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14 STATE WATER RESOURCES CONTROL BOARD

15  
16 In the Matter of Own Motion Review of Waste  
Discharge Requirements Order  
17 No. R5-2010-0114 [NPDES No. CA0077682]  
for Sacramento Regional Wastewater Treatment  
18 Plant, Issued by the California Regional Water  
Quality Control Board, Central Valley Region.

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

**SACRAMENTO REGIONAL COUNTY  
SANITATION DISTRICT'S  
COMMENTS/RESPONSE TO  
OCTOBER 29, 2012 DRAFT ORDER ON  
OWN MOTION REVIEW**



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1 Sacramento Regional County Sanitation District (“District” or “SRCSD”) hereby provides  
2 comments and certain objections concerning the proposed order of the State Water Resources  
3 Control Board (State Board) transmitted by letter of the State Board’s Chief Counsel dated  
4 October 29, 2012<sup>1</sup> (hereafter, “Revised Draft Order”). The Revised Draft Order relates to the  
5 State Board’s “own motion” review of Central Valley Regional Water Quality Control Board  
6 (Regional Board) Order No. R5-2010-0114 (Permit). The Revised Draft Order is proposed for  
7 consideration at the State Board’s December 4, 2012 meeting. The October 29 transmittal also  
8 includes a document showing changes from a prior draft order distributed on May 14, 2012<sup>2</sup>  
9 (hereafter, “May Draft Order”) in underline/strike-out format. The underline/strikeout document  
10 is referred to below as “Redline Draft Order.”

11 **I. INTRODUCTION**

12 If the emperor has no clothes, the problem cannot be solved by bringing in a new emperor  
13 who also has no clothes. The May Draft Order embraced stringent new effluent limitations for  
14 ammonia for the Sacramento Regional Wastewater Treatment Plant (SRWTP). It did not accept  
15 the Regional Board’s regulatory logic for such limitations<sup>3</sup>: instead, it proposed a different, but  
16 still unsupportable, regulatory path to the same end based on an unprecedented approach to water  
17 quality-based permitting, and the Revised Draft Order perpetuates this shortcoming. The Revised  
18 Draft Order similarly rejects the Regional Board’s logic for stringent new effluent limitations for  
19 nitrate, but it proposes an unprecedented new approach to reach the same result. This new  
20 approach and discussion does not even acknowledge the laws that apply to NPDES permitting, let  
21 alone adhere to them, does not correctly describe the state of scientific information, and  
22 contradicts findings of the Regional Board itself. The Revised Draft Order also proposes post-

23 \_\_\_\_\_  
24 <sup>1</sup> Letter dated October 29, 2012, to Paul S. Simmons, Esq., et al., and Mr. Bill Jennings, Executive Director, from  
Michael A.M. Lauffer, Chief Counsel, State Board, regarding State Board Meeting Notification.

25 <sup>2</sup> See Letter dated May 14, 2012, to Paul S. Simmons, Esq., et al., and Mr. Bill Jennings, Executive Director, from  
Michael A.M. Lauffer, Chief Counsel, State Board, regarding State Board Workshop Notification.

26 <sup>3</sup> (See May Draft Order, p. 12 and fn. 51 (Regional Board’s bases for denial of mixing zone not applicable); see also  
27 Sacramento Regional County Sanitation District’s Response to Draft Order on Own Motion Review (June 15, 2012)  
(hereafter, “District’s Comments on May Draft Order”), pp. 58-59.) As with its previous comments, the District does  
28 not, by this submittal, waive any issue or position that may be asserted in this or other forums. (District’s Comments  
on May Draft Order, p. 4, fn. 5.)

1 hoc justification for the Permit’s tertiary filtration/ disinfection requirements, now employing  
2 technical and legal discussion that differs from the May Draft Order. In this regard, the Revised  
3 Draft Order ignores State Board precedent and advances entirely new technical arguments  
4 without identification of evidence that underlies its assertion. In most cases, such assertions are  
5 just wrong, and in others, they are misleading.

6 Since the Regional Board’s release of a tentative permit in August of 2010, the Permit has  
7 been a technology-based permit in search of a water quality-based justification. The Revised  
8 Draft Order also makes a new statement that “the size of the District’s discharge is significant.”<sup>4</sup>  
9 This statement is typical of the tone of the entire permitting and Permit review process: a higher  
10 level of treatment is necessary because the SRWTP is large. This approach is inconsistent with  
11 the Clean Water Act (CWA)<sup>5</sup> and the Porter-Cologne Water Quality Control Act (Porter-  
12 Cologne).<sup>6</sup> It appears to the District that only the outcome matters to the Regional and State  
13 Boards, and that the drive to the outcome will not even pause to acknowledge the real  
14 consequences for citizens in the Sacramento Region who must pay for the predetermined  
15 outcome.

16 The letter transmitting the Revised Draft Order states that comments are to be limited to  
17 changes made to the May Draft Order. The sections of the Revised Draft Order that involve  
18 major overhauls as compared to the May Draft Order are those that concern tertiary filtration/  
19 disinfection and nitrate. Accordingly, the District’s comments focus primarily on those two  
20 sections. All the District’s prior submittals are incorporated by reference.

21 In addition, in the final section of these comments, the District brings to the State Board’s  
22 attention that there remain certain unresolved evidentiary questions that should be addressed and  
23 clarified.

24 The District is concerned that the two-week period afforded to provide comment is very  
25 short, particularly considering that there was not advance notice, the stakes are very high, the

26 <sup>4</sup> Revised Draft Order, p. 10; Redline Draft Order, p. 11.

27 <sup>5</sup> 33 U.S.C. § 1251 et seq.

28 <sup>6</sup> Wat. Code, § 13000 et seq.

1 Revised Draft Order contains a significant amount of new material, and the Permit has been  
2 before the State Board for 22 months. The District has endeavored to furnish comments to the  
3 extent feasible and asks that its comments receive full and objective consideration.

4 **II. THE REVISED DRAFT ORDER DOES NOT JUSTIFY THE PERMIT'S**  
5 **TERTIARY FILTRATION REQUIREMENTS**

6 The Revised Draft Order proposes new justification for the "2.2 MPN"<sup>7</sup> Permit adopted by  
7 the Regional Board. The District submits that a "23 MPN" permit, such as has controlled its  
8 operations until now, is adequate with regard to pathogens and disinfection.

9 As the District has made clear, it fully expects to design, construct, and operate  
10 "nitrification" facilities to achieve substantial ammonia reduction – the only dispute concerns  
11 how much ammonia or nutrient reduction and for what reasons. Under any scenario, however,  
12 the local public will incur hundreds of millions of dollars in costs, and potentially up to an  
13 estimated \$780 million in project costs, with additional new operation and maintenance (O&M)  
14 costs of \$31 million each year to address ammonia/nutrient issues.<sup>8</sup>

15 An *additional billion dollars* (plus \$45 million in increased annual O&M costs) for new  
16 tertiary filtration and disinfection is not justified. The State Board should not endorse a gigantic  
17 fix for a problem that does not exist. The Revised Draft Order's analysis proposes to ignore the  
18 implications of data that it presents for the first time, reverses the State Board's own precedent,  
19 relegates Porter-Cologne to the dustbin, and argues for outcomes based on undocumented,  
20 superficial, incomplete, and incorrect assertions. With regard to the latter, the Revised Draft  
21 Order even goes so far as to posit "conditions" based on misunderstandings of the SRWTP  
22 discharge, and argue that under such nonexistent conditions, an "approximate" risk under a  
23

24 <sup>7</sup> In these comments, "2.2 MPN" is used as one form of shorthand for various Permit requirements related to tertiary  
25 filtration / disinfection. The District has discussed the origin of these requirements and the "2.2 MPN" shorthand  
previously.

26 <sup>8</sup> The District has discussed the planning level cost estimates in its *Petition for Review In the Matter of the*  
27 *Sacramento Regional County Sanitation District's Petition for Review of Action and Failure to Act by Regional*  
*Water Quality Control Board, Central Valley Region, in Adopting Waste Discharge Requirements Order*  
28 *No. R5-2010-0114 (NPDES No. CA0077682) and Time Schedule Order No. R5-2010-0115 for Sacramento Regional*  
*County Sanitation District, Sacramento Regional Wastewater Treatment Plant* (hereafter, "Petition"), at pages 16-25.

1 “hypothetical” scenario “may be” a certain level.<sup>9</sup> This statement and many like it are wrong and  
2 irrelevant for many reasons, but the example underscores that the Revised Draft Order has not  
3 taken an objective approach.

4 **A. The Revised Draft Order’s Discussion of the Basin Plan Numeric Water**  
5 **Quality Objective Reinforces That a 23 MPN Permit Is Protective**

6 For the first time in any document prepared by the Regional Board or State Board in  
7 connection with the Permit, the Revised Draft Order discusses an actual adopted water quality  
8 objective (WQO) for pathogens that applies to the Sacramento River. The District agrees that this  
9 WQO is relevant. In fact, consideration of this issue vividly demonstrates that the Permit is  
10 unreasonable and far more stringent than necessary.

11 As the Permit materials reflect, during the Permit development, the Department of Public  
12 Health (DPH) identified contact recreation as the most sensitive use for purposes of pathogenic  
13 risk: in other words, if recreation is adequately protected, other uses that could be affected by  
14 pathogens will be protected.<sup>10</sup> The Water Quality Control Plan for the Sacramento and San  
15 Joaquin River Basins (Basin Plan) contains a numeric WQO for the protection of REC-1  
16 beneficial use, as follows:

17 In waters designated for contact recreation (REC-1), the fecal coliform  
18 concentration based on a minimum of not less than five samples for any 30-day  
19 period shall not exceed a geometric mean of 200/100 ml, nor shall more than  
20 ten percent of the total number of samples taken during any 30-day period exceed  
21 400/100 ml.<sup>11</sup>

22 Under applicable regulations, a regional water quality control board (regional board) is  
23 obliged to develop water quality-based effluent limitations (WQBELs) by determining whether  
24 there is reasonable potential for a discharge to cause or contribute to exceedance of WQOs and, if  
25 so, to develop effluent limitations such that the discharge does not cause or contribute to such an

26 <sup>9</sup> Revised Draft Order, p. 12; Redline Draft Order, p. 12.

27 <sup>10</sup> See, e.g., Permit, p. F-75 (“DPH determined that if contact recreation is protected then agricultural irrigation and  
28 other Delta beneficial [sic] uses that could be impacted by pathogens would also be protected.”); see also Staff  
Report, Sacramento Regional County Sanitation District, Sacramento Regional Wastewater Treatment Plant,  
Proposed NPDES Permit Renewal and Time Schedule Order, Sacramento County (Dec. 2010) (hereafter, “Staff  
Report”), pp. 25-26 (to the same effect).

<sup>11</sup> Basin Plan, p. III-3.00.



1 exceedance.<sup>12</sup> In this instance, the Permit contains headings suggesting that a “reasonable  
2 potential” analysis was conducted and a WQBEL written based on the applicable process. But  
3 the Permit did not even acknowledge the existence of the Basin Plan WQO, and there is no  
4 WQBEL for pathogens in the Permit based on the REC-1 Basin Plan WQO or any other  
5 applicable standard.<sup>13</sup>

6 The May Draft Order also did not acknowledge the existence of the Basin Plan’s REC-1  
7 numeric WQO. However, the Revised Draft Order does discuss the applicable WQO. It also  
8 explains that this adopted standard represents approximately a 0.8 percent (8 in 1,000) risk of  
9 illness for recreational water ingestion. It states that receiving water quality data *upstream* of the  
10 SRWTP exceeds the WQO. Specifically, it explains that, upstream of the District’s outfall, long-  
11 term average fecal coliform concentration is 228 Most Probable Number (MPN)/100 milliliters  
12 (mL).<sup>14</sup> The Revised Draft Order thus states that there may be no assimilative capacity for fecal  
13 coliform based on receiving water quality upstream of the discharge.<sup>15</sup>

14 This discussion is incomplete and omits important data. The District’s highly effective  
15 chlorine disinfection system destroys and eliminates fecal coliform. Current effluent fecal  
16 coliform levels average 2.2 MPN/100 mL.<sup>16</sup> That is, they are *far lower* than those of the upstream  
17 receiving water, and lower than the WQO itself. Downstream of the SRWTP discharge, average  
18 ambient fecal coliform is 141 MPN/100 mL,<sup>17</sup> significantly *lower* than upstream. Therefore, the  
19 discharge *creates* assimilative capacity for fecal coliform.<sup>18</sup>

20 If upstream concentrations of fecal coliform exceed the pathogen WQO, the Regional  
21 Board should consider listing the upstream area as impaired under section 303(d) of the CWA and

22 \_\_\_\_\_  
23 <sup>12</sup> 40 C.F.R. § 122.44(d)(1).

24 <sup>13</sup> Permit, pp. F-72 to F-80; see Petition, pp. 27-28.

25 <sup>14</sup> Revised Draft Order, p. 10; Redline Draft Order, p. 11.

26 <sup>15</sup> Revised Draft Order, pp. 10-11; Redline Draft Order, p. 11.

27 <sup>16</sup> Administrative Record (AR) at SRCSD\_Data\_110.

28 <sup>17</sup> Sacramento Coordinated Monitoring Program (CMP), Appendix B Summary Statistics (Dec. 1992-June 2010),  
AR at SRCSD\_OTHER\_317.

<sup>18</sup> This is also true for total coliform. The SRWTP effluent average total coliform concentration is 8 MPN/100 mL  
(AR at SRCSD\_Data\_110), compared to average 2,170 MPN/100 mL upstream. (CMP, Appendix B.)

1 developing load and wasteload allocations.<sup>19</sup> The District is doing more than its share toward  
2 *reducing* risk of illness based on consideration of fecal coliform levels, the metric in the Basin  
3 Plan to evaluate the REC-1 beneficial use.

4 In the meantime, the District would not object to the development of WQBELs based on  
5 the adopted Basin Plan WQO for fecal coliform, as the Revised Draft Order suggests should  
6 occur.<sup>20</sup> The SRWTP would readily comply with such limitations.

7 Further, it is appropriate to reflect on the overall state of affairs. If it adopts the Revised  
8 Draft Order, the State Board will have concluded:

- 9 (i) That the risk of gastrointestinal illness from REC-1 for persons directly ingesting  
10 Sacramento River water *upstream* of the SRWTP (i.e., caused by other sources) is  
approximately 80 in 10,000 (based on upstream ambient fecal coliform levels).
- 11 (ii) That even though the current SRWTP discharge reduces fecal coliform in the river  
12 and thus reduces the 80 in 10,000 risk, it should get no credit for such reduction.
- 13 (iii) Instead, it makes perfect sense for the SRWTP to be regulated to ensure that its  
14 discharge does not cause a 0.5 in 10,000 increment of increase in risk<sup>21</sup> of  
gastrointestinal illness from protozoa, even if that costs a billion dollars; and
- 15 (iv) Moreover, uncontroverted expert testimony<sup>22</sup> supporting that the SRWTP meets  
16 the 0.5 in 10,000 criterion described in (iii), even without additional treatment, will  
be ignored and the District required to make the expenditures.

17 **B. The Revised Draft Order Guts Porter-Cologne**

18 Porter-Cologne contains core requirements that ensure water quality regulations be  
19 reasonable and the product of reasoned deliberation. These mandates are reinforced by principles  
20 of administrative law confirmed by the Supreme Court. The Revised Draft Order contravenes  
21 Porter-Cologne and all prior State Board and court authority related to Porter-Cologne's  
22 application.

23  
24  
25 <sup>19</sup> 33 U.S.C. § 1313(d).

26 <sup>20</sup> Revised Draft Order, p. 12, ¶ 6; Redline Draft Order, p. 13.

27 <sup>21</sup> The DPH recommendation of 1:10,000 risk of infection translates to approximately 0.5:10,000 risk of illness.  
(Meeting, State of California, Central Valley Regional Water Quality Control Board, Partial Transcript (Dec. 9,  
2010), Tiffany C. Kraft, CSR, AR at SRCSD\_BM\_13 (hereafter, "Hearing Transcript"), p. 209:1-7.)

28 <sup>22</sup> See sections II.E.5-6, *post*.

1 The District agrees with the Revised Draft Order’s statements that, when a regional board  
2 adopts permit provisions that are more stringent than necessary to implement adopted WQOs it  
3 must comply with Water Code section 13241.<sup>23</sup> To be more specific, it must comply with Water  
4 Code sections 13263(a) and 13241. Section 13263(a) requires that when adopting waste  
5 discharge requirements (WDRs), a regional board must take into consideration the WQOs  
6 reasonably required for the protection of beneficial uses and the provisions of Water Code  
7 section 13241.<sup>24</sup> Water Code section 13241 in turn requires the consideration of a variety of  
8 factors, one of which is economics.<sup>25</sup>

9 As discussed above, the Revised Draft Order now recognizes that there is an adopted,  
10 numeric WQO for fecal coliform in the Basin Plan.<sup>26</sup> The 2.2 MPN total coliform effluent  
11 limitation in the Permit, and other provisions related to tertiary filtration, are much more stringent  
12 than necessary to implement this WQO.<sup>27</sup>

13 When the Regional Board proposes to adopt effluent limitations more stringent than those  
14 required by existing WQOs, “. . . the rationale for the more stringent limitations must be  
15 explained in the permit findings . . . . In addition, the RWQCB must consider the factors

18 <sup>23</sup> Revised Draft Order, pp. 13-14; Redline Draft Order, pp. 14-15.

19 <sup>24</sup> Wat. Code, § 13263(a).

20 <sup>25</sup> Water Code section 13241 provides:

21 Each regional board shall establish such water quality objectives in water quality control plans as in  
22 its judgment will ensure the reasonable protection of beneficial uses and the prevention of nuisance;  
23 however, it is recognized that it may be possible for the quality of water to be changed to some degree  
24 without unreasonably affecting beneficial uses. Factors to be considered by a regional board in  
25 establishing water quality objectives shall include, but not necessarily be limited to, all of the following:

- 23 (a) Past, present, and probable future beneficial uses of water.
- 24 (b) Environmental characteristics of the hydrographic unit under consideration, including the  
25 quality of water available thereto.
- 26 (c) Water quality conditions that could reasonably be achieved through the coordinated control of  
27 all factors which affect water quality in the area.
- 28 (d) Economic considerations.
- (e) The need for developing housing within the region.
- (f) The need to develop and use recycled water.

27 <sup>26</sup> Revised Draft Order, p. 10, Redline Draft Order, p. 11; see Basin Plan, p. III-3.00 (WQO for fecal coliform).

28 <sup>27</sup> Revised Draft Order, p. 14; Redline Draft Order, p. 15.

1 specified in Water Code Section 13241[.]”<sup>28</sup> That is, if the Regional Board chooses to implement  
2 a more stringent objective on a permit-specific basis, it “must consider the factors specified in  
3 Water Code Section 13241.”<sup>29</sup> The State Board has further explained that, “when a Regional  
4 Board includes permit limits more stringent than limits based on an applicable numeric objective  
5 in the relevant basin plan, the Regional Board must address the section 13241 factors in the  
6 permit findings. These factors include, among others, economic considerations, environmental  
7 characteristics of the hydrographic unit under consideration, and the need for recycled water.”<sup>30</sup>  
8 Thus, the Regional Board must make findings related to each of the provisions of Water Code  
9 section 13241.<sup>31</sup> The State Board’s Chief Counsel has explained that, in these types of  
10 circumstances, a regional board has an affirmative duty to develop and consider information on  
11 the section 13241 factors and engage in a “balancing” of factors to develop objectives consistent  
12 with the statute.<sup>32</sup> A regional board must “set forth findings to bridge the analytic gap between  
13 the raw evidence and ultimate decision or order.”<sup>33</sup> The findings must also be supported by  
14 evidence in the record.<sup>34</sup> Further, “mere conclusory findings without reference to the record are  
15 inadequate.”<sup>35</sup>

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16  
17 <sup>28</sup> *In the Matter of the Petition of City and County of San Francisco, et al.*, State Board Order No. WQ 95-4 (Sept. 21,  
1995) (hereafter, “State Board Order WQ 95-4”), p. 13; see also *In the Matter of the Petitions of Napa Sanitation  
18 District, et al.*, State Board Order No. WQ 2001-16 (Dec. 5, 2001), p. 24.

19 <sup>29</sup> *In the Matter of the Petition of the Cities of Palo Alto, Sunnyvale and San Jose*, State Board Order No. WQ 94-8  
(Sept. 22, 1994), p. 9.

20 <sup>30</sup> *In the Matter of the Review on Own Motion of Waste Discharge Requirements Order No. 5-01-044 for Vacaville’s  
21 Easterly Wastewater Treatment Plant*, State Board Order WQO 2002-0015 (Oct. 3, 2002) (hereafter, “State Board  
22 Order WQO 2002-0015”), p. 35, footnote omitted.

23 <sup>31</sup> See, e.g., State Board Order WQO 2002-0015, pp. 35, 72 (issue remanded and Regional Board directed to revise its  
24 findings to expressly address Wat. Code, § 13241 factors which had not been addressed); see also State Board Order  
25 WQ 95-4, pp. 13-14, 32 (permit remanded to Regional Board for failure to consider the factors specified in Wat.  
26 Code, § 13241).

27 <sup>32</sup> Memorandum dated January 4, 1994, to Regional Board Executive Officers, from William R. Attwater, Chief  
28 Counsel of the State Board, re: Guidance on Consideration of Economics in the Adoption of Water Quality  
Objectives, AR at SRCSD\_CORR\_1002 (hereafter, “Attwater Memorandum”), p. 3.

<sup>33</sup> *Topanga Assn. for a Scenic Community v. County of Los Angeles* (1974) 11 Cal.3d 506, 515 (“*Topanga*”); see  
State Board Order WQ 95-4, pp. 10, 13; see *Environmental Protection Information Center v. California Dept. of  
Forestry & Fire Protection* (2008) 44 Cal.4th 459, 516 (“*EPIC*”).

<sup>34</sup> *Topanga, supra*, 11 Cal.3d at pp. 514-515.

<sup>35</sup> *EPIC, supra*, 44 Cal.4th at p. 517.

1           The May Draft Order stated that none of the above provisions are applicable because the  
2 Permit tertiary filtration/disinfection requirements implement narrative WQOs, and, thus, are not  
3 more stringent than necessary to implement previously adopted standards.<sup>36</sup> This is incorrect, and  
4 the Revised Draft Order deletes this discussion.<sup>37</sup> Regrettably, however, the Revised Draft Order  
5 declines to evaluate compliance with Porter-Cologne. It does so by reversing State Board  
6 precedent without acknowledgment of doing so. It ignores Supreme Court and appellate  
7 precedent. And it forgives noncompliance as to evidence-based factual findings through a broad  
8 arm-wave.

