1. The 10 Mg/L End-Of-Pipe Nitrate Effluent Limit Is Appropriate	
	For The Protection Of Municipal Drinking Water Use .....	15
	2. The Regional Board Properly Denied A Nitrate Mixing Zone Based	
	On Public Health Protection .....	17
	3. The 10 Mg/L End-Of-Pipe Nitrate Effluent Limit Is Independently	
	Justified By The Need To Restore N:P Ratios.....	18
	4. The 10 Mg/L End-Of-Pipe Nitrate Effluent Limit Is Independently	
	Justified By Antidegradation Policy .....	21

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28

**TABLE OF CONTENTS**

(continued)

**Page**

B. If The State Water Board Remands The Permit’s Nitrate Limit To The Regional Water Board For Reassessment, The Final Order Should Direct The Regional Water Board To Consider All Relevant Evidence To Determine A Limit That Is Protective Of Beneficial Uses ..... 22

V. THE FINAL ORDER SHOULD CURTAIL THE PERMIT’S THERMAL PLAN EXCEPTION AND DIRECT THE DISCHARGER TO CARRY OUT A PROJECT TO COMPLY WITH THE THERMAL PLAN IN THE SHORTEST PRACTICABLE TIME..... 25

VI. THE FINAL ORDER SHOULD ACKNOWLEDGE THAT A BROADER RANGE OF LEGAL AUTHORITY SUPPORTS THE PERMIT’S FINAL LIMITS ON AMMONIA, NITRATE AND PATHOGENS AND REQUIRES THE DISCHARGER TO START REDUCING WASTE LOADINGS NOW ..... 29

A. Antidegradation Policy..... 29

1. Antidegradation Policy Applies And Requires Nitrification, Denitrification And Tertiary Filtration As Best Practicable Treatment Or Control Pursuant To Resolution 68-16..... 29

2. The Assessment Of BPTC Compliance Costs Pursuant To Antidegradation Policy Provides Strong Record Evidence Supporting The Permit’s Final Ammonia, Nitrate And Pathogens Limits ..... 31

3. Antidegradation Policy Requires A Shorter BPTC Compliance Schedule And More Stringent Interim Limits Requiring The Discharger To Start Reducing Waste Loadings Now ..... 32

B. Endangered Species Act..... 33

C. The California Constitution And State Water Board Declaration ..... 35

VII. CONCLUSION ..... 36

1 **I. INTRODUCTION**

2 The largest single source of fresh water supply in all California is at stake in this  
3 proceeding. For that reason, the Public Water Agencies<sup>1</sup> strongly support the central findings of  
4 the State Water Resources Control Board's ("State Water Board") Draft Order<sup>2</sup> with respect to  
5 the final ammonia and pathogens limits in the National Pollutant Discharge Elimination System  
6 Permit ("Permit") for the Sacramento Regional Wastewater Treatment Plant ("SRWTP").

7 Specifically:

8 **Pathogens.** The Draft Order properly finds that the Sacramento Regional County  
9 Sanitation District ("Discharger") must employ tertiary filtration to remove harmful pathogens  
10 from its discharge to protect domestic, municipal, agricultural irrigation and recreational uses of  
11 Delta receiving waters against harm from the SRWTP's ongoing, and increasing, discharge of the  
12 human pathogens *Giardia* and *Cryptosporidium*. These important findings are amply supported  
13 by law and by the record developed before the Central Valley Regional Water Quality Control  
14 Board ("Regional Water Board"). We urge the State Water Board to adopt them—and to  
15 supplement the findings with the additional record evidence and legal authority outlined in these  
16 comments.

17 **Ammonia.** The Draft Order properly upholds the Regional Water Board's finding that  
18 the Discharger must employ nitrification to remove the 14 tons per day of ammonia from its  
19 discharge, because the ammonia is inhibiting the primary production of diatom phytoplankton in  
20 the Sacramento-San Joaquin River Delta ("Delta"), is toxic to copepod zooplankton, is harming  
21 critical habitat for endangered species, and is contributing to the decline of fish species listed  
22 under the federal Endangered Species Act ("ESA"). The Draft Order properly rejects the

23  
24 <sup>1</sup> The "Public Water Agencies" are: Alameda County Water District; Alameda County  
25 Flood Control and Water Conservation District, Zone 7; Contra Costa Water District; Kern  
26 County Water Agency; Metropolitan Water District of Southern California; State Water  
Contractors; San Luis & Delta-Mendota Water Authority; Santa Clara Valley Water District; and  
Westlands Water District.

27 <sup>2</sup> The "Draft Order" is Draft Order WQ 2012-XX "In the Matter of Own Motion Review of  
28 Waste Discharge Requirements Order No. R5-2010-0114 [NPDES No. CA0077682] for  
Sacramento Regional Wastewater Treatment Plant."

1 Discharger’s unfounded request for an ammonia “mixing zone” that would compromise the  
2 integrity of the Delta from the point of discharge at Freeport through Suisun Bay.

3 **Nitrate.** With respect to the Draft Order’s findings that the Permit’s final effluent limit  
4 for nitrate should be remanded, the Public Water Agencies respectfully submit that the State  
5 Water Board staff has overlooked compelling record evidence and controlling law that support a  
6 final nitrate limit of no more than 10 mg/L at end of pipe (*i.e.*, no mixing zone). As a result, the  
7 State Water Board should not remand, but should affirm the final effluent limits set by the  
8 Regional Water Board to prevent nitrate pollution. There is ample evidentiary support in the  
9 record to require full denitrification of the Discharger’s wastewater. Indeed, failure to require  
10 denitrification would violate settled principles of federal and state Antidegradation Policy.

11 **Thermal Plan.** The Draft Order does not make findings on whether the SRWTP may  
12 continue to discharge wastes at elevated temperatures without meeting the temperature objectives  
13 of the state’s Water Quality Control Plan for Control of Temperature in the Coastal and Interstate  
14 Water and Enclosed Bays and Estuaries of California (“Thermal Plan”). Compliance with the  
15 temperature objectives is required unless the discharger shows they are “more stringent than  
16 necessary to assure the protection and propagation of a balanced, indigenous population of . . .  
17 fish” in the receiving water. Here, the receiving water is critical habitat for threatened or  
18 endangered fish species, and the Discharger failed to show that the temperature objectives are  
19 more stringent than necessary to assure the protection and propagation of these listed species.  
20 The State Water Board’s Final Order should revise the Permit to require the Discharger to  
21 develop a plan and schedule to comply with the Thermal Plan in the shortest practicable time.

22 **A Shorter Compliance Schedule and Interim Measures.** The Regional Water Board  
23 gave the Discharger *10 years* to continue to violate water quality objectives, to harm beneficial  
24 uses of Delta receiving waters, and to violate Antidegradation Policy, the ESA and fundamental  
25 principles of California water law. During that decade, the Permit would allow SRWTP  
26 discharges of ammonia, pathogens and other wastes in secondary-treated municipal sewage to  
27 continue at the current level of 141 million gallons per day (“MGD”)—and increase to 181 MGD.  
28 Meanwhile, the discharge impacts to aquatic life and listed fish species will continue—and

1 increase—unabated. Rather than affirming that continuing, and increasing, harm, the State Water  
2 Board should ensure all efforts are made to impose a shorter compliance schedule and to require  
3 the Discharger to carry out interim measures that will start reducing waste loadings now—not in a  
4 decade. The largest single source of fresh water supply for more than 25 million Californians,  
5 their workplaces and farms depends on it.

6 **II. THE DRAFT ORDER PROPERLY AFFIRMS THAT THE PERMIT LIMITS ON**  
7 **HARMFUL HUMAN PATHOGENS ARE AMPLY SUPPORTED BY THE**  
8 **ADMINISTRATIVE RECORD AND APPLICABLE LAW, AND THE**  
9 **ADMINISTRATIVE RECORD CONTAINS ADDITIONAL SUPPORTING LINES**  
10 **OF EVIDENCE**

11 The Draft Order affirms that the Regional Water Board properly determined that removal  
12 of harmful human pathogens to a level equivalent to disinfected tertiary recycled water is  
13 necessary to protect domestic, municipal, agricultural irrigation and recreational uses of Delta  
14 receiving waters against harm from the SRWTP’s ongoing, and increasing, discharge of the  
15 human pathogens *Giardia* and *Cryptosporidium*. (Draft Order at 4-8.) The Final Order should  
16 retain that affirmation, upholding the Permit limits on the SRWTP’s discharge of harmful human  
17 pathogens.

18 The Public Water Agencies provide fresh drinking water supplies to more than 25 million  
19 Californians using State Water Project (“SWP”) and Central Valley Project (“CVP”) water  
20 delivered through the Sacramento River and Delta, into which the SRWTP discharges secondary-  
21 treated municipal sewage containing pathogens that can cause gastrointestinal illness. Although  
22 the SRWTP adds chlorine disinfectant to its effluent before discharge, the Draft Order properly  
23 affirms the Regional Water Board’s determination that the concentration of waste particles  
24 remaining in SRWTP effluent after secondary treatment substantially reduces the effectiveness of  
25 disinfection. (Draft Order at 5.) The Draft Order properly affirms the finding that removing  
26 those particles through tertiary filtration of the effluent will enhance the effectiveness of  
27 disinfection to the point where the discharge would be essentially pathogen free. (Draft Order at  
28 7-8.) Finally, the Draft Order properly affirms that removal of particles and other residual  
untreated wastes by tertiary filtration before disinfection would substantially reduce the formation  
and discharge of dangerous disinfection byproducts that are toxic to humans, animals and aquatic

1 life, while also substantially reducing the discharge of copper, mercury, total suspended solids  
2 and biochemical oxygen demand. (Draft Order at 5, 8.)

3 The Draft Order also properly affirms the Regional Water Board's determination not to  
4 rely on average dilution flows as a basis for allowing the SRWTP to continue to discharge  
5 harmful pathogens. Although the Discharger contends secondary treatment is adequate because  
6 *average* receiving water flows will dilute the discharge by at least a 20:1 ratio, the record shows  
7 that *actual* receiving water flows can and will be much lower (*i.e.*, 14:1 and 9:1 ratios) and that  
8 tidally induced reverse-flow events can double-dose receiving waters with pathogens and other  
9 wastes. (*See* Public Water Agencies' Comments on Regional Water Board Tentative Permit  
10 [October 8, 2010] ["PWA Comments"] at 38-39; *see also* Draft Order at 4.) Accordingly, the  
11 Draft Order properly affirms the Regional Water Board's determination to base the Permit's  
12 pathogens limits on an assessment of actual risks to human health. (Draft Order at 4.)

13 To that end, the Draft Order properly affirms the Regional Water Board's finding that the  
14 Sacramento River is heavily used for direct body-contact recreation ("REC1") and agricultural  
15 irrigation ("AGR") at and near the point of discharge. (Draft Order at 4.) Although the Draft  
16 Order acknowledges that the SRWTP's pathogens discharge affects at least 20 agricultural  
17 irrigation intakes within one mile upstream and two miles downstream of the point of discharge,  
18 the Final Order should also acknowledge that the discharge affects the Freeport Regional Water  
19 Authority's drinking water intake, which is located within 6,000 feet upstream of the point of  
20 discharge. (Permit at F-40.) The Final Order should acknowledge that reverse-flow events can  
21 force this drinking water intake to shut down in order to protect human health from SRWTP  
22 effluent. (Errata To Public Water Agencies' Response to Discharger's Petition [May 6, 2011]  
23 ["PWA Response"] at 115-116; PWA Comments at 49.) The Final Order should find that major  
24 water supply infrastructure should not have to operate around, or be planned around, this  
25 Discharger.

26 The Draft Order also properly affirms the Regional Water Board's determination to follow  
27 the California Department of Public Health's recommendation to complete a site-specific risk  
28 assessment and to limit the increased risk of human infection from pathogens in the SRWTP

1 discharge to no more than a 1 in 10,000 risk. (Draft Order at 6-7.) In response to the  
2 Discharger's contentions about the adequacy of discharge mixing and dilution, the State Water  
3 Board's Final Order should cite the record evidence showing that the computer modeling  
4 underlying the Discharger's mixing analysis fails to account for significant discharge mixing  
5 problems that concentrate effluent below the point of discharge. (See PWA Response at 98-99  
6 [citing record evidence that actual dilution from actual effluent mixing is much less than indicated  
7 by Discharger's model]; see also PWA Comments at 50 [citing TetraTech review of Discharger  
8 modeling that fails to reflect real-world mixing problems revealed by dye studies].)

9 The Draft Order properly affirms that the results of the Discharger's own risk assessment  
10 show that the SRWTP pathogens discharge increases the risk of human infection by 1.2 in 10,000  
11 for individuals with a single receiving water exposure and by 13.6 in 10,000 for individuals with  
12 10 exposures. (Draft Order at 6.) In response to the Discharger's contention that these increased  
13 infection risks are overstated due to a highly conservative risk assessment method, the Final  
14 Order should note that the Discharger's risk assessment optimistically assumes completely  
15 effective effluent mixing based on modeling that fails to account for significant incomplete  
16 mixing problems documented in the record evidence noted above.

