

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

ORDER WQ 2016-

In the Matter of Review of
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

Issued by the
California Regional Water Quality Control Board,
Central Valley Region

SWRCB/OCC FILES A-2239(a)-(c)

BY THE BOARD:

In this order, the State Water Resources Control Board (State Water Board or Board) reviews on its own motion Waste Discharge Requirements General Order No. R5-2012-0116 issued by the Central Valley Regional Water Quality Control Board (Central Valley Water Board) for Growers within the Eastern San Joaquin River Watershed that are Members of a Third-Party Group (hereinafter "Eastern San Joaquin Agricultural General WDRs" or "General WDRs"). The Eastern San Joaquin Agricultural General WDRs authorize discharges from irrigated lands¹ operations to waters of the state within the Eastern San Joaquin River Watershed and set forth a number of requirements for monitoring and planning, for implementation and evaluation of management practices, and for participation in various education and outreach events. For the reasons discussed herein, the State Water Board generally upholds the structure and requirements of the Eastern San Joaquin Agricultural General WDRs, but directs a number of revisions, primarily to add greater specificity and transparency in reporting of management practice implementation, to require reporting of certain nitrogen application-related data needed for management of excess nitrogen use, and to expand the surface water and groundwater quality monitoring programs of the General WDRs. Many of the revisions to the Eastern San Joaquin Agricultural General WDRs implement the conclusions of an agricultural expert panel that made

¹ Irrigated lands are lands irrigated to produce crops or pasture for commercial purposes, nurseries, and privately and publicly managed wetlands. (Eastern San Joaquin Agricultural General WDRs, Attach. E, Definitions, p.3.)

recommendations to the State Water Board on an appropriate regulatory program for irrigated lands in September 2014 (Agricultural Expert Panel)² while review of the Eastern San Joaquin Agricultural General WDRs was pending before the State Water Board.

I. BACKGROUND

California's agricultural industry produces more than 400 commodities at over 75,000 farms and ranches and is a significant part of the state's economy, providing a large percentage of fruits and vegetables for the nation. Agriculture is especially significant within the Central Valley, where it represents over seven million acres of irrigated lands, approximately one million of which are in the Eastern San Joaquin Watershed. The California grower community has a rich knowledge base of management and business practices, developed over several generations of farming. Because the vast majority of growers plan for the long term, they are naturally motivated to protect natural resources, through stewardship of the land. Over the last few decades, as the impacts of agricultural discharges on water quality have been further studied and understood, growers have collaborated with the regional water quality control boards and the State Water Board (collectively, "water boards"), most commonly through the mechanism of grower coalitions, to find shared solutions to address existing and potential water quality issues. At the same time, the water boards have acknowledged that growers have a legitimate interest in protecting confidential business practices and recognized the need to preserve the tradition of agriculture in California and the ongoing viability of agriculture as an essential driver of the state's economy.

Water quality impacts associated with agriculture are complex and addressing them requires pooling and focusing the knowledge, expertise, and resources of all concerned parties, including growers and their representatives, the regulatory agencies, and the environmental and environmental justice communities. The issues are especially complicated because the same activities that are essential to producing a crucial, reliable food supply – e.g. pesticide use to control pests, nitrogen to fertilize crops, irrigation to water crops – also underlie many of the critical impacts. Pesticide toxicity in surface water threatens the viability of the water bodies to support aquatic and other species. High levels of nitrates found in in drinking water wells impact public health. Concentrated levels of salt resulting from long-term irrigation

² Conclusions of the Agricultural Expert Panel, Recommendations to the State Water Resources Control Board pertaining to the Irrigated Lands Regulatory Program (Sept. 9, 2014), available at http://www.swrcb.ca.gov/water_issues/programs/agriculture/docs/ILRP_expert_panel_final_report.pdf (as of Jan. 5, 2016) (Agricultural Expert Panel Report). We take official notice of the Agricultural Expert Panel Report. (Cal. Code Reg., tit. 23, § 648.2.)

adversely affect the quality of groundwater for irrigation, municipal, and other uses. Collectively, we have a responsibility to acknowledge these impacts and address them, but in a manner that preserves the economic viability of agriculture. In some cases, historic agricultural practices have resulted in the impacts we see today. Current practices are also, in some cases, causing impacts and although agricultural practices have generally improved over time, we have an obligation to continue to develop appropriate solutions. This is an ongoing process that requires a thorough understanding of the complex relationship between agricultural practices and water quality impacts gained through collecting and analyzing real-world data and responding to that data with innovations in practices. This data-driven analysis of the issues forms the foundation for fair, even-handed, and reasonable regulation of irrigated lands.