9           The Revised Draft Order excuses any noncompliance with the above legal principles in  
10 part because the Revised Draft Order takes the position that Water Code section 13241 does not  
11 require that a regional board make specific findings on each of the Water Code section 13241  
12 factors.<sup>38</sup> But no one contends that the *Water Code* specifically requires such findings; instead,  
13 core principles of administrative adjudication *do* impose such obligations. The Revised Draft  
14 Order muddles and fails to recognize the difference between quasi-legislative actions (where  
15 findings are not required) and administrative adjudication (where findings are required). It thus  
16 proposes to improperly reverse prior precedential State Board orders and other applicable  
17 authority.<sup>39</sup> The Revised Draft Order exacerbates the problem through advancing the new  
18 premise that as long as there is *any* evidence *somewhere* in the record related to the Water Code  
19 factors, that the State Board has met its legal obligations.<sup>40</sup> This is simply not true for  
20 adjudicatory orders defining rights and obligations of parties.<sup>41</sup> Once again, adoption of the  
21 Revised Draft Order would be a reversal of all prior precedent. And here, the Revised Draft  
22

23 \_\_\_\_\_  
24 <sup>36</sup> May Draft Order, p. 9.

25 <sup>37</sup> Redline Draft Order, pp. 14-15.

26 <sup>38</sup> Revised Draft Order, p. 14; Redline Draft Order, p. 16.

27 <sup>39</sup> See footnotes 28-35, *ante*, and accompanying text; see also Attwater Memorandum, pp. 2, 6 (differentiating  
28 between basin plan amendments and adoption of waste discharge requirements).

<sup>40</sup> Revised Draft Order, pp. 14-15; Redline Draft Order, p. 16.

<sup>41</sup> See footnotes 28-35, *ante*, and accompanying text.

1 Order simply makes the sweeping statement that there is evidence regarding section 13241 factors  
2 in the record somewhere and thus the Regional Board complied with its obligations.<sup>42</sup>

3 It is notable that, in this instance, the tentative permit that the Regional Board staff  
4 released in September of 2010 had not included even a passing effort to acknowledge Porter-  
5 Cologne or comply with the applicable obligations described above.<sup>43</sup> The Permit as adopted  
6 includes hastily added section 13241 “findings” that the District believes to be deficient. The  
7 District has explained why they are deficient<sup>44</sup> and the Revised Draft Order chooses to ignore the  
8 issue. The State Board *has not* evaluated whether the Permit findings are responsive to the Water  
9 Code. It has not evaluated whether evidence supports each finding. And, in fact, the District  
10 submits, as to some issues, that the findings contradict all evidence in the record pertaining to  
11 certain subjects.<sup>45</sup>

12 These points are not technicalities. All of the obligations of concern are in service of  
13 requirements that the Regional Board’s action be reasonable and reflect deliberation directed at  
14 that end. A meaningful evaluation of the Regional Board’s action would not summarily conclude  
15 that there was information on costs or other factors that were considered (as the Revised Draft  
16 Order does).<sup>46</sup> It would, however, acknowledge the estimated capital costs ranging to \$1.2 billion  
17 for the new Permit tertiary filtration disinfection requirements. It would consider what water  
18 quality conditions can reasonably be achieved in the Sacramento River, as the law requires.<sup>47</sup> It  
19 would additionally consider any other relevant factors, including the potential *adverse*  
20 environmental effects of imposing the new obligations.<sup>48</sup> It would *not* simply recite, and propose  
21

22 \_\_\_\_\_  
23 <sup>42</sup> Revised Draft Order, pp. 14-15; Redline Draft Order, p. 16.

24 <sup>43</sup> California Regional Water Quality Control Board, Central Valley Region, Tentative Order No. R5-2010-XXXX  
25 [NPDES No. CA0077682] Waste Discharge Requirements for the Sacramento Regional County Sanitation District,  
26 Sacramento Regional Wastewater Treatment Plant (Sept. 3, 2010) (hereafter, “September 2010 Tentative Permit”).

27 <sup>44</sup> See, e.g., District’s Comments on May Draft Order, pp. 28-36; Petition, pp. 46-54.

28 <sup>45</sup> District’s Comments on May Draft Order, pp. 28-36; Petition, pp. 46-54.

<sup>46</sup> Revised Draft Order, pp. 14-15; Redline Draft Order, p. 16.

<sup>47</sup> Wat. Code, §§ 13263(a), 13241(c).

<sup>48</sup> See, e.g., District’s Comments on May Draft Order, p. 36; Petition, p. 53.

1 new, arguments for a pre-determined outcome. The Revised Draft Order does just that, and in the  
2 process it eviscerates Porter-Cologne.

3 **C. The Revised Draft Order’s Presentation of Evidence Is Inappropriate and**  
4 **Chronically Incorrect**

5 The Revised Draft Order includes multiple technical or factual errors and omissions, and  
6 is very misleading as to others. As a preliminary matter, however, the District takes exception to  
7 the Revised Draft Order’s general approach to the presentation of information, for various  
8 reasons. Specifically, the Revised Draft Order presents certain matters as fact when they are not  
9 fact, or, at a minimum, relate to matters in dispute. In the majority of these cases, the Revised  
10 Draft Order identifies no evidence supporting the statement. For example, on pages 6-7, the  
11 Revised Draft Order<sup>49</sup> states that “[t]he reasons that the [Regional Board] and CDPH considered  
12 the District’s discharge unique include: . . . .” The Revised Draft Order goes on to describe five  
13 “reasons” the two agencies allegedly considered the circumstances to be unique. There are no  
14 citations whatsoever which demonstrate that each of these assertions is a reason the agencies  
15 considered the District “unique.” More importantly, in the majority of the circumstances, there is  
16 no evidence cited to support the statement or assertion described in the list. The District objects  
17 to all these statements. To the extremely limited extent the Revised Draft Order does refer to any  
18 evidence related to these assertions, the District addresses that issue below.

19 The very same deficiency exists on page 12 of the Revised Draft Order.<sup>50</sup> There, the  
20 Revised Draft Order states that “a ‘2.2 MPN’ level of treatment was deemed appropriate by the  
21 [Regional Board] for the following reasons. . . .” The Revised Draft Order goes on to list seven  
22 reasons. This list includes no citations to support that these were reasons that the Regional Board  
23 considered a 2.2 MPN level of treatment appropriate (in fact, the Revised Draft Order’s list  
24 includes “reasons” that were not even arguably among the Regional Board’s reasons). And, more  
25 importantly, and again, the list of reasons amounts to assertions of fact without identification of  
26

27 <sup>49</sup> Revised Draft Order, pp. 6-7; Redline Draft Order, pp. 6-7.

28 <sup>50</sup> Revised Draft Order, p. 12; Redline Draft Order, pp. 12-13.

1 any supporting evidence. The District objects to these statements. In fact, the list is plagued by  
2 statements that are simply wrong.

3 The Revised Draft Order takes a similar approach in characterizing “reasons”<sup>51</sup> DPH  
4 considers a particular risk level to be appropriate. The Revised Draft Order provides no citation  
5 for the source of the four “reasons” attributed to DPH, but more importantly, there is no  
6 evaluation of these statements or their significance in the Revised Draft Order itself. This  
7 deficiency is addressed further in subsequent sections of these comments. The net effect of the  
8 Revised Draft Order’s presentation of all of these various assertions discussed above is to create  
9 talking points, but not an objective or accurate or evidence-based analysis.

10 In sections II.D-F below, the District addresses specific technical issues.

11 **D. The Discharge Circumstance More Than Meets the Standard 20:1 Dilution**  
12 **Condition That Supports a “23 MPN” Permit**

13 Under standard permitting practices regularly applied in the Central Valley, when a  
14 discharge occurs to a water body providing dilution of 20:1 or more, the applicable permit  
15 limitation is 23 MPN, not the 2.2 tertiary filtration/disinfection limitation that the Regional Board  
16 adopted for the SRWTP.<sup>52</sup> Although it incorrectly states one outdated guidance value concerning  
17 dilution ratios,<sup>53</sup> the Revised Draft Order correctly recognizes that the 20:1 guidance is applicable  
18 here.<sup>54</sup>

19 <sup>51</sup> Revised Draft Order, pp. 9-10; Redline Draft Order, p. 10.

20 <sup>52</sup> The District explained this practice in detail in the District’s Comments on May Draft Order (pp. 10-13); see also  
Petition, pp. 29-32.

21 <sup>53</sup> The Revised Draft Order proposes to take official notice of two DPH guidance documents from 1987 and 1992.  
22 (Revised Draft Order, pp. 5-6, fn. 17; Redline Draft Order, p. 6, fn. 17.) The District made a request for such notice  
because the May Draft Order contained a statement to the effect that DPH guidelines provide for 2.2 MPN to protect  
23 MUN use when dilution is less than 100:1. (May Draft Order, p. 5; Sacramento Regional County Sanitation  
District’s Request for Admission of New Evidence and for Official Notice (June 15, 2012) (hereafter, “District’s  
Request Admission/Notice”), pp. 5-6.) As the District pointed out, any such guidance was rescinded by the  
24 subsequent DPH documents and since 1987 has not been applicable. The subsequent documents were provided to  
illustrate that the May Draft Order had referred to inapplicable guidance. (District’s Request Admission/Notice, p. 6;  
25 District’s Comments on May Draft Order, p. 11 and fn. 38.) The State Board itself has also issued an order  
describing the document referenced in the May Draft Order as having been “rescinded.” (*Order Amending North*  
26 *Coast Regional Board Cease & Desist Order No. 85-35 for the City of Santa Rosa Subregional Wastewater*  
*Treatment, Reuse & Disposal Facilities*, State Board Order No. 2000-04 (March 15, 2000), p. 2, ¶ 10.) The Revised  
27 Draft Order does not reflect consideration of the content of the updated and modified guidance, and continues to refer  
to the inapplicable value from the rescinded guidance. (Revised Draft Order, pp. 5-6; Redline Draft Order, pp. 5-6.)

28 <sup>54</sup> Revised Draft Order, p. 6; Redline Draft Order, p. 6.



1 The Permit findings, based on evidence in the record, identify the average dilution of  
2 SRWTP effluent in the Sacramento River as 50:1, and the actual value is somewhat greater than  
3 that.<sup>55</sup> In addition, each individual day's dilution is greater than 20:1.<sup>56</sup> The Revised Draft Order  
4 thus recognizes not only that the 20:1 practice is applicable, but also that, under the applicable  
5 guidelines, a "23 MPN" requirement would be applicable here:

6 As noted by the District, following the *CDPH Guidelines*, the District would not  
7 be required to meet a "2.2 MPN" level of treatment based on the average dilution  
8 provided by receiving waters at the point of discharge. Following the *CDPH  
Guidelines*, a "23 MPN" level of treatment, as currently provided by the District,  
would be required.<sup>57</sup>

9 The Revised Draft Order attempts, however, to argue that this conclusion should  
10 somehow not apply because of circumstances of the SRWTP. The stated reasons are essentially  
11 that a 20:1 ratio does not exist at *all* times at *all* locations in the water column downstream of the  
12 discharge, an erroneous and inaccurate interpretation of DPH guidance. In this regard, the  
13 Revised Draft Order's contentions describe the existence of a mixing zone having a potential for  
14 REC-1 users to contact the discharge at ratios less than 20:1 and the existence of a marina  
15 characterized as "within" the mixing zone.<sup>58</sup> They also focus on the fact that tidal influences can  
16 affect the lower Sacramento River. The Revised Draft Order also refers to "double dosing" as  
17 part of this suite of contentions.<sup>59</sup>

18 First, in *any* discharge situation, there is necessarily an area in the immediate proximity of  
19 the discharge where dilution ratios are less than 20:1. In the case of the District, for example,  
20 effluent is discharged from a diffuser *on the bottom of the river*, 20 to 30 feet deep, in the center  
21 of the river. Multiple modeling and dye studies demonstrate that the plume "hugs" the bottom of  
22 the river, such that the highest effluent concentrations (and lowest dilution) are present near the

23 \_\_\_\_\_  
24 <sup>55</sup> Permit, p. F-74; see Staff Report, p. 30; see also Sacramento Regional County Sanitation District's Comments and  
25 Evidence Regarding Tentative NPDES Permit, Time Schedule Order, and Permitting Options Circulated on  
September 3, 2010 (Oct. 11, 2010), AR at SRCSD\_CORR\_1002 (hereafter, "District's October 2010 Comments and  
Evidence Letter"), pp. 8, 12.

26 <sup>56</sup> See, e.g., District's October 2010 Comments and Evidence Letter, p. 12.

27 <sup>57</sup> Revised Draft Order, p. 6; Redline Draft Order, p. 6.

28 <sup>58</sup> Revised Draft Order, pp. 7, 12; Redline Draft Order, pp. 7, 12.

<sup>59</sup> Revised Draft Order, pp. 6, 12; Redline Draft Order, pp. 6-7, 12.

1 river bottom; the plume becomes significantly more diluted with distance downstream and as the  
2 plume mixes upward in the water column. The Revised Draft Order should have considered  
3 actual specific evidence concerning this mixing zone because the Revised Draft Order's  
4 statements are not consistent with various reports, including a 2008 report<sup>60</sup> that actually evaluates  
5 plume characteristics.<sup>61</sup> In summary, it is not remarkable or unique that there is a mixing zone  
6 within which dilution is less than 20:1, and it is notable that the highest effluent concentrations  
7 are located in a small zone at the river's bottom and away from the river edges.

8 The Revised Draft Order also states that there is "potential" for "AGR" (irrigation) use  
9 contact with the discharge at dilution ratios less than 20:1.<sup>62</sup> This "potential" would certainly  
10 exist if irrigation diversion structures went to the center and bottom of the river immediately  
11 below the discharge, but they do not. The actual evidence in the record does not support that  
12 there is any risk related to irrigation use. The Revised Draft Order ignores the specific evidence  
13 in the record (which is passively acknowledged in the Permit)<sup>63</sup> related to agricultural diversions  
14 having 20:1 dilution or greater.<sup>64</sup>

15 \_\_\_\_\_  
16 <sup>60</sup> (Flow Science, 2008. Model Verification Results for FLOWMOD simulation of SRCSD Effluent Discharge to the  
17 Sacramento River at Freeport, November 2007 Field Study. Prepared for Sacramento Regional County Sanitation  
18 District (June 9, 2008), AR at SRCSD\_OTHER\_102.) This report was prepared after the SRWTP diffuser had been  
19 modified to prevent diluted effluent from reaching the surface near the east bank of the river at low flows and thus  
20 was operating under its current configuration.

21 <sup>61</sup> For example, both modeled and measured values shown in Figures 7 and 8 of that report show that the effluent  
22 plume is confined to the bottom third of the river at 30 feet downstream of the diffuser (top of the plume is 12-15 ft  
23 below the surface). By 100 feet, the edge of the plume is approximately 10 feet below the surface. By the time  
24 diluted effluent reaches the surface at 350 feet downstream, average dilution within the plume is 24-29:1 depending  
25 on the specific flow scenario. It is highly unlikely that someone swimming, fishing or boating anywhere in the near  
26 field would come in contact with effluent that is diluted less than 20:1. Near Cliff's Marina, which is located  
27 4,200 feet downstream of the discharge, dilution should far exceed the 20:1 dilution ratio through the river.

28 <sup>62</sup> Revised Draft Order, p. 12; Redline Draft Order, p. 12.

<sup>63</sup> Permit, p. F-78 (undiluted effluent not drawn into agricultural intakes).

<sup>64</sup> During the course of Permit development, information on irrigation use of the Sacramento River was provided to  
the Regional Board. There is, first, uncontroverted evidence in the record from a knowledgeable engineer who works  
with 25 Reclamation Districts in the Delta. (See Letter dated December 15, 2004, to K. Landau, Regional Board,  
from R. Seyfried, SRCSD, re: NPDES Permit, Responses to Comments Raised at Meeting of November 19, 2004,  
AR at SRCSD\_CORR\_210.) None of the types of pumps used for irrigation go much below the surface, with a  
typical depth between 5 feet and 10 feet below the water's surface. In fact, they are shallow enough that they run the  
risk of the pump cavitating at low tide. In addition, the pipes from these pumps do not stick out horizontally into the  
water. They draw water near the riverbank and, in general, outside the direct influence of the SRWTP effluent  
plume, which emanates from a diffuser located on the river bottom in the middle of the river.

Further, modeling (calibrated and validated with multiple dye studies) demonstrates that up to 700 feet  
downstream of the discharge, the plume from the diffuser is centered within the river and does not come closer than

1 With respect to tidal influences and the potential for the river “slowing” to provide less  
2 than 20:1 dilution on an instantaneous basis, the Revised Draft Order ignores DPH’s actual  
3 recommendations. Specifically, DPH recommends that, where there are tidal influences, “an  
4 instantaneous [dilution ratio] of less than 20:1 is acceptable *as long as the average for each day*  
5 *exceeds 20:1.*”<sup>65</sup> The circumstances of the SRWTP meet this test. Indeed, had the District been  
6 discharging at its *full* permitted flow during the period January 1, 1998, through January 1, 2010,  
7 there would have been zero days with daily average dilution less than 20:1.<sup>66</sup> As the Revised  
8 Draft Order recognizes, the District is completely prohibited from discharging when the  
9 river:effluent ratio is less than 14:1.<sup>67</sup> Operationally, any change in such ratio from a tidal shift is  
10 rapid, and the District diverts effluent to the SRWTP storage ponds well before the actual ratio  
11 declines to 14:1.<sup>68</sup> In all events, the daily dilution is normally 50:1, very commonly *greater*

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12  
13 100 feet of either riverbank. Typically, dilution is far greater than 20:1. At Harmonic Mean Flows, the river:effluent  
14 flow ratio is 56:1 for 181 million gallons per day (mgd) of effluent flow. At critical low river flows as represented by  
15 the lowest 7-day average flow expected to occur once in ten-years (7Q10) (i.e., 5,820 cubic feet per second (cfs)),  
16 dilution ratio is 21:1 at a discharge rate of 181 mgd. River flows as low as the 7Q10 occur infrequently. Between  
17 1970 and 2009, river flow was at or below 5,820 cfs approximately 0.58 percent of the time. (District’s October  
18 2010 Comments and Evidence Letter, p. 8.) In short, there is no evidence of any appreciable risk related to irrigation  
19 of food (or other crops) that would necessitate filtration.

20  
21 <sup>65</sup> (Letter dated July 1, 2003, to Thomas R. Pinkos, Executive Officer, Regional Board, from David P. Spath, Chief,  
22 Division of Drinking Water and Environmental Management, AR at SRCSD\_CORR\_2187, p. 1, emphasis added.)  
23 The Revised Draft Order is plainly incorrect in stating that the SRWTP discharge circumstances are “unique”  
24 because there is a tidal influence on the river. (Revised Draft Order, p. 6; Redline Draft Order, p. 6.) Tidally-driven  
25 flows occur throughout the Delta and in San Francisco Bay, and in river and estuary systems worldwide. Tidal  
26 dynamics are well understood and readily modeled, and discharges of treated wastewater occur routinely into water  
27 bodies that experience tidal phenomena. In fact, as noted above, DPH guidance specifically addresses situations  
28 where a discharge is tidally-influenced, stating that a tidally-caused instantaneous dilution of less than 20:1 is  
acceptable as long as the average for each day exceeds 20:1.

<sup>66</sup> (District’s October 2010 Comments and Evidence Letter, p. 12.) Certain other material in the record that refers to  
the probability of occurrence of less than 20:1 dilution is based on calculations assuming the once-requested,  
increased permitted flow of 218 mgd Average Dry Weather Flow (ADWF). The value cited above is based on  
181 mgd ADWF.

<sup>67</sup> Revised Draft Order, p. 7; Redline Draft Order, p. 7; Permit, p. 13.

<sup>68</sup> (Permit, p. F-14.) The Revised Draft Order states that during a specific 18 month period, the District was required  
to cease discharging and to divert to storage basins on 137 occasions in order to met the requirement of the Permit  
that it not discharge when river:effluent ratio is less than 14:1. (Revised Draft Order, p. 7; Redline Draft Order, p. 7.)  
This is unremarkable. When 14:1 does occur, the duration is on the order of minutes (up to 25). (Thermal Plan  
Exception Justification for the Sacramento Regional Wastewater Treatment Plant (Robertson-Bryan, Inc., 2010),  
AR at SRCSD\_CORR\_0994, Att. 100, and Appendix B, Technical Memorandum re Revised Analysis of the Effect  
of SRWTP Effluent Discharge on Sacramento River Water Temperature (Flow Science Inc., 2010), AR at  
SRCSD\_OTHER\_166, pp. 4-6.) Also, a diversion to storage basins does not mean that a reverse flow condition  
occurred, even on a temporary basis. It merely means that discharge at less than a 14:1 ratio was avoided, even if

1 than 50:1 and always greater than 20:1. There is no evidence whatsoever that the transient tidal  
2 condition results in any meaningful consequence.<sup>69</sup>

3 With respect to the subject of so-called “double dosing,” the Revised Draft Order errs,  
4 fundamentally and repeatedly. As a preliminary consideration for this discussion, the record is  
5 replete with results from water quality modeling, dye studies, and technical *reports* that describe  
6 the full range of hydrologic and hydrodynamic conditions that occur at the SRWTP. The Revised  
7 Draft Order cites no such information.

8 In fact, the Revised Draft Order cites *no evidence at all* with respect to its statements that  
9 purport to describe a phenomenon of “double dosing” or its consequences.<sup>70</sup> For this reason, the  
10 District objects to every single statement in the Revised Draft Order purporting to describe  
11 “double dosing” or its effects.

12 Equally important, the Revised Draft Order’s statements related to “double dosing” are  
13 simply incorrect. It is not disputed that an episodic condition sometimes called “double dosing”  
14 can occasionally occur in some high tide/low flow conditions; the problem is that what the  
15 Revised Draft Order says *about* the condition is not correct. For example, the Revised Draft  
16 Order states that there is a “doubling of effluent concentrations” of pathogens as a result of  
17 double dosing.<sup>71</sup> There is no evidence to this effect. The statement is incorrect. The Revised  
18 Draft Order also states that there is a doubling of concentrations of pathogens in the receiving

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19 only for a few minutes. Of the 137 occasions of diversion over that 18 month period, only 25 of those were actual  
20 reverse flow events.

21 <sup>69</sup> The Revised Draft Order refers to a passage from the State Board’s Order reviewing the City of Davis permit, in  
22 which the State Board stated that, in selecting hardness values, effluent limitations must protect beneficial uses  
23 considering “reasonable, worst case conditions.” (Revised Draft Order, p. 12, fn. 46; Redline Draft Order, p. 12,  
24 fn. 46.) The District agrees that in setting permit requirements for pathogens, the Regional Board should evaluate  
25 reasonable worst-case conditions. But it must also evaluate the full range of conditions that occur. To do otherwise  
26 would be to ignore reality and grossly overestimate the risks associated with a discharge.