17 In response to the Discharger's contentions that the Regional Water Board was too strict  
18 and should have followed a 1986 U.S. Environmental Protection Agency ("U.S. EPA") guidance  
19 document purportedly identifying a pathogens risk level of 8 illnesses in 1,000 exposures as  
20 acceptable, the Draft Order correctly observes that the guidance is not a legal rule with regulatory  
21 impact on the Permit. (Draft Order at 6.) However, the Final Order also should observe that the  
22 1986 guidance says the 8-in-1,000 risk level only reflects an assessment of the actual risk then  
23 existing in nationwide receiving waters, that this level is not necessarily protective of beneficial  
24 uses, and that wherever pathogen levels can be consistently controlled to keep illness rates lower  
25 than the general nationwide estimate, such lower levels should be maintained. (See PWA  
26 Response at 104-107 [quoting 1986 guidance].)

27 The Draft Order properly affirms that the Regional Water Board went above and beyond  
28 its legal obligations by thoroughly assessing the range of potential SRWTP upgrade costs to



1 comply with the Permit's pathogens limits. (Draft Order at 8-10.) The Final Order should also  
2 acknowledge that the Regional Water Board considered the potential of those compliance costs to  
3 cause economic impacts to the local community and adopted findings pursuant to Water Code  
4 sections 13263 and 13241 that are supported by the record. More specifically, the Final Order  
5 should acknowledge that those findings are supported by the U.S. EPA's economic impact  
6 assessment model for carrying out Antidegradation Policy, which shows that the costs for  
7 incorporating tertiary filtration to combat pathogens is reasonable and affordable. (PWA  
8 Comments at 89-96.)

9 Finally, the State Water Board's Final Order should expressly acknowledge that  
10 Antidegradation Policy, as carried out through Resolution 68-16, requires tertiary filtration as best  
11 practicable treatment or control ("BPTC") to prevent pathogens from degrading receiving water  
12 and harming REC1, AGR and MUN beneficial uses—including both existing drinking water  
13 intakes (*i.e.*, the Freeport Regional Water Authority drinking water intake located 6,000 feet  
14 above the SRWTP outfall) and potential future drinking water intakes (*i.e.*, the five potential  
15 intakes between Freeport and Courtland that are being planned as part of the Bay Delta  
16 Conservation Plan). (Permit at F-40.) Requiring tertiary filtration as BPTC will protect existing  
17 and future water supply infrastructure from having to operate or be planned around a secondary-  
18 treated sewage discharge that needs cleaning up.

19 **III. THE DRAFT ORDER PROPERLY AFFIRMS THAT THE PERMIT LIMITS ON**  
20 **AMMONIA ARE AMPLY SUPPORTED BY THE ADMINISTRATIVE RECORD**  
21 **AND APPLICABLE LAW, AND THE ADMINISTRATIVE RECORD CONTAINS**  
22 **ADDITIONAL SUPPORTING LINES OF EVIDENCE**

23 The State Water Board should adopt the Draft Order's findings that the SRWTP's ongoing  
24 ammonia<sup>3</sup> discharge is: (1) harming the Delta ecosystem; and (2) adversely affecting critical

25 <sup>3</sup> The chemical form of ammonia in water consists of two species, the more abundant of  
26 which is the ammonium ion (NH<sub>4</sub><sup>+</sup>) and the less abundant of which is the un-ionized ammonia  
27 (NH<sub>3</sub>) molecule; the ratio of these species in a given aqueous solution depending on pH and  
28 temperature. (U.S. Environmental Protection Agency Draft 2009 Update, Aquatic Life Ambient  
Water Quality Criteria for Ammonia—Freshwater, EPA-822-D-09-001, [December 2009] at 4.)  
Collectively, ammonium and un-ionized ammonia are referred to as total ammonia or total  
ammonia nitrogen. Although the dominant form of total ammonia discharged by the SRWTP and  
found in downstream receiving waters is ammonium, the Permit, the State Water Board's Draft  
Order and these comments employ the general term "ammonia" when referring to ammonium or  
total ammonia.

1 habitat and harming fish species protected by the federal ESA and the California Endangered  
2 Species Act (“CESA”).<sup>4</sup> The administrative record developed by the Regional Water Board  
3 amply supports these findings.

4 First, the record shows that the receiving water ammonia concentrations resulting from the  
5 SRWTP’s discharge are harming diatom phytoplankton production from the point of discharge  
6 through Suisun Bay, which is an impairment of aquatic life beneficial use.

7 Second, the record shows that suppression of diatom production harms the copepod  
8 population that eats diatoms, which is a further impairment of aquatic life beneficial use.

9 Third, the record shows that receiving water concentrations of ammonia from the  
10 SRWTP’s discharge are toxic to copepods from the point of discharge to *at least* 8 miles  
11 downstream,<sup>5</sup> which also is an impairment of aquatic life beneficial use.

12 Fourth, the record shows that these impacts to diatoms and copepods harm the Delta  
13 ecosystem, adversely affect critical habitat and harm listed fish species by reducing the amount of  
14 food available for these fish, which also is an aquatic life beneficial use impairment.<sup>6</sup>

15 Fifth, the record shows the massive ammonia discharges are causing both an imbalance in  
16 the native ratios of nitrogen to phosphorus and thereby contributing to impairment of the food  
17 web and consuming available dissolved oxygen essential to aquatic life.

18 Given great weight of evidence in the administrative record, we urge the State Water  
19 Board to adopt a Final Order that more clearly articulates each of the preceding aquatic life  
20 impacts resulting from the SRWTP’s ammonia discharge, to amplify its affirmation that these  
21 impacts are occurring, and to identify with more particularity the specific lines of record evidence

22 \_\_\_\_\_  
23 <sup>4</sup> Longfin smelt are listed under CESA.

24 <sup>5</sup> Receiving water concentrations of ammonia exceeding the copepod toxicity threshold  
25 have been confirmed 27 miles downstream and in nearly half of all samples collected between  
Hood and Isleton in 2009-2010 (*See* PWA Comments at 10 (citing Regional Water Board data).

26 <sup>6</sup> The SRWTP’s ammonia discharge also causes chronic toxicity impacts to Delta smelt  
27 from the point of discharge to Hood, which is 8 miles downstream. (*See* PWA Hrg. Pres. at Slide  
28 38; Public Water Agencies’ Comments on Aquatic Life and Wildlife Preservation Issues  
Concerning the SRWTP NPDES Permit Renewal [June 1, 2010] [“PWA Aquatic Life  
Comments”] at 12.)

1 that support the Permit's final ammonia limit without a mixing zone.

2       A.     **The Draft Order Properly Affirms The Regional Water Board's Findings**  
3             **That The Thousands Of Tons Of Ammonia Discharged By The SRWTP**  
4             **Inhibit Nitrogen Uptake By Diatom Phytoplankton And Harm Copepods**  
5             **Essential To Listed Fish Species And Aquatic Life In The Delta**

6             The Draft Order properly affirms the Regional Water Board's finding that the SRWTP's  
7             ongoing discharge of 14 tons per day of ammonia is harming diatom phytoplankton, an essential  
8             food source for copepods in the Delta and the base of the food web for Delta aquatic life,  
9             including the Delta smelt, longfin smelt and salmon. (*See* Draft Order at 17 [the "Central Valley  
10            Water Board concluded that 'ammonia concentrations inhibited diatom primary production rates .  
11            . . .' and that '[i]nhibition of diatom growth by elevated ammonia concentrations has been  
12            documented between Rio Vista and Suisun Bay.'].) The Final Order should strengthen the  
13            Regional Water Board's finding that the ammonia concentrations in the receiving water are  
14            inhibiting the uptake of nitrogen by diatom phytoplankton and should cite the evidence in the  
15            record showing this impact to aquatic life beneficial use.

16            Specifically, the published work of Delta experts Drs. Richard Dugdale, Frances Wilkerson  
17            and Alexander Parker is in the record and demonstrates that the Discharger's massive ammonia  
18            loadings are disrupting the food supply critical to Delta aquatic life by inhibiting nitrogen uptake  
19            and thereby suppressing phytoplankton productivity at the base of the food web. (*See e.g.*, PWA  
20            Comments at 11-16 and scientific literature cited therein; *see also* Permit at J-5 to J-7 [citing  
21            research by Dugdale et al., 2007<sup>7</sup> and Wilkerson et al., 2006<sup>8</sup>]; Public Water Agencies' Hearing  
22            Presentation to Regional Water Board [December 9, 2010] ["PWA Hrg. Pres." at Slide 39.] The  
23            record evidence shows that ammonium concentrations in the receiving waters exceed the  
24            threshold level at which nitrate uptake by diatoms is reduced (0.015 mg N/L). (*See* Permit at J-7,

25            <sup>7</sup> Dugdale, R.C., F. P. Wilkerson, V. E. Hogue and A. Marchi. 2007. The role of ammonium  
26            and nitrate in spring bloom development in San Francisco Bay. *Estuarine, Coastal and Shelf*  
27            *Science* 73: 17-29 ("Dugdale et al. 2007").

1 Table J-2 [identifying 0.015 mg N/L as threshold and showing exceedance factor]; *see also* PWA  
2 Hrg. Pres. at Slide 39.)

3  
4 Beyond Dugdale, et al, there is ample additional evidence in the record to support the  
5 finding that ammonia concentrations are inhibiting nitrogen uptake by diatom phytoplankton. For  
6 example:

- 7 • The discharge is causing ammonium concentrations well above the nitrate uptake  
8 suppression threshold for many miles downstream. (*See* Permit at J-5 to J-7; *see, e.g.*,  
9 PWA Hrg. Pres. at Slide 39; [concentration up to *47x greater* than initial suppression  
10 threshold at Hood]); *see also* Regional Water Board Hearing Transcript [December 9,  
11 2010] [“RWB Hrg. Trans.”] at 123:21 to 124:1; PWA Comments at 14; Foe, Chris, A.  
12 Ballard, S. Fong. 2010. Nutrient concentrations and biological effects in the  
13 Sacramento-San Joaquin Delta, Report Prepared for Regional Water Board [“Foe et al  
14 2010”] at Table 6 [ammonium concentrations at Chipps Island, *40 miles downstream*,  
15 were almost *seven times* threshold].)
- 16 • While “[a]nnual average ammonia concentrations increased 11.5-fold in the River  
17 downstream of the SRWTP,” (Permit at J-5), nitrate uptake essentially ceases and  
18 primary production declines. (PWA Hrg. Pres. at Slide 40; RWB Hrg. Trans. at  
19 293:9-240:4.) Nitrogen uptake also declines at five stations immediately downstream  
20 of the discharge, as well as at Rio Vista, far beyond the requested mixing zone.  
21 (PWA Comments at 12 and scientific literature cited therein.)
- 22 • The fact that ammonia loading inhibits nitrogen uptake by phytoplankton is well  
23 established according to scientific research done over many decades and in a variety  
24 of systems. (PWA Comments at 13 and scientific literature cited therein.)
- 25 • The ammonia discharge has also caused a shift to less desirable food, such as from  
26 diatoms to flagellates, cryptophytes and cyanobacteria, and to invasive macrophytes,  
27 such as *Egaria densa*. (*See* Permit at J-7; *see also* PWA Aquatic Life Comments at  
28 13.) The shift contributes to the ongoing impacts to fish species. (*See* PWA  
Comments at 12 and scientific literature cited therein.)

22 The record further shows that the adverse impact of the SRWTP’s ammonia discharge on  
23 diatom productivity is harming copepods that feed on diatoms. (*See* Draft Order at 17 [citing  
24 Regional Water Board confirmation that ammonia-impacted “[p]hytoplankton, such as diatoms,  
25 are a primary food resource for many zooplankton species.”]; PWA Response at 72-73 [citing  
26

---

27 <sup>8</sup> Wilkerson, F.P, R.C. Dugdale, V.E. Hogue and A. Marchi. 2006. Phytoplankton blooms  
28 and nitrogen productivity in San Francisco Bay. *Estuaries and Coasts* 29(3): 401–416  
 (“Wilkerson et al. 2006”).

1 scientific literature confirming diatom-copepod food-web link].) This indirect impact of the  
2 SRWTP's ammonia discharge is a further impairment of the aquatic life beneficial use.

3 This indirect impact to copepods also adversely affects fish species which prey on  
4 copepods, including Delta smelt and longfin smelt. (See PWA Comments at 11 and literature  
5 cited therein; see also Permit at J-1.) The implications of this food supply inhibition are clear:  
6 The "inhibition in diatom growth" is linked to the "collapse of ... fish populations" as it deprives  
7 fish of critical food supply in the "spawning and nursery area for Delta smelt and longfin smelt  
8 and an important rearing area for striped bass." (Draft Order at 17.) Thus, the Draft Order  
9 appropriately concludes that "the discharge is adversely affecting critical fish habitat by reducing,  
10 both directly and indirectly, the amount of available food for the young of these three important  
11 fish species." (Draft Order at 17.)

12 **B. The Draft Order Properly Affirms The Regional Water Board's**  
13 **Determination That Ammonia Concentrations Downstream Of The Proposed**  
14 **Mixing Zone Would Cause Acute And Chronic Toxicity To Copepods And**  
15 **Adversely Impact Threatened And Endangered Fish Species**

16 The Draft Order correctly affirms the Regional Water Board's determination that the  
17 SRWTP's ongoing ammonia discharge is causing receiving water concentrations of ammonia to  
18 reach levels toxic to copepods that are central to the food web that supports Delta aquatic life.  
19 (See, e.g., Draft Order at 16 ["The available scientific evidence indicates that ammonia toxicity to  
20 copepods is one of the contributing factors compromising the integrity of the entire water  
21 body"].)

