December 22, 2017

Chair Felicia Marcus and Board Members
c/o Jeanine Townsend, Clerk to the Board
State Water Resources Control Board
1001 I Street, 24th Floor
Sacramento, CA 95814

Sent via electronic mail to: commentletters@waterboards.ca.gov

RE: Comments to A-2239(a)-(c)

Dear Chair Marcus and Board Members:

California Coastkeeper Alliance ("CCKA"), California Rural Legal Assistance, Inc. ("CRLA"), and The Otter Project work to protect and enhance water quality throughout the state for the benefit of communities and ecosystems. We appreciate the opportunity to comment on the Eastern San Joaquin River Watershed Agricultural Order A-2239(a)-(c).

While we recognize the State Water Resources Control Board's ("State Board") attempt to resolve deficiencies in the Eastern San Joaquin Agricultural General Waste Discharge Requirements, the October 10, 2017 Proposed Order ("2017 Proposed Order") fails to adhere to numerous laws. Such laws include the Porter-Cologne Water Quality Control Act ("Porter-Cologne Act"), the Policy for the Implementation and Enforcement of the Nonpoint Source Pollution Control Program ("Nonpoint Source Policy"), the Statement of Policy with Respect to Maintaining High Quality Waters, State Water Board Resolution No. 68-16 ("Antidegradation Policy"), California Government Code section 11135, California Fair Housing Law, the reasonable use doctrine, substantive due process, the human right to water codified in the Water Code, the prohibition on public nuisance, and the public trust doctrine.

The 2017 Proposed Order does not address the concerns that we raised in our June 1, 2016 comments in response to the version proposed in 2016 ("2016 Proposed Order"). We therefore incorporate our prior comments in this letter, including our comments that the State Board failed to impose enforceable standards, require sufficient receiving water monitoring, and require replacement water for impacted communities, among others.[1]

[1] These include four sets of comments on the 2016 Proposed Order, including comments from CCKA; The Otter Project; 53 Environmental Justice, Tribal Interest, Fishing and Environmental Organizations; and CRLA, Clean Water Action, Community Water Center, and the Leadership Counsel for Justice and Accountability.

In addition to failing to address our previous comments, the 2017 Proposed Order creates additional deficiencies, rendering it even worse than its flawed 2016 version. The 2017 Proposed Order exacerbates the problems in the 2016 Proposed Order by weakening the target values for nitrogen, creating a new categorical exemption for nitrogen reporting, failing to require sufficient drinking water supply well monitoring, and failing to require notification, and the provision of replacement water. Further, the 2017 Proposed Order also unnecessarily delays improvements to the surface monitoring program and withholds key information from both the public and the Central Valley Regional Water Quality Control Board ("Regional Board" or "Central Valley Water Board"), including field location identifiers that the State Board deemed "essential" to the success of the Irrigated Lands Regulatory Program.

Even despite these failures, the 2017 Proposed Order is precedential for other regions of the state beyond the Eastern San Joaquin region. The precedential nature of the Order is therefore especially concerning to us. For example, by its terms, the 2017 Proposed Order forces regions that currently comply with data transparency laws to reverse course and withhold critical information about agricultural discharges from the public. In addition, while other regions have improved water quality monitoring and required replacement water for affected communities, the State Board sets precedent that undoes even this basic step forward.

Further aggravating these concerns, General Waste Discharge Requirements ("General WDRs") do not terminate after a defined term, unlike waivers of discharge requirements, which are limited to five years under Water Code section 13269(a)(2). The 2017 Proposed Order will therefore remain in place indefinitely, with no opportunity to course-correct when the consequences of its unlawful provisions become even more apparent over time.

Our comments are divided into four sections.

- Section I summarizes the history of the Regional Board's failures to address agricultural pollution in the Central Valley, current receiving water conditions in the Eastern San Joaquin region, and the need for additional data to draw conclusions about trends in water quality.
- Section II explains key components of the 2017 Proposed Order and the ways in which the State Board's 2017 revisions failed to remedy the deficiencies in the 2016 Proposed Order and the 2012 General WDRs and instead created new problems.
- Section III summarizes the deficiencies in the surface water monitoring program and the improvements that could be made now, based on available information.
- Section IV explains how the 2017 Proposed Order violates the law.

These comments take into account the State Board's direction that comments be limited to revisions of the 2016 Proposed Order in the October 10, 2017 Proposed Order.[2] As explained in detail below, because the 2017 Proposed Order's components are interrelated, changes to one component (e.g., reporting requirements) affect the functioning and legality of others (e.g., the Surface Water Quality Management Plans and the Antidegradation Analysis) even though the latter have not been expressly altered in the 2017 Proposed Order. That is, the 2017 Proposed Order must be considered as a whole to determine its legality. Therefore, we comment on all core components of this interconnected Order as they are impacted by the proposed changes.

[2] State Board, October 10, 2017 Transmittal Letter at 2.

I. AGRICULTURE'S IMPACT ON WATER QUALITY IN THE REGION

Discharges from irrigated agriculture are the largest source of pollution to Central Valley waterways. The State Board's 2010 Integrated Report for Clean Water Act Section 303(d) List /305(b) Report identifies some 730 waterbody impairments in the Central Valley. Agriculture is identified as the source of impairment for 269 of these segments covering 1,572 waterway miles and 96,147 acres of open water.[3] The State Board's proposed 2014 Integrated Report includes 979 listings for the Central Valley, representing a 38 percent increase in waterbody impairments.[4]

The 2017 Proposed Order acknowledges these problems but only in general terms (instead of assessing the conditions fully, as it should have). Even so, it admits that "[p]esticide toxicity in surface water threatens the viability of the water bodies to support aquatic and other species," that "[h]igh levels of nitrates found in drinking water supply wells impact public health," and that "[c]oncentrated levels of salt resulting from long-term irrigation adversely affect the quality of groundwater for irrigation, municipal, and other uses."[5] However, the 2017 Proposed Order does not provide information about the source of these problems or explain the condition of water quality in the region. As detailed in these comments, the Order fails to remedy the history of inadequate regulation that has led to these widespread problems.

A. The state has unsuccessfully regulated agricultural discharges in the Central Valley for more than three decades.

As explained in the 2017 Proposed Order, the Central Valley Water Board began to regulate agriculture in 1982.[6] This early program, structured as a waiver of waste discharge requirements under Water Code section 13269, conditionally waived the requirement for submittal of a report of waste discharge for irrigation return flow "as long as the discharge did not cause toxicity or excess sediment discharges that would violate turbidity objectives."[7]

The Regional Board did not require surface receiving water monitoring to determine compliance with water quality objectives until 2003, when it approved the Central Valley Agricultural General Waiver and began identifying where irrigated lands might be contributing to water quality problems. The 2003 Waiver also authorized the third-party coalition system, which has been in place ever since.

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[3] *See* Petition by California Sportfishing Protection Alliance ("CSPA") and California Water Impact Network.

[4] Central Valley Regional Board, Draft Staff Report, Clean Water Act Sections 305(b) and 303(d) 2014 Integrated Report for the Central Valley (September 2016), *available at* ://www.waterboards.ca.gov/centralvalley/water_issues/tmdl/impaired_waters_list/2014_int_rpt_dev/staff_report.pdf.

[5] State Water Resources Control Board, Order WQ 2018, In the Matter of Review of Waster Discharge Requirements Gender Order No. R5-2012-0116 for Growers Within the Eastern San Joaquin River Watershed that are Members of the Third-Party Group, SWRCB/OCC Files A-2239(a)-(c), October 10, 2017 ("2017 Proposed Order"), p.2. Throughout these comments, we cite to the 2017 Proposed Order with redlines, to note changes from the 2016 Proposed Order. If we cite to text from the 2016 Proposed Order that has been struck in the 2017 Proposed Order, the cite will indicate such with the notation (redline) in the citation.

[6] 2017 Proposed Order at 3.

[7] 2017 Proposed Order at 3.

It was not until 2006, in modifying the 2003 Waiver, that the Regional Board began requiring submission of management plans when water quality problems were identified.[8] And it was not until the 2012 General WDRs that the Regional Board began to regulate and monitor groundwater.[9]

None of these requirements, which were generally voluntary in nature, reduced agricultural pollution. Indications that these early attempts targeted at agricultural pollution, which were generally voluntary in nature, were failing are documented in agency assessments. The Regional Board's 2007 assessment of data collected at 313 Central Valley sites, for example, revealed that (1) toxicity to aquatic life was present at 63 percent of the monitored sites; (2) pesticide water quality standards were exceeded at 54 percent of sites; (3) one or more metals violated criteria at 66 percent of the sites; and (4) human health standards for bacteria were violated at 87 percent of monitored sites, and more than 80 percent of the locations reported exceedances of general parameters (dissolved oxygen, pH, salt, TSS). As explained below, these problems persist because the state has failed to effectively regulate agricultural pollution.[10]

In 2008, after 26 years of attempted regulation and five years of third-party coalition involvement, the Regional Board completed an Existing Conditions Report ("2008 Conditions Report") for Central Valley irrigated agricultural operations. This report found that water quality in the Eastern San Joaquin region (characterized as the "San Joaquin Valley Floor Watershed") was "dominated by agricultural return flows during the dry season, which frequently transport pesticides to the San Joaquin River."[11] The 2008 Conditions Report indicated that numerous pesticides (chlorpyrifos, diazinon, thiobencarb, dieldrin, DDT, and DDD) had been detected in one or more waterbodies in concentrations that exceed water quality objectives and that insecticides may be causing the "large toxicity problem" in the Eastern San Joaquin region.[12] It further found that "many of the rivers and agriculture drainages located in the region contain low [dissolved oxygen]," which could be attributed in part to nutrient loading from agricultural runoff.[13]

With respect to groundwater in particular, the 2008 Conditions Report determined that nitrate concentrations in groundwater in the eastern San Joaquin Valley exceeded drinking water standards in approximately 25 percent of domestic water supply wells,[14] and 23 different pesticides were detected in 41 of 60 of the groundwater samples collected.[15] This is especially problematic because the vast majority of San Joaquin Valley community water systems rely on

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[8] 2017 Proposed Order redline at 3, n. 4, 5 (citing Central Valley Water Board Resolution R5-2003-0105 and Central Valley Water Board Order No. R5-2006-0053).

[9] *See* Attachment 1 *San Joaquin County Resource Conservation District v. California Regional Water Quality Control Board, Central Valley Region,* Sacramento County Superior Court, Consolidated Case No. RG12632180, Ruling Under Submission of Petition for Writ of Mandate, May 21, 2013, p. 19.

[10] *See* Attachment 2 California Sportfishing Protection Alliance, Analysis of the 2007 Report; *see also Revised Draft of the 2007 Review of Monitoring Data for the Irrigated Lands Conditional Waiver Program 13 July 2007* https://www.waterboards.ca.gov/public_notices/petitions/water_quality/docs/a2239/overview/Documents/AR-Docs (126).pdf

[11] 2008 Existing Conditions Report at 3-74, 3-75.

[12] 2008 Existing Conditions Report at 3-74, 3-75.

[13] 2008 Existing Conditions Report at 3-74, 3-75.

[14] 2008 Existing Conditions Report at 4-298.

[15] 2008 Existing Conditions Report at 4-299.

groundwater as a drinking water source. According to the State Board's own draft report, "Communities Reliant upon Contaminated Groundwater," 300,000 residents of Stanislaus and Merced Counties rely upon contaminated groundwater.[16]
In 2011, the modified waiver expired by its terms, and the Central Valley Regional Board opted to adopt eight General WDRs, one of which was for Eastern San Joaquin region that is now before the State Board. As explained by both the environmental justice and environmental petitioners, the 2012 Eastern San Joaquin General WDRs failed to address agricultural pollution and comply with the law.[17]

B. Courts have found similar discharge waivers and WDRs unlawful.

In 2013 and 2015, the Sacramento County Superior Court found unlawful two irrigated agriculture discharge permits with provisions that resemble the Eastern San Joaquin General WDRs. In *San Joaquin Count Resource Conservation*, the court found the Regional Board's renewed waiver (the predecessor to the General WDRs at issue here) violated the Antidegradation Policy and Nonpoint Source Policy because it allowed discharges to degrade groundwater and failed to include sufficient feedback mechanisms for waste discharges to high quality groundwater.[18] In a similar fashion, the court in *Monterey Coastkeeper* found the Central Coast Regional Water Quality Control Board's irrigated agriculture discharge Waiver unlawful because, among numerous other failures, it did not include "conditions that allowed for determining individual compliance with water quality standards or the level of effectiveness of actions taken to protect water quality, such as individual discharge monitoring or evaluation of water quality improvements;"[19] and lacked "adequate standards and feedback mechanisms to assess the effectiveness of implemented management practices in reducing pollution or preventing further degradation of water quality.[20] As detailed below, the General WDRs at issue here have provisions that are similar to (and in many instances *more problematic than*) the provisions found to violate California's core water quality laws.[21]

C. Analysis of the available data shows that water quality is not improving, and the Regional Board is not collecting sufficient data.

Dr. Revital Katznelson reviewed the complete East San Joaquin dataset available on the California Environmental Data Exchange Network ("CEDEN"), including 61,824 water chemistry records, Dr. Katznelson's compilation, and conclusions attached to this comment

[16] State Water Board, *Communities Reliant upon Contaminated Groundwater*, Table 1.3 at 34 (indicating Community Water Systems that Rely on a Contaminated Groundwater Source for Drinking Water, by County and Population Served.).
[17] Petitions by Asociación de Gente Unida por el Agua, et al. ("AGUA") and by the CSPA and California Water Impact Network.
[18] *San Joaquin County Resource Conservation District v. California Regional Water Quality Control Board, Central Valley Region,* Sacramento County Superior Court, Consolidated Case No. RG12632180, Ruling Under Submission of Petition for Writ of Mandate, May 21, 2013, pp. 19-20.
[19] *Monterey Coastkeeper v. State Water Resources Control Board*, Sacramento Superior Court, Case No. 34-2012-80001324, Decision (September 25, 2015), pp. 32-34. (discussed in Section IV below).
[20] *Id.*, p. 33.
[21] *See also Asociación de Gente Unida por Agua v. Central Valley Regional Water Quality Control Board,* 210 Cal. App. 4th 1255 (2012) ("*AGUA"*) (discussed in Section IV below).

letter.[22] The review demonstrates that the available surface water quality data for the region from 2004 and 2016 show consistent exceedances of water quality objectives and do not support a conclusion that water quality in the Eastern San Joaquin watershed region is improving. Among other conclusions, Dr. Katznelson finds:

- The monitoring program failed to analyze sediments, where many in-use pesticides, herbicides, and heavy metals concentrate. "This extreme paucity of sediment data creates a very serious information gap in what we know about potentially toxic chemicals accumulating in our waterways."[23]
- "[T]here were 264 (13.3 %) WQOs exceedances of dissolved oxygen." Perhaps more critically, Dr. Katznelson finds that the monitoring methods are flawed: "All the other dissolved oxygen data collected in the Eastern San Joaquin Region simply cannot be used to demonstrate compliance because they were collected at a time of day that does not reflect the real risk."[24]
- The data is statistically biased towards finding "no exceedances." "The 461 failed visits [dry, shallow, non-contiguous] were counted by the Coalition as samples that did not exceed WQOs, instead of deleting them from the sample count."[25] "Because a failed sampling event represents "no data" rather than "no exceedances", the Coalition is generating a wrong count of "no exceedances", which may be misleading."[26] "The sample count is diminished and cannot support a statistically robust dataset for detection of change over time."[27]

Dr. Katznelson also extracted and reviewed data for a number of key constituents and suggests that no conclusion as to trends can be gleaned from the data. In particular, she makes the following conclusions with respect to particular constituents:

- Total ammonia: "The trend line's slope was similar for the entire dataset… At this time, the data have not been subject to statistical analysis that can determine whether the change over time is significant."[28]
- Nitrate and nitrite: "The Region's waterways appear to be nitrate-rich on many occasions over the years, with many values above 10 mgN/L… [G]iven the distribution of the data, the tests [to detect change] will probably be unable to demonstrate a significant slope [trend] for this dataset."[29]
- Chlorpyrifos: The pesticide and herbicide section begins by cautioning that "the analytical suite of biocides was not updated fast enough to include new biocides, so not all the biocides that could have been present were analyzed for."[30] The section then acknowledges an apparent decline in chlorpyrifos detections: "Overall, the density of detections appears to diminish over time, and the trend line shows a decrease in concentration. The decrease may reflect the decrease in chlorpyrifos application in the

[22] Attachment 3, Revital Katznelson, Eastern San Joaquin Data Review Notes. December 21, 2017.
[23] *Id.* at 1.
[24] *Id.* at 2.
[25] *Id.*
[26] *Id.* at 3.
[27] *Id.*
[28] *Id.* at 4.
[29] *Id.* at 5.
[30] *Id.* at 7.

Region during some monitoring years."[31]

- Dissolved copper: "Dissolved copper data are needed for comparison to water quality objectives, because toxicity is caused by the dissolved form. The trend line shows an upwards slope, indicating increasing concentrations over time."[32]

II. THE 2017 PROPOSED ORDER FAILS TO PROTECT AND IMPROVE WATER QUALITY.

In almost all respects, the 2017 Proposed Order fails to fix fundamental problems in the 2012 General WDRs and constitutes a step backward from the already deficient 2016 version proposed by staff.

After providing an overview of the 2017 Proposed Order's major flaws, we explain in detail how its interrelated provisions create deficient General WDRs that will not ensure compliance with receiving water limitations or protect beneficial uses. We also explain how those provisions have changed over time from the 2012 General WDRs and the 2016 Proposed Order. Our discussion is divided into the following subsections:

A. Overview of the 2017 Proposed Order's Flawed Approach
B. Nitrogen Pollution
C. Surface Water Monitoring
D. Surface Water Management Plans
E. Other Problems with Farm Evaluation Reporting Changes
F. Drinking Water Supply Well Monitoring and Notification
G. Groundwater Monitoring
H. Groundwater Quality Management Plans

A. Overview of the 2017 Proposed Order's Flawed Approach

The 2017 Proposed Order maintains the core elements of the General WDRs, which combine to form a web of complicated, interrelated requirements that ultimately fail to effectively regulate agricultural pollution. This Section provides a brief overview of those core elements, which will be further explained in the sections that follow.

1. Lack of Enforceable Standards and Target Date for Compliance

To date, the State Board and Regional Board have been unwilling to require individual growers to take accountability by demonstrating individual compliance. The 2017 Proposed Order maintains the General WDRs' deficient receiving water limitations for groundwater and surface water. In pertinent part, they provide that "[w]astes discharged from Member operations shall not cause or contribute to an exceedance for applicable water quality objectives in surface water [and groundwater], unreasonably affect applicable beneficial uses, or cause or contribute to a condition of nuisance."[33] Even though appearing broadly prohibitory, however, these limitations *do not apply* to growers operating under a Surface Water Quality Management Plan ("SQMP") or a Groundwater Quality Management Plan ("GQMP"). Moreover, dischargers have *10 years* after an exceedance is *first detected* to come into compliance with the receiving water

[31] *Id.*
[32] *Id.* at 6.
[33] 2017 Proposed Order at 14.

limitations.[34] In this way, the General WDRs lack enforceable standards and effectively allow pollution to continue unabated for 10 years even after it has been identified, rather than when the General WDRs become effective. Alhough the receiving water limitations apply to individual dischargers, the current system provides no mechanism for determining whether dischargers are *actually* complying with the receiving water limitations. Indeed, as described below, the State Board has set up a complicated regime that makes such a determination impossible.

Further, while SQMPs and GQMPs are supposed to require changes in grower management practices, adopt measurable "milestones" to track progress, and incorporate a monitoring system that is capable of verifying whether the new management practices are leading to compliance with receiving water limitations, they fail to provide the necessary feedback mechanism (that is, verification of management practice effectiveness) because both the reporting and monitoring systems are fundamentally flawed.

Disturbingly, even though regulation of irrigated agricultural discharges began in 1982, the State Board and Regional Board, which are the agencies primarily responsible for controlling water pollution, have no target for achieving and maintaining the water quality objectives that are so central to the Porter-Cologne Act.

2. Inadequate Management Practice Reporting and Receiving Water Monitoring

Under the General WDRs' iterative, "adaptive management"[35] approach, adequate information about both management practices and water quality is essential for the functioning of the program. As the State Board itself has noted, in order to evaluate the effectiveness of the management practices, the Regional Board must know where, when, and how growers are implementing them. It must also know where, when, and how water quality is changing as these management practices are employed.[36] According to the State Board, "a management practice-based nonpoint source regulatory program will succeed in its ultimate purpose of 'achiev[ing] and maintain[ing] water quality objectives and beneficial uses' only to the extent it facilitates implementation of effective management practices."[37] Therefore, "[i]nstituting effective management practices requires sufficient monitoring and reporting to determine if existing management practices are leading to compliance with water quality requirements and [to the] implementation of improved water quality practices where they are not."[38] The State Board asserts that this "feedback mechanism – that a nonpoint source discharge control program link its implementation requirements, with some level of confidence, to expected water quality outcomes, and incorporate monitoring and reporting sufficient to verify that link – is a fundamental tenet of the Nonpoint Source Policy."[39]

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[34] 2017 Proposed Order at at 14-15, 71-72; Gen. WDRs § XII (time schedule to comply with receiving water limitations), p. 41; MRP-1 § I.C.4.d (SQMPs/GQMPs require a specific time schedule and milestones for the implementation of management practices and tasks in SQMPs/GQMPs), p. 5.

[35] 2017 Proposed Order at 31, 32.

[36] *See, e.g.,* MRP § III.C.1, p. 7 (General WDRs require "[s]urface water monitoring must provide sufficient data to describe irrigated agriculture's impacts on surface water quality and to determine whether existing or newly implemented management practices comply with the receiving water limitations of the Order.).

[37] 2017 Proposed Order at 17.

[38] 2017 Proposed Order at 17.

[39] 2017 Proposed Order at 17.

Yet, despite the acknowledged importance of management practice information, the 2017 Proposed Order does not require the reporting of specific location identifiers linked to management practices to the Regional Board in the many reports required to be provided. The 2017 Proposed Order requires growers to submit two, and in some cases three, important types of management practice reports to the Third Party: Irrigation and Nitrogen Management Plan ("INMP") Summary Reports (submitted annually), Farm Evaluations (submitted every five years), and, when an SQMP or GQMP is imposed, Management Plan Implementation Reports ("MPIR") (submitted "at least annually").[40] The Third Party anonymizes all growers' names before reporting the information to the Regional Board. It also creates a new categorical exemption from nitrogen reporting, anonymizes field locations from the INMP summary reports, and fully removes any location indicators from the Farm Evaluations and MPIRs. This anonymization of growers' names and removal of location identifiers renders the reported information useless because neither the Regional Board nor the public can link management practice to water quality data in a particular geographic area or to a particular grower. Thus, while the "field-level" data in the INMP Summary Reports, Farm Evaluations, and MPIRs appear to give more precise information about management practice than the aggregated data required in the 2012 General WDRs, these data actually lack critical information for determining "if existing management practices are leading to compliance with water quality requirements and [to the] implementation of improved water quality practices where they are not."[41] Neither the Regional Board nor the public will have sufficient data to verify the proper functioning of the so-called "feedback mechanism" that is so vital to the entire program. The 2017 Proposed Order therefore fails to fix the information problem evident in the 2012 General WDR's reporting requirements.

Nor does the 2017 Proposed Order require needed changes in the deficient surface water and groundwater quality monitoring system. For surface water, the 2017 Proposed Order maintains the 2012 General WDRs' defective surface receiving water monitoring system and delays needed improvements for years by creating an expert panel process that lacks deadlines and a defined path to actual adoption of an adequate monitoring system. For groundwater, the 2017 Proposed Order also fails to remedy core problems with the groundwater and drinking water supply well monitoring system, including infrequent and inadequate monitoring and a lack of any assurance of drinking water replacement when exceedences are detected.

3. Lack of Accountability and Transparency

In addition to this lack of enforceable standards and adequate reporting and monitoring, the 2017 Proposed Order exacerbates the fundamental accountability and transparency problems that plagued the 2012 General WDRs. The 2017 Proposed Order preserves the 2012 General WDRs' reliance on the Third Party to develop and implement the system for monitoring receiving waters, the SQMPs, and the GQMPs but does not establish standards the Third Party must meet to ensure adequate oversight.

What is more, under new 2017 Proposed Order, the Third Party withholds critical field-level information from the Regional Board and the public, has the authority to calculate critical nitrogen conversion coefficients that are used to determine nitrogen target values, and has sole and broad discretion to determine who nitrogen "outliers" are. The 2017 Proposed Order further provides that the Third Party, rather than the Regional Board, is the keeper of the field-level data

[40] Growers are also required to submit sediment and erosion control plans, but we do not comment on those plans here.
[41] 2017 Proposed Order at 17.

identified by location and name.[42] It instructs the Third Party to store this information with an independent entity in a secure site for only 10 years.[43] Therefore, the State Board uses the Third Party structure to shield dischargers from public accountability and from oversight by the Regional Board itself.

In the end, the Order's labyrinthine requirements dead end, without enforceable standards and thus without any factual support that these requirements will lead to quantifiable improvements – or even to the status quo – in water quality. Compliance with receiving water limitations purportedly must occur within 10 years – but it is unclear when (or if at all) the 10-year timeframe commences since detection of water quality problems must first occur, and such detection is likely difficult since the monitoring program is flawed. The first responder to such detection of problems (the Third Party) is not even subject to the enforcement mechanisms of the State Board, and even if the Third Party responds, there is no standard by which to ensure the problem is actually addressed. Target values for nitrogen that purportedly will govern fertilizer use also dead end: there is no requirement that such values be used as a regulatory tool to hold discharges accountable for over-application. When agricultural discharges are undisputedly the cause of a serious and urgent water quality problem, a regulatory approach that abandons reasonable progress toward achieving and maintaining water quality objectives for the protection of the people of California is arbitrary and capricious and against the law.

In the sections that follow, we present the Proposed Order's numerous deficiencies with respect to nitrogen management, surface water and groundwater monitoring and management, and drinking water.

B. Nitrogen Pollution

Although the State Board had the opportunity to improve the 2012 General WDRs' flawed approach to addressing nitrogen pollution, the 2017 Proposed Order proposes an ineffective system that will not lead to reductions of nitrogen pollution to groundwater and surface water.

In developing the current Order, the State Board considered the findings of the Nitrogen Taskforce and the Agricultural Expert Panel, both of which were convened in light of the nitrate contamination crisis in the Central Valley. Both bodies acknowledged over-application of nitrogen by irrigated agriculture was contaminating groundwater, including drinking water supply wells. Relying on these reports and a joint "proposal" from some environmental justice organizations and some agricultural interests, as well as its own analysis,[44] the State Board establishes in the 2017 Proposed Order a complicated process for addressing nitrogen pollution. It depends on two main elements:

1. Reporting by growers to the Third Party and reporting by the Third Party to the Regional Board; and
2. Calculation of "target values" for nitrogen loading and identification of "outliers" who may be over-applying nitrogen to their fields.

We explain what the 2017 Proposed Order requires for each element, how those requirements

[42] 2017 Proposed Order at 56.
[43] 2017 Proposed Order at 56; MRP § V.D at 24 ("The third-party shall maintain all INMP Summary Reports received by the third-party and maintain all electronic database tables created from the INMP Summary Reports for a minimum of 10 years…").
[44] 2017 Proposed Order redline at 21, 71.

have changed over time, and how the current framework fails to solve the nitrogen pollution problems that persist across the region.

1. Nitrogen Reporting by the Grower and the Third Party

a. Nitrogen Reporting Requirements in the 2017 Proposed Order

The 2017 Proposed Order requires each grower to prepare a farm-specific Irrigation and Nitrogen Management Plan ("INMP") every year, pursuant to a template prepared by the Third Party.[45] The INMP is required to explain how the grower intends to manage nitrogen and irrigation on the field in the coming year. The grower is required keep this report at farm headquarters but need not submit it to the Regional Board unless requested.[46] The grower must also prepare on an annual basis a separate INMP Summary Report pursuant to a template also prepared by the Third Party.[47] The INMP Summary Report includes a subset of the data contained in the prior crop year's INMP.[48] Along with the farm owner's name, field identifier, acreage, crop type, and both irrigation and nitrogen management practices implemented, growers report two nitrogen values to the Third Party: (1) the "A"—the nitrogen "applied" to a field, and (2) the "Y"—the crop "yield" in that field.[49]

The Third Party then "anonymizes" all of the member-reported data, including member name and location as identified by Assessor Parcel Number ("APN ID"), and reports the anonymized A and Y values to the Regional Board in three data sets: (1) by anonymized grower name, (2) by anonymized field APN ID, and (3) by Township, which is a standardized, 36 square-mile unit.[50]

In these three data sets, the Third Party also includes a calculation for A/Y and A-Y.[51] A third variable, "R," or nitrogen removed, is required to be reported. After the Third Party has determined the appropriate conversion coefficient from the Y to the R value, it will report that R value instead of Y, including the appropriate A/R and A-R calculations.[52] The Third Party prepares and submits the data sets to the Regional Board in three separate tables.[53] The 2017 Proposed Order provides an example of each of the three tables for illustrative purposes at the end of the Order.[54]

The A/R ratio (as the amount of nitrogen applied to a field in a year divided by the amount of

[45] MRP § VI.B, at 32-36. The template may be prepared by the Third Party in consultation with the Regional Board or in coordination with other coalitions and with approval from the Regional Board.
[46] Gen WDR § VII. D, p. 28.
[47] Gen. WDRs § VII, pp. 27-28; Gen. WDRs § VIII.C.2, p. 33; MRP § VI.B, pp. 32-36. The template may be prepared by the Third Party in consultation with the Regional Board or in coordination with other coalitions and with approval by the Regional Board.
[48] MRP § VI. B p. 36-37.
[49] MRP § VI B. p. 37.
[50] 2017 Proposed Order sample tables at end of the Order; MRP § V.D, pp. 25-27.
[51] MRP § VI. B redline at 36-37.
[52] 2017 Proposed Order at 43-45 n.106-110; MRP § V.D, pp. 25-27; *see also* Attachment E to Gen. WDRs ("Definitions") at 4 (defining nitrogen applied and removed).
[53] 2017 Proposed Order at 51-53; MRP § V.D pp. 25-27.
[54] 2017 Proposed Order sample tables at end of the Order, pp.87-89; MRP § V.D, pp. 25-27.

nitrogen removed from the same field during the same year) is important because it can reveal excess nitrogen left in the field after a grower has applied fertilizer and harvested crops.[55] The higher the A/R ratio, the higher the likelihood of excess nitrogen and the higher the risk of contamination. A-R (pounds of nitrogen applied minus pounds of nitrogen removed) is also relevant because it can indicate the amount of the nitrogen left in the field, "especially in cases where use of only the multi-year A/R ratio may mask significant quantities of nitrogen left in the field."[56] For example, as the State Board explains, "a grower applying 75 pounds of nitrogen and removing 50 has the same A/R ratio of 1.5 as a grower applying 450 pounds of nitrogen and removing 300. But the nitrogen left in the field by the second grower is six times the magnitude of the nitrogen left in the field by the first grower."[57]

"[W]here feasible," the Third Party will also calculate a three-year average of A/R for each grower for each field. It will report this "multi-year" A/R ratio by anonymized grower and field in corresponding first and second data sets.[58] The A/R and A-R values and this multi-year ratio together are referred to as the "AR data" in the General WDRs. According to the State Board, "[w]hen evaluated over multiple years, the A/R ratio provides a reliable measurement of the nitrogen left in the field,"[59] and "the trend in the multi-year A/R ratio over time will inform whether practices are working to reduce the amount of nitrogen being left on the field and the corresponding potential for discharge to groundwater."[60] The State Board asserts "a multi-year A/R ratio may also provide the basis for acceptable multi-year A/R ratio target values, with reduction in the multi-year A/R ratio toward the target ratio for an area over time acting as a proxy for reduction in nitrate discharge to groundwater."[61] In other words, the 2017 Proposed Order assumes that reduction in multi-year A/R averages over time can lead to reductions in nitrogen discharges to receiving waters.[62] However, as explained below, such reduction in nitrogen discharges is unlikely to occur because of the 2017 Proposed Order's numerous, fundamental flaws.

b. Changes in Nitrogen Reporting from Prior Versions of the Order

The 2012 General WDRs required Third Parties to use "nitrogen consumption" ratios, defined as the ratio of "total nitrogen available for crop uptake" to the "estimated crop consumption of nitrogen."[63] Along with field and crop information, the Third Party analyzed this information for outliers but was not required to report the ratio by field location or grower name to the Regional Board.[64]

The 2016 Proposed Order eliminated the reporting of the "nitrogen consumption" ratio and

[55] 2017 Proposed Order at 39-43; State Water Board Fact Sheet pp. 5; see also Gen. WDRs § VII.D, pp. 27-28.
[56] 2017 Proposed Order at 42.
[57] 2017 Proposed Order at 42 n.104.
[58] 2017 Proposed Order at 43.
[59] 2017 Proposed Order at 41.
[60] 2017 Proposed Order at 42.
[61] 2017 Proposed Order at 42 (citing Agricultural Expert Report pp. iii, 24, 38).
[62] 2017 Proposed Order at 41-43; 69-70.
[63] 2017 Proposed Order at 42; MRP § V.E redline at 29 (striking Nitrogen Summary Report Reporting Component 17 on nitrogen consumption ratios from and replacing with INMP Summary Report A/R ratio).
[64] MRP § V.E redline at 29 (striking Nitrogen Summary Report Reporting Component 17 on nitrogen consumption ratios from and replacing with INMP Summary Report A/R ratio).

required instead the reporting of the AR data along with nitrogen and irrigation practices reporting.[65] The AR data concept and the addition of irrigation management practice reporting resulted from the Agricultural Expert Panel process, which began in 2013, after the 2012 General WDRs went into effect, and concluded in 2014. The Expert Panel recommended the use of A/R as "the primary metric for evaluating progress on [nitrogen contamination] source control, with eventual impact on the groundwater quality."[66] In adopting this recommendation, the State Board found that "[w]hen evaluated over multiple years, the A/R ratio provides a reliable measurement of the nitrogen left in the field."[67] It found A/R superior to the nitrogen consumption ratio because it used removed nitrogen, which was based on a measurement, instead of nitrogen uptake/consumption, which the State Board said was based on an estimate. [68] It further determined that A/R would "simplify some of the inherent complexity of trying to perform a nitrogen balance on an annual basis."[69] With respect to irrigation management practice reporting, it found that such information was important because irrigation affects how nitrogen moves into receiving waters.

The 2016 Proposed Order required annual AR data and management practice reporting by all growers. It went a step further than the Expert Panel recommendations and required that the grower AR data and management practice information be linked to field location, finding that such information was critical for Third Party oversight and accountability, and for creating a broader understanding of nitrogen pollution across the state.[70]

The 2017 Proposed Order preserved the 2016 Order's use of the AR data and nitrogen and irrigation management practice report. However, it eliminated the critical location identifiers and created a new categorical exemption from nitrogen reporting. As detailed below, these changes render the 2017 Proposed Order insufficient.

c. Problems with the 2017 Proposed Order Changes to Nitrogen Reporting

i. *The 2017 Proposed Order withholds critical nitrogen information*.

In the 2016 Proposed Order, the State Board explained at length the importance of location-based information about nitrogen application and uptake. According to the State Board's rationale in 2016, "[a]ccess to the full field level data set enables auditing of the Third Party and allows the Regional Board to verify the accuracy and completeness of the Third Party's calculations and analyses." In addition, field-level data, identified by location "facilitates responding to indications of over-application [of nitrogen] by any given Member." [71] The

[65] 2017 Proposed Order redline at 42, 43 ("We revise the Eastern San Joaquin Agricultural Order to eliminate reporting on the nitrogen consumption ratio and to instead require recording and reporting of the AR data.").
[66] Agricultural Expert Report at iv, 27-28.
[67] 2017 Proposed Order at 41.
[68] 2017 Proposed Order at 41. The State Board further summarized: "The Agricultural Expert Panel Report identified a shift to using the A/R ratio in nitrogen management as critical in reducing nitrogen leaching to groundwater because the multi-year A/R ratio will provide a fairly accurate picture of efficiency of the nitrogen application on the field and the potential over-application of nitrogen over several years."
[69] 2017 Proposed Order at 41.
[70] 2017 Proposed Order redline at 46-48.
[71] 2017 Proposed Order redline at 47.

Regional Board "cannot exercise this type of oversight with only aggregated data."[72]

The State Board further elaborated on the importance of a correlated set of data that links management practices with water quality conditions and which identifies the location of the fields: "The correlated data set will allow the Central Valley Water Board to gauge the effectiveness, and ineffectiveness, of implemented management practices in reducing nitrogen left in the soil," and it will "allow for watershed-based modeling for nitrate loading to groundwater."[73] The State Board summarized that it found that field-level data, by location, should be submitted to the Central Valley Water Board "to support development of acceptable multi-year A/R ratio target values for crops grown in the Eastern San Joaquin River Watershed, to inform whether implemented nitrogen management practices are achieving the appropriate water quality results, and to allow for appropriate oversight over follow up when they are not."[74]

In addition, the State Board identified in the 2016 Proposed Order numerous programmatic benefits to location data that could help the entire Irrigated Lands Regulatory Program improve its understanding of nitrogen contamination. The State Board explained:

> [A]vailability of location information additionally permits the field-level AR data to be entered into GeoTracker and to be linked not just with the management practice implementation information, but also with water quality data available through that system, so that a full data set is available to inform the irrigated lands regulatory program.[75]

Such statewide modeling, according to the State Board, "may be expanded beyond the boundaries of the Eastern San Joaquin Agricultural General WDRs when linked to similar data sets developed in other coalition boundaries."[76] The data set will have uses beyond the short-term needs of the water boards:

> [F]or example, researchers may use the data to conduct studies advancing the science supporting future developments in the regulatory program, environmental justice groups may use the data to assist in planning for areas that may need drinking water assistance in the future, and local agencies may use the data in groundwater quality management efforts.[77]

The State Board thus asserted:

> [W]e are acting on the cumulative knowledge gained through the proceedings of the Nitrogen Tracking Task Force and the Agricultural Expert Panel … as well as the Water Boards experience in implementing both the Central Coast Agricultural Order and the irrigated lands programs in the Central Valley, with consideration to our overarching obligation to protect water quality and to provide transparency and

[72] *Id.*
[73] 2017 Proposed Order redline at 48
[74] 2017 Proposed Order redline at 49.
[75] 2017 Proposed Order redline at 48.
[76] *Id.*
[77] *Id*.

accountability in that process.[78]

In the 2017 Proposed Order, the State Board reverses course. Directly contradicting its rationale underlying the 2016 decision, the State Board eliminates nitrogen reporting by location identifier. It determines that it is now "satisfied that the goals of the program can be carried out effectively if field-level data is linked to anonymous identifiers."[79] The State Board further finds that "the effective management of a nonpoint source program for agricultural discharges is not necessarily dependent on tying each data point to a discharger identified by name, or to a specific location."[80] Despite its own statements to the contrary, it "anticipate[s] that the anonymous field-level data is sufficient for the Central Valley Water Board to verify that implemented management practices are making progress toward achievement of the water quality goals of the program."[81] The State Board claims that the "township level AR data set," rather than "the correlated data set" (deemed essential in the 2016 Proposed Order), will be "available to researchers to perform watershed-based modeling for nitrate groundwater loading, both within the Third Party boundaries and in the entire basin (by using data from other coalitions)."[82]

This anonymization of crucial nitrogen reporting information undermines the entire program. Without the specific location information, neither the public nor the Regional Board can hold growers accountable, conduct proper oversight of the Third Party, understand if and how best management practices are leading to water quality improvement, or create the "correlated data set" that the State Board deemed vital to understanding and addressing nitrate pollution throughout the state.[83] Without specific locations, the public and the Regional Board cannot understand where the high A/R number is and track that to a particular receiving water exceedance.

While the State Board suggests that township-level data enables tracking of over-application of nitrogen, such averaging makes it impossible to compare impacts of different management practices on water quality in different regions, as the Board itself has stated and as the environmental justice petitioners rightly noted.[84] Thus, the elimination of specific field location identifiers from reports of nitrogen data exacerbates the General WDRs' broader failure to provide sufficient information for the Regional Board to perform its oversight and enforcement duties as to each discharger.[85]

According to the 2017 Proposed Order, the elimination of field location identifiers is not based on any legal requirements or constraints with respect to grower privacy rights or trade secrets. The State Board is "not persuaded that the INMP Summary Report data constitutes proprietary

[78] 2017 Proposed Order redline at 50.
[79] 2017 Proposed Order at 52.
[80] 2017 Proposed Order at n.63.
[81] 2017 Proposed Order at 53.
[82] 2017 Proposed Order at 78.
[83] 2017 Proposed Order at 48.
[84] CRLA, Community Water Center, Clean Water Action, and Leadership Counsel for Justice and Accountability, Comments on A-2239(a)-(c), June 1, 2016 at 12 ("management practices data aggregated at the township level provides no means for linking practices with water quality data").
[85] Water Code §§ 13260, 13263, 13267, 13350; *see, e.g.,* Gen. WDRs, para. 50, p. 15; Gen. WDRs § IV.A.1, p. 18; Gen. WDRs § IV.B.6, p. 19.

business information."[86] Nevertheless, it eliminates actual location information based on industry concerns that growers will leave the Third Party if field-level data, identified by location, is reported to the Regional Board. The State Board thus purports to strike the balance between the "value of fully functioning third party" against "additional burdens of receiving data that is largely anonymous."[87] It opts to strike that "balance" by withholding key information it concluded in 2016 to be vital.