27 <sup>70</sup> The only source cited in connection with statements concerning “double dosing” is the Permit itself. (Revised  
28 Draft Order, p. 6, fn. 20; see also Revised Draft Order, p. 5, fn. 13; Redline Draft Order, p. 5, fn. 13, and p. 7, fn. 20.)  
The Permit itself is not evidence that the State Board may rely upon to uphold the Permit; it is the quasi-adjudicatory  
order under review. Moreover, the Permit does *not say* what the Revised Draft Order represents that it says. The  
Revised Draft Order cites the Permit for the proposition that there is a doubling of concentrations of pathogens.  
(*Ibid.*) The cited page of the Permit (p. F-32) does not say that. Instead, it explains that water quality modeling  
addressed “double dosing” and states that through various requirements, the Permit “limits double dosing of the  
discharge during flow reversals.” (Permit, p. F-32, fn. 1.)

<sup>71</sup> Revised Draft Order, p. 6; Redline Draft Order, p. 7.

1 water.<sup>72</sup> Again, there is no evidence to support this statement, and again the Revised Draft Order  
2 is incorrect. The term used is itself misleading: “double dosing” does not refer to a doubling of  
3 any concentration. It refers to an uncommon situation under which effluent may be discharged to  
4 the same parcel of water twice. Whatever short-term increased concentrations can occur (for  
5 example, immediately adjacent to the diffuser at the river bottom) are of no significant  
6 consequence;<sup>73</sup> and there is no doubling of concentration over any meaningful period of time or  
7 space, and no doubling of overall load or risk occurs. Contrary to suggestions in the Revised  
8 Draft Order, there is no evidence whatsoever that this infrequent, short-term, transient  
9 phenomenon, has any impact on risk to recreational users.

10 The errors of the Revised Draft Order related to this issue are even more disturbing when  
11 they provide the foundation for the Revised Draft Order’s strained bullet point conclusion that  
12 “[u]nder double dosing conditions [as mischaracterized], the *approximate combined* risk . . . in  
13 the effluent at a *hypothetical* 20 to 1 dilution ratio *may be* as high . . . .”<sup>74</sup>

14 In summary, with respect to issues concerning river to effluent ratio and receiving water  
15 conditions, the Revised Draft Order ignores applicable guidance, relies on little or no evidence,  
16 asserts that extremes are the norm, and makes incorrect statements. It is an improper basis for  
17 objective decisions.

18 **E. Quantitative Risk Assessment Confirms That 23 MPN Is Adequate**

19 **1. The Revised Draft Order’s Characterizations Concerning Risk**  
20 **Assessment Are Sensational and Erroneous and the Revised Draft**  
21 **Order Relies on No Evidence or Improper Evidence**

22 The Revised Draft Order introduces various new characterizations of risk associated with  
23 the discharge. As with many other assertions in the Revised Draft Order, statements describing  
24 quantified risk are rarely, if ever, accompanied by any citation to a specific item of evidence.

25 <sup>72</sup> See, e.g., Revised Draft Order, p. 5, fn. 13, and p. 6; Redline Draft Order, pp. 5, 7.

26 <sup>73</sup> During a reverse flow event, the effluent discharged prior to the reverse flow will mix over the river depth and  
27 toward the river’s edges; this mixing results in significant dilution. When discharge from the diffuser resumes, the  
28 plume from the diffuser is centered in the middle of the river, and the highest concentrations of effluent occur at the  
bottom of the river, where recreation (swimming) is highly unlikely to occur.

<sup>74</sup> Revised Draft Order, p. 12, ¶ 5, emphasis added; Redline Draft Order, p. 12, emphasis added.

1 Accordingly, the District objects to such statements. Further, the Revised Draft Order’s approach  
2 is directed to a characterization of “risk” that is a gross departure from the real world. Adoption  
3 of the Revised Draft Order would endorse a logic that resembles the following:

4 (i) Without identifying any specific evidence or analysis, identify a “worst-case.”  
5 Ignore any comments or evidence that indicate that the assumptions or facts are wrong or  
6 misleading.

7 (ii) Assume that this worst-case risk exists at all times in all locations downstream of  
8 SRWTP, even if it actually exists infrequently, over a short time interval, or never.<sup>75</sup>

9 (iii) Multiply by ten.<sup>76</sup>

10 (iv) Characterize the result as “the” risk attributable to the SRWTP.

11 Whether or not this exact logic is used in any given situation, each new characterization or  
12 purported characterization in the Revised Draft Order that is purportedly based on the District’s  
13 risk assessment is erroneous. Such characterizations do not take into consideration the  
14 uncontroverted evidence in the record or the overall characterization of risk by the acknowledged  
15 expert in this matter. Thus, even ignoring compounding errors of misstatements, the Revised  
16 Draft Order’s discussion cannot be the basis for an objective decision.

17 As an additional preliminary matter, and discussed below and elsewhere, during the  
18 Permit development process, DPH provided an extraordinarily conservative recommendation  
19 concerning the risk levels that should be protected related to effects of the District’s discharge.  
20 The Revised Draft Order states: “At the July 18 [, 2012] Workshop, the District asserted that the

21 \_\_\_\_\_  
22 <sup>75</sup> As noted previously, the District agrees that the evaluations of risk should include and fully account for  
23 “reasonable worst-case” conditions. But it must also include and account for a full range of conditions. Otherwise, it  
24 is not accurate. In this regard, the Revised Draft Order, in characterizing illness risk associated with fecal coliform  
25 concentrations in the Sacramento River, cites long-term average concentrations, and uses those concentrations to  
26 quantify the risk, in accordance with the averaging periods contained in the coliform objective in the Basin Plan.  
27 (Revised Draft Order, pp. 10-11; Redline Draft Order, p. 11.) Setting aside the issue of whether certain  
28 characterizations in the Revised Draft Order of “worst-case” protozoa risk are real or hypothetical, an instantaneous  
value is not representative of overall risk.

<sup>76</sup> The Revised Draft Order repeatedly refers to alleged risks associated with ten swimming events (days). (Revised  
Draft Order, p. 8 and fn. 28, pp. 10, 12; Redline Draft Order, p. 8 and fn. 28, pp. 9, 10, 12.) The risk levels in the  
United States Environmental Protection Agency (U.S. EPA) recommendations and any other applicable  
recommendations are based on the risk of illness for a single swimming activity/day. Multiplying a calculated risk  
by ten is to overstate the actual risk by a factor of ten, just as multiplying by one million would overstate the actual  
risk by a factor of one million. (See also fn. 102, *post*.)

1 risk of infection is significantly lower than 1 in 10,000 downstream of the discharge since all  
2 *Giardia* are inactivated by chlorination of the effluent before discharge.”<sup>77</sup> This characterization  
3 is not entirely accurate, but for immediate purposes, it is close enough: the District did assert at  
4 the workshop that evidence in the record indicates that DPH’s recommendation as related to the  
5 District’s discharge is met under current SRWTP treatment and disinfection.

6 The important point in this regard is that the non-evidentiary workshop was not the  
7 birthplace of the District’s assertion. Instead, the District was characterizing uncontroverted  
8 record testimony of an extraordinarily qualified expert. Because the Revised Draft Order seeks to  
9 avoid the actual content of the evidentiary record, the District finds it again necessary to describe  
10 the content of the record and events and evidence related to the uncontroverted testimony. Such  
11 discussion covers ground that the District has covered previously, and the District respectfully  
12 urges the State Board actually to consider this information, because it pertains to new assertions  
13 in the Revised Draft Order.

## 14 2. Context for Quantitative Recreational Risk Assessment

15 As discussed previously, persons who ingest water directly from surface water bodies –  
16 such as in certain recreation activities – are at risk of acquiring gastrointestinal illness due to the  
17 presence of pathogens in the ingested water.<sup>78</sup> In this regard, the U.S. EPA has identified  
18 acceptable levels of risk for all ambient surface waters, in its “Ambient Water Quality Criteria.”<sup>79</sup>  
19 This U.S. EPA acceptable risk level is 0.8%, or 8 illnesses per 1,000 bathers/swimmers.<sup>80</sup> The  
20 national criteria are applied extensively throughout the United States.<sup>81</sup> The May Draft Order

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22 <sup>77</sup> Revised Draft Order, p. 9; Redline Draft Order, p. 9.

23 <sup>78</sup> [Written] Testimony/Comments of Charles P. Gerba, Ph.D., Related to Draft NPDES Permit for the Sacramento  
24 Regional Wastewater Treatment Plant, submitted on October 11, 2010, AR at SRCSD\_CORR\_1002 (hereafter,  
25 “Gerba Written Testimony”), pp. 1-2; Hearing Transcript, p. 208:20-25.

26 <sup>79</sup> *Ambient Water Quality Criteria for Bacteria – 1986* (U.S. EPA, Jan. 1986, EPA440/5-84-002), AR at  
27 SRCSD\_OTHER\_370 (hereafter, “U.S. EPA Recreation Criteria Document”).

28 <sup>80</sup> (U.S. EPA Recreation Criteria Document, p. 9; Hearing Transcript, p. 210:21-25.) As was pointed out by DPH, the  
February 2010 Risk Assessment Report (*Estimated Risk of Illness from Swimming in the Sacramento River*, Report  
for Sacramento Regional County Sanitation District (SRCSD), Charles P. Gerba, Ph.D. (Feb. 23, 2010),  
SRCSD\_OTHER\_148) inadvertently cited a 19 per 1,000 swimmers threshold that applies to salt water rather than  
the 8 per 1,000 acceptable risk that is applicable to freshwater recreation. The oversight is not material.

<sup>81</sup> See, e.g., Gerba Written Testimony, p. 5.

1 correctly stated that the U.S. EPA recommendations are for public health protection from  
2 recreational contact with pathogens in waters subject to wastewater discharges.<sup>82</sup> The averaging  
3 period for indicator bacteria (*E. coli* or *enterococci*) monitoring recommended in the  
4 U.S. EPA Recreation Criteria Document is generally not less than 5 samples over a 30-day  
5 period. The U.S. EPA recommendations were developed for use by states in establishing their  
6 own water quality standards.<sup>83</sup> Contrary to the Revised Draft Order’s assertions, the District does  
7 not insist that the U.S. EPA criteria must be applied to the Sacramento River. But the U.S. EPA  
8 recommendations are used extensively throughout the country<sup>84</sup> and at the very least provide  
9 valuable context and perspective. Further, risk levels from the U.S. EPA Recreation Criteria  
10 Document have been used in recent U.S. EPA regulations adopting *regulatory* criteria for various  
11 states. In 2000, Congress passed the Beaches Environmental Assessment and Coastal Health Act  
12 of 2000 (Pub.L. No. 106-284 (Oct. 10, 2000) 114 Stat. 870) (BEACH Act) which required states  
13 to adopt either the U.S. EPA 1986 Criteria or criteria “as protective” as the U.S. EPA  
14 recommendation. The U.S. EPA’s 2004 Water Quality Standards for Coastal and Great Lakes  
15 Recreation Waters promulgated water quality criteria for the remaining states that had not yet  
16 adopted protective criteria, putting in place regulatory criteria corresponding to an illness rate of  
17 0.8% for swimmers (the U.S. EPA criteria value) in freshwater.<sup>85</sup>

18 As noted in the Revised Draft Order, notwithstanding the Regional Board’s ordinary  
19 practice, based on DPH recommendations of requiring 23 MPN where there is substantial  
20 dilution, Regional Board staff also sought a further recommendation from DPH with regard to  
21 pathogens and disinfection.<sup>86</sup> Because *Cryptosporidium* and *Giardia* are less susceptible to  
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23 <sup>82</sup> May Draft Order, pp. 5-6.

24 <sup>83</sup> See Petition, p. 37.

25 <sup>84</sup> Gerba Written Testimony, p. 5; see Hearing Transcript, p. 215:9-12.

26 <sup>85</sup> 69 Fed. Reg. 67218, 67232 (Nov. 16, 2004), codified at 40 C.F.R. § 131.41 (“EPA is promulgating water quality  
27 criteria that correspond to an illness rate of 0.8% for swimmers in freshwater[.]”).

28 <sup>86</sup> The District considers the request as an adjunct to the 20:1 policy that ultimately served to confirm the lack of need  
for filtration. (See also Letter dated June 9, 2009, to Ken Landau, Regional Board, from Robert Seyfried, SRCSD,  
re: Comments on Letter to Carl Lischeske (May 11, 2009) Requesting a Health Risk Assessment for Sacramento  
Regional Water Treatment Plant Discharge to the Sacramento River, AR at SRCSD\_CORR\_0441.)



1 inactivation by chlorine disinfection than coliform, subsequent inquiry focused on the risk of  
2 illness from these organisms based on ingestion of river water. DPH staff initiated a preliminary  
3 evaluation of risk in the Sacramento River, but it was agreed that there were significant problems  
4 and uncertainties with that work.<sup>87</sup> DPH and Regional Board staff then endorsed the  
5 recommendation that an expert risk evaluation be conducted by Dr. Charles Gerba. Dr. Gerba is a  
6 Professor of Environmental Microbiology at the University of Arizona, and a renowned expert on  
7 microbial risk assessment, wastewater disinfection, and related issues. Among other things, he  
8 has produced over 500 articles, including textbooks, in environmental science and risk  
9 assessment. He has served as an advisor to multiple federal and state agencies, and conducts  
10 research on microbial fate and transport in the environment and wastewater treatment.<sup>88</sup> DPH  
11 identified contact recreation as the most sensitive use for purposes of analysis: that is, if contact  
12 recreation is adequately protected, other uses that could be affected by pathogens will be  
13 protected.<sup>89</sup> With interaction and input by Regional Board staff and DPH, Dr. Gerba prepared a  
14 draft report and then a report dated February 23, 2010.<sup>90</sup> Dr. Gerba also subsequently submitted  
15 written testimony in October of 2010, and testified and presented evidence at the Regional Board  
16 hearing.<sup>91</sup> Dr. Gerba's work and testimony, none of which is disputed in the record, are discussed  
17 more specifically in sections II.E.3-6 below.

### 18 3. Preparation of Assessment

19 As identified above, Dr. Gerba performed a quantitative microbial risk assessment to  
20 determine the risk of acquiring gastrointestinal illness from *Giardia* and *Cryptosporidium* via  
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22 <sup>87</sup> See, e.g., Letter dated August 23, 2010, to Ken Landau, Regional Board, from Stan Dean, SRCSD, re: Review of  
23 Department of Public Health Records Pertaining to SRCSD NPDES Permit Renewal Recommendation, AR at  
SRCSD\_CORR\_0707 (hereafter, "District's August 2010 Letter"), p. 1.

24 <sup>88</sup> See Gerba Written Testimony, p. 1 and Attachments to Gerba Written Testimony; District's Exhibits at Regional  
25 Board's December 6, 2010 Permit Hearing (hereafter, "District's Hearing Exhibits"), PowerPoint, AR at  
SRCSD\_BM\_10, slide 30.

26 <sup>89</sup> See, e.g., Permit, p. F-75 ("DPH determined that if contact recreation is protected then agricultural irrigation and  
other Delta beneficial [sic] uses that could be impacted by pathogens would also be protected.").

27 <sup>90</sup> February 2010 Risk Assessment Report.

28 <sup>91</sup> Gerba Written Testimony, pp. 1-5; Hearing Transcript, pp. 208:14-221:20; District's Hearing Exhibits, PowerPoint  
slides 30-40.

1 ingestion of river water. The analysis relied upon standard microbial risk assessment methods.<sup>92</sup>  
2 The analysis calculated risks of illness based on compiled ambient water quality data from four  
3 locations: Veteran’s Bridge, which is 8 miles upstream of the SRWTP discharge; Freeport  
4 (sometimes referred to as “Freeport Marina”), which is immediately upstream of the discharge;  
5 Cliff’s Marina, which is approximately 0.5 miles downstream of the discharge; and River  
6 Mile 44, which is approximately 1.5 miles downstream of the discharge.<sup>93</sup> It also calculated risk  
7 of a 20:1 blend of upstream river water and effluent, a worst-case condition hypothetically (and  
8 conservatively) assumed to exist at all times in the assessment.<sup>94</sup>

9 The report compared these risks to acceptable risk levels identified by the U.S. EPA in the  
10 U.S. EPA’s “Ambient Water Quality Criteria.”<sup>95</sup> As noted above, this U.S. EPA acceptable risk  
11 level is 0.8%, i.e., 8 illnesses per 1,000 bathers/swimmers.<sup>96</sup> The report also notes, that in the  
12 case of recreational waters, risk of illness is used rather than risk of infection.<sup>97</sup> Forty to  
13 fifty percent of persons infected actually experience a gastrointestinal illness.<sup>98</sup>

14 For purposes of the February 2010 Risk Assessment Report, very conservative, and  
15 conservatively compounding, assumptions were employed. For example, the February 2010 Risk  
16 Assessment Report used a conservative assumption with respect to the viability of *Giardia* cysts  
17 in SRWTP effluent. Not all the cysts or oocysts in measured water are viable (capable of causing  
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19 <sup>92</sup> Gerba Written Testimony, p. 1.

20 <sup>93</sup> February 2010 Risk Assessment Report, pp. 4, 9; Hearing Transcript, pp. 213:21-214:1; District’s Hearing Exhibits, PowerPoint slides 36-39.

21 <sup>94</sup> (February 2010 Risk Assessment Report, pp. 3-5; Hearing Transcript, pp. 211:12-18; District’s Hearing Exhibits, PowerPoint slides 37-39.) As water moves further downstream, potential impacts attributable to the SRWTP discharge diminish. (See, e.g., Gerba Written Testimony, p. 3.) The February 2010 Risk Assessment Report, on page 5, relates certain data on the frequency of occurrence of dilution of 20:1. These frequencies are based on an assumed permitted 218 mgd ADWF rather than 181 mgd. The report was prepared before the District decided to withdraw its request for an increase to 218 mgd as permitted flow.

24 <sup>95</sup> February 2010 Risk Assessment Report, p. 4.

25 <sup>96</sup> (U.S. EPA Recreation Criteria Document, p. 9; Hearing Transcript, p. 210:21-25.) As was pointed out by DPH, the February 2010 Risk Assessment Report inadvertently cited a 19 per 1,000 swimmers threshold that applies to salt water rather than the 8 per 1,000 acceptable risk that is applicable to freshwater recreation. The oversight is not material.

27 <sup>97</sup> February 2010 Risk Assessment Report, p. 9.

28 <sup>98</sup> February 2010 Risk Assessment Report, p. 9; Hearing Transcript, p. 209:5-7.

1 an infection).<sup>99</sup> While no data exist on the percentage of *Giardia* cysts in secondary-treated  
2 wastewater that are viable, such data do exist for *Cryptosporidium* oocysts.<sup>100</sup> This percentage  
3 value was used for *Cryptosporidium*, but it was also simply, and very conservatively, assumed in  
4 the February 2010 Risk Assessment Report that an equal percentage of *Giardia* cysts from the  
5 SRWTP were viable.<sup>101</sup>

6 In addition, although the U.S. EPA acceptable or recommended risk levels (and the DPH  
7 recommendations) are based on one swimming or bathing exposure (also referred to as swimming  
8 activity day), the February 2010 Risk Assessment Report calculated risk from both one day of  
9 swimming activity and ten days of swimming activity.<sup>102</sup>

10 Also, the February 2010 Risk Assessment Report assumed that each individual swallows  
11 100 mL of water during a day of swimming activity. This is *much greater* than amounts typically  
12 used in such risk assessments. The U.S. EPA studies indicate that 37 mL is a more appropriate  
13 value for a day of swimming, while other studies have estimated the amount of water ingested for  
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18 <sup>99</sup> February 2010 Risk Assessment Report, p. 7; Hearing Transcript, p. 212:6-12.

19 <sup>100</sup> February 2010 Risk Assessment Report, p. 7; Hearing Transcript, p. 212:13-17; see Gerba Written Testimony, p. 3.

20 <sup>101</sup> February 2010 Risk Assessment Report, p. 7; Gerba Written Testimony, p. 3; Hearing Transcript, p. 212:15-18.

21 <sup>102</sup> (Gerba Written Testimony, pp. 1-2; Hearing Transcript, p. 212:18-19; District's Hearing Exhibits, PowerPoint  
22 slide 34.) The Revised Draft Order does not reflect objectivity or fairness in its treatment of the February 2010 Risk  
23 Assessment Report's presentation of ten days of swimming activity. Specifically, the February 2010 Risk  
24 Assessment Report showed that even if the risk to swimmers were multiplied by a factor of ten, the risk would still be  
25 *far* below the U.S. EPA acceptable risk values. (February 2010 Risk Assessment Report, pp. 9-10.) That does *not*  
26 mean, as the Revised Draft Order implies (Revised Draft Order, pp. 12; Redline Draft Order, p. 12), that the risk of  
27 illness actually increases by a factor of ten. The Revised Draft Order repeatedly refers to alleged risks associated  
28 with ten swimming events (days). (Revised Draft Order, p. 8 and fn. 28, pp. 10, 12; Redline Draft Order, p. 8 and  
fn. 28, pp. 9, 10, 12.) The risk levels in the U.S. EPA Recreation Criteria Document and any other applicable  
recommendations are based on the risk of illness for a single swimming day. (Hearing Transcript, p. 211:7-8.) The  
epidemiologic studies that formed the basis for the criteria were used to determine illness rates in a population over a  
recreational season. The studies were conducted by interviewing bathers to record illness symptoms after a single  
day of swimming at a recreational beach. Multiplying a calculated risk by ten is to overstate the actual risk by a  
factor of ten, just as multiplying by one million would overstate the actual risk by a factor of one million.  
Dr. Gerba's depiction of the risk associated with ten swimming events served to illustrate the conservative nature of  
his results. He did not recommend this as the applicable basis for comparison against the U.S. EPA acceptable risk  
for a single swimming activity/day and it would be illogical to do so.

1 boaters and fishing activities at 6 to 10 mL.<sup>103</sup> Nonetheless, the 100 mL assumption was applied  
2 throughout, unquestionably representing a very conservative assumption.<sup>104</sup>

3 The resultant risk calculations are generally reflected in Tables 3-5 of the February  
4 2010 Risk Assessment Report.<sup>105</sup> Thus, for example, referencing Table 4 and using the applicable  
5 conservative assumptions, the calculated average risk of illness from ingesting *Cryptosporidium*  
6 for a swimmer at Veteran’s Bridge is  $1.20 \times 10^{-5}$  (or, 1.2 in 100,000), and at River Mile 44 it is  
7  $1.27 \times 10^{-5}$  (or, 1.27 in 100,000).<sup>106</sup>

8 The February 2010 Risk Assessment Report found that for all scenarios evaluated, even  
9 combining risks from the two protozoa under the suite of conservative assumptions, the risk was  
10 below the U.S. EPA recreational criteria accepted risk value by two to three orders of  
11 magnitude.<sup>107</sup>

#### 12 4. Letter From DPH and Response

13 DPH wrote to Regional Board staff on June 15, 2010, after review of the February 2010  
14 Risk Assessment Report.<sup>108</sup> DPH pointed out (not specifically referencing, but presumably using,  
15 Table 5 on p. 16 of the February 2010 Risk Assessment Report) that the calculated risk of illness  
16 reflected for swimmers was on average 1.3 per 10,000 at Veteran’s Bridge (upstream), 1.2 per  
17 10,000 at Freeport (upstream), 1.8 per 10,000 at Cliff’s Marina (.5 mile downstream), and 3.4 per  
18 10,000 at River Mile 44 (1.5 miles downstream).<sup>109</sup> The “bottom line” recommendation in the  
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20

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<sup>103</sup> Gerba Written Testimony, p. 2.