22 In reaching that finding, the Draft Order properly focuses on the recent work of Dr. Swee  
23 Teh (and colleagues), who has studied the toxic effects of total ammonia on the native copepods  
24 *Eurytemora affinis* and *Pseudodiaptomus forbesi*. In laboratory toxicity analyses, Dr. Teh found  
25 10 percent mortality occurred in invertebrate species exposed to ambient ammonia concentrations  
26 present downstream of the discharge. (See PWA Comments at 10; see also Permit at J-2.) Dr.  
27 Teh also conducted life cycle tests, which found that total ammonia impacted adult *P. forbesi*  
28 reproduction at concentrations greater than or equal to 0.79 mg/L<sup>-1</sup>, while nauplii and juveniles  
are affected at concentrations as low as 0.36 mg/L<sup>-1</sup>. (See PWA Comments at 10; see also Permit

1 at J-2.) Again, the data show total ammonia at these toxic concentrations many miles  
2 downstream of the SRWTP's discharge. (See PWA Pres. at Slide 37 [concentration at Hood 1.3x  
3 to 2x greater than toxicity threshold].) Total ammonia concentrations above 0.36 mg/L<sup>-1</sup> were  
4 measured at Isleton, 27 miles downstream, and in 44 percent of the samples collected between  
5 Hood and Isleton in 2009-2010. (See PWA Comments at 10 (citing Regional Water Board data).)  
6 Thus, the record evidence shows that receiving water ammonia concentrations are already at toxic  
7 levels and that allowing the Discharger to continue discharging ammonium would further harm  
8 aquatic life beneficial use.

9 Ammonia toxicity to copepods also adversely affects fish species that prey on copepods,  
10 including Delta smelt and longfin smelt. (See PWA Comments at 11 and literature cited therein;  
11 see also Permit at J-1.) The Draft Order properly affirms the Regional Water Board's conclusion  
12 that ammonia concentrations in the receiving waters adversely affect threatened and endangered  
13 fish species by reducing, both directly and indirectly, the amount of food available for these fish  
14 species. (See Draft Order at 17.) The Draft Order also correctly affirms that "the record supports  
15 the Central Valley Water Board's determination that the District's discharge of ammonia affects  
16 designated critical habitat for species listed as endangered under the Endangered Species Act."  
17 (Draft Order at 16.) Accordingly, the Draft Order properly concludes "that ammonia toxicity to  
18 copepods is likely a factor adversely affecting candidate, threatened, or endangered species  
19 populations (sometimes referred to as pelagic organism decline) in the Delta and that the Permit's  
20 findings are supported by the administrative record." (Draft Order at 17.) The Final Order  
21 should retain this conclusion.

22 C. **The Draft Order Properly Affirms That The Regional Water Board Correctly**  
23 **Used The Most Recent Science Underlying U.S. EPA's Draft Water Quality**  
24 **Criteria For Ammonia As One Of Multiple Reasons To Deny A Mixing Zone**

25 The Draft Order properly affirms the Regional Water Board's use of the scientific literature  
26 that is the basis for the U.S. EPA's Draft 2009 Water Quality Criteria for Ammonia, in affirming  
27 the denial of an ammonia mixing zone. As the Draft Order recognizes, the U.S. EPA has been  
28 developing an update to its freshwater criteria for ammonia<sup>9</sup> that relies on more current science to

<sup>9</sup> U.S. EPA, Draft 2009 Update Aquatic Life Ambient Water Quality Criteria for Ammonia

1 define ammonia levels protective of aquatic life. (See Permit at F-55 to F-56; see also Permit at  
2 J-2 to J-3.) Based on that science, the ambient ammonia concentrations just outside the requested  
3 mixing zone would exceed the toxicity threshold for Unionid freshwater mussels 21 percent of  
4 the time under 2007-2008 conditions and 41 percent of the time under 2009 conditions. (See  
5 Permit at J-4; see Draft Order at 14 [freshwater Unionid mussel *Anadonata* present above and  
6 below SRWTP discharge.]

7 Considering the current science underlying U.S. EPA's proposed criteria as part of an  
8 evaluation of the actual impact of the SRWTP's discharge is entirely reasonable—indeed, given  
9 the broad direction to consider available information, it would be unreasonable for the Regional  
10 Water Board to rigidly apply a 1999 standard without considering the latest science. As noted in  
11 the Draft Order, the Regional Water Board did not rely on the draft ammonia criteria itself, but  
12 rather the scientific literature supporting the draft criteria, and the Regional Water Board's  
13 consideration of this other relevant information was entirely appropriate as an additional line of  
14 record evidence supporting denial of an ammonia mixing zone.

15 **D. The Administrative Record Provides Additional Support For The Setting Of**  
16 **Stringent Ammonia Effluent Limits And The Denial Of A Mixing Zone**

17 SRWTP currently discharges an estimated *10,000,000 pounds of ammonia* each year, and  
18 this amount has been increasing over the past 30 years. (PWA Comments at 8, Figure 1 [showing  
19 trend].) According to the Regional Water Board's "NPDES Permit Renewal Issues: Drinking  
20 Water Supply and Public Health" paper dated December 14, 2009, ("RWB Public Health Issues  
21 Paper") flow ratios nearing 14:1 are not uncommon during dry years under the existing SRWTP  
22 capacity. That means, at the point of discharge, approximately *7 percent of the receiving water* is  
23 comprised of SRWTP effluent. Given the immense scope of the discharge, it is not surprising  
24 that SRWTP's effluent has impacts on the receiving waters far downstream. Researchers,  
25 including Dr. Carol Kendall of the United States Geological Survey, Dr. Alex Parker, and others,  
26 have observed the massive contribution of ammonia from the Discharger, and the resulting

27  
28 — Freshwater (December 2009).

1 changes in nutrient composition, downstream of the SRWTP and into Suisun Bay. (PWA  
2 Comments at 9 [citing research].) There is ample additional evidence in the record to deny the  
3 Discharger's request to use state waters to dispose of this massive, far-ranging waste discharge.

4 1. The Scientific Research By Dr. Patricia Glibert Provides Additional  
5 Record Support To Require Total Ammonia And Nitrate Removal

6 Dr. Patricia Glibert's work provides further support for the Permit's ammonia and nitrate  
7 effluent limits and denial of a mixing zone, as her scientific research revealed that the past thirty  
8 years of increasing, massive ammonia discharges from the SRWTP strongly correlates with the  
9 well-documented change in the composition of the base of the food web. (*See* PWA Comments  
10 at 16-23 [citing and discussing research]; *see also* in Permit at J-7 to J-8.) Thirty years of water  
11 quality data showed a clear trend: A material change in the ratio of nitrogen to phosphorous (the  
12 N:P ratio), caused by an increase in total N loading, a decrease in total P loading, and a change in  
13 the dominant form of nitrogen to the total ammonia present in the SRWTP's discharge. (*See id.*)  
14 Dr. Glibert found that the variation in these nutrient concentrations and ratios in the Delta is  
15 highly correlated to variations in the nutrient composition of the SRWTP's discharge. These  
16 changes in nutrient composition are, in turn, linked to changes in the food web, including the  
17 composition of phytoplankton and zooplankton, annual blooms of *Microcystis*, and the declining  
18 abundance of several fish species, including Delta smelt. (*See id.*) The core principles of Dr.  
19 Glibert's scientific research are well-established in the record and supported by other scientific  
20 research from around the globe. (*See* PWA Comments at 19-23 [citing and discussing  
21 literature].)

22 That scientific research confirms that requiring both nitrification and denitrification (*see*  
23 discussion *infra*) of the discharge will help to restore the nutrient balance in the receiving water.  
24 Simply nitrifying the ammonia and discharging high nitrate loads in its place will not restore the  
25 pre-SRWTP balance. Total nitrogen loads need to be reduced. Requiring full nutrient removal on  
26 wastewater treatment plants in other ecosystems, such as in the Chesapeake Bay, Tampa Bay, and  
27 coastal areas of Denmark, has proven to be effective at reversing the harmful effects of previously  
28 undertreated nutrient discharges. (*See* PWA Comments at 23-25.)



1                   2.     The Record Shows Ammonia Removal Also Is Required To Stop The  
2                   Discharger From Causing Ongoing Violations Of The Dissolved Oxygen  
3                   Objective Essential To Protecting Aquatic Life

4                   The Final Order should also expressly rely on the Regional Water Board’s finding that  
5                   SRWTP’s discharge is consuming the available assimilative capacity for oxygen-demanding  
6                   substances in the Delta and causing violations of the water quality objective for dissolved oxygen  
7                   (“DO”) (allowing not less than 7.0 mg/L) many miles downstream of the discharge. (Permit at F-  
8                   56, J-8 to J-10.)

9                   The total ammonia and biological oxygen demand (“BOD”) in the discharge consume  
10                  oxygen in the receiving waters and deplete dissolved oxygen (“DO”) for many miles  
11                  downstream.<sup>10</sup> (Permit at F-95 [“[t]he oxygen depleting constituents from the SRWTP use or will  
12                  use all the assimilative capacity of the River and Delta leaving no assimilative capacity available  
13                  to other communities” that have invested in advanced treatment processes].) These depressed DO  
14                  levels have an adverse impact on aquatic life. As Regional Water Board staff explained, the  
15                  water quality objective for DO is important for protecting aquatic life, including sensitive salmon  
16                  species, “especially larval salmon moving downstream.” (RWB Hrg. Trans. at 127:21 to 128:1.)  
17                  The Discharger should not be permitted to continue to consume significant amounts of DO  
18                  essential to healthy fish such as endangered salmon and threatened Delta smelt.

19                  **IV.     THE DRAFT ORDER PROPERLY AFFIRMS THAT A PERMIT LIMIT ON**  
20                  **NITRATE IS REQUIRED TO PROTECT BENEFICIAL USES, AND THE**  
21                  **ADMINISTRATIVE RECORD CONTAINS MULTIPLE LINES OF EVIDENCE**  
22                  **SUPPORTING A FINAL NITRATE LIMIT NO HIGHER THAN THE 10 MG/L**  
23                  **LIMIT APPROVED BY THE REGIONAL WATER BOARD**

24                  The Draft Order recognizes the need for a nitrate limit, but proposes to send the matter  
25                  back to the Regional Board for further analysis. The Public Water Agencies urge the State Water

26                  <sup>10</sup>     See Permit at F-95, J-8 to J-10; PWA Comments at 25-27. Data gathered by state  
27                  agencies confirm that SRWTP’s current discharge is contributing to depressed DO levels far  
28                  downstream of the discharge point. (See DWR monitoring data, 2008-2009, attached to DWR  
                  Office Memo from Sal Batmanghilich, Chief Real-time Monitoring Section to Kathleen Harder,  
                  Central Valley Water Quality Control Board re Hood water quality station Dissolved Oxygen  
                  QA/QC data, July 22, 2010.) As confirmed by the Regional Water Board, concerns asserted by  
                  the Discharger regarding those data are not well founded. (See PWA Response at 75-77; see also  
                  RWB Hrg. Trans. at 127:16 to 127:19.)

1 Board to reconsider this approach, as the record amply supports the determination of the Regional  
2 Water Board to impose a 10 mg/L limit on nitrates and to deny the Discharger's requested mixing  
3 zone. However, if this Permit limit is remanded, the Regional Water Board should consider the  
4 growing body of scientific literature showing that allowing the SRWTP to discharge tons of  
5 nitrate into the Sacramento River and Delta would be harmful to municipal and aquatic life  
6 beneficial uses.

7           A.     **The Final Order Should Affirm The Permit's 10 Mg/L End-Of-Pipe Nitrate**  
8                   **Effluent Limit**

9                   1.       The 10 Mg/L End-Of-Pipe Nitrate Effluent Limit Is Appropriate For The  
10                           Protection Of Municipal Drinking Water Use

11           The entire Sacramento River and Delta are designated for municipal and domestic water  
12 supply beneficial use ("MUN"). The Fourth Edition of the Water Quality Control Plan For The  
13 Sacramento River And San Joaquin River Basins ("Basin Plan") requires that waters designated  
14 for MUN meet, *at a minimum*, primary and secondary drinking water maximum contaminant  
15 levels ("MCLs") adopted by the California Department of Public Health ("DPH"). (Basin Plan at  
16 III-3.00.) The primary MCL for nitrate (as N) is 10 mg/L, which is equivalent to 45 mg/L as  
17 nitrate.<sup>11</sup> Therefore, the Regional Water Board appropriately based the nitrate effluent limit on  
18 the 10 mg/L MCL. The question is whether the Regional Water Board appropriately exercised its  
19 discretion to deny a mixing zone for nitrate.

20           Granting a mixing zone for nitrate would allow the 10 mg/L MCL to be exceeded in the  
21 Sacramento River within the vicinity of the SRWTP outfall diffuser. The Discharger argued, and  
22 the Draft Order would find, that maintaining the 10 mg/L standard at the diffuser, or "end of  
23 pipe," is unnecessary to protect the MUN use, because there are no drinking water diversions now  
24 located at the outfall. (Draft Order at 19-20.) In other words, the Draft Order would allow a  
25 nitrate limit that ignores the fact that the Sacramento River and Delta are designated MUN, by  
26 applying the MUN standard only where an actual physical municipal water use diversion  
27 currently exists.