Further, while the State Board had previously found that "housing the data set with the Central Valley Water Board supports the long-term security and integrity of the data set, given public agencies' obligations for record retention,"[88] it instead reverses course and states that the Third Party can store this information offsite for 10 years.[89] The Regional Board can, on a case-by-case basis, "require submittal of specific names or locations, or names or locations generally, should the Central Valley Water Board make a determination that it is necessary."[90]

The State Board claims that it will "periodically evaluate" whether the framework is "sufficient to enable to the oversight and transparency necessary to ensure measurable progress toward achieving quality requirements and may require disclosure of name and location data in the future if we find it is not."[91] This "evaluation" will purportedly start in 2022 when the Regional Board is first required to "report" on this issue to the State Board and only occur every two years.[92]

ii. The 2017 Proposed Order creates new and undefined categorical exemptions from nitrogen reporting.

The State Board now asserts, for the first time, that it recognizes "that there may be uniquely-situated categories of growers for whom the requirement for nitrogen management is inappropriate because applied nitrogen is not expected to seep below the root zone in amounts that would, even over multiple decades, reach groundwater, and is further not expected to discharge to surface water."[93] It further states that "any category of Members (such as growers of a particular crop or growers in a particular area) seeking to be exempted from irrigation and nitrogen planning and reporting requirements shall make a demonstration, for approval by the relevant regional water board, that nitrogen applied to the fields does not percolate below the root zone in any significant amount and does not migrate to surface water through discharges, including drainage, runoff, or sediment erosion."[94]

The State Board provides two examples of potentially exempt categories of growers. It explains, "[b]ased on written and verbal comments … we have been made aware that rice growers in the Central Valley region may have already made the required demonstration, but that will be a

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[86] 2017 Proposed Order redline at 50
[87] 2017 Proposed Order redline at 51.
[88] 2017 Proposed Order redline at 48 fn.129
[89] 2017 Proposed Order redline at 56; MRP V.D redline at 24 ("The third-party shall maintain all INMP Summary Reports received by the third-party and maintain all electronic database tables created from the INMP Summary Reports for a minimum of 10 years…").
[90] 2017 Proposed Order redline n.63.
[91] 2017 Proposed Order redline at 51.
[92] 2017 Proposed Order redline at 79.
[93] 2017 Proposed Order at 39, fn. 97.
[94] *Id.*

determination for the Central Valley Water Board to make in the first instance."[95] It continues, "[s]imilarly, members in the San Joaquin County and Delta Water Quality Coalition may have demonstrated that nitrogen applied to the fields does not percolate below the root zone, but must, at a minimum, additionally demonstrate that the applied nitrogen does not migrate to the surface water before the Central Valley Water Board could exempt them from the irrigation and nitrogen planning and reporting requirements."[96]

The 2017 Proposed Order does not explain the basis for such an exemption. Indeed, based on the languages in the 2017 Proposed Order, we doubt that any grower category can credibly demonstrate that nitrogen applied to the fields for an entire category of growers in a region "does not percolate below the root zone in any significant amount and does not migrate to surface water through discharges, including drainage, runoff, or sediment erosion."[97] Since this exemption is permanent for large swaths of farmland, growers will have to show that *no* significant discharge to groundwater or surface water will occur *over decades anywhere*. We doubt they can credibly make such a showing. To the extent they attempt to do so, and the Regional Board proposes these exemptions, such a determination must at the very least be subject to public review.

Nor does the State Board specify any *actual* criteria by which to make and evaluate the showing required to qualify for the exemption, deferring the development of the criteria to a future time. Yet the 2017 Proposed Order states that the as-yet undeveloped criteria will be precedential statewide.

2. Nitrogen Target Values and Outliers

a. 2017 Requirements for Determining Nitrogen Target Values and Outliers

Under the 2017 Proposed Order, the Third Party will provide the three sets of AR data to the Regional Board and calculate crop-specific removal coefficients.[98] The Third Party will then use the coefficients to calculate "R" values for crops and A/R and A-R values for reported fields and growers.[99]

The timeline for development of multi-year A/R target value ranges under the 2017 Proposed Order is as follows: The Third Party has until 2021 to publish coefficients (used to convert crop yield numbers to the "R" value for each crop) that cover 95% of cropland, and until 2023 to publish coefficients for 99% of cropland.[100] The coefficient determination will then go through public comment.[101] Within "three years" of the availability of the coefficient for each crop, but not by a date certain, the Regional Board must propose target values.[102] These proposed target A/R values will then be subject to an undefined exert panel process and public comment.[103] Thus, the earliest any multi-year A/R target values will be available is 2025.[104] After the values

[95] *Id.*
[96] *Id.*
[97] 2017 Proposed Order at 39.
[98] 2017 Proposed Order at 41.
[99] Proposed Order at 43-44.
[100] 2017 Proposed Order at 41.
[101] 2017 Proposed Order at 44.
[102] 2017 Proposed Order at 71.
[103] 2017 Proposed Order at 44.
[104] For example, the Agricultural Expert Panel's recommendations for nitrogen took almost two

are determined, the State Board will then decide whether and how they will be used to meet water quality objectives.

Once the Regional Board has determined multi-year A/R target values, "over the [succeeding] few years" it will use it as a guide to determine "acceptable ranges for multi-year A/R target values by crop." [105] The 2017 Proposed Order does not direct that these targets values be enforceable. The State Board instead punts the issue, asserting that "[i]t is premature at this point to project the manner in which the multi-year A/R ratio target values might serve as regulatory tools."[106] The Board explains that it will make any decision about how to actually use the A/R target values "only after convening [yet another] expert panel that can help evaluate and consider the appropriate use of the acceptable ranges for multi-year A/R ratio target values in irrigated lands programs statewide." [107] Without enforceable targets, the Regional Boards cannot reduce nitrogen over-application.

As to over-application, the 2017 Proposed Order directs the Third Party to identify outliers annually based on the INMP Summary Report data submitted for that particular year.[108] Due to the "limited data available," as well as the variation in conditions from field to field and from year to year,[109] the 2017 Proposed Order states that any definition of outliers is "imperfect"[110] and therefore leaves the term undefined in the WDR. The 2017 Proposed Order states that it is the State Board's expectation that outliers will be determined with reference to the ranges for the multi-year A/R ratio and A-R difference values developed by the Third Party and Central Valley Water Board.[111] It directs the Third Party to propose a set of Members, who may be over-applying nitrogen, with whom the Third Party will follow up.[112] When determining which Members may be over-applying, the Third Party may choose to set a standard that governs annually for a period of years to determine outliers.[113] Alternatively, the Third Party may propose and seek approval of a specific set each year.[114]

b. Changes to the Nitrogen Values and Outlier Calculations

Several changes between the 2016 and 2017 Proposed Order impose additional delay in the A/R process and weakens accountability. The 2017 Proposed Order pushes back the date for the Third Party to publish coefficients by two years (from 2019 to 2021 for 95% of cropland and from 2021 to 2023 for 99% of cropland).[115] Unlike the 2016 Proposed Order, which imposed an

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years to develop between the 2013 formation of the panel to the September 2014 publication of its report. Now, over three years the publication of the report, the State Board is still in the process of incorporating its recommendations into agricultural orders.

[105] 2017 Proposed Order at 44, 46; MRP § V.C, p. 17; MRP § V.D, p. 25.

[106] 2017 Proposed Order at 79-80.

[107] *Id.*

[108] 2017 Proposed Order at 55; Gen. WDRs § IV.8.c, p. 22; MRP § V.C, p. 17; MRP § V.D, p. 25

[109] 2017 Proposed Order at 55.

[110] 2017 Proposed Order at 55.

[111] 2017 Proposed Order at 55; Gen. WDRs § IV.8.a, c, p. 22; MRP § V.C, p. 17; MRP § V.D, pp. 24-27.

[112] 2017 Proposed Order at 55; Gen. WDRs § IV.8.a,c, p. 22; MRP § V.C, p. 17; MRP § V.D, pp. 24-27.

[113] *Id*.

[114] *Id.*

[115] 2017 Proposed Order redline at 44.

objective metric for determining outliers based on the AR data mean,[116] the 2017 Proposed Order gives the Third Party discretion to determine which "standard" it will apply to determine which growers require follow-up.[117]

Further, while the 2016 Proposed Order required all sources of nitrogen to factor into any evaluation of A/R outliers, the 2017 Proposed Order explicitly and without justification carves out an exception for outliers caused by application of irrigation water containing nitrogen.[118]

c. Problems with the 2017 Propose Order's Approach with Nitrogen

i. The 2017 Proposed Order lacks enforceable nitrogen targets and weakens accountability.

For numerous reasons, the 2017 Proposed Order fails to ensure actual reductions in nitrogen pollution will occur. As explained above, it fails to require the Regional Board to use the multi-year A/R target to *regulate* discharges. Without enforceable targets, the Regional Boards cannot effectively reduce nitrogen over-application.

Moreover, the State Board weakens its direction in the 2016 Proposed Order to use the A/R values and correlated field-level data set to ensure at least some level of accountability for nitrogen over-application. While the 2016 Proposed Order similarly failed to establish enforceable nitrogen targets, it at least required the Regional Board to use a "correlated set of field-level management practice implementation data, AR data, and water quality monitoring data" to assist the Regional Board in verifying that the Third Party is "appropriately following up with Members, evaluating the effectiveness of management practices in reducing over-application of nitrogen and in protecting surface water and groundwater, and developing, in coordination with the State Water Board and other regional water boards, acceptable ranges for multi-year A/R ratio target values."[119] Such tracking would provide some level of assurance that the Regional Board was targeting and addressing over-application of nitrogen. The 2017 Proposed Order thwarts even this modicum of accountability by eliminating this use of the "correlated data set," presumably because it is now impossible to create such a data set without the appropriate location identifiers.

Further weakening the 2016 Proposed Order, the 2017 Proposed Order leaves outlier determinations entirely within the discretion of the Third Party, with no standard for the Third Party to apply. The 2017 Proposed Order also states, for the first time and without justification, that a Member will not be identified as an outlier based on high AR data "solely due to application of nitrogen in irrigation water." This change is problematic because such application can cause nitrogen contamination.[120] In addition, the 2017 Proposed Order fails to specify how

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[116] 2017 Proposed Order at redline at 54 (directing the Third Party to collect and analyze the AR data and to "identify the mean and standard deviation and report values that are higher than one standard deviation removed from the mean" and report those values annually.)

[117] "The Third Party may choose to set a standard, approved by the Central Valley Water Board, that it applies annually for a period of years to determine outliers or may propose and seek approval of a specific set each year.

[118] 2017 Proposed Order at 55. "A Member will not be identified as an outlier based on high AR data solely due to application of nitrogen in irrigation water."

[119] 2017 Proposed Order at 85.

[120] 2017 Proposed Order at 55; 40-41 (explaining that the "nitrogen applied" value includes nitrogen from "any source" including "irrigation water").

the Regional Board or the Third Party will make the determination that the outlier status may be due "solely" to application of nitrogen in irrigation water. Since nitrogen is contained in irrigation water, all Members could potentially claim that they should not be considered outliers.

ii. The A/R and A-R values are unreliable and will fail to catch over-application.

The A/R approach established in the 2017 Proposed Order improperly bases the target values on grower-reported data, specifically the mean of the developed target value rather than best management practices. Using the "A" and "Y" information reported by growers, the Third Party develops the appropriate "R" values and the AR data sets that will be used to determine "target values" over time.

This method is flawed for the obvious reason that the grower-reported "A" values necessarily include values from fields where over-application is occurring. Therefore, the mean of existing levels of nitrogen application will be higher than the level needed to protect water quality.[121] For the same reason, the "outlier" approach, which will presumably be based on the inflated A/R target ranges, will not capture all dischargers who are over-applying nitrogen. In addition, the three-year average A/R that the State Board proposes makes little sense with annual crop rotation. As the State Board acknowledges, "fields are not always planted with the same crop for three consecutive years and…the boundaries of a field[] may change from year to year."[122] In these cases, the three-year average of the A/R and A-R values will not present reliable results. Indeed, since growers often specialize in crops and change fields, it will be impossible to identify a grower responsible for a particular field or to develop a meaningful SQMP or GQMP using an unreliable three-year running average as a metric.

iii. The 2017 Proposed Order delays the A/R target-setting for at least seven years and proposes no interim accountability measures to stop pollution.

At a minimum, the process for calculating multi-year A/R target values will take seven years to complete from the adoption of the General WDRs. As detailed in above, the calculation of the crop-specific coefficients and the develop of the A/R target values precede the calculation of the multi-year A/R target values).

In the meantime, nitrogen pollution will continue unchecked. As the public waits for this multi-year process to unfold, the State Board requires no action to address nitrogen contamination. It declines to use currently-available information on nitrogen uptake to set interim guidance for nitrogen application. In effect, knowing that nitrogen contamination of surface water and groundwater is extensive and seriously threatens human health and the environment, the State Board proposed a long a circuitous path that has no basis for successfully reducing pollution at its source: the farm. Under the 2017 Proposed Order, the public has no assurance that the State and Regional Boards will take the action necessary to reduce nitrogen contamination of groundwater and its harmful impacts on surface water. As explained in detail in Section IV, the 2017 Proposed Order's nitrogen management provisions violate numerous laws, including the

[121] Indeed, the State Board does not account for the perverse incentive that this mechanism may create. During the five-year period during which application data will be collected for developing the ranges for multi-year A/R target values, growers may have the opposite incentive: to apply more to be able to have higher target value, which would allow less stringent regulation in the future.

[122] 2017 Proposed Order redline p. 43 n.107.

public trust doctrine and the state's anti-discrimination mandate.

B. Surface Water Monitoring

1. The 2017 Proposed Order's Treatment of Surface Water Monitoring

The current surface water quality monitoring program, as established in the 2012 General WDRs and preserved in the current 2017 Proposed Order, is comprised of monitoring a few "core" sites and "represented" sites that are located in surface receiving waters—i.e. waters that "receive" discharges.[123] The Third Party monitors only a few "core" sites, asserted to be representative of "represented" sites elsewhere in the watershed.[124] The Third Party monitors the represented sites only if a core site has an exceedance.[125] In this way, the General WDRs adopt a representative monitoring approach, rather than a regional or watershed-based approach.[126]

In the 2017 Proposed Order, the State Board explains in no uncertain terms that the current monitoring system is insufficient.[127] According to the State Board, "the nonpoint source implementation program must 'include sufficient feedback mechanisms so that the [regional water board], dischargers, and the public can determine whether the program is achieving its stated purpose(s), or whether additional or different [management practices] or other actions are required.'"[128] And "[t]he representative monitoring of the General WDRs does not appear to meet that mandate."[129]

Specifically, the State Board finds two main problems with the General WDRs' "core" and "represented" site approach to detecting surface receiving water exceedances. First, according to the State Board, the composition of core and represented sites is insufficient. The monitoring system incorrectly assumes that an exceedance at a core site would be indicative of an exceedance at a represented site.[130] But the data, by the State Board's assessment, "does not bear this out."[131] After examining monitoring data, the State Board concludes that "monitoring at a represented site reveals exceedances for a different set of pollutants than the monitoring at the core site that triggered the requirement for sampling the represented site in the first place." According to the State Board, "the data suggests that there is enough variability in field-by-field

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[123] 2017 Proposed Order at 56-60; MRP §§ III.A-C, pp. 4-8.
[124] *Id.*
[125] *Id*.
[126] 2017 Proposed Order at 59; *see also* MRP § III.A-C, pp. 4-8. The monitoring program under the General WDRs must ensure that "existing and developing water quality problems are in fact detected and subsequently corrected and must provide for sufficient density of monitoring to achieve that purpose." 2017 Proposed Order at 60; *see also* 2017 Proposed Order at 17; MRP § II, p. 3; MRP § IV, p. 13; MRP-1 §§ I.C.4.d-e (SQMPs/GQMPs must incorporate specified compliance time schedules with milestones that have measurable performance goals aligned with the elements of the SQMP/GQMP strategy), p. 5; MRP-1 §§ I.D.1-3 (SQMP/GQMP's must be designed to measure effectiveness at achieving objectives and capable of determining whether management practice changes implemented in response to SQMP/GQMPs are effective and can comply with receiving water limitations), p. 5-6.
[127] 2017 Proposed Order at 58-59 (quoting Agricultural Expert Panel Report, p. 41).
[128] 2017 Proposed Order at 60; *see also* 2017 Proposed Order at 17.
[129] 2017 Proposed Order at 60.
[130] 2017 Proposed Order at 59.
[131] *Id.*

practices to yield significantly varied monitoring results from core sites to represented sites."[132] And the State Board recognizes additional upstream monitoring cannot be done until the SQMP is in place; and such a plan cannot be in place until an exceedance is detected at a core or represented site. Thus, as the State Board acknowledges, "water quality exceedances upstream or in an adjacent portion of the watershed to that of the core and represented sites may go undetected in the interim."[133]

Second, the State Board acknowledges that the core and represented monitoring sites do not have "sufficient spatial density or distribution" to detect exceedances or identify problem areas throughout the watershed.[134] Having "carefully reviewed" the surface water monitoring framework, the State Board cannot find that it is in fact "of sufficient density (spatially and temporally) to identify general locations of possible pollution.'"[135] Further, "[e]specially given that monitoring to date has indicated that discharges from irrigated lands are leading to some exceedances of receiving water limitations," the State Board finds that "the monitoring results of the Eastern San Joaquin Agricultural General WDRs indicate that a more comprehensive ambient monitoring program is necessary."[136]

Rather than ordering solutions, the State Board punts the question and calls for an "expert panel" to make recommendations on a "framework" for surface water monitoring to inform irrigated lands' programs statewide.[137] The State Board does not set a timeline for this process, which could take years, or direct any action at all to remedy the obvious existing problems with the current program. In the meantime, the current program from the 2012 General WDRs will remain in place. Furthermore, there is no guarantee that any of the expert panel's recommendations will actually be incorporated into future WDRs. The Regional Board will likely need additional time to determine what recommendations, if any, are relevant to its region, as the panel will consider monitoring issues statewide.

Finally, in addition to failing to set up a proper monitoring system, the 2017 Proposed Order prescribes outdated and ineffective toxicity testing. As detailed in the additional comments of The Otter Project, the short-term, three-day test prescribed in the General WDR uses three species for water toxicity and *Hyalella azteca* for sediment, which simply will not detect entire classes of toxic products used in the region.[138]

2. Changes from the 2016 Proposed Order's Treatment of Surface Water Monitoring

In contrast to the 2017 Proposed Order, which keeps the 2012 General WDR system in place, the 2016 Proposed Order required the Regional Board to "review and reconsider the provisions and reopen the General WDRs by March 1, 2017, to adopt a revised [surface monitoring] program."[139] It specified that, any revised program must "be on a scale sufficient to track water quality progress across the entire basin and collect data sufficient to cover conditions throughout the watershed" and, like the Central Coast Order and consistent with the Expert Panel's

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[132] *Id.*
[133] 2017 Proposed Order at 59-60; 2016 Proposed Order at 46.
[134] 2017 Proposed Order at 59; 2016 Proposed Order at 46
[135] 2017 Proposed Order at 58-59 (quoting Agricultural Expert Panel Report, p. 41.).
[136] 2017 Proposed Order at 60.
[137] 2017 Proposed Order at 61.
[138] *See* The Otter Project, Comments on A-2239(a)-(c), December 22, 2017.
[139] 2017 Proposed Order redline at 60-61.

recommendation, a new program "must incorporate monitoring elements that require the Third Party to pursue exceedances with increasingly focused monitoring upstream channels designed to narrow down and identify the approximate area and sources of the exceedances."[140] Finally, the 2016 Proposed Order required that, "[t]o the extent the Third Party relies on monitoring in a SQMP to identify and focus on sources of exceedances, the monitoring program should clearly state how that will be accomplished through the SQMP provisions."[141] While these fixes were not enough to remedy the program, they were a step in the right direction. And with respect to toxicity testing, while the 2017 Proposed Order made no direct changes to the flawed regime, although its shortcomings are exacerbated by other changes to the Order.

3. Problems with the 2017 Proposed Order's Approach to Surface Water Monitoring

Despite the State Board's acknowledgement of these glaring problems with the current monitoring system, it fails to propose any solutions in the 2017 Proposed Order and eliminates the improvements directed in the 2016 Propose Order. In the face of obvious, admitted problems and a pressing need to obtain adequate surface water quality information, the 2017 Proposed Order delays action, fails to require solutions to the already-identified problems, and weakens the 2016 Proposed Order's direction to specifically improve the program.

These deficiencies are a step backwards from the already-weak provisions of the 2016 Proposed Order that required the Regional Board to make specific improvements to the system and explain how its monitoring program complies with the requirements for SQMPs.[142] As detailed below in Section III below, there are numerous feasible options that the State Board could order now based on current knowledge.

Unlike the 2016 Proposed Order, the 2017 Proposed Order provides no date certain for change and does not require the Third Party to pursue exceedances upstream to identify their sources or to ensure SQMPs are reducing exceedances. The State Board's delay through a statewide expert panel will further delay attainment of water quality objectives and necessary information and accountability.

The 2017 Proposed Order also fails to require the obvious: increasing density and frequency of sampling, which the State Board acknowledged as a problem to be fixed.

Finally, in addition to lacking sufficient spatial and temporal density, the monitoring program fails to update toxicity tests so that they can detect new, toxic products applied to fields. The testing currently prescribed will not detect toxicity for entire classes of widely used pesticides that are currently applied in the region. The current testing is inconsistent with the Surface Water Ambient Monitoring Program guidance, which finds insufficient the three-day test currently ordered, and it fails to include tests using *Chironomus diutus* which are used in the other regions and could detect in-use toxic products currently overlooked. In addition, the 2017 Proposed Order fails to require chronic toxicity monitoring and testing that would capture episodic events when toxicity is likely to be present. As a result, the monitoring program will not detect exceedances of harmful pollutants or generate accurate results about whether receiving water limitations are met.

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[140] 2017 Proposed Order redline at 60 (citing Agricultural Expert Panel Report, p. 41).
[141] 2017 Proposed Order redline at 61.
[142] 2017 Proposed Order at 61.

The weakened monitoring and reporting requirements exacerbate the impacts of the outdated suite of toxicity tests. The existing system already fails to detect certain toxic discharges, and under the 2017 Proposed Order, the ability to actually identify and address the source of even detected exceedances is further eviscerated.

In this way, and as discussed further in Section IV, the 2017 Proposed Order's surface water monitoring program violates numerous laws, including the Porter-Cologne Act and the Nonpoint Source Policy.

C. Surface Water Quality Management Plans

The SQMP and GQMPs are purportedly the "primary vehicles" for requiring implementation of new and improved management practices under the General WDRs, as described by the State Board in the 2017 Order.[143] (GQMPs are discussed later.) How these plans work is therefore critical to the functioning of the entire program. However, as described below, the 2017 Proposed Order renders them ineffective. Before explaining these failures in the Order, we first provide an overview of how SQMPs are intended to protect water quality and the reporting requirements that are vital to this function.

1. Background on SQMP's Function

The objective of SQMPs is for Members in the SQMP's identified watershed to adopt management practices that will meet the General WDRs' receiving water limitations.[144] Because surface receiving water limitations do not apply to growers operating under an SQMP, the Order relies heavily on the SQMPs to identify and address exceedances, ensure improved management practices are implemented, and verify Members' compliance with receiving water limitations.[145]

The Third Party must develop SQMPs for watersheds where a constituent exceeded a water quality objective more than once in a three-year period from the same monitoring site.[146] Additionally, SQMPs may be required where there is a trend of water quality degradation that threatens a beneficial use.[147]

As mentioned above, growers are exempt from receiving water limitations if they operate within the geographic parameters of an SQMP and implement recommended management practices.[148] In fact, all Members that operate in an SQMP's area[149] and implement recommended

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[143] 2017 Proposed Order at 72; *see also* Information Sheet at 14 ("SQMPs are the key mechanism under this [WDR] to help ensure that waste discharges from irrigated lands are meeting Surface Receiving Water Limitation III.").
[144] Gen. WDRs § III.A (Surface Water Limitations), p. 18. *See also,* p. 18, fns. 18-19.
[145] 2017 Proposed Order at 72; MRP § IV, p. 13; MRP-1 §§ I.C.4.d-e, p. 5; MRP-1 §§ I.D.1-3, p. 5-6.
[146] 2017 Order, pp. 14-17, 71-72; Gen. WDRs § VIII.I.2.a-b, p. 37 and fns. 35-36; MRP § III.A.1-2, p. 4-5, with fns. 3-4, p. 5; MRP § IV, p. 13; MRP § V.C, p. 23-24; MRP § VIII, p. 38; MRP-1 §§ I.A-B, pp. 2-4.
[147] *Id.*
[148] Gen. WDRs § III, p. 18, fn. 18.
[149] The "area" of the SQMP would depend on the conditions that triggered the SQMP's development. For example, if a constituent exceeded its water quality objective two or more times from the same monitoring site in a three-year period, and that site was a core site, the SQMP would cover the entire sub-watershed, which is 1/6 of Eastern San Joaquin. *See* MRP §

management practices benefit from such exemption, as the WDRs do not appear to place any additional restrictions on eligibility.[150] The exemption renders the receiving water limitations nugatory if SQMPs do not actually protect water quality.

The exemption impacts a substantial number of Members in Eastern San Joaquin Region, as SQMPs are typically developed for large areas and cover a substantial number of surface water users in the region.[151] Additionally, the General WDRs allow the Third Party to develop a single Comprehensive SQMP, rather than individual SQMPs, so long as the compliance timeframes are the same.[152] The Third Party has in fact chosen this option and adopted a Comprehensive SQMP for all of Eastern San Joaquin.[153]

The Third Party updates the Comprehensive SQMP annually by assessing, based on monitoring data, whether the 'represented' sites should add or decrease monitoring of particular constituents, based on monitoring data.[154] If a constituent exceeds a water quality objective more than once from the same site in a three-year period, it is monitored under the SQMP.[155] If a constituent being monitored under a SQMP has not exceeded the water quality objective for three consecutive years, the SQMP for that constituent is deemed completed.[156] In this manner, the Third Party determines whether affected Members are either not subject to the WDRs' receiving water limitations or in compliance with them, respectively. [157]

Even though SQMPs are supposed to address water quality problems in areas where exceedances of water quality objectives have been detected, [158] the Order allows Members that are operating in the area of a SQMP up to 10 years to comply with the receiving water limitations.[159]

SQMPs also supposedly incorporate key provisions of the Nonpoint Source Policy.[160] Indeed, SQMPs are purportedly one of the primary mechanisms for the General WDRs to comply with the NPS Policy under the Irrigated Lands Regulatory Program.[161] Specifically, SQMPs must

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III.A-C, pp. 4-8.
[150] *See* Gen. WDRs § III, p. 18, fns. 18-19; Information Sheet, p. 20.
[151] *Id.*
[152] Gen. WDRs § VIII.I.3-4, p. 38; Information Sheet, pp. 13-14.
[153] *Id.*
[154] *Id.; see also* MRP § III.A-C, pp. 4-8.
[155] Gen. WDRs § VIII.I.1 (Members shall comply with SQMPs/GQMPs, once approved by Regional Board), p. 36; Gen. WDRs § VIII.I.1 (Third Party's general responsibilities under SQMPs/GQMPs), pp. 36-37; Gen. WDRs §§ VIII.I.2-3 (conditions mandating Third Party to develop a SQMP/GQMP, conditions where Third Party has discretion to do so, and conditions where no SQMP/GQMP is required), pp. 37-38, see also fns. 35-36 (defining "exceedance" for surface and groundwater and acceptable data to make determination); MRP § III.A.1-2, p. 4-5, with fns. 3-4 (SQMP required for areas where monitoring sites detect more than one exceedance of same constituent at same site in a three-year period), p. 5
[156] MRP-1 § III (Third Party and Regional Board's requirements to complete SQMPs/GQMPs), pp. 8-9.
[157] Gen. WDRs § III, p. 18, fn. 18.
[158] MRP-1 § I.A-B, pp. 2-4.
[159] Gen. WDRs § III.A p. 18. *See also,* p. 18, fn. 18; fn. 18; Gen. WDRs § XII, p. 41
[160] 2017 Proposed Order at 14-17, 71-72; MRP § VIII p. 38; MRP-1 §§ I.A-Bpp. 2-4; §§ I.C.4.d-e, p. 5; MRP-1 §§ I.D.1-3, p. 5-6.
[161] 2017 Proposed Order at 14-17; 71-72; Information Sheet, pp. 14, 20, 30; Gen. WDRs'

provide a time schedule for compliance with receiving water limitations that is no longer than 10 years.[162] The compliance schedule must include milestones, including the time needed for the Third Party to identify the new management practices that will bring Members into compliance, the deadline by which Members must implement the identified practices, and the time necessary for the Third Party to verify compliance.[163] Last, SQMPs are required to incorporate a monitoring system that provides reliable feedback on progress implementing the SQMPs and the effectiveness of the new management practices to meet receiving water limitations.[164]

Members' responsibilities under the SQMPs are primarily to implement the recommended management practices and report the same to the Third Party in MPIRs.[165] In addition, Members must attend training and educational programs provided by the Third Party to address water quality problems, such as exceedances.[166]

For its part, the Third Party is required to "develop and implement plans to track and evaluate effectiveness of water quality management practices, pursuant to approved [SQMPs]."[167] Initially, the Third Party is required to determine areas where irrigated agriculture may cause or contribute to surface or groundwater quality degradation, including assessment of water quality monitoring data and the physical setting of the areas.[168] The Third Party must then develop a strategy, with a time schedule and milestones, to identify and implement management practices that will meet the General WDRs' receiving water limitations.[169] The Third Party must also develop a monitoring strategy to provide feedback on SQMP progress and to measure the effectiveness of the new management practices at addressing the water quality problem.[170]

To assess necessity, design, implementation and evaluation of SQMPs, the Third Party is expected to collect data from an expansive list of sources. First, Members annually submit management practice implementation data pursuant to SQMPs in MPIRs.[171] The Third Party also assesses the Members' management practice data submitted in their Farm Evaluations (every five years) and annual INMP Summary Reports.[172]

Attachment B, Monitoring and Reporting Program ("MRP") § II, p. 3.

[162] 2017 Order, pp. 14-15, 71-72; Gen. WDRs § XII (time schedule to comply with receiving water limitations), p. 41; MRP-1 § I.C.4.d, p. 5.

[163] 2017 Order, pp. 15-17, 71-72; § MRP-1 § I.C.4.e, p. 5; Information Sheet, pp. 14, 20; *see also* Gen. WDRs § IV.C.4, p. 21; Gen. WDRs § IV.C.6, p. 22; Gen. WDRs § IV.C.8, p. 22; Gen. WDRs § IV.C.9, p. 22.

[164] 2017 Order, pp. 15-17, 71-72; MRP § III.C.1, p. 7; MRP-1 §§ I.D.1-3, pp. 5-6; Information Sheet, pp. 14, 20.

[165] 2017 Proposed Order, pp. 14-17, 71-72; Gen. WDRs § VII.G (Members' reporting requirements under SQMP/GQMPs), p. 31; Gen. WDRs § VIII.I.1 (Members shall comply with SQMPs/GQMPs once approved by Executive Officer), p. 36.

[166] Gen. WDRs § VIII.I.1; Gen. WDRs § IV.C.8, p. 22.

[167] Gen. WDRs § IV.C.4, p. 22; Gen. WDRs § IV.C.9, p. 22; Gen. WDRs §§ VIII.I.1, pp. 36-37; Gen. WDRs § VIII.I.2.a-b, p. 37 and fns. 35-36; MRP-1 §§ I.A-B, pp. 2-4; MRP-1 §§ I.C.4.d-e, p. 5; MRP-1 §§ I.D.1-3, p. 5-6; MRP-1 §§ I.E-G, pp. 6-7.

[168] MRP § VIII, p. 38; MRP-1 §§ I.A-B, pp. 2-4.

[169] Gen. WDRs § IV.C.4, p. 22; Gen. WDRs § IV.C.9, p. 22; Gen. WDRs § XII, p. 41; MRP-1 §§ I.A-B, pp. 2-4; §§ I.C.4.d-e, p. 5; MRP-1 §§ I.D.1-3, p. 5-6; MRP-1 I.F, pp. 6-7.

[170] Gen. WDRs § IV.C.4, p. 21; Gen. WDRs § IV.C.6, p. 22; MRP-1 §§ I.D.1-3, p. 5-6.

[171] Gen. WDRs § VII.G, p. 31; Gen. WDRs § VIII.I.1, p. 36; MRP § V.C, pp. 23-24.

[172] MRP § V.C., pp. 23-24.

Second, the Third Party implements the General WDRs' surface monitoring programs.[173] Significantly, these monitoring programs provide information on Regional water quality conditions, based on representative monitoring, despite that the General WDRs' receiving water limitations apply to individual Members.[174]

The Third Party may also conduct studies to determine whether SQMPs are indicated. If water quality problems are found but the extent to which irrigated agriculture may be a source is unknown, the Third Party may delay development of an SQMP to study the water quality problem or, at least, rule out irrigated agriculture as the source.[175] The Third Party must continue to monitor the area while it conducts the source study and, if it finds irrigated agriculture may be a source, a full SQMP must be implemented.[176]

Finally, the Third Party is responsible for submitting its assessments and underlying data to the Regional Board.[177] The two most significant reports pertinent to SQMPs are the annual Members' MPIRs and the Management Plan Progress Summary Report. Members' data submitted with these reports are submitted to the Regional Board for each field according to an anonymous Member ID, but without identifying the location of the fields. *Id.*

The Regional Board, in turn, is responsible for approval of the SQMP (and updated plans).[178] Approval requires the Board to circulate proposed SQMPs for public review.[179] The Regional Board also determines when SQMPs are "complete" (i.e., the Third Party demonstrates that Members in the area are in compliance with receiving water limitations).[180] Finally, the Regional Board must periodically review the Plans (at least every five years) to determine its adequacy and progress.[181]

2. Reporting Relevant to SQMPs

a. Requirements in the 2017 Proposed Order

As discussed above, the 2017 Proposed Order requires various types of reports: INMP Summary Reports, Farm Evaluations, and, when SQMP or GQMPs apply, MPIRs. Growers report information to the Third Party, which summarizes it and anonymizes any field-level identifiers before reporting this information to the Regional Board.

For Farm Evaluations, the 2017 Proposed Order requires growers to submit their evaluations to

[173] Gen. WDRs § IV.C.4, p. 21; Gen. WDRs § IV.C.6, p. 22.
[174] 2017 Proposed Order at 59; Gen. WDRs III, p. 18, fn. 18-19;
[175] Gen. WDRs § VIII.I.2.b, p. 37; MRP-1 § I.G, p. 7.
[176] *Id.*
[177] Gen. WDRs § VIII.1, pp. 36-37; MRP § V.C, pp. 23-24; MRP-1 § I.F, pp. 6-7.
[178] Gen. WDRs § VIII.I.1, p. 36; MRP-1 § II (Regional Board's responsibilities to approve and review SQMPs/GQMPs), pp. 7-8; MRP-1 § III (Third Party and Regional Board's requirements to complete SQMPs/GQMPs, (i.e., Third Party must demonstrate Members in region comply with General WDRs' Receiving Water Limitations), pp. 8-9.
[179] Gen. WDRs § VIII.I.1, p. 36.
[180] MRP-1 § III (Third Party and Regional Board's requirements to complete SQMPs/GQMPs, (i.e., Third Party must demonstrate Members in region comply with General WDRs' receiving water limitations), pp. 8-9.
[181] MRP-1 § II (Regional Board's responsibilities to approve and review SQMPs/GQMPs), pp. 7-8.

the Third Party every five years.[182] Farm Evaluations are the "mechanism for identification of the on-farm management practices implemented to achieve the General WDRs' management practice performance standards."[183] For MPIRs, the 2017 Proposed Order requires growers who are subject to SQMPs or GQMPs to submit these reports to the Third Party.[184] The State Board "expects" this reporting will occur "at least annually" and "based on the implementation cycle of the applicable management practices."[185] MPIRs are intended to enable the evaluation of whether growers under SQMPs and GQMPs are in fact changing management practices and whether such changes are effective to address water quality problem.

The Third Party reports growers' management practice implementation data to the Regional Board annually, based on data submitted by growers in the Farm Evaluations, MPIRs and INMP Summary Reports.[186] The data is anonymized and, as revised in 2017 Proposed Order, submitted without field location identifiers.[187] The 2017 Proposed Order provides an illustrative example of the management practice table (Table 1) that the Third Party submits to the Regional Board, with information from all three reports and anonymous identifiers for Member names.[188]

The Third Party also submits an annual Management Plan Progress Report to the Regional Board, which summarizes the management practices recommended to growers, information concerning the number of growers that have implemented such practices, and assessment of their effectiveness to address water quality problems.[189]

b. Changes in Reporting from Prior Versions of the Order

While the 2017 Proposed Order adds requirements for forms and process to management practice reporting, it does little to fix the 2012 General WDRs' inadequacies. Under the 2012 Order, growers submitted Nitrogen Summary Reports to the Third Party every year; they also submitted Farm Evaluations every year in high vulnerability areas and every five years in low vulnerability regions.[190] The Third Party aggregated this information before submitting it to the Regional Board, and it did not attached field-level identifiers to the management practice information.

The 2016 Proposed Order sought to improve this system, albeit marginally, by requiring the Third Parties to submit the INMP Summary Reports information with field-level identifiers including field location.[191] The 2016 Proposed Order also changed the reporting frequency of Farm Evaluations from every five years to annually and required field-level identifiers to be included in the reports to the Regional Board.[192]

The 2017 Proposed Ordered reverses the 2016 approach, requiring the Third Party to anonymize

[182] Gen. WDRs § VII.B.1-2, pp. 25-26.
[183] 2017 Proposed Order redline, p. 28
[184] Gen. WDRs § VII.G, p. 31.
[185] 2017 Proposed Order redline, p. 72.
[186] Gen. WDRs § VIII.D, p. 34; MRP § IV, p. 13; MRP § V; MRP § V.C, pp. 22-23.
[187] MPR § V.C, pp. 23-24.
[188] 2017 Proposed Order at 87.
[189] MPR-1 § § I.F.1-13, pp. 6-7.
[190] 2016 Gen. WDRs § VII.B.1-2, p. 26.
[191] 2017 Proposed Order redlined at 27-29, 30-35.
[192] 2017 Proposed Order redlined at 27-29, 30-35.

the grower name and field location in the INMP summary reports, [193] changing the Farm Evaluation reporting frequency back to five years,[194] allowing the Third Party to anonymize grower names in the Farm Evaluations, and eliminating field location identifiers entirely.

The 2017 Proposed Order introduces the MPIRs for the first time, which, as with Farm Evaluations, the Third Party reports to the Regional Board without grower names and field location identifiers. [195] While the State Board presented MPIRs as "strengthen[ing]" reporting requirements, [196] the MPIRs in fact contain the same management practice information that would have been reported annually in Farm Evaluations under the 2016 Proposed Order, and now only growers who are covered by SQMPs and GQMPs must submit this information. Therefore, under the 2017 Proposed Order's MPIR requirement, the Regional Board and the public have access to the same management practice implementation information as they would have had under the 2016 Proposed Order but from fewer growers. [197] We explain the consequences of these 2017 reporting changes on SQMPs below and demonstrated the interrelated nature of the various components of the 2017 Proposed Order.

3. The Effects of the 2017 Monitoring and Reporting Changes on SQMPs

The 2017 changes to reporting and monitoring eviscerate the SQMPs, which are intended to be the "backbone" of the nonpoint source regulatory framework."[198] By withholding important information about management practices and by failing to improve surface water monitoring, the 2017 Proposed Order cannot protect water quality through use of SQMPs and the "iterative" process that it proposes.[199] We describe how the 2017 Proposed Order renders SQMPs ineffective.

b. Problems in Reporting and Monitoring Under the SQMPs

The 2017 Proposed Order does not directly alter the SQMP provision. However, changes to other key provisions of the Order undermine the entire SQMP structure, which is particularly significant given the important function SQMPs are intended to perform. Specifically, the 2017 revisions to reporting and monitoring that remove field-level location identifiers and maintain the deficient receiving water monitoring system render the SQMPs ineffective and unable to demonstrate compliance with the law.

i. Anonymization and lack of location identifiers for management practices information undermines the SQMPs function.