The Central Valley Water Board began engaging the grower community when it adopted its first regulatory program for irrigated lands in 1982. This initial regulatory 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. In 2003, in response to revisions to Water Code section 13269,³ the Central Valley Water Board re-examined its original 1982 waiver and significantly changed its regulatory strategy for irrigated lands (2003 Central Valley Agricultural General Waiver).⁴ The 2003 Central Valley Agricultural General Waiver required surface receiving water monitoring of numerous parameters to begin identifying where irrigated lands might be contributing to water quality problems. To take advantage of local knowledge and resources, leverage limited regulatory resources, and minimize costs, the Central Valley Water Board allowed growers to form discharger coalitions, with a third-party representative responsible for grower outreach and education and for implementation of a number of the requirements of the regulatory program, including representative monitoring. In 2006, the Central Valley Water Board modified the 2003 Central Valley Agricultural General Waiver, retaining the third-party structure, but now also requiring submission of management plans when water quality problems were

³ There were two relevant amendments to Water Code section 13269. The first amendment required the regional water boards to terminate or extend all existing waivers of WDRs on or before January 1, 2003. Thereafter, waivers of WDRs were not allowed to exceed five years in duration. (See Stats. 1999, ch. 686, § 2.) The second amendment required waivers of WDRs to contain monitoring provisions unless the regional water board determined that the discharge did not pose a significant threat to water quality. (See Stats. 2003, ch. 801, § 1.)

⁴ Central Valley Water Board Resolution R5-2003-0105, Administrative Record (AR) 00001-00012. In addition to the 2003 Central Valley Agricultural General Waiver, Resolution R5-2003-0105 adopted a second conditional waiver for individual dischargers that chose not to join a coalition.

identified (2006 Central Valley Agricultural General Waiver).⁵ The 2006 Central Valley Agricultural General Waiver was renewed for an additional two years in 2011.

When the Central Valley Water Board issued the 2006 Central Valley Agricultural General Waiver, the Board committed to preparing an environmental impact report (EIR) pursuant to the California Environmental Quality Act (CEQA) that would comprehensively address discharges of waste from irrigated lands to all waters of the state, both surface water and ground water. The Draft Programmatic EIR was released in July 2010 and the Final Programmatic EIR was certified by the Central Valley Water Board on April 7, 2011.⁶ The Programmatic EIR was challenged by numerous parties, including two of the petitioners in this proceeding. On May 21, 2013, the Sacramento County Superior Court issued a final ruling that rejected the challenges to the Programmatic EIR.⁷ The final ruling was not appealed.

After certification of the Final Programmatic EIR, the Central Valley Water Board began working with a stakeholder advisory workgroup and a groundwater monitoring advisory workgroup to further develop its long-term irrigated lands regulatory program (ILRP). The Central Valley Water Board set out to issue watershed-specific or commodity-specific WDRs instead of one region-wide waiver of WDRs like the 2006 Central Valley Agricultural General Waiver. In April 2012, the Central Valley Water Board issued the first set of draft WDRs for the Eastern San Joaquin River Watershed, conducted several public workshops and multiple meetings with stakeholders and interested parties, and held a hearing in November 2012.

On December 7, 2012, the Central Valley Water Board adopted the Eastern San Joaquin Agricultural General WDRs.⁸ The Eastern San Joaquin Agricultural General WDRs

⁵ Central Valley Water Board Order No. R5-2006-0053, AR 01037-01069. As in 2003, the Central Valley Water Board also adopted a separate conditional waiver for individual dischargers not joining a coalition. (Central Valley Water Board Order No. R5-2003-0054.)

⁶ Central Valley Water Board Resolution No. R5-2011-0017, AR 03720-03721.

⁷ *San Joaquin County Resource Conservation Dist., et al. v. Cal. Regional Water Quality Control Bd., Central Valley Region, et al.* (Super. Ct. Sacramento County, 2013, No. 34-2012-80001186). We take official notice of the final ruling. (Cal. Code Reg., tit. 23, § 648.2.)