28 <sup>11</sup> California Code of Regulations, Title 22, Division 4, Chapter 15, Article 4, § 64431.

1 A fundamental problem with this logic is that it overlooks that the Sacramento River  
2 serves as a conveyance facility for municipal water supplies. (See Cal. Water Code § 7075  
3 [authorizing use of river channels to convey appropriated water].) Pursuant to water rights  
4 approved by the State Water Board, the SWP and CVP use the channels of the Sacramento River  
5 and the Delta to convey appropriated water to millions of families, farms and workplaces. The  
6 Sacramento River and Delta are currently part of the water delivery system for the SWP and CVP  
7 and significant amounts of the water conveyed by the Sacramento River and past the SRWTP  
8 discharge are used for MUN beneficial use. Given the Sacramento River's designation for MUN  
9 use and its role as a MUN delivery system, the Regional Water Board properly determined that  
10 maintaining the 10 mg/L limit at the point of discharge is necessary to protect MUN use.

11 The SRWTP's discharge is already impacting MUN beneficial uses. The Freeport  
12 Regional Water Authority intake is only 6,000 feet upstream from the discharge location and  
13 during reverse flow events can be exposed to effluent from the SRWTP. (Permit at F-40.) The  
14 Freeport intake must shut down during reverse flow events to protect the intake supply from  
15 effluent contamination, so an existing MUN use is already impaired by the SRWTP's discharge.<sup>12</sup>  
16 In addition, the North Bay Aqueduct Contractors have decided to pursue an intake upstream of  
17 the discharge rather than a less costly one downstream of the discharge. (See RWB Hrg. Trans. at  
18 270.) Also, the Bay Delta Conservation Plan is evaluating up to five intakes between Freeport  
19 and Courtland for delivery of SWP and CVP water. (Draft Order at 7, fn. 27; PWA Response at  
20 114; PWA Comments at 38, fn. 125.) The placement and operation of statewide public water  
21 supply infrastructure should not have to be planned around the SRWTP's discharge of nitrate or  
22 other wastes that simply need cleaning up.

23 The entire Sacramento River is designated as a source of drinking water under the State's  
24 Sources of Drinking Water Policy (State Water Board Resolution 88-63), and the high quality of

25 <sup>12</sup> RWB Public Health Issues Paper at 4 ("The nearest drinking water intake to the SRWTP  
26 discharge to the Sacramento River is the East Bay Municipal Utility District's (EBMUD)  
27 Freeport Intake, approximately 1 mile upstream of the District's discharge. Under low river flow  
28 and high tides, effluent could move up river to the vicinity of the Freeport Intake. An operational  
agreement between SRCSD and EBMUD requires the diversion at the intake to cease during  
these conditions . . .").

1 that source must be maintained under the state's Antidegradation Policy (State Water Board  
2 Resolution 68-16). Waste assimilation in MUN waters is not consistent with these policies, is not  
3 protective of MUN waters, and is not a beneficial use. Given the MUN designation, the actual  
4 municipal use within the Sacramento River and at existing and planned MUN diversions in the  
5 immediate vicinity, and the strong state policies for the protection of the entire Sacramento River  
6 and Delta as a drinking water supply, the Regional Water Board was justified in denying a nitrate  
7 mixing zone on the basis of protecting MUN beneficial use throughout the Sacramento River.

8           2.       The Regional Board Properly Denied A Nitrate Mixing Zone Based On  
9                   Public Health Protection

10           The Draft Order states that the nitrate mixing zone was improperly denied because the  
11 Regional Water Board "uncoupled the use to be protected from the objective providing the  
12 protection." (Draft Order at 21). In this case the Draft Order finds that the nitrate MCL of 10  
13 mg/L was set "to protect human health, but the mixing zone was denied based on information that  
14 nitrate discharges have biostimulatory effects unrelated to drinking water protection." (*Id.*)  
15 However, the record amply demonstrates that biostimulatory effects do create public health  
16 protection issues. The Regional Water Board's Public Health Issue Paper states:

17           Algal growth can impact the efficiency of water treatment filters, create  
18 taste and odor issues, increase total organic carbon, which is **a precursor to**  
19 **the formation of trihalomethanes (cancer causing constituents)**, and  
          certain species of algae produce neurotoxins that are **harmful to humans,**  
          fish, and wildlife.

20 (RWB Public Health Issue Paper at 6 [emphasis added].) Excessive algal growth increases total  
21 organic carbon ("TOC"), which increases disinfection by-product ("DBP") concentrations in  
22 treated drinking water. Higher TOC also increases the amount of disinfectant required to achieve  
23 adequate disinfection, which leads to further DBP formation. DBPs such as trihalomethanes  
24 ("THM") and haloacetic acids ("HAA") have been associated with increased risk of cancer and  
25 adverse reproductive outcomes, among other adverse health impacts. (*See* PWA Comments on  
26 RWB Public Health Issue Paper [February 1, 2010] ["PWA Public Health Comments"] at 12.)

27           Bromate is another DBP of concern to drinking water suppliers that use ozone for  
28 disinfection of Delta source water. Delta water is influenced by the salty waters of the San

1 Francisco Bay and therefore contains bromide, which is oxidized by ozone to form bromate.  
2 Bromate is a regulated DBP and a known human carcinogen. When higher ozone dosages are  
3 required to counteract the added demand of increased TOC loading, including algae growth,  
4 bromate formation is increased and may jeopardize compliance with regulatory limits. (PWA  
5 Response at 91.)

6 Also, while many DBPs have been identified and some are regulated under the Safe  
7 Drinking Water Act, there are many others that are not yet regulated because the potential adverse  
8 health effects have not been fully characterized. (PWA Public Health Comments at 12.)

9 As the Draft Order correctly observes: “A mixing zone can be denied . . . ‘to compensate  
10 for uncertainties in the protectiveness of the water quality criteria.’” (Draft Order at 20). As  
11 described above, the nitrate MCL of 10 mg/L is not protective of public health from  
12 biostimulatory effects of excess nutrients if a mixing zone is approved. The use protected here is  
13 MUN, and although the 10 mg/L nitrate MCL objective is designed to protect human health, the  
14 mixing zone was properly denied based on other relevant information showing that the drinking  
15 water MCL for nitrate is not adequate to protect human health with respect to biostimulatory  
16 effects. The Final Order should affirm the Regional Water Board’s final nitrate effluent limit of  
17 10 mg/L at end of pipe without a mixing zone.

18 3. The 10 Mg/L End-Of-Pipe Nitrate Effluent Limit Is Independently Justified  
19 By The Need To Restore N:P Ratios

20 The 10 mg/L end-of-pipe nitrate limit is necessary to help restore the N:P ratios of the  
21 receiving water and to protect beneficial uses. The effect of the SRWTP’s discharge on N:P  
22 ratios and the demonstrated adverse consequences on the aquatic community strongly support a  
23 nitrate limit. (Permit at J-7; Regional Water Board’s Response to Comments [Dec. 9, 2010] at  
24 31.) Numerous studies have repeatedly demonstrated that the N:P ratio influences phytoplankton  
25 composition and the presence—or absence—of native species and vegetation. (See PWA  
26 Response at 91-92.) Reducing nitrate will help to restore the nutrient balance to the levels present  
27 when native pelagic species were more abundant in the Delta. Indeed, absent denitrification, the  
28 N:P ratios would not improve, because the nitrification process will convert the effluent’s

1 ammonia nitrogen into nitrate nitrogen. In contrast, if the nitrate is also treated and reduced as  
2 required by the new Permit, it turns the nitrate into harmless nitrogen gas released to the  
3 atmosphere, thereby improving the N:P ratios and supporting the beneficial uses.

4 The adverse impacts of excessive nutrients and altered N:P ratios are documented in the  
5 administrative record. The Draft Order properly confirms the evidence of adverse impacts of  
6 excessive nutrients, including the fact that the Suisun Marsh Wetlands is listed as impaired for  
7 nutrients, that the formation of cyanobacteria blooms are occurring in the Delta and  
8 phytoplankton blooms are occurring in San Francisco Bay, and that levels of total nitrogen and  
9 total phosphorous in the discharge—as well as points downstream<sup>13</sup>—exceed U.S. EPA’s  
10 recommended Aggregate EcoRegion I nutrient levels. (Draft Order at 21-22.) The nexus  
11 between these effects and nutrient loading from the SRWTP is clear given that the SRWTP more  
12 than doubles the nutrient concentrations in the Sacramento River. (Draft Order at 22; PWA  
13 Response at 83.)

14 In addition to the documented, adverse effects of excessive nutrients noted in the Draft  
15 Order, evidence in the record shows that the beneficial use of downstream receiving waters used  
16 for drinking water, agricultural irrigation and for aquatic life already are impaired by nuisance  
17 algal growth and macrophytes stimulated by excess nitrate and other nutrients. (See PWA  
18 Response at 84-90.) Evidence also shows a link between elevated nutrients and a decline of the  
19 Delta’s native fish species. (See PWA Comments at 16-23; see also PWA Response at 63-64, 72-  
20 73.)

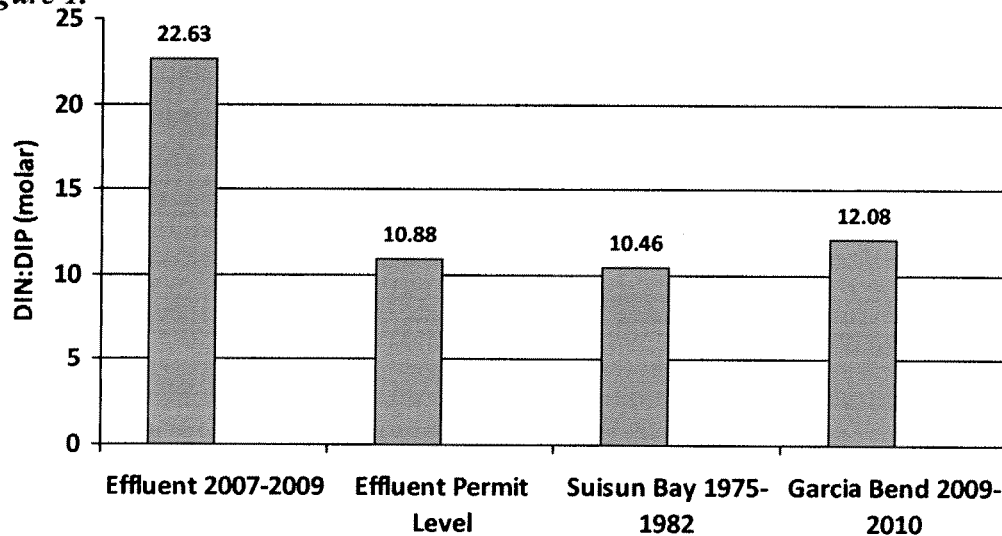
21 Evidence in the record shows that the 10 mg/L nitrate limit is necessary to restore the N:P  
22 ratio of the receiving waters and to alleviate the impacts of excessive nutrients on beneficial uses.  
23 As shown in Figure 1,<sup>14</sup> below, with the Permit’s final end-of-pipe nitrate limit at 10 mg/L and

24 <sup>13</sup> See PWA Response at 83, Table 4 (showing Total N and Total P at four downstream  
25 locations, all of which exceed the EPA recommended nutrient levels cited in the Draft Order.)

26 <sup>14</sup> See PWA Hrg. Pres. at Slide 46 (showing figure). The Suisun measurements are from  
27 Department of Water Resource’s Environmental Monitoring Program dataset 1975-1982, Nitrate  
28 + nitrite 0.293 mg/L, total ammonia 0.043 mg/L and ortho-phosphate 0.071 mg/L. The Garcia  
Bend data is from Foe et al 2010: nitrate 0.116, nitrite 0.002, total ammonia 0.024, phosphate  
0.026. The effluent data are from the Discharger’s nitrate, total ammonia and total phosphorus  
data for years 2007-2009 as provided to interested parties by Kathy Harder of the Regional Water

total ammonia nitrogen at 1.8 mg/L, the nutrient ratios would approach the ratio found in Suisun Bay before the SRWTP was constructed—and would resemble the nutrient ratios observed upstream of the SRWTP discharge. Specifically, the nitrate and total ammonia nitrogen limits set by the Permit would result in an effluent N:P ratio of approximately 10.88. As such, the discharge would approximate the N:P ratio of 10.46 that was present in Suisun Bay *before* the Discharger began to impact the Sacramento River and the Delta.

**Figure 1.**



The SWRTP’s discharge of ammonia nitrogen has been impacting the Delta ecosystem for over thirty years. Since the SRWTP came on line in 1982 and began discharging tons of total ammonia nitrogen every day, chlorophyll *a* blooms in Suisun Bay have significantly declined.<sup>15</sup> These blooms are critical to a healthy estuary. Thus, targeting the historical N:P ratio for Suisun

Board. Based on differences in total phosphorus and ortho-phosphate concentrations at Hood and at Garcia Bend from Foe et al 2010, we assume that most of the total phosphorus reported by the Discharger is inorganic ortho-phosphate and therefore comparable to the DIN:DIP calculations for the other locations. If that assumption is incorrect, then the effluent DIN:DIP would be even higher than what is shown in Figure 1.