The State Board emphasized in the 2016 Proposed Order how important it was that the Regional Board receive the Members' data identified by field location. [200] In the order, the State Board noted that, although the Nonpoint Source Policy allows reliance on management practice implementation to control sources of pollution, feedback mechanisms are necessary to reliably

[193] MRP § V, p. 22.
[194] Gen. WDRs § VII.B, pp. 25-26.
[195] 2017 Proposed Order redlined at 30-35; Gen. WDRs § VII.G, p. 31; Gen. WDRs § VIII.D, p. 34; MRP § V, p. 22.
[196] 2017 Proposed Order at 28.
[197] *See, e.g.,* MRP § V.C, pp. 22-23.
[198] 2017 Proposed Order redline at 16, 72.
[199] 2017 Proposed Order redline at 28, 83.
[200] 2017 Proposed Order redlined at 27-29, 30-35.

measure and verify the effectiveness of new management practices in complying with receiving water limitations.[201] Thus, a nonpoint source discharge control program is designed to link its implementation to expected water quality outcomes and adaptively manage the program to institute improved management practices where they are needed to meet water quality requirements.[202] That feedback mechanism relies on the availability of information on the management practices currently being implemented and the changes and improvements made to those management practices from year to year.[203]

As the State Board concluded in adopting the 2016 Proposed Order, it is important for the Regional Board to receive Members' management practice data on a field level, identified by location, to allow the Regional Board to conduct meaningful evaluation of management practices and their effectiveness.[204] Where, for example, surface water monitoring indicates toxicity in a given area, the Regional Board should review pesticide management practice implementation information submitted for fields within the area.[205] Linking the management practice implementation with water quality monitoring for the area would significantly enhance the Regional Board's ability to determine whether implemented management practices are in fact minimizing waste discharges to surface water. [206]

This linkage is particularly significant for SQMPs because they are designed and implemented to address known water quality degradation caused, at least in part, by irrigated agricultural practices. The connection is the "feedback" mechanism that is a key requirement of the General WDRs, as a program under the Nonpoint Source Policy, and the SQMPs.[207] For example, an exceedance detected by monitoring will trigger a SQMP that covers an area as large as is represented by the particular monitoring site.[208] Thus, the location of the fields (particularly in relation to other fields) under the SQMP is crucial information to assess the effectiveness of the SQMP to implement changes in management practices that improve water quality. It would also help the Regional Board to exercise reasonable oversight over the Third Party in its follow up engagement with Members to require improved management practices through outreach or through a SQMP.[209]

The State Board further stated that the most direct manner in which to link management practices at the field level with water quality data is to use location as the common identifier.[210] The evaluation of such data, identified by location, "will be critical for the ongoing development and improvement of the irrigated lands regulatory program to appropriately protect water quality."[211]

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[201] 2017 Proposed Order redline at 13-17, 31-32.
[202] *Id.*
[203] *Id.*; *see also* MRP § IV, p. 13.
[204] 2017 Proposed Order redline at 30-35, 58-61.
[205] *Id.*
[206] *Id.*
[207] 2017 Proposed Order at 13-17, 31-32; 2017 Proposed Order redlined at 30-35, 58-60; Gen. WDRs § IV.C.6, p. 22; MRP-1 §§ I.C-D, p. 4-6.
[208] Gen. WDRs § III, p. 18 fn. 18; Gen. WDRs § VIII.I.3, p. 38; MRP § I.A-C, pp. 4-8; MRP-1 § I.A-B, pp. 2-4; Information Sheet, pp. 13-15.
[209] 2017 Proposed Order redlined at 30-35; Gen. WDRs § VIII.I.1, p. 36; MRP § IV, p. 13; MRP-1 § II-III, pp. 7-9
[210] 2017 Proposed Order redline at 30-35.
[211] 2017 Proposed Order redline at 33

Without grower names and location identifiers, the Regional Board loses its ability to assess the effectiveness of SQMPs and to link management practices to improvement of water quality.[212] The Regional Board is responsible for oversight of SQMPs.[213] The Board's oversight cannot be effective if it lacks sufficient information to assess the plans' adequacy and the Members' compliance with the General WDRs.[214] The anonymized information under the MPIR, as well as the other reports which allow assessment of the effectiveness of the SQMPs by linking management practices to water quality, hinders the Regional Board's ability to perform this critical function.[215]

In defense of the MPIRs' anonymized reporting, the State Bard incorrectly states that "[t]he field-level anonymous management practice implementation data … will allow the Central Valley Water Board and stakeholders to verify that the Third Party is following up with appropriate Members and that the Members are implementing improved practices in response to the follow up."[216] According to the State Board, the Regional Board will still be able to "correlate management practice implementation data from the INMP Summary Report and MPIR with AR data for use in statistically valid analyses to identify effective and ineffective management practices to reduce nitrate loading."[217]

This conclusion is not supported by the facts. With the information reported, neither the public nor the Regional Board can determine *where* exceedances are occurring, *which* management practices and farms might be contributing to such exceedances and *whether* effective management practices are being implemented over time, as required by the General WDRs.[218] Further, the reported management practices are imprecise and the public has no way of verifying whether the Third Party "follow-up" has occurred. As the State Board itself has acknowledged, location data is essential for verification: "[W]here…surface water monitoring indicates toxicity in a given area, the Central Valley Water Board should review the pesticide management practice implementation information submitted for fields within the area."[219] Without location data, neither the Regional Board nor the public can take this critical "verification" step.

ii. The flawed surface water monitoring system makes achievement of water quality objectives through SQMPs impossible.

Because the monitoring program is deficient, the SQMPs cannot ensure that water quality objectives are met within the 10-year compliance deadline required by the General WDRs.[220] As explained the General WDRs establish receiving water limitations which provide that "[w]astes discharged from Member operations shall not cause or contribute to an exceedance for applicable water quality objectives in surface water [and groundwater], unreasonably affect applicable beneficial uses, or cause or contribute to a condition of nuisance."[221] However, these

[212] 2017 Proposed Order at 17, 31-32; 2017 Proposed Order redlined at 30-35; Gen. WDRs § IV.4, 6, 9, pp. 22-23; MRP § IV, p. 13; MRP-1 § I.C-D, pp. 4-6
[213] Gen. WDRs § VII.G, p. 31; Gen. WDRs § VIII.I.1, pp. 36-37; MRP-1 § II, pp. 7-8; MRP-1 § III (Third Party and Regional Board's requirements to complete SQMPs/GQMPs, pp. 8-9.
[214] 2016 Proposed Order sy 27-29.
[215] *Id.*; *see also* Gen. WDRs § VIII.D, p. 34; MRP § V, p. 22; MRP-1 § I.C-D, pp. 4-6
[216] 2017 Proposed Order redline at 77.
[217] 2017 Proposed Order redline, p. 78.
[218] *See, e.g.,* 2017 Proposed Order at 13-17, 58-60; MRP § IV, p. 13.
[219] 2017 Proposed Order redline, p. 32.
[220] Gen. WDRs § XII, p. 41.
[221] Gen. WDRs § III, p. 18.

limitations *do not apply* to growers operating under a Surface Water Quality Management Plan ("SQMP") or a Groundwater Quality Management Plan ("GQMP"). And dischargers have *10 years* after requisite consecutive exceedances and a SQMP is adopted before the commencement of the 10-year period to comply with receiving water limitations.[222]

The 2017 Proposed Order's failure to fix the flawed monitoring system thus contradict the State Board's contention that the General WDRs are consistent with the Nonpoint Source Policy's requirements that orders implementing a nonpoint source program comply with water quality objectives.[223] The State Board asserts that the General WDRs comply with this Nonpoint Source Policy requirement because the WDRs' receiving water limitations take effect immediately, except for Members that are addressing exceedances pursuant to a SQMP, who must attain compliance with the receiving water limitations in no more than 10 years.[224] However, that 10-year time schedule is dependent upon the surface monitoring program's ability to actually *detect* the exceedances that trigger the adoption of an SQMP.[225] As acknowledged by the State Board, the surface receiving water monitoring program cannot do so because the monitoring program at issue here lacks the spatial and temporal density to identify exceedances throughout the watershed.[226] While water quality monitoring at core and represented sites is "supplemented by additional, potentially upstream, monitoring under an SQMP," when triggered, "the problem is that a SQMP is not triggered until an exceedance is detected at a core or represented site." As a result, "[w]ater quality exceedances upstream or in an adjacent portion of the watershed to that of the core and represented sites may go undetected in the interim."[227] The 10-year period does not start until exceedances are detected, which this monitoring program is incapable of detecting.

As a result, the deficiencies with the surface monitoring program under the 2017 Proposed Order make it impossible for Members to comply with water quality requirements within 10 years, as required under the General WDRs and the Nonpoint Source Policy, contrary to the State Board's contention otherwise.[228] Because of these deficiencies, and as further explained below in Section IV, the 2017 Proposed Order violates numerous laws, including the Porter-Cologne Act and the Nonpoint Source Policy.

D. Other Problems with Farm Evaluation Reporting Changes

Separate and apart from its effects on SQMPs, the reduction in Farm Evaluation reporting frequency from annually to every five years for all growers weakens other aspects of the General WDRs.[229] Because the Third Party only receives management practice information in the Farm

[222] 2017 Proposed Order, pp. 14-15, 71-72; Gen. WDRs § III.A, p. 18 fn. 18; Gen. WDRs § VIII.I.2, p. 37, fn. 35; Gen. WDRs § XII, p. 41; MRP § I.A-C, pp. 4-8; MRP § VIII, p. 38; MRP-1 § I.A-B, pp. 2-4; MRP-1 § I.C-D, pp. 4-6.
[223] Nonpoint Source Policy, Key Elements 1-5, p. 13; 2017 Proposed Order at 14-17, with fn. 45 at p. 15; *see also* Gen. WDRs § IV.A.3, pp. 18-19; Gen. WDRs §§ IV.B.6, 8, p. 22; MRP § II, p. 3; MRP § III.C.1, p. 7; MRP-1 § I.C-D, pp. 5-6.
[224] 2017 Proposed Order at 14-17, with fn. 45 at p. 15; Gen. WDRs § III.A, p. 18, fn. 18; Gen. WDRs § XII, p. 41; *c.f.* 2017 Proposed Order at 59-60.
[225] 2017 Proposed Order at 14-17, 58-60; Gen. WDRs § III, p. 18 fn. 18; Gen. WDRs § XII, p. 41; Gen. WDRs §§ IV.B.6, 8, p. 22; MRP § II, p. 3; MRP § III.C.1, p. 7; MRP § IV, p. 13; MRP-1 § I.C-D, pp. 4-6.
[226] 2017 Proposed Order at 59-60.
[227] 2017 Proposed Order at 59-60; *see also* Gen. WDRs § VIII.I.2, p. 37.
[228] 2017 Proposed Order at 15, fn. 45, 17, 59-60, 71-72.
[229] Gen. WDRs § VII.B, pp. 25-26.

Evaluations every five years, the Regional Board will no longer have up-to-date knowledge about the practices employed by growers who do not fall under the SQMPs and GQMPs. The State Board claims this decrease in frequency is justified because "annual submission of the Farm Evaluations is necessary only when water quality problems indicate the need for iterative updating of implemented management practices," and because "[b]ased on the experience of the East San Joaquin Water Quality Coalition to date, most implemented management practices otherwise remain fairly stable from year to year."[230] This statement in fact supports the opposite conclusion from the one that the State Board makes: since management practices (business as usual) are obviously causing water quality problems, as discussed in Section I above, the General WDRs must require standards to force a change in how farms manage pollution; and thus management practices should not remain "stable," but must change; and such changes should be reported more frequently.

The 2017 Proposed Order further states that the "Executive Officer may require more frequent Farm Evaluations," including for example, if that member is an "outlier" for nitrogen application.[231] But as explained above, "outliers" will not be identifiable for up to five years because the A/R target value will at least that long to develop.
The Regional and State Boards' ability to "verify the correlation between new or improved management practice implementation and water quality improvements" depends on updated annual information about management practices.[232]

E. Drinking Water Supply Well Monitoring and Notification

In the 2017 Proposed Order, the State Board acknowledges that groundwater contamination in the Eastern San Joaquin Valley poses a serious health risk to residents, especially pregnant women and children, who consume water from contaminated drinking water supply wells.[233] The health-based maximum contaminant level ("MCL") for nitrate in drinking water is 10 mg/L,[234] and the State Board explains that, "given the public health risk associated with drinking water that exceeds the MCL levels, the only way to ensure that public health is fully protected is to require sampling of every drinking water supply well."[235]

1. Drinking Water Supply Well Requirements in the 2017 Proposed Order

The 2017 Proposed Order requires testing of all on-farm drinking water supply wells starting "after" January 1, 2019 or at some later date if, prior to January 1, 2019, the State Water Board determines that the legislature has "established a comprehensive statewide program that assures that private drinking water wells will be routinely monitored for nitrate contamination and users of those wells notified of the results."[236]

Testing must be annual unless test results demonstrate three years of levels below 8mg/L, in which case the test frequency can be reduced from annual to every five years. The Executive Officer may require an alternative sampling schedule at any time.[237] Once samples are collected

[230] 2017 Proposed Order at 28.
[231] 2017 Proposed Order n.80.
[232] 2017 Proposed Order at 72.
[233] 2017 Proposed Order at 63.
[234] 2017 Proposed Order at 63.
[235] 2017 Proposed Order at 64.
[236] 2017 Proposed Order at 65-66.
[237] 2017 Proposed Order at 63.

and analyzed, all monitoring results must be submitted directly to GeoTracker, the state's public database for tracking groundwater quality. If monitoring shows an exceedance of 10 mg/L of nitrate, growers are required to notify users within 10 days and send a copy of the notice to the Regional Board.[238] The 2017 Proposed Order states that the State Board "expects" that the Regional Board will, "where appropriate, act promptly to require the Member to provide users with safe drinking water for consumption,"[239] but does not require such provision.

2. Changes from Prior Versions

The 2017 Order's requirement that all testing results from both public and private supply wells be made publicly available on Geotracker addresses the 2016 Proposed Order's failure to require disclosure of private well test results. However, the 2017 Proposed Order's delay of the monitoring start date an entire year from 2018 (as required in the 2016 Proposed Order) to 2019, and its conditioning of the start date on legislation is a step backwards. As detailed below, the shortcomings of the 2017 Proposed Order are numerous and exacerbated the other components of the order that fail to address agricultural pollution.

3. The 2017 Proposed Order lacks important drinking water provisions.

In numerous respects, the 2017 Proposed Order fails to ensure proper testing. As detailed above, the 2017 Proposed Order's approach to addressing nitrogen pollution is deeply flawed and will not even begin to consider setting target values for source reduction until far in the future. Further, the 2017 Proposed Order's weakening of the reporting requirements and the "feedback mechanism" for ensuring management practices lead to reduction in receiving water exceedances means that pollution of drinking water sources will remain, and indeed worsen, in the near future. These deficiencies in the 2017 Proposed Order underscore the need to begin drinking water testing now, increase the number of parameters, provide sufficient notice to all users, and guarantee replacement water.

a. Testing is delayed and insufficient.

First, the January 1, 2019 start date for testing in the 2017 Proposed Order is too far into the future and contingent upon legislation.[240] If legislation does not pass, and drinking water supply well testing begins in 2019, residents will have continued to drink and cook with harmful contaminated water for over a year, and possibly two years if farmers wait until the end of 2019 to test their wells. There is no guarantee that appropriate legislation will pass, and even if it does, the time from passage of legislation to actual implementation may take years, leaving residents uninformed and unable to protect themselves from drinking contaminated water. Residents need to know now if the water they are using is contaminated. They cannot take steps to protect themselves if they do not know. Testing and noticing should begin immediately.

Second, the five-year test frequency allowed for in the 2017 Proposed Order is not sufficient to protect residents from contaminated water even if a grower can demonstrate three years of levels below 8mg/L.[241] Drinking water supply well conditions can change within months, and users of that well should not go for years without appropriate monitoring, risking the serious health risks

[238] 2017 Proposed Order at 64; 2017 Gen. WDRs § VII.E, p. 30; MRP § IV.A (Drinking Water Supply Well Monitoring), p. 15.
[239] 2017 Proposed Order at 64.
[240] Proposed Order at 65-66; Gen. WDRs § VII.E, p. 30; MRP § IV.A, p. 14-15
[241] MRP § IV.A (Drinking Water Supply Well Monitoring) at 14.

associated with contaminated water exceeding MCLs. Drinking water supply wells must be tested at least once a year.

Third, there is also no specification as to when testing should be conducted. The water quality can change often depending on the agricultural activity. In the Central Coast for example, testing in the spring will result in lower nitrate levels while testing in the fall will show higher nitrate levels in the same well. The purpose of testing is to protect the health of residents who use that water to drink and cook. To ensure residents are protected, drinking supply wells should be tested when contamination levels are likely to be higher.

Fourth, the 2017 Proposed Order does not require monitoring of constituents that are known groundwater contaminants that are associated with agriculture operations, such as 1,2,3-TCP and DBCP. While these contaminants are no longer used, they do exist in the soils and the groundwater and thus are continually applied to crops through irrigation. These contaminants pose serious health risks and residents relying on that water should be informed if their water is unsafe to drink.

Fifth, the 2017 Proposed Order allows the Executive Officer to require an alternative sampling schedule at any time.[242] This alternative sampling schedule cannot be less than annual to protect users. The order must ensure that, at a minimum, sampling is conducted every year.

b. The 2017 Proposed Order fails to ensure replacement water.

The 2017 Proposed Order fails to require replacement water if exceedances are detected. This is especially concerning given the failures identified above with the 2017 Proposed Order weakening of nitrogen target-setting and lack of enforceable targets.

Replacement water must be provided for on-farm drinking water well users. The primary concern raised by commenters in this area focuses on the complexity of tenant-landlord law. We take a moment to clarify this point. The vast majority of on-farm contaminated drinking water well users are tenants, that is, they rent a unit for housing. By law, all residential rental units must have potable water.[243] The landlord is legally responsible for ensuring the rental unit has potable water.[244]

All residential leases and rental agreements include an implied warranty of habitability, found both in statute and common law. The implied warranty of habitability requires that all residential rental units be habitable, that is, fit "for the occupation of human beings."[245] Regardless of the housing arrangement, the type of housing unit, whether it is a verbal or a written agreement, or who made the agreement, all rental housing units must have potable water, safe for human consumption. The 2017 Proposed Order must acknowledge the legal requirement for safe drinking water and the obligation to provide it.

The impact of contaminated water sources used for drinking water extend beyond the impact to on-farm water well users. The contamination of water sources from agricultural operations impacts public water systems, private well owners, and entire communities. Dischargers must be

[242] 2017 Proposed Order at 63; MRP § IV.A, p. 14-15.
[243] California Civil Code § 1941.
[244] *See Green v. Superior Court*, 10 Cal.3d 616 (1974); *Hinson v.* Delis, 26 Cal.App.3d 62 (1972).
[245] California Civil Code § 1941.

required to mitigate their impacts and assure that those impacted by agricultural operations have access to safe and affordable water in accordance with the human right to water found in Water Code Section 106.3. This includes the provision of replacement water for the affected population.

Under Water Code Section 13304, "a cleanup and abatement order issued by the state board or regional board may require the provision of, or payment for, uninterrupted replacement water…."[246] The State Board and Regional Boards can issue cleanup and abatement orders requiring replacement water, and must do so to ensure users are not consuming water that is unsafe due to agricultural operations.

c. The 2017 Proposed Order does not ensure adequate notice of exceedances to drinking water users.

The 2017 Proposed Order fails to require notification in languages and methods appropriate to drinking water users. Since the majority of farmworkers are racial and ethnic minorities and have limited-English proficiency, this failure means that users may receive "notice" but in a format and language that they cannot understand. Growers should already know the language needs of their farmworkers. Under the Revised Woker Protection Standards, growers are requird to provide pesticide safety trainings in a language that is understood by their farmworkers, thus growers should already be familiar with most of the language needs.

The circumstances of indigenous farmworkers raise another concern. According to the 2010 Indigenous Farmworker Study, the predominant languages for indigenous farmworkers from Mexico are Mixteco, Triqui, and Zapoteco. Because these languages are no longer written, written notices in these and other indigenous languages would not be possible.

The same concern arises for all users, regardless of race or ethnicity, who may have low-literacy or not be literate in their native language. In order to reach as many users as possible, all notices, regardless of the language, must include low-literacy features such as simple words, pictograms, and symbols.

The State Board should prepare standard template notices and make them available on its website. The State Board must professionally translate all notices into the most common languages to ensure the accuracy of the translations. Further, a standard template would ensure that all of the information is included in the notices, including the type of contamination, health warnings, steps that must be taken for protection, and a phone number to call for additional information. Additionally, all notices, regardless of the language, must include a low-literacy warning as described above. Finally, notices should include a section that can be checked off indicating whether replacement water will be provided. This will allow users to prepare as much as possible, and aid the state and regional boards in their enforcement actions to require replacement water.

F. Groundwater Monitoring

The General WDRs establish a groundwater quality monitoring program to evaluate impacts of management practices on groundwater quality, identify areas where groundwater is degraded, and evaluate the effectiveness of management practices.[247] In addition to the drinking water

[246] Water Code § 13304(a).
[247] Gen. WDRs § VIII.E, p. 34; MRP § IV, pp. 13-14.

supply well program described above, the groundwater monitoring program consists of: (1) a Groundwater Quality Assessment Report ("GAR"); (2) the Management Practice Evaluation Program ("MPEP"); and (3) the Groundwater Quality Trend Monitoring Program ("GQTMP").[248] The 2017 Proposed Order does not make significant changes to these components. We explain them below because they are relevant to the functioning of the GQMPs and INMPs, as well as the effectiveness of the groundwater monitoring program overall.

1. Groundwater Quality Assessment Report

The purpose of the GAR is to provide the information needed to create the Management Practice Evaluation Program and Groundwater Quality Trend Monitoring Program, which collectively form the three primary components of the General WDRs' groundwater quality monitoring program.[249] The GAR compiles existing data from multiple sources to provide criteria for groundwater quality conditions[250] and identify areas that are high vulnerability areas for groundwater, which required a GQMP to be developed.[251] The Third Party is responsible for creating the GAR and submitting it to the Regional Board.[252]

2. Management Practice Evaluation Program

The MPEP requires the Third Party to conduct targeted studies "to evaluate management practices that are protective of groundwater quality."[253] The purpose of the MPEP is to create a report of collected surface and groundwater quality data to evaluate whether management practices are reducing discharges and improving water quality.[254] In cases where the Third Party concludes that certain management practices do not protect groundwater quality (i.e., current management practices fail to ensure compliance with groundwater receiving limitations), the Third Party must submit a new or alternative MPEP to the Regional Board.[255]

The MPEP requires groundwater monitoring data to be collected from shallow groundwater, defined as groundwater located less than ten feet below the soil surface,[256] because sampling from shallow groundwater provides an accelerated response of the management practices' impacts on groundwater quality.[257]

In addition, the MPEP requires the Third Party to develop a management practice evaluation work plan that describes the tools and methods the Third Party uses to correlate management practice activities on surface level with impacts on the underlying groundwater quality.[258] The third party ranks the high and low vulnerability areas and implements the MPEP through a

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[248] *Id.*
[249] 2017 Proposed Order, p. 63; Gen. WDRs § VIII.E.2, p. 34-35; MRP § IV.B, pp. 15-17. .
[250] 2017 Order, p. 42; Gen. WDRs § VIII.E.2, p. 34-35; MRP § IV.B, pp. 15-17.
[251] 2017 Proposed Order at 14-15; Gen. WDRs § VIII.E.2, p. 34-35; . Gen. WDRs § VIII.I.2 (conditions that require preparation of SQMP/GQMP), p. 37 and fn. 36; MRP § IV.B, pp. 15-17.
[252] 2017 Proposed Order, p. 66; Gen. WDRs § VIII.E.2, p. 34-35; MRP § IV.B, pp. 15-17.
[253] 2017 Proposed Order, p. 62; Gen. WDRs § VIII.E.3, p. 35; MRP § IV.C, pp. 17-19, § IV.E, pp. 20-21.
[254] *Id.*
[255] 2017 Proposed Order, pp. 14-15; Gen. WDRs § VIII.E.3, p. 35; MRP § IV.C, pp. 17-19, § IV.E, pp. 20-21.
[256] *Id.*
[257] 2017 Proposed Order, p. 68; Gen. WDRs § VIII.E.3, p. 35; MRP § IV.E, pp. 20-21, fn. 13.
[258] 2017 Proposed Order p. 67, MRP § IV.E, pp. 20-21...

phased approach.[259] Members must implement the MPEP in both high and low vulnerability areas.[260]

3. Groundwater Quality Trend Monitoring Program

The GQTMP is samples of a network of existing wells to determine current and long-term regional groundwater quality trends.[261] According to the 2017 Proposed Order, it must be capable of differentiating impacts from current, residual, or legacy contamination.[262] GQTMP monitoring is not limited to nitrate levels, but also monitors conductivity, pH, dissolved oxygen, temperature, total dissolved solids, and general minerals.[263] However, as discussed further below, it does not monitor for certain groundwater contaminants such as 1,2,3-TCP that are harmful to human health.

The Third Party is required to develop a Groundwater Quality Trend Monitoring Work Plan within one year of the Executive Officer's approval of the GAR.[264] The Third Party inputs the GQTMP monitoring data into the State Water Board's GeoTracker Database and submits the data to the Regional Board.[265]

G. Groundwater Quality Management Plans

1. Requirements in the 2017 Proposed Order

According to the 2017 Proposed Order, the GQMPs, along with SQMPs, are the "primary vehicles for requiring implementation of new and improved management practices under the General WDRs."[266] The objective of GQMPs, similar to that of SQMPs as discussed above, is for Members in the GQMPs' identified watershed to adopt management practices that will meet the General WDRs' receiving water limitations.[267] Because, groundwater receiving water limitations do not apply to growers operating under a GQMP, the Order relies heavily on the GQMPs to identify and address exceedances, ensure improved management practices are implemented, and verify Member's compliance with receiving water limitations. [268]

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[259] 2017 Proposed Order, p. 67; Gen. WDRs § VIII.E.3, p. 35; MRP § IV.E, pp. 20-21.
[260] Gen. WDRs § VIII.E.3, p. 35; MRP § IV.E, pp. 20-21
[261] Gen. WDRs § VIII.E.4, p. 35-36; MRP § IV.D, pp. 19-20, § IV.F, pp. 21-22..
[262] *Id.*
[263] 2017 Proposed Order, p. 67; Gen. WDRs § VIII.E.4, p. 35-36; MRP § IV.D, pp. 19-20, § IV.F, pp. 21-22.
[264] 2017 Proposed Order, pp. 36, 63; Gen. WDRs § VIII.E.4, p. 35-36; MRP § IV.F, pp. 21-22.
[265] *Id.*
[266] 2017 Proposed Order at 72; *see also* Information Sheet at 20. However, the State Board expects that as the A/R ratio data is developed, management practices in response to high multi-year A/R ratios, rather than in response to a GQMP, will become the primary vehicle for implementing improved management practices to address nitrate impacts. 2017 Proposed Order at 72, fn. 147. At the same time, the State Board acknowledges, to some degree, that even with nitrate levels, low multi-year A/R ratios may still cause nitrate exceedances in groundwater, in which case GQMPs will remain significant. *Id.*
[267] Gen. WDRs § III.B (Groundwater Limitations), p. 18. *See also,* p. 18, fn. 19 ("These limitations are effective immediately except where Members are implementing an approved Groundwater Quality Management Plan (GQMP) for a specified waste parameter in accordance with an approved time schedule authorized pursuant to sections VIII.I and XII of this Order.").
[268] 2017 Proposed Order at 72.

The Third Party must develop GQMPs for watersheds where there is a confirmed exceedance (considering applicable averaging periods) in a groundwater well.[269] The Third Party must also develop a GQMP for areas it designates to be high vulnerability groundwater areas (i.e., areas where the groundwater is vulnerable to degradation by irrigated agriculture) when developing a GAR.[270] Additionally, the Regional Board may require the development of GQMPs where there is a trend of water quality degradation that threatens a beneficial use, based on its consideration of information such as the State Water Board Hydrogeologically Vulnerable Areas and the Department of Pesticide Regulation Groundwater Protection Areas. *Id.* The Third Party will not develop a GQMP to address a water quality problem[271] if irrigated agricultural practices are not a cause or contributor to the water quality problem.[272]

To determine whether conditions requiring a GQMP are present, the Third Party is authorized to review data from a wide array of sources, including its own assessments in GAR, MPEP, groundwater trend data from the GQTMP, and drinking water supply well monitoring.[273] The WDRs require certain information be reviewed by the Third Party to assess the necessity and effectiveness of a GQMP, such as INMP Summary Reports, monitoring data from GQTMP and supply well monitoring, and its own assessment of management practices, such as the MPEP and information relied upon for the annual Management Plan Progress Report.[274] However, the Third Party is not authorized to monitor for certain constituents, including pesticides and pesticide degradation products.[275] The Third Party is *allowed* to review monitoring data collected by other programs to assess GQMPs, including data collected by the Department of Pesticide Regulation for its groundwater monitoring program and data entered in GeoTracker.[276] However, the Third Party is not *required* to act on any such data.[277]

The Third Party may also conduct source studies to determine whether a GQMP is required. If the Third Party identifies water quality problems but cannot determine the extent to which irrigated agriculture may be a source, the Third Party may delay development of a GQMP to study the water quality problem or, at least, rule out irrigated agriculture as the source.[278] The

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[269] 2017 Proposed Order at 14-17, 71-72; Gen. WDRs § VIII.I.2.b, p. 37 and fn. 36. "A 'confirmed exceedance' means that monitoring data are determined to be of the appropriate quality and quantity necessary to verify that an exceedance has occurred. The determination of an exceedance may be based on data obtained by the Regional Water Board from any source and made available in Geotracker, including pesticide-related monitoring data collected by the Department of Pesticide Regulation." *Id.*, p. 37, fn. 36.

[270] 2017 Proposed Order at 71, fn. 144; Gen. WDRs § VIII.I.2.b, p. 37 and fn. 36. The Third Party makes groundwater vulnerability designations based on a combination of the area's physical properties (soil type, depth to groundwater, known agricultural impacts to beneficial uses, etc.) and management practices used in that area (irrigation method, crop type, nitrogen application and removal rates, etc.). MRP § IV.B.4, p. 16.

[271] See Attachment E of Gen. WDRs, 'water quality problem' defined as "Exceedance of an applicable water quality objective or a trend of degradation that may threaten applicable Basin Plan beneficial uses.", p. 7.

[272] Gen. WDRs § VIII.I.2.a-b, p. 37 and fns. 35-36; Information Sheet, pp. 14, 20.

[273] Gen. WDRs § VIII.E, p. 34; MRP § IV, pp. 13-14.

[274] Gen. WDRs § VIII.E, pp. 34-36; MPR § IV, pp. 13-22.

[275] *See, e.g.,* 2017 Proposed Order at 68-69.

[276] Gen. WDRs § VIII.I.2, p. 37 and fn. 36.

[277] *See, e.g.,* 2017 Proposed Order at 68-69.

[278] Gen. WDRs § VIII.I.2.b, p. 37; MRP-1 § I.G, p. 7.

Third Party must continue to monitor the area while it conducts the source study and, if it finds irrigated agriculture may be a source, it must implement a full GQMP.[279]

GQMPs are purportedly required to contain key provisions of the Nonpoint Source Policy and, according to the State Board, are one of the primary mechanisms for the General WDRs consistency and compliance with the Policy under the Irrigated Lands Regulatory Program.[280] As with SQMPs, GQMPs must provide a time schedule for compliance with receiving water limitations that is no longer than 10 years.[281] According to the 2017 Proposed Order, the compliance schedule must include milestones, including the time needed for the Third Party to identify the new management practices that will bring Members into compliance, the length of time necessary for Members to implement the identified practices, and the time necessary for the Third Party to verify compliance.[282] Lastly, GQMPs are purportedly required to incorporate a monitoring system that provides reliable feedback on progress implementing the Management Plans and the effectiveness of the new management practices to meet receiving water limitations.[283]

As mentioned above, growers are exempt from receiving water limitations if they operate within the geographic parameters of a GQMP and implement recommended management practices.[284] In fact, all Members that operate in an GQMP's area and implement recommended management practices benefit from the WDR's exemption of receiving water limitations, as the WDRs do not appear to place any additional restrictions on eligibility.[285] Thus, the WDRs' exemption impacts a substantial number of Members in Eastern San Joaquin, as GQMPs are typically developed for large areas and cover a substantial number of groundwater users in the region.[286] Additionally, the General WDRs allow the Third Party to develop a single Comprehensive GQMP, rather than individual GQMPs, so long as the compliance timeframes are the same.[287] The Third Party has chosen this option and adopted a Comprehensive GQMP for all of Eastern San Joaquin, which was approved in June of 2017.[288]

As with SQMPs, while the General WDRs' receiving water limitations are effective immediately, Members implementing GQMP are not subject to the WDRs' limitations for the duration of the plan, although such plans are not to exceed 10 years.[289]

As with SQMPs, the Regional Board is responsible for oversight and enforcement of GQMPs. Initially, the Regional Board approves proposed plans after they are posted for public review and comment. The Regional Board may modify the proposed management Plan based on comments.[290]

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[279] *Id.*
[280] 2017 Order, pp. 14-17, 71-72; Information Sheet, pp. 20, 30; Gen. WDRs' MRP § II, p. 3..
[281] 2017 Order, pp. 14-15, 71-72; Gen. WDRs § XII, p. 41; MRP-1 § I.C-D, pp. 4-6.
[282] 2017 Order, pp. 15-17, 71-72; § MRP-1 § I.C-D, pp. 4-6; .C.4.e, p. 5; Information Sheet, p. 20; *see also* Gen. WDRs § IV.C.4, p. 21; Gen. WDRs § IV.C.6, p. 22; Gen. WDRs § IV.C.8 , p. 22; Gen. WDRs § IV.C.9, p. 22; MRP § IV, pp. 13-22.
[283] *Id.*
[284] Gen. WDRs § III, p. 18, fn. 18.
[285] *See,* Gen. WDRs § III, p. 18, fn. 19; Information Sheet, p. 20.
[286] *Id.*
[287] Gen. WDRs § VIII.I.3-4, p. 38; Information Sheet, p. 20.
[288] *Id.*
[289] Gen. WDRs § III.B, p. 18, fn. 19; Gen. WDRs § XII , p. 41.
[290] Gen. WDR § VIII.I.1, pp. 36-37; MRP-1 § II-III, pp. 7-9.

The Regional Board is also supposed to assesses GQMPs' progress, including a periodic review of water quality management plans at least once every five years.[291] The Regional Board "intends" to review available data to determine whether the approved management plan is resulting in water quality improvements.[292] The Regional Board may order revisions to the plans if available information indicates that irrigated agriculture waste dischargers are not in compliance with receiving water limitations or if available information indicates degradation calls for inclusion of additional areas, constituents of concern, or improved management practices. During the review, the Regional Board must find that the Management Plans are either making "adequate progress" or "inadequate progress."[293] The latter is based on whether receiving water limitations are not being met and water quality improvement milestones and compliance time schedules in the approved management plan has not been met. *Id.* The Third Party may take action in response to a finding of "inadequate progress," including requiring the Third Party to develop and implement a field study plan.[294]

As with SQMPs, GQMP approval requires the Board to circulate proposed GQMP for public review.[295] The Regional Board also determines when GQMPs are "complete" (i.e. the Third Party demonstrated that Members in the area are in compliance with receiving water limitations).[296] Finally, the Regional Board must periodically review the Plans (at least every five years) to determine its adequacy and progress.[297]

The Regional Board also determines when management plans are "complete."[298] To be deemed complete, the GQMP must satisfy its goal, which for all management plans is to identify the source(s) of constituents of concern, track the implementation of effective management practices, and ultimately ensure that irrigated agriculture waste discharges are meeting the surface and groundwater receiving water limitations of the Order.[299] To make this determination, the Regional Board must assess evidence that demonstrates objective was achieved (three or more years with no exceedances during the times of the year when previous exceedances occurred).[300]

2. Changes from Prior Version of the Order

The Regional Board's General WDRs, prior to State Board's 2016 or 2017 proposed modifications, mandated the Third Party to develop a GQMP in high vulnerability groundwater areas, as determined by the Third Party as part of the GAR process (i.e., areas in which groundwater quality is vulnerable to degradation from agricultural operations).[301] The State Board's 2016 Order removed vulnerability distinctions for all growers requirements and, therefore, also modified this provision. The 2016 Proposed Order omitted the requirement and instead granted the Third Party discretion to develop a GQMP if the grower was located in a

[291] MRP-1 § II.b, p. 8.
[292] MRP-1 § II.b., p. 8.
[293] MRP-1 § II.B.1-2, p. 8.
[294] MRP-1 § II.b., p. 8.
[295] Gen. WDRs § VIII.I.1, p. 36.
[296] MRP-1 § III, pp. 8-9.
[297] MRP-1 § II, pp. 7-8.
[298] Gen. WDR. § VIII.I.1, pp. 36-37; MRP-1 § III.a-d, p. 8-9.
[299] MRP-1 § III, pp. 8-9.
[300] MRP-1 § III.a-d., p. 8-9.
[301] Gen. WDRs § VIII.I.2.b, p. 37 (as reflected in the 2017 Order).

high vulnerability area under a prior GAR.[302] The 2017 Proposed Order revised this provision again and deleted the prior modification, thus reinstating the mandate ("shall") that GQMPs be developed for high groundwater vulnerability areas.[303]

The other revision in the 2017 Order clarified that the determination of a "confirmed exceedance" in a groundwater well, "may be based on data obtained by the Regional Water Board from any source and made available in Geotracker, including pesticide-related monitoring data collected by the Department of Pesticide Regulations."[304]

3. The 2017 Proposed Order fails to remedy failures in groundwater monitoring and management and weakens other provisions that undermine GQMP function.

As asserted in the comments of CRLA and others with respect to the 2016 Proposed Order, the GQMPs and the groundwater quality trend monitoring program are deficient in numerous respects.[305] The 2017 Proposed Order does not fix the identified problems, and in the same way revisions to other parts of the Order render the SQMPs ineffective, so too here the 2017 Proposed Orders further weaken the GQMPs by withholding critical location identifiers used to track management practice effectiveness, by instituting a flawed A/R process, and by failing to set and enforce nitrogen loading target values, as discussed further below.

First, like prior versions of the General WDRs, the 2017 Proposed Order fails to require GQMPs to achieve compliance with water quality objectives in a satisfactory timeframe. As CRLA and other commenters have noted, the 10-year compliance timeframe allows pollution to continue unabated for a decade and possibly much longer. This delay is especially concerning now, given the complicated, seven-year-plus process that the 2017 Proposed Order imposes for setting A/R target values, and given the fact that the 2017 revision backs away from committing to use A/R target values to hold dischargers accountable.

Second, the GQMPs lack a trigger for mitigation measures. As CRLA and others asserted in their 2016 comments, such a trigger is necessary to ensure that the effects of nitrogen contamination are mitigated if GQMPs do not addresses receiving water exceedances, especially when drinking water is at risk.[306] The risk of ineffective GQMPs is heightened by the 2017 changes to the order, which remove location identifiers from management practice data, thereby thwarting the essential "feedback" mechanism upon which the program is based.

Third, the Proposed Order fails to include aggressive source control measures in GQMPs, as CRLA and other commenters have noted.[307] Targeted actions to reduce nutrient loading and improve water quality are necessary to ensure pollution is abated. Suggested measures have included, for example, reducing nutrient loading by at least 20 percent within 10 years, towards a goal of reducing nutrient loading to 31 pounds per acre or less in the area.[308] None of these

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[302] 2016 Order's Gen. WDRs § VIII.H.2.b ("a GQMP may be developed by the third-party in high vulnerability areas previously designated and approved as a part of the GAR."), p. 38.
[303] Gen. WDRs § VIII.I.2.b, p. 37.
[304] Gen. WDRs § VIII.I.2.b, 37, fn. 36.
[305] *See* CRLA, Community Water Center, Clean Water Action, Leadership Counsel for Justice and Accountability, Comments to A-2239(a)-(c). June 1, 1016.
[306] CRLA *et al*., June 1, 1016 Comments to A-2239(a)-(c), p.10-12.
[307] *Id.* at 10.
[308] *Id.*

targets – or for that matter, any target – is included in the 2017 Proposed Order.