22 <sup>104</sup> February 2010 Risk Assessment Report, p. 8; Gerba Written Testimony, p. 2; Hearing Transcript, pp. 212:20-  
23 213:2.

24 <sup>105</sup> February 2010 Risk Assessment Report, pp. 14-16.

25 <sup>106</sup> February 2010 Risk Assessment Report, p. 15.

26 <sup>107</sup> February 2010 Risk Assessment Report, pp. 9-10; Hearing Transcript, p. 211:18-20; District’s Hearing Exhibits,  
27 PowerPoint slide 33.

28 <sup>108</sup> Letter dated June 15, 2010, to Kenneth D. Landau, Regional Board, from Gary H. Yamamoto, P.E., DPH, re:  
Request for Health Risk Assessment for Sacramento Regional County Sanitation District (SRCSD) Discharge to  
Sacramento River, Sacramento County, AR at SRCSD\_CORR\_0573 (hereafter, “DPH June 2010 Letter”).

<sup>109</sup> DPH June 2010 Letter, p. 2.

1 DPH letter was that SRCSD’s effluent should not cause an additional risk of infection greater  
2 than 1 in 10,000.<sup>110</sup>

3 In a letter of June 30, 2010, the District responded to the DPH letter, noting the extremely  
4 conservative nature of the DPH recommendation, the high cost of filtration, and the fact that the  
5 February 2010 Risk Assessment Report used extremely conservative assumptions. The District  
6 also pointed out that, even with all the conservative assumptions, the difference at 0.5 miles  
7 downstream was not statistically significant, and while the difference at 1.5 miles downstream  
8 was statistically significant, the value may also be influenced by different factors such as the  
9 marina or other inflows. In addition, there were certain misstatements in the DPH letter that  
10 required clarification or correction.<sup>111</sup> The District also noted that, even though the risk level

11 \_\_\_\_\_  
12 <sup>110</sup> DPH June 2010 Letter, p. 3.

13 <sup>111</sup> Page 9 of the Revised Draft Order (Redline Draft Order, p. 10) refers to four “reasons CDPH considers the  
14 additional 1 infection in 10,000 exposures risk threshold to be appropriate and the U.S. EPA Rec Criteria’s risk  
15 threshold of 8 illnesses to 1,000 (i.e., 80 in 10,000) exposures inappropriate . . . .” Although the Revised Draft Order  
16 does not identify a specific document, the reference is presumably to a June 15, 2010 letter from DPH. There are  
17 certain aspects of these points that merit the State Board’s closer examination.

18 First, as the District has explained, it is misleading to state that the U.S. EPA ambient water quality criteria are  
19 based on risks posed where pathogens detected are from human and animal sources. There is no basis for concluding  
20 that a pathogen of human origin is of greater risk than other origins, and there is no support in the U.S. EPA  
21 Recreation Criteria Document for any claim that treated effluent would raise the risk of receiving water which meets  
22 the U.S. EPA criteria – the acceptable risk level already accounts for all pathogen sources contributing to risk in the  
23 water. (U.S. EPA Recreation Criteria Document, p. 9.) The studies initiated by U.S. EPA to develop the criteria  
24 were designed to determine if swimming in sewage-contaminated water carries a health risk for bathers. The studies  
25 went on to establish a quantitative relationship between gastroenteritis and indicator bacteria concentrations. (See  
26 Letter dated June 30, 2010, to Ken Landau, Regional Board, from Stan Dean, SRCSD, Subject: California  
27 Department of Public Health letter dated June 15, 2010, AR at SRCSD\_CORR\_0594 (hereafter, “District’s June  
28 2010 Letter”), p. 3; see also Gerba Written Testimony, p. 2 [“The USEPA 1986 standards apply to all surface  
recreational waters regardless if they are directly influenced by treated wastewater or not.”]; U.S. EPA Recreation  
Criteria Document, p. 3 [U.S. EPA criteria based on studies whose goals included “to determine if swimming in  
sewage-contaminated water carries a health risk for bathers”]; U.S. EPA Recreation Criteria Document, p. 5 [“[T]he  
association of illness in swimmers using bathing water contaminated by treated sewage is an important aspect of the  
process for developing recreational water quality criteria[.]”].)

23 Second, with respect to whether the U.S. EPA criteria risk levels are acceptable, as noted elsewhere, the  
24 U.S. EPA recently promulgated a regulation establishing water quality standards for certain states that is based on  
25 that specific level. Further, the U.S. EPA is conducting a review of the criteria, but the revisions under consideration  
26 do not focus on revising the acceptable risk levels. (Gerba Written Testimony, p. 2; District’s June 2010 Letter.)

27 Third, the Revised Draft Order reports a statement that “Dr. Gerba estimates that the average risk of infection  
28 from a single swimming exposure to the effluent” is one order of magnitude higher than the DPH 1 in 10,000 risk of  
infection recommendation. (Revised Draft Order, p. 10; Redline Draft Order, p. 10.) Dr. Gerba did not make a  
quantitative estimate of risk associated with undiluted effluent. Data printed in the DPH letter of June 15, 2010 do  
not reflect this supposed order of magnitude estimate, and Dr. Gerba made no such estimate. In addition, the  
statement is inconsistent with the Revised Draft Order’s statement that the combined risk of infection from *Giardia*  
and *Cryptosporidium* is “2.4 in 10,000 upstream of the District’s outfall and 3.6 in 10,000 downstream of the

1 recommendation proposed by DPH was extremely conservative, the level could be met if just one  
2 of the conservative assumptions were more realistic.<sup>112</sup> In written testimony subsequently  
3 submitted in October 2010, Dr. Gerba stated his agreement with the content of the District's June  
4 2010 Letter in this regard as related to the microbial risk analysis, in addition to addressing  
5 additional topics discussed below.<sup>113</sup>

6 **5. Permit Discussion of February 2010 Risk Assessment Report and**  
7 **Uncontroverted Evidence**

8 The Permit contains severe mischaracterizations or misunderstandings regarding the  
9 February 2010 Risk Assessment Report.<sup>114</sup> The Permit does not meaningfully consider the  
10 magnitude of the risks, the exceptionally small differences in risks, or that they were the product  
11 of very conservative assumptions. Further, the Permit *does not address at all* Dr. Gerba's  
12 October 2010 written testimony or testimony at the December 2010 hearing which supplements  
13 the February 2010 Risk Assessment Report with further analysis. Nor is there any evidence  
14 disputing Dr. Gerba's October or December analysis or testimony, a fact that undercuts much of  
15 the discussion in the Permit and a fact that is ignored in the Revised Draft Order.

16 For example, as discussed below, the Permit does not consider in any way Dr. Gerba's  
17 uncontroverted October and December 2010 testimony and analysis concerning inactivation of  
18 *Giardia* through the SRWTP treatment processes.

19 As described above, the District explained in June of 2010 that if even one of the  
20 conservative assumptions employed for generating tables in the February 2010 Risk Assessment  
21 were made more realistic, the DPH recommendation, as stringent as it is, may well be met. The  
22 September 2010 Tentative Permit released by Regional Board staff three months later stated: "it

23 \_\_\_\_\_  
24 District's outfall." (Revised Draft Order, p. 8; Redline Draft Order, p. 8.) This change in risk is far less than an order  
25 of magnitude. It also does not reflect consideration of the inactivation of *Giardia* by chlorination at the SRWTP, as  
26 discussed elsewhere.

27 <sup>112</sup> (See District's June 2010 Letter, pp. 2-4; see also District's August 2010 Letter.) The District notes that in the  
28 District's June 2010 Letter (p. 3) there is discussion of the frequency of occurrence of 20:1 dilution, but this is based  
on assumed permitted flow of 218 mgd rather than 181 mgd.

<sup>113</sup> Gerba Written Testimony, p. 2.

<sup>114</sup> See Petition, pp. 37-40.

1 is possible that further refinement of the Discharger’s health risk assessment would demonstrate  
2 that the Discharger already achieves the health risk recommended by DPH.”<sup>115</sup>

3 In October of 2010, the District transmitted written testimony of Dr. Gerba, updating and  
4 refining the findings in his February 2010 Risk Assessment Report.<sup>116</sup> In his written testimony  
5 and testimony at the Regional Board hearing, Dr. Gerba described the preparation and outcomes  
6 of the February 2010 Risk Assessment Report. He expressed his updated conclusion and expert  
7 opinion that the “SRWTP discharge does not result in a meaningful increase in risk to  
8 recreationists of waterborne disease.”<sup>117</sup>

9 In addition, Dr. Gerba explained that, subsequent to completion of the February 2010 Risk  
10 Assessment Report, he had also considered the effect of current SRWTP disinfection practices on  
11 the viability of *Giardia* cysts: “The impact of chlorination on the discharge from the [SRWTP]  
12 was not considered in this [February 2010 Risk Assessment Report’s] assessment of *Giardia*  
13 viability. *Giardia is much more susceptible to inactivation by free chlorine and chloramines than*  
14 *Cryptosporidium[.]*”<sup>118</sup>

15 As described below, Dr. Gerba went on, in his October 2010 written testimony (which  
16 was incorporated as part of the District’s comments on the September 2010 Tentative Permit),<sup>119</sup>  
17 to discuss *Giardia* inactivation by the chloramines that are formed in the disinfection process.<sup>120</sup>  
18 It requires emphasis that this information is uncontroverted in the record, and the Regional Board  
19 ignored it entirely. In this regard, the District’s comment letter submitted in October  
20 simultaneously with Dr. Gerba’s Written Testimony stated:

21  
22  
23 \_\_\_\_\_  
24 <sup>115</sup> September 2010 Tentative Permit, p. F-75.

25 <sup>116</sup> Gerba Written Testimony; Hearing Transcript, p. 208:14-18.

26 <sup>117</sup> Gerba Written Testimony, p. 5; see Hearing Transcript, p. 215:14-19.

27 <sup>118</sup> Gerba Written Testimony, p. 3, emphasis added; see also Hearing Transcript, p. 215:14-19; District’s Hearing  
28 Exhibits, PowerPoint slide 40.

<sup>119</sup> District’s October 2010 Comments and Evidence Letter, p. 16.

<sup>120</sup> Gerba Written Testimony, pp. 3-5.

1           However, *Giardia* is much more susceptible to inactivation by free chlorine and  
2 chloramines than *Cryptosporidium* and therefore would experience greater  
3 inactivation by chloramines in the SRWTP effluent before discharge . . . .  
4 Dr. Gerba provides further analysis and conclusions in accompanying material  
5 [i.e., the written testimony], which constitutes additional comment and evidence.<sup>121</sup>

6 The Regional Board “Staff Response to Comments” did not respond to this comment at all. This  
7 is significant because, this single refinement, consideration of inactivation of *Giardia* by  
8 chloramines, results in risk values associated with the SRWTP which meets the DPH-  
9 recommended risk level of one in 10,000, retaining all other assumptions of the February 2010  
10 Risk Assessment Report.<sup>122</sup>

11           Dr. Gerba’s analysis, as described in his testimony, leads to the conclusion that in  
12 assessing in-river risks associated with the SRWTP discharge, the risk of illness from *Giardia*  
13 associated with the discharge is essentially eliminated, and the proper focus in assessing  
14 discharge-related risk is thus *Cryptosporidium*.<sup>123</sup> Dr. Gerba explained that chloramines are  
15 formed as a result of chlorine use in the disinfection process. He analyzed *Giardia* inactivation  
16 from chlorine/chloramines based on the U.S. EPA guidance as a function of actual contact time  
17 and temperature of the SRWTP effluent. He confirmed that there are no in-river risks from  
18 *Giardia* attributable to the effluent. Accordingly, *Cryptosporidium*, not *Giardia*, is the  
19 appropriate microbe to consider in evaluating SRWTP’s risks to recreaters from ingestion of river  
20 water.<sup>124</sup>

21           The data related to in-river risk from *Cryptosporidium* are in Table 4 of the February  
22 2010 Risk Assessment Report,<sup>125</sup> and are depicted on PowerPoint slides 38 and 39 of the  
23 District’s Hearing Exhibits. The calculated risks for a swimming day are:

24 \_\_\_\_\_  
25 <sup>121</sup> District’s October 2010 Comments and Evidence Letter, p. 11, citation omitted.

26 <sup>122</sup> In addition, federal regulations require responses to significant comments raised during the public comment  
27 period. (40 C.F.R. § 124.17(a)(2).) Absence of a response to this evidence and comment is thus inconsistent with  
28 federal regulations.

<sup>123</sup> Hearing Transcript, pp. 213:16-19, 215:14-19, 221:8-20.

<sup>124</sup> Hearing Transcript, pp. 213:16-19, 215:14-16, 221:8-20; District’s Hearing Exhibits, PowerPoint slide 35  
 (“*Cryptosporidium* represents the only microbial risk from SRWTP discharge.”).

<sup>125</sup> February 2010 Risk Assessment Report, p. 15.



1 Veteran's Bridge: 1.20:100,000  
Freeport: 1.04:100,000  
2 Cliff's Marina: 1.09:100,000  
3 River Mile 44: 1.27:100,000<sup>126</sup>

4 Even assuming, for the sake of argument, that the differences are statistically significant  
5 (which they are not), they are trivial, and for each location the risk of illness is approximately  
6 *1:100,000*. The September 2010 Tentative Permit had recognized that refinement of the February  
7 2010 Risk Assessment Report could support that the SRWTP already meets the extremely  
8 conservative DPH recommendation.<sup>127</sup> When such a refinement was presented, it was ignored.<sup>128</sup>  
9 It was completely inappropriate for the Regional Board to ignore the evidence, and it is  
10 inappropriate for the State Board to ignore it.

## 11 6. Summary of Evidence Related to Risk Assessment

12 The District does not concur that the DPH "recommendation" for a change in risk of  
13 infection of no more than 1 in 10,000 is an appropriate basis for regulation. First, it advocates  
14 extremely costly treatment based on a risk value or change in risk that is unduly low, and  
15 unprecedented in its application. Indeed, the value is based on drinking water standards  
16 applicable to tap water, not recreation.<sup>129</sup> Second, the value is not based on consideration of  
17 ambient water quality conditions or the relative significance or insignificance of any change in  
18 water quality that may be caused by the SRWTP. In other words, it is disconnected from  
19 development of WQBELs related to ambient WQOs. Third, DPH does not consider the factors

22 <sup>126</sup> February 2010 Risk Assessment Report, p. 15; District's Hearing Exhibits, PowerPoint slides 38-39.

23 <sup>127</sup> September 2010 Tentative Permit, p. F-75.

24 <sup>128</sup> Instead, after submittal of the District's written comments and written testimony of Dr. Gerba in October 2010, the  
25 passage from the September 2010 Tentative Permit that had recognized that the conservative recommendation may  
26 be met, was *deleted* from the final revisions of the permit presented for Regional Board consideration in December.  
27 (See "Underline/Strikeout" version of the California Regional Water Quality Control Board, Central Valley Region,  
28 Order No. R5-2010-XXXX [NPDES No. CA0077682] Waste Discharge Requirements for the Sacramento Regional  
County Sanitation District, Sacramento Regional Wastewater Treatment Plant, Sacramento County (hereafter,  
"November Redline Tentative Permit"), p. F-80.)

<sup>129</sup> See also Gerba Written Testimony, p. 2 ("In my experience spanning 33 years, I have not encountered a regulatory  
agency using a 1:10,000 risk threshold for contact recreation in surface waters.").

1 provided in Water Code sections 13263(a) and 13241, which the Regional Board must do in  
2 setting effluent limits more stringent than those derived from adopted objectives.<sup>130</sup>

3 With that said, however, the uncontroverted evidence in the record is that the DPH  
4 recommendation *is met* with *current* treatment. In particular, the uncontroverted evidence in the  
5 record is:

6 **The SRWTP does not increase risk of illness from *Giardia* in the river, due to**  
7 **inactivation of *Giardia* in the specific disinfection circumstances of the SRWTP,**

8 **and**

9 **Increased risk of illness from *Cryptosporidium* contributed by the SRWTP is much**  
10 **less than 1 in 100,000.**<sup>131</sup>

11 The Regional Board did not consider this evidence at all. Again, the District reiterates  
12 that the DPH position regarding recommended risk levels is overly conservative and is  
13 inappropriate. However, that position was that the SRWTP not increase the risk of infection by  
14 more than 1 in 10,000. There is uncontroverted evidence in the record that the SRWTP does not  
15 cause an increase in risk of this magnitude.

#### 16 **7. Revised Draft Order's Improper Treatment of Risk Assessment**

17 The May Draft Order made no mention of the uncontroverted evidence described above.  
18 However, as noted previously, the Revised Draft Order now states that, "at the July 18 [State  
19 Board] Workshop the District asserted"<sup>132</sup> that *Giardia* is inactivated through the SRWTP's  
20 chlorination. The District did in fact assert that uncontroverted evidence reflected that the very  
21 conservative DPH recommendation is met. The Revised Draft Order goes on, however, to state

22 \_\_\_\_\_  
23 <sup>130</sup> See section II.B, *ante*.

24 <sup>131</sup> Translated to risk of infection, this would mean much less than 2 in 100,000. All the values discussed above  
25 ignore potential contribution of other sources between the point of discharge and River Mile 44. The Revised Draft  
26 Order, like the May Draft Order, refers to the 2009 draft report that preceded the February 2010 Risk Assessment  
27 Report. (Revised Draft Order, p. 8, fn. 28; Redline Draft Order, p. 8, fn. 28.) Based on the draft report, the  
28 incremental change in risk of illness associated with *Cryptosporidium* discharge would be between zero and 2.9 per  
100,000. (*Estimated Risk of Illness from Swimming in the Sacramento River near Freeport*, Report for the  
Sacramento Regional County Sanitation District, Charles P. Gerba (Sept. 24, 2009), AR at SRCSD\_OTHER\_131  
(hereafter, "2009 Draft Report"), Table 3.)

<sup>132</sup> Revised Draft Order, p. 9; Redline Draft Order, p. 9.

1 that DPH staff “responded” that this conclusion “utilized tables for required chlorine  
2 concentration and contact time to inactivate *Giardia* that were prepared for ‘clean,’ low solids  
3 water which is inconsistent with the quality of the District’s effluent.”<sup>133</sup> The Revised Draft  
4 Order thus posits that it is a matter of “he said, she said.” Regardless of what anyone from DPH  
5 said at a workshop, it is not evidence. It is improper to rely upon, or cite such statement. The  
6 notice for the July State Board Workshop made clear that new evidence was not being taken or  
7 accepted at the workshop.<sup>134</sup> The Chief Counsel and Board Chair confirmed that nothing stated at  
8 the workshop is evidence.<sup>135</sup> And consideration of these statements would violate statutes and  
9 regulations governing this procedure.<sup>136</sup>

10 These principles are also important because the ad hoc comments “in response” did not in  
11 any event even suggest that the speaker had read Dr. Gerba’s analysis or his written and oral  
12 testimony before the Regional Board on the specific subject of *Giardia* inactivation, nor is there  
13 even evidence that the speaker was qualified generally to speak to this subject matter of  
14 Dr. Gerba’s testimony. Dr. Gerba’s expert testimony is the only evidence on this issue before the  
15 State Board. If the State Board desires to go outside the current record, the District will be more  
16 than happy to produce Dr. Gerba to answer any questions regarding his analysis.

17 Closely related, the improperly cited evidence serves as a bridge to the Revised Draft  
18 Order’s arguments that Dr. Gerba’s assessment does not consider the presence of fine particulate  
19 matter in effluent.<sup>137</sup> The Revised Draft Order has no basis for making this assertion, which  
20 implies that one of the nation’s leading experts does not know that raw water and treated  
21 wastewater are different. Indeed, the assertion of Dr. Gerba’s ignorance is simply false. In fact,  
22 he testified that while his calculations showed for example a 99.999 percent reduction in viability  
23 of *Giardia* cysts during summer, the values might be “slightly” less than that because there is

24 \_\_\_\_\_  
<sup>133</sup> Revised Draft Order, p. 9; Redline Draft Order, p. 9.

25 <sup>134</sup> See Letter dated May 14, 2012, to Paul S. Simmons, Esq., et al., and Mr. Bill Jennings, Executive Director, from  
26 Michael A.M. Lauffer, Chief Counsel, State Board, regarding State Board Workshop Notification, p. 2.

27 <sup>135</sup> Video recording of the July 18, 2012 State Board Workshop, 2:39:25-2:40:36.

28 <sup>136</sup> See, e.g., Gov. Code, § 11513; Cal. Code Regs., tit. 23, § 648 et seq.

<sup>137</sup> Revised Draft Order, p. 9; Redline Draft Order, p. 9.

1 organic matter and some turbidity in sewage.<sup>138</sup> Thus, fully understanding all relevant  
2 information, his (uncontroverted) expert testimony was that, based on the effectiveness of the  
3 chlorine disinfection, there would be no increased in-river risk of illness from *Giardia* attributable  
4 to discharges from the SRWTP.<sup>139</sup> The evidence in the record does not support that any  
5 significant number of *Giardia* cysts discharged by the SRWTP are viable, making the Revised  
6 Draft Order’s statement<sup>140</sup> that the District contributes 30 percent of “pathogens” incorrect or  
7 misleading.

8 The Revised Draft Order’s untimely effort to itself rebut the uncontroverted expert  
9 testimony lacks any technical foundation. In essence, the modifications in the Revised Draft  
10 Order here focus on the “relatively high number of solids, associated coliform” (citing no  
11 evidence), lack of a “conventional” chlorine contact chamber and “associated issues with  
12 pathogen shielding” that “may result” in inadequate disinfection.<sup>141</sup> Elsewhere, it asserts, without  
13 reference to any proper evidence, that up to 20 percent of pathogens may be “shielded” by  
14 solids.<sup>142</sup>

15 This new effort to uphold the Permit is not responsible. None of the above new assertions  
16 identify any evidence. And they are not correct. The SRWTP chlorine disinfection process is  
17 *extremely* effective.

18 The Revised Draft Order’s statement related to shielding appears to adopt a  
19 mischaracterization of a study by Dr. Robert Emerick that is cited in the Permit.<sup>143</sup> Further, the  
20 statement confuses several issues: (1) a study based on ultraviolet (UV) disinfection rather than  
21 chlorine (particle shielding is a particular UV disinfection issue because UV light beams need to

22 <sup>138</sup> Hearing Transcript, p. 216:13-21.

23 <sup>139</sup> Hearing Transcript, pp. 213:16-19, 215:14-16, 221:8-20.

24 <sup>140</sup> Revised Draft Order, p. 9; Redline Draft Order, p. 10.

25 <sup>141</sup> Revised Draft Order, p. 12; Redline Draft Order, p. 12.

26 <sup>142</sup> (Revised Draft Order, pp. 9, 12; Redline Draft Order, pp. 9, 12.) The only source cited for this statement is the  
27 Permit itself. As noted previously, the State Board cannot rely upon the Permit as evidence in this manner. The  
28 Permit is the matter under review.