<sup>15</sup> See Müller-Solger, A., A.D. Jassby and D.C. Müller-Navarra. 2002. Nutritional quality of food resources for zooplankton (*Daphnia*) in a tidal freshwater system (Sacramento-San Joaquin River Delta). *Limnol Oceanogr* 47(5):1468-1476 (chlorophyll *a* levels in Delta declined in last three decades and levels are now commonly below threshold for limiting phytoplankton growth); see also Jassby, A. 2008. “Phytoplankton in the Upper San Francisco Estuary: recent biomass trends, their causes, and their trophic significance.” *San Francisco Estuary and Watershed Science*. 6(1): Article 2, February 2008 (“Jassby 2008”) at Fig. 3 (showing trend in declining chlorophyll *a* in Suisun Bay since mid-80s)

1 Bay, which supported chlorophyll *a* blooms, provides a clear benchmark by which the State  
2 Water Board can affirm the Regional Water Board's 10 mg/L nitrate limit.

3 Similarly, the nitrate effluent limit would result in a nutrient ratio that approximates the  
4 existing N:P ratio (12.08) just upstream of the SRWTP at Garcia Bend. The nutrient balance  
5 upstream of the SRWTP—which is generally unaffected by the SRWTP discharge—provides yet  
6 another metric that confirms the appropriateness of the 10 mg/L nitrate limit. Indeed, using  
7 upstream water quality as a basis for the proper nitrate limit is fully consistent with the Basin  
8 Plan, which provides that “[m]aintenance of the existing high quality of water means maintenance  
9 of ‘background’ water quality conditions, i.e., the water quality found upstream or upgradient of  
10 the discharge, unaffected by other discharges.” (See Basin Plan at IV-17.00.)

11 4. The 10 Mg/L End-Of-Pipe Nitrate Effluent Limit Is Independently Justified  
12 By Antidegradation Policy

13 A final nitrate limit of no more than 10 mg/L represents BPTC required by  
14 Antidegradation Policy. The Regional Water Board properly determined that denitrification is  
15 necessary to limit the nitrate discharged as a result of the nitrification treatment needed to meet  
16 the Permit's final ammonia limit. If the Regional Water Board had only required removal of total  
17 ammonia nitrogen through nitrification, the result would be significantly increased nitrate loading  
18 in the SRWTP's discharge, causing a significant increase in the concentration and mass emission  
19 of nitrate. In other words, the average 14 tons per day of ammonia-nitrogen that the SRWTP  
20 currently discharges would be converted to 14 tons per day of nitrate-nitrogen. Antidegradation  
21 Policy prohibits such a sudden, massive increase of nitrate loading into the Sacramento River and  
22 Delta, and requires denitrification as BPTC to ensure that the discharge does not further degrade  
23 the receiving waters.

24 Currently, the Discharger's effluent contains very low concentrations of nitrate, ranging  
25 from 0.016 to 1.4 mg/L with an average of 0.13 mg/L. (Permit at F-44.) While it might not be  
26 practicable to maintain these nitrate levels in the discharge following nitrification treatment, an  
27 end-of-pipe nitrate level of no more than 10 mg/L clearly is. The discharge permits for Manteca,  
28 Tracy, Lodi, Mountain House, Olivehurst, Linda, El Dorado Irrigation District, Grass Valley,



1 Placerville, Placer County Sewer District, Auburn, Live Oak, and Rio Vista all have end-of-pipe  
2 nitrate or nitrate + nitrite limits of 10 mg/L.<sup>16</sup> These similarly situated dischargers demonstrate  
3 that denitrification to at least an end-of-pipe nitrate concentration of 10 mg/L is BPTC and, thus,  
4 is required by Antidegradation Policy.

5 As shown below, the economic impact of SRWTP's upgrade costs to comply with the  
6 Permit's final limits on ammonia, nitrate and pathogens is reasonable, and as such, the upgrade to  
7 denitrification is required as BPTC under Antidegradation Policy. (See discussion under heading  
8 VI.A.2, *infra*.) Thus, the Final Order should cite Antidegradation Policy as another independent  
9 and proper basis for setting the end-of-pipe nitrate limit at 10 mg/L.

10 **B. If The State Water Board Remands The Permit's Nitrate Limit To The**  
11 **Regional Water Board For Reassessment, The Final Order Should Direct The**  
12 **Regional Water Board To Consider All Relevant Evidence To Determine A**  
13 **Limit That Is Protective Of Beneficial Uses**

14 The State Water Board should affirm the final 10 mg/L nitrate limit approved by the  
15 Regional Water Board because, as summarized above, there is ample evidence in the  
16 administrative record to justify the Permit's 10 mg/L end-of-pipe limit. If the State Water Board  
17 nevertheless decides to remand the Permit to the Regional Water Board to reassess the nitrate  
18 limit, the Final Order should direct the Regional Water Board to consider all the currently  
19 available evidence in setting a nitrate limit. As described above, there is evidence in the  
20 administrative record that excessive nutrients are impacting many of the beneficial uses of the  
21 receiving waters. In addition, there is new evidence regarding the impacts of nutrient loading,  
22 which the Final Order should direct the Regional Water Board to consider if the Permit is  
23 remanded. In particular, if the Permit is remanded on the nitrate limit, the Final Order should  
24 direct the Regional Water Board to consider at least the following evidence:

25 <sup>16</sup> See PWA Response, Attachment 2 (citing Order No. R5-2009-0095 [Manteca], No. R5-  
26 2007-0036 [Tracy], No. R5-2007-0113 [Lodi], No. R5-2007-0039 [Mountain House], No. R5-  
27 2010-0074 [Olivehurst], No. R5-2006-0096 [Linda], No. R5-2007-0069 [El Dorado Irrigation  
28 District – El Dorado Hills], No. R5-2008-0173 [El Dorado Irrigation District – Deer Creek], No.  
R5-2009-0067 [Grass Valley], R5-2008-0053 [Placerville], R5-2010-0092 [Placer County Sewer  
District No. 1], R5-2010-0090-01 [Auburn], 2-11-0034 [Live Oak], R5-2010-0081 [Rio Vista –  
Northwest]).

- 1 1. Glibert, P.M. 2012. Ecological stoichiometry and its implications for aquatic  
2 ecosystem sustainability. *Current Opinion in Environmental Sustainability*.  
3 <http://dx.doi.org/10.1016/j.cosust.2012.05.009>
- 3 3. Glibert, P.M., D. Fullerton, J.M. Burkholder, J.C. Cornwell, and T.M. Kana.  
4 2011. Ecological stoichiometry, biogeochemical cycling, invasive species, and  
5 aquatic food webs: San Francisco Estuary and comparative systems. *Reviews*  
6 *in Fisheries Science*, 19(4):1-60.
- 6 4. Glibert, P. M., Z. Mingjiang, Z. Mingyuan, M.A. Burford. 2011 Preface to the  
7 special issue on eutrophication and HABS: the GEOHAB approach. *Chinese*  
8 *Journal of Oceanology and Limnology*, 29(4): 719-723.
- 8 5. Glibert, P.M., Madden, C.J., Boynton, W., Flemer, D., Heil, C., and Sharp, J.,  
9 2010. Nutrients in Estuaries: A Summary Report of the National Estuarine  
10 Experts Workgroup 2005–2007. EPA contract numbers 68-C-02-091 and EP-  
11 C-07-025.
- 10 6. González, A.L., J.S. Kominoski, M. Danger, S. Ishida, N. Iwai, and A.  
11 Rubach. 2010. Can ecological stoichiometry help explain patterns of  
12 biological invasions? *Oikos*. 119: 779–790.
- 12 7. Kendall, C., P. Lehman, S.R. Silva, M.B. Young, and M. Guerin. 2011b.  
13 Tracing sources of nutrients fueling *Microcystis* blooms in the Sacramento-  
14 San Joaquin Delta using a multi-fingerprinting approach. Draft report to  
15 California Department of Water Resources (unpublished).
- 15 8. Kimmerer W.J., A.E. Parker, U.E. Lidström, and E.J. Carpenter. 2012. Short-  
16 Term and Interannual Variability in Primary Production in the Low-Salinity  
17 Zone of the San Francisco Estuary. *Estuaries and Coasts*, 35:913–929.
- 17 9. Lancelot, C., P. Grosjean, V. Rousseau, E. Breton, and P.M. Glibert. 2012.  
18 Rejoinder to “Perils of correlating CUSUM-transformed variables to infer  
19 ecological relationships (Breton et al. 2006; Glibert 2010)”. *Limnol.*  
20 *Oceanogr.*, 57(2): 669–670.
- 19 10. Lehman, P.W., S.J. The, G.L. Boyer, M.L. Nobriga, E. Bass, and C. Hogle.  
20 2010. Initial impacts of *Microcystis aeruginosa* blooms on the aquatic food  
21 web in the San Francisco Estuary. *Hydrobiologia* 637:229-248.
- 21 11. Parker, A.E., R.C. Dugdale, and F.P. Wilkerson. 2012a. Elevated ammonium  
22 concentrations from wastewater discharge depress primary productivity in the  
23 Sacramento River and the Northern San Francisco Estuary. *Mar. Pollut. Bull.*  
24 64: 574–586.
- 24 12. Parker, A.E., V. E. Hogue, F.P. Wilkerson, and R.C. Dugdale. 2012. The  
25 effect of inorganic nitrogen speciation on primary production in the San  
26 Francisco Estuary. *Estuarine, Coastal and Shelf Science*  
27 doi:10.1016/j.ecss.2012.04.001.
- 26 13. Parker, A.E., W.J. Kimmerer, and U.U. Lidström. 2012. Reevaluating the  
27 Generality of an Empirical Model for Light-Limited Primary Production in the  
28 San Francisco Estuary. *Estuaries and Coasts* 35:930–942.
- 28 14. U.S. Fish and Wildlife Service. 2012. Endangered and Threatened Wildlife

1 and Plants; 12-month Finding on a Petition to List the San Francisco Bay-  
2 Delta Population of the Longfin Smelt as Endangered or Threatened. 50 CFR  
Part 17, Docket No. FWS-R8-ES-2008-0045, 4500030113.

3 15. Xu, J., P.M. Glibert, H. Liu, K. Yin, X. Yuan, M. Chen, and P. J. Harrison.  
4 2012. Nitrogen Sources and Rates of Phytoplankton Uptake in Different  
Regions of Hong Kong Waters in Summer. *Estuaries and Coasts*, 35:559–571.

5 16. Yuan, X., P. M. Glibert, J. Xu, H. Liu, M. Chen, H. Liu, K. Yin, and P. J.  
6 Harrison. 2012. Inorganic and Organic Nitrogen Uptake by Phytoplankton and  
Bacteria in Hong Kong Waters. *Estuaries and Coasts*, 35:325–334.

7 The State Water Board should also direct the Regional Water Board to consider all  
8 relevant information and methodologies when reassessing the nitrate limit—but it should be  
9 directed to do so within a set time period. The Draft Order notes that the Nutrient Numeric  
10 Endpoint (“NNE”) framework for estuaries is currently under development, as is the statewide  
11 policy for nutrient control for inland surface waters. (Draft Order at 22.) While these tools would  
12 be helpful to the Regional Water Board in setting the nitrate limit for the SRWTP, it is not  
13 necessary that the Regional Water Board wait for development of the NNE framework and policy  
14 to begin any remand work. The NNE approach can begin immediately where current science has  
15 already been translated into specific numeric “endpoints.” For example, nitrogen in the form of  
16 ammonium can be modeled to obtain an endpoint of no ammonium inhibition of nitrate uptake by  
17 targeting ammonium concentrations less than the 0.056 mg/L inhibition threshold confirmed by  
18 Dugdale, et. al. (See PWA Comments at 32-35.) Similarly, N:P ratios can be modeled to obtain  
19 an endpoint of more desirable community composition by targeting the N:P ratio that existed  
20 when or where the desired community composition existed. (See PWA Hrg. Pres. At Slide 46  
21 [comparing N:P ratios].)

22 Both the Discharger and the Public Water Agencies need a level of certainty in the Permit  
23 and cannot wait indefinitely for final nutrient Permit limits. The Discharger needs to plan and  
24 implement its treatment upgrades. The Public Water Agencies, as well as the public generally,  
25 need assurance that the beneficial use impairments due to excessive nutrients will be reversed.  
26 Therefore, if the State Water Board remands the Permit’s final nitrate limit to the Regional Water  
27 Board, the Public Water Agencies request that the Final Order direct the Regional Water Board to  
28

1 complete any reassessment of nutrient and nitrate limits as expeditiously as possible and by no  
2 later than 12 months after the Final Order.

3 **V. THE FINAL ORDER SHOULD CURTAIL THE PERMIT'S THERMAL PLAN**  
4 **EXCEPTION AND DIRECT THE DISCHARGER TO CARRY OUT A PROJECT**  
5 **TO COMPLY WITH THE THERMAL PLAN IN THE SHORTEST**  
6 **PRACTICABLE TIME**

6 The Final Order should eliminate the Permit's exceptions to the state's Thermal Plan,  
7 because the Discharger failed to show that the Thermal Plan's temperature objectives are more  
8 stringent than necessary to protect aquatic life.<sup>17</sup> The Final Order should revise the Permit to  
9 require the Discharger to develop a plan and schedule to comply with the Thermal Plan. At the  
10 same time, the studies already mandated by the Permit should be fast-tracked, so measures to  
11 protect the aquatic life beneficial uses in the Sacramento River can be identified and implemented  
12 as soon as possible.