Finally, as discussed above, the GQTMP does not monitor for certain groundwater contaminants that threatened human health, such as 1,2,3-TCP, DBCP, and arsenic. Without a monitoring program for these parameters, drinking water users have no way of knowing whether their water is contaminated, and there is no way for the public or the Regional Board to assess effects of management practices on groundwater quality. This is so even though some of these contaminants are naturally occurring or not currently in use because current agricultural operations may still move them toward drinking water sources and exacerbate their harmful effects.[309]

In sum, the changes to the 2017 Order fail to address the numerous flaws with groundwater monitoring and management and exacerbate the already-deficient GQMP and groundwater trend monitoring provisions in the 2016 Order.

III. THE 2017 PROPOSED ORDER KEEPS IN PLACE A DEFICIENT SURFACE WATER MONITORING SYSTEM AND POSTPONES NECESSARY ACTION.

As discussed above, both the Agricultural Expert Panel and the have State Board have explicitly acknowledged the problems with the surface water monitoring program. However, the State Board fails to implement needed changes to the program and instead imposes a drawn-out expert panel process. Such a decision does not stand to reason as solutions to the program can be implemented now.

Dr. Katznelson reviewed the current surface water quality monitoring program and proposes a program that could provide useful information to all parties and comply with the law. We attach Dr. Katznelson's report which elaborates on our comments in more detail.[310]

In reviewing the surface water monitoring program as ordered in the 2017 Proposed Order and the General WDRs, as modified, Dr. Katznelson made comments and recommendations. Key comments include:

- The Order does not require observations or field measurement triggers for responsive [immediate] monitoring.[311]
- The Order does not specify a time limit for approval SQMPs. This creates an undefined time-frame for any response to exceedance problems.[312]
- The Order does not specify the number of "regular" samples to be collected.[313]
- The Order does not require that dry waterways be visited again, or that alternative, wet sites be found on the same waterway.[314]
- The Order does not specify how to report long-term trends in water quality.[315]

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[309] CRLA *et al*., Comments to A-2239(a)-(c), June 1, 2016, p. 12.
[310] *See* Attachment 4. Revital Katznelson, Comments on Surface Water Monitoring Requirements in East San Joaquin Region's Agricultural Areas and Monitoring Design Recommendations. December 21, 2017.
[311] *Id.* at 2.
[312] *Id*. at 3.
[313] *Id*.
[314] *Id*.
[315] *Id*. at 4.

- The Order does not specify the timing and frequency of sample collection; rather, it defers to the Coalition to determine these variables.[316]
- The Order does not prescribe a specific study design for each monitoring goal.[317]
- The Order does not require individual growers to participate in documentation of real-time, frequent observations and of discharge events.[318]
- The required analytical suite for water samples is not updated quickly enough.[319]
- The Order does not provide adequate instructions on how to capture discharges related to specific agricultural activities.[320]
- The Order places too much emphasis on "bean counting" reports such as Implemented Management Practices, and allows for an "interim compliance" based on meeting management practice implementation requirements, deferring compliance with water quality protection into the far future.[321]

These comments and other comments expose numerous deficiencies surface water monitoring program including a lack of defined goals, a lack of detail as to how monitoring is to be accomplished, and the delegation of key decisions to the Third Party.

Dr. Katznelson further concludes that the program can be improved now. The design and implementation of an effective monitoring program is not rocket science, and the State Board should improve the fundamentally flawed monitoring program in the Eastern San Joaquin region in this Order.

According to Dr. Katznelson, as an initial matter, the following monitoring program goals should be established:

- Goal One: Compliance
- Goal Two: Source identification
- Goal Three: Management practice effectiveness evaluation
- Goal Four: Long term trends[322]

Furthermore, the following monitoring "framework components" could be implemented now:

- Fixed stations. A small number (3-4) of "long term" monitoring stations at the bottom of perennial stream drainages that have a history of exceedances.[323] This contributes to goals 1, 4.
- Commodity based stations. Twelve monitoring Stations located at the bottom of small, uniform watersheds, each one draining predominantly one type of crop/commodity.[324] This contributes to goals 1, 4.
- Routine observations and reporting. Growers will make weekly and anecdotal non-technical observations (per an existing standard protocol. i.e. increased flow, foam,

[316] *Id*. at 5.
[317] *Id*. at 5.
[318] *Id*. at 6.
[319] *Id*.
[320] *Id*. at 8.
[321] *Id*. at 10.
[322] *Id*. at 19.
[323] *Id*. at 20.
[324] *Id.*

turbidity, overland flow events).[325] This contributes to goals 1, 2, 3.

- Responsive monitoring when alerted by observations. A technical team with field kits will respond to observations. Field kits will have the capacity to analyze – in real time – critical analytes (i.e. conductance, pH, nitrates, ammonia).[326] This contributes to goals 1, 2, 3.
- Special studies. With the ability to analyze samples in real-time, the team could be able to track-back and potentially identify discharge.[327] This contributes to goals 2, 3.
- Follow-up studies, if necessary, to confirm regulatory goals.[328]

As detailed in Dr. Katznelson's report, this approach is likely less costly than a network of fixed stations with a dedicated team collecting samples for expensive laboratory analysis. The suggested approach blends fixed stations, with responsive field testing and with grower attentiveness to discharges. The State Board should order such fixes now rather than delay the implementation of solutions while it leaves in place a flawed system that cannot achieve compliance.

IV. THE 2017 PROPOSED ORDER IS UNLAWFUL.

1. The Order violates Water Code § 13263 because the iterative approach is not sufficient to achieve compliance with the Basin Plan's water quality objectives.

As indicated in our comments on the 2016 Proposed Order, the State Board's proposed "iterative" approach violates the Porter-Cologne Act.[329] Because the 2017 revisions to the Order further weaken key provisions of the order, our prior arguments now apply with greater force. We summarize them briefly here and incorporate CCKA's 2016 comments on the order's numerous Porter-Cologne violations.[330]

The 2017 Proposed Order's iterative approach to compliance with the Basin Plan's water quality objectives violates Porter-Cologne because it lacks specific, enforceable standards and deadlines, and adequate feedback mechanisms to determine if management practices are effective at meeting receiving water limits. Water Code § 13263 requires WDRs to implement any relevant water quality control plans, and must take into consideration the beneficial uses and water quality objectives required to achieve beneficial uses. Additionally, Water Code § 13269 requires a conditional waiver of waste discharge requirements to include monitoring requirements "designed to support the development and implementation of the Waiver program, including, but not limited to, verifying the adequacy and effectiveness of the Waiver's conditions."[331]

The 2017 Proposed Order's reliance on iterative management practices in lieu of enforceable standards does not comply with these mandates. As detailed above, the Order provides no meaningful standard by which to measure compliance with the Basin Plan's water quality objectives. Growers have 10 years to comply with receiving water limits *after* an exceedence is

[325] *Id*.
[326] *Id*.
[327] *Id*.
[328] *Id*.
[329] CCKA, Comments to A-2239(a)-(c), June 1, 2016; CRLA *et al.,* Comments to A-2239(a)-(c), June 1, 2016.
[330] CCKA, Comments to A-2239(a)-(c), June 1, 2016 at 2-10.
[331] California Water Code § 13269(a)(2).

detected and an SQMP or GQMP triggered, but there is no way to determine whether dischargers are complying with the law. Indeed, the 2017 Proposed Order's surface water monitoring program cannot ensure responsible parties are identified in the first place. As a result, the Order violates Porter-Cologne.

Recent court decisions also support this conclusion. The *Monterey Coastkeeper* court held in no uncertain terms that an iterative process with representative monitoring fails to ensure water quality standards will be achieved.[332] Similarly here, the 2017 Proposed Order's lack of enforceable standards, iterative approach, and insufficient monitoring system cannot ensure compliance with water quality objectives. The order's monitoring program also suffers from the legal deficiencies that plagued the WDR rejected in *AGUA*. According to the *AGUA* court, the regional monitoring locations in the WDR were "ineffective to accomplish the timely detection of a change in [water] quality" and therefore illegal.[333] The 2017 Proposed Order violates Porter-Cologne.

2. The Order violates the California Non-Point Source Policy.

As indicated in our comments on the 2016 Proposed Order, the State Board's proposed iterative approach also violates the Nonpoint Source Policy.[334] Again, because the State Board's 2017 revisions further eviscerate key provisions of the order that affect non-point source detection and control, our prior arguments also apply here. We summarize them briefly below and incorporate CCKA's 2016 comments on violations of the Nonpoint Source Policy.[335]

a. The Order does not comply with Nonpoint Source Policy Elements 1 and 2.

The Nonpoint Source Policy requires an Agricultural Order to address nonpoint source pollution "in a manner that achieves and maintains water quality objectives and beneficial uses."[336] The Regional Board must be able to determine there is a "high likelihood that management practices will be successful."[337] As explained above, the monitoring system currently in place cannot detect violations of water quality standards or evaluate the effectiveness of management measures to prevent violations in waters well upstream of the regional or representative monitoring locations. Nor is there any evidence in the record upon which the Regional Board could determine that implemented management measures are "highly likely" to be successful in attaining standards in those upstream waters.

Further, the 2017 Proposed Order has no feedback mechanism to evaluate management measures, especially one designed to establish "a strong correlation between the specific [management practices] implemented and the relevant water quality requirements."[338] This is especially true now, under the current revisions, given that the Order has eliminated key critical information from the reporting requirements. Because the 2017 Proposed Order does not achieve water quality objectives and protect beneficial uses, it violates the NPS Policy.

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[332] *Monterey Coastkeeper* at 26-34.
[333] *AGUA* at 1260.
[334] CCKA, Comments to A-2239(a)-(c), June 1, 2016 at 10-20; CRLA *et al.,* Comments to A2239(a)-(c), June 1, 2016.
[335] CCKA, Comments to A-2239(a)-(c), June 1, 2016 at 11-20.
[336] State Board, Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program (May 20, 2004) ("Nonpoint Source Policy") at 12.
[337] *Id.*
[338] *Id*.

b. The Order does not comply with Nonpoint Source Policy Element 3.

The Nonpoint Source Policy requires that where a Regional Board determines it is necessary to allocate time to achieve water quality requirements, the Nonpoint Source program "shall include a specific time schedule, and corresponding quantifiable milestones designed to measure progress toward reaching the specified requirements."[339] Here, the 2017 Proposed Order does not contain meaningful deadlines with quantifiable milestones to meet receiving water limitations.

The Order allows growers up to 10 years to come into compliance with a water quality objective once a receiving water exceedance occurs. This violates the law. The Nonpoint Source Policy is clear that the "time schedule may not be longer than that which is reasonably necessary to achieve an NPS implementation program's water quality objectives."[340] By waiting to start the time schedule only after an exceedance is detected, the Regional Board purposefully extends the time schedule for longer than that which is reasonably necessary.

The Nonpoint Source Policy's intent is to begin any necessary time at the adoption of the Nonpoint Source program. The Policy states that in the consideration of approval of specific interim goals and the time necessary to achieve those goals, a Regional Board considers such factors as: significant capital outlays for implementation of management practices; the presence of a severely degraded waterbody; and whether or not a Nonpoint Source control implementation program is a component of a larger TMDL implementation program. These are considerations made at the beginning of a Nonpoint Source program, not after an exceedance is detected.

The 2017 Proposed Order's illegal monitoring scheme cannot detect receiving water exceedances. As explained above, the Order lacks specific data to determine compliance with water quality standards. Requiring a Third Party to conduct future monitoring provides no assurances that receiving water violations will ever be detected. Given the lack of monitoring to determine individual grower responsibility for a receiving water exceedance, it is conceivable that the 10-year time schedule may never begin.

c. The Order does not comply with Nonpoint Source Policy Element 4.

The 2017 Proposed Order fails to meet the requirements of Nonpoint Source Policy Element 4 because it lacks verification measures adequate to determine whether growers meet water quality objectives. Regional monitoring locations cannot identify localized pollution problems that occur at individual field discharge locations or receiving waters in close proximity to pollution discharges. The regional monitoring will provide no information and no correlation about dischargers' use of management practices and their discharges' impacts on more localized waters.

Consequently, and as detailed above, the General WDRs, as modified, do not contain feedback mechanisms by which either the Regional Board or the public could "determine whether the program is achieving its stated purpose, or whether additional or different [management practices] or other actions are required."[341]

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[339] *Id*. at 13.
[340] *Id*.
[341] *Id*.

The 2017 Proposed Order does not meet the requirements of the Nonpoint Source Policy because it lacks adequate monitoring and reporting to verify compliance with the requirements and does not measure progress over time. It lacks specific time schedules designed to measure progress toward reaching quantifiable milestones. At bottom, the State Board has failed to show a "high likelihood" that the 2017 Proposed Order will achieve water quality standards.

3. The Order violates the state Antidegradation Policy.

California's Antidegradation Policy, as set forth in Resolution No. 68-16, requires that, if an activity may produce waste that will discharge into existing high-quality waters, baseline water quality must be maintained unless certain findings are made. Specifically, the State Board must show that the change in quality (1) is consistent with the maximum benefit to the people of the state; (2) will not unreasonably affect beneficial uses; and (3) will not violate water quality standards. Furthermore, any activity that produces or may produce waste, and that discharges into high-quality waters, is required to undergo best practicable treatment or control ("BPTC") to ensure that (a) pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit will be maintained. The Policy applies to both groundwater and surface water.[342]

The purpose of the Antidegradation Policy is to maintain high-quality waters in the State.[343] It also provides a uniform process that requires the state and regional water boards to explain in a fully informed and transparent manner when they diverge from those protections. The analysis should quantify all of the impacts of a discharge or set of discharges, if possible, and failure to engage in this analysis, make appropriate findings, or support any findings with evidence violates the policy.[344] "The agency which renders the challenged decision must set forth findings to bridge the analytic gap between the raw evidence and ultimate decision or order."[345]

In *AGUA*, the Regional Board claimed in its general waste discharge order for milk cow dairies that it (1) "does not authorize degradation of waters of the State"; (2) "requires actions to be taken to assure that degradation does not occur, that water quality objectives are not exceeded, and that nuisance does not occur"; and (3) "requires use of best practicable treatment or control."[346] The Court of Appeals disagreed, finding the Regional Board did not provide any *means* for that protection to occur: the Order lacked an adequate monitoring system and contained no enforcement mechanism for violations.[347]

The same is true here. The State Board finds that the degradation allowed by the General WDRs "is consistent with the maximum benefit" and that the WDRs "satisfy the best practical treatment or control standard."[348] Yet the State Board concludes this *without* summarizing the impacts of the discharges from agricultural activities and weighing them against the benefits of those activities. Indeed, it could not do so, since it admits that the monitoring system in the WDRs "does not appear to be to be comprehensive enough to identify problem areas throughout

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[342] State Board, Questions and Answers on Resolution No. 68-16, at 3 (February 16, 1995).
[343] *Id.* at 2, citing Water Code §13000 ("[T]he state must be prepared to exercise its full power and jurisdiction to protect the quality of waters in the state from degradation…")
[344] Resolution No. 68-16; *AGUA*, 210 Cal. App. 4th at 1278-81.
[345] *AGUA*, 210 Cal. App. 4th at 1281 (citations omitted).
[346] *Id.* at 1264.
[347] *Id.* at 1260, 1278 ("The wish is not father to the action… there is not substantial evidence to support the findings.").
[348] 2017 Proposed Order at 70-71.

the watershed."[349] Furthermore, just as in *AGUA*, the General WDRs lack a concrete enforcement mechanism for violations. While BPTCs are not defined under the Antidegradation Policy, the State Board concedes in so many words that best practical treatment and control are still not defined: "Management plans *will evolve over time* as monitoring and other feedback *leads to new practices being developed…*" and "use of the multi-year A/R ratio *will be required* in the Modified General WDRs as it will drive the *implementation of more effective management practices over time…*" (emphasis added).[350] These unknown numbers and management plans, which are critical to nitrogen pollution reduction, cannot qualify as BPTC, or treatment or control that "ensure [] pollution or nuisance will not occur."

The State Board and the Regional Board were on notice of these issues. In *San Joaquin County Resource Conservation District v. California Regional Water Quality Control Board, Central Valley Region*, Sacramento County Superior Court, Consolidated Case No. RG12632180, Ruling Under Submission of Petition for Writ of Mandate (May 21, 2013), several environmental petitioners challenged the adoption of the "Short-Term Renewal of the Coalition Group Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands," a 2011 waiver extension for nonpoint agricultural pollution that was a predecessor to the General WDRs. The court found that:

> It also is questionable whether the Renewed Waiver is sufficient to comply with the Antidegradation Policy since it is not clear that the Board has an adequate means of identifying and taking actions against dischargers who are violating water quality objectives when water quality objectives are being exceeded, or of ensuring that BPTC is being implemented when high quality water is being degraded.

Id. at 19. The Court also held that despite the Regional Board's assurances that the waiver extension "is intended to be an interim step toward implementation of a new, long-term ILRP which, the Board contends, will fully comply with the Antidegradation Policy," the Court "nevertheless must decide whether the Renewed Waiver *itself* complies with the Antidegradation Policy." *Id.* at 20 (emphasis added). The Court sent a similar message to the State Board three years later with regard to a similar nonpoint agricultural pollution waiver, holding that "Petitioners do not contend that the Modified Waiver must achieve 'instantaneous compliance'… [but] the Modified Waiver must include requirements reasonably designed to show measurable progress toward improving water quality over the short-term and achieving water quality standards in a meaningful timeframe."[351]

The State Board is now proposing precedential General WDRs, yet, in the changes in the 2017 Proposed Order, the Board has taken a step *back* from the required antidegradation analysis.[352]

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[349] 2017 Proposed Order at 49-50.

[350] 2017 Proposed Order at 71. This contrasts with the Board's statement that "it is premature at this point to project the manner in which the multi-year A/R ratio target values might serve as regulatory tools." 2017 Proposed Order at 66.

[351] *Monterey Coastkeeper* at 32.

[352] The 2017 Proposed Order's antidegradation analysis remains largely unchanged from the 2016 Proposed Order. Thus, we incorporate by reference the antidegradation comments in the June 1, 2016 comment letters to A-2239(a)-(c) submitted separately by CCKA, CRLA, the Otter Project, and the joint comments of 53 Environmental Justice, Tribal Interest, Fishing and Environmental Organizations. Those comments noted that (1) the Antidegradation Policy applies to agricultural nonpoint source discharges; (2) the Order fails to establish a numeric water

The 2017 Proposed Order rolls back potential surface water monitoring improvements that were part of the 2016 Proposed Order and requires a regime of groundwater sampling that is too infrequent and thus "insufficient for the task" of monitoring groundwater degradation.[353] The 2017 Proposed Order also proposes open-ended, unenforceable standards and fails to install any immediate interim pollution controls. The end result is that high-quality waters will continue to be degraded for at least the next seven-to-10 years, without any enforceable management practices in the meantime.[354] More importantly, even after that period, the monitoring system will be unable to gauge whether degradation of high-quality waters is being reasonably limited. As the Court told the Regional Board five years ago, "if the Board is going to rely on watershed-scale monitoring to ensure agricultural dischargers are implementing BPTC, the Board still must ensure that any activity that will result in a discharge of waste to high waters will comply with water quality standards and meet BPTC."[355] Here, 2017 Proposed Order makes such assurance impossible because it fails to include enforceable standards and weakens the monitoring and reporting provisions such that BPTC is unattainable.

4. The Order violates the public trust doctrine.

As the United States Supreme Court announced over a century ago, the state holds public trust property "in trust for the people of the state that they may enjoy the navigation of the waters, carry on commerce over them, and have liberty of fishing therein freed from the obstruction or interference of private parties."[356] When California was admitted to the Union in 1850, it acquired title from the federal government to navigable waterways and the lands lying beneath them.[357] California thus "holds all of its navigable waterways and the lands lying beneath them 'as trustee of a public trust for the benefit of the people'" and for future generations.[358]

California courts have expansively construed public trust uses to include the right to "hunt, bathe or swim, and the right to preserve the [trust lands] in their natural state as ecological units."[359] Indeed, "one of the most important public uses . . . is the preservation of those lands in their natural state, so that they may serve as ecological units for scientific study, as open space, and as environments which provide food and habitat for birds and marine life, and which favorably

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quality baseline to determine effects on water quality and impacts on beneficial uses; (3) the Order fails to conduct an adequate maximum-benefit analysis; (4) the Order does not set a BPTC to prevent pollution and nuisance and to maintain the highest water quality consistent with maximum benefit; and (5) the monitoring scheme is not adequate to ensure that beneficial uses are protected. *See* CCKA, Comments to A-2239(a)-(c), June 1, 2016 at 5-10, 16-20; CRLA *et al.,* Comments to A-2239(a)-(c), June 1, 2016 at 6-8. All of these comments apply in equal force to the 2017 Proposed Order.

[353] *AGUA*, 210 Cal. App. 4th at 1280.

[354] As stated above, the long-term A/R target values will be set by the Regional Board by 2025 at the earliest, and growers under a third-party-administered SQMP or GQMP will have up to 10 years to comply with receiving water limitations.

[355] *San Joaquin County Resource Conservation District* at 20.

[356] *Illinois Central Railroad v. Illinois*, 146 U.S. 452, 460 (1892) (holding that Illinois cannot transfer the lakefront lands on Lake Michigan to a private party without considering the state's public trust obligations).

[357] *Nat'l Audubon Society v. Superior Court*, 33 Cal. 3d 419, 424 (1983).

[358] *Colberg, Inc. v. State ex rel. Dep't of Public Works*, 67 Cal. 2d 408, 416-17 (1967) (quoting *People v. Gold Run D. & M. Co.*, 66 Cal. 138, 151 (1884)); *Nat'l Audubon Soc'y*, 33 Cal. 3d at 437, 445.

[359] *City of Berkeley v. Superior Court*, 26 Cal. 3d 515, 521 (1980).

affect the scenery and climate of the area."[360] The courts have also extended public trust protection to wildlife itself: "[I]t is clear that the public trust doctrine encompasses the protection of undomesticated birds and wildlife. They are natural resources of inestimable value to the community as a whole."[361]

The public trust doctrine imposes an affirmative "*duty* upon the government to protect" public trust resources.[362] The state's obligation as a sovereign is to "exercise a continuous supervision and control over the navigable waters of the state" in the best interests of the people on whose behalf it serves.[363] The state cannot *neglect or extinguish its duties as a trustee: "The State can no more abdicate its trust over property in which the whole people are interested, like navigable waters and the soils under them . . . than it can abdicate its police powers in the administration of government and the preservation of the peace."*[364] As one leading scholar explained:

> The trustee has a duty to protect the public trust property against damage or destruction . . . . Under well-established principles of private trust law, trustees may not sit idle and allow damage to occur to the trust. . . . The duty to protect trust assets is also a duty to prevent waste to those assets.

Mary Christina Wood, *Advancing the Sovereign Trust of Government to Safeguard the Environment for Present and Future Generations (Part II): Instilling a Fiduciary Obligation in Governance*, 38 Envtl. L. 91, 94-95 (2009).

Thus, the public trust doctrine:

> is more than an affirmation of state power to use public property for public purposes. It is an affirmation of the duty of the state to protect the people's common heritage of streams, lakes, marshlands and tidelands, surrendering that right of protection only in rare cases when the abandonment of that right is consistent with the purposes of the trust.[365]

The state may grant rights to use water, but it must "consider the effects of [doing so] upon the interest protected by the public trust, and attempt, so far as feasible, to avoid or minimize any harm to those interests." *Id.* at 425. The powers of the Board in carrying out these duties are broad and "include everything necessary to the proper administration of the trust."[366]

For the numerous reasons discussed above, the 2017 Proposed Order does not come close to satisfying the State Board's fiduciary obligations under the public trust doctrine – or even evidence any meaningful consideration of those obligations. The Board does not address the public trust values being sacrificed, the measures necessary and available to avoid ongoing and future harm, or the feasibility of imposing such measures to protect public trust values and resources. Instead, with the 2017 Proposed Order, the Board is blithely and unlawfully abdicating

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[360] *Marks v. Whitney*, 6 Cal. 3d 251, 259-60 (1971).
[361] *Center for Biological Diversity v. FPL Group, Inc.*, 166 Cal. App. 4th 1349, 1363 (2008).
[362] *Id.* at 1365.
[363] *Nat'l Audubon Soc'y*, 33 Cal. 3d at 425; *see also Center for Biological Diversity*, 166 Cal. App. 4th at 1365.
[364] *Nat'l Audubon Soc'y, 33 Cal. 3d at 437-48 (quoting Illinois Cent. R. Co.*, 146 U.S. 387, 453) (1892) (emphasis added).
[365] *Nat'l Audubon Soc'y*, 33 Cal. 3d at 440.
[366] *City of Long Beach v. Mansell*, 3 Cal. 3d 462, 482 (1970).

its public trust fiduciary duties by allowing the very same (private party) interests currently engaged in activities that are harming public trust resources and destroying public trust values to be the regulatory gatekeepers. The Board's adoption of the Order, approving and sanctioning continued agricultural pollution of public trust waters, and its failure to impose enforceable measures or standards that will ensure the cleanup and long-term protection of the people's public trust resources, would be an egregious breach of the Board's public trust duties.

The 2017 Proposed Order then compounds this fundamental fiduciary duty breach by authorizing Third Party monitors to gather, hold, and anonymize requisite water quality data about state waters. California's public trust resources belong to the *people* of the state, not to the growers and not to the Board. It is the Board's duty to preserve and protect those resources for the people. Like any fiduciary trustee, Board members have an unalterable duty to act on behalf of beneficiaries – the people of California – and not to allow other private interests in any way to override that duty. By effectively privatizing water quality data – and thereby shielding those data from the transparency requirements and intent of the Public Records Act – the Board essentially abdicates these solemn trustee duties and virtually assures that the private interests currently harming public trust resources can and will continue to be unaccountable to the people for their actions. Indeed, transparency is the cornerstone of good government, especially when the profound interests of the people in safe drinking water and ecological protection are at stake. By authorizing continued agricultural discharges that violate water quality objectives and degrade beneficial uses, and then protecting those dischargers from any public scrutiny or accountability, the Board would undermine the core values it is charged with protecting – and profoundly violates its public trust obligations.

5. The Order violates the public's right to information, the non-delegation doctrine, and the non-abdication doctrine.

As discussed in the comments of the CCKA and other California Waterkeepers and the comments of the Environmental Law Foundation and the Environmental Justice Coalition for Water, the 2017 Proposed Order violates the public's right to access information about water quality regulation.[367] It unlawfully allows third parties to withhold water pollution information,[368] and its delegation of the State Board's regulatory authority to Third Parties and abdication of the state's police powers also violates fundamental state doctrines.[369]

6. The Order violates anti-discrimination and fair housing laws.

The 2017 Proposed Order imposes disparate, negative impacts on protected classes. State law provides that no person shall, on the basis of race, national origin, ethnic group identification, and other protected classes, be unlawfully denied full and equal access to the benefits of, or be unlawfully subjected to discrimination under, any program or activity that is conducted, operated, or administered by the state.[370]

Within the San Joaquin Valley, majority-Latino communities are disproportionately impacted by

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[367] *See* CCKA *et al*. Comments to A-2239(a)-(c), December 22, 2017; *see also* Environmental Law Foundation, Comments to A-2239(a)-(c), December 22, 2017.
[368] *See Zamora v. Central Coast Regional Water Quality Control Board* (Oct. 28, 2016) San Luis Obispo Sup. Ct. No. 15CV-0247.
[369] *Sacramento Chamber of Commerce v. Stephens*, 212 Cal. 607, 610 (1931); *Light v. State Water Resources Control Board*, 226 Cal. App. 4th 1463, 1490 (2014).
[370] Gov. Code § 11135.

nitrate contamination of groundwater from agricultural waste. Latinos are more likely to have higher levels of nitrates in their drinking water than the population at large.[371] With other variables held constant, in communities served by small water systems, increases in the percentage of Latinos were associated with increases in nitrate levels.[372] For example, a sample size of almost three million people on small water systems found that, of the 5,000 people who relied on water that exceeded the MCL for Nitrates, 50 percent were Latino while less than 40 percent of the sample size as a whole was Latino.[373] Moreover, Latino and low-income communities are less likely to have access to adequate healthcare, water treatment, and substitute water sources, which further aggravates these disparate impacts. [374]

Here, the General WDRs, by authorizing waste discharges with no requirement to mitigate nitrate impacts to drinking water sources, disparately and negatively impact communities of color, are discriminatory, and, as such, violate state law. The 2017 Proposed Order finds that, with the addition of the monitoring and reporting requirements discussed above, the Modified General WDRs will not disproportionately impact or discriminate against Latinos and low-income communities. However, for the reasons discussed above, the Modified General WDRs are inadequate to protect groundwater for communities. For one, the WDRs explicitly authorize pollution and nuisance for more than 10 years. Further, the Order does not require dischargers to cover the costs of mitigating the impacts of nitrate contamination on drinking water, leaving the burden on those residents living in nitrate-impacted communities. These impacts disparately burden low-income, communities of color.

The Order allows water pollution to continue, which will disparately impact minority communities. It does not provide measures to improve already contaminated drinking water sources, and it fails to provide an available recourse for residents drinking contaminated water. These shortcomings negatively and disproportionately affect minority communities because these communities are the majority of those directly and significantly affected by nitrate contamination. Thus, the Order has the effect of subjecting a protected class to discrimination in violation of Gov. Code § 11135.

The 2017 Proposed Order also raises Fair Housing and Civil Rights issues. The state's Fair Employment and Housing Act guarantees all Californians the right to hold and enjoy housing without discrimination based on race, color, or national origin. *See* Gov. Code § 12900 *et seq*. Government Code § 65008 renders null and void any action undertaken by a local governmental agency that denies to any individual or group of individuals the enjoyment of their residence, landownership or tenancy based upon certain characteristics of the target population.

The 2017 Proposed Order fails to protect the right of minority residents to hold and enjoy their home or rental tenancy. As stated previously, minority residents are disproportionately affected by nitrate contamination. By allowing nitrate contamination to continue without adequate measures to protect and improve water quality, the 2017 Proposed Order is allowing minority residents to be disproportionately and discriminatorily denied their right to enjoyment of their housing and thus may be null and void.

7. The Order violates the reasonable use doctrine.

[371] Carolina Balasz, *et al*., *Social Disparities in Nitrate Contaminated Drinking Water in California's San Joaquin Valley,* Environmental Health Perspectives 19: 9 (September 2011).
[372] *Id*. at 1276.
[373] *Id*. at 1276.
[374] *Id*. at 1273; *see also* Harter Report at 17.

It is well established under California law that the use of all waters of the state is subject to the reasonable use doctrine, which is enshrined in Article X, section 2 of the California Constitution and the Water Code. The doctrine mandates reasonable use of water resources to protect the public interest. Specifically, water resources must "be put to beneficial use to the fullest extent of which they are capable, and that the waste or unreasonable use or unreasonable method of use of water be prevented."[375] Furthermore, "the conservation of such waters is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare."[376]

The State Board's responsibilities under the reasonable use doctrine are in part defined by its duties under the Water Code – that is, to coordinate and control water quality to achieve an effective water quality control program in the state.[377] The Board, as the principal agency responsible for the administration of state water resources for effective water quality control, has a unique responsibility under the doctrine to implement a long-term, comprehensive approach to water resource management and conservation to address competing needs under a dynamic setting.[378] In doing so, the Board must abide by the priority the Legislature has set: the Legislature made clear the State Board is to prioritize domestic use of water resources over irrigated agriculture.[379]

The 2017 Proposed Order, as revised, violates the reasonable use doctrine. The State Board violated its duty to effectuate the reasonable use doctrine by failing to engage in any analysis of whether the Order complies with the doctrine. Had the State Board done so, it would have had to engage in analysis of which beneficial uses were being prioritized to the exclusion of others. It would (or should) have also found that the Order violates the doctrine for all of the reasons discussed above. For example, the revised Order incorporates deficient irrigation and nitrogen management, surface and groundwater monitoring programs, and reporting requirements, among others. The Order's failure to ensure reasonable use is particularly egregious because the water quality degradation resulting from the growers' use severely impacts domestic, environmental, and other critical beneficial uses. Fundamentally, the Order cannot ensure attainment of water quality objectives and cannot even provide a timeline of when such objectives may be attained. In the meantime, the state continues to experience drought conditions, with water resources and quality becoming increasingly critical. As the State Board knows well, communities have long lost access to safe drinking water because of nitrate pollution, and fish and wildlife cannot continue their existence in toxic water.[380]

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[375] Cal. Constitution, article X, § 2; Water Code §§ 100, 275; *see also National Audubon Soc'y*, 33 Cal. 3d at 443; *Light,* 226 Cal. App. 4th at 1479.
[376] *Id.*
[377] Article X, § 2; Water Code §§ 100, 174, 179, 275, 13000, 13001; *Imperial Irrigation District v. State Water Resources Control Board*, 225 Cal. App. 3d 548, 559-60 (1990) ("The Board 'has been granted broad authority to control and condition water use… [extending] to regulation of water quality and prevention of waste.") (citing *Environmental Defense Fund, Inc. v. East Bay Mun. Utility Dist.* ("*EDF"*)*,* 20 Cal. 3d 327, 341-342 (1977), rehrg 26 Cal. 3d 183 (1980)).
[378] *National Audubon Soc'y*, 33 Cal. 3d at 444, 449-50; *Imperial Irrigation District*, 225 Cal. App. 3d at 559-60; *EDF,* 20 Cal. 3d at 341-342.
[379] Water Code § 106; *United States v. State Water Resources Control Board,* 182 Cal. App. 3d 82, 103 (1986) (stating the Board's actions must reflect this "legislative policy that the favored or 'highest' use is domestic").
[380] The State Board contends more stringent requirements would be too costly for the Members

8. The Order violates the human right to water.

The Legislature declared it to be the "established policy of the state that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes."[381] The law mandates the State Board and other state agencies to consider this policy when adopting or establishing policies, regulations, or grant criteria that impact people's right to safe and accessible drinking water.[382] The State and Regional Boards also recognized the right to drinking water as a core value to be given the highest protection. [383] As earlier discussed, the State Board is required to prioritize people's right to drinking water over the interests of irrigated agriculture.[384]

The State Board contends that the modified General WDRs support the basic human right to safe drinking water, based on four provisions: (1) calculation and reporting of field-level A/R data; (2) implementation and reporting of management practices where Members identified as having significantly higher than average multi-year A/R ratio in order to reduce over-application of nitrogen; (3) monitoring on-farm drinking water supply wells to determine if they exceed public health standards; and (4) notification of users if a well exceeds public health standards. 2017 Proposed Order at 65. However, as discussed above, the Board's 2017 Proposed Order, as revised, undermines each of these provisions and consequently undermines the General WDRs' overall effectiveness. The Proposed Order is incapable of determining the impact of management practices on water quality and of assuring growers' compliance with water quality objectives.[385]

This shallow analysis makes a mockery of the human right to water in this sixth largest economy in the world, as water quality degradation undeniably continues as the primary result of irrigated

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and Third Party. 2017 Proposed Order at 9-10, 12 & n.29, 16, 18-19, 25, 57-61, 73-76, 83-84. The Board is illegally prioritizing irrigation to the exclusion of other beneficial uses. "'Paramount among these we see the ever increasing need for the conservation of water in this state, an inescapable reality of life quite apart from its express recognition in [Article X, Section 2].'" *Light,* 226 Cal. App. 4th at 1479-80 (quoting *Joslin v. Marin Municipal Water District,* 67 Cal. 2d 132, 140 (1967)); *see also In re Waters of Long Valley Creek Stream System,* 25 Cal. 3d 339, 354 (1979).

[381] Water Code § 106.3(a).

[382] Water Code § 106.3(b); *see also* Health & Safety Code § 116270(a) ("Every resident of California has the right to pure and safe drinking water.").

[383] State Board Resolution No. 2016-0010, Adopting the Human Right to Water as a Core Value and Directing its Implementation in Water Board Programs and Activities (2016), p. 3; Central Valley Regional Water Quality Control Board Resolution R5-2016-0018, Adopting the Human Right to Water as a Core Value in Central Valley Water Board Programs and Activities (2016).

[384] Water Code § 160 ("[T]he use of water for domestic purposes is the highest use of water, and that the next highest use is for irrigation."); *United States v. State Water Resources Control Board,* 182 Cal. App. 3d at 103 (stating the State Board's actions must reflect "the legislative policy that the favored or 'highest' use [of the state's water resources] is domestic, and irrigation is the next highest").

[385] While the State Board states that "it is appropriate … to consider the human right to water in this context," it also claims that Water Code § 106.3, "by its terms, does not apply to the issuance of a water quality order." 2017 Proposed Order at 65. But the Order establishes a "policy for the state," within the meaning of Water Code § 106.3, since it identifies numerous provisions that are precedential for future irrigated lands regulatory programs statewide. 2017 Order at 8, n.14. Water Code § 106.3 thus applies to the Order.

agriculture and humans – and an increasing at that – continue to lack access to clean, reliable and affordable sources of domestic water.

Irrigated agricultural operations have caused severe water quality degradation and disproportionately burden low-income communities of color, who are consequently required to expend limited resources on remediation and replacement water. The Boards acknowledge this serious health risks and yet refuses to impose more stringent permit requirements, citing costs on growers and disregarding costs passed on to communities.[386] In prioritizing agriculture over human rights, the Board is ignoring a human rights crisis that is unfolding and growing. Considering the magnitude of the problem, it is well past time to change course and adopt discharge permits that protect water quality and people's drinking water.

9. The Order violates substantive due process.

Both the United States and the California Constitutions recognize and preserve the fundamental right of citizens to be free from government action that harm life, liberty and property. U.S. Constitution, amend. V and XIV; California Constitution, article I § 1. California's Constitution, being somewhat broader, provides: "All people are by nature free and independent and have inalienable rights. Among these are enjoying and defending life and liberty, acquiring, possessing, and protecting property, and pursuing and obtaining safety, happiness, and privacy." California Constitution, article I, § 1.

These inherent and inalienable rights protect citizens from government infringement upon basic freedoms and basic (or natural) rights. Inextricably linked to the inalienable right to life is the basic human right to safe water that is adequate to drink. Without access to safe drinking water, human life cannot be sustained, as water is "the very life blood" of existence.[387]

As stated above, it the policy of California that "every human has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes."[388] The Boards also recognized the right to drinking water as a core value to be given the highest protection.[389]

The Boards have known for decades that growers operating under the conditions of previously issued irrigated agricultural discharge permits have caused nitrate contamination in people's drinking water. Yet the Boards continue to issue permits with the same deficient conditions, including the revised 2017 Proposed Order. The State and Regional Boards are the primary agencies responsible for controlling this public health crisis,[390] and yet the Boards continue to require little more of growers than collective, mixed-source monitoring and education. The Boards do so with full appreciation that maintaining the status quo will result in more citizens losing access to safe drinking water and infringing upon their fundamental rights to safe drinking water.

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[386] 2017 Proposed Order at 9-10, 12 n.29, 16, 18-19, 25, 57-61, 73-76, 83-84.
[387] *Gin S. Chow v. City of Santa Barbara,* 217 Cal. 673, 701-702 (1933).
[388] Water Code § 106.3(a); Health & Safety Code § 116270(a).
[389] State Board Resolution 2016-0010, Adopting Human Right to Water as a Core Value and Directing its Implementation in Water Board Programs and Activities; Central Valley Regional Water Quality Control Board Resolution R5-2016-0018, Adopting the Human Right to Water as a Core Value in Central Valley Water Board Programs and Activities; *see also* State Water Board Resolution 88-63, Sources of Drinking Water Policy.
[390] Water Code §§ 174, 179, 13001.

Because of all of the deficiencies identified above, the Order is not protective of water quality and will not prevent the deprivation of citizens' right to drinking water. In addition, the state does not have a compelling state interest in keeping costs down for growers; decreased costs for growers is not a sufficient justification to infringe on citizens' substantive due process rights such as the right to water.[391] Weaker permits also do not save costs overall, but merely result in shifting costs to the state and impacted communities – those who are least able to afford the burdens of health consequences and deal with contaminated water, such as via filtration (or other treatment), purchasing and transporting replacement water, or monitoring water quality.