⁸ The Central Valley Water Board has since amended the Eastern San Joaquin Agricultural General WDRs four times. We take official notice of the amended versions of the Eastern San Joaquin Agricultural General WDRs. (*Ibid.*) The Central Valley Water Board adopted amendments to the General WDRs on October 3, 2013, on March 27, 2014, on April 17, 2015, and on October 2, 2015. Our references and citations to the Eastern San Joaquin Agricultural General WDRs is to the final amended version. This version was not submitted as part of the administrative record prepared by the Central Valley Water Board, but is available at http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2012-0116-r3.pdf (as of Feb. 3, 2016.). We also note that the October 3, 2013, amendment clarified that any reports approved by or determinations made by the Executive Officer of the Central Valley Water Board in accordance with the terms of the General WDRs are reviewable by the Board itself upon request. (Eastern San Joaquin Agricultural General WDRs, Attach. A, Information Sheet, p.27.) As a result, we do not take up the argument made by Environmental Petitioners regarding improper delegation of certain review and approvals to the Executive Officer.

regulate discharges to groundwater from irrigated lands as well as surface water discharges. The Eastern San Joaquin Agricultural General WDRs carry forward many of the program elements from the 2006 Central Valley Agricultural General Waiver. These elements include allowance of a third party to represent the growers, outreach and education requirements, representative monitoring of receiving waters (as opposed to farm discharge monitoring), annual reporting, requirements to implement and evaluate management practices, and receiving water limitations. The Eastern San Joaquin Agricultural General WDRs add programs for groundwater monitoring and groundwater protection, including implementation of groundwater management plans.

The requirements of the Eastern San Joaquin Agricultural General WDRs are discussed in greater detail in the sections that follow. In brief summary, the General WDRs assign certain requirements to the individual growers (Members) and certain requirements to the coalition (Third Party).⁹ Each Member must meet receiving water limitations (except where the Third Party is implementing a management plan to address known exceedances caused by agricultural discharges), which prohibit the Member from causing or contributing to exceedances of applicable water quality objectives in surface water and groundwater. Each Member must also implement management practices that minimize waste discharge to surface water and groundwater and protect wellheads from surface water intrusion. Each Member is responsible for conducting farm evaluations, which must document the Member's management practices. Each Member is required to prepare and implement a nitrogen management plan that meets the Eastern San Joaquin Agricultural General WDRs' requirement to minimize nutrient application relative to crop need. Members in areas susceptible to erosion must prepare and implement sediment and erosion control plans.

The Third Party, in turn, must conduct education and outreach activities, collect data from Members regarding management practice implementation and nitrogen application and analyze and report aggregated information on such implementation to the Central Valley Water Board. The Third Party is also responsible for maintaining the collected data and submitting the data to the Regional Board upon request. The Third Party must conduct surface water and groundwater quality monitoring. In response to certain triggers, including exceedances of water quality objectives in surface water or groundwater, the Third Party must prepare and submit to the Central Valley Water Board management plans to address water quality issues in a given area and implement those plans in accordance with a specific schedule for implementation of improved

⁹ Throughout this order, references to the "Third Party" are to the third-party group referenced in the Eastern San Joaquin Agricultural General WDRs; references to a "third party," "third-party group," or "third-party approach/structure" are to agricultural coalitions generally.

or additional management practices and other tasks by Members. The Third Party that has taken on this responsibility under the Eastern San Joaquin Agricultural General WDRs is the East San Joaquin Water Quality Coalition.

The Eastern San Joaquin Agricultural General WDRs assign some of the above requirements based on threat to water quality: regulatory requirements are heightened in higher threat geographic areas (called “high vulnerability areas”), whereas lower threat geographic areas have fewer requirements (called “low vulnerability areas”).

In response to the Central Valley Water Board’s adoption of the Eastern San Joaquin Agricultural General WDRs, three timely petitions for review were filed with the State Water Board by Asociación de Gente Unida por el Agua, et al. (AGUA), by the California Sportfishing Alliance and California Water Impact Network (CSPA), and by San Joaquin County Resource Conservation District, et al. (SJCRCDD) (collectively “Petitioners”). After deeming the petitions complete, consolidating them for review, receiving a response to the petitions and the administrative record from the Central Valley Water Board, and responses to the petitions from interested persons, we adopted Order WQ 2014-0135 on August 5, 2014, taking this matter up on our own motion. We granted own motion review in order to have sufficient time to adequately review the submissions and to allow for completion of a report by the Agricultural Expert Panel (Agricultural Expert Panel Report) prior to making decisions on related issues raised in the petitions.

The Agricultural Expert Panel Report grew out of a legislative effort to address nitrate in groundwater. In 2008, the Legislature added section 83002.5¹⁰ to the Water Code requiring the State Water Board to develop pilot projects focusing on nitrate in groundwater in the Tulare Lake Basin and the Salinas Valley, and to submit a report to the Legislature. In its report, the State Water Board made fifteen recommendations including Recommendation #11, calling for a task force to identify intended outcomes and expected benefits of a nitrogen mass balance tracking system, and Recommendation #14, calling for a panel of experts to assess existing agricultural nitrate control programs and develop recommendations to ensure that ongoing efforts are protective of groundwater quality.