14 The Thermal Plan contains temperature water quality objectives for existing dischargers  
15 of elevated temperature waste, such as the Discharger's SRWTP. (See Permit at F-9.) The  
16 Thermal Plan allows a regional water board to grant an exception to the temperature water quality  
17 objectives, if the discharger demonstrates that the objectives are "more stringent than necessary to  
18 assure the protection and propagation of a balanced, indigenous population of . . . fish . . . in and  
19 on the body of water into which the discharge is to be made." (33 U.S.C. § 1326(a); see Thermal  
20 Plan at 6 [exceptions to Thermal Plan must comply with 33 U.S.C. § 1326(a)].)

23 Given the threatened or endangered status of Delta smelt, winter- and spring-run salmon,  
24 Central Valley steelhead and green sturgeon under the federal Endangered Species Act, there is

25 <sup>17</sup> The appropriateness of the Permit's granting of an exception to the Thermal Plan is raised  
26 by the California Sportfishing Protection Alliance's ("CSPA") Petition for State Water Board  
27 Review. CSPA's Petition explains that the Thermal Plan exception degrades the aquatic life  
28 beneficial use of the Sacramento River and requests that the Discharger's Permit be revised to  
"implement the Thermal Plan without exception." (CSPA Petition at 72, 76.) Accordingly, it is  
proper for the Public Water Agencies to respond to CSPA's Petition by requesting that the Permit  
be revised to require compliance with the Thermal Plan.

1 no “balanced, indigenous population” of fish in the waters receiving the SRWTP’s thermal  
2 discharge. Accordingly, the Draft Order properly affirms the Regional Water Board’s  
3 determination to reject the Discharger’s request to increase thermal discharge impacts through an  
4 expanded exception to the state’s Thermal Plan. However, for the same reason, the Regional  
5 Water Board’s decision to continue the SRWTP’s existing exception from the Thermal Plan was  
6 improper. The Discharger failed to demonstrate that the Thermal Plan’s temperature limitations  
7 are “more stringent than necessary” to protect aquatic life in the Sacramento River. (33 U.S.C. §  
8 1326(a).)

9 The Thermal Plan exceptions provided in the Permit were originally granted over twenty  
10 years ago and are no longer justified. (*See* Permit at F-10.) As the U.S. Fish & Wildlife Service  
11 (“USFWS”) recommended, “[a] long-term plan is needed to address how the facility will  
12 minimize future thermal discharges and adequately protect beneficial uses . . . .”<sup>18</sup> The Permit  
13 acknowledges that since the last extension of the Discharger’s Thermal Plan exceptions, there has  
14 been “a significant pelagic organism decline in the Delta . . . .” (Permit at F-83.) It was improper  
15 for the Regional Water Board to extend the Thermal Plan exceptions previously enjoyed by the  
16 Discharger, because the evidence in the record indicates that the objectives contained in the  
17 Thermal Plan are necessary to protect the aquatic life beneficial uses.

18 The SRWTP is discharging high-temperature waste directly into critical habitat for ESA-  
19 listed fish species, including the Delta smelt, Chinook salmon, steelhead and sturgeon.<sup>19</sup> The  
20 Permit acknowledges that the Sacramento River and Delta serve as a migration corridor and/or  
21 provide other types of habitat (*e.g.*, spawning, rearing) for many anadromous fish species,  
22 including the federally listed spring-run and winter-run Chinook salmon. (Permit at 82.) These  
23 fish species have temperature thresholds, known as Critical Thermal Maxima (“CTM”), which  
24 are considered *lethal* temperatures. However, sub-lethal temperatures also negatively impact

25 \_\_\_\_\_  
26 <sup>18</sup> Letter from USFWS to Regional Water Board re: Recommendations on SRCSD State  
27 Thermal Plan exemption request, NPDES permit renewal (August 18, 2010) (“USFWS Thermal  
28 Impacts Letter”) at 4.

<sup>19</sup> Letter from National Marine Fisheries Service to Regional Water Board (September 9,  
2010) at 1; USFWS Thermal Impacts Letter at 1.

1 these fish species.<sup>20</sup> Evidence in the administrative record indicates that at times, water  
2 temperatures upstream of the discharge already exceed the threshold at which survival of juvenile  
3 Chinook salmon declines, yet the Permit continues to allow the Discharger to exceed the Thermal  
4 Plan's water quality objectives.<sup>21</sup>

5 The Permit justifies the Thermal Plan exceptions, in part, by concluding that there is a  
6 "zone of passage" in which fish "would avoid the heated plume by swimming around or on top of  
7 it." (Permit at F-84.) Yet, the Permit acknowledges that larval stage Delta smelt are particularly  
8 vulnerable to high water temperature "due to their small size and limited mobility." (Permit at F-  
9 85; *see* PWA Response at 140 [describing Delta smelt weak swimming ability].) The Permit's  
10 acknowledgement that Delta smelt have limited ability to move away from high temperatures is  
11 contrary to the Permit's conclusion that fish can swim around the thermal plume created by the  
12 Discharge. In addition, the projected zone of passage relies on modeled temperature plumes that  
13 do not accurately depict actual dispersion of the Discharger's heated effluent. The Permit  
14 assumes a zone of passage for fish at the point of discharge, approximately 175-200 feet wide, on  
15 the east bank of the Sacramento River. (Permit at F-84.) However, dye studies show that the  
16 Discharger's effluent concentrates along the eastern edge of the Sacramento River, at the assumed  
17 zone of passage.<sup>22</sup> That is important because it indicates there is no zone of passage for fish along  
18 the eastern bank of the river.

19 In addition, evidence in the record shows that the Discharger is failing to meet even the  
20 more lenient temperature limitations allowed under its existing Thermal Plan exception, during  
21 the time period in which Delta smelt are present in the vicinity of the Discharge. The Permit  
22

---

23 <sup>20</sup> USFWS Thermal Impacts Letter at 2 ("adverse temperature effects occur to Delta smelt . .  
24 . [at] temperatures lower than their respective CTMs").

25 <sup>21</sup> See PWA Response at 142-143 (identifying 18°C/64.4°F as the temperature at which  
26 survival of juvenile Chinook salmon declines); *see also id.* at 137, Table 2 (maximum  
27 temperature upstream of discharge was 68°F in April and 74°F in May).

28 <sup>22</sup> Final Memorandum from Tetra Tech to Regional Water Board re: Review of the  
Sacramento Regional County Sanitation District's dynamic Modeling Study for the Sacramento  
Regional Wastewater Treatment Plant (June 30, 2008) at 9-10; November 2007 Data Report,  
Effluent Discharge Dilution and Velocity Profiling Field Study in the Sacramento River  
(Prepared for Flow Sciences, Inc.), by Brown & Caldwell (2008) at A-25, Fig. A-20.

1 provides an exception to the Thermal Plan, which limits the temperature differential between the  
2 effluent and the natural receiving water temperature to no more than 25°F from October 1st  
3 through April 30th. (Permit at 14.) However, the Discharger’s 2010 Thermal Plan Exception  
4 Justification indicates that under certain conditions, this 25°F limitation is being exceeded in the  
5 months of November through January and is being reached in the months of February, March and  
6 September.<sup>23</sup> In addition, the time period in which the Discharger is allowed to exceed the  
7 Thermal Plan’s 20°F limitation, and the months in which the Discharger may be exceeding its  
8 more lenient 25°F limitation, include the months in which Delta smelt are most likely present in  
9 the vicinity of the discharge. (See Permit at F-84 to 85 [identifying December through June as  
10 time when Delta smelt could be expected in vicinity]. ) The Discharger should not be granted  
11 exceptions allowing the SRWTP to release thermal waste that is 25°F warmer than the receiving  
12 waters, during a time period when protected fish species such as the Delta smelt are likely present  
13 and impacted by the discharge.

14 Finally, the Discharger should not be granted exceptions to the Thermal Plan because the  
15 effluent contains a variety of pollutants, only one of which is thermal waste, which all  
16 cumulatively affect water quality in the Sacramento River. Allowing the Discharger to exceed  
17 the Thermal Plan’s temperature limitations increases the overall water quality impact of the  
18 effluent. The USFWS advised the Regional Water Board that “[f]ish passing through the  
19 discharge plume face reduced dissolved oxygen concentration, increased thermal stress and  
20 exposure to ammonia and copper. . . .”<sup>24</sup> In light of the multiple pollutants contained in the  
21 discharge, each of which is a stressor on fish, the Final Order should revise the Permit to direct  
22 the Discharger to comply with the state’s Thermal Plan.

23  
24  
25 <sup>23</sup> Thermal Plan Exception Justification for the Sacramento Regional Wastewater Treatment  
26 Plant, prepared for Sacramento Regional County Sanitation District by Robertson-Bryan, Inc.  
(July 2010) at 27, Table 5.

27 <sup>24</sup> USFWS Comments on Regional Water Board NPDES Permit Renewal Issues: Aquatic  
28 Life and Wildlife Preservation, Sacramento Regional County Sanitation District, Sacramento  
Regional Wastewater Treatment Plant (June 15, 2010) at 3.

1 **VI. THE FINAL ORDER SHOULD ACKNOWLEDGE THAT A BROADER RANGE**  
2 **OF LEGAL AUTHORITY SUPPORTS THE PERMIT'S FINAL LIMITS ON**  
3 **AMMONIA, NITRATE AND PATHOGENS AND REQUIRES THE**  
4 **DISCHARGER TO START REDUCING WASTE LOADINGS NOW**

5 The State Water Board's Final Order should expressly acknowledge that Antidegradation  
6 Policy, the federal Endangered Species Act, and fundamental principles of California water law  
7 all support the Permit's final effluent limits on ammonia, nitrate and harmful human pathogens.  
8 The Final Order also should expressly acknowledge that these legal authorities require the  
9 Discharger to comply with these limits in the shortest practicable time, while also carrying out  
10 interim measures to start reducing loadings of these wastes now. To that end, the Final Order  
11 should either revise or remand the Permit to the Regional Water Board to mandate a final effluent  
12 limit compliance period shorter than 10 years and to require immediate development and  
13 implementation of interim measures to start reducing waste loadings now.

13 **A. Antidegradation Policy**

14 State Water Board Resolution 68-16 carries out state and federal Antidegradation Policy  
15 by mandating that anyone "which produces or may produce a waste or increased volume or  
16 concentration of waste and which proposes to discharge to existing high quality waters will be  
17 required to meet waste discharge requirements which will result in the best practicable treatment  
18 or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and  
19 (b) the highest water quality consistent with the maximum benefit to the people of the State will  
20 be maintained."

- 21 1. Antidegradation Policy Applies And Requires Nitrification, Denitrification  
22 And Tertiary Filtration As Best Practicable Treatment Or Control Pursuant  
23 To Resolution 68-16

24 The record shows that the Discharger requested approval to degrade receiving water  
25 quality by discharging 181 MGD of secondary-treated municipal sewage into the Sacramento  
26 River at Freeport—a request that includes a 28 percent increase in the volume of waste loadings  
27 discharged over the SRWTP's existing actual 141 MGD discharge level.<sup>25</sup> The fact that the

28 <sup>25</sup> Adding denitrification to the SRWTP to reduce ammonia loadings will cause a sudden  
massive increase in nitrate loadings. (Draft Order at 19.) The SRWTP's existing and historic



1 Permit renewal retains the *maximum* discharge level authorized by a prior permit is irrelevant.<sup>26</sup>  
2 Antidegradation Policy applies to an *existing* discharge “if that discharge, either alone or in  
3 combination with other discharges, was *actually* causing continuing significant degradation.”  
4 (*Ohio Valley Environmental Coalition v. Horinko* [2003] 279 F.Supp.2d 732, 752, fn. 20  
5 [emphasis added].) That is exactly the case we have here. Antidegradation Policy applies.

6 The record further shows that Antidegradation Policy requires nitrification, denitrification  
7 and tertiary filtration as BPTC because: (a) the Sacramento River at Freeport is an existing high  
8 quality water (Permit at F-94); (b) the existing discharge is causing degradation and beneficial use  
9 impairment, including harm to threatened and endangered fish species and their critical habitat  
10 and harm to municipal, agricultural and recreational water uses, which harms have become more  
11 apparent since 2000, when the last permit was issued (*see* Permit at F-94 to F-95, F-98 Table F-  
12 18; *see also* discussion *infra*); (c) the Discharger’s proposal to continue, and even increase, its  
13 existing discharge would cause yet more degradation and resulting harm to those beneficial uses  
14 (*see* Permit at F-93 to F-95; *see also* discussion *infra*); (d) degradation of receiving waters by the  
15 Discharger can be reduced by imposing final effluent limits that necessitate removal of nutrients  
16 and pathogens through nitrification, denitrification and tertiary filtration (Permit at F-95); (e)  
17 many other municipal wastewater dischargers within the Regional Water Board’s jurisdiction  
18 already are required to remove nutrients and pathogens through nitrification, denitrification and  
19 tertiary filtration because these treatment technologies are effective, well-established and  
20 practicable (*see* Permit at F-96; *see also* PWA Comments, Attachment 2); and (f) the full range of  
21 estimated costs and resulting sewer rates for the Discharger to comply with those final Permit  
22 limits is reasonable (*see* Permit at F-96; *see also* PWA Response at 169-178).