<sup>143</sup> Emerick, Robert W., Factors Influencing Ultraviolet Disinfection Performance Part II: Association of Coliform  
Bacteria with Wastewater Particles, Water Environment Research, Volume 71, Number 6 (Sept./Oct. 1999), AR at  
SRCSD\_OTHER\_232; see also District’s October 2010 Comments and Evidence Letter, p. 9.

1 strike pathogens directly); (2) a study that examined coliform bacteria instead of protozoans  
2 (protozoans are much larger); and (3) a study that had nothing to do with the pathogenic risk of  
3 protozoans in effluent.

4       Regarding particle shielding, three additional points must also be realized. First, to the  
5 extent that any particle shielding occurs, it does not mean that disinfection does not occur; it  
6 means that greater disinfection effort must occur. Second, it is improper for a Permit to be based  
7 on internal workings of a wastewater plant; rather the Permit must be concerned with the quality  
8 of the effluent that is discharged. How the quality is met is the responsibility of the wastewater  
9 utility. In the case of the SRWTP, its chlorine disinfection is highly effective at achieving an  
10 excellent effluent quality. Third, the potential for particle shielding is typically characteristic of a  
11 pure oxygen-activated sludge system. SRCSD has acknowledged that it should change its  
12 secondary process to remove some ammonia, and such change would change the character of the  
13 particles and make any discussion of particle shielding obsolete.

14       The Revised Draft Order also speculates as to the efficacy of the SRWTP's chlorine  
15 disinfection, and states that the SRWTP does not have a "conventional" chlorine contact  
16 chamber.<sup>144</sup> The speculation ignores *actual performance and fundamental engineering principles*.  
17 First, regarding performance, a source cited in the Revised Draft Order states that untreated  
18 domestic wastewater contains total coliform concentrations of  $10^7$ - $10^{10}$  MPN/100 mL and fecal  
19 coliform concentrations of  $10^6$ - $10^7$  MPN/100 mL.<sup>145</sup> Average SRWTP effluent total coliform and  
20 fecal coliform concentrations are 8 and 2.2 MPN/100 mL, respectively.<sup>146</sup> Second, regarding  
21 engineering principles, it is well known that the effectiveness of chlorine contact facilities is  
22 largely a function of whether short circuiting of flow occurs, and it is well documented that a pipe  
23 has much less potential for short-circuiting than a basin or chamber. Whether or not it is

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25  
26 \_\_\_\_\_  
<sup>144</sup> Revised Draft Order, pp. 7, 9; Redline Draft Order, pp. 7, 9.

27 <sup>145</sup> Metcalf and Eddy, Inc., *Wastewater Treatment/Disposal/Reuse* (3d ed., 1991), p. 110.

28 <sup>146</sup> AR at SRCSD\_Data\_110.

1 conventional, the SRWTP chlorine contact system performs very well. Its design and functioning  
2 are not inferior to other systems.<sup>147</sup>

3 **F. Neither the Occurrence of MUN Use Nor the Possibility of a Peripheral Canal**  
4 **/ Tunnel Necessitates Tertiary Filtration / Disinfection**

5 The Revised Draft Order adds new statements concerning municipal use, somewhat  
6 coupled with discussion of a peripheral canal/tunnel. Its deficiencies of objectivity, and lack of  
7 any actual technical analysis, are highlighted by the continued characterization of a peripheral  
8 canal diversion as a “drinking water intake”:<sup>148</sup> a term no one would use in the real world.<sup>149</sup>

9 As context for discussion of MUN, the District reiterates certain matters that are avoided  
10 in the Revised Draft Order. As the Permit recites, contact recreation is considered the most  
11 sensitive use, such that, if it is protected, other beneficial uses will be protected.<sup>150</sup> There is no  
12 evidence of any risk or any meaningful effect on risk to consumers of water of any kind; nor did  
13 DPH itself or anyone else identify any such risk as a concern. The nearest location where water is  
14 diverted for treatment and delivery for drinking water is the Barker Slough Pumping Plant, which  
15 is approximately 40 miles downstream of the discharge.<sup>151</sup> The California Urban Water Agencies

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17 <sup>147</sup> Chlorine is mixed into secondary effluent at the Effluent Observation Structure (EOS) using flash mixers. From  
18 the EOS, the chlorinated effluent flows by gravity to the Influent/Effluent Building (I/E Building), where depending  
19 on river levels, the effluent is either pumped or flows by gravity to the outfall facility. The effluent is exposed to  
20 chlorine while in the approximately 2-mile long pipeline from the point of chlorination to the Outfall Facility, where  
21 the effluent is dechlorinated prior to being discharged to the Sacramento River via a diffuser. The pipeline acts as an  
22 efficient plug-flow reactor for providing chlorine contact time. (Metcalf and Eddy, p. 502.) A number of parameters  
23 are monitored (i.e., flow secondary effluent turbidity, final effluent total suspended solids (TSS), chlorine residual,  
24 coliform, etc.) to establish chlorine dose necessary to ensure compliance with SRWTP effluent requirements.  
25 Traditional chlorine contact basins have significant flow short-circuiting and even with best baffling design, they are  
26 inferior to the plug-flow reactor type design.

27 <sup>148</sup> Revised Draft Order, p. 7 and fn. 47; Redline Draft Order, p. 13.

28 <sup>149</sup> The Revised Draft Order also states that U.S. EPA Region IX supported tertiary filtration. It does not say that the  
U.S. EPA furnished any technical justification. The District acknowledges the position taken by all involved entities,  
but the ultimate decision-makers must have a sense of accountability.

<sup>150</sup> See, e.g., Permit, p. F-75 (“DPH determined that if contact recreation is protected then agricultural irrigation and  
other Delta beneficial [sic] uses that could be impacted by pathogens would also be protected.”).

<sup>151</sup> (Permit, p. F-36.) As stated in the District’s October 2010 Comments and Evidence Letter (p. 11) and reflected in  
the record: *Giardia* and *Cryptosporidium* are not detected frequently in State Water Project (SWP) waters according  
to the 2006 State Water Project Sanitary Survey. The source of waters for all of the drinking water treatment plants  
analyzed was classified as Bin 1 (no additional treatment required under the Long Term 2 Enhanced Surface Water  
Treatment Rule (LT2ESWTR)). (District’s October 2010 Comments and Evidence Letter, p. 11 [referencing  
California State Water Project Watershed Sanitary Survey, 2006 Update, prepared for the SWP Contractors Authority

1 (CUWA) stated that pathogens from the SRWTP “are not currently impacting drinking water  
2 quality/treatment[.]”<sup>152</sup> CUWA, and separately, a group of Delta export contractors including the  
3 municipal “Water Agency” participants in this proceeding, recommended that disinfection  
4 requirements remain the same for existing flows.<sup>153</sup>

5 The State Board should not ignore that the water agency parties to this proceeding, as part  
6 of their technical input during Permit development, recommended there be no change in  
7 disinfection requirements for current flows. Yet, the Revised Draft Order still proposes to do so.  
8 It offers an array of speculative statements about what might happen if a peripheral canal/tunnel is  
9 built, someday, somewhere.<sup>154</sup> In general, it has been the understanding of Northern Californians  
10 that export water contractors propose to pay the costs of the peripheral canal. The Revised Draft  
11 Order appears to be built on the premise that the Sacramento region will enable the canal. Be that  
12 as it may, the Revised Draft Order only offers speculation upon speculation upon speculation, not  
13 just as to whether a canal/tunnel would be constructed, but also as to what the implications might  
14 be for upstream and downstream conditions. In fact, it offers no concrete reasons that a 23 MPN  
15 permit is not entirely adequate.<sup>155</sup>

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16 by Archibald Consulting, Richard Woodward Water Quality Consultants, Palencia Consulting Engineers  
17 (June 2007), AR at SRCSD\_OTHER\_208].)

18 <sup>152</sup> California Urban Water Agencies’ February 1, 2010, Letter to K. Harder, *Comments on Issue Paper on NPDES*  
19 *Permitting Renewal Issues Drinking Water Supply and Public Health for the Sacramento Regional Wastewater*  
20 *Treatment Plant*, AR at SRCSD\_CORR\_0500, p. 2.

21 <sup>153</sup> (Letter dated February 1, 2010, to Kathy Harder, Regional Board, from Walter Wadlow, Alameda County Water  
22 District, et al., re: Comments on Drinking Water Supply and Public Health Issues Concerning the Sacramento  
23 Regional Wastewater Treatment Plant NPDES Permit Renewal, AR at SRCSD\_CORR\_0499 (hereafter, “Wadlow  
24 Letter”), p. 15.) As of the date of the Wadlow Letter, the District had requested an increase in flow from the  
25 currently permitted flow of 181 mgd to 218 mgd, a request that was later withdrawn. (Letter dated February 1,  
26 2005, to Ken Landau, Assistant Executive Officer, Regional Board, from Wendell Kido, District Manager, SRCSD,  
27 subject: Application for NPDES Permit Renewal for the Sacramento Regional Wastewater Treatment Plant  
28 (SRWTP), NPDES Permit No. CA0077682, AR at SRCSD\_OTHER\_053; Letter dated June 11, 2010, to Pamela  
Creedon, Executive Officer, Regional Board, from Mary Snyder, District Engineer, SRCSD, re: Request for Change  
in Permitted Capacity for the Sacramento Regional Wastewater Treatment Plant (SRWTP), AR at  
SRCSD\_CORR\_0567; Permit, p. 4.) Both CUWA as cited in the preceding footnote and the individual contractors  
in the Wadlow Letter advocated filtration for increases in discharge above current actual flow levels up to the  
218 mgd that was contemplated as of the time the letters were sent, but there was no technical justification offered  
for this position.

<sup>154</sup> Revised Draft Order, pp. 12-13, fn. 47; Redline Draft Order, p. 13, fn. 47.

<sup>155</sup> A known issue of water contractors is whether a given change in raw water quality could result in increased  
treatment requirements for municipal water purveyors under the regulations that dictate the level of treatment they  
must provide. As noted previously, such treatment is defined by the LT2ESWTR. Treatment requirements under the

1 Last in this regard, the Revised Draft Order discusses the recently constructed diversion at  
2 Freeport.<sup>156</sup> This discussion also underscores the result-oriented nature of the Revised Draft  
3 Order, which has thrown in the kitchen sink by inclusion of this issue. The Freeport Project was  
4 planned, designed, and constructed well after the SRWTP. The District and the Freeport Water  
5 Authority developed an operational agreement that constrains the District in a manner entirely  
6 acceptable to the District and with which the parties are entirely satisfied. Freeport Water  
7 Authority has no concerns. The District has no concerns. No one else has any concerns. There is  
8 no problem to be fixed.

9 **G. Conclusion Regarding Tertiary Filtration and Disinfection**

10 Under an objective, evidence-based analysis, the Permit's tertiary filtration and  
11 disinfection requirements are not justified. A "23 MPN" permit is appropriate.

12 **III. THE REVISED AMMONIA LIMITATIONS BASED ON THE U.S. EPA**  
13 **CRITERIA SHOULD BE CALCULATED DIFFERENTLY**

14 In the Permit, the Regional Board adopted effluent limitations for ammonia based on the  
15 U.S. EPA's 1999 Update of Water Quality Criteria for Ammonia (1999 Criteria). The  
16 1999 Criteria were applied as end-of-pipe limits to implement the Basin Plan narrative toxicity  
17 objective. The District believes that the Regional Board erred and that there are technical, legal,  
18 and regulatory shortcomings in the Revised Draft Order insofar as it would support adoption of  
19 the 1999 Criteria as end-of-pipe effluent limitations. The District has previously addressed these  
20 issues,<sup>157</sup> and does not repeat them here.

21 The District does, however, provide comments regarding the Revised Draft Order's re-  
22 calculation of the 1999 Criteria.<sup>158</sup> The District agrees that, if the 1999 Criteria are adopted as

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24 LT2ESWTR are not based on water in the Sacramento River; they are based on water at the water treatment plant  
25 (e.g., counts of cysts and oocysts). (See 71 Fed. Reg. 654, 657 (June 5, 2006); 40 C.F.R. § 141.703.) Setting aside  
26 any discussion of who should pay for what, and what costs might be for any given activity, there is no evidence in the  
record that would support any argument that the District must increase treatment of the SRWTP discharge due to an  
effect on water treatment, with or without a new canal.

27 <sup>156</sup> Revised Draft Order, pp. 12-13, fn. 47; Redline Draft Order, p. 13, fn. 47.

28 <sup>157</sup> Petition, pp. 37-64; District's Comments on May Draft Order, pp. 37-62.

<sup>158</sup> Revised Draft Order, pp. 24-26; Redline Draft Order, pp. 26-28.



1 end-of-pipe limits, they should be calculated differently than they were calculated in the Permit.  
2 However, the District submits that the calculation should not be as provided in the Revised Draft  
3 Order.

4 As the District explained in its comments to the Regional Board, to calculate the 30-day  
5 Criterion Continuous Concentration (CCC), the Regional Board should have used paired effluent  
6 pH and temperature data rather than receiving water data because no dilution has been granted.<sup>159</sup>  
7 Using the paired pH and temperature data to calculate the criteria is more appropriate than using  
8 highest pH and highest temperature values for the data sets because these conditions do not occur  
9 simultaneously. Further, as the Revised Draft Order recognizes, two 30-day CCCs should have  
10 been calculated, one for each season.<sup>160</sup> By calculating two 30-day CCCs with paired effluent  
11 temperature and pH data, and by deriving the effluent limitations from the 1/10th percentiles of  
12 the seasonal CCC datasets (assuming no mixing zone for compliance with the 1999 Criteria), the  
13 resulting effluents would be an average monthly effluent limitation (AMEL) of 3.0 mg/L and a  
14 maximum daily effluent limitation (MDEL) of 4.1 mg/L for April 1-October 31, and an AMEL of  
15 3.3 mg/L and MDEL of 4.5 mg/L for November 1-March 31.<sup>161</sup>

16 The use of the 1/10th percentile is appropriate. That method was used by the Regional  
17 Board to calculate effluent limits for the City of Atwater (Order No. R5-2007-0063, NPDES  
18 No. CA0079197). The Regional Board explained that use of the 1/10th percentile objective is  
19 consistent with the 1-in-3 year average frequency for criteria excursions recommended by the  
20 U.S. EPA.<sup>162</sup> The effluent limits assigned to Atwater within its NPDES permit were calculated  
21 from seasonal 1/10th percentile objectives. This ammonia effluent limit calculation method was  
22 also used in permits for: City of Lodi (Order No. R5-2007-0113); City of Davis (Order  
23 No. R5-2007-0132); City Brentwood (Order No. R5-2008-0006); City of Vacaville (Order  
24 No. R5-2008-0055); Nevada CSD No. 1 (Order No. R5-2008-0111); City of Turlock (Order

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26 <sup>159</sup> District's October 2010 Comments and Evidence Letter, p. 94.

27 <sup>160</sup> District's October 2010 Comments and Evidence Letter, p. 94.

28 <sup>161</sup> District's October 2010 Comments and Evidence Letter, p. 94.

<sup>162</sup> Order R5-2007-0063, p. 14.

1 No. R5-2010-0002); City of Rio Vista (Order No. R5-2010-0081); City of Redding (Order  
2 No. R5-2010-0096); City of Galt (Order No. R5-2010-0099); City of Live Oak (Order  
3 No. R5-2011-0034); City of Atwater (renewal of 2007 permit) (Order No. R5-2011-0082); and,  
4 City of Modesto (Order No. R5-2012-0033).

5 **IV. THE NEW, POST-HOC RATIONALIZATION FOR THE PERMIT NITRATE**  
6 **LIMIT IS LEGALLY DEFICIENT AND TECHNICALLY UNSUPPORTED**

7 The Permit includes an average monthly effluent limitation for nitrate of 10 mg/L derived  
8 from application of the primary maximum contaminant level (MCL) of 10 mg/L (as nitrogen) at  
9 the end-of-pipe without the consideration of dilution.<sup>163</sup> The Regional Board denied the granting  
10 of a human health mixing zone for nitrate, summarily determining that “a human health mixing  
11 zone for nitrate does not meet all the mixing zone requirements of the SIP.”<sup>164</sup> The Permit  
12 contains no findings of any sort that justify the denial of a human health mixing zone.<sup>165</sup> The May  
13 Draft Order properly concluded that it was inappropriate to deny a mixing zone for compliance  
14 with the MCL, and thus the Regional Board had not justified the requirement that the SRWTP  
15 meet the MCL at the end-of-pipe.<sup>166</sup>

16 The Revised Draft Order changes course. It retains the conclusion that the Regional  
17 Board’s denial of dilution credit and mixing zone for meeting the MCL was improper.<sup>167</sup> But the  
18 Revised Draft Order makes a quantum shift from the May Draft Order, rewriting the Permit and  
19 dramatically revising the May Draft Order, yet in a manner that ends up with the conclusion that  
20 the exact same limitation adopted by the Regional Board is proper. The Revised Draft Order  
21 states that the Regional Board “sufficiently justified” the effluent limitation,<sup>168</sup> but points to no  
22 justification that the Regional Board actually adopted. The Revised Draft Order thus represents

23  
24 \_\_\_\_\_  
<sup>163</sup> Permit, p. 14 (Table 6), F-44 to F-45, F-72.

25 <sup>164</sup> Permit, pp. F-44 to F-45.

26 <sup>165</sup> See Petition, pp. 126-127.

27 <sup>166</sup> May Draft Order, p. 21.

28 <sup>167</sup> Revised Draft Order, p. 28; Redline Draft Order, p. 31.

<sup>168</sup> Revised Draft Order, p. 38; Redline Draft Order, p. 42.

1 an independent excursion, undertaken nearly two years after adoption of the Permit, to seek a  
2 justification.

3 The Revised Draft Order fails to explain how the limitation can legally be imposed on the  
4 District considering applicable state and federal regulatory permitting requirements. In fact, it  
5 does not even *acknowledge* the legal requirements that are applicable. It bypasses them entirely.  
6 The Revised Draft Order also fails to identify evidence in the record that supports proposed new  
7 findings. In this manner, the Revised Draft Order turns the NPDES permitting process on its  
8 head and opens the door for any permit limitation that might arguably be considered in the  
9 Regional Board’s heretofore unrecognized “zone of reasonableness.” Of additional concern, the  
10 Revised Draft Order creates a whole new category of Permit limitations that would now be  
11 allowed based on meeting a subjective test of “precautionary” or “preventive.” This approach has  
12 no basis or support in state or federal law.

13 **A. There Is No Regulatory Basis to Support the Adoption of “Technologically**  
14 **Attainable Performance-Based Levels” for the Protection of Aquatic Life**

15 The CWA requires two types of effluent limitations in NPDES permits for publicly-  
16 owned treatment works (POTWs).<sup>169</sup> There are “technology-based” limitations based on  
17 secondary treatment standards set by the U.S. EPA, and “water quality-based” limits (otherwise  
18 referred to as water quality-based effluent limitations, or WQBELs).<sup>170</sup> The secondary treatment  
19 standards establish minimum effluent quality for the specified parameters of biochemical oxygen  
20 demand (BOD), TSS, and pH.<sup>171</sup> There are no secondary treatment standards for total nitrogen or  
21 nitrate. WQBELs are those that are established to “implement any applicable water quality  
22 standard established pursuant to this chapter.”<sup>172</sup> Such limits must be established when a pollutant

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24 <sup>169</sup> 33 U.S.C. § 1311(b); CWA, § 301(b).

25 <sup>170</sup> 33 U.S.C. § 1311(b)(1)(B)-(C); see also Permit, p. F-15 (“There are two principal bases for effluent limitations in  
26 the Code of Federal Regulations: 40 CFR 122.44(a) requires that permits include applicable technology-based  
27 limitations and standards; and 40 CFR 122.44(d) requires that permits include WQBELs to attain and maintain  
28 applicable numeric and narrative water quality criteria to protect the beneficial uses of the receiving water where  
numeric water quality objectives have not been established.”).

<sup>171</sup> 40 C.F.R. § 133.102.

<sup>172</sup> 33 U.S.C. § 1311(b)(1)(C).

1 is discharged, or may be discharged, at a level that will cause or have reasonable potential to  
2 cause or contribute to an excursion above any water quality standard.<sup>173</sup> Both state and federal  
3 courts, as a matter of course, explain that permit effluent limitations under the CWA are either  
4 technology-based effluent limitations or standards-based WQBELs.<sup>174</sup> The Regional Board and  
5 State Board implement the CWA. Also, of course, Porter-Cologne generally states that regional  
6 boards adopting WDRs shall take into consideration the WQOs required to protect beneficial uses  
7 and the provisions of section 13241 of the Water Code.<sup>175</sup>

8 Unlike the Permit itself, the Revised Draft Order states that the “District’s discharge is  
9 contributing to an exceedance of the downstream biostimulatory water quality objectives.”<sup>176</sup>  
10 However, the Revised Draft Order provides no explanation for this finding, fails to follow legally  
11 applicable processes for making such a statement, fails to identify any direct evidence to support  
12 such a finding, and fails to follow regulations applicable to writing effluent limitations.  
13 Moreover, the Revised Draft Order relies on scientific theories or hypotheses that the Regional  
14 Board itself determined to be so uncertain as to not include as a basis for its decision.

15 **1. The Revised Draft Order Fails to Acknowledge or Follow Applicable**  
16 **Permitting Procedures**

17 In the normal course of NPDES permitting for POTWs, regional boards first identify  
18 applicable technology-based effluent limitations.<sup>177</sup> In the Permit, such limits are those for BOD,  
19 TSS, flow, and pH.<sup>178</sup> Regional boards must also identify those effluent limitations that are  
20 necessary to achieve applicable water quality standards (i.e., WQBELs).<sup>179</sup> When setting  
21 WQBELs, regional boards conduct what is known as a reasonable potential analysis, which is

22 <sup>173</sup> 40 C.F.R. § 122.44(d)(1)(i).

23 <sup>174</sup> *Upper Blackstone Water Pollution Abatement Dist. v. U.S. Environmental Protection Agency* (1st Cir. 2012)  
24 690 F.3d 9, 14 (“*Upper Blackstone*”); *Communities for a Better Environment v. State Water Resources Control Bd.*  
(2003) 109 Cal.App.4th 1089, 1092-1096.

25 <sup>175</sup> Wat. Code, § 13263(a).

26 <sup>176</sup> Revised Draft Order, p. 29; Redline Draft Order, p. 31.

27 <sup>177</sup> See, e.g., Permit, p. F-17.

28 <sup>178</sup> Permit, pp. 13-15, F-17.

<sup>179</sup> 33 U.S.C. § 1311(b)(1)(C); 40 C.F.R. § 122.44(d)(1)(i); Permit, p. F-18.