The task force (Nitrogen Tracking Task Force) was convened by the California Department of Food and Agriculture (CDFA), in coordination with the water boards and with participation by stakeholders and experts from agricultural organizations, academia, and the

¹⁰ Added by Stats. 2007-2008, 2nd Ex.Sess., ch. 1 (S.B.1), § 6, eff. March 1, 2009.

environmental advocacy community.¹¹ The panel of experts (Agricultural Expert Panel) was convened by the State Water Board, in coordination with CDFA, and considered all existing studies, programs, and efforts for agricultural nitrate control, including the recommendations of the Nitrogen Tracking Task Force.

On September 24, 2013, concurrent with the proceedings of the Nitrogen Tracking Task Force, but prior to convening the Agricultural Expert Panel, the State Water Board adopted Order WQ 2013-0101, reviewing the Central Coast Regional Water Board's (Central Coast Water Board) waiver of WDRs for irrigated lands (Central Coast Agricultural Order). We stated in that order that many of our conclusions represented an interim approach to regulation of agriculture, pending further consideration by the Agricultural Expert Panel. As we laid out in Order WQ 2013-0101, we referred a number of additional questions regarding the development of an appropriate agricultural regulatory program to the Agricultural Expert Panel for consideration, primarily questions specific to agricultural nitrate control programs, but also questions regarding appropriate risk or vulnerability determinations for purposes of tiering requirements and regarding effective surface water monitoring.¹² Many of these questions are relevant to the current proceedings.

The Agricultural Expert Panel held multiple public meetings over a six month period in Tulare, San Luis Obispo, and Sacramento, to consider the questions posed by the State Water Board. The Agricultural Expert Panel consisted of eight members with various areas of

¹¹ The Nitrogen Tracking Task Force's final report is available at <https://www.cdfa.ca.gov/environmentalstewardship/PDFs/NTRSTFFinalReport122013.pdf> (as of Jan. 5, 2016) (Nitrogen Tracking and Reporting Task Force, Final Report (Dec. 2013)) (Nitrogen Tracking Task Force Report). We take official notice of the Nitrogen Tracking Task Force Report. (Cal. Code Reg., tit. 23, § 648.2.)

¹² The following questions were posed to the Agricultural Expert Panel: "1. How can risk to or vulnerability of groundwater best be determined in the context of a regulatory program such as the Irrigated Lands Regulatory Program (ILRP)? 2. Evaluate and develop recommendations for the current approaches taken to assessing risk to or vulnerability of groundwater. 3. How can risk to or vulnerability of surface water best be determined in the context of a regulatory program such as the ILRP? 4. Evaluate and develop recommendations for the current approaches taken to assessing risk to or vulnerability of surface water. 5. What management practices are expected to be implemented and under what circumstances for the control of nitrogen? 6. What management practices are recommended for consideration by growers when they are selecting practices to put in place for the control of nitrogen? 7. Evaluate and make recommendations regarding the usage of various nitrogen management and accounting practices. 8. Evaluate and make recommendations regarding the most effective methods for ensuring growers have the knowledge required for effectively implementing recommended management practices. 9. What measurements can be used to verify that the implementations of management practices for nitrogen are as effective as possible? 10. Evaluate and make recommendations regarding the usage of various verification measurements of nitrogen control. 11. Evaluate the relative merits, and make recommendations regarding the usage of, surface water measurement systems derived from either receiving water or a discharge monitoring approach to identify problem discharges. 12. Evaluate and make recommendations on how best to integrate the results of the Nitrogen Tracking and Reporting System Task Force with any above recommendation regarding management practices and verification measures. 13. Evaluate and make recommendations on the reporting requirements to report budgeting and recording of nitrogen application on a management block basis versus reporting aggregated numbers on a nitrate loading risk unit level." (Agricultural Expert Panel Report, p. i.) Upon request from the Agricultural Expert Panel, the State Water Board provided additional clarification on several of the questions. (See Agricultural Expert Panel Report, Appen. C.)

specialization including: an irrigation specialist/agricultural engineer, a soil scientist, a hydrogeologist, an agronomist, a certified crop advisor, a University of California Cooperative Extension farm advisor, a Central Coast grower, and a Central Valley grower. The Agricultural Expert Panel released a draft report in July 2014 considering and answering the questions posed, took written public comment on the draft report, and issued the Agricultural Expert Panel Report on September 9, 2014. The Agricultural Expert Panel Report was presented to us on September 23, 2014, and made a number of recommendations for the regulation of irrigated lands.¹³ In this order, we consider and incorporate a number of those recommendations. The discussed recommendations are appropriate not only for the Eastern San Joaquin Agricultural General WDRs, but also for the next generation of regional water quality control board (regional water board) agricultural regulatory programs statewide, and our conclusions in this precedential order apply statewide (except where a regional water board expressly finds that there are truly significant site-specific conditions that render these requirements inappropriate). The specific recommendations made by the Agricultural Expert Panel and endorsed by us in this order are discussed under the appropriate topics in the next section.¹⁴