10. The Order violates the prohibition against public nuisance.

Under the Porter-Cologne Act, a nuisance occurs when a discharge exceeds water quality objectives and causes harm to the health or wellbeing of a community (or otherwise significant number of people) or obstructs their free use or interferes with the comfortable enjoyment of life or property.[392] Contaminating communities' source of drinking water (resulting in health-based standards violations and deprivation of access to drinking water) constitutes a nuisance under the Porter-Cologne Act. In addition, a public nuisance that clearly violates a provision of the Water Code or a Basin Plan, such as the exceedance of a numeric, health-based water quality objective or MCL, constitutes a public nuisance per se.[393]

As discussed in the sections above, the revised 2017 Proposed Order will result in discharges that violate nitrate MCLs for drinking water. In addition, the 2017 Proposed Order adopts the same inadequacies as prior orders that result in increasingly severe harm. Just like earlier iterations, the Order fails to incorporate clear and enforceable permit conditions and effective feedback mechanisms that can assess the impact of management practices on water quality and verify growers' compliance with water quality objectives. The Board is aware the degradation from the discharges governed by these permits results in nitrate concentrations that exceed MCLs for drinking water, causing communities to lose access to drinking water. The Board's approved discharger permits have resulted and continue to result in a condition of nuisance, in violation of the central tenets of Porter-Cologne.[394]

V. CONCLUSION

The 2017 Proposed Order is a step backwards from an already weak set of proposed changes to the General WDRs. As water quality continues to degrade throughout the state, polluted water puts communities and ecosystems at risk. Because the General WDRs, as modified by the 2017 Proposed Order, will remain in place indefinitely and because many provisions are precedential throughout the state, these unlawful aspects of the Order will thwart water quality improvements

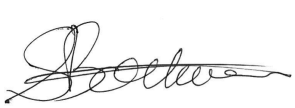
[391] 2017 Proposed Order at 9-10, 12 n.29, 16, 18-19, 25, 57-61, 73-76, 83-84.
[392] Water Code §13050(m) defines nuisance to mean anything that meets all of the following: (1) is injurious to health, is indecent or offensive to the senses, or is an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property; (2) affects an entire community, neighborhood, or considerable number of persons, although the impacts may be unequal; and (3) occurs during, or as a result of, the treatment or disposal of wastes.
[393] *Jordan v. City of Santa Barbara,* 46 Cal. App. 4th 1245, 1257 (1996); *Newhall Land & Farming Co. v. Superior Court*, 19 Cal. App. 4th 334, 341 (1993) (citing *Carter v. Chotiner*, 210 Cal. 288, 291 (1930)).
[394] Water Code §§ 13000; 13050(h)-(j), (m); 13140; 13241; 13263; Resolution 88-63 (antidegradation policy).

in California for years to come.

It is time for the State Board to comply with the law and address the persistent pollution problems caused by agricultural practices in this state. We look forward to working with you to take the necessary steps to reform agricultural pollution management and uphold the law.

Sincerely,

Marisol Aguilar
Director, Community Equity Initiative
California Rural Legal Assistance, Inc.
Attorney for Petitioners
Planada En Accion
Fairmead Community and Friends



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Department 29
Superior Court of California
County of Sacramento
720 Ninth Street
Timothy M. Frawley, Judge
Frank Temmerman, Clerk

Hearing Held: Friday, March 29, 2013, 10:00 a.m.

SAN JOAQUIN COUNTY RESOURCE CONSERVATION DISTRICT, et al. **v.** **CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD, CENTRAL VALLEY REGION, et al.** **CALIFORNIA RICE COMMISSION** **CALIFORNIA SPORTFISHING PROTECTION ALLIANCE, et al.** **v.** **CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD, CENTRAL VALLEY REGION, et al.** **CALIFORNIA RICE COMMISSION**	**Case Number: 34-2012-80001186 (Consolidated Case Number: RG12632180)**

Proceedings: Petition for Writ of Mandate and Complaint for Declaratory and Injunctive Relief

On March 28, 2013, the court issued a tentative ruling in the above-entitled proceeding. On March 29 2013, at 10:00 a.m., the matter came on for hearing with counsel present as indicated on the record. After the hearing, the Court requested supplemental briefing. Upon receipt of the supplemental briefing, the matter was taken under submission.

Having reviewed the administrative record and considered the oral and written arguments of the parties, the Court hereby rules as follows:

RULING UNDER SUBMISSION

I.
Introduction

At issue in this case is the Central Valley Regional Water Quality Control Board's certification of a "Final Program Environmental Impact Report for the Long-Term Irrigated Lands Regulatory Program" (Resolution No. R5-2011-0017) and adoption of the "Short-Term Renewal of the Coalition Group Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands" (Resolution No. R5-2011-0032).

Petitioner San Joaquin County Resource Conservation District, on behalf of the San Joaquin County and Delta Water Quality Coalition (the "Ag Coalition"), challenges the certification of the Final Program EIR. Petitioners California Sportfishing Protection Alliance and California Water Impact Network (collectively, "CSPA"), separately challenge both the certification of the Final Program EIR and the renewal of the waiver. The Court shall grant the CSPA petition in part, but deny the Ag Coalition's petition in its entirety.

II.
Background Facts and Procedure

The Central Valley is home to some of the world's most productive and economically-viable agriculture industry. As a result, agriculture has become a dominant land use activity in the Central Valley and a significant and important part of the California economy. California's Central Valley includes over seven million acres of irrigated farm land, and approximately 35,000 individual farms.

Irrigated farm lands can convey an array of pollutants to surface and ground waters that potentially could impact water quality. Unlike industrial wastewater discharges, which generally contain low volumes of concentrated pollutants emanating from a discrete discharge point, agricultural discharges are characterized by large volumes of water containing relatively low levels of pollutants. In addition, whereas industrial discharges are usually "point source" discharges emanating from a discrete discharge point, agricultural discharges usually are "nonpoint source" discharges.

Discharges from agricultural lands include irrigation return flow, flows from tile drains, storm water runoff, drift from sprayed materials, and spills and leaks. These discharges can affect water quality by transporting pollutants, including pesticides, sediment, nutrients, salts, pathogens, and heavy metals into surface and ground waters. The amount and type of effects on water quality vary from location to location, depending on the irrigation method, geography, rainfall,

crops grown, soil types, pesticides and fertilizers used, management practices, and other factors.

As "nonpoint source" discharges, discharges from agricultural lands historically have not been subject to the same type of regulation as other discharges of waste. For example, agricultural discharges are exempt from regulation under the federal Clean Water Act and, until relatively recently, were virtually unregulated under California law as well. However, California has regulated agricultural discharges since 1982 under the Porter-Cologne Water Quality Control Act (Porter-Cologne).

California's Porter-Cologne Act has the explicit goal to protect all California waters for use and enjoyment by people of the State. Porter-Cologne maintains that all activities and factors which may affect the quality of the waters of the state shall be regulated to attain the highest water quality which is reasonable. (Cal. Water Code § 13000.) Pursuant to Porter-Cologne, the regional water quality control boards must develop basin plans to ensure the reasonable protection of beneficial uses of waters and set forth the water quality conditions that could reasonably be achieved. (Cal. Water Code §§ 13240, 13241.)

Regional boards implement their basin plans primarily through the issuance of National Pollutant Discharge Elimination System (NPDES) permits (for point source and storm water discharges) and Waste Discharge Requirements (WDRs) (for nonpoint source discharges). Under Porter-Cologne, anyone discharging or proposing to discharge waste that could affect water quality must file a Report of Waste Discharge (RWD) with the regional board. (Cal. Water Code § 13260.) After receipt of an RWD, the regional board may issue a WDR for discharge to the state's waters. (Cal. Water Code § 13263.)

Water Code section 13263 sets forth the requirements of WDRs. WDRs must implement any relevant water quality control plans that have been adopted, take into consideration the beneficial uses to be protected, the water quality objectives reasonably required for that purpose, other waste discharges, the need to prevent nuisance, and the factors that are required to be considered by Water Code section 13241 in establishing water quality objectives.

In addition to authorizing regional boards to issue WDRs, Porter-Cologne authorizes regional boards to waive the filing of RWDs and the issuance of WDRs if the regional board determines, after a hearing, that the waiver is consistent with any applicable state or regional water quality control plan and is in the public interest. (Cal. Water Code § 13269.) Waivers shall be conditional and persons subject to the waiver must comply with such conditions. (*Ibid.*)

Since 1982, the Central Valley Regional Water Quality Control Board (the "Regional Board") has regulated nonpoint source discharges from agricultural lands through a waiver of WDRs. The 1982 waiver's only substantive

requirement was to require agricultural dischargers to minimize sediment to meet basin plan turbidity objectives and prevent concentrations of materials toxic to fish or wildlife.

Beginning in 2002-03, the Regional Board substantially increased regulation of agricultural discharges through a conditional waiver of WDRs for discharges from irrigated agricultural lands. The conditional waiver program has come to be known as the "Coalition Group Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands" and, alternatively, as the "irrigated lands regulatory program" (or "ILRP"). The conditional waiver program includes substantial monitoring requirements, watershed plans, and education and outreach components.

Between 2003 and 2005, Regional Board staff presented the Board with updates on the waiver, progress on the long-term EIR, and proposed revisions and extensions to the program. At the August 2005 meeting, the Regional Board adopted an updated monitoring program, and asked staff for a recommendation on how to incorporate groundwater protections into the waiver program. Staff prepared an informational report dated September 15, 2005, which outlined the progress of the program as well as options on bringing groundwater protection into the program. (AR 2294-97.)

The 2003 conditional waiver program was set to expire in 2006. In 2006, the Regional Board adopted a new conditional waiver for discharges from irrigated agricultural lands that continued the program until 2011. The extension was intended to serve as an interim program while a new, long-term ILRP was developed. (AR 22.) As part of the approval of the extension, the Board directed staff to begin developing the new long-term ILRP and to continue preparation of an EIR that would evaluate alternatives for the long-term program. (*Ibid.*)

The Board's 2006 renewal of the waiver program was challenged by the California Sportfishing Protection Alliance. As part of a stipulated judgment to settle the action, the Regional Board staff agreed to propose a program EIR ("PEIR") for Board certification by April 2011. (*Ibid.*)

In 2008, the Regional Board embarked on a two-year stakeholder process in an effort to outline the next steps for a new long-term ILRP.

In July of 2010, the Regional Board released the Draft PEIR for the long-term ILRP for public review and comment. The Draft PEIR analyzed five alternatives for the long-term ILRP program, but did not identify a "preferred" alternative. Instead, the Regional Board purported to analyze each of the five alternatives equally. (AR 1097, 1123-53.)

The five alternatives included in the Draft PEIR were the No Change Alternative [Alternative 1], the Third Party Lead Entity Alternative [Alternative 2], the

Individual Farm Water Quality Management Plan Alternative [Alternative 3], the Direct Oversight with Regional Monitoring Alternative [Alternative 4], and the Direct Oversight with Farm Monitoring Alternative [Alternative 5].

Under the No Change Alternative, the Board would renew the 2006 conditional waiver without change.

Under the Third Party Lead Entity Alternative, the Board would develop a single or series of regulatory mechanisms for discharges from irrigated lands to both surface and groundwater. Regulation of discharges to surface water would be similar to the approach of the 2006 conditional waiver, with third party groups functioning as the lead entities. Third party groups would also be required to monitor groundwater and develop groundwater management plans.

Under the Individual Farm Water Quality Management Plan Alternative, the Board would abandon the coalition approach, and require individual growers to individually apply for a conditional waiver directly from the Board. The Board would have to approve each individual farm water quality management plan.

Under the Direct Oversight with Regional Monitoring Alternative, individual growers would be required to obtain WDRs and develop individual farm water quality management plans. However, the alternative would include various tiers, which could trigger additional requirements.

Under the Direct Oversight with Farm Monitoring Alternative, individual growers would be required to obtain WDRs and develop farm water quality management plans. Individuals growers also would be required to monitor at the edge-of-field, track pesticide and fertilizer use, and develop a farm nitrate balance as part of a nutrient management plan. Growers also would be required to install groundwater monitoring wells.

In addition to the alternatives analyzed in the Draft PEIR, Regional Board staff added a "Recommended Project Alternative" as an appendix to the Draft PEIR. (AR 1461-1708.) The staff report indicates that the Recommended Project Alternative is essentially a conglomerate of different elements of the five alternatives analyzed in the Draft PEIR. (AR 1604-10.)

The Recommended Project Alternative was not analyzed in the four corners of the Draft PEIR. The environmental analysis of the Recommended Program Alternative relies on the environmental review of the five alternatives in the PEIR, and the discussion in the staff report attached as an appendix. (AR 1123.)

In March of 2011, the Regional Board issued a Notice of Availability for the Final PEIR. The Regional Board also released a staff report for an April hearing to certify the PEIR. The staff report contained a Recommended Irrigated Lands Regulatory Framework Program (the "Framework"), which was purportedly

intended to implement the Recommended Program Alternative. (AR 103774-103810.) Under the Framework, the new, long-term ILRP will replace the 2006 conditional waiver with new WDRs that expand the current regulatory requirements for discharges to surface waters and impose new requirements to protect groundwater.

At the April 2011 hearing, the Regional Board adopted Resolution No. R5-2011-0017, certifying the Final PEIR. (AR 22-23.) However, the Regional Board did not approve a new, long-term ILRP program, concluding that adoption of a new ILRP program at that time would have been premature.

On June 9, 2011, to bridge the gap between expiration of the existing conditional waiver program and the adoption of a new ILRP program, the Regional Board adopted Resolution R5-2011-032 (the "Renewed Waiver"). Resolution R5-2011-032 renews and extends for two years, until June 30, 2013, the existing 2006 conditional waiver program.

The Regional Board made express findings that due to resource constraints it could not implement a new program and develop new WDRs at the same time. Because staff indicated that completing the new ILRP project would take up to two years, the Board found that a short-term renewal was the only way to ensure a viable regulatory program would be in place pending the ILRP. (AR 24-26.) The Board relied on the certified Final PEIR in approving the Renewed Waiver.

On June 15, 2011, the Board filed a notice of determination for the Renewed Waiver.

Under the Renewed Waiver, dischargers can either choose to be subject to a waiver and comply with its conditions, or submit a RWD and seek an individual WDR. The Waiver allows groups of farmers to create groups of dischargers and other interested entities, dubbed "coalition groups," to implement the conditions of the waiver.

In general, coalition groups are required to (1) maintain a list of participants, including parcel information; (2) prepare and implement a monitoring and reporting program that meets the requirements of the Coalition Group Monitoring and Reporting Program (Order No. R5-2008-0005); (3) report exceedances of water quality standards to the Board; and (4) develop, submit, and implement management plans where there are exceedances of water quality standards.

The Coalition Group Monitoring and Reporting Program requires a monitoring plan that describes the conditions of the waters that receive discharges from irrigated lands within the coalition group boundaries; the magnitude and extent of water quality problems in those waters; the contributing sources from irrigated agriculture to the water quality problems; the management practices that are being implemented to reduce the impacts of irrigated agriculture on the waters;

and a statement whether the water quality problems are getting better or worse. (AR 32935 *et seq.*) In addition to addressing these five issues, the monitoring plans need to include twenty-one different components, including a discussion of specific management practices in use and available programs to reduce or eliminate water quality impacts from irrigated agricultural discharges and locations where these occur.

The Coalition Group Monitoring and Reporting Program requires three different types of monitoring. The monitoring sites must represent the various water body types that directly or indirectly receive agricultural drainage. Monitoring cannot be limited to larger volume bodies that would dilute contaminants. (AR 32940.) The location of monitoring sites must fairly represent agricultural drainage and discharges from irrigated agriculture in the coalition group boundary area.

Based on the monitoring data, the coalition groups are required to report to the Board if monitoring results indicate exceedances of water quality standards. The report must include follow-up analysis or other actions the coalition group intends to take to address the exceedance. If the exceedance involves a pesticide or toxicity, the follow-up actions must include investigation of pesticide use within the watershed area associated with the exceedance. If there is more than one exceedance of the same parameter at the same location within a three-year period, the coalition group must develop and implement a management plan.

Management plans are required to identify management practices to address exceedances, provide for a schedule of implementation, contain performance goals, include additional monitoring for constituents of concern, evaluate the effectiveness of management practices being encouraged, identify participants that are subject to the specific management plan in question, and provide routine reporting to the Board. (AR 32958.)

The Renewed Waiver generally requires that dischargers participating in a coalition group implement management practices as necessary to achieve best practicable treatment or control to reduce discharges to the extent feasible and achieve compliance with applicable water quality standards, protect the beneficial uses of the waters of the state, and prevent nuisance.

The Renewed Waiver prohibits dischargers who are participating in a coalition group from discharging any waste not specifically regulated by the waiver, causing any new discharges of waste from irrigated lands that impair surface water quality, or increasing discharges of waste or adding new wastes that impair surface water quality not previously discharged. The Waiver also prohibits discharges that cause or contribute to an exceedance of any applicable water quality standard.

However, the Waiver does not require individual dischargers to sample, monitor, or report the pollutants that they have discharged or will discharge. Nor does the

Waiver require monitoring of receiving waters at or near the locations of individual farm discharges. Further, individual dischargers are not required to report management practices to their coalition group, and individual dischargers do not have to allow coalition group representatives access to the discharger's property. A coalition group cannot mandate that an individual discharger implement or install any specific management practice; the group can only recommend management practices. (AR 1477.)

Following certification of the PEIR and approval of the Renewed Waiver, petitioner San Joaquin County Resource Conservation District, on behalf of the San Joaquin County and Delta Water Quality Coalition (the "Ag Coalition"), filed a lawsuit in this Court challenging the certification of the Final PEIR.

Petitioners California Sportfishing Protection Alliance and California Water Impact Network (collectively, "CSPA"), filed a separate lawsuit in Alameda County Superior Court challenging the certification of the Final PEIR and the approval of the Renewed Waiver (Case No. RG12632180). The Alameda case subsequently was transferred to this Court and consolidated as Sacramento Superior Court Case No. 34-2012-80001186.

III.
Requests for Judicial Notice and Objections

The Board has filed a request for judicial notice of a September 14, 2011, response to petitions for review of actions taken by the Board. The Ag Coalition has filed a separate request for judicial notice of sixteen additional documents. Both CSPA and the Ag Coalition object to the Board's request for judicial notice. CSPA also objects to Exhibits 14 and 16 of the Ag Coalition's request for judicial notice, and to the Declaration of William Thomas.

The Court sustains the objection to the Board's request for judicial notice, to the objection to Exhibit 16 of the Ag Coalition's request, and to the Declaration of William Thomas. The Court overrules the objection to Exhibit 14, although the Court notes that Exhibit 14 is not part of the administrative record and shall not be considered when determining whether findings are supported by evidence in the record.

IV.
Standard of Review

The challenges to the Board's issuance of the Renewed Waiver are reviewed under Code of Civil Procedure section 1094.5. (Water Code § 13330(e).) The inquiry under section 1094.5 is whether the agency has (1) proceeded without, or in excess of, jurisdiction; (2) whether there was a fair trial; and (3) whether there was any prejudicial abuse of discretion. Abuse of discretion is established if the agency has not proceeded in the manner required by law, the order or decision is

not supported by the findings, or the findings are not supported by the evidence. (Civ. Proc. Code § 1094.5(b).)

Under Water Code section 13330(e), the Court is authorized to exercise its independent judgment on the evidence. In applying the independent judgment test, the trial court reweighs the evidence from the hearing and makes its own determination as to whether the administrative findings are supported by the weight (i.e., preponderance) of the evidence. (*Vaill v. Edmonds* (1991) 4 Cal.App.4th 247, 257.)

Even where the independent judgment test applies, the findings of the agency come before the court with a strong presumption as to their correctness. (*Fukuda v. City of Angels* (1999) 20 Cal.4th 805, 811-12, 817.) It is presumed that the agency regularly performed its official duty. (*Id.*; *Elizabeth D. v. Zolin* (1993) 21 Cal.App.4th 347, 354.) The burden falls on the petitioner attacking the administrative decision to convince the court that the administrative proceedings were unfair, were in excess of jurisdiction, or that the agency's findings are contrary to the weight of the evidence. (*Fukuda, supra*, at pp. 811-12.)

The Court reviews the Regional Board's compliance with CEQA by evaluating whether there was a prejudicial abuse of discretion. (Pub. Res. Code § 21168.5.)

In a mandate proceeding to review an agency's decision for compliance with CEQA, the court reviews the administrative record to determine whether the agency abused its discretion. Abuse of discretion is shown if the agency has not proceeded in the manner required by law, or the determination is not supported by substantial evidence. (*Protect the Historic Amador Waterways v. Amador Water Agency* (2004) 116 Cal.App.4th 1099, 1106.) Judicial review differs significantly depending on whether the claim is predominantly one of improper procedure or a dispute over the facts. (*Ebbetts Pass Forest Watch v. California Dept. of Forestry & Fire Prot.* (2008) 43 Cal.4th 936, 945.)

Where the alleged defect is that the agency has failed to proceed in the manner required by law, the court's review is de novo. (*Id.*) Although CEQA does not mandate technical perfection, CEQA's information disclosure provisions are scrupulously enforced. (*Id.*) A failure to comply with the requirements of CEQA which results in an omission of information necessary to informed decision-making and informed public participation constitutes a prejudicial abuse of discretion, regardless whether a different outcome would have resulted if the agency had complied with the disclosure requirements. (*Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1198; *Association of Irritated Residents v. County of Madera* (2003) 107 Cal.App.4th 1383, 1392.)

Where the alleged defect is that the agency's factual conclusions are not supported by substantial evidence, the reviewing court must accord deference to the agency's factual conclusions. The reviewing court may not weigh conflicting evidence to determine who has the better argument and must resolve all reasonable doubts in favor of the administrative decision. The court may not set aside an agency's approval of an EIR on the ground that an opposite conclusion would have been equally or more reasonable. (*Ebbetts Pass, supra*, at p.945; *County of Amador v. El Dorado County Water Agency* (1999) 76 Cal.App.4th 931, 946.)

Regardless of what is alleged, an EIR approved by a governmental agency is presumed legally adequate, and the party challenging the EIR has the burden of showing otherwise. (*Santa Clarita Organization for Planning the Environment v. County of Los Angeles* (2007) 157 Cal.App.4th 149, 158; *Gilroy Citizens for Responsible Planning v. City of Gilroy* (2006) 140 Cal.App.4th 911, 919.)

V.
Discussion

A. The Ag Coalition Petition

The Ag Coalition challenges the Board's certification of the PEIR for the long-term ILRP. The Ag Coalition contends that the PEIR suffers from the following fundamental flaws and must be set aside: (1) the Regional Board failed to identify and describe the "proposed" project, distorting the impacts and alternatives analysis; (2) the PEIR contains an inadequate environmental baseline; (3) the PEIR contains an inadequate identification and analysis of alternatives; (4) the Board failed to recirculate the PEIR after significant new information was added in the form of the Recommended Program Alternative and the Framework; (5) the PEIR contains an inadequate evaluation of individual and cumulative environmental impacts for the alternatives included; and (6) the mitigation measures in the PEIR are unlawful and in excess of the Board's jurisdiction.[1] The Ag Coalition seeks an order commanding the Regional Board to set aside the certification of the PEIR and prepare and certify a legally adequate PEIR for the long-term ILRP before the Board takes any action to implement the long-term ILRP.

1. The PEIR's project description is adequate.

The Ag Coalition contends that the Board's PEIR violates CEQA because it contains a defective description of the project. According to the Ag Coalition, CEQA requires the lead agency to identify a "proposed" project and to consider a reasonable range of alternatives to that project. Here, the Ag Coalition contends,

[1] The petition also challenged the Board's long-term ILRP as violating Porter-Cologne and the Due Process Clause. However, since the Board did not approve a long-term ILRP, these challenges are not ripe and, therefore, the Court shall not consider them.

the PEIR does not identify any proposed project. Rather, the PEIR identifies five alternatives and analyzes all five alternatives to an equal level of detail. The PEIR indicates that the Board intends to use the PEIR in selecting a "preferred" alternative.

The Board does not agree that the PEIR fails to identify the "proposed" project. According to the Board, the proposed project is the development and implementation of an ILRP. The Board admits that the PEIR does not identify a "preferred" alternative. Rather than using the typical EIR approach of starting with a preferred project and then looking at alternatives to that project, the Draft PEIR was intended to be used as a tool to assist decisionmakers in selecting a project.

The Board argues that nothing in CEQA requires a lead agency to identify a "preferred" alternative. The Board argues that its approach, while not typical, resulted in *more* detailed analysis of project alternatives than would have occurred if the Board had taken a more traditional approach. The Board argues it should not be penalized for providing more detailed analysis and for using the CEQA process to inform its selection. In any event, the Board contends, based on the results of the Draft PEIR, Board staff selected and described a "Recommended Program Alternative" in an appendix to the Draft EIR, which was released and circulated for public comment in that form.

The Court finds the PEIR's description of the project to be adequate. While the Board's approach is not typical, it is consistent with the purposes of CEQA. The purpose of an EIR is to provide public agencies and the public with detailed information about the significant effects a project is likely to have on the environment, to list ways those effects might be minimized or avoided, and to identify alternatives to the project. (Pub. Resources Code §§ 21061, 21100.) It follows that an accurate description of the "project" is necessary to decide what kind of EIR is required. (*County of Inyo v. City of Los Angeles* (1977) 71 Cal.App.3d 185, 192.) Only through an accurate view of the project may official decisionmakers and the public balance the project's benefit against its environmental cost, consider mitigation measures, and weigh other alternatives. (*Id.* at p.193.)

By refusing to select a "preferred" alternative, and analyzing all of the alternatives with an equal level of detail, the Board promoted, rather than impaired, CEQA's role in the decisionmaking process. In essence, the Board applied CEQA in its purest form: as an informational tool to help the agency select a preferred project alternative.

The Court fails to see what CEQA purpose would be served by requiring the Board to artificially select one alternative as the "preferred" alternative and then perform the exact same analysis (or a less detailed analysis). To construe

CEQA in this manner would grossly elevate form over substance, which this Court will not do.

Moreover, even if a "preferred" project alternative was required, the Board included one in the appendix to its Draft PEIR: the so-called "Recommended Project Alternative." The Recommended Program Alternative was attached to and circulated with the Draft PEIR and analyzed as an additional alternative to the five alternatives discussed in the body of the Draft EIR. (AR 1604-41.) The Court fails to see what difference it makes that the analysis was contained in an appendix to the Draft PEIR rather than in the body of the Draft PEIR itself. Even if this was error, it certainly was not prejudicial; it did not deprive the public or the Board of information necessary to informed decision-making and informed public participation.

The PEIR's project description satisfies CEQA requirements for a program-level EIR.

2. The PEIR's environmental baseline is adequate.

The Ag Coalition next argues that the PEIR's description of the environmental baseline is inadequate because it does not describe in detail how much water is currently diverted and returned to streams, and because it improperly relies on the "no project" alternative to represent existing baseline conditions.

These claims are rejected. The PEIR did not improperly rely on the "no project" alternative to represent the existing baseline conditions, and the additional information that petitioners seek to have included in the PEIR – while desirable – is simply not reasonably available to the Board or necessary to perform a program-level analysis of the hydrologic effects of the ILRP.

3. The PEIR's alternatives analysis is adequate.

The Ag Coalition contends that the PEIR's alternatives analysis is inadequate because it contains a flawed "no project" alternative, failed to analyze the Recommended Program Alternative and the Framework, and failed to identify a preferred or environmentally-superior alternative.

In its tentative ruling, the Court agreed that the PEIR was flawed because it did not contain a true "no project" alternative discussing the existing conditions, as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved. However, at the hearing, the Board persuasively argued that, under the unique circumstances of this case, the Board properly treated the continuation of the existing regulatory plan, policy, or ongoing operation as the "no project" alternative. As explained in the PEIR, if the existing program were not extended and were allowed to expire, regulation of irrigated agriculture would not cease. Rather, agricultural dischargers would be required

by Water Code section 13260 to file a Report of Waste Discharge and the Board would be required to issue individual or general WDRs to regulate the discharges or to adopt a new waiver. An environmental analysis of the impacts of issuing WDRs to each of tens of thousands of individual dischargers would not be feasible. (See AR 121-122, 1153.) The most that the Board reasonably could be expected to do is to estimate the impacts of issuing general WDRs or a new waiver. This is precisely what was done. Accordingly, the Court finds no violation of CEQA.

The Court likewise rejects the contention that the PEIR's alternatives analysis is inadequate because it failed to analyze the Recommended Program Alternative or the Framework.

As described above, the Draft PEIR included the Recommended Program Alternative as an alternative (albeit in an appendix), and the alternative was circulated along with the other five alternatives. (See AR 118, 123-124, 1459-1740.) In addition, the text of the Draft EIR referred to the appendix that contained the discussion of the Recommended Program Alternative. (See AR 1123.) While the use of an appendix to present information is not favored, the Court is persuaded that it may satisfy CEQA where, as here, the appendix is referenced in the text of the EIR and the discussion in the appendix is adequate. (See *California Oak Foundation v. City of Santa Clarita* (2005) 133 Cal.App.4th 1219, 1239.)

Moreover, the Recommended Program Alternative was derived from the elements of the other five alternatives and there is no material difference between the elements of the Recommended Program Alternative and the elements of the other five alternatives described in the Draft PEIR. Thus, to the extent the PEIR was required to analyze the Recommended Program Alternative, the Court finds that it does so.

Moreover, the Ag Coalition has failed to explain why the range of alternatives described in the PEIR is unreasonable in the absence of the Recommended Program Alternative and the Framework. Accordingly, the Court rejects the contention that the alternatives analysis is inadequate because it fails to consider the Recommended Program Alternative and the Framework. (The Ag Coalition's alternative contention that the Board abused its discretion by failing to recirculate the PEIR to discuss the Recommended Program Alternative and the Framework is discussed below.)

For the reasons described above, the Court also rejects the contention that the PEIR is inadequate because the Draft PEIR initially failed to identify a "preferred" project alternative.

The Court agrees with the Ag Coalition, however, that the PEIR should have identified an environmentally-superior alternative. Even if this requirement is not

explicitly stated in CEQA, it is implied by the Guidelines and the structure of CEQA, which requires a lead agency to consider environmentally superior alternatives. (See 14 C.C.R. § 15126.6(e)(2); see also *California Native Plant Society v. City of Santa Cruz* (2009) 177 Cal.App.4th 957, 1007; *Preservation Action Council v. City of San Jose* (2006) 141 Cal.App.4th 1336, 1353.)

4. The Board was not required to recirculate the PEIR.

The Ag Coalition argues that due to the inclusion of the Recommended Program Alternative and the Framework, the Board should have recirculated the Draft PEIR for public comment. The Court does not agree.

An EIR to which significant new information is added after the initial publication and review of the Draft EIR, but prior to the agency's consideration or approval of the project, must be recirculated for an additional round of review and comment by the public and interested agencies. (Cal. Pub. Res. Code § 21092.1; 14 C.C.R. § 15088.5.) In *Laurel Heights Improvement Association v. Regents*, the California Supreme Court clarified that recirculation is required in four different circumstances: (1) when new information discloses a new, substantial environmental impact of a project; (2) when new information shows a substantial increase in the severity of an environmental impact (unless mitigation measures reduce that impact to insignificance); (3) when new information discloses a feasible alternative or mitigation measure that has not been adopted and that clearly would lessen environmental impacts; and (4) when the draft EIR was so fundamentally flawed that public comment on the draft was effectively meaningless. (*Laurel Heights Improvement Association v. Regents* (*Laurel Heights II*) (1993) 6 Cal.4th 1112, 1130.)

CEQA does not require a lead agency to add significant new information to an EIR before determining whether the information is significant enough to require recirculation. (*Western Placer Citizens for an Agricultural & Rural Environment v. County of Placer* (2006) 144 Cal.App.4th 890, 903.) Here, by certifying the EIR, the Board necessarily concluded that the new information was not significant, and therefore did not require recirculation and additional public comment. The question is whether the Board's determination is supported by substantial evidence.

The Court concludes that it is. The evidence in the record supports a finding that the Recommended Program Alternative was not "new" information since it was appended to and circulated with the Draft PEIR. Moreover, even if the Recommended Program Alternative was new information, substantial evidence supports a finding that the changes proposed by the Recommended Program Alternative were not "significant" for purposes of CEQA.

A similar analysis applies to the Framework. While the Framework was new information, it does not appear to make any "significant" changes to the

Recommended Program Alternative that may cause new or more severe environmental impacts – at least at a programmatic level.

5. The PEIR contains an adequate evaluation of the project's individual and cumulative environmental impacts.

The Ag Coalition contends the PEIR is inadequate because it contains an inadequate evaluation of the project's individual and cumulative environmental impacts. The Court finds the PEIR's discussion of the project's individual and cumulative impacts to be adequate for a programmatic EIR.

In its tentative ruling, the Court took issue with the PEIR's cumulative impacts analysis. However, at the hearing, the Court was persuaded by the Board that it made a good faith effort at full disclosure and that, due to the sheer size and scope of the project, further analysis of the project's cumulative impacts was not reasonably feasible.

6. The PEIR's mitigation measures are lawful.

The Ag Coalition also challenges the PEIR's implicit finding that the mitigation measures are feasible. The Ag Coalition contends that several of the mitigation measures, namely CUL-MM-1, BIO-MM-1, BIO-MM-2, and FISH-MM-1, are not feasible because they impose requirements on dischargers that the Board does not have the power to impose, and because they impose excessive costs.

The Court rejects this claim. The Ag Coalition has failed to persuade the Court that substantial evidence does not support finding the mitigation measures are feasible and that the Board has the power to impose them.

In its request for supplemental briefing, the Court questioned whether the Board has the power to require as part of its mitigation measures that agricultural operations undertake "additional CEQA review" if such review would not otherwise be required under CEQA. The Board responded that it does not believe it has that authority, but that it did not believe it had imposed any such requirement on agricultural operations.

In essence, where the mitigation measures refer to "additional CEQA review," the Board clarified that the language was simply intended to mean that if a future discretionary approval by the Board would require additional CEQA review, such review will be undertaken. With this stipulation, the Court is persuaded that the PEIR's mitigation measures are lawful.

B. The CSPA Petition

Like the Ag Coalition, CSPA challenges the Board's certification of the Final PEIR. CSPA alleges that the Board's certification of the Final PEIR violated

CEQA because the PEIR was not based on a proposed project, and because the Board approved the Renewed Waiver even though it conflicts with applicable laws and regulations.

CSPA also challenges the Regional Board's approval of the Renewed Waiver. CSPA contends that the Regional Board abused its discretion in approving the Renewed Waiver because the Renewed Waiver is not consistent with the State's Antidegradation Policy (Resolution No. 68-16) or the State's "Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program" (aka, the "Nonpoint Source Policy") and, therefore, the Board could not make the findings required by Water Code § 13269 to issue the Renewed Waiver.

CSPA seeks an order commanding the Regional Board to set aside the certification of the PEIR and the approval of the Renewed Waiver, and to suspend all activity under the ILRP that could result in any change or alteration to the environment until the Board has taken actions necessary to bring the certification and project approval into compliance with CEQA and Porter-Cologne.

1. CSPA's CEQA arguments lack merit.

Like the Ag Coalition, CSPA claims that the Board's certification of the PEIR violated CEQA because the PEIR did not include an adequate project description. For the reasons described above, the Court rejects this claim.

CSPA also contends that the Board's certification violates section 21002.1 of CEQA because the project that was approved – the Renewed Waiver – is inconsistent with "applicable laws and regulations." This claim, too, is rejected.

CSPA has taken the cited language out of context. Section 21002.1 provides, in relevant part:

> In order to achieve the objectives set forth in Section 21002, the Legislature hereby finds and declares that the following policy shall apply to the use of environmental impact reports prepared pursuant to this division:
>
> (a) The purpose of an environmental impact report is to identify the significant effects on the environment of a project, to identify alternatives to the project, and to indicate the manner in which those significant effects can be mitigated or avoided.
>
> (b) Each public agency shall mitigate or avoid the significant effects on the environment of projects that it carries out or approves whenever it is feasible to do so.

> (c) If economic, social, or other conditions make it infeasible to mitigate one or more significant effects on the environment of a project, the project may nonetheless be carried out or approved at the discretion of a public agency if the project is otherwise permissible under applicable laws and regulations.

In context, it is clear that the reference to "applicable laws and regulations" was not intended to give rise to an independent cause of action under CEQA. The intent of the language is simply to make clear that compliance with CEQA does not exempt projects from compliance with otherwise applicable laws and regulations. An agency may abuse its discretion by approving a project that does not comply with applicable laws and regulations, but CEQA does not create a separate cause of action for violations of otherwise applicable laws and regulations.[2]

2. The Board abused its discretion in approving the Renewed Waiver without complying with the State's Antidegradation Policy.

CSPA contends that the Regional Board abused its discretion in adopting the Renewed Waiver because the Renewed Waiver fails to comply with the State's Antidegradation Policy (Resolution No. 68-16). CSPA contends that the Board violated the Antidegradation Policy in at least four ways: (1) by finding that the Antidegradation Policy does not apply to already degraded (impaired) waters; (2) by relying upon watershed-scale monitoring, which petitioners contend is not adequate to detect and prevent further degradation; (3) by failing to implement Best Practicable Treatment or Control (BPTC); and (4) by ignoring the adverse effects of the Waiver on discharges to groundwater.

The Board responds that because the Renewed Waiver is simply an interim step in the phased implementation of the long-term ILRP, the appropriate time to question compliance with the Antidegradation Policy is when the final order establishing the program is issued. To consider application of the Antidegradation Policy at this time, argues the Board, would be premature.

Further, since the Board considered the Antidegradation Policy when it issued the 2006 waiver, and the Renewed Waiver simply extends the 2006 waiver, the Board argues that the petitioners' claims are time barred and that no useful purpose would be served by requiring a new antidegradation analysis at this time.

Finally, even if the petitioners' challenges are ripe, the Board contends the Court should find the Renewed Waiver is consistent with the Antidegradation Policy

[2] The fact that a project violates otherwise applicable laws and regulations may, however, give rise to a potentially significant impact under CEQA.

because it prohibits discharges that will lower water quality, requires dischargers to meet water quality objectives, and implements best management practices.

As an initial matter, the Court rejects the Board's claim that the Antidegradation Policy should not be applied to the Renewed Waiver because the Waiver is only an "interim" program. There is no evidence of any exemption from the Antidegradation Policy for "interim" programs, or that the Board has interpreted interim programs to be exempt from the Antidegradation Policy's requirements.

For similar reasons, the Court rejects the Board's argument that the petitioners' claims are barred by the doctrine of res judicata. The petitioners here are challenging the 2011 Renewed Waiver, not the 2006 conditional waiver.

Before renewing the 2011 Waiver, the Board was statutorily required to determine that the Waiver is consistent with any applicable basin plan and is in the public interest. Since the Antidegradation Policy is state policy and has been incorporated into the Regional Board's basin plan, the Board was required to consider whether the Waiver was consistent with the Antidegradation Policy.

Moreover, even if res judicata otherwise would apply, it would not apply here because there are changed circumstances and new facts which did not exist at the time of the prior judgment, including, among other things, the decision in *Asociacion De Gente Unida Por El Agua v. Central Valley Regional Water Quality Control Board* (2012) 210 Cal.App.4th 1255.

The Court finds some merit in the Board's argument that a new antidegradation analysis should not be required because the Board considered the Antidegradation Policy when it issued the 2006 waiver, and the Renewed Waiver simply extends the 2006 waiver. It would make little sense to require the Board to perform a new antidegradation analysis to support a very brief (e.g., one or two month) extension of an existing program for which an antidegradation analysis already had been performed. But the Court is not persuaded that this reasoning can be applied to a situation such as this, where the Board granted an additional two-year extension.

Therefore, the Court proceeds to consider whether the Renewed Waiver is consistent with the Antidegradation Policy.

The Antidegradation Policy provides that where a regional board is permitting an activity that may produce waste that will discharge into existing high quality waters, it may permit such activity only if it makes certain findings. Specifically, the board must find that the activity (1) is consistent with the maximum benefit to the people of the state, (2) will not unreasonably affect beneficial uses, and (3) will not violate water quality standards. It also must find that any discharge to high quality water will be required to undergo best practicable treatment or control of the discharge necessary to assure that no pollution or nuisance will

occur, and the highest water quality consistent with the maximum benefit to the people of the state will be maintained. (*Asociacion De Gente Unida Por El Agua v. Central Valley Regional Water Quality Control Board* (2012) 210 Cal.App.4th 1255, 1260.)

In this case, the Regional Board has failed to make any of these findings for the 2011 Renewed Waiver. Instead, the Board appears to rely on the findings it made for the 2006 waiver. (AR 35; see also AR 96-97.) But even if the findings for the 2006 waiver are carried forward to the 2011 Renewed Waiver, the finding that the Waiver is consistent with the Antidegradation Policy is not supported by substantial evidence.

The Board admits that an ILRP that fails to regulate and monitor groundwater quality will not be consistent with the Antidegradation Policy. There is no dispute that the Renewed Waiver does not regulate or monitor groundwater quality. Thus, for this reason alone, the Renewed Waiver is not consistent with the Antidegradation Policy.

At the hearing, the Board argued that potential degradation to groundwater should not be considered because discharges to groundwater are not "covered" by the Waiver. However, if the authorized discharges to surface water under the Waiver may produce waste that will discharge into existing high quality groundwater, the Antidegradation Policy applies. Indeed, the Board's Final PEIR concedes that the Renewed Waiver is not consistent with its Antidegradation Policy. (See, e.g., AR 1160 [discussing the "No Change" alternative].)