1 basically a threshold determination of whether a specified pollutant in the discharger’s effluent  
2 may cause, have the reasonable potential to cause, or contribute to an excursion above a water  
3 quality standard.<sup>180</sup> If the permitting authority finds that reasonable potential exists, then the  
4 permit must contain effluent limits for that pollutant that are based on a numeric WQO, or a  
5 narrative WQO.<sup>181</sup> When effluent limitations must be established for narrative WQOs, the federal  
6 regulations set forth several options for setting such limitations, which include, in part, using  
7 established criteria through a state policy for interpreting narrative criteria, and using the  
8 U.S. EPA criteria published under section 304(a) of the CWA.<sup>182</sup>

9 The State Board has adopted the State Board’s *Policy for Implementation of Toxics*  
10 *Standards for Inland Surface Waters, Enclosed Bays, and Estuaries in California* (SIP), which  
11 established reasonable potential analyses procedures for “priority” pollutants included on the  
12 National Toxics Rule (NTR) and California Toxics Rule (CTR).<sup>183</sup> The State Board has  
13 determined that SIP procedures are available to the regional boards to use at their discretion for  
14 pollutants that are not included in the NTR or CTR.<sup>184</sup> Nitrate, and nitrogen compounds in  
15 general, are not considered to be priority pollutants. In this case, the Regional Board elected to  
16 use the SIP’s reasonable potential analysis procedures for nitrate.<sup>185</sup>

17 The SIP establishes a step-by-step approach for determining reasonable potential, and  
18 calculating WQBELs where reasonable potential exists.<sup>186</sup> The first step requires the permitting  
19 agency to identify applicable water quality criteria and objectives, and select the lowest (most  
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21 \_\_\_\_\_  
22 <sup>180</sup> See 40 C.F.R. § 122.44(d)(1)(i); see also *In the Matter of Own Motion Review of Waste Discharge Requirements*  
*for the University of California Davis*, State Board Order No. WQ 2010-0005 (Mar. 16, 2010) (State Board  
Order 2010-0005), p. 5.

23 <sup>181</sup> 40 C.F.R. § 122.44(d)(1)(iii), (vi).

24 <sup>182</sup> 40 C.F.R. § 122.44(d)(1)(vi).

25 <sup>183</sup> SIP, p. 3.

26 <sup>184</sup> *In the Matter of the Petition of Yuba City*, State Board Order WQO 2004-0013 (July 22, 2004) (State Board  
Order 2004-0013), p. 6; State Board Order 2010-0005, p. 5.

27 <sup>185</sup> See Permit, p. F-45 (“Unless otherwise stated, the Central Valley Water Board conducted the RPA in accordance  
with section 1.3 of the SIP.”).

28 <sup>186</sup> SIP, pp. 6-14.

1 stringent) objective or criterion that is applicable to the receiving water.<sup>187</sup> Step 2 through Step 4  
2 set forth the process for collecting and evaluating data to be compared to the identified, lowest  
3 objective/criterion. Under Step 4, if the maximum effluent concentration (MEC) is greater than  
4 or equal to the identified, lowest objective/criterion, reasonable potential is determined to exist  
5 and a WQBEL is required.<sup>188</sup> Step 5 and Step 6 provide for additional steps when the MEC is  
6 lower than the identified, lowest objective/criterion.<sup>189</sup>

7 Besides the SIP, regional boards often rely on the U.S. EPA's *Technical Support*  
8 *Document for Water Quality-based Toxics Control* (TSD) as an established process for  
9 determining reasonable potential and calculating WQBELs.<sup>190</sup> The process for determining  
10 reasonable potential and establishing effluent limitations under the TSD are very similar to that  
11 for the SIP.<sup>191</sup> The primary difference between the two approaches is that the TSD considers the  
12 availability of dilution as part of determining reasonable potential, while the SIP considers  
13 dilution only in the calculation of the WQBEL.<sup>192</sup>

14 It is important to confirm what the Regional Board did, and did not do, with respect to its  
15 findings for nitrogen loadings to the Delta, and the adoption of nitrate limits equal to 10 mg/L  
16 without the consideration of dilution. For nitrate and nitrite, the Permit identifies applicable  
17 WQOs as the primary MCLs for the protection of human health as equal to 10 mg/L and 1 mg/L  
18 (measured as nitrogen), respectively.<sup>193</sup> The WQO language in the Permit also states that "studies  
19 have indicated a possibility that nitrate is toxic to aquatic organisms," but no WQO or water  
20 quality criterion is identified for nitrate toxicity to aquatic organisms and the Permit makes no  
21 finding of nitrate toxicity.<sup>194</sup> The Permit then describes the Regional Board's reasonable potential

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23 <sup>187</sup> SIP, p. 6.

24 <sup>188</sup> SIP, p. 6.

25 <sup>189</sup> SIP, p. 6.

26 <sup>190</sup> TSD, March 1991; see also State Board Order 2010-0005, p. 5.

27 <sup>191</sup> See, e.g., TSD, pp. 62-64.

28 <sup>192</sup> TSD, p. 63; SIP, p. 8.

<sup>193</sup> Permit, p. F-71.

<sup>194</sup> Permit, p. F-72.

1 analysis results as follows: “The conversion of ammonia to nitrites and the conversion of nitrites  
2 to nitrates present a reasonable potential for the discharge to cause or contribute to an in-stream  
3 excursion above the Primary MCLs for nitrite and nitrate.”<sup>195</sup>

4 After concluding that reasonable potential exists for the reasons stated, the Regional  
5 Board determined that dilution should not be allowed based on a summary conclusion that a  
6 mixing zone would not meet the requirements of the SIP.<sup>196</sup> The only arguably related finding in  
7 the entire Permit states, “elevated nitrogen discharges from the Facility have been shown to be  
8 negatively affecting the receiving water far downstream of the discharge within the Delta, not just  
9 the areas defined by the requested mixing zone.”<sup>197</sup> Thus, as acknowledged in the Revised Draft  
10 Order, the Regional Board’s denial of dilution credits is completely unrelated to the beneficial use  
11 that the 10 mg/L limit was intended to protect.<sup>198</sup> Additionally, the Permit makes no findings to  
12 support a conclusion of “far downstream” effects, and did not purport to say that there was any  
13 evidence of adverse effect.<sup>199</sup> Relevant here, nowhere does the Permit state or suggest that the  
14 District’s discharge has reasonable potential to cause or contribute to exceedances of nitrate  
15 standards associated with the aquatic life beneficial use, or the downstream biostimulatory WQO.

16 In the September 2010 Tentative Permit, Regional Board staff originally proposed a  
17 nitrate limit of 0.26 mg/L due to concerns with “adverse effects to aquatic life from nitrogen.”<sup>200</sup>  
18 However, even with that, no finding of reasonable potential was proposed in connection to an  
19 aquatic life beneficial use, and no WQO or water quality criterion was identified as being the  
20 basis for the proposed limit of 0.26 mg/L. Rather, the draft limit in the September 2010 Tentative  
21 Permit was based on a hypothetical treatment performance scenario that did not purport to  
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23

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24 <sup>195</sup> Permit, p. F-72.

25 <sup>196</sup> Permit, pp. F-44 to F-45.

26 <sup>197</sup> Permit, p. F-45.

27 <sup>198</sup> Revised Draft Order, p. 28; Redline Draft Order, p. 31.

28 <sup>199</sup> See Petition, pp. 125-129.

<sup>200</sup> September 2010 Tentative Permit, p. F-71.

1 identify this as an attainable effluent limitation, and there are no known POTWs who meet such a  
2 limitation.<sup>201</sup>

3 With respect to the narrative objectives for biostimulatory substances,<sup>202</sup> the Regional  
4 Board did not make any finding that discharges from the SRWTP are affecting downstream  
5 objectives for biostimulatory substances. To the contrary, the Regional Board's Staff Report for  
6 the December 9, 2010 hearing states: "Several biologic impacts in the Delta and export waters  
7 from nitrogen in the SRCSD discharge have been asserted, but none have been clearly  
8 demonstrated."<sup>203</sup> Further, although documents in the record generally identify concerns that  
9 nitrates may have on affects to nitrogen-to-phosphorus ratios, the Regional Board did not find  
10 these documents determinative, or link the District's discharge (or anticipated future discharge) of  
11 nitrate to these concerns.<sup>204</sup> Specifically, the Permit states that it is unknown if shifts in algal  
12 communities are a result of changes in nutrient concentrations and/or ratios.<sup>205</sup> Because it is  
13 unknown, the Permit notes that "[f]ollow up studies are needed to determine the ecological effect  
14 of the change in nutrient concentrations and ratios on the phytoplankton community and whether  
15 nutrient control might cause the community to revert back to a diatom-based system."<sup>206</sup>

16 It is proper that the Regional Board did not find that future discharges of nitrate from the  
17 SRWTP had reasonable potential to affect aquatic life beneficial uses or downstream

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18 <sup>201</sup> September 2010 Tentative Permit, p. F-71 to F-72; [Written] Testimony/Comments of Hugh Stephen McDonald,  
19 Carollo Engineers, on the Costs of Treatment and Feasibility of Complying With Certain Effluent Limitations  
20 Proposed in Waste Discharge Requirements for the Sacramento Regional County Sanitation District, Sacramento  
21 Regional Wastewater Treatment Plant, submitted on October 11, 2010, AR at SRCSD\_CORR\_1002 (hereafter,  
"McDonald Written Testimony"), Exh. B, pp. 3-5; [Written] Testimony/Comments of Denny S. Parker Related to  
Draft Waste Discharge Requirements for the Sacramento Regional Wastewater Treatment Plant, submitted on  
October 11, 2010, AR at SRCSD\_CORR\_1002 (hereafter, "Parker Written Testimony"), pp. 2-4.

22 <sup>202</sup> Basin Plan, p. III-3.00 ("Water shall not contain biostimulatory substances which promote aquatic growths in  
23 concentrations that cause nuisance or adversely affect beneficial uses."); see also Water Quality Control Plan for the  
San Francisco Bay Basin, p. 3-3 ("Waters shall not contain biostimulatory substances in concentrations that promote  
24 aquatic growths to the extent that such growths cause nuisance or adversely affect beneficial uses. Changes in  
chlorophyll a and associated phytoplankton communities follow complex dynamics that are sometimes associated  
25 with a discharge of biostimulatory substances. Irregular and extreme levels of chlorophyll a or phytoplankton  
blooms may indicate exceedance of this objective and require investigation.").

26 <sup>203</sup> Staff Report, p. 20.

27 <sup>204</sup> See Petition, pp. 127-128; see, e.g., Staff Report, pp. 21-22.

28 <sup>205</sup> Permit, Attachment J, p. J-8.

<sup>206</sup> Permit, Attachment J, p. J-8.



1 biostimulatory WQOs. Oddly, the Revised Draft Order fails to acknowledge or take these Permit  
2 findings. Instead, the Revised Draft Order makes its own conclusory statement that the  
3 “District’s discharge is contributing to an exceedance of the downstream biostimulatory water  
4 quality objectives,” and, then proceeds to find that the Regional Board’s action to adopt a nitrate  
5 limit of 10 mg/L is reasonable under the totality of the circumstances. The Revised Draft Order  
6 significantly departs from established permitting procedures and must be rejected by the State  
7 Board.

8 In this regard, the Revised Draft Order does not dispute or find that the Regional Board’s  
9 process for determining reasonable potential was inconsistent with applicable state or federal  
10 regulations or policy. Rather, the Revised Draft Order finds, and the District agrees, that the  
11 Regional Board’s denial of a dilution credit for other unrelated reasons was improper.<sup>207</sup> In  
12 making this finding, the Revised Draft Order states that “a permit writer must be mindful of the  
13 nexus between objectives and uses in each analytical step when deriving a water quality-based  
14 effluent limitation to implement a water quality objective.”<sup>208</sup> The District agrees with this  
15 statement. Yet, despite this clear understanding of the established permitting process, the Revised  
16 Draft Order steps through the looking glass to reach a result that does not heed the very same  
17 admonition and is not otherwise based on established law or procedures.

18 **2. The Revised Draft Order Makes a Statement That the District’s**  
19 **Discharge Contributes to an Exceedance of the Downstream**  
20 **Biostimulatory WQOs, But Makes No Finding of Reasonable Potential**  
21 **and Does Not Properly Calculate a WQBEL**

22 When acting on a petition, including when its action is taken under its own motion  
23 authority, the State Board has the discretion to uphold a regional board’s order, remand the order  
24 back in whole or part, or modify the order.<sup>209</sup> The Revised Draft Order would essentially modify  
25 the Regional Board’s Permit for nitrate by stating that, “we [i.e., the State Board] conclude that  
26 there is a need to set effluent limitations for nitrate based, in part, that the District’s discharge is

27 <sup>207</sup> Revised Draft Order, p. 27; Redline Draft Order, p. 29.

28 <sup>208</sup> Revised Draft Order, p. 28; Redline Draft Order, p. 30.

<sup>209</sup> Cal. Code Regs., tit. 23, § 2052(a)(2).

1 contributing to an exceedance of the downstream biostimulatory water quality objectives.”<sup>210</sup>  
2 While the State Board has the authority to modify or set effluent limitations different from those  
3 contained in the Permit, and thus presumably has authority to modify the Regional Board’s  
4 findings for setting effluent limitations, it cannot ignore the law that governs the development of  
5 permits.<sup>211</sup> Thus, if the State Board wishes to find that the District’s discharge is contributing to  
6 an exceedance of the downstream biostimulatory WQOs, the State Board must explain the  
7 reasonable potential analysis that the State Board conducted to reach such a conclusion, and the  
8 State Board’s ultimate decision must be supported by evidence in the record.<sup>212</sup> The Revised  
9 Draft Order provides no such information, nor is the conclusion in the Revised Draft Order  
10 supported by evidence in the record. Further, the Revised Draft Order must explain the process  
11 for developing a WQBEL to implement the WQOs. The Revised Draft Order fails to do so.

12 With respect to conducting a reasonable potential analysis, under the SIP or the TSD, the  
13 first step of a reasonable potential analysis is to identify the lowest (most stringent) applicable  
14 WQO or criterion.<sup>213</sup> In this case, the Revised Draft Order appears to have identified narrative  
15 biostimulatory objectives that are in the Basin Plan, as well as the Water Quality Control Plan for  
16 the San Francisco Bay Region as the lowest applicable WQO.<sup>214</sup> When a narrative WQO is  
17 identified, the permitting agency must then interpret the narrative objective with a numeric  
18 criterion. To interpret the narrative objective, the TSD recommends that permitting agencies use  
19 the options set forth in the federal regulations.<sup>215</sup> The Revised Draft Order fails to include any  
20 information with respect to interpreting the narrative biostimulatory objectives with a numeric  
21 water quality criterion. At most, the Revised Draft Order states that the Regional Board *could*

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23 <sup>210</sup> Revised Draft Order, p. 29; Redline Draft Order, p. 31, emphasis added.

24 <sup>211</sup> Cal. Code Regs., tit. 23, § 2052(a)(2).

25 <sup>212</sup> *Topanga, supra*, 11 Cal.3d at pp. 514-515.

26 <sup>213</sup> SIP, p. 6.

27 <sup>214</sup> See section IV.A.1, *ante*.

28 <sup>215</sup> TSD, p. 62 (“Although the provisions of 40 CFR 122.44(d)(1)(vi) are presented in the regulation in the context of permit limit development, these same considerations should be applied in characterizing effluents in order to determine whether limits are necessary.”).

1 have used the U.S. EPA's recommended Aggregate Ecoregion I nutrient levels.<sup>216</sup> However, the  
2 Revised Draft Order includes no analysis or discussion with respect to determining whether such  
3 criteria would be appropriate if applied to the Sacramento River near the SRWTP's point of  
4 discharge or in the downstream waters.<sup>217</sup> Moreover, the Revised Draft Order makes no actual  
5 finding of reasonable potential.

6 The Revised Draft Order also refers to ongoing development of the State Board's Nutrient  
7 Numeric Endpoint (NNE) framework, and the considerable work still remaining for use of the  
8 NNE framework for NPDES permitting purposes.<sup>218</sup> The Revised Draft Order contends that the  
9 NNE framework will ultimately result in scientifically-based thresholds to interpret and  
10 implement narrative biostimulatory objectives, but the NNE framework has yet to be adopted and  
11 site-specific conceptual models have yet to be developed.<sup>219</sup> In other words, the Revised Draft  
12 Order does not interpret the narrative biostimulatory WQOs with a numeric criterion, and  
13 therefore no reasonable potential analysis could be conducted. Without conducting such an  
14 analysis, the Revised Draft Order cannot reach a conclusion that the discharge is contributing to  
15 exceedances of downstream biostimulatory WQOs.

16 Further, even assuming that the Revised Draft Order makes a proper determination of  
17 reasonable potential, it fails to calculate a WQBEL in accordance with applicable law. When  
18 calculating WQBELs for the applicable WQO (i.e., narrative biostimulatory objective), one does  
19 not simply affirm that there is evidence of concern with the current pollutant load. Instead,  
20 WQBELs are calculated in a manner to determine what is the quality of effluent necessary to  
21 meet the WQO, thereby protecting the beneficial use.

22 Specifically, once it is determined that there is reasonable potential, actual WQBELs *must*  
23 then be calculated using numeric criteria that are identified for protection of the use.<sup>220</sup> The

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25 <sup>216</sup> Revised Draft Order, p. 36; Redline Draft Order, pp. 39-40.

26 <sup>217</sup> See section IV.B.7, *post*, for technical discussion as to applicability of such criteria to this receiving water.

27 <sup>218</sup> Revised Draft Order, p. 38; Redline Draft Order, p. 41.

28 <sup>219</sup> Revised Draft Order, p. 38; Redline Draft Order, p. 41.

<sup>220</sup> 40 C.F.R. § 122.44(d)(1).

1 process for calculating QBELs for a non-priority pollutant like nitrate may be done under the  
2 SIP, or the TSD.<sup>221</sup> In either case, the actual calculation of the QBEL includes the applicable  
3 WQO, which must be expressed numerically.<sup>222</sup> The permitting authority has three options for  
4 deriving the numeric value that is necessary for establishing such limits.<sup>223</sup> The options are:  
5 “(A) Establish effluent limits using a calculated numeric water quality criterion . . . using a  
6 proposed State criterion, or an explicit State policy or regulation interpreting its narrative water  
7 quality criterion . . . ; (B) Establish effluent limits on a case-by-case basis, using EPA’s water  
8 quality criteria, published under section 304(a) of the CWA, supplemented where necessary by  
9 other relevant information; or (C) Establish effluent limitations on an indicator parameter for the  
10 pollutant of concern; . . . .”<sup>224</sup> The Revised Draft Order follows no such process to identify a  
11 numeric expression for the narrative biostimulatory WQO to then calculate a QBEL.

12 Moreover, if following the SIP, consideration of dilution would also be part of calculating  
13 the QBEL.<sup>225</sup> The SIP establishes a methodology for considering mixing zones and dilution  
14 credits. In general, the SIP provides that the allowance of a mixing zone “is discretionary and  
15 shall be determined on a discharge-by-discharge basis.”<sup>226</sup> But, as indicated in the Revised Draft  
16 Order, “the decision to grant or deny a mixing zone for a pollutant should, in each analytical step,  
17 consider the use that is being protected by the applicable water quality objective.”<sup>227</sup>

18 There is no dispute that such a mixing zone study was prepared and approved for use by  
19 the Regional Board in the development of this Permit.<sup>228</sup> However, because the Revised Draft  
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22 <sup>221</sup> See SIP, pp. 7-13; TSD, pp. 98-105.

23 <sup>222</sup> SIP, pp. 7-8; TSD, pp. 63-64; 40 C.F.R. § 122.44(d)(1)(vi).

24 <sup>223</sup> 40 C.F.R. § 122.44(d)(1)(vi).

25 <sup>224</sup> 40 C.F.R. § 122.44(d)(1)(vi).

26 <sup>225</sup> SIP, pp. 7-13.

27 <sup>226</sup> SIP, p. 15.

28 <sup>227</sup> Revised Draft Order, p. 28; Redline Draft Order, p. 30.

<sup>228</sup> Permit, pp. F-33 to F-34; see also Letter dated April 2, 2009, to Mary K. Snyder from Kenneth D. Landau re: Acceptance of Sacramento Regional County Sanitation District’s Dynamic Mathematical Model for Use in NPDES Permit Renewal for the Sacramento Regional Wastewater Treatment Plant, AR at SRCSD\_CORR\_0422.

1 Order fails to calculate a WQBEL, it likewise fails to consider if dilution is appropriate for nitrate  
2 considering the narrative biostimulatory WQO.

3 **3. The Revised Draft Order Improperly Finds That the Regional Board’s**  
4 **Adoption of the Nitrate Effluent Limitation is Reasonable**

5 **a. The Permit and Revised Draft Order Do Not Comply With Law**

6 Ultimately, the Revised Draft Order finds the nitrate limit adopted by the Regional Board  
7 to be reasonable because it is set at a “technologically attainable performance-based level.” The  
8 establishment of such a limit has no basis or support in law. As explained previously, the CWA  
9 requires two types of limits in NPDES permits for POTWs, technology-based limits to implement  
10 secondary treatment standards, and WQBELs. There are no technology-based limits for nitrate,  
11 or nutrients in general, and therefore the limit is not technology-based. It is arguably a WQBEL  
12 because it is based on the primary MCL to protect human health. But, as the Revised Draft Order  
13 finds, if it is a WQBEL to ensure compliance with the primary MCL, then the Regional Board’s  
14 denial of dilution credits and a mixing zone for nitrate was improper.<sup>229</sup> Absent fitting into one of  
15 those categories, the Regional Board, and the State Board sitting in its place, has no authority to  
16 adopt an effluent limitation that mandates a specific type of treatment.<sup>230</sup>

17 To the extent the Permit or the Revised Draft Order’s alternative rationale could somehow  
18 be characterized as “other,” i.e., not required by federal law but somehow authorized, Water Code  
19 sections 13263(a) and 13241 are applicable.<sup>231</sup> Under such provisions, the Regional Board still  
20 must consider the WQOs reasonably required to protect beneficial uses and all the Water Code  
21 section 13241 factors, and make appropriate findings. The Revised Draft Order fails to do so, and  
22 does not purport to do so.

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26 <sup>229</sup> Revised Draft Order, p. 28; Redline Draft Order, p. 31.

27 <sup>230</sup> See, e.g., Wat. Code, § 13360(a) (“No waste discharge requirement or other order of . . . the state board . . . shall  
specify the design, location, type of construction, or particular manner in which compliance may be had . . .”).

28 <sup>231</sup> *City of Burbank v. State Water Resources Control Bd.* (1005) 35 Cal.4th 613, 627-628 (“*Burbank*”).

1                                   **b.       The Permit Is Not Exempt From Applicable Law**

2           Under the Revised Draft Order’s reasoning, a regional board can adopt any limit for any  
3 pollutant as long as the regional board’s action is deemed to be reasonable on a gross basis. The  
4 Revised Draft Order claims that such actions are appropriate when “a statute is precautionary in  
5 nature and where the evidence [is] difficult to come by, uncertain, or even conflicting because it  
6 is on the frontiers of scientific knowledge, [and] a rigorous step-by-step proof of cause and effect  
7 is not required.”<sup>232</sup> To support this position, the Revised Draft Order relies on plainly  
8 inapplicable case law and State Board orders that have been taken out of context. Indeed, the  
9 recent federal case at the center of the Revised Draft Order’s arguments is entirely counter to any  
10 notion that the legal process for development of WQBELs can be avoided.