23  
24 nitrate discharge has been negligible. (*Id.*)

25 <sup>26</sup> Contrary to the Discharger’s contention, (Discharger’s Petition at 133, fn. 516) the State  
26 Water Board’s 1990 Administrative Procedures Update for Antidegradation Policy  
27 Implementation for NPDES Permitting (“APU 90-004”) confirms that when reissuing a permit,  
28 Antidegradation Policy findings should be made where “an existing discharge has reduced water  
quality [] since the facility was permitted and the reduction is not authorized by the permit.”  
(APU 90-004 at 1.) This guidance applies here, because the Discharger’s prior permit, issued in  
2000, did not authorize discharges of ammonia that would harm critical habitat and listed fish  
species.

1                   2.     The Assessment Of BPTC Compliance Costs Pursuant To Antidegradation  
2                                   Policy Provides Strong Record Evidence Supporting The Permit's Final  
3                                   Ammonia, Nitrate And Pathogens Limits

3             With respect to Permit compliance costs, the Discharger's central argument against the  
4 Permit is a claim that the total cost to implement BPTC is unreasonably high. The economic  
5 impact of Permit compliance costs is relevant under Antidegradation Policy, so the Final Order  
6 should respond to the Discharger's argument by citing the record evidence developed pursuant to  
7 Antidegradation Policy. (See Permit at F-96 [showing cost of tertiary treatment upgrades would  
8 be comparable to other POTWs]; PWA Response at 166-178 [citing record evidence on Permit  
9 compliance costs and resulting sewer rates compared to rates in other service areas, and U.S. EPA  
10 economic impact assessment model conclusion that Discharger service area can afford SRWTP  
11 upgrades to implement BPTC<sup>27</sup>].)

12             The Regional Water Board considered economic and socioeconomic studies provided by  
13 the Discharger, the North State Building Industry Association, the University of the Pacific and  
14 the Public Water Agencies. U.C. Berkeley Economics Professor David Sunding evaluated the  
15 regional economic impacts of implementing BPTC and testified to the Regional Water Board on  
16 his findings. (RWB Hrg. Trans. at 282-288; PWA Hrg. Pres. at Slides 25-32.) Dr. Sunding found  
17 that implementing the SRWTP compliance upgrades would actually have a *stimulus* effect,  
18 increasing regional income and employment during SRWTP upgrade construction, and at worst  
19 would have a marginal effect, if any, on the state capital's economy over the long term. (PWA  
20 Response at 174-178.) Dr. Sunding also testified, and the Regional Water Board found, that the  
21 Discharger had failed to in any way account for the socioeconomic costs of the water quality  
22 degradation that would continue, and increase, unless the SRWTP were upgraded to implement  
23 BPTC. (PWA Response at 179-180; Permit at F-94 to F-97.) Based on the record, the  
24 Discharger must implement BPTC and may not evade that legal obligation based on unfounded  
25 allegations about cost.

26  
27 <sup>27</sup>     The record shows the Discharger never contested application of the U.S. EPA economic  
28 impact assessment model or its conclusion. Accordingly, that un rebutted record evidence  
strongly supports the final Permit limits for ammonia, nitrate and pathogens.

1                   3.     Antidegradation Policy Requires A Shorter BPTC Compliance Schedule  
2                                   And More Stringent Interim Limits Requiring The Discharger To Start  
  Reducing Waste Loadings Now

3                   The Final Order should shorten the Discharger’s decade-long period for complying with  
4 the Permit’s final effluent limits and should require the Discharger to carry out interim measures  
5 to reduce pollutant loadings now.<sup>28</sup> The Permit and associated Time Schedule Order delay for an  
6 entire decade the Discharger’s obligation to comply with the Permit’s final effluent limits for  
7 ammonia, nitrate and pathogens. During that decade, the Permit provides interim effluent limits  
8 allowing the Discharger to significantly increase loadings of ammonia and other wastes. Under  
9 those interim limits, the maximum daily concentration and mass loading of ammonia could more  
10 than double to 34 tons of untreated ammonia each day. (PWA Comments at 3, 31.) Those  
11 increased waste loadings will further degrade receiving water, harming threatened and  
12 endangered fish species and their critical habitat and municipal, agricultural and recreational  
13 beneficial uses.

14                   The record shows that the impacts caused by those loadings can be materially reduced in  
15 two ways. First, the decade-long Time Schedule Order should be shortened to facilitate the  
16 Discharger’s implementation of alternative SRWTP upgrade project delivery systems, such as  
17 Design-Build or Construction Manager at-risk, and alternative project implementation  
18 approaches, like phased or modular construction. (PWA Response at 180-183.) Second, the  
19 Permit should be revised to include lower interim effluent limits for ammonia and nitrate that will  
20 facilitate the Discharger’s: (1) incorporation of sidestream treatment of high-ammonia in-plant  
21 recycle flows, like the SRWTP’s internal centrate flow generated by the Discharger’s solids  
22 handling; and (2) accelerated implementation of its recycled water program. The record shows  
23

24 <sup>28</sup>                   The appropriateness of the Discharger’s 10-year compliance schedule and the Permit’s  
25 interim effluent limits is raised by the California Sportfishing Protection Alliance’s Petition for  
26 State Water Board Review (“CSPA Petition”). (CSPA Petition at 13; *see, e.g.*, CSPA Petition at  
27 39-43 [stating 10-year schedule not “the shortest practicable time” required by law]; CSPA  
28 Petition at 91.) These issues also are raised by the Discharger’s Petition for State Water Board  
review. (*See* Discharger’s Petition at 21:1-4 [arguing against potential requirement “to implement  
‘interim’ ammonia reduction”].) Accordingly, it is proper for the Public Water Agencies to  
respond to CSPA’s and the Discharger’s petitions by requesting a shorter compliance schedule  
with stronger interim measures.

1 that just those two interim measures could reduce the Discharger's ammonia loadings by up to 11  
2 percent. (*Id.*)

3 In sum, based on the record, the State Water Board's Final Order should acknowledge that  
4 Resolution 68-16: (1) applies to the Permit; (2) supports the final ammonia, nitrate and pathogens  
5 limits as requiring the Discharger to implement BPTC; (3) requires the Discharger to carry out  
6 interim measures that reduce degradation of receiving waters as soon as practicable; and (4)  
7 supports lower interim ammonia limits to facilitate the Discharger's implementation of interim  
8 measures that will reduce ammonia loadings as soon as practicable.

9 **B. Endangered Species Act**

10 The State Water Board's Final Order should likewise acknowledge that the Discharger's  
11 ongoing impacts on Delta smelt and other threatened and endangered fish species and their  
12 critical habitat requires the Discharger to comply with the Permit's final ammonia and nitrate  
13 effluent limits in the shortest practicable time, while also carrying out interim control measures.

14 The Final Order should expressly acknowledge that more than 90 percent of the ammonia  
15 entering the Sacramento River originates from the SRWTP and should retain the Draft Order's  
16 acknowledgement that the Permit's final ammonia effluent limit is necessary to stop the discharge  
17 from adversely affecting designated critical habitat and from contributing to the decline of fish  
18 species listed as threatened or endangered under the ESA, including winter- and spring-run  
19 Chinook salmon, Central Valley steelhead, Delta smelt and green sturgeon. The record contains  
20 ample evidence supporting those conclusions.<sup>29</sup>

21 The Final Order should expressly acknowledge that more than 90 percent of the ammonia  
22

23 <sup>29</sup> See Draft Order at 16 ["Ammonia toxicity is adversely impacting biologically sensitive or  
24 critical habitats."]; ["As would be expected, ammonia's toxic effect on copepods also affects  
25 those species that feed on copepods."]; ["The available scientific evidence indicates that ammonia  
26 toxicity to copepods is one of the contributing factors compromising the integrity of the entire  
27 water body."]; ["the record supports the Central Valley Water Board's determination that the  
28 District's discharge of ammonia affects designated critical habitat for species listed as endangered  
under the Endangered Species Act."]; and at 17 ["We concur with the Central Valley Water  
Board's conclusion that ammonia toxicity to copepods is likely a factor adversely affecting  
candidate, threatened, or endangered species populations (sometimes referred to as pelagic  
organism decline) in the Delta and that the Permit's findings are supported by the administrative  
record."].

1 entering the Sacramento River and Delta originates from the SRWTP and should retain the Draft  
2 Order's official notice that the USFWS has concluded that these ammonia loadings are harming  
3 the "Delta ecosystem" by interfering with diatom phytoplankton production and adversely  
4 changing the Delta food web to make less food available for special status fish species, like the  
5 longfin smelt. (USFWS, 77 Fed. Reg. 19756, 19786-87 [April 2, 2012] [finding "ammonium is  
6 ... documented to interfere with uptake of nitrates by phytoplankton" and citing Dugdale et al.  
7 2007; Jassby 2008].) Among other things, the USFWS found that:

8 [A]mmonia in the form of ammonium has been shown to alter the food web  
9 by adversely impacting phytoplankton and zooplankton dynamics in the  
10 estuary ecosystem. Historical data suggest that decreases in Suisun Bay  
11 phytoplankton biomass coincide with increased ammonia discharge by the  
12 SRWTP (Parker et al. 2004, p. 7; Dugdale et al. 2011, p. 1). Phytoplankton  
13 preferentially take up ammonium over nitrate when it is present in the  
14 water. Ammonium is insufficient to provide for growth in phytoplankton,  
15 and uptake of ammonium to the exclusion of nitrate results in decreases in  
16 phytoplankton biomass (Dugdale et al. 2007, p. 23). Therefore, ammonium  
17 impairs primary productivity by reducing nitrate uptake in phytoplankton.  
18 Ammonium's negative effect on the food web has been documented in the  
19 longfin smelt rearing areas of San Francisco Bay and Suisun Bay (Dugdale  
20 et al. 2007, pp. 27-28). Decreased primary productivity results in less food  
21 available to longfin smelt and other fish in these bays.

22 (*Id.*) Although the USFWS findings were published in April 2012, after briefing was completed  
23 in this Permit review proceeding, the Final Order should note that the USFWS findings are based  
24 on the same record evidence that the Regional Water Board considered in setting the Permit's  
25 final ammonia effluent limits. (*See, e.g.,* Dugdale et al. 2007; Jassby 2008.) The same arguments  
26 and references were cited and presented by the Public Water Agencies to the Regional Water  
27 Board during the public comment period and hearing on the Discharger's Permit. (*See* PWA  
28 Comments at 13-14, 33 fn. 117 [citing Dugdale et al. 2007]; *see also id.* at 18 fn. 49 [citing Jassby  
2008].)

ESA section 9 prohibits unauthorized take of Delta smelt and other Delta fish species  
listed as threatened or endangered. The SRWTP's current discharge of 14 tons per day of  
ammonia plus other wastes already is causing unauthorized take of Delta smelt and likely other  
listed fish species through adverse modification of critical habitat. The Discharger has no  
incidental take authority under ESA section 10 or ESA section 7. Compliance with the Permit's

1 final effluent limits for ammonia and other wastes will reduce this ongoing unauthorized take.  
2 The Final Order should expressly acknowledge that the Discharger's compliance with the  
3 Permit's final effluent limits in the shortest practicable time, while also carrying out interim  
4 measures to start reducing ammonia loadings now, are both necessary to begin addressing  
5 unlawful take.

6 **C. The California Constitution And State Water Board Declaration**

7 The Final Order should acknowledge that the Permit's final effluent limits for ammonia,  
8 nitrate and pathogens and the Discharger's compliance with the Thermal Plan are necessary to  
9 carry out the state's most fundamental declaration of water policy. The California Constitution  
10 provides:

11 It is hereby declared that because of the conditions prevailing in this State  
12 the general welfare requires that the water resources of the State be put to  
13 beneficial use to the fullest extent of which they are capable, and that the  
14 waste or unreasonable use or unreasonable method of use of water be  
prevented, and that the conservation of such waters is to be exercised with a  
view to the reasonable and beneficial use thereof in the interest of the  
people and for the public welfare.

15  
16 (Cal. Const., Art. X, § 2.) Consistent with that mandate, almost 40 years ago, the State Water  
17 Board rendered Decision 1379—"Delta Water Rights Decision," in which the State Water Board  
18 held:

19 Recent state and regional board activity in the regulation of waste  
20 discharges demonstrates an intent to protect the Delta environment with  
21 stringent controls on waste discharges at the earliest reasonable date. Waste  
22 discharges will be managed and where possible reused with a view toward  
achieving these prime objectives. No one has a right to pollute the waters of  
the state regardless of the quality of water that may flow in the particular  
streams.

23 (State Water Board Decision 1379 at 40 [1971].) The Discharger's ongoing use of Delta  
24 receiving waters to dispose of secondary-treated municipal sewage violates California water law  
25 and is precisely the unreasonable use and waste of water that the California Constitution and  
26 Decision 1379 forbids.

1 **VII. CONCLUSION**


2 The State Water Board should issue a Final Order affirming that the administrative record  
3 developed over the last decade amply supports the Permit the Regional Water Board approved in  
4 December 2010 to stop California's largest inland sewage discharger from continuing to use  
5 California's largest single source of fresh water supply and critical habitat for threatened and  
6 endangered fish species—the Delta—for disposal of secondary-treated sewage.