Further, in regard to surface water, Board staff admitted in the July 2010 staff report that the Renewed Waiver would only partially implement the iterative BPTC process for addressing degradation to surface waters because the program is geared toward identifying exceedances, rather than degradation. (AR 1583.) This also renders the Renewed Waiver inconsistent with the Antidegradation Policy. (Cf. AR 1536 [describing the proposed iterative BPTC process for the long-term ILRP].)

It also is questionable whether the Renewed Waiver is sufficient to comply with the Antidegradation Policy since it is not clear that the Board has an adequate means of identifying and taking actions against dischargers who are violating water quality objectives when water quality objectives are being exceeded, or of ensuring that BPTC is being implemented when high quality water is being degraded.[3]

The Court does not agree with petitioners that edge-of-field monitoring is necessarily required to correlate management practices with resulting water quality and achieve BPTC. (See Cal. Water Code § 13269.) Even if individual edge-of-field monitoring might provide additional useful information, the evidence

[3] The Court recognizes that this issue exists, but does not decide the issue in this ruling.

in the record supports the Board's argument that it likely is not cost-effective or reasonable for the Board to put a "cop on every corner." However, if the Board is going to rely on watershed-scale monitoring to ensure agricultural dischargers are implementing BPTC, the Board still must ensure that any activity that will result in a discharge of waste to high quality waters will comply with water quality standards and meet BPTC.

The Court recognizes that the Renewed Waiver is intended to be an interim step toward implementation of a new, long-term ILRP which, the Board contends, will fully comply with the Antidegradation Policy. This well may be true, but the Court nevertheless must decide whether the Renewed Waiver itself complies with the Antidegradation Policy. For the reasons described above, the Court is persuaded it does not.

The Board may only waive WDRs if the Board determines that the waiver is consistent with any applicable basin plan and is in the public interest. (Cal. Water Code § 13269.) As demonstrated above, the Renewed Waiver is inconsistent with the Antidegradation Policy, a key component of the Basin Plan. Accordingly, the Renewed Waiver is not consistent with the Basin Plan and the Board could not make the findings required by Water Code § 13269 to issue the Renewed Waiver. Accordingly, the Court shall issue a writ of mandate compelling the Board to comply with the Policy.

3. The Board abused its discretion in approving the Renewed Waiver because the Renewed Waiver does not comply with the State's Nonpoint Source Policy.

CSPA also contends that the Renewed Waiver is inconsistent with California's "Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program" (aka, the "Nonpoint Source Policy"). (AR 16025-44.) The Nonpoint Source Policy includes five key elements with which any nonpoint source program must abide.[4] (AR 16037.) CSPA contends the Renewed Waiver is inconsistent with at least three of those elements: Key Elements 1, 2, and 4.

Key Element 1 states that a nonpoint source control implementation program must, at a minimum, address nonpoint source pollution in a manner that achieves and maintains water quality objectives and beneficial uses, including any applicable antidegradation requirements. (AR 1110, 1576, 16037.) For the reasons described above, the Court finds that the Renewed Waiver is inconsistent with applicable antidegradation requirements. Accordingly, the Renewed Waiver is inconsistent with Key Element 1 of the Nonpoint Source Policy.

[4] The Court rejects the Board's claim that the Renewed Waiver is not a "nonpoint source control implementation program."

Key Element 2 of the Nonpoint Source Policy provides that a nonpoint source control implementation program must include a description of the management practices and other program elements that are expected to be implemented to ensure attainment of the program's stated purpose, the process to be used to select or develop management practices, and the process to be used to ensure and verify proper management practice implementation. (AR 1576, 16038.)

CSPA contends that the Renewed Waiver fails to comply with Key Element 2 because the Board does not know what management practices are being implemented by individual dischargers and because the Waiver's monitoring requirements are insufficient to detect violations of water quality standards. However, the Court is not persuaded that the Renewed Waiver fails to comply with the requirements of Key Element 2. The alleged flaws identified by petitioners do not appear to be requirements of this element.

It is true that Key Element 2 requires the Board to be able to determine there is a high likelihood that the management practices authorized by the program will attain water quality requirements. This involves consideration of the management practices to be used, the effectiveness of the management practices to be used, and the process for ensuring their proper implementation. However, CSPA has failed to show that this Element requires the Board to collect and analyze information about the particular management practices being implemented on each individual farm.

Key Element 4 of the Nonpoint Source Policy requires every nonpoint source pollution control program to include "sufficient feedback mechanisms" to determine whether the program is achieving its stated purpose, or whether additional or different management practices or other actions are required. (AR 1579, 16039.) The program must describe the measures, protocols, and associated frequencies that will be used to verify the degree to which management practices are being implemented and achieving the program's objectives, and/or provide feedback for use in adaptive management.

The Renewed Waiver is inconsistent with Key Element 4 because it does not include feedback mechanisms for waste discharges to high quality groundwater. In addition, since the feedback mechanism for discharges to surface water do not apply unless there is an exceedance, the feedback mechanism also appears to be insufficient in regard to potential degradation of high quality surface water. Accordingly, the Court finds the Renewed Waiver is inconsistent with Key Element 4 of the Nonpoint Source Policy.

VI.
Disposition

The Ag Coalition's petition is denied.

CSPA's petition is granted in respect to its claims that the Board abused its discretion in approving the Renewed Waiver because the Waiver does not comply with the State's Antidegradation Policy or Nonpoint Source Policy. In all other respects, CSPA's petition is denied.

The Court denies the requests for declaratory and injunctive relief, as unnecessary.

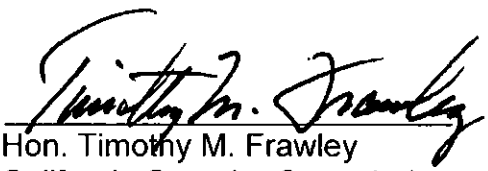
A writ of mandate shall issue commanding the Board to bring its long-term ILRP into compliance with the State's Antidegradation Policy and Nonpoint Source Policy. The writ shall further command the Board to file a return specifying what it has done to comply.

The parties are directed to meet and confer regarding what is a reasonable amount of time for the Board to comply with the writ and file a return. If the parties cannot reach an agreement, the Court will entertain additional argument from the parties in the form of short letter briefs (not to exceed 2 pages in length), and decide the issue.

Counsel for CSPA is directed to prepare a formal judgment and writ, consistent with this ruling; submit them to opposing counsel for approval as to form; and thereafter submit them to the court for signature and entry of judgment in accordance with Rule of Court 3.1312.

In recognition of the environmental harm that could occur if the Renewed Waiver were to be invalidated immediately without a replacement ILRP, the Court's writ shall not compel the Board to set aside its approval of the Renewed Waiver pending compliance with the writ. The Renewed Waiver shall remain in place until the Board has complied with the writ and/or the Waiver is replaced by a new, long-term ILRP.

Dated: May 21, 2013

Signed: 

Hon. Timothy M. Frawley
California Superior Court Judge
County of Sacramento

Case Number: 31-2012-80001186/RG12632180 Department: 29
Case Titles: San Joaquin RCD v. Cal Regional WQCB/CA Rice Commission.
CalSPA v. Cal Regional WQCB/CA Rice Commission

CERTIFICATE OF SERVICE BY MAILING
(C.C.P. Sec. 1013a(4))

I, the Clerk of the Superior Court of California, County of Sacramento, certify that I am not a party to this cause, and on the date shown below I served the foregoing RULING by depositing true copies thereof, enclosed in separate, sealed envelopes with the postage fully prepaid, in the United States Mail at Sacramento, California, each of which envelopes was addressed to:

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

Dated: May 21, 2013

Superior Court of California, County of Sacramento

By: F. Temmerman,
Deputy Clerk

California Sportfishing Protection Alliance
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For immediate release:
25 July 2007

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Water Board Report Shows that Irrigated Agriculture Has Polluted the Delta and Most Central Valley Waterways

(Stockton, CA) The Central Valley Regional Water Quality Control Board (Regional Board) has released a landmark draft report presenting the first region-wide assessment of data collected pursuant to the Irrigated Lands Program since its inception in 2003. Data collected from some 313 sites throughout the Central Valley reveals that: 1) toxicity to aquatic life was present at 63% of the monitored sites (50% were toxic to more than one species), 2) pesticide water quality standards were exceeded at 54% of sites (many for multiple pesticides), 3) one or more metals violated criteria at 66% of the sites, 4) human health standards for bacteria were violated at 87% of monitored sites and 5) more than 80% of the locations reported exceedances of general parameters (dissolved oxygen, pH, salt, TSS). While the adequacy of monitoring (i.e., frequency and comprehensiveness of monitoring) varied dramatically from site to site, the report presents a dramatic panorama of the epidemic of pollution caused by the uncontrolled discharge of agricultural wastes.

The report is posted on the Regional Board's website at: http://www.waterboards.ca.gov/centralvalley/programs/irrigated_lands/index.html#Monitoring A brief review of the report including a zone-by-zone description of many of the monitoring results is attached at the bottom of this advisory.

"The report is a searing indictment of the Schwarzenegger Administration's failure to regulate polluted discharges from irrigated agriculture," said Bill Jennings, Executive Director of the California Sportfishing Protection Alliance (CSPA). "Allowing farmers to dispose of toxic wastes in our waterways without effective regulation has destroyed the biological integrity of streams, rivers and the Delta," he said adding, "Collapsing fish populations are a direct result of failing to require agriculture to comply with routine pollution control requirements applicable to virtually every other segment society, from municipalities and industry to mom-and-pop businesses."

California's ambient monitoring program and scientists from the University of California at Davis collected data from 53% of the sites. The remaining sites were monitored by agricultural coalitions or individual water agencies, pursuant to the Irrigated Lands Waivers program.

Discharges of agricultural pollutants are allowable under waivers of waste discharge requirements issued by the Regional Board in 2003 and renewed in 2006. Those waivers are being contested in a lawsuit filed by CSPA and Baykeeper against the Regional Board on 18 June 2007.

The waivers require farmers to join coalitions and conduct limited water quality monitoring. However, requirements to implement pollutant control measures are voluntary. Unfortunately, the structure of the waivers precludes the Regional Board from learning the identity of specific dischargers, actual discharge locations, the constituents being discharged, the volume and concentration of discharged pollutants, whether or not BMPs have been implemented or if

implemented BMPs are effective. Consequently, the Regional Board cannot document a single specific source of pollution, the implementation and effectiveness of a single control measure or a single pound of pollution that has actually been prevented from entering waterways.

Since the coalitions are legally fictitious entities shielding actual dischargers, the Regional Board is unable to employ its traditional regulatory enforcement powers against dischargers to compel compliance with the conditions of the waiver. As a result, no enforcement actions have been taken for the failure of the coalition's to comply with the waiver's explicit monitoring and reporting requirements. Regulation of the largest source of pollution to Central Valley waterways has effectively been delegated to the voluntary goodwill of groups of dischargers. Such an approach has never worked in the past and is not likely be successful in the future.

"The report puts to rest the repeated claims by farmers that agricultural pollution is not a problem in the Central Valley," said Jennings, "and it graphically chronicles the bankruptcy of the Regional Board's approach to controlling agricultural wastes." "We cannot begin to restore the Delta and Central Valley waterways until we begin to control the massive discharge of toxic pollutants from agriculture."

CSPA reviewed the draft report and found that it was confusing and understates the consequences of the data. Principle defects were: 1) lack of a unified framework (formats, tables and discussion rationales are different for each zone), 2) comparison of toxicity and specific constituents to total sites monitored, regardless of whether they were monitored at a particular site; 3) failure to address spatial and temporal variability in comparing water quality exceedances to total collected samples, and 4) failure to discuss the ecological and statistical significance of criteria exceedance. Despite these shortcomings, the report is the first attempt to define the extent of agricultural pollution and it presents an appalling picture of the state of Central Valley waterways.

One of the more disturbing findings in the report is the pervasiveness of long-banned pesticides like DDT and it's degradates, DDE and DDD, that are either being remobilized by present farming practices or illegally applied. DDT is still legal in Mexico and a number of individuals have questioned whether DDT is being illegally smuggled into the state. A number of other "prohibited" pesticides were also identified at various monitoring sites.

CSPA is a public benefit conservation and research organization established in 1983 for the purpose of conserving, restoring, and enhancing the state's water quality and fishery resources and their aquatic ecosystems and associated riparian habitats. CSPA has actively promoted the protection of water quality and fisheries throughout California before state and federal agencies, the State Legislature and Congress and regularly participates in administrative and judicial proceedings on behalf of its members to protect, enhance, and restore California's water quality and fisheries.

California Sportfishing Protection Alliance (CSPA)
A Brief Overview of the *Draft 2007 Review of Monitoring Data, Irrigated Lands Conditional Waiver Program, 17 June 2007*
Central Valley Regional Water Quality Control Board

Central Valley Regional Water Quality Control Board staff posted the *Revised Draft of the 2007 Review of Monitoring Data for the Irrigated Lands Conditional Waiver Program* (Report) on 13 July 2007. It is posted on the Regional Board's web site at: http://www.waterboards.ca.gov/centralvalley/programs/irrigated_lands/index.html#Monitoring

The Report divides the Central Valley into four zones:

1. Zone 1 includes the Sacramento River Watershed.
2. Zone 2 includes the Delta Region and portions of the San Joaquin, Stanislaus, Calaveras and Mokelumne watersheds.
3. Zone 3 includes the San Joaquin River Watershed.
4. Zone 4 includes the Tulare Lake Basin.

The Report presents the first region-wide assessment of data collected pursuant to the Irrigated Lands Program since its inception in 2003. Monitoring data collected from some 313 sites is identified in the Report. The irrigated lands agricultural coalitions or individual water agencies enrolled under the waiver monitored 148 sites or 47% of the total. The state's ambient water monitoring program (SWAMP), UC Davis (under contract to the Regional Board) and others monitored the remaining 165 sites.

Monitored constituents included toxicity (fish, zooplankton, phytoplankton and sediment), pesticides (standard suites plus legacy organochlorines), metals (arsenic, boron, copper, lead, nickel and zinc), bacteria/pathogens (*E. coli*), field parameters (dissolved oxygen, pH, total dissolved solids and/or electrical conductivity) and nutrients (phosphorus and nitrogen containing compounds including phosphate, nitrate and ammonia).

Notwithstanding the structural deficiencies, inaccuracies and bias of the Report (discussed below), it is welcome first step toward identifying and quantifying the impacts of discharges from irrigated lands. It presents an astonishing and depressing mosaic of the pervasive water quality problems in the Central Valley caused by irrigated agriculture. It is a searing indictment of the Regional Board's failed policy of exempting irrigated agriculture from water quality regulations applicable to virtually every other segment of society.

The frequency and comprehensiveness of monitoring varied significantly from site to site. Where monitored:

1. Toxicity was identified at 63% of the sites and 50% of the sites experienced toxicity to two or more species.
2. Pesticide criterion was exceeded for one or more pesticides at 54% of the sites.

3. One or more metals exceeded water quality criteria in 66% of the monitored sites.
4. Human health criteria for bacteria were exceeded in 87% of the monitored sites.
5. More than 80% of the monitored sites exceeded water quality criteria for general parameters.

The pervasiveness of identified problems is disheartening. For example, 60 of 61 monitoring sites in the San Joaquin Watershed (Zone 3) exceeded at least one parameter. Many sites reported exceedances in virtually all parameters (toxicity, bacteria, metals, pesticides and general parameters). The single site that reported no exceedances in Zone 3 was only monitored a single time for two parameters.

While the Report is a welcome first step in cataloging water quality problems caused be irrigated agriculture, it is needlessly confusing and contains fundamental structural deficiencies and inaccuracies. These include:

1. Lack of a unified and consistent framework for individual zone summaries. Formats, tables and discussion rationales are unique for each zone making it difficult to compare zones.
2. Inconsistency in reported parameters. For example, Zone 2 and 3 summaries reported general parameter exceedances but general parameters were ignored in the Zone 1 and 4 sections. Again, results for metal sampling was discussed in the Zone 2 and 3 summaries but not for Zones 1 and 4. None of the zone summaries discussed nutrient monitoring results.
3. Improperly comparing toxic occurrences at sites to the total number of sites, regardless of whether toxicity was monitored. For example, the Report states that toxicity to algal species was found at 27% of the sites in Zone 1. However, algal toxicity testing in was only conducted at 59 of the 96 monitoring locations in Zone 1. Toxicity to algae was found at 26 of those sites. Consequently, 44.1% of the monitoring sites experienced toxicity to algae, not the 27% incorrectly reported. Another example is sediment toxicity in Zone 2. The Report states that 23% of the sites exhibited sediment toxicity. However, sediment toxicity was only conducted at 31 sites and toxicity was identified at 12 sites, which is actually 38.7% of the sites where sediment toxicity was measured.
4. Improperly comparing the number of exceedances to the total number of tests for a specific parameter in a zone. For example, Zone 1 includes the entire Sacramento Valley. Sampling for dormant spray insecticides would not be expected to result in detections in areas or during periods where they are not applied. Comparing monitoring results of a specific parameter to the total sampling conducted throughout the Sacramento Valley without incorporating temporal and spatial discussions is simply disingenuous. It biases the results and understates potential problems.
5. Failure to discuss the relative importance of water quality criteria exceedances. Aquatic life criteria are established as a not-to-be-exceeded more than once-in-three year standard. More frequent exceedances can result

in irreparable harm to the environment. Even a single exceedance of aquatic life criteria for a synthetic or toxic constituent can be statistically significant.

6. The Report ignores sublethal and chronic effects to aquatic ecosystems and the impacts of multiple stressors simultaneously occurring.
7. Failure to place the adequacy of monitoring in context. For example, a number of sites were only monitored a single time for one or few parameters. Results from even the most rigorously monitored sites represent only a brief snapshot of actual ambient conditions. Monitoring six or twelve times a year represents 0.07 % and 0.14% of yearly conditions. Statistically speaking, given minimal monitoring, a single identified exceedance of a synthetic or toxic constituent not naturally occurring in the environment virtually guarantees that numerous undiscovered and undocumented water quality exceedances and/or toxic events actually occurred.
8. Absence of a discussion of whether the agricultural coalitions have complied with mandated requirements of the Irrigated Lands Waiver. The lack of such a discussion prevents any assessment of the adequacy of the monitoring program. For example, none of the coalitions have complied with requirements to monitor all of major drainages, 20% of intermediate drainages on a rotating basis and minor drainages when downstream impacts are identified. Nor does the Report discuss the frequent failure of the coalitions to monitor for all required parameters, comply with data collection protocols and conduct follow up monitoring where water quality exceedances are identified.

Despite these shortcomings, the Report clearly establishes that discharges from agricultural lands are a significant, if not the major contributor, to the shredding to the aquatic biological tapestry throughout the Central Valley. Coupled with the inadequacy of coalition management plans, the Report's findings chronicle the bankruptcy of the Regional Board's approach to controlling agricultural pollution. Especially, in light of the fact that the Conditional Waiver precludes the Regional Board from knowing the identity of specific dischargers, actual discharge locations, the constituents being discharged, the volume/concentration of discharged constituents, whether or not BMPs have been implemented or if implemented BMPs are effective. Regulation of the largest source of pollution to Central Valley waterways has been left to the voluntary goodwill of groups of dischargers. Such an approach has never worked in the past and is not likely be successful in the future.

Below is a brief summary of the Report's findings.

Zone 1 (Sacramento River Watershed)

1. Ninety-six (96) total monitoring locations (many were infrequently monitored or monitored for only one or a few constituents or type of toxicity). Agricultural coalitions monitored 43 sites. UC Davis (under contract with the Regional Board) or SWAMP (state's Ambient Monitoring Program) monitored 53 or 55% of locations.
2. Toxicity was monitored at 84 sites (a number of sites only monitored for one species and one sampling event). Toxicity was identified at 45 sites or 53.6%

of sites where toxicity testing was conducted. Toxicity to two or more species was identified at 16 sites or 35.6% of sites where toxicity was identified.

a. Toxicity tests for fish (*Pimephales promelas* - fathead minnow) were conducted at 76 sites (many of those had only one or few tests). Toxicity was identified at 6 sites or 7.9% of sites that were monitored for fish toxicity. *Report incorrectly states only 6% of sites had fish toxicity.*
b. Toxicity tests for zooplankton (*Ceriodaphnia dubia* - water flea) were conducted at 75 sites (a number of sites only monitored 1 – 3 times). Zooplankton toxicity was identified at 20 sites or 26.6% of the sites that monitored for zooplankton toxicity. Of the sites that identified toxicity, 5 or 25% were toxic more than once. Mortality exceeded 50% in 77% of the toxic events. *Report incorrectly states 21% of sites had zooplankton toxicity.*
c. Toxicity tests for algae (*Selenastrum* – algal species) were conducted at 59 sites (number of sites only monitored 2 or 3 times). Algal toxicity was identified at 26 sites or 44.1% of sites that actually monitored for algal toxicity. Of the sites that identified toxicity, 17 or 65.4% were toxic more than once. Mortality was greater than 50% in 29% of the toxic events. *Report incorrectly states 27% of sites had algal toxicity*
d. Sediment toxicity tests (*Hyalella azteca* – sediment amphipod) were conducted at 52 sites (27 monitored once, 14 monitored twice). Sediment toxicity was identified at 13 sites or 25% of sites that monitored sediment toxicity. Of the sites that identified toxicity and conducted more than one test, 37.5% were toxic more than once. *Report incorrectly states 13.5% of sites had sediment toxicity*

3. Bacteria/pathogens (*E. coli*) were monitored at 33 sites (several had only 1, 2 or 4 samples). Public health limits (235 MPN/100 ml) were exceeded at 28 sites or 84.8% of the sites monitored for bacteria.
4. Pesticides were monitored at 57 sites (many with only 1 or 2 samples). Exceedances were identified at 23 sites or 40.4% of the sites that were monitored for pesticides (numerous sites had exceedances for multiple pesticides).
5. Metal (arsenic, boron, cadmium, copper, lead, nickel, selenium and zinc) results were not reported for Zone 1 because coalitions failed to report hardness data.
6. General parameters (dissolved oxygen, pH, total suspended solids and electrical conductivity) were not reported for Zone 1.
7. The Zone 1 summary contains no information on nutrient monitoring.

Zone 2 (Delta Region and portions of San Joaquin, Stanislaus, Calaveras and Mokelumne watersheds)

1. Fifty-eight (58) total monitoring locations (many were infrequently monitored or monitored for only one or a few constituents or type of toxicity). Agricultural coalitions monitored 29 sites and UC Davis or SWAMP monitored the other 29 locations. Twenty-one percent (21%) of the sites had

more than 25 cumulative exceedances of metal, toxicity and general parameter criteria.

2. Toxicity was monitored at 52 sites (a number of sites only monitored for one species and/or one sampling event). Toxicity was identified at 26 sites or 50% of sites where toxicity testing was conducted. Toxicity to two or more species was identified at 14 sites or 53.8%% of sites where toxicity was identified (6 sites or 27% were toxic to 3 or more species).
   a. Toxicity tests for fish were conducted at 47 sites (many had only one or few tests). Toxicity was identified at 9 sites or 19.1% of sites that monitored for fish toxicity. Of the sites that identified toxicity, 3 or 33.3% were toxic more than once. *Report incorrectly states that 17% of sites exhibited toxicity.*
   b. Toxicity tests for zooplankton were conducted at 47 sites (a number of sites were only monitored 3 – 4 times). Zooplankton toxicity was identified at 15 sites or 31.9% of the sites that monitored for zooplankton toxicity. Of the sites that identified toxicity, 6 or 42.9% were toxic more than once. *Report incorrectly states 28.8% of sites exhibited toxicity to water flea.*
   c. Toxicity tests for algae were conducted at 37 sites (a number of sites were only monitored 1, 2 or 4 times). Algal toxicity was identified at 12 sites or 32.4% of sites that actually monitored for algae toxicity. Of the sites that identified toxicity, 7 or 58.3% were toxic more than once. *Report states that 23% of sites exhibited algae toxicity.*
   d. Sediment toxicity tests were conducted at 31 sites. Sediment toxicity was identified at 12 sites or 38.7% of sites that monitored sediment toxicity. Of the sites that identified toxicity, 8 or 66.7% were toxic more than once. *Report incorrectly states sediment toxicity occurred in 23% of sites.*
3. Bacteria/pathogens (*E. coli*) were monitored at 23 sites. Health-based limits (235 MPN/100 ml) were exceeded at 18 sites or 78.3% of the sites monitored for bacteria (of these, 39% were above 1600 MPN/100 mL). Numerous sites exceeded criteria the majority of the time. For example, Grant Line Canal and French Camp Slough both exceeded criteria in 11 of 14 samples and Lone Tree Creek exceeded criteria in 14 of 16 samples.
4. Metals were monitored at 23 sites. One or more metal exceedances were found at 12 sites or 52.2% of the sites monitored for metals. Several sites had multiple exceedances. For example, Pixley Slough exceeded criteria for copper, lead and zinc 8, 20 and 4 times, respectively. Grant Line Canal exceeded arsenic, copper, lead and nickel 2, 3, 3, and 1 time respectively (out of five tests).
5. Pesticides were monitored at least once at 46 sites. Pesticides exceedances were identified at 28 sites or 60.9% of the sites that monitored for pesticides. Several sites had 30 to 40 exceedances and a number of sites had multiple exceedances of multiple pesticides. Pesticides under Basin Plan prohibition (carbofuran, malathion, methyl parathion and thiobencarb) were detected at 9 sites. Dieldrin is illegal in California but was identified at 4 sites. DDT and it's degradates DDE and DDD continue to be identified in Zone 2.

6. General parameters (dissolved oxygen, pH, Total suspended solids, electric conductivity) were monitored at 58 sites. Water quality criteria were exceeded for one or more parameters at 49 sites or 84.5% of the sites monitored for general parameters.
7. The summary contains no information on nutrient monitoring.

Zone 3 (San Joaquin River Watershed)

1. Eighty-three (83) total monitoring locations (many were infrequently monitored or monitored for only one or a few constituents or type of toxicity). Agricultural coalitions monitored 46 sites and UC Davis or SWAMP monitored 37 or 46% of locations.
2. Toxicity was monitored at 62 sites (a number of sites only monitored for one species and one sampling event). Toxicity was identified at 47 sites or 75.8% of sites where toxicity testing was conducted. Toxicity to two or more species was identified at 34 sites or 72.3%% of sites where toxicity was identified (16 sites or 34% toxic to 3 or more species).
    a. Fish toxicity tests were conducted at 58 sites. Toxicity to fish was identified at 11 sites or 19% of sites monitored for toxicity (Coalition only data shows toxicity at 24.4% of sites). Of the sites that identified toxicity, 2 or 18.1% were toxic more than once.
    b. Zooplankton toxicity was analyzed at 58 sites. Toxicity to zooplankton was identified at 34 sites or 59% of the sites monitored for zooplankton toxicity. Complete mortality of 100% was frequent (36 of 61 toxic samples) and the magnitude of toxicity was as high as 22 toxic units. Of the sites that identified toxicity, 15 or 44.1% were toxic more than once.
    c. Algal toxicity testing was conducted at 56 sites. Toxicity to algae was identified at 24 sites or 43% of the sites that monitored algal toxicity. Of the sites that identified toxicity, 10 or 41.7% were toxic more than once.
    d. Sediment toxicity was analyzed at 51 sites. Toxicity in sediment was identified at 29 sites or 57% of sites that monitored sediment toxicity. Of the sites that identified toxicity, 13 or 44.8% were toxic more than once.
3. Bacteria/pathogens (*E. coli*) were analyzed at 45 sites. Health-based limits (235 MPN/100 ml) were exceeded at 42 of 45 or 93% of the sites that monitored for bacteria. Of the sites that identified bacteria exceedances, 36 or 85.7% exceeded criteria multiple times.
4. Metal suites were analyzed at 30 sites. Exceedances of one or more criteria occurred at 23 sites or 77% of the sites that monitored for metals.
5. Pesticide suites were analyzed at 44 sites. Exceedances of one or more pesticides were identified at 32 sites or 72.7% of the sites that monitored pesticide suites. Although banned for more than 30 years, DDT was found to be above criteria in 8% of tests and it's degradates DDE and DDD were identified 14% and 3% of the time, respectively.
6. General Parameters
    a. Dissolved oxygen was monitored at 61 sites. Exceedance of the 7mg/L (cold water) was identified at 49 sites or 80% of the sites monitored for dissolved oxygen.

b. pH was monitored at 61 sites. Exceedance of criteria was identified at 26 sites or 42.6% of the sites monitored for pH.
c. Electrical conductivity (salt) was monitored at 61 sites. Exceedance of the 700 μmhos/cm criteria (agricultural goal) was identified at 30 sites or 49% of sites monitored for electrical conductivity.

7. Nutrients were monitored at 62 sites but collected data is neither reported nor discussed.
8. Note: University of California study found measurable concentrations of DDT, DDD or DDE in 90% of sediment samples.

Zone 4 (Tulare Lakes Basin)

1. Seventy-six (76) total monitoring locations (many were infrequently monitored or monitored for only one or a few constituents or type of toxicity). Agricultural coalitions monitored 30 sites. UC Davis, SWAMP or others monitored forty-six or 61% of locations.
2. Toxicity was monitored at 66 sites (a number of sites only monitored for one species and/or one sampling event). Toxicity was identified at 49 sites or 77.2% of sites where toxicity testing was conducted. Toxicity to two or more species was identified at 20 sites or 40.8%% of sites where toxicity was identified.
   a. Fish toxicity testing conducted at 57 sites. Toxicity to fish identified at 19 sites or 33.3% of sites monitored for fish toxicity. Of the sites that identified toxicity, 3 or 15.8% were toxic more than once.
   b. Zooplankton toxicity testing conducted at 57 sites. Toxicity to zooplankton identified at 8 site or 14% of sites monitored for zooplankton. Of the sites that identified toxicity, 1 or 12.5% were toxic more than once.
   c. Algal toxicity testing was conducted at 57 sites. Algal toxicity was identified at 33 sites or 57.9% of sites monitored for algae toxicity. Of the sites that identified toxicity, 24 or 72.7% were toxic more than once.
   d. Sediment toxicity was analyzed at 39 sites (majority of sites only tested 1 or 2 times). Sediment toxicity was identified at 16 sites or 41% of sites monitored for sediment toxicity. Of the sites that identified toxicity, 3 or 18.8% were toxic more than once.
3. Pesticides were monitored at 30 sites. Exceedances of one or more pesticide criteria were identified at 13 sites or 43% of sites monitored for pesticides. Prohibited pesticides or DDT/degradates were detected above criteria at 7 sites (23% of monitored sites).
4. There is no information in the Report on bacteria/pathogen monitoring.
5. Metals were monitored at 28 sites. However, results for metal testing were not disclosed in the Report.
6. There is no information presented on general parameters other than the observation that electrical conductivity limits were exceeded at 13 locations.
7. The Report contains no information on nutrient monitoring.

Summary: Central Valley

1. There were a total of 313 monitoring sites in the Central Valley. Coalitions monitored 148 locations. UC Davis, SWAMP or others monitored 165 sites or 53% of the total monitored sites.
2. Toxicity was monitored at 264 sites (a number of sites only monitored for one species and/or one sampling event). Toxicity was identified at 167 sites or 63.3% of sites where toxicity testing was conducted. Toxicity to two or more species was identified at 84 sites or 50.3%% of sites where toxicity was identified.
    a. Fish toxicity was identified at 45 of 238 sites or 18.9% of the sites where fish toxicity was monitored.
    b. Toxicity to zooplankton was identified at 54 of 237 sites or 22.8% of the sites where zooplankton toxicity was monitored.
    c. Toxicity to Algae species was identified at 95 of 209 sites or 45.5% of the sites where algal toxicity was monitored.
    d. Sediment toxicity was found at 70 of 173 sites or 40.5% of sites where sediment toxicity was monitored.
3. One or more pesticides exceedances were found at 96 of 177 sites or 54.2% of the sites where pesticide suites were monitored.
4. Metal results were not reported for Zones 1 and 4. Zones 2 and 3 reported metal exceedances at 35 of 53 sites or 66% of the sites where metals were monitored.
5. Exceedance of human health criteria for bacteria/pathogens (*E. coli*) was identified at 88 of 101 sites or 87% of the sites where bacteria was monitored. Most of the sites had numerous violations.
6. General parameters were not reported for Zones 1 and 4. Zones 2 and 3 reported exceedance of one or more general parameters at 84.5% and 88.5% of sites, respectively.
7. There was no reporting or discussion of nutrient data with the exception Table Z3-1 for Zone 3 that reveals that nutrient monitoring was conducted at 62 sites.

Eastern San Joaquin Data Review Notes
Compiled by Revital Katznelson, Ph.D**.**
Final Report
12/21/2017

This document provides a preliminary review of the data currently available on the California Environmental Data Exchange Network (CEDEN), as uploaded by the ESJWQC Project. Section 1 lists the data inventory as retrieved from four of CEDEN's data repositories. Section 2 discusses some of the sampling design and data reliability issues encountered while reviewing the data. Section 3 shows preliminary data plots (graphs) developed for selected analytes, with details about the number of results and percent detection of each analyte

1. Data Inventory

ESJWQC Project's data were queried from CEDEN on December 8, 2017, retrieving the following Matrix/analyte combinations in four separate queries:

- Habitat (field) observations, 34166 records;
- Water conditions (field measurements) and water chemistry (constituent concentrations), 61824 records;
- Sediment chemistry/grain size, 1250 records; and
- Toxicity in water (1166 samples) and in sediments (339 samples).

Time periods: The data span from 2004 to September 2016.

Locations: The data was collected in a total of 42 sampling Stations (plus a few additional sites with less than 6 visits). Six (6) of the 42 stations were designated as "core sites" and were sampled 12 times a year in some years.

2. Monitoring design and data reliability problems

2.1 Sediment monitoring

Monitoring toxic constituents such as heavy metal, pesticides, and herbicides in water and sediments over several decades has indicated that many of these substances are rarely detected in water, but are found in high concentrations in sediments. This knowledge is not reflected in the sampling design implemented in the Eastern San Joaquin Region for over a decade. The trigger-based design, that calls for analyzing sediments for only 10 pesticides and only if toxicity is found, had yielded only 39 pesticide detections and 46 non-detects between 2009 and 2016. The rest of ESJ Coalition's sediment dataset includes total organic carbon and grain size data (which have nothing to do with monitoring for compliance). This extreme paucity of sediment data creates a very serious information gap in what we know about potentially toxic chemicals accumulating in our waterways.

2.2 Dissolved Oxygen

Dissolved oxygen is one of the water characteristics that fluctuates during the 24 hours cycle, with minimum values detected at dawn and maximum values peaking in the mid-afternoon (depending on the available light). Dissolved oxygen measurements at ESJ occurred at various

times during the day, because the Station Visit timing was directed to operations, not to the worst case scenario. Thus, most measurements of dissolved oxygen occurred after several hours of daylight (and photosynthesis).
The dataset includes 1977 records of instantaneously dissolved oxygen measurements, ranging between 0.05 and 104.8 mg/L.

In the context of compliance monitoring, the dataset should be separated into 4 groups:

1. Values below 5 mg/L (264 visits) definitely exceed all water quality objectives (WQOs)
2. Values between 5 and 7 mg/L (292 visits) exceed WQOs for cold waters even at mid-day, and could have exceeded warm water WQOs if measured at dawn;
3. Values between 7 and 13 mg/L (1251 visits) could have exceeded some WQOs if measured at dawn; and
4. Values above 13 mg/L (171 visits), which indicate oxygen supersaturation above 110% (given the temperatures recorded at the Eastern San Joaquin Region). Total dissolved gases above 110% saturation may cause gas-bubble disease in aquatic organisms (U.S. EPA 1976, p.140). However, oxygen supersaturation is normally not regulated by the State Board.

Thus, what can be concluded with confidence now is only that there were 264 (13.3 %) WQOs exceedances of dissolved oxygen. All the other dissolved oxygen data collected in the Eastern San Joaquin Region simply cannot be used to demonstrate compliance because they were collected at a time of day that does not reflect the real risk. To collect dissolved oxygen data that demonstrate compliance, the field crews would have to make the measurements at each Station at dawn – or deploy dissolved oxygen data loggers.

2.3 Failed Station-Visits due to dry streams

Every year, the Coalition prepares a monitoring plan update (MPU) which specifies the number of samples to be collected at each monitoring Station. As planned, the datasets should have the statistical robustness to conduct various data analyses and derive information from the data. However, the existing sampling design does not call for visiting dry waterways again (or visiting alternative, wet sites on the same waterway). In fact, The Coalition can decide that "All 'Dry', 'Too Shallow', and 'Non-contiguous' events are counted as sampled events and reported as 'no exceedances of the WQTLs'" (ESJWQC 2017 MPU p.2).

Failed Station Visits occurred in many Stations during the draught but also during water year 2016. Of the 2433 Station Visits conducted between 2004 and 2016, 461 (19 percent) did not yield water samples (CEDEN 2017). Several monitoring stations were not sampled for an entire monitoring year, or sampled at a fraction of the prescribed frequency. The 461 failed visits were counted by the Coalition as samples that did not exceed WQOs, instead of deleting them from the sample count.

This creates three major problems:

1. Because a failed sampling event represents "no data" rather than "no exceedances", the Coalition is generating a wrong count of "no exceedances", which may be misleading.
2. The temporal density of sampling decreases, and with it the chance to find water quality problems, particularly in the vast geographic areas affected by the drought

3. The sample count is diminished and cannot support a statistically robust dataset for detection of change over time.

The scope of this preliminary data review did not include comparison of ESJ results to WQOs, nor was it directed to deciphering how the Coalition calculates their Percent Exceedances. Thus, at this time it is not possible to determine whether percent exceedance is decreasing over time, as the Coalition claims.

2.4 Identification of storm runoff

Collection of rain event runoff is required by the Order. However, the State's data management systems (e.g., SWAMP, CEDEN) do not have placeholders for tagging results from samples that were collected deliberately to represent storm runoff. Thus, the identification of storm runoff in the ESJ dataset is based on an inference from (a) crew's reports regarding their memory of rain amounts (more of less than one inch) during the 24 hours period prior to sampling, and (b) observation of rain during sampling.

This may result in incorrect designation of sample type (as "runoff or as "dry weather"), and thus jeopardize the determination if runoff collection frequency was as required. Moreover, because the properties of storm runoff water are completely different from the water that flows in streams during dry weather, ambiguous designation of sample type makes data interpretation very difficult, and data analysis for each type separately – which is very important in identification of trends - almost impossible

2.5. Data reliability issues

A preliminary review of the data revealed a few oddities, including the following:

Specific Conductance:
There were 50 measurements with result values below 30 uS/cm, and only 11 of them may have been storm runoff. The minimal values were 0.38 and 3.11uS/cm; these cannot be correct data. Just as a reference, pure rain samples collected by the author in the San Francisco Bay Area had specific conductance of 30 uS/cm, and the only values under 10 uS/cm were measured in a Sierra lake that receives annual flushing with snow melt water running off granite terrain (Katznelson, R. unpublished observations).

Outliers
Nutrient concentrations were usually showing a smooth gradient, except a few outlying values that were much higher than the rest. These outliers could be evidence of a very rich discharge. On the other hand, they could have been measured in non-representative samples collected in unusual niches of the waterway (e.g., edges) or too close to a discharging outfall.

3 Long-term trend plots

Plots were created in Excel and each included data from all years and all sites, i.e., entire dataset, (except for oxidized Nitrogen – see below). Excel trend-line, apparently calculated from the values included in each plot, was added to visualize the slope (without any statistical tests at this

preliminary stage). Some outliers with extremely high values were not included; details are provided for each plot. Removal of outliers did not visibly change the slope of the trend-line.

3.1 Nutrients

Nutrient concentrations were measured in over 1000 samples. Reduced Nitrogen was represented by ammonia predominantly, and by Total Kjeldahl nitrogen (TKN, a.k.a. organic nitrogen) for a limited time. TKN detected concentrations ranged between 0.11 and 0.11 and 90 mg/L. Oxidized nitrogen was represented by nitrate and nitrite (see below).

3.1.1 Total ammonia

Ammonia was measured in 1034 samples and was detected in 640 (62%) of them, with concentration ranging between 0.044 and 152 mgN/L (the detection limits, ranging between 0.04 and 0.08 mgN/L, varied over the years). Figure 1 shows the long-term trend for all ammonia concentrations below 5 mgN/L (20 higher values were not included in the plot).

Ammonia was present year-round, often at concentrations that may be toxic at the prevalent pH values. The trend line's slope was similar for the entire dataset, i.e., it was not affected when the 20 values of >5 mg/N/L were also included. At this time, the data have not been subject to statistical analysis that can determine whether the change over time is significant.