11           First, the Revised Draft Order cites *Upper Blackstone* for the proposition that an effluent  
12 limitation within the “zone of reasonableness” should not be overturned.<sup>233</sup> However, in that case,  
13 U.S. EPA *followed* applicable regulations in developing a WQBEL. The Revised Draft Order  
14 fails to observe that the U.S. EPA first found that discharge from the POTW had *reasonable*  
15 *potential* to cause or contribute to an excursion above Massachusetts and Rhode Island water  
16 quality standards, and that (after a comprehensive analysis) the U.S. EPA concluded lower limits  
17 were necessary to achieve compliance with state water quality standards.<sup>234</sup> Further, the case  
18 clearly notes that the U.S. EPA translated applicable narrative criteria into numeric limits under  
19 section 122.44(d)(1)(vi) of title 40 of the Code of Federal Regulations.<sup>235</sup> None of these actions  
20 or findings are present in the Revised Draft Order.

21           Second, in upholding the U.S. EPA’s action in that case, the court reviewed the process of  
22 analysis employed by the U.S. EPA, which included use of a peer-reviewed model, evaluation of  
23 the model results in comparison to relevant receiving water quality data, information to address  
24 known short-comings in the model, and many sources of other information to formulate the limits

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26 <sup>232</sup> Revised Draft Order, p. 34; Redline Draft Order, p. 37.

27 <sup>233</sup> Revised Draft Order, p. 34; Redline Draft Order, p. 37.

28 <sup>234</sup> *Upper Blackstone*, *supra*, 690 F.3d at p. 18.

<sup>235</sup> *Upper Blackstone*, *supra*, 690 F.3d at p. 18.

1 in question.<sup>236</sup> The court also looked to see if the U.S. EPA had followed proper procedures,  
2 which the court concluded it had.<sup>237</sup> Ultimately, the court found that the WQBELs were justified  
3 by the record and within the zone of reasonableness.<sup>238</sup> Thus, the court upheld the limits the  
4 U.S. EPA adopted in that permit, which the U.S. EPA had found necessary to meet state water  
5 quality standards.<sup>239</sup> The WQBELs the U.S. EPA calculated were reasonable based on the record.  
6 The court did not hold that any technologically attainable performance-based level that a  
7 permitting agency might adopt is lawful. The “zone of reasonableness” test applied to the  
8 determinations made in the proper application of applicable regulations. The court did not  
9 establish a procedure to *bypass* applicable regulations based on a subjective evaluation that a  
10 permit is reasonable overall.

11 The District emphasizes that it does *not* maintain that the mere fact of scientific  
12 uncertainty prevents the adoption of WQBELs. The District *does* maintain that the Regional  
13 Board or State Board must follow applicable legal requirements in the adoption of effluent  
14 limitations and show its work. Only when that has occurred, would it be relevant to consider  
15 whether a 10 mg/L effluent limitation is within a “zone of reasonableness.”

16 The Revised Draft Order also cites the State Board’s order in Los Coyotes as supporting  
17 the action proposed.<sup>240</sup> As with the *Upper Blackstone* case, the Los Coyotes Order does not apply  
18 to the circumstances here. In the Los Coyotes Order, the State Board notes that the permits in  
19 question found that discharges had reasonable potential to cause or contribute to an exceedance of  
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<sup>236</sup> *Upper Blackstone, supra*, 690 F.3d at pp. 25-26.

22 <sup>237</sup> *Upper Blackstone* at pp. 27-28.

23 <sup>238</sup> *Upper Blackstone, supra*, 690 F.3d at p. 29.

24 <sup>239</sup> *Upper Blackstone, supra*, 690 F.3d at pp. 28-29.

25 <sup>240</sup> (*In the Matter of Review of Own Motion of Waste Discharge Requirements for Los Coyotes and Long Beach*  
26 *Wastewater Reclamation Plants*, State Board Order WQO 2003-0012 (Sept. 16, 2003) (hereafter, “State Board Order  
27 WQO 2003-0012”); Revised Draft Order, p. 36; Redline Draft Order, p. 38.) The Revised Draft Order also cites  
28 other cases and State Board orders to support the proposition that as long as the action is reasonable it is okay. However, like with the *Upper Blackstone* case, none of the other authorities holds that an action is permissible if the action in question falls outside of and/or fails to comply with the applicable legal requirements. Rather, the cases and State Board orders collectively make findings with respect to reasonableness of an agency’s action in the context of following proper procedures even though there may be uncertainty with the scientific information being considered.

1 the narrative WQO for biostimulatory substances.<sup>241</sup> As discussed previously, the Regional Board  
2 made no such finding in this Permit. There is nothing in the Los Coyotes Order that even  
3 addresses the issue of whether a regional board or the State Board can bypass the legal  
4 requirements applicable to adoption of WQBELs, and that does not appear to have been an issue.  
5 Further, based on the Los Coyotes Order, the dispute over total inorganic nitrogen was,  
6 essentially, academic. The POTW was already building a facility that would meet the new  
7 limitation:<sup>242</sup> the district “planned to construct the new treatment technology and received funds  
8 form the State Board to do so.”<sup>243</sup> Such facts are absent here.

9 In contrast, the Revised Draft Order finds the effluent limitation for nitrate here as being  
10 reasonable because it is a preventative action that results in implementation of known treatment  
11 technologies.<sup>244</sup> There is no support for such limits under state or federal law. As already  
12 discussed, effluent limitations adopted to ensure compliance with federal law are technology-  
13 based, or WQBELs. There is no category under the CWA or the federal regulations for effluent  
14 limits being established as “preventative action limits.” On the other hand, if the Revised Draft  
15 Order is suggesting that the Regional Board has such discretion under state law, then the limit  
16 exceeds federal requirements and is subject to the provisions of Water Code section 13263, which  
17 incorporates considerations under section 13241.<sup>245</sup>

18 In either case, the Revised Draft Order fails to include findings that would bridge the  
19 analytical gap between “the raw evidence and ultimate decision or order.”<sup>246</sup>

20 Here, the Revised Draft Order fails to include findings that provide for the legal  
21 justification for such limits (e.g., technology-based, WQBEL), and it fails to reference  
22 information from the record to support any such findings. Specifically, the Revised Draft Order  
23

24 <sup>241</sup> State Board Order WQO 2003-0012, p. 7.

25 <sup>242</sup> State Board Order WQO 2003-0012, p. 8.

26 <sup>243</sup> State Board Order WQO 2003-0012, p. 7.

27 <sup>244</sup> Revised Draft Order, p. 35; Redline Draft Order, pp. 37-38.

28 <sup>245</sup> Wat. Code, § 13263; *Burbank*, *supra*, 35 Cal.4th at pp. 627-628.

<sup>246</sup> *Topanga*, *supra*, 11 Cal.3d at p. 515; *EPIC*, *supra*, 44 Cal.4th at p. 516.



1 makes the following very generalized statements without including any record references to  
2 support such statements:

- 3 • “Since the Delta, Suisun Bay, and greater San Francisco Bay are presently  
4 exhibiting cultural eutrophication at the current nutrient loading levels, without  
5 a reduction in the current nutrient loading by the District, nitrification without  
6 denitrification will not be protective of downstream beneficial uses and will  
7 only exacerbate the ecological decline of the Bay-Delta ecosystem.
- 8 • “Nutrient reduction in the Sacramento River is a critical step to restoring the  
9 Bay-Delta ecosystem’s health and better protecting drinking water supplies.
- 10 • “. . . [t]he Central Valley Water Board was correct in requiring denitrification  
11 of the District’s discharge.”<sup>247</sup>

12 Further, the Revised Draft Order attempts to suggest that the Regional Board made such  
13 findings to support the nitrate limit of 10 mg/L.<sup>248</sup> However, as discussed previously, no such  
14 findings are present in the Permit. The Staff Report indicates that staff recommended the nitrate  
15 limit of 10 mg/L without consideration of dilution because of their concerns “regarding the  
16 impacts of [sic] nitrates may have on the Delta, including affects to the nitrogen-to-phosphorous  
17 ratio in the Delta and impacts nitrogen may have on aquatic life.”<sup>249</sup> On the other hand, Regional  
18 Board staff also wrote (in a response to comments) that: “At this time there is no science to  
19 support what [N:P] ratio would be appropriate for the Sacramento River and the Sacramento-San  
20 Joaquin Delta.”<sup>250</sup> In any event, staff documents such as Staff Reports and Staff Response to  
21 Comments are not findings of the Regional Board and are not incorporated into the Permit.<sup>251</sup>  
22 The Permit, including Attachment J, does not incorporate concerns with respect to any specific

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<sup>247</sup> Revised Draft Order, p. 35; Redline Draft Order, p. 38.

24 <sup>248</sup> See Revised Draft Order, p. 38; Redline Draft Order, p. 41.

25 <sup>249</sup> Staff Report, pp. 20-21.

26 <sup>250</sup> Response to Written Comments for Sacramento Regional County Sanitation District, Sacramento Regional  
27 Wastewater Treatment Plant, Tentative Waste Discharge Requirements (Dec. 9, 2010) (“Staff Response to  
28 Comments”), p. 31.

<sup>251</sup> See State Board Order No. WQ 95-4, pp. 21-22 (regional board rationale must be expressed in permit findings and fact sheet).

1 impact as part of its findings. Rather, the Permit proceeds cautiously with respect to such theories  
2 and finds only that follow-up studies are needed.<sup>252</sup>

3 **B. The Revised Draft Order’s “Justifications” for the Nitrate Limit Are**  
4 **Improper and Not Supported by Evidence in the Record**

5 The Revised Draft Order identifies seven “reasons” as to why the Regional Board’s  
6 concerns with respect to nutrient loading are justified.<sup>253</sup> From these concerns with total nutrient  
7 loading, the Revised Draft Order then concludes that the nitrate limit of 10 mg/L without dilution  
8 is reasonable.<sup>254</sup> The reasons provided are problematic on several fronts.

9 First, these “reasons” are being provided for the first time with the Revised Draft Order.  
10 The Permit does not include any of these reasons as the basis for establishing the nitrate limit.<sup>255</sup>  
11 In fact, as indicated previously, the opposite is true in that the Regional Board did specifically  
12 *NOT* accept some of these reasons as a basis for regulating the SRWTP.<sup>256</sup>

13 Second, conclusory reasons in the Revised Draft Order, just like the Permit’s general  
14 statements, cannot stand by themselves. Such statements must be supported by evidence in the  
15 record and findings must bridge the analytical gap between the raw evidence and the ultimate  
16 determination.<sup>257</sup> As is shown below, the evidence in the record does not support these reasons as  
17 appropriate findings for upholding the nitrate limit.

18 For purposes of the discussion below, the District ignores the regulatory shortcomings of  
19 the Revised Draft Order. Due to its legal and regulatory limitations, the Revised Draft Order may  
20 not be adopted at all. But the Revised Draft Order is additionally incorrect in regard to its cited  
21 reasons.

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24 <sup>252</sup> Permit, p. J-8 (“Follow-up studies are needed to determine the ecological effect of the change in nutrient  
25 concentrations and ratios on the phytoplankton community and whether nutrient control might cause the community  
26 to revert back to a diatom-based system.”).

25 <sup>253</sup> Revised Draft Order, p. 38; Redline Draft Order, pp. 41-42.

26 <sup>254</sup> Revised Draft Order, p. 38; Redline Draft Order, p. 42.

27 <sup>255</sup> Permit, pp. F -45, F-71 to F-72.

28 <sup>256</sup> See, e.g., Permit, pp. J-7 to J-8.

<sup>257</sup> *Topanga, supra*, 11 Cal.3d at p. 515.

1                   **1.     The Revised Draft Order Improperly Claims That Impairment By**  
2                   **Nutrients to the Suisun Marsh Wetlands Justifies the Nitrate Limit**

3                   The Suisun Marsh is listed on the CWA section 303(d) list as impaired for nutrients.  
4                   However, a listing of impairment does not by itself justify denial of dilution credits or any given  
5                   effluent limitation. The State Board has opined on several occasions that a listing is suggestive  
6                   but not determinative of the existence of assimilative capacity.<sup>258</sup> In doing so, this Board has  
7                   directed regional boards to “review ambient data and base their determinations on those data.”<sup>259</sup>  
8                   No less applies to the State Board in its action here. As to whether there is assimilative capacity  
9                   for any given discharge within the drainage area of the Delta and San Francisco Bay, the regional  
10                  boards and State Board must review ambient data and make determinations on the data.  
11                  Otherwise, the State Board is acting in a manner that is inconsistent with its own precedential  
12                  order. Further, the Revised Draft Order establishes no linkage between the effluent limitation and  
13                  these impairments. Overall, if a water is 303(d)-listed, a total maximum daily load (TMDL) that  
14                  includes wasteload and local allocations must be developed as appropriate.<sup>260</sup>

15                   **2.     The Revised Draft Order Improperly Claims That Data Showing That**  
16                   **the Nutrient Concentrations Downstream of the Discharge Are More**  
17                   **Than Double the Upstream Concentrations Justifies the Nitrate Limit**

18                  A *change* in downstream nutrient concentrations is not by itself relevant for determining if  
19                  SRWTP discharges are causing or contributing to an excursion of downstream water quality  
20                  standards. As discussed previously, effluent data and ambient data need to be analyzed as part of  
21                  a reasonable potential analysis.<sup>261</sup> If the reasonable potential analysis shows that SRWTP  
22                  discharges are causing or contributing to an excursion of a downstream water quality standard,  
23                  and if no assimilative capacity exists, then a WQBEL without consideration of dilution may be  
24                  justified. Lacking such an analysis, data by itself has no basis for justifying effluent limits.

25                  <sup>258</sup> State Board Order 2004-0013, p. 14; *In the Matter of the Review on its Own Motion of Waste Discharge*  
26                  *Requirements for the Avon Refinery*, State Board Order No. 2001-06 (Mar. 7, 2001).

27                  <sup>259</sup> State Board Order 2004-0013, p. 14.

28                  <sup>260</sup> 33 U.S.C. § 303(d); 40 C.F.R. § 130.7.

<sup>261</sup> See section IV.A.1, *ante*.

1                   **3. The Revised Draft Order Improperly Claims That Evidence Allegedly**  
2                   **Showing That the San Francisco Bay and Delta Are Receiving**  
3                   **Excessive Nutrients Despite the Existing Biostimulatory Substances**  
4                   **Objectives in the Basin Plans Justifies the Nitrate Limit**

5                   As with the concentration data referenced in subsection 2, alleged exceedances of  
6                   downstream WQOs, as a justification for an effluent limit, must be determined as part of a  
7                   reasonable potential analysis.<sup>262</sup> It is inappropriate, and unlawful, to make a conclusory statement  
8                   about excessive nutrients without evaluating data in a manner that is consistent with the  
9                   permitting processes set forth in the regulations.<sup>263</sup> Further, the Regional Board itself did not  
10                  make such findings.<sup>264</sup>

11                   **4. The Revised Draft Order Inappropriately Attempts to Justify the**  
12                   **Nitrate Limit on the Basis That the Bay-Delta Ecosystem Has**  
13                   **Undergone a Shift From a Nitrate-Based Diatom Phytoplankton**  
14                   **System to an Ammonium-Based Phytoplankton and Small-Sized**  
15                   **Zooplankton Community**

16                  The Revised Draft Order seeks to tie total nutrient loading (including nitrate) to shifts in  
17                  algal communities.<sup>265</sup> Evidence in the record does not support a nitrate limit based on these  
18                  hypotheses.<sup>266</sup> First, to the extent that such hypothesized effects are allegedly caused by  
19                  ammonia,<sup>267</sup> the amount of nitrate in the system is irrelevant.

20                  Second, the Revised Draft Order implies that “out of nowhere” in 1982 the SRWTP began  
21                  discharging tons of ammonia-nitrogen into the Sacramento River on a daily basis.<sup>268</sup> What is not

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<sup>262</sup> See section IV.A.1, *ante*.

23                  <sup>263</sup> 40 C.F.R. § 122.44(d)(1)(vi); SIP, p. 6.

24                  <sup>264</sup> See, e.g., Regional Board, Issue Paper, Drinking Water Supply and Public Health Related Issues, Proposed  
25                  NPDES Permit Renewal for Sacramento Regional County Sanitation District, Sacramento Regional Wastewater  
26                  Treatment Plant (Dec. 14, 2009) (hereafter, “Regional Board’s Human Health Issue Paper”), p. 6 (“At this time it is  
27                  uncertain whether nutrient loadings from the current permitted or expanded discharge are impacting beneficial uses  
28                  due to biostimulation.”).

<sup>265</sup> Revised Draft Order, p. 31; Redline Draft Order, pp. 34-35.

<sup>266</sup> See, e.g., District’s October 2010 Comments and Evidence Letter, pp. 26-35; see also [Written]  
Testimony/Comments of Diana L. Engle, Ph.D., of Larry Walker Associates on the Potential Roles of Ammonia and  
Nutrient Ratios in the Upper San Francisco Estuary, submitted on October 11, 2010, AR at SRCSD\_CORR\_1002  
(hereafter, “Engle Written Testimony”), p. 4.

<sup>267</sup> District’s October 2010 Comments and Evidence Letter, pp. 26-35; Engle Written Testimony, p. 4.

<sup>268</sup> Revised Draft Order, p. 32; Redline Draft Order, p. 34.

1 stated, however, is that the SRWTP’s operations in 1982 actually replaced more than 20 other  
2 wastewater treatment plants in the region that were already discharging treated wastewater. Thus,  
3 operation of the SRWTP in 1982 did not suddenly add vast amounts of ammonia-nitrogen into  
4 the river. Accordingly, the Revised Draft Order has no evidence to suggest that discharges from  
5 the SRWTP that commenced in 1982 are responsible for shifts from “a nitrate-based diatom  
6 phytoplankton system, to an ammonium-based small phytoplankton system and shift into a small-  
7 sized zooplankton community . . . .”<sup>269</sup>

8 Next, the Revised Draft Order appears to rely in part on work by Dr. Patricia Glibert in  
9 2010 to implicate nutrients as a cause of phytoplankton and zooplankton community changes in  
10 the Delta. However, as addressed at length by documents in the record, there are serious flaws in  
11 the basis for Dr. Glibert’s conclusions, and her work has questionable applicability to the  
12 functioning of the Delta ecosystem. For example, she arrived at her conclusions using an  
13 improperly applied statistical transformation (cumulative sums of variability, or CUSUM) to  
14 produce artificial and highly misleading correlations between nutrient parameters and biological  
15 parameters (phytoplankton, zooplankton, fish abundance).<sup>270</sup> Specifically, the type of correlation  
16 analysis used in Glibert’s article violates the underlying assumptions for linear regression and  
17 produces misleading results that are not supported by underlying data.<sup>271</sup> Other reasons that the  
18 study is not reliable include the limited geographic extent of the data; possible improper sub-  
19 sampling of CUSUM time series; nontransparent data reduction; and omissions of key analyses

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<sup>269</sup> Revised Draft Order, p. 32; Redline Draft Order, p. 34.

23 <sup>270</sup> See District’s October 2010 Comments and Evidence Letter, pp. 52-54; see Engle, D. and C. Suverkropp. 2010.  
24 Memorandum: Comments for Consideration by the State Water Resources Control Board Regarding the Scientific  
25 Article *Long-term Changes in Nutrient Loading and Stiochiometry and their Relationships with Changes in the Food  
26 Web and Dominant Pelagic Fish Species in the San Francisco Estuary, California* by Patricia Glibert, 17 pp. July 29,  
27 2010, submitted on October 11, 2010, AR at SRCSD\_CORR\_1002 (hereafter, “Engle & Suverkropp 2010”); see  
28 Engle Written Testimony, p. 4; see [Written] Testimony/Comments of Claus Suverkropp of Larry Walker Associates  
Regarding Statistical Analysis of the Potential Roles of Ammonia and Nutrient Ratios in the Upper San Francisco  
Estuary, submitted on October 11, 2010, AR at SRCSD\_CORR\_1002 (hereafter, “Suverkropp Written Testimony”),  
pp. 1-2.

<sup>271</sup> Engle & Suverkropp 2010, pp. 3-10; Engle Written Testimony, pp. 2-4; Suverkropp Written Testimony, pp. 1-3.

1 necessary to support a claim for a link between nutrient ratios and the food web or to support  
2 alternative hypothesis.<sup>272</sup>

3 The Permit recognizes the limitations associated with these theories that attempt to link  
4 nutrient ratios to changes in the Delta phytoplankton composition.<sup>273</sup> The Permit also  
5 acknowledges that additional studies are necessary to determine if nutrient control would have  
6 hypothesized effects on phytoplankton community structure.<sup>274</sup> Accordingly, the Regional Board  
7 did not rely on this information to support the nitrate limit. Yet, the Revised Draft Order attempts  
8 to resurrect these issues to support the Regional Board's action. The Revised Draft Order's  
9 position, which is contrary to the Regional Board's action and prevailing scientific opinion, is  
10 inappropriate, and more importantly, not supported by the evidence in the record.

11 **5. The Revised Draft Order Inappropriately Attempts to Justify the**  
12 **Nitrate Limit on the Basis That Cultural Eutrophication Has Led to**  
13 **Microcystins Levels Exceeding the World Health Organization's**  
14 **Recommended Drinking Water Standards in the Delta**

15 Next, the Revised Draft Order implies that nutrient-related discharges from the SRWTP  
16 are in part responsible for toxic blooms of microcystins in the Delta.<sup>275</sup> While toxic blooms of the  
17 colonial form of *Microcystis aeruginosa* have occurred in the north portion of the SFE during  
18 summer months (June-November) since 1999, the evidence does not show that there is a  
19 relationship between current nutrient loads (currently as ammonia) and the abundance or toxicity  
20 of *Microcystis*.<sup>276</sup> Rather, studies conducted by Lehman et al. (2008, 2010) and Mioni (2010)  
21 found no apparent association between ammonium concentrations or ratios between ammonium

22 \_\_\_\_\_  
23 <sup>272</sup> District's October 2010 Comments and Evidence Letter, pp. 32-33, 53-53; Engle Written Testimony, p. 4; for  
24 specific examples of the defects, see Petition, pp. 99-101.

25 <sup>273</sup> Permit, p. J-8 ("Whether this [shift] is the result of changes in nutrient concentrations and/or ratio is not known.").

26 <sup>274</sup> Permit, p. J-8 ("Follow up studies are needed to determine the ecological effect of the change in nutrient  
27 concentrations and ratios on the phytoplankton community and whether nutrient control might cause the community  
28 to revert back to a diatom-based system.").

<sup>275</sup> Revised Draft Order, p. 32; Redline Draft Order, pp. 34-35.

<sup>276</sup> See District's October 2010 Comments and Evidence Letter, pp. 29-30; Engle Written Testimony, pp. 2-4; see  
also District's Comments on Issue Paper Regarding Drinking Water Supplies and Public Health Related Issues  
(Feb. 1, 2010) (hereafter, "District's February 2010 Comments on Human Health Issues Paper"), p. 4.