7 Although the State Water Board's Draft Order affirms most of the Permit's final effluent  
8 limits as amply supported by the administrative record, the Final Order should acknowledge the  
9 additional lines of record evidence supporting the final Permit limits for ammonia, nitrate and  
10 harmful human pathogens. The Final Order also should acknowledge that a broader range of  
11 powerful legal authority supports these Permit limits, not just the detailed technical calculations  
12 called for by the Basin Plan, State Implementation Plan and Technical Support Document. The  
13 Final Order should expressly invoke Article X, section 2 of the California Constitution, the  
14 federal Endangered Species Act and state and federal Antidegradation Policy as requiring the  
15 Discharger to comply with these Permit limits in the shortest practicable time, while also carrying  
16 out interim measures to start reducing discharge impacts now—not after another decade of  
17 degradation.

18 The Public Water Agencies, on behalf of the more than 25 million Californians they serve,  
19 request that the State Water Board's Final Order affirm and strengthen the Permit, consistent with  
20 these comments.

21 DATED: June 15, 2012.

22 HANSON BRIDGETT LLP

23  
24 By   
25 Michael B. McNaughton  
26 Attorneys for Respondent ALAMEDA COUNTY  
27 WATER DISTRICT  
28

1 DATED: June 15, 2012.

BOLD, POLISNER, MADDOW, NELSON & JUDSON

2  
3 By Robert B. Maddow  
4 Robert B. Maddow  
5 Attorneys for Respondent CONTRA COSTA  
6 WATER DISTRICT

7 DATED: June 15, 2012.

8 KRONICK, MOSKOVITZ, TIEDEMANN & GIRARD  
9 A Professional Corporation

10 By Eric N. Robinson  
11 Eric N. Robinson  
12 Attorneys for Respondents ALAMEDA COUNTY  
13 FLOOD CONTROL AND WATER  
14 CONSERVATION DISTRICT, ZONE 7, STATE  
15 WATER CONTRACTORS and KERN COUNTY  
16 WATER AGENCY

17 DATED: June 15, 2012.

18 THE METROPOLITAN WATER DISTRICT OF  
19 SOUTHERN CALIFORNIA

20 By Adam C. Kear  
21 Adam C. Kear  
22 Attorneys for Respondent THE METROPOLITAN  
23 WATER DISTRICT OF SOUTHERN CALIFORNIA

24 DATED: June 15, 2012.

25 SAN LUIS & DELTA-MENDOTA WATER  
26 AUTHORITY


27 By Jon D. Rubin  
28 Jon D. Rubin  
Attorneys for Respondent SAN LUIS & DELTA-  
MENDOTA WATER AUTHORITY



1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28

DATED: June 15, 2012.

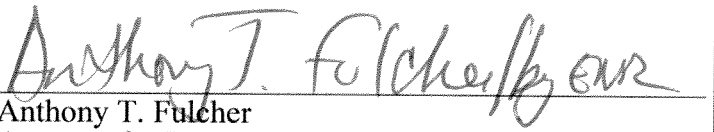
SIDLEY AUSTIN LLP

By   
Robert B. Martin, III  
Attorney for Respondent WESTLANDS WATER DISTRICT

SAMUEL B. BOXERMAN  
Of Counsel for WESTLANDS WATER DISTRICT

DATED: June 15, 2012.

SANTA CLARA VALLEY WATER DISTRICT

By   
Anthony T. Fulcher  
Attorney for Respondent SANTA CLARA VALLEY WATER DISTRICT

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28

**ATTACHMENT 1**

Michael B. McNaughton, State Bar No. 168244  
HANSON BRIDGETT LLP  
425 Market Street, 26th Floor  
San Francisco, CA 94105  
Telephone: (415) 777-3200  
Facsimile: (415) 541-9366

Attorneys for Respondent  
ALAMEDA COUNTY WATER DISTRICT

Robert B. Maddow, State Bar No. 41675  
BOLD, POLISNER, MADDOW, NELSON & JUDSON  
500 Ygnacio Valley Road, Suite 325  
Walnut Creek, CA 94596  
Telephone: (925) 933-7777

Attorneys for Respondent  
CONTRA COSTA WATER DISTRICT

Eric N. Robinson, State Bar No. 191781  
KRONICK, MOSKOVITZ, TIEDEMANN & GIRARD  
A Law Corporation  
400 Capitol Mall, 27th Floor  
Sacramento, California 95814  
Telephone: (916) 321-4500  
Facsimile: (916) 321-4555

Attorneys for Respondents  
ALAMEDA COUNTY FLOOD CONTROL AND  
WATER CONSERVATION DISTRICT, ZONE 7,  
KERN COUNTY WATER AGENCY  
and STATE WATER CONTRACTORS

Amelia T. Minaberrigarai, State Bar No. 192359  
General Counsel  
KERN COUNTY WATER AGENCY  
P.O. Box 58  
Bakersfield, CA 93302-0058  
Telephone: (661) 634-1400  
Facsimile: (661) 634-1428

Attorney for Respondent  
KERN COUNTY WATER AGENCY

1 Adam C. Kear, State Bar No. 207584  
Sr. Deputy General Counsel  
2 THE METROPOLITAN WATER DISTRICT  
OF SOUTHERN CALIFORNIA  
3 700 North Alameda Street  
Los Angeles, CA 90012-2944  
4 Mailing address: P.O. Box 54153  
Los Angeles, CA 90054-0153  
5 Telephone: (213) 217-6057  
Facsimile: (213) 217-6890  
6

7 Paul N. Singarella, State Bar No. 155393  
LATHAM & WATKINS LLP  
650 Town Center Drive, 20th Floor  
8 Costa Mesa, CA 92626-1925  
Telephone: (714) 540-1235  
9 Facsimile: (714) 755-8290

10 Attorneys for Respondent  
THE METROPOLITAN WATER DISTRICT  
11 OF SOUTHERN CALIFORNIA

12 Jon D. Rubin, State Bar No. 196944  
SAN LUIS & DELTA-MENDOTA WATER AUTHORITY  
13 400 Capitol Mall, 27<sup>th</sup> Floor  
Sacramento, CA 95814  
14 Telephone: (916) 321-4519  
Facsimile: (209) 826-9698  
15

16 Attorneys for Respondent  
SAN LUIS & DELTA-MENDOTA WATER AUTHORITY

17 Robert B. Martin, III, State Bar No. 235489  
SIDLEY AUSTIN LLP  
18 555 California Street, Suite 2000  
San Francisco, CA 94104  
19 Telephone: (415) 772-7443  
Facsimile: (415) 772-4000  
20

21 Attorney for Respondent  
WESTLANDS WATER DISTRICT

22 Samuel B. Boxerman  
SIDLEY AUSTIN LLP  
23 1501 K Street, NW  
Washington, D.C. 20005  
24 Telephone: (202) 736-8547  
Facsimile: (202) 736-8711  
25 E-mail: sboxerman@sidley.com

26 Of Counsel for Respondent  
WESTLANDS WATER DISTRICT  
27  
28

1 Anthony T. Fulcher, State Bar No. 192690  
Office of District Counsel  
2 SANTA CLARA VALLEY WATER DISTRICT  
5750 Almaden Expressway,  
3 San Jose, CA 95118  
Telephone: (408) 265-2600  
4 Facsimile: (408) 979-5649

5 Attorneys for Respondent  
SANTA CLARA VALLEY WATER DISTRICT  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28

**PROOF OF SERVICE**

I, Lorraine Lippolis, declare:

I am a citizen of the United States and employed in Sacramento County, California. I am over the age of eighteen years and not a party to the within-entitled action. My business address is 400 Capitol Mall, 27th Floor, Sacramento, California 95814. On June 15, 2012, I served a copy of the within document(s):

**PUBLIC WATER AGENCIES' COMMENTS ON DRAFT ORDER**

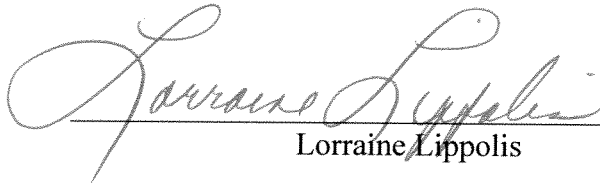
- by transmitting via facsimile the document(s) listed above to the fax number(s) set forth below on this date before 5:00 p.m.
- by placing the document(s) listed above in a sealed envelope with postage thereon fully prepaid, the United States mail at Sacramento, California addressed as set forth below.
- by placing the document(s) listed above in a sealed Federal Express envelope and affixing a pre-paid air bill, and causing the envelope to be delivered to a Federal Express agent for delivery.
- by personally delivering the document(s) listed above to the person(s) at the address(es) set forth below.
- by transmitting via e-mail or electronic transmission the document(s) listed above to the person(s) at the e-mail address(es) set forth below.

***See attached Service List***

I am readily familiar with the firm's practice of collection and processing correspondence for mailing. Under that practice it would be deposited with the U.S. Postal Service on that same day with postage thereon fully prepaid in the ordinary course of business. I am aware that on motion of the party served, service is presumed invalid if postal cancellation date or postage meter date is more than one day after date of deposit for mailing in affidavit.

I declare under penalty of perjury under the laws of the State of California that the above is true and correct.

Executed on June 15, 2012, at Sacramento, California.

  
 \_\_\_\_\_  
 Lorraine Lippolis

Service List

<p>Paul S. Simmons          Theresa A. Dunham          Cassie N. Aw-Yang          Somach, Simmons &amp; Dunn          500 Capitol Mall, Suite 1000          Sacramento, CA 95814          E-mail: psimmons@somachlaw.com          E-mail: tdunham@somachlaw.com          E-mail: cawyang@somachlaw.com</p>	<p>Bill Jennings, Executive Director          California Sportfishing Protection Alliance          3536 Rainier Avenue          Stockton, CA 95204          E-mail: deltakeep@aol.com</p>
<p>Robert A. Ryan, Jr., County Counsel          Lisa A. Travis          Supervising Deputy County Counsel          County of Sacramento          700 H Street, Suite 2650          Sacramento, CA 95814          E-mail: ryanr@saccounty.net          E-mail: travisl@saccounty.net</p>	<p>Stanley R. Dean, District Engineer          Sacramento Regional County Sanitation          District          10060 Goethe Road          Sacramento, CA 95827          E-mail: deans@sacsewer.com</p>
<p>Clay Rodgers, Assistant Executive Officer          Central Valley Regional Water Quality          Control Board, Fresno Office          1685 E Street          Fresno, CA 93706-2020          E-mail: crodgers@waterboards.ca.gov</p>	<p>Robert Crandall, Assistant Executive Officer          Central Valley Regional Water Quality          Control Board, Redding Office          415 Knollcrest Drive          Redding, CA 96002          E-mail: rcrandall@waterboards.ca.gov</p>
<p>Rick Moss, Assistant Executive Officer          Central Valley Regional Water Quality          Control Board          11020 Sun Center Drive, Suite 200          Rancho Cordova, CA 95670-6114          E-mail: rmoss@waterboards.ca.gov</p>	<p>Mike Jackson          Law Office of Mike Jackson          P.O. Box 207          429 W. Main Street          Quincy, CA 95971          E-mail: mjatty@sbcglobal.net</p>
<p>Andrew L. Packard          The Law Offices of Andrew L. Packard          100 Petaluma Boulevard North, Suite 301          Petaluma, CA 94952          E-mail: andrew@packardlawoffices.com</p>	<p>Pamela C. Creedon, Executive Officer          Central Valley Regional Water Quality          Control Board          11020 Sun Center Drive, Suite 200          Rancho Cordova, CA 95670-6114          E-mail: pcreedon@waterboards.ca.gov</p>

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28

<p>David P. Coupe San Francisco Bay Regional Water Quality Control Board 1515 Clay Street, Suite 1400 Oakland, CA 94612 E-mail: <a href="mailto:dcoupe@waterboards.ca.gov">dcoupe@waterboards.ca.gov</a></p>	<p>Alex P. Mayer Office of Chief Counsel State Water Resources Control Board 1001 I Street, 22nd Floor P.O. Box 100 Sacramento, CA 95812-0100 E-mail: <a href="mailto:amayer@waterboards.ca.gov">amayer@waterboards.ca.gov</a></p>
<p>Kenneth D. Landau Assistant Executive Officer Central Valley Regional Water Quality Control Board 11020 Sun Center Drive, Suite 200 Rancho Cordova, CA 95670-6114 E-mail: <a href="mailto:klandau@waterboards.ca.gov">klandau@waterboards.ca.gov</a></p>	<p>Kathleen Harder Water Resource Control Engineer Central Valley Regional Water Quality Control Board 11020 Sun Center Drive, Suite 200 Rancho Cordova, CA 95670-6114 E-mail: <a href="mailto:kharder@waterboards.ca.gov">kharder@waterboards.ca.gov</a></p>
<p>Philip G. Wyels Office of Chief Counsel State Water Resources Control Board 1001 I Street, 22nd Floor P.O. Box 100 Sacramento, CA 95812-0100 E-mail: <a href="mailto:pwlyels@waterboards.ca.gov">pwlyels@waterboards.ca.gov</a></p>	<p>Patrick E. Pulupa Office of Chief Counsel State Water Resources Control Board 1001 I Street, 22nd Floor P.O. Box 100 Sacramento, CA 95812-0100 E-mail: <a href="mailto:ppulupa@waterboards.ca.gov">ppulupa@waterboards.ca.gov</a></p>
<p>David W. Smith, Chief Permits Office U.S. EPA, Region 9 75 Hawthorne Street San Francisco, CA 94105 E-mail: <a href="mailto:smith.davidw@epa.gov">smith.davidw@epa.gov</a></p>	