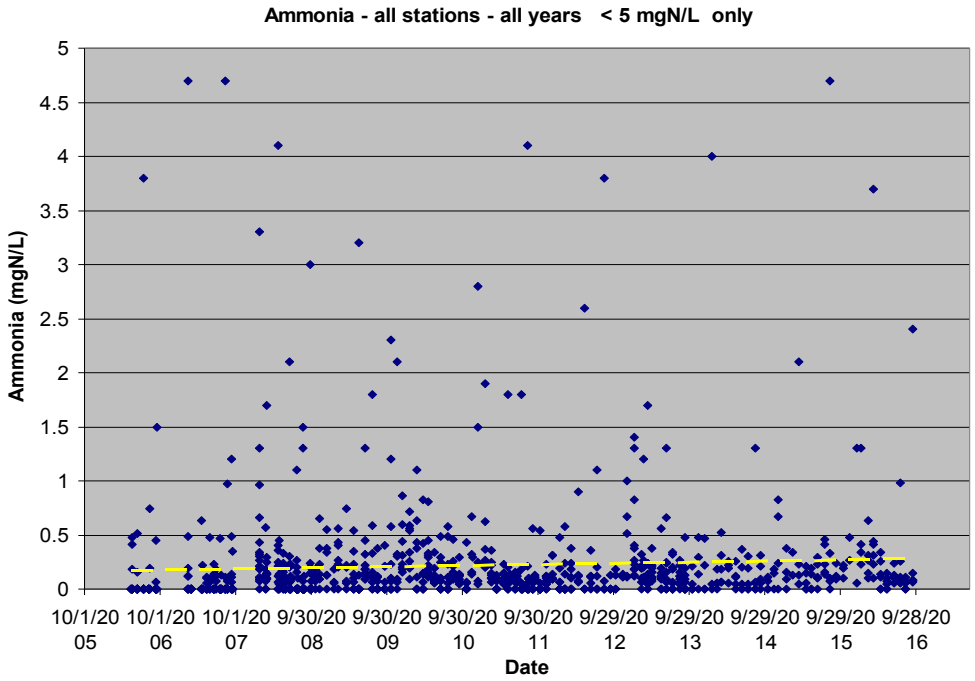

Figure 1 Ammonia Concentrations in Eastern San Joaquin Region, 2006-2016.
Legend: 20 outlier values between 5 and 155 mgN/L were excluded. Non-detects were plotted as 0.001 mgN/L

3.1.2 Nitrate and nitrite

Nitrate and Nitrite were measured separately **between 2004 and 2008**, yielding 347 records each. Nitrate was detected in 303 of these samples, with concentrations peaking at 68 mgN/L (the

detection limits, ranging between 0.05 and 0.1 mgN/L, varied over the years and when samples were diluted for analysis). Nitrite was detected much less often and at concentrations <10% of the nitrate in the same sample.

The analytical suite was altered in October 2008, with the implementation of the 2008 WDRs and the introduction of a new analytical method which measures the sum of Nitrate + Nitrite combined. Data collected between September 2008 and 2018 yielded 1021 records, 923 of them above the detection limits, which ranged between 0.02 and 1 mg N/L (depending on sample dilution factor).

Figure 2 shows the results of all analyses of nitrate or nitrate+nitrite obtained between 2006 and 2016. The plot does not include nitrite data collected during 2006-2008. The Region's waterways appear to be nitrate-rich on many occasions over the years, with many values above 10 mg N/L. This preliminary plot does not include any statistical analysis that can determine whether the change over time is significant. However, given the distribution of the data, the tests will probably be unable to demonstrate a significant slope for this dataset.

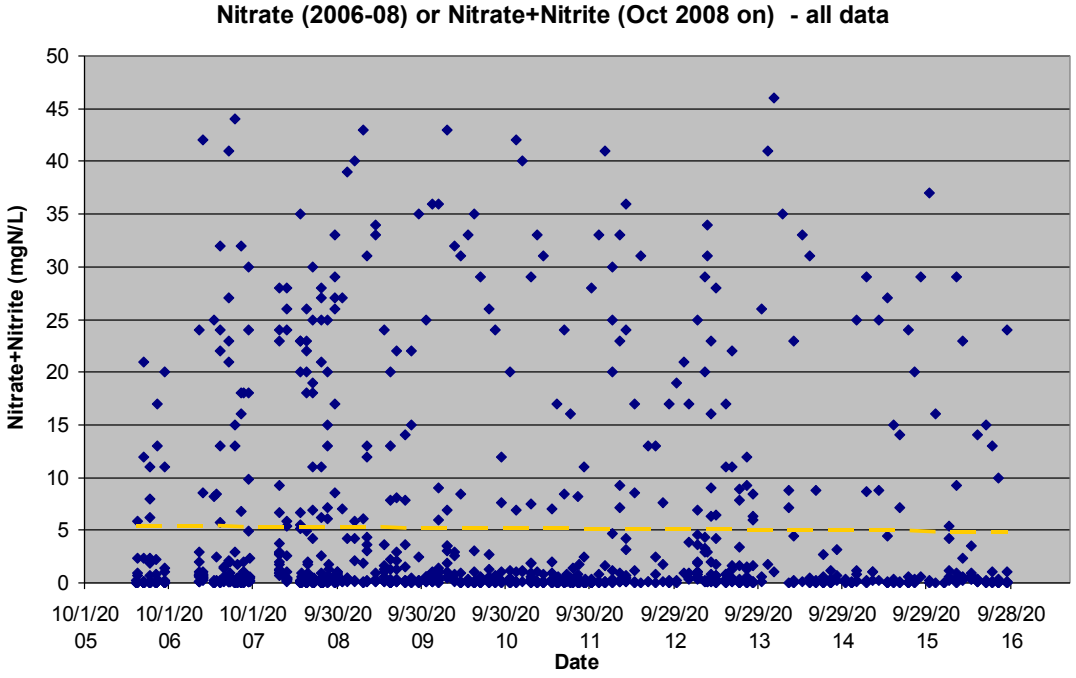

Figure 2: Nitrate + Nitrite Concentrations in Eastern San Joaquin Region, 2006-2016
Legend: One outlier value of 68 mg N/L was not included. Nitrite was usually <10% of Nitrate (when analyzed separately between 2006 and 2008; data not plotted). Non-detects are plotted as 0.01 mg N/L

3.2 Metals

Of all metals analyzed in water, copper dominated the exceedance tables (as shown in ESJWQC MPUs 2015-2017, and annual report 2017) as well as the detections dataset.
Dissolved copper was detected in all 602 samples, in concentrations ranging between 0.08 and 44 ug/L (detection limits ranged between 0.06 and 0.15 ug/L). Total copper was detected in all 872

samples, in concentrations ranging between 0.82 and 120 ug/L (detection limits ranged between 0.05 and 0.6 ug/L)
Figures 3 shows the dissolved copper data collected since 2008, when the Coalition began measuring dissolved copper. Dissolved copper data are needed for comparison to water quality objectives, because toxicity is caused by the dissolved form. Dissolved copper concentrations are usually below 5 ug/L. The trend line shows an upwards slope, indicating increasing concentrations over time. Plotting of total copper data for the same time period also indicated an increasing trend (not shown).

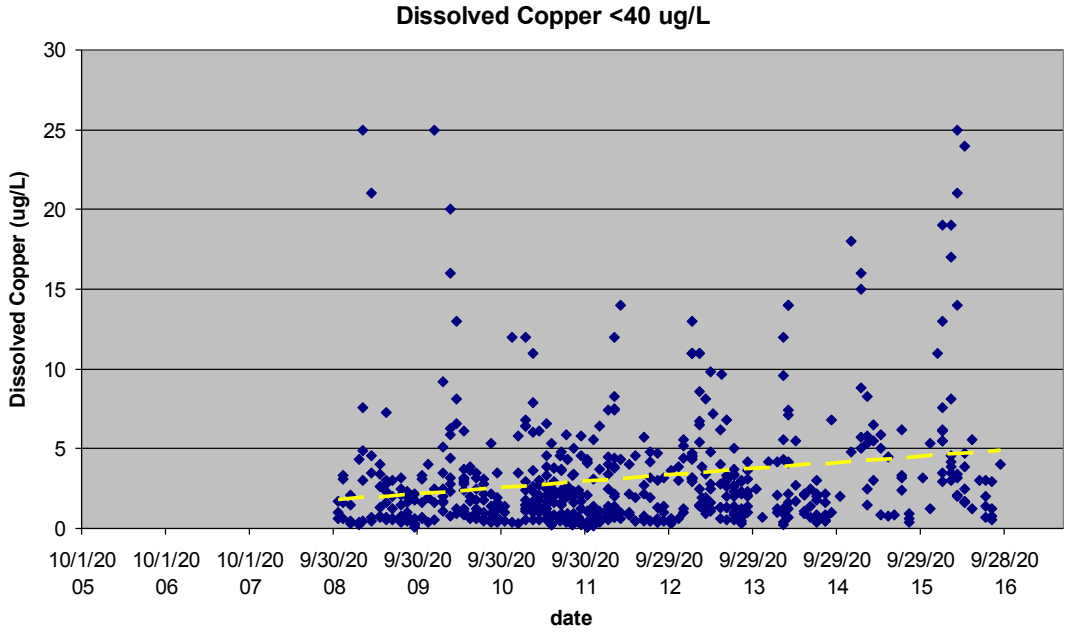

Figure 3: Dissolved Copper Concentrations in Eastern San Joaquin Region, 2008-2016
Legend: Two outliers of 42 and 44 ug/L were not included.

3.3 Pesticides and herbicides

Detection of organic pesticide and herbicides in water sample was rare, particularly in the case of hydrophobic substances that would most often be found in the sediment. The dataset is limited for two reasons:
(a) samples were collected in the represented sites only if triggered by a toxicity event at a core site in the same Zone, and the toxicity test organisms in use may have not been sensitive to some biocides (so their effect - and presence – was missed, and no samples were collected), and
(b) the analytical suite of biocides was not updated fast enough to include new biocides, so not all the biocides that could have been present were analyzed for.

When analyzed, most constituents of the 2004-2016 analytical suites were not detected at all, or detected a few times during the entire monitoring period. The only compounds detected in more than 25 samples were diazinon, chlorpyrifos, diuron, and simazine. In this sparse dataset, only chlorpyrifos was detected often enough to produce an informative plot: Chlorpyrifos was detected in 171 of the 1239 samples analyzed.

Figure 4 shows the concentrations of chlorpyrifos over time. Ten outliers, detected throughout the monitoring period in a variety of sites, were omitted from the plot. Overall, the density of detections appears to diminish over time, and the trend line shows a decrease in concentration. The decrease may reflect the decrease in chlorpyrifos application in the Region during some monitoring years.

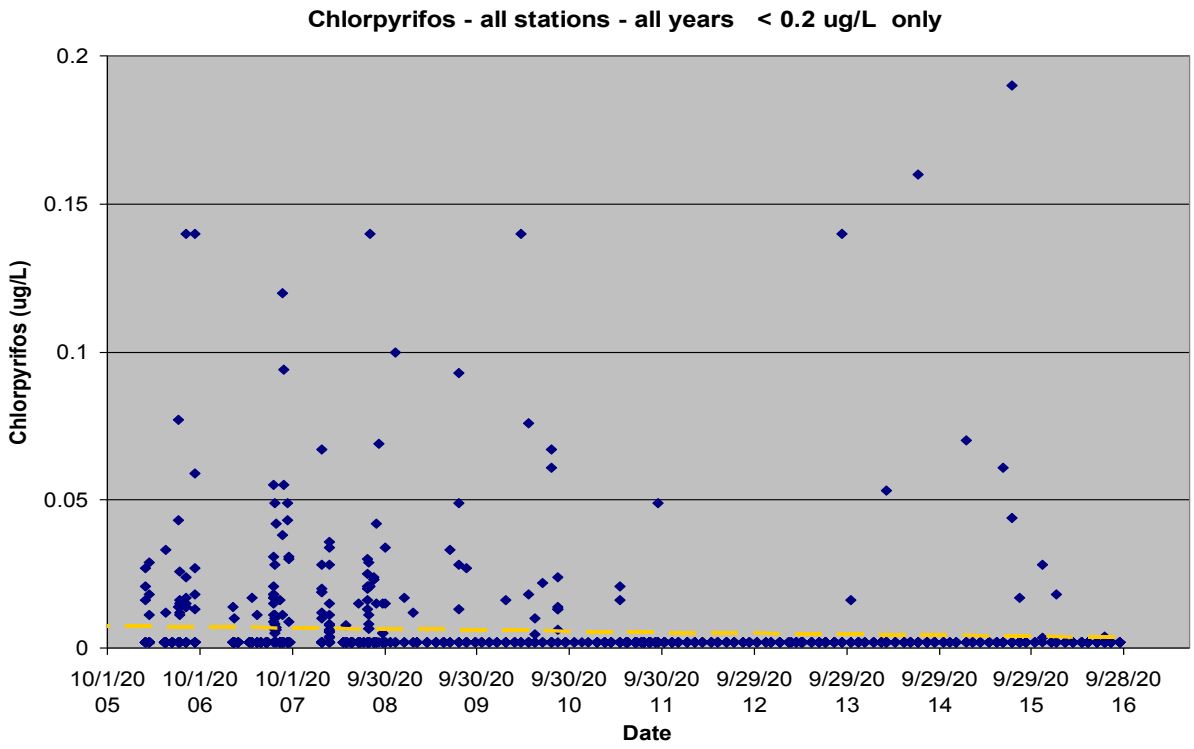

Figure 4; Chlorpyrifos Concentrations in Eastern San Joaquin Region, 2005-2016
Legend: 10 values 0.2 to 4.2 ug/L not included. Non-detects were plotted as 0.002 ug/L

3.4 Toxicity

Toxicity testing is an effective way to detect harmful substances without extensive analysis of toxic constituents. The monitoring efforts included testing water samples with three test species (the crustacean *Ceriodaphnia dubia*, the *alga Selenastrum capricornutum*, and the minnow *Pimephales promelas*) as well as testing of sediment samples with the amphipod *Hyalella azteca*.

Ceriodaphnia dubia toxicity was tested in 1166 samples, 65 or which caused significant mortality. Figure 5 shows the effect of water samples on *C. dubia* over time. The percent mortality was calculated from percent survival endpoints and plotted in a way that shows the magnitude of the problem (i.e. higher value is more harmful). The trend line in this preliminary plot shows a slight reduction in percent mortality over the years, but its significance needs to be determined by statistical analysis of this incremental dataset.

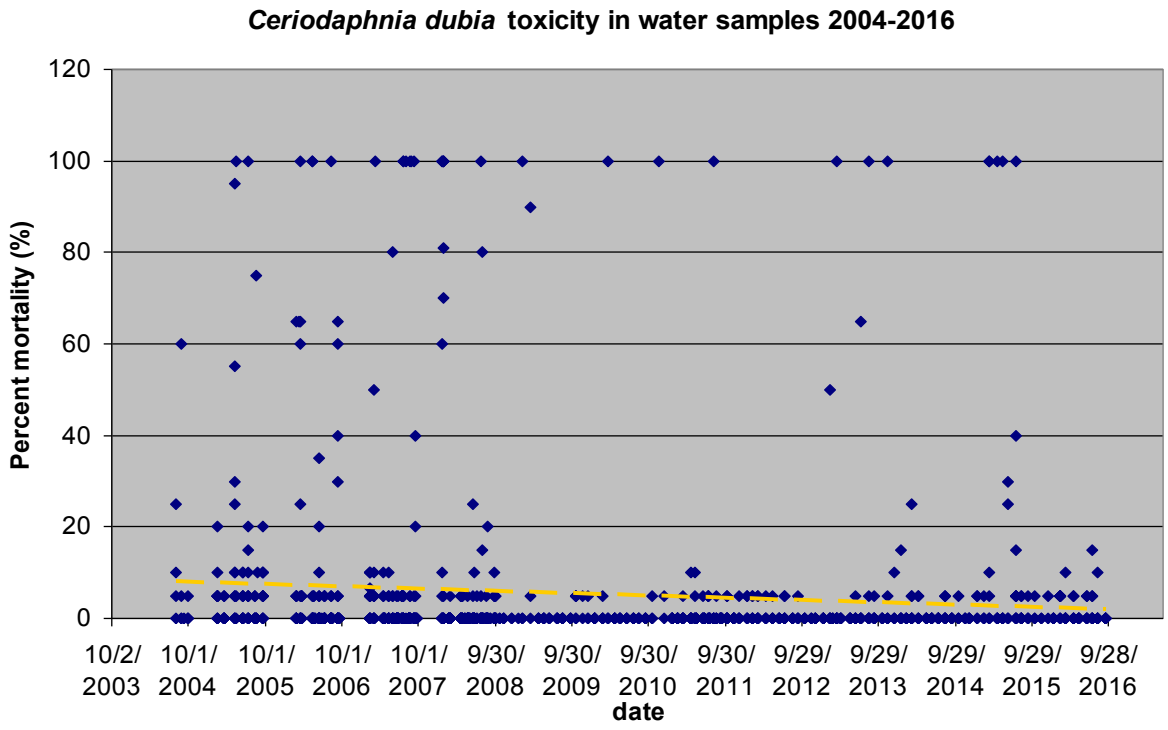

Figure 5 Percent mortality of C. dubia in Eastern San Joaquin Region water samples, 2004-2016

Figure 6 shows the results of sediment toxicity tests with *H. azteca*, as percent mortality. The trend line shows decreased toxicity to *H. azteca* as well. Significant *H. azteca* mortality was observed in 70 sediment samples of the 339 samples tested

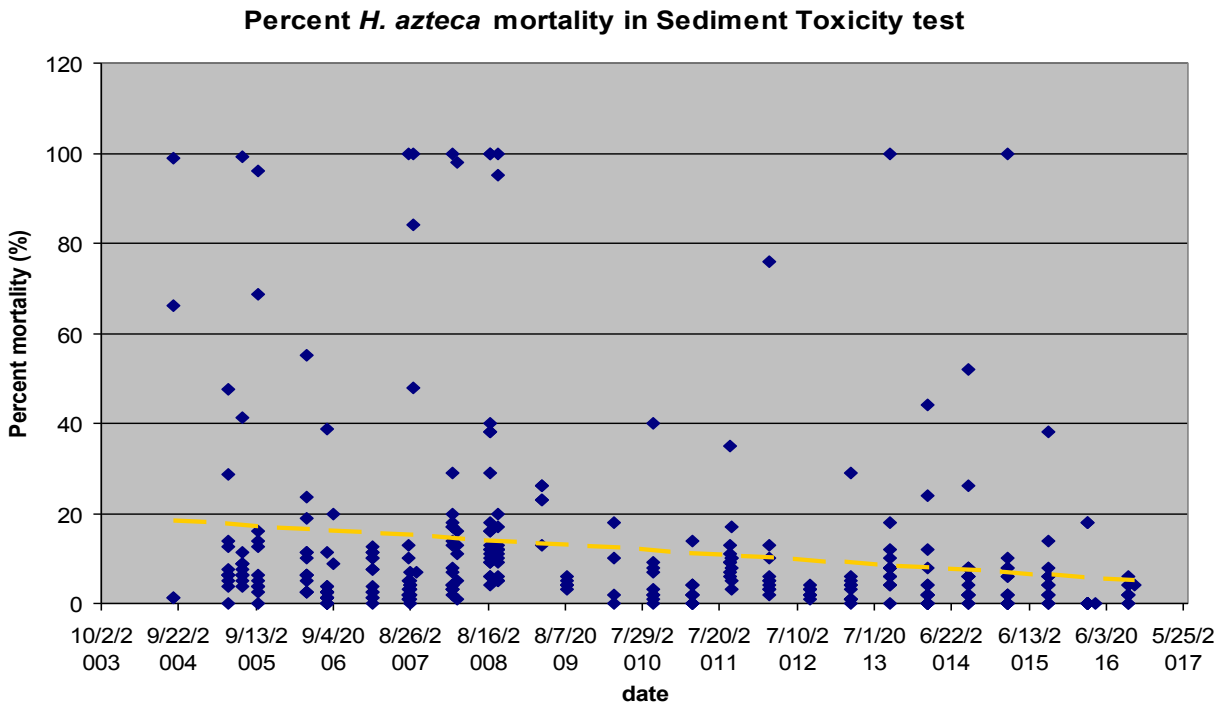

Figure 6 Percent mortality of *H.azteca* in Eastern San Joaquin Region Sediment samples, 2004-2016

References

U.S. Environmental Protection Agency (U.S.EPA) 1976. Quality Criteria for Water. U.S. Environmental Protection Agency, Washington, D.C. 20460. EPA 440-9-76-023 (the Red Book). 501 pp.

Revital Katznelson, Ph.D.

Revital Katznelson received her B. Sc. in biology, M.Sc. in microbial ecology, and Ph.D. in biochemistry from the Hebrew University of Jerusalem, Israel. She has over 30 years of experience in performing, interpreting, and assuring quality of field and laboratory analyses of chemical, biological and bacteriological water quality characteristics. She also has hands-on experience in toxicity testing using a variety of test organisms. Beyond the laboratory, Dr. Katznelson has decades of experience using a wide array of field instrument and kits, and she is proficient with the use of enzyme-linked immunosorbent assay (ELISA) kits and the sealed-well technology (e.g., Colilert) used to count indicator bacteria.

Dr. Katznelson has led numerous ecological studies in a variety of aquatic systems including creeks, ponds, lakes, marshes, lagoons, and reservoirs, and has developed innovative methods to assess - and to increase - the representativeness of samples collected in these types of waterbodies.

In the National arena, Dr. Katznelson has been part of the Water Quality Data Elements Workgroup and the Aquatic Sensors Workgroup of the Methods and Data Comparability Board (affiliated with the National Water Quality Monitoring Council) for several years, and was the lead person in the development of quality assurance guidance for field measurements and telemetry using various water quality sensors.

As a technical liaison at the California State Water Resources Control Board, and a member of the Clean Water Team affiliated with the Surface Water Ambient Monitoring Program (SWAMP), Dr. Katznelson has introduced an array of concepts and tools for training, guidance, data management, documentation, and quality assurance to the realm of water quality monitoring in California. She has successfully applied elaborate instructional design principles, and her unique ability to teach basic scientific concepts, to the construction of her citizen monitoring workshops, her national presentations, and her quality assurance workshops for SWAMP. She also was the co-developer of the SWAMP Advisor, a web-based expert system for compilation of a SWAMP-comparable Quality Assurance Project Plan. Dr. Katznelson was the lead, and primary author, of the SWAMP Field Methods Distance Learning Course Part 1, which was delivered on CDs and on-line in 2005. In the late 2000s, Dr. Katznelson was deeply involved in implementing, troubleshooting, and interpreting the SWAMP physical habitat assessments and algae protocols as they were developing, and she eventually created all contents of the SWAMP Field Methods Distance Learning Course Part 2 (physical and biological assessment) published in 2012. She is currently writing interpretive monitoring reports, providing technical support services, and assisting citizen groups with their environmental monitoring as a volunteer.

Since the late 1970s, Dr. Katznelson has taught in many environments including undergraduate classrooms/labs/field activities at the university, specialized methodology courses and training workshops, and individual mentoring. She uses the current Water Quality Monitoring Design course, provided by UC Berkeley Extension twice a year, to share her decades of experience with her students.

Dr. Katznelson's latest publications and a link her resume (with full publication list), are available on her website at:
http://www.water-science-etc.net/PRODUCTS-pubs.htm

Comments on Surface Water Monitoring Requirements in the Eastern San Joaquin Region's Agricultural Areas and Monitoring Design Recommendations

by Revital Katznelson, Ph.D.

Final Report

12/20/2017

Summary

Modern agriculture, which makes intensive use of irrigation and of chemicals, has a potential to cause adverse environmental effects if the discharge of harmful substances into adjacent waterways is not regulated. Since 2003, the Central Valley Region Water Quality Control Board (RB5) and State Water Resources Control Board (SWRCB or State Board) have implemented California's Irrigated Lands Regulatory Program. The Waste Discharge Requirements (WDRs) developed by this Program must protect the waterbodies that receive agricultural discharges. The WDRs must be consistent with water quality objectives and protect beneficial uses. Water quality monitoring to assess whether WQOs have been met is the cornerstone of this regulatory process.

The State Board's proposed Order, R5-2012-0116-R4 (which modifies the 2012 Waste Discharge Requirements General Order No. R5-2012-0116 for Growers Within the Eastern San Joaquin River Watershed that are Members of the Third-Party Group) is a key component of the regulatory process. The Order's monitoring and reporting program (MRP) establishes the methods that must be used to ensure Eastern San Joaquin Growers are in compliance with the WDRs. For several reasons, the monitoring requirements in the Order are not sufficient, and are not specific enough, to assure that data collection will achieve its goals.

Given the variability of agricultural practices and hydrological features in the ESJ Region, the sampling and analyses effort required by the Order does not provide adequate coverage in space and time, rendering water quality problems undetected. The monitoring strategy, in which the majority of the Region's drainage area is **not monitored unless triggered** by detection of a problem far downstream (e.g., exceedance of a water quality benchmark), will miss detection of many exceedances. This strategy also causes a very long delay, often by more than a year, in identification of the sources of problematic constituent(s). And this, in turn, further delays the implementation of management practices that may alleviate the problem.

Discharges of harmful chemicals are episodic by nature. The monitoring efforts designed to capture them need to be **deliberate, knowledge-based, and activity-driven**. The Order's criteria of when and where to collect water samples - in the attempt to capture problematic constituents - are not sufficient. These problems could be addressed now, as detailed below. Chapter 3 presents an alternative monitoring framework that enables collection of more information, and better coverage of the Region, for a similar level of funding.

Today, water quality monitoring is a well-advanced science that spans many types of activities, instruments, and analytical tools. These tools help us learn about our environment. Visual observations – if well documented – can be an integral part of this science. Better yet, anybody, not just scientists, can make documented observations. Field measurements with inexpensive thermometers and pocket meters have provided immense value when used by citizen-science groups in California, particularly after the operators received a very basic training in quality assurance (which enabled them to deliver data of known and documented quality). Another group of monitoring tools is comprised of hundreds of analytical field kits (e.g., for ammonia, nitrate, etc.) that can provide extremely valuable information in real time and inform sample-collection decisions in real time.

Chapter 1, Section 1.2 below further elaborates on the various tools for data collection, including options that can be used by non-scientists. Unfortunately, the proposed Order refers to the field measurements and sample collection and laboratory analysis aspects of monitoring exclusively and does not mention other opportunities for data collection by Growers and other members of the public. Chapter 2 presents a hypothetical case study which demonstrates how a Grower, armed with a smart phone and connected to a technical support crew member, can contribute to the identification of water quality problems in real time and to the triggering of responsive actions. Chapter 3 lays out an alternative monitoring framework for the Eastern San Joaquin Region, which also incorporates commodity-based monitoring sites, focus on constituent transport events and on sediment sampling, and cost-effective methods for source identification and for evaluation of management practices effectiveness.

Table of Contents

List of Comments

Introduction: An Overview of Water Quality Monitoring

Waste Discharge Requirements must protect the surface water and the groundwater of the Eastern San Joaquin ("ESJ") Region. Irrigated agriculture is associated with intense use of fertilizers and biocides (i.e., materials that kill agricultural pests and disease organisms such as pesticides, herbicides, fungicides, rodenticides, etc.). Water discharged from cultivated areas can adversely impact surface and groundwater that receive these discharges ("receiving waters"). Growers are using copious amounts of water, nutrients, and biocides to assure and increase yield. The use of surplus water, the application of excess nutrients, or the application of unnecessary biocides can happen, particularly when the needs are unknown. It takes knowledge and technological advances to prevent this excess, and it requires ATTENTION. But even when all excess use is eliminated, irrigated agriculture activities still have the potential to impact the receiving waters, and there are still many management practices that need to be implemented to prevent such harm. The science of management practices is rich, diverse, and knowable; it is the responsibility of the growers to make the best use of it.

Receiving waters are geographical features, and Waters of the State is a designated status given to those that need to be protected. But there is a problem: agriculture has transformed the hydrology of the Central Valley so profoundly that it is often very hard to identify the original, pristine waterways that we want to preserve. Most of the receiving waters in the ESJ Region are designated as Waters of the State. Protection of these waterways from nutrients and biocides that are discharged from irrigated lands requires compliance with water quality objectives (i.e., concentrations that are deemed safe for supporting each beneficial use); this is ascertained by measuring chemical concentrations or testing the toxicity of the water. While it may not be efficient for each grower collect and analyze water samples, it makes sense to require each grower to pay attention and to collect evidence that they are paying attention via reported observations. It also makes sense to require that growers monitor for pests on their crops, and to require evidence for the presence of pests that had triggered treatment with biocides.

The word "monitoring", which can mean "to watch, observe, or check for a special purpose" (Webster on-line dictionary), is often used as "sampling and analysis" in the strict sense when applied to water quality. In the irrigated agriculture arena, one can refer to **three separate aspects** of "monitoring":

1. **Needs assessment**: A farmer visits the field often to look for pests and treat if needed ("IPM Monitoring"). Needs Assessments also include sampling soil and foliage for analyses of nitrogen, phosphorus, potassium, etc., testing nitrogen concentrations in irrigation water, and measuring water tension in soil or foliage to determine when to irrigate and how much water to provide. Needs assessments are, indeed, the Best Management Practices. Reporting of the information and data collected for needs assessment is seldom required.
2. **Field observations** and simple field measurements: There is a treasure of knowledge, understanding, and proof in low-effort information collection, especially when done very frequently. A series of pictures of a staff gage in a ditch, which document water level fluctuations over time, can help identify a discharge event. Water level rise or overland flow pictures – if reported in real time – can trigger responsive field measurements (using simple instruments and kits such as pH strips, pocket conductivity meters, or nutrient kits). Findings can trigger sampling for definitive analyses (see type 3 below). Reporting of field observations/measurements in real time should be required.
3. **Sampling and analyses** in the laboratory: This is the way chemical concentration and toxicity data are collected for comparison with water/sediment quality benchmarks. This high-effort aspect of monitoring requires funding and expertise, and is best done by

professional operators who provide services to a large group of growers. Reporting of analytical results is required.

Chapter 1 Comments on Order No. R5-2012-0116-R4 dated Oct 10, 2017

Context: The State Board's **"2017 Proposed Order" -** Order No. R5-2012-0116-R4 ("Order") includes 4 levels of nested documents: L1: State Board Review; L2: Appendices A through E; L3: Attachments to Appendices; and L4: Appendices to the Attachments. **Appendix A** (L2) includes the General WDRs ("Waste Discharge Requirements General Order No. R5-2012-0116-R4 for Growers Within the Eastern San Joaquin River Watershed that are Members of the Third-Party Group") plus three **Attachments** (Information Sheet, Monitoring and Reporting Program (**MRP**), and CEQA Mitigation Measures, L3s). The Comments in this Chapter are focused on the surface water monitoring components as presented in the State Board Review (L1), the General WDRs (L2), and the MRP (L3), all referred to as "the Order".

The legal, regulatory, proof of compliance and procedural aspects of the Order have been reviewed extensively for Draft 1 (CCKA 2016a,b, The Otter Project 2016) .This Chapter is responding to the surface water monitoring requirements proposed in the Oct 10, 2017 MRP. Preparation of this report was informed by the Order documents plus a number of publications, including the 2010 Central Coast Conditions Report (CCRWQCB 2010) and the 2007 Monitoring Design Guidance compiled by the Central Valley Regional Board staff, Irrigated Lands Regulatory Program's Technical Issues Committee (TIC), and Brock Bernstein of Southern California Coastal Water Research Project (SCCWRP) (CVRWQCB 2007). Much was also gleaned from the East San Joaquin Water Quality Coalition ("Coalition") publications, including the four recent Monitoring Plan Updates (MPU, ESJWQC 2014, 2015, 2016, 2017), Surface Water Quality Management Plan (SQMP, ESJWQC 2015), and the Annual Report for the October 2015-spetember 2016 data (ESJWQC 2017). The monitoring data review included all Eastern San Joaquin 2004-2016 data that were available on CEDEN.

1.1 Monitoring strategy

1.1.1 Responsive monitoring versus adaptive monitoring – the time frame.

Comment 1: The Order does not require observations or field measurement triggers for responsive monitoring.
The order does not mention responsive monitoring, nor does it define triggers for sample collection that are perceivable or measurable in the field or allow for collecting samples **immediately** at the triggered location. This approach differs from the triggered monitoring as done by the Coalition, where results of a given sampling and analyses event inform subsequent sampling many weeks or even months after the event (see "undefined time-frame" comment below). It also differs from adaptive monitoring where results from one year are used to alter sampling locations and analytical suites in the subsequent monitoring year (e.g., Exceedance in a Core station triggers monitoring in Represented sites in the same zone a year or more later (ESJWQC 2017 MPU p. 1).
Recommendation: The Order should require frequent observations (sensory information) and basic measurements (e.g., staff gage reading; Specific Conductivity measurements) to inform responsive monitoring. These observations and measurements should always be augmented by time- and date-stamped photo-documentation. Sample collection should be triggered when oddities are observed during routine observations, or can be associated with known events (e.g., extra flow at the end of an irrigation cycle; rainfall runoff; end of spraying activity in the field upstream of the Station). Responsive monitoring should be immediate.

Comment 2: The Order requires a public review process but does not specify a time limit for approval of Surface Water Quality Management Plans (SQMPs) (WDR Section VIII.I.1, MRP Sections V.D and E, Appendix MRP-1 Section II.A p.7). This creates an undefined time-frame for any response to exceedance problems.
In other words, even if a SQMP is submitted by the Coalition within 60 days of exceedance discovery (which **is** ordered in the WDR VIII.I.1, p.36), and sampling must occur within 90 to 180 days after SQMP approval (ESJWQC 2015 SQMP, Table 18 p. 71), there is no requirement that follow-up monitoring in case of exceedance is conducted **within a given period of time**. The current Comprehensive SQMP, which took years to develop and approve, does not show any avenue for **immediate** response.
Recommendation:
Develop a defined schedule of SQMP development.

1.1.2 Number of samples, spatial and temporal density of data, and statistical power of the dataset.

Comment 3: The Order concurs with the experts' opinion that the "spatial and temporal density of data" is inadequate for compliance monitoring, but it does not concur with the experts' opinion that increased number of samples and sampling locations should be ordered now.
The existing data coverage, geographically and over the years, appears to be inadequate for capturing exceedances. However, the Order does not require an increase in sampling density, or alteration of the sampling design and the monitoring strategy.

Comment 4: The Order (including the MRP) does not specify the number of "regular" samples to be collected.
This number is determined by the Coalition, and the information is provided in the Coalition's annual Monitoring Plan Update (MPU). Year after year, the routine sampling at core sites dominates the plan, with constituent-driven, very limited coverage elsewhere.

Comment 5: The Order does not require that dry waterways be visited again, or that alternative, wet sites be found on the same waterway.
The Coalition can decide that "All Dry," "Too Shallow," and "Non-contiguous" events are **counted as sampled events** and reported as 'no exceedances of the WQTLs'" (ESJWQC 2017 MPU p.2). The problem with this statement is that a failed sampling event represents "no data" rather than "no exceedances".

In fact, several monitoring stations were not sampled for an entire monitoring year(!), or sampled at a fraction of the prescribed frequency. Examples include the following:

- Eleven (11) samples for copper analysis were required for Station 545XBSAAE (Berenda Slough along Ave 18 1/2) in water-year 2015, but none was collected;
- During the same water year, 12 samples were planned for Station 545XCCART (Cottonwood Creek @ Rd 20) but none collected (all Station Visits recorded a dry stream).
- In Stations 535XDCAGR (Deadman Creek (Dutchman) @ Gurr Rd) and 535DMCAHF (Deadman Creek @ Hwy 59), a total of 14 visits were planned for water-year 2015, but only 4 visits yielded samples.

Failed Station Visits occurred in many other Stations during the drought but also during water year 2016. Of the 2433 Station Visits conducted between 2004 and 2016, 461 (19 percent) did not yield

water samples (CEDEN 2017). The diminished support for a statistically robust dataset for trend analysis is not addressed by the Order.

Comment 6: The order requires collection of only two sediment samples a year in each Station monitored during that year, to be tested for *H. azteca* toxicity.
This low frequency, especially in light of the paucity of constituent concentrations data in sediments, provides insufficient information about the risk of sediment toxicity.

Comment 7: The Order requires collection of only two Stormwater samples a year in each Station monitored during that year.
This is not sufficient for adequate representation of storm runoff due to extremely high variability between storms, particularly when a considerable fraction (20.4%) of planned storm-water sampling events was not performed (because the creek bed was dry when the crews arrived). Given that storm runoff is the major force that transports constituents and soils from land to waterways, elevated concentrations (which may exceed water quality objectives and may cause harm) are expected in storm runoff samples more than in dry weather samples. Thus, harmful conditions will be missed if not enough storm runoff sample are collected.
Recommendation:
Field crews should plan their monitoring events to **deliberately** capture **one** of three condition-groups:

1. Rain runoff (see timing considerations in Section 1.2.5c below)
2. Irrigation discharge events
3. Dry weather flows

The resulting data should be tagged with condition-type in the database. Any statistical analysis for comparison or trend analysis should use these types of samples **separately**, because they represent totally different situations.

Comment 8: The Order does not specify how to report long-term trends in water quality.
The Coalition is reporting long-term trends in terms of multi-year reduction of **percent exceedances** for lumped characteristic groups, not as a change in concentrations of a single constituent over time. Scientists know that trend monitoring does not apply to percent exceedance for "all pesticides" or "all metals"; this lumping can be misleading particularly when the quantities of applied pesticides change over time - and there is no monitoring data (i.e., no new exceedances) for the new substances that have replaced out-of-use pesticides.

1.1.3 Management decisions support

Comment 9: The State Water Board concluded that the current density (spatial and temporal) of sampling and analysis efforts is insufficient for adequately identifying water quality problems in the East San Joaquin region (p. 47-50 of the draft Order). However, the State Board refrained from requiring an increase in monitoring density. At this time, the State Board defers the question of monitoring framework's adequacy to a future Expert Panel, which will begin by making a list of management decisions.
This deferment lacks transparency (the State Board does not indicate the future management decisions) and delays required actions that could be taken now (because the Expert Panel process takes years). As stated in the Order, there is already ample expertise to support a water quality monitoring framework that will accomplish its major objectives, particularly if **existing** monitoring resources are channeled in a more focused way. In other words, there is no need for an Expert Panel because there is sufficient knowledge to develop several monitoring designs, each intended to address one of the major goals (compliance; sources; management practices effectiveness evaluations; and trends).

Recommendation:
The Order should dictate more explicit criteria regarding the sampling locations, the temporal situations when samples should be collected, and the constituents to be analyzed for each situation. The State Board should also direct the Regional Board to create a monitoring plan that fulfills the major goals quickly and by a specified date.

1.2 Monitoring design: the Why, Who, What, Where, When, and How

Monitoring design, i.e., where, when, and what will be monitored, has to be tailored to monitoring intent (the Why) very early in the monitoring planning phase. Well-designed study is the only way to achieve a successful and cost-effective monitoring effort. However, sometimes some of these design aspects are unknown during the planning phase. In that case, an Order can replace locations/times/characteristics with criteria for selecting them, as the conditions on the ground dictate. It is very clear that the Order cannot take the place of a Monitoring Plan; these plans need to be developed on a case-by-case basis. However, the Order can and should provide specific criteria that must be met when locations, times, characteristics are selected. Examples: include collection of samples immediately downstream of a discharge point; sample during the time period of the highest risk (MRP III.A.2); or require analyses of all pesticides known to be in use in a given drainage.

The following comments pertain to more then one aspect of monitoring design, and are discussed in more detail in Sections 1.2.1 to 1.2.6 below.

Comment 10: The Order considers only water-related transport mechanisms and does not address other pathways of constituent movement from irrigated lands to waterways.
Although the spread of agrochemicals via dust, spray drift, and volatilization is not directly related to irrigation, a number of constituents reach waterways via these pathways, sometimes at toxic concentrations (e.g., diazinon in rain, Bailey *et al* 2000).
Recommendation:
Add requirements for monitoring of **aerial deposition, wet and dry**, during February (the month of dormant spray application) in geographical areas of intense almond and stone-fruit cultivation.

Comment 11: The Order does not specify the timing and frequency of sample collection; rather, it defers to the Coalition to determine these variables.
It is critical to direct the sample collection timing to what is known about the actual times of constituents release or transport in order to encounter water quality problems (see Section 1.2.5 below). By deferring it to other entities, the Water Board has no voice in how it should be done. In other words, the phrase "time periods of highest risk" is good but not specific enough.
Recommendation:
At a minimum, the order should use explicit language linking timing and frequency to agricultural commodities and to common cultivation practices such as plowing, sowing, planting, irrigating, spraying, harvesting, etc.