1 and phosphorus and either *Microcystis* abundance or toxicity.<sup>277</sup> Rather, from these studies, it  
2 appears that water temperature is strongly positively correlated with *Microcystis* abundance and  
3 toxicity, and that water transparency, flows, and specific conductivity are potential drivers of  
4 *Microcystis* blooms in the Delta. Comparatively, ammonia and nitrate concentrations were  
5 weakly negatively correlated with *Microcystis* abundance, meaning that higher ammonia and  
6 nitrate concentrations were associated with fewer *Microcystis*.<sup>278</sup>

7 Several other studies also support an association between water temperature and  
8 *Microcystis* blooms in the Delta.<sup>279</sup> These studies collectively show that an upward trend in  
9 spring-summer mean water temperature in the freshwater Delta between 1996-2005 supports a  
10 link between temperature and the recent onset of summertime *Microcystis* blooms in the Delta,  
11 and is consistent with observations from other estuaries.<sup>280</sup> Others report that increased residence  
12 time (e.g., during drought) and warmer temperatures are factors stimulating cyanobacterial  
13 blooms.<sup>281</sup> On the other hand, the record does not provide evidence, nor does the Revised Draft  
14 Order cite to any, to support the implied correlation between existing discharges (and potential  
15 discharges with increased levels of nitrate) from the SRWTP and *Microcystis* abundance.

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17 <sup>277</sup> See District's October 2010 Comments and Evidence Letter, pp. 29-30; Engle Written Testimony, pp. 2-4;  
18 Lehman, P.W., et al., The influence of environmental conditions on the seasonal variation of Microcystis cell density  
19 and microcystins concentration in the San Francisco Estuary. *Hydrobiologia* (2008) 600:187-204, AR at  
20 SRCSD\_OTHER\_080; Lehman, P.W., et al., Initial impacts of Microcystis aeruginosa blooms on the aquatic food  
21 web in the San Francisco Estuary (2010) *Hydrobiologia* 637:229-248, AR at SRCSD\_OTHER\_140; and,  
22 Mioni, C.E., et al., *What controls Microcystis bloom & toxicity in the San Francisco Estuary?* (Summer/Fall 2008 &  
23 2009) (May 12, 2010) Delta Science Program Brownbag Series, Sacramento, CA.

24 <sup>278</sup> See District's February 2010 Comments on Human Health Issues Paper, p. 4; see Engle Written Testimony, p. 3;  
25 see also Engle, D. (2010) Testimony before State Water Resources Control Board Delta Flow Criteria Informational  
26 Proceeding. Other Stressors-Water Quality: Ambient Ammonia Concentrations: Direct Toxicity and Indirect Effects  
27 on Food Web (hereafter, "Engle Testimony re: Delta Flow Criteria), p. 5.

28 <sup>279</sup> See District's October 2010 Comments and Evidence Letter, pp. 29-30; Engle Written Testimony, pp. 2-4;  
Jassby, A. 2008. Phytoplankton in the Upper San Francisco Estuary: recent biomass trends, their causes and their  
trophic significance (2008). *San Francisco Estuary & Watershed Science*, Feb. 2008; Paerl, H.W., K.L. Rossignol,  
S. Nathan Hall, B.L. Peierls, and M.S. Wetz. 2009. Phytoplankton community indicators of short- and long-term  
ecological change in the anthropogenically and climatically impacted Neuse River Estuary, North Carolina, USA.  
(2009) *Estuaries and Coasts*. DOI 10.1007/s12237-009-9137-0; Paerl, H.W., and J. Huisman. 2008. Blooms like it  
hot. (2008) *Science* 320:57-58. doi:10.1126/science.1155398; Fernald, S.H., N.F. Caraco, and J.J. Cole. 2007 et al.  
Changes in cyanobacterial dominance following the invasion of the zebra mussel *Dreissena polymorpha*: long-term  
results from the Hudson River Estuary. (2007) *Estuaries and Coasts* 30:163-170.

<sup>280</sup> See District's October 2010 Comments and Evidence Letter, pp. 29-30; Engle Written Testimony, pp. 2-4.

<sup>281</sup> District's October 2010 Comments and Evidence Letter, pp. 29-30; Engle Written Testimony, pp. 2-4.

1 With respect to references to the World Health Organization's (WHO) recommended  
2 drinking water standard, the District objects to the Revised Draft Order's inclusion of this  
3 standard as a basis for justifying the nitrate limit. The Revised Draft Order references a study by  
4 Mioni as the record cite for the WHO standard.<sup>282</sup> Referencing a study that in turn references the  
5 standard is hearsay, and is not sufficient to support the finding for which it is being proposed.<sup>283</sup>  
6 Next, the Revised Draft Order provides no information or analysis to determine that such a  
7 drinking water standard is appropriate or applicable to the Delta. Before suggesting that such a  
8 standard is applicable, the State Board (or the Regional Board) would need to first identify the  
9 applicable narrative WQO.<sup>284</sup> Then the State Board would need to translate the narrative WQO to  
10 a numeric criterion, finding that the WHO standard is appropriate as a numeric criterion. In  
11 making such a finding, the State Board would need to evaluate the WHO standard, and the intent  
12 and purpose behind the standard to determine if it is appropriate and applicable.<sup>285</sup> From there, a  
13 reasonable potential analysis must then be conducted, which would include evaluating effluent  
14 data as compared to the numeric criterion. Clearly, no such analysis has been conducted to  
15 determine if the WHO standard appropriately applies to the Delta, or if discharges from the  
16 SRWTP have reasonable potential to cause or contribute to an excursion above these standards.

17 In fact, review of the WHO's *Cyanobacterial toxins: Microcystin-LR in Drinking Water*,  
18 *Background document for development of WHO Guidelines for Drinking-water quality* shows that  
19 the numeric criterion of 1 µg/L is a provisional, guideline value because of limited data.<sup>286</sup> In  
20 light of the provisional nature of this guideline, it is highly inappropriate for the Revised Draft  
21 Order to imply that it is a drinking water standard applicable to the Delta. Further, the Regional  
22

23 <sup>282</sup> Revised Draft Order, p. 32; Redline Draft Order, p. 35.

24 <sup>283</sup> Gov. Code, § 11513(d).

25 <sup>284</sup> See, e.g., SIP, p. 6.

26 <sup>285</sup> State Board Order 2002-0015, pp. 47-48.

27 <sup>286</sup> (WHO's *Cyanobacterial toxins: Microcystin-LR in Drinking Water*, *Background document for development of*  
28 *WHO Guidelines for Drinking-water quality*,  
<[http://www.who.int/water\\_sanitation\\_health/dwq/chemicals/cyanobactoxins.pdf](http://www.who.int/water_sanitation_health/dwq/chemicals/cyanobactoxins.pdf)> (as of Nov. 11, 2012), pp. 10-11.)  
The District requests that the State Board take official notice of the WHO document pursuant to its authority under  
California Code of Regulations, title 23, section 648.2, or delete all reference to the document.



1 Board did not identify the WHO drinking water standards as being appropriate for consideration.  
2 In fact, the Regional Board’s Human Health Issues Paper did not include the WHO standard in its  
3 discussions of various standards.<sup>287</sup> It is inappropriate for the Revised Draft Order to now suggest  
4 and find that the nitrate limit in the Permit is justified by a concern that cultural eutrophication  
5 (allegedly caused by nutrient discharges from the SRWTP) has caused *microcystin* levels to  
6 exceed the WHO drinking water standard.

7 **6. The Revised Draft Order Inappropriately Attempts to Justify the**  
8 **Nitrate Limit on the Basis of Issues Related to Taste and Odor of**  
9 **Drinking Water Supplies**

10 The Revised Draft Order then turns to a hypothesis that excess nutrients (caused by  
11 discharges from the SRWTP) cause objectionable taste and odor in drinking water.<sup>288</sup> However,  
12 like the other hypotheses, the Revised Draft Order fails to identify evidence in the record to  
13 support this statement.

14 With respect to taste and odor (T&O) issues, the major direct concern alleged regarding  
15 nutrient loadings and concentrations in the Delta is the impact of these factors on the growth of  
16 algae species, which arguably then produce episodic T&O problems.<sup>289</sup> The primary argument  
17 that has been advanced is that nutrient loadings to the Delta must be reduced, and nutrient  
18 concentrations in ambient Delta waters must be reduced to extremely low levels, in order to avoid  
19 T&O problems for exported water. The water agencies have claimed that reducing nutrient  
20 loading to such levels would prevent the growth of T&O-producing algae species in downstream  
21 water supply reservoirs that receive Delta water (e.g., Castaic Reservoir in Southern California),  
22 and in water supply aqueducts that transport Delta water to water intake locations (e.g., South  
23 Bay Aqueduct).<sup>290</sup>

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25 <sup>287</sup> See, e.g., Regional Board’s Human Health Issues Paper, p. 3, Table 1 of WQOs.

26 <sup>288</sup> Revised Draft Order, p. 32; Redline Draft Order, p. 35.

27 <sup>289</sup> Regional Board’s Human Health Issues Paper, p. 6.

28 <sup>290</sup> See, e.g., Comments from the Water Agencies on Drinking Water Supply and Public Health Issues concerning the Sacramento Regional Wastewater Treatment Plant NPDES Permit Renewal (Feb. 2010), AR at SRCSD\_CORR\_499, p. 9.

1 The evidence does not support this position. For example, efforts to increase nutrient and  
2 organic carbon loadings and enhance the productivity of the Delta that are proposed by water  
3 agencies under the Bay Delta Conservation Plan as wetlands and habitat creation speak to the  
4 cross purposes of water supply and ecosystem health, and raise obvious questions about the  
5 ability or wisdom of seeking to effect net decreases in Delta nutrient concentrations.<sup>291</sup>

6 Further, evidence in the record does not support a finding that drinking water supplies are  
7 experiencing T&O issues due to nutrient loads in the Delta. For example, a summary of  
8 presentations from 2008 identified the following:

- 9 • T&O problems in reservoirs supplied by the SWP are caused primarily by geosmin and 2-  
10 methylisoborneol (2-MIB) (hereafter, “MIB”) released by benthic cyanobacteria.
- 11 • At this time there is limited ability to relate nutrient loads or in-channel (aqueduct)  
12 concentrations to domestic water supply water quality.
- 13 • Efforts to model the relationship between nutrient load to a water body and the  
14 development of benthic and attached algae in that water body have not been successful.
- 15 • Overall, it is not possible to predict how reducing the nutrient loads to the Delta and from  
16 in-Delta sources will impact the location, magnitude, or frequency of T&O problems.

17 Because of the characteristics of T&O sources, a potential conclusion is that the control of  
18 nutrients should not be based on an attempt to control algae-caused T&O.<sup>292</sup>

19 It has also been found that remedial action plans for T&O problems are often unsuccessful  
20 because they attempt control of noxious metabolites through a reliance on water treatment and  
21 broad-scale nutrient–biomass models. Nutrient control approaches are undermined by several  
22 factors, including the facts that (1) different T&O compound-producing taxa show disparate  
23 patterns across nutrient and mixing regimes; (2) epibenthic and periphytic microbes are  
24 widespread culprits in the production of T&O compounds and growth of attached microbes is

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26 <sup>291</sup> See District’s Administrative Draft Antidegradation Analysis for Proposed Discharge Modification for the  
Sacramento Regional Wastewater Treatment Plant (Antidegradation Analysis), p. 4-22.

27 <sup>292</sup> Antidegradation Analysis, pp. 4-24 to 4-25; Lee (2008) summarized T&O-related presentations by J. Janik,  
28 R. Losee, and P. Hutton of Metropolitan Water District (MWD), given at a March 25, 2008, California Water and  
Environmental Modeling Forum (CWEMF) titled “Delta Nutrient Water Quality Modeling Workshop.”

1 more weakly linked to conditions in the water column than phytoplankton; (3) deep-layer  
2 cyanobacteria maxima, supplied by internally recycled nutrients in the hypolimnion, can be a  
3 source of T&O compounds; (4) nutrient reduction strategies have increased water transparency  
4 and littoral production in many systems, improving conditions for attached algae; and (5) other  
5 groups of MIB and geosmin-producing organisms are not algae, but actinomycete bacteria,  
6 myxobacteria, fungi, and others.<sup>293</sup>

7 Further, although surface blooms are perceived as primary sources of water odor, twice as  
8 many known odor-causing cyanobacterial species are epibenthic, not planktonic.<sup>294</sup> For  
9 example, two cyanobacteria genera (*Hyella* and *Microcoleus*), which form biofilms on aquatic  
10 macrophytes, have been associated with T&O events. Attached cyanobacteria have been  
11 implicated as sources of MIB or geosmin in many studies of lakes, reservoirs, or rivers.<sup>295</sup>  
12 Benthic cyanobacteria are also responsible for most of the T&O events reported in the literature  
13 in terminal reservoirs receiving water from the SWP. Specifically, almost all of the T&O events  
14 in Diamond Valley Lake are associated with films of benthic cyanobacteria (*Oscillatoria* or  
15 *Phormidium spp.*) that grow on sides of the reservoir and on the dam. The benthic colonies in  
16 Diamond Valley Lake form on sediments 3-17 m deep, usually in late summer. This indicates  
17 that they are frequently positioned near the thermocline, where they would have greater access to  
18 diffusive fluxes of nutrients released at the sediment/water interface during summer stratification.  
19 MIB producing strains of *Oscillatoria* that have been isolated from other southern California  
20 reservoirs (Lake Mathews, Las Virgenes Reservoir, Lake Bard, Lake Skinner, and Silverwood  
21 Lake) are also benthic forms.<sup>296</sup> Thus, decreases in phytoplanktonic biomass (such as might be  
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24 <sup>293</sup> Antidegradation Analysis, pp. 4-23 to 4-24; see also District's February 2010 Comments on Human Health Issues  
25 Paper, pp. 5-6.

26 <sup>294</sup> Antidegradation Analysis, pp. 4-23 to 4-25; see also District's February 2010 Comments on Human Health Issues  
27 Paper, pp. 5-6.

28 <sup>295</sup> Antidegradation Analysis, p. 4-24.

<sup>296</sup> Antidegradation Analysis, p. 4-24; see also District's February 2010 Comments on Human Health Issues Paper,  
p. 6.

1 the aim of nutrient reduction strategies) could have the unintended consequence of increasing the  
2 available substrate for the main culprits of T&O episodes in these reservoirs.<sup>297</sup>

3 Moreover, although periphytic algae associated with aquatic macrophytes or macroalgae  
4 (e.g., *Cladophora*) have been blamed for T&O events, at least one study indicates that MIB and  
5 geosmin production may be higher in biofilms growing on inert substrates (e.g., rocks) than on  
6 macrophytes.<sup>298</sup> The importance of epibenthic microbes as T&O producers indicates that  
7 reservoir bathymetry and patterns of reservoir drawdown, will be more effective management  
8 tools in the control of T&O causing organisms than nutrient control in source waters.<sup>299</sup>

9 In summary, information in the record does not demonstrate a linkage between discharges  
10 from the SRWTP and T&O problems in water supplies that use water from the Delta. On the  
11 other hand, significant information exists in the record to indicate that the reduction in  
12 total nitrogen (N) and total phosphorus (P) concentrations in the Delta will not resolve, and would  
13 not be expected to resolve, T&O episodes in Delta-derived water supplies.<sup>300</sup> Information in the  
14 record suggests that attempts to reduce Total N and Total P concentrations in the Delta would  
15 more likely have unintended adverse impacts on the Delta ecosystem and on the occurrence of the  
16 same T&O episodes that parties wish to avoid.

17 **7. The Revised Draft Order Inappropriately Attempts to Justify the**  
18 **Nitrate Limit on the Basis That Total Nitrogen and Total Phosphorus**  
19 **in the Discharge Exceed Aggregate Ecoregion I Nutrient Levels**

20 Another reason for justifying the Regional Board's action, according to the Revised Draft  
21 Order, is that levels of total N and total P in the discharge consistently exceed the U.S. EPA's  
22 recommended Aggregate Ecoregion I nutrient levels.<sup>301</sup> Although this issue was first brought  
23 forth in the Regional Board's Human Health Issues Paper, it was not cited as a reason or basis in

24 <sup>297</sup> District's February 2010 Comments on Human Health Issues Paper, p. 6.

25 <sup>298</sup> Antidegradation Analysis, p. 4-24.

26 <sup>299</sup> (Antidegradation Analysis, p. 4-24.) Also, for analysis for extensive discussion on volatile organic compounds  
and their relationship to (or lack thereof) to T&O problems in drinking water, see *id.*, pp. 4-22 to 4-24.

27 <sup>300</sup> See District's February 2010 Comments on Human Health Issues Paper, pp. 5-6; see also Antidegradation  
Analysis, pp. 4-22 to 4-25.

28 <sup>301</sup> Revised Draft Order, p. 38; Redline Draft Order, p. 41.

1 the Permit for the action taken by the Regional Board.<sup>302</sup> More importantly, the U.S. EPA criteria  
2 were developed for consideration by individual states and have no regulatory effect in  
3 California.<sup>303</sup> Also, the State Board has evaluated the application of these U.S. EPA Ecoregion  
4 levels in California and has not, to date, deemed their use to be appropriate. Further, there are  
5 serious questions with respect to their applicability to the Delta region. The U.S. EPA's  
6 recommendations for threshold nutrient concentrations for rivers and streams in Aggregate  
7 Ecoregion I were not developed from estuarine habitat data.<sup>304</sup> For example, the lower limits for  
8 "risk of eutrophication" in Ecoregion I are accompanied by a chlorophyll-a threshold of 8 µg/L,  
9 which is questionable considering that Delta researchers state that Delta zooplankton become  
10 food limited when chlorophyll-a levels are below 10 µg/L.<sup>305</sup> In short, the use of the U.S. EPA  
11 Ecoregion values as a determinant in the Revised Draft Order is unsupported in the record, is  
12 inconsistent with prior determinations by the State Board regarding the use of these values in  
13 surface waters of California, and is unsupported by scientific evidence that would demonstrate the  
14 applicability of these values in the Delta.

## 15 **V. UNADDRESSED EVIDENTIARY ISSUE**

16 It appears that there are certain issues concerning evidence that have not been addressed  
17 explicitly. Most relevant here,<sup>306</sup> the District refers to certain documents transmitted to the State  
18 Board after the distribution of the May Draft Order. The Revised Draft Order, in footnote 17,  
19 would take official notice of some items. The Revised Draft Order does not speak specifically to  
20 other items, some of which were submitted by the District and some of which were submitted by  
21

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22 <sup>302</sup> Regional Board's Human Health Issues Paper, p. 7.

23 <sup>303</sup> Ambient Water Quality Criteria Recommendations, Information Supporting the Development of State and Tribal  
24 Nutrient Criteria for Rivers and Streams in Nutrient Ecoregion I ("Recommended Aggregate Ecoregion I Criteria")  
(2001), EPA 822-B-01-012, pp. iii-iv, 6-7.

25 <sup>304</sup> District's February 2010 Comments on Public Health Issue Paper, pp. 6-7; see also Recommended Aggregate  
26 Ecoregion I Criteria, pp. 13-15.

27 <sup>305</sup> District's February 2010 Comments on Public Health Issue Paper, p. 7; Recommended Aggregate Ecoregion I  
28 Criteria, p. 20.

<sup>306</sup> In its comments on the May Draft Order, the District expressed objection to certain evidence cited in the May  
Draft Order and other objections are stated in these comments. The District's objections and all positions taken on  
evidence stand and, assuming they have been overruled or rejected, the District takes exception to such action.


1 the Water Contractors.<sup>307</sup> (In each case also, there were objections filed to these documents.)  
2 Under all the circumstances, it can be inferred that the State Board is not considering this  
3 additional evidence,<sup>308</sup> but specificity on this point would be in the interest of all concerned. This  
4 could be accomplished through confirming, consistent with the November 22, 2011 Interlocutory  
5 Ruling and Revised Draft Order that, except as provided in the Revised Draft Order (i.e., certain  
6 matters officially noticed), the State Board has determined to base its review on the documents  
7 and information that was before the Regional Board at the time the Permit was adopted.<sup>309</sup>

8 **VI. CONCLUSION**

9 The State Board should not adopt the Revised Draft Order.

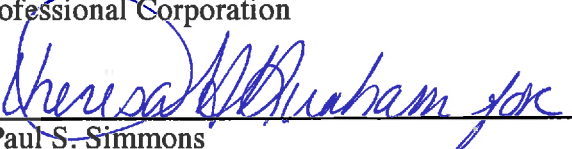
11 OFFICE OF THE COUNTY COUNSEL

12 DATED: November 13, 2012

12 By:   
13 Lisa A. Travis  
14 Attorneys for  
15 SACRAMENTO REGIONAL COUNTY  
16 SANITATION DISTRICT

17 SOMACH SIMMONS & DUNN  
18 A Professional Corporation

19 DATED: November 13, 2012

19 By:   
20 Paul S. Simmons  
21 Attorneys for  
22 SACRAMENTO REGIONAL COUNTY  
23 SANITATION DISTRICT

24 \_\_\_\_\_  
25 <sup>307</sup> The Water Contractors' submittal generally requested that if certain evidence furnished by the District were  
26 admitted, their additional "submittals" be admitted also.

26 <sup>308</sup> The matter of this evidence is also the subject of a Letter dated July 11, 2012 to James Herink, Staff Counsel,  
27 State Board, from Paul S. Simmons re: Evidentiary Issues, State Water Resources Control Board Own Motion  
28 Review of Waste Discharge Requirements Order No. R5-2010-0114 for Sacramento Regional Wastewater Treatment  
Plant.

<sup>309</sup> State Board's Interlocutory Ruling on Outstanding Motions (Nov. 22, 2011), p. 3.

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**PROOF OF SERVICE**

I am employed in the County of Sacramento; my business address is 500 Capitol Mall, Suite 1000, Sacramento, California; I am over the age of 18 years and not a party to the foregoing action.

On November 13, 2012, I served a true and correct copy of:

**SACRAMENTO REGIONAL COUNTY SANITATION DISTRICT'S  
COMMENTS/RESPONSE TO OCTOBER 29, 2012 DRAFT ORDER  
ON OWN MOTION REVIEW**

XXX (by mail) on all parties in said action, in accordance with Code of Civil Procedure §1013a(3), by placing a true copy thereof enclosed in a sealed envelope, with postage fully paid thereon, in the designated area for outgoing mail, addressed as set forth below.

XXX (electronically) to all parties in said action, by electronically transmitting a true copy thereof to the electronic mailing (email) addresses as set forth in the attached Service List.  
SEE ATTACHED SERVICE LIST

I declare under penalty of perjury that the foregoing is true and correct. Executed on November 13, 2012, at Sacramento, California.

  
Crystal Rivera

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**SERVICE LIST**  
**SWRCB/OCC File Nos. A-2144(a) and A-2144(b) (consolidated)**  
*Petition of Sacramento Regional County Sanitation District*  
*Petition of California Sportfishing Protection Alliance*

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