1.2.1 The Why (monitoring intent)

Comment 12: the Order does not prescribe a specific study design for each monitoring goal.
As explained elsewhere in this report, monitoring goals cannot be achieved using only one study design. Goals (prescribed by the State Board) and appropriate designs (prescribed by the Regional Board) must be linked.
Recommendations:

a) Monitoring design must be tailored to the goal, which is, overall, **finding adverse effects** – or assuring there are none. We need to target the **worst case scenario** if we want to "catch" damage, e.g., collect fine sediments where deposition occurs for pesticide analysis, measure dissolved oxygen at 5 AM during low flow, etc.
b) If problematic discharges are found, a new question arises: where is it coming from? The monitoring intent would be **source identification**, and the study design would call for sampling tributaries up the waterways network to find the source. Because discharge events are episodic by nature, the use of field kits in real time is highly recommended.
c) Implementation of **management practices** to reduce the impact of pollutants requires monitoring to evaluate the **effectiveness** of these management practices in reducing concentrations For this intent, the study design would involve monitoring before and after implementation, or upstream and downstream of the discharge point, or – in the case of structural management practices – at the inlet and outlet of the structure (with consideration of the retention time).
d) Identification of **long-term trends**, particularly overall reduction of pollutant concentrations as a result of implemented management practices, calls for generation of a statistically-robust dataset. The study design for this intent would be high-frequency measurements/sampling at a few selected sites. Field instruments and kits are useful for this intent as well. It is easier to detect significant change in smaller and less complex drainage areas (rather than in a large basin with multiple sources of problematic constituents).

1.2.2 The Who (operators)

Comment 13: The Order does not require individual growers to participate in documentation of real-time, frequent observations and of discharge events.
Growers are present in the fields to conduct their business and it is not a huge burden for them to document what they are seeing at key locations around their plots.
Recommendation:
Establish an observation and reporting system that encourages growers to pay attention and report what they see to help the Program identify potential problems.

Comment 14: There is no provision for real-time technical support to growers.

Recommendation:
The Growers' documentation activity should be combined with highly **Mobile Technical Support Unit** members, funded and trained by the Coalition, who work with the growers to implement responsive monitoring. These knowledgeable, experienced people will look at field observations in real time (e.g., receive text/email pictures from growers) and, as needed, immediately visit the site to test the water with field kits or and/or to collect samples for laboratory analyses.

1.2.3 The What (characteristics and analytes)

(Note: recommendations for the next three comments are grouped below)

Comment 15: The required analytical suite for water samples is not updated fast enough.
Comment: The required analytical suite for water samples is not updated fast enough.
The process of updating the list of pesticides to be monitored took a very long time; some pesticides have been in use for a number of years but will only be analyzed for in water-year 2018 (however, the toxicity tests have not been updated to included species sensitive to new pesticides). It is expected that the 2018 water-year monitoring efforts will address all the new pesticides such as surfactants and adjuvants.

Comment 16: Monitoring of sediment quality is utterly deficient. Sediment samples required by the Order are not analyzed for a myriad of potentially harmful chemicals, except for a selected suite of 10 - and only if toxicity was observed in that sample.
The sediment data collected in the ESJ Region since 2004 are not merely sparse; they are virtually non-existent. The Order ignores the fact that many of the agrochemicals applied to irrigated crops are very transient in water (and are rarely detected), but accumulate in sediments, often to harmful concentrations. The water comes and goes, but the sediment remembers.

Comment 17: The order does not require field observations (beyond those done during site visits for sample collection) and does not mention the need for documentation of overland flow events.
In other words, the Order does not require the growers to pay attention, and alert the sampling crews they see water and soil moving from their property to adjacent waterways.

Recommendations:
*This group addresses the comments 15, 16, and 17 above, listing the recommended **additions** to monitoring types and tested analytes.*

a) Add: Frequent **field observations** and photo-documentation, and add reporting pathways (e.g., pictures go to Coalition's mobile tech-support unit immediately; also see Sections 1.2.6 and 3.6 below). Field observations and photo-documentation should be done by the growers themselves. They are present at the scene, and it will help them pay attention to the consequences of their activities.

b) Add: **Field measurements**, using instruments and field kits, that can be used by the growers or by mobile tech-support crew members in response to observed triggers.
-- test strips for pH and other constituents
-- thermometers
-- pocket meters for conductivity/salinity, temperature, and pH
-- Ammonia, nitrate+nitrite, and orthophosphate field kits are useful for tracking nutrient sources and runoff
-- Surfactant kits (surfactants are widely used in biocide formulations. Detection of surfactants with field kits should trigger immediate collection of samples for pesticide analyses and toxicity testing.)

c) Add: All **chemicals** (and their breakdown products) applied to each Station's drainage area (or individual field if monitoring edge-of-field) to the analytical suite. This includes (but not limited to) biocides, fertilizers, surfactants, soil amendments, etc. Surfactants are widely used and should be reported as total ("MBAS") or as specific families of compounds.
Important: Measure the concentrations of biocides and metals in **sediments**, not just in water. And not only after toxicity was observed.

d) Add **toxicity** test organisms for water and sediment toxicity testing in freshwater, e.g., Chironomids – a.k.a. midges, such as *Chironomus dilutus* (Anderson et al 2015). The toxic soup of multiple biocides has a synergistic effect and different organisms respond in different ways; some are more sensitive than others. In other words, the toxicity testing suite should include new organisms that are most sensitive to the new pesticides in use today. Make sure the lab strain of *H. azteca* (the strain that is still sensitive to pyrethroids) is always used, rather than pyrethroid-insensitive mutants of this organism. Non-responsive toxicity test species (e.g., *Pimephales promelas*) should be excluded to channel resources elsewhere.

e) Add "Integrative" characteristics such as benthic macroinvertebrates (**BMI)**; they are good indicators for episodic toxicity and they yield very useful metrics that indicate how fast conditions change in the waterway.

1.2.4 The Where (monitoring locations)

Comment 18: Apart from requiring selection of "represented locations", the Order does not specify the selection criteria or the need to represent the worse case scenario.
Recommendation:
Sampling locations should be targeted to capture the worst case scenario for any potentially harmful constituent. Language such as "immediately downstream of the mixing zone below the Outfall/confluence/discharge point" or "at each tributary just above confluence" should be included, and directly tied to the monitoring goal.

1.2.5 The When (Monitoring Time)

1.2.5.1 Time of day

Comment 19: The Order and all the Plans associated with it (e.g., MRP, MPU, and SQMP) do not mention the time of day in any context.
For field measurements, selection of monitoring **time** is inseparable from monitoring intent. Measurements done anecdotally - whenever the crew happens to be in the Station – usually do not provide useful DO, pH, Temperature, or turbidity data. Moreover, such data, which usually do not represent the worst case scenarios, cannot be a regulatory tool.

Example: In slow-moving, nutrient-rich waterways the concentrations of dissolved oxygen (DO) can fluctuate daily from 2 mg/L or less at dawn to 15 mg/L or more in the afternoon, after many hours of photosynthesis. DO dips below ~4 mg/l is deadly to most organisms; concentrations must be at least 5 mg/L to protect warm-water aquatic life. The Order does **not** require that DO be measured at dawn to assure that DO problems are detected. In fact, the Order does not mention the time of day at all. Nor does it require that sampling place and time be targeted to capture the worst case scenario for any potentially harmful constituent.
Recommendation:
Use data loggers to collect time-series (continuous) field measurements (see Section 1.2.6e below).

1.2.5.2 Times of specific agricultural activities

Comment 20: The Order does not provide adequate instructions on how to capture discharges related to specific agricultural activities.
Activity-related sample timing is critical, whether it is irrigation, granular chemical application, spraying, dusting, fogging, or basic cultivation practices such as plowing, harvest, or even disposal of pruned branches.
Recommendation:
Sampling should be done when the activity effects reach the waterway.

1.2.5.3 Rain event sampling: time in the storm hydrograph

Comment 21: the Order does not require sampling at a given time during the hydrograph and does not specify the type of Stormwater samples (composites vs grabs).

Studies show that the highest concentrations of storm water constituents are usually detected close to the beginning of the storm flows (i.e., during the rising limb of the storm hydrograph). The Coalition allows for collection of runoff samples up to **three days** from the onset of storm flows (ESJWQC 2017 MPU p.1), but also states that the Region's waterways usually experience "flash" flows that cease immediately after precipitation stops (ESJWQC 2015 SQMP p.51).

Recommendations:

The downstream end of most small drainages, even in low-gradient streams, should be sampled within 24 hrs of rainfall start, **not 3 days.** When sampling runoff, it is best to use triggers of turbidity, water level rise, and altered specific conductance to inform sampling time and to collect samples during the rising limb of the hydrograph. This requires the presence of dedicated crews at each Station. Alternatively, runoff can be captured by deployment of unattended sampling devices (as simple as bottle-traps or as sophisticated as automatic pump samplers) that are triggered when the water level rises.

1.2.5.4 Seasonal patterns

Comment 22: The Order is silent about sampling seasons.

There is ample knowledge about what agricultural activities are best done in which season; a UC Davis guidance document (Prichard 2001) even distinguishes between different parts of the San Joaquin Valley for optimal timing of certain activities such as post-harvest irrigation of almonds. Application of biocides and nutrients also follow seasonal patterns and vary by crop type.

Recommendation: Selection of sample collection seasons should be targeted to agricultural commodities and dominant crop types to maximize the chance of witnessing disturbances and harmful discharges.

1.2.6 The How (Methods)

Comment 23: The Order does not mention entire categories of data collection methods that are needed for compliance and for collection of meaningful data within budget.

The universe of monitoring includes much more than the options required by the Order.

Recommendations:

a) frequent field observations: field data sheets should be simple, smart-phone accessible, and standardized for streamlined data management (and possible upload to **CEDEN).** For text categories, useful categorization will make it easy to "calibrate" among observers.

b) field measurement instruments and kits can be used by the growers themselves and/or by the Coalition's mobile tech-support unit personnel. There is a wide selection of wet-chemistry field kits, using a variety of comparators (Lawson and Mistry 2017). This type of field equipment (e.g., pocket Spec. Cond./temperature meter, pH strips, Nitrate ampoules, ammonia reagent kits, or surfactant/detergent kits) is:

- cheap (costs are between a few cents to less than a dollar per test);
- quick (takes less than 5 minutes);
- easy to use by any person who can follow instructions;
- can be augmented by quality checks with Standards to produce data of known and documented accuracy and precision;
- can reduce costs by replacing expensive lab analysis for certain monitoring goals; and
- offer immediate, real time, results that can inform further actions.

c) Reporting by **sending pictures** (e.g., picture of test-tube +comparison chart, with time stamp and lat/long coordinates)

d) Screening methods: Beyond the field kits discussed above, forensic studies such as source identification or evaluation studies for management practice effectiveness should make much wider use of other rapid methods. These screening methods can be used by trained operators, not necessarily in the laboratory, with inexpensive materials and equipment. Examples include ELISA kits (enzyme-linked immunosorbent assay, a.k.a. Immunoassay kits) that are now available for hundreds of organic compounds, Colilert tests for E. coli and other bacterial indicators, or simplified toxicity protocols (e.g., the 2-day adult *Ceriodaphnia dubia* test developed for schools). With appropriate testing of Standards, positive/negative controls, and reference toxicants, these methods can produce data of known and documented quality (as well as suitable for compliance and defensible in court in many cases).

e) Continuous monitoring using data loggers: As mentioned above, the values of dissolved oxygen, pH, and temperature are changing rapidly during the day/night cycle, and single measurements during sampling Station visits (whenever the crew happens to be at the Station) produce data of unknown representativeness and extremely limited use. Because crews visit Stations at times that often do not represent the worst case scenarios, exceedances are often missed. In other words, monitoring of DO, pH and temperature anecdotally ("whenever") cannot be a regulatory tool.

It is recommended to use data loggers to track the changes in these water quality characteristics during the diurnal cycles for several weeks each season. State agencies have been using data loggers to collect time-series field measurements (a.k.a continuous monitoring) for at least 15 years. Compliance is assessed by calculation of meaningful statistics from the data strings (e.g., weekly minimum average of DO) and comparison of these statistics with water quality objectives (Sullivan *et al* 2000)

f) New analytical methods: Measurement systems that can identify new constituents of concern and deliver adequate reporting limits (e.g., for comparison with toxicity-related water quality objectives), or new methods developed per the EPA's Performance-Based Measurement Systems (PBMS) protocols.

g) Use of drones and/or **remote sensing** methods to discover and document overland flow events, algal blooms in receiving waters, etc.

1.3 Programmatic output versus direct evidence

1.3.1 Indirect measures of "success"

Comment 24: The Order places too much emphasis on "bean counting" reports such as Implemented Management Practices, and allows for an "interim compliance" based on meeting management practice implementation requirements, deferring compliance with water quality protection into the far future.
The problem is that – even with all the scientific studies done to evaluate management practices effectiveness -- not all management practices are effective as implemented, and the proof should be on a case by case basis.
Recommendation:
Select appropriate locations and the timing to conduct monitoring (possibly with field instruments and kits) to determine whether the water quality has improved over time.

Comment 25: The Order does not ensure that sampling designs and monitoring results of special studies done by the Coalition are accessible to the public, not even when locations are not disclosed.
When triggered, the Coalition is required to conduct special studies for source identification and effectiveness evaluation (of management practices implemented by ESJ growers). They do not report the individual results and do not provide all supporting documentation (metadata). The entire component of special studies is totally opaque.
Recommendation:
Require reporting of special studies based on **conceptual models** that reflect real geographical layout, sampling design, and analytical results - but with codes for specific locations, dates, or other details that might identify the real Growers. These types of reports will help the Coalition **link** management practice implementation with real improvement in water quality. They will also enable a member of the public to evaluate the efficacy of the study design and the meaning of the results.

1.3.2 Expectations versus real records

Comment 26: The Order does not differentiate between perceived risk and actual risk and does not require reporting of actual risk to waterways.
The Order properly requires that Growers report quite a lot of information via the Farm Evaluation, Irrigation and Nitrogen Management Plan (INMP), and Sediment and Erosion Control Plan. However, high-risk phenomena (such as the possibility of surface flow of water from the field to a receiving water, or the potential for sediment transport) are reported annually as a perceived risk; there is no requirement to collect evidence in real time and estimate the magnitude/duration of these events.
Recommendation:
Involve growers with conducting observations and encourage them to pay attention and report how long the flow event lasted (also see Chapter 2 below).

1.4 Other data sources, data recipients, and reviewers

1.4.1 Collaboration during the planning and data collection processes

Comment 27: The Order does not require collaboration with other agencies and with potential partners during the development of planning documents for monitoring.
Recommendation: Regional Board staff and Coalition staff should collaborate coordinate and communicate with other federal and state agencies, districts, counties, citizen groups, etc. during the monitoring planning phase and later (CVRWQCB 2007 p. 2).

1.4.2 Comparison of data from various sources

Comment 28: The order does not require comparison of Coalition's data with data generated by others.
The Order properly encourages the use of data collected by others, and provides a list of data repository that Regional Board staff can use for their assessments. However, the Order does not require that Regional Board staff compare independent data with the Coalition's data for the same sites and and/or seasons.
Recommendation:
Support data exploration by Regional Board staff.

1.4.3 Independent technical review

Comment 29: The Order does not require independent technical review of Coalition's submitted documents.

Recommendation: Augment the Coalition's expertise with qualified technical advisors from academia and industry on an ongoing basis, as documents are written and monitoring designs are developed. Technical review will help correct inaccuracies before they are published. The following examples of inaccurate statements are from the Coalition's SQMP discussion (ESJWQC 2015):

- p. 46 *"Although natural processes can convert nitrate or organic nitrogen to ammonium, the concentration of ammonium in these conditions is relatively low."* Nitrate is never converted to ammonia in nature. Ammonia (NH_3) nitrogen can be oxidized to nitrite (NO_2^-) and then to nitrate (NO_3^-) if oxygen is present (i.e., in aerobic conditions), a process called nitrification. Nitrate nitrogen can only be reduced to nitrite and then to molecular nitrogen (N_2) in anaerobic conditions, a process known as denitrification. The molecular nitrogen is released to the atmosphere. However, the SQMP author was indeed correct on this item: Organic nitrogen is readily broken down to ammonia, a process called ammonification.
- p.47 *"A large amount of organic matter can also result in changes in pH as microbial breakdown of dead algae and other organic matter in the water can lead to elevated pH"*; the opposite is usually true: pH values decrease when breakdown of organic matter by microbes is increased.
- p.48 *"E. coli may persist in the presence of oxygen in the environment for periods of time after being voided, and are known to reproduce and proliferate in the environment."* Actually, E. coli bacteria (a) live in anaerobic environments and are not adapted to oxygen, and (b) require stable heat (37^o C) and dense nutrition, which is present only in very special habitats such as muddy lagoons in the sun. Thus, while other coliforms might, E. coli normally does not multiply in the environment.

Chapter 2. Almond Orchard Case Study: NAF Nitrogen Project

Development of this Case Study was informed by reading-material on almond cultivation as presented by the Almonds Board of California (http://www.almonds.com/), as well as from information available at the Integrated Pest Management (IPM) website. The Plan for the case study was adapted from a hypothetical Environmental Monitoring Plan developed by the author for citizen monitoring groups in the past (CWT Toolbox http://www.waterboards.ca.gov/water_issues/programs/swamp/cwt_toolbox.shtml).

Note: *This hypothetical case study features a fictitious almond farm adjacent to imaginary Almond Slough, a tributary of non-existent Sorrel Creek. However, the scenario and associated monitoring plan are as real as it gets.*

Introduction

Sorrel Creek flows east to west from its headwaters in the Snowy Mountains into the Big Valley Wetland Monument, draining an area of 87 square miles. Almond Slough drains an area of eight square miles of the valley floor, and flows from the south into a network of sloughs that drain into Sorrel Creek just before it enters the Big Valley Wetland Monument.

Almond Slough is fringed by a healthy but very narrow riparian corridor, and has very steep banks, 9-15 feet high, with evidence of many landslides. Water is present year-round; however, the water level fluctuates seasonally and in response to flow events (mostly rain runoff or irrigation runoff).

The entire Almond Slough watershed is cultivated, mostly by almond growers. There is one small dairy farm upstream of the orchards.

Natural Almonds Farm (NAF) is located 2 miles upstream of the slough's confluence with another of the network's sloughs, and consists of one large (x-acres) almond orchard situated adjacent to the slough. The almond orchard is irrigated by a permanent array of micro-sprinklers. Water delivery is controlled by automatic valves that open in response to a low-moisture signal from one soil tensiometer located at the south-east corner of the orchard. The trees receive nutrients and biocides on an as-needed basis.

Dale Fields is the owner and operator of NAF. Committed to protect the streams and rivers of Big Valley, Dale has been involved with "Needs Assessment Monitoring" for many years. Soil-moisture measurements inform how much water is needed. Availability of nutrients informs how much fertilizer needs to be added (Nitrogen, phosphorus, and potassium concentrations in soil, foliage, and wood are measured every 3 years at NAF, by independent consultants, per well-established protocols). In addition, since the implementation of the Integrated Pest Management (IPM) protocols, the NAF has reduced biocide use by 60% or more (because the trees are treated only if pests have been found, rather than on a prescribed seasonal schedule).

Natural Almonds Farm (NAF) is a member of the Big Valley Farms Coalition ("the Coalition") which represents this farm and several hundred other growers in all their dealings with the Regional Water Quality Control Board ("Waterboard"). The Coalition is in charge of helping the growers comply with the Waterboard's Waste Discharge Requirements (WDR) Order, and is responsible for collecting and analyzing water samples from receiving waters at representative locations. One of these sampling stations is located at the bottom end of Sorrel Creek just before it enters the wetland area.

A Problem description

A1 Geographical setting and relevant cultivation methods

The edge of the NAF orchard is very close to Almond Slough. Nitrogen fertilizer is added - when needed - as a granular formula of a urea salt, which releases ammonia into the irrigation water applied by the micro-sprinkler array. When the soil is saturated, excess irrigation water flows overland across the dirt road into the riparian corridor (and sometimes into the slough, where a turbid plume can be seen). Overland flow (runoff) from the orchard to the slough also occurs very often during rain events.

A2 Problem statement

Results from the Coalition's sampling at the bottom of Sorrel Creek in previous years revealed elevated concentrations of ammonia and nitrate on several occasions, indicating exceedances of water quality objectives and possible toxicity to aquatic life. The sources of these nitrogen compounds are not known, and the Coalition does not have the funding to conduct a source identification study in the watershed. Based on existing anecdotal evidence, the NAF (and other farms like it) may be contributing to the nitrogen loads on Almond Slough and Sorrel Creek.

A3 Monitoring objective and specific study question

NAF, with the help of the Coalition, intends to embark on a low-tech, low cost monitoring effort that will encourage the grower (and possibly the other farm hands) to pay more attention to water exiting the orchard, and try to estimate the amounts of nitrogen released from the Farm during one water-year. This effort will also include evaluation of the amounts coming from upstream of NAF (i.e., from other sources). The Project will attempt to answer the three specific questions shown in box 3-1:

Box 3-1: Monitoring Questions

(1) What is the frequency of nitrogen release from NAF into Almond Slough in Water-Year 2016-2017?

(2) What is the estimated NAF's contribution of nitrogen to Almond Slough in Water-Year 2016-2017?

(3) Are there other sources, located upstream of NAF, that contribute nitrogen to Almond Slough at the same time?

B Project personnel, roles, and responsibilities

Dale Fields, the grower, is present at the orchard several times a week when performing the necessary farming activities. Paying attention is already an important aspect of farming, and the addition of documentation and sharing is another aspect of stewardship. Chris Tech, a trained member of the

Coalition Mobile Tech Support Unit, will be responsible for field measurements and data management for the Project. Pat Quaile, the Coalition's technical leader, will review the data every eight weeks and provide oversight and support as needed. Robin Knowles, Ph.D serves as an outside advisor to the Coalition.

C Project Activities and Schedule

The major activities planned for this Project can be grouped into three aspects of "monitoring":
C.1 **"Needs Assessments"** has already been conducted for a number of years by Dale Fields, and is an ongoing effort (see Introduction above).
C.2 **Observations, photo-documentation, and field measurements** will be initiated in 2016 and continue into the future.
C.3 **Sampling and laboratory analysis** will be conducted in support of field activities, commencing in 2016.

D Monitoring Strategy and Design

D.1 Sampling design principles used to select locations and timing.

Selection of points in space and time (i.e., location and timing) for observations, field measurements, or sample collection can be done according to a number of **Sampling design principles.** These principles embody three major approaches:

a) **"directed"** (also known as "targeted" or "knowledge-based") - points are selected deliberately based on our knowledge of what they represent, or systematically in space/time. Monitoring locations for the NAF Nitrogen Project will be selected using this design principle, and the timing for routine observations will be selected systematically (e.g., once a week).
b) **"random"** - points are selected at random from a population of "eligible" points that share a specific attribute of interest. This design principle will not be used in the Project.
c**) "responsive"** - points are selected based on given constraints or in response to certain events or conditions. The timing of many monitoring activities planned for this Project will be related to events (irrigation, rain) or observations of unusual changes in water level in the Slough.

D.2 Observation and sampling locations

Fig D-1 shows a schematic depiction of NAF property and the adjacent Almond Slough. The arrows show flow direction, from south to north. Potential observation and sampling points are also shown, as red circles with numbers (each point shown has been assigned an ID, unique to the Region). The gray square is a concrete structure that was used as a pump well in the 1950s. Station #1 is a good observation point from which the staff gage, mounted on the southern side of the concrete structure, can be easily seen/read/photographed. Station #2 enables sampling of the water coming from upstream of NAF. There are several access points further upstream (not shown) that enable sampling to detect spatial differences in various characteristics. Station #3 represents the lowest part of the little earth berm that surrounds the orchard boundary; this is where overland flow occurs.

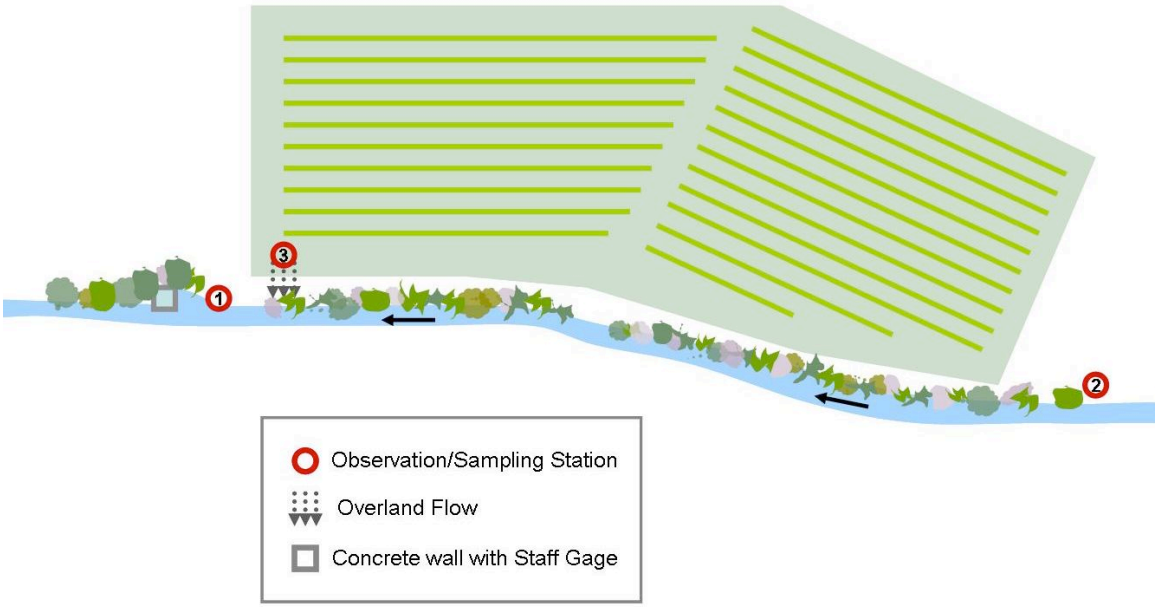

Figure D-1: Observation and sampling locations at NAF and along Almond Slough

D.3 Water quality characteristics for Almond Slough monitoring

D.3.1 Visual observation

Observation characteristics and associated verbal categories will be done weekly and include (but will not be limited to) the following:
-- SKY CODE: Clear; Partly Cloudy; Overcast; Fog; Smoky; Hazy
-- SITE ODOR: None; Sulfides; Sewage; Smoke; Rotting Vegetation; Solvents; Other____
-- OBSERVED FLOW: No Observed Flow; Trickle (<0.1cfs); 0.1-1cfs; 1-5cfs; 5-20cfs; 20-50cfs; 50-200cfs; >200cfs
-- WATER CLARITY: Clear (see bottom); Cloudy (>4" vis); Murky (<4" vis)
-- OTHER PRESENCE: Oily Sheen; Foam; Trash; Other_____
(These are real characteristic names and text categories from the SWAMP data sheet)

D.3.2 Staff gage reading

The staff gage will be attached to the abandoned concrete structure on the south wall. It will be visible from the NAF bank at Station #1 and accessible for periodic cleaning. Staff Gage reading will be recorded on every visit to Station #1.

D.3.3 Photo-documentation

The permanent photo-documentation "frame" of Almond Slough will be established in Station #1 at the Project's onset, and all subsequent pictures will be taken from the same location in the same direction at the same zoom each time. Photo-documentation will be done on every visit to Station #1.

D.3.4 Field measurements

Measurements of temperature, specific conductance, and pH will be conducted by the Mobile Tech Support Unit person (Chris), when triggered as described in Section D.4 below. Chris will also measure ammonia and nitrate using field kits, and collect water samples for lab analysis of Ammonia, nitrate, and Total Nitrogen only if needed.

D.4 Roles and logistics planned for this Project

Field observations will be conducted by Dale (the Grower) who is already at the site as part of normal business operations. Routine observations will be done very frequently at Stations #1 and #2.

During every Station Visit, Dale will take pictures of the field observations data sheet and the staff gage, and send them in real time, by text or email, to Chris at the Coalition's Mobile Tech Support Unit.

If overland flow is observed in Station #3, Dale will fill out the observations data sheet for Station #3 as well, and take pictures as needed. In addition, Dale will estimate the discharge volume (in Cubic feet/second, or Gallon/sec, or even Quart/sec), try to evaluate the total length of time the flow was happening, and keep records of these estimates (this might require more than one visit).

Dale will alert the Chris (the Mobile Tech Support person) when field measurements are required under the following circumstances:

- when overland flow is observed at NAF during dry weather; or
- when unusual conditions are observed in the Slough (e.g. murky waters, foam, increased water level, etc.); or
- during rain events that produce runoff from NAF.

When informed by other parties about an unusual situation happening downstream of NAF, Dale will conduct observations at NAF as needed and possibly alert Chris for water testing.

The Coalition's Mobile Tech Support Unit is dedicated to responsive monitoring which can be triggered by any unusual situations and they are able to arrive within a very short period of time during dry weather (they are not always available during rain events). Each crew member travels with a variety of sampling devices (e.g., a collection of beakers mounted on a long pole for sampling the center of the slough from a tall, steep bank). They also bring several instruments and kits for field measurements, as well as pre-cleaned sample containers and preservatives for many analytical suites.

Chris (the Mobile Tech Support crew member) will conduct field measurements at the appropriate locations, including both Stations upstream and downstream of NAF property. Samples for laboratory analysis will be collected, according to established Standard Operation Procedures, if ammonia is detected with the field kit (ammonia is a good indicator for fresh input in this case, and will inform sampling for "definitive" laboratory analyses of all nitrogen species). The samples will be delivered to the laboratory under Chain of Custody procedures for analysis of ammonia, nitrate+nitrite, and total nitrogen (see methods in Section 8 below). Samples for analysis of other constituents deemed appropriate and/or requested by the Regional Board may also be collected.

Footnote: The roles above are planned for WY 2016-2017, if the Grower will assist the Mobile Tech Support person with the field measurements. If Dale is interested in performing the field measurements in subsequent years, the Clean Water Team (the Citizen Monitoring Program of the State Water Resources Control Board) will provide training, and the Coalition will provide full technical support, including supply of instruments, kits and Standard solutions for quality checks.

D.5 Other sources of data and information

Constituent concentrations data at the Sorrel Creek downstream station is available from the Coalition and will be used as reference to the overall nitrogen loads. There is little information about water movement within the slough network that includes Almond Slough, but water level data have been gathered infrequently by The Friends of Sorrel Creek (FSC) via staff gage readings in locations where such gages could be permanently installed. FSC volunteers have recently acquired, and been trained in the use of, a dissolved-oxygen data logger. They will be deploying this instrument in various sloughs during the dry weather period, hopefully collecting at least four deployment episodes (one week each) at Almond Slough. The data will be available to NAF Nitrogen Project personnel three days after each retrieval of the instrument.

E Measurement Quality Objectives (MQOs) and choice of measurement methods

Not all monitoring data must be highly accurate and precise; the required level of accuracy and precision depends on the study question. For example, a wide range of error can be tolerated for data collected to answer the question "where is this constituent coming from", if the data is of known and documented quality. The Coalition can reduce monitoring costs by using field methods when they are adequate.

F Quality assurance plan

All instruments will be calibrated often to reduce drift from the calibrated state. All data will be supported with periodic quality checks of all instruments and kits to assess the accuracy and precision of each instrument or kit.

G Data management, interpretation, and reporting

G.1 Electronic reporting of field observations/measurements

This Project makes use of available technological advances. Information is captured electronically via digital pictures on a cell phone and can be sent immediately. There are a number of spreadsheet applications for cell phones, some of which can be programmed with specific placeholders and drop-down menus. Thus, Field Observations (i.e., selected verbal categories) can be entered into a spreadsheet using drop-down menus, and Results of field measurements will be typed in.

Laboratory data have been reported in electronic format for decades, and the Coalition has a streamlined process in place for data transfer.

G.2 Data integration, management, and analysis

Documented, validated and qualified data generated in this Project will be stored in the NAF Project File. Selected information fields will be exported to a Data Exchange Node that will be connected to other data through the California Environmental Data Exchange Network (CEDEN); this will be done by the Coalition.

All data collected for the NAF Nitrogen Project, as well as the water level and dissolved oxygen data collected by the Friends of Sorrel Creek and all current and historic data collected by the Coalition at the mouth of Sorrel Creek, will be reviewed by Dr. Robin Knowles, who will provide input on the potential conclusions from the data and suggest design modifications for future monitoring.

Chapter 3 A Vision of a Monitoring Framework for Eastern San Joaquin

A monitoring program is created to accomplish specific goals. Within the context of nonpoint source agricultural discharges, the ILRP monitoring goals include the following:

Goal One: Compliance
Goal Two: Source identification
Goal Three: Management practice effectiveness evaluation
Goal Four: Long term trends

The current ESJ monitoring Program, as noted by both the State Board and numerous environmental advocates, is inadequate. Existing data collected over the past 12 years indicate that compliance (goal 1) has not been achieved and there is no way of predicting whether the Program will achieve compliance within the current Order's schedule. The long term regional trends (goal 4), as observed from existing data, do not show dramatic decreases in concentrations over time, and show slight increases for some constituents. As for the remaining two goals, namely source identification (Goal 3) and management practice effectiveness evaluation (Goal 3), the Program is totally **opaque**; the monitoring design, spatial layout, and analytical results of these "special studies" have not been released to the public. At this time, there is no way of knowing if these goals are archived, when, or where.

As mentioned in the Introduction above, water quality monitoring is not limited to sample collection and laboratory analysis; there are many aspects of monitoring that are not "rocket science" and are not prohibitively expensive. However, these options require all parties, including the growers, to be involved, attentive, and responsive. The "traditional" sampling and analysis aspect, as conducted by the current Program, will not accomplish all goals. It would benefit the ILRP monitoring program if other modes of data collection - and information collection – are introduced.

This chapter lists some old and new ideas that help focus monitoring resources to collect data that are more likely to achieve the program's goals. It also describes data collection tools that have not been widely used in the ILRP Program and can expand existing resources to collect much more information and data. The list includes the following:

- Targeting water and soil movement events to address **episodic discharges** rather than conducting routine monitoring;
- Looking for particulate-bound pollutants in the **sediment rather than in the water**;
- Selecting study watersheds to address each of the major **agricultural commodities;**
- Using inexpensive field-based analytical tools such as test strips, wet chemistry kits, and immunoassay (ELISA) kits to identify constituent **sources** and evaluate the **effectiveness** of management practices**;**
- Creating a mobile technical support unit with crews that are familiar with the Region, well trained in sampling and in the use of the field kits described above, and available "on call" to respond to water quality problems in real time;
- Involving the Growers and other citizens in **paying attention and alerting** a mobile technical support unit as needed, thus spreading the ability/potential to capture problematic discharge throughout the Region.

3.1 Framework components

These ideas can easily be applied to an ESJ Regional monitoring framework that incorporates the following component:

3.1.1 Component1: fixed stations at integrative sites

A small number (3-4) of "long term" monitoring Stations at the bottom of perennial stream drainages that had a history of exceedances will be selected where deposition occurs. Water and sediment samples will be collected 4 times a year during dry weather and analyzed for a wide range of constituents including toxicity.

3.1.2 Component 2: commodity-based Stations

Twelve monitoring Stations located at the bottom of small, uniform watersheds, each one draining predominantly one type of crop/commodity, will be selected. Two Stations will represent each of the top 6 commodities. One Station for each commodity will be fixed over time. Stream water quality (temperature, dissolved oxygen, etc.) will be tracked with automatic data loggers for 20 weeks each year. Water samples will be collected during 4 rain events (during fall and spring) and during 4 irrigation runoff events. Sediments will be collected 4 times a year. Analytes will include commodity-specific materials to reduce cost.

3.1.3 Component 3: Routine observations and reporting

Growers will make weekly and anecdotal observations (per the standard SWAMP protocol), read the local staff gage, and report to the Coalition instantaneously using cell phones. When they observe storm runoff or unusual dry-weather flows into receiving water (irrigation runoff, overland flow, pumping) they will alert the Coalition's Technical Support Team.

3.1.4 Component 4: Responsive monitoring when alerted by observations

When alerted, Technical Support Team members go to the site, conduct basic field measurements using field kits, and collect water samples for ELISA and/or laboratory analyses if necessary. Samples collected this way, throughout the Region, will greatly increase the ability of the Program to identify water quality problems where they happen, not only where we are looking for them.

3.1.5 Component 5: Special studies for source identifications and management practice effectiveness

When water quality problems are identified, the Coalitions' technical team can track the problem's source by moving up the watershed and measuring constituents of interest and other relevant characteristics with field equipment and/or ELISA kits.

3.1.6 Component 6: Follow-up studies for existing regulatory processes

Monitoring resources may be allocated to continuation of management plans and other regulatory processes in drainages with known water quality problems.

3.2 How the Framework can help achieve the Program's goals

Implementation of commodity-focused monitoring, utilization of a vast selection of inexpensive tools, and involvement of the Growers can increase the likelihood that the monitoring goals will be achieved in time.

3.2.1 Goal 1: Compliance

The major reason for monitoring in the Region is to assure compliance of agricultural discharges with water quality objectives (WQOs). Laboratory measurements data collected via Components 1, 2, 3 and 4 will be used to compare detected concentrations of potentially harmful constituents to WQOs for water and sediments for all the beneficial uses that are relevant to each waterway.

3.2.2 Goal 2: Source identification

Components 3, 4 and 5 may be very useful in achieving this goal, often in real time (while the discharge is happening) and at a fraction of the cost needed for laboratory analyses.

3.2.3 Goal 3: Management practices effectiveness evaluations

This group of special studies require spatial and temporal flexibility and sample density that are easier to accomplish by inexpensive analyses suggested in components 3, 4 and 5. Grower observations can help inform these studies.

3.2.4 Goal 4: Long term trends

Components 1 and 2 will provide a robust dataset that will enable the detection of change over time with a high level of confidence. The overall condition of the Region will be depicted by component 1, while long-term trends in specific sectors of irrigated agriculture can be detected from component 2 data, grouped by commodity type.

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Appendix A to this **"2017 proposed Order"** which includes Order No. R5-2012-0116-R4 plus three attachments (Information Sheet, Monitoring and Reporting Program (MRP), and CEQA Mitigation Measures) – is at:

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Revital Katznelson, Ph.D.

Revital Katznelson received her B. Sc. in biology, M.Sc. in microbial ecology, and Ph.D. in biochemistry from the Hebrew University of Jerusalem, Israel. She has over 30 years of experience in performing, interpreting, and assuring quality of field and laboratory analyses of chemical, biological and bacteriological water quality characteristics. She also has hands-on experience in toxicity testing using a variety of test organisms. Beyond the laboratory, Dr. Katznelson has decades of experience using a wide array of field instrument and kits, and she is proficient with the use of enzyme-linked immunosorbent assay (ELISA) kits and the sealed-well technology (e.g., Colilert) used to count indicator bacteria.

Dr. Katznelson has led numerous ecological studies in a variety of aquatic systems including creeks, ponds, lakes, marshes, lagoons, and reservoirs, and has developed innovative methods to assess - and to increase - the representativeness of samples collected in these types of waterbodies.

In the National arena, Dr. Katznelson has been part of the Water Quality Data Elements Workgroup and the Aquatic Sensors Workgroup of the Methods and Data Comparability Board (affiliated with the National Water Quality Monitoring Council) for several years, and was the lead person in the development of quality assurance guidance for field measurements and telemetry using various water quality sensors.

As a technical liaison at the California State Water Resources Control Board, and a member of the Clean Water Team affiliated with the Surface Water Ambient Monitoring Program (SWAMP), Dr. Katznelson has introduced an array of concepts and tools for training, guidance, data management, documentation, and quality assurance to the realm of water quality monitoring in California. She has successfully applied elaborate instructional design principles, and her unique ability to teach basic scientific concepts, to the construction of her citizen monitoring workshops, her national presentations, and her quality assurance workshops for SWAMP. She also was the co-developer of the SWAMP Advisor, a web-based expert system for compilation of a SWAMP-comparable Quality Assurance Project Plan. Dr. Katznelson was the lead, and primary author, of the SWAMP Field Methods Distance Learning Course Part 1, which was delivered on CDs and on-line in 2005. In the late 2000s, Dr. Katznelson was deeply involved in implementing, troubleshooting, and interpreting the SWAMP physical habitat assessments and algae protocols as they were developing, and she eventually created all contents of the SWAMP Field Methods Distance Learning Course Part 2 (physical and biological assessment) published in 2012. She is currently writing interpretive monitoring reports, providing technical support services, and assisting citizen groups with their environmental monitoring as a volunteer.

Since the late 1970s, Dr. Katznelson has taught in many environments including undergraduate classrooms/labs/field activities at the university, specialized methodology courses and training workshops, and individual mentoring. She uses the current Water Quality Monitoring Design course, provided by UC Berkeley Extension twice a year, to share her decades of experience with her students.

Dr. Katznelson's latest publications and a link her resume (with full publication list), are available on her website at:
http://www.water-science-etc.net/PRODUCTS-pubs.htm