II. ISSUES AND FINDINGS

The three petitions raise a number of issues concerning the Central Valley Water Board's adoption of the Eastern San Joaquin Agricultural General WDRs. To the extent petitioners raise issues that are not discussed in this order, either in whole or in part, such issues are dismissed as not raising substantial issues appropriate for our review.¹⁵

¹³ The Agricultural Expert Panel proceedings are detailed at http://www.swrcb.ca.gov/water_issues/programs/agriculture/ (as of Jan. 5, 2016). In addition to the Agricultural Expert Panel Report, we take official notice of the proceedings of the Agricultural Expert Panel. (Cal. Code Reg., tit. 23, § 648.2.)

¹⁴ In reviewing the Eastern San Joaquin Agricultural General WDRs, we also take into account some of our precedential determinations in State Water Board Order WQ 2013-0101. While the Central Coast Water Board's approach to regulating irrigated lands has significant differences when compared to the Central Valley Water Board's approach, there are a number of overlapping issues raised by both sets of petitions for review. However, State Water Board Order WQ 2013-0101 is the subject of current litigation. On September 30, 2015, the County of Sacramento Superior Court issued a judgment and peremptory writ of mandate compelling the State Water Board to set aside Order WQ 2013-0101 and reconsider the Central Coast Agricultural Order. The judgment and writ issued in accordance with a Ruling on Submitted Matter, dated August 10, 2015 (*Monterey Coastkeeper et al. v. State Water Resources Control Bd.* (Super Ct. Sacramento County, 2015, No. 34-2012-80001324) (Sacramento Superior Court Ruling) in which the court considered a number of the issues decided in Order WQ-2013-0101. Our appeal of the judgment and writ is currently pending. Accordingly, we reference our findings and conclusions in Order WQ-2013-0101 in this order only where those findings and conclusions have not been specifically called into question by the Sacramento Superior Court Ruling. We also discuss and reference conclusions of the Sacramento Superior Court Ruling where relevant.

¹⁵ *People v. Barry* (1987) 194 Cal.App.3d 158, 175-177; *Johnson v. State Water Resources Control Bd.* (2004) 123 Cal.App.4th 1107, 1114; Cal. Code Regs., tit. 23, § 2052, subd. (a)(1).

In particular, although we have carefully reviewed the petition filed by SJCRCD, we have not taken up the issues raised in that petition, primarily because the issues have already been resolved through a court ruling and through our precedential order WQ 2013-0101 issued since SJCRCD filed its petition. The majority of SJCRCD's arguments relate to the CEQA documents supporting the General WDRs and some of those arguments were resolved by the Superior Court's May 21, 2013, ruling upholding the Programmatic EIR.¹⁶ SJCRCD noted in its petition that its CEQA challenges related to the EIR were already properly pending in the litigation challenging the Programmatic EIR and were only being repeated in the petition in the event that any party or a court disagreed.¹⁷ We agree with SJCRCD that it properly raised those issues in the litigation, and we do not address them again here. SJCRCD also argues that the Central Valley Water Board was required under Water Code 13141 to incorporate an economic analysis on the costs to agriculture of the General WDRs into the relevant water quality control plans. We resolved that question in Order WQ-2013-0101 by finding that section 13141 only applies to an agricultural water quality control program that is adopted within a water quality control plan, not through a permitting action, like the Eastern San Joaquin Agricultural General WDRs.¹⁸ Nevertheless, it is important for the regional water boards to consider costs when adopting irrigated lands regulatory programs.¹⁹ In this case, the Central Valley Water Board incorporated an analysis of costs in the information sheet.²⁰ We also note that the Central Valley Water Board's Water Quality Control Plan for the Sacramento and San Joaquin River Basins includes an estimate of potential costs and sources of financing for the Central Valley Water Board's long-term irrigated lands program at pages IV.38-IV.39.²¹

¹⁶ *San Joaquin County Resource Conservation Dist.*, *supra* (Super. Ct. Sacramento County, 2013, No. 34-2012-80001186).

¹⁷ SJCRCD Petition, page 2.

¹⁸ State Water Board Order WQ 2013-0101, p. 16.

¹⁹ Under Water Code 13263 and 13241, "economic considerations" is one of the factors a regional water board must take into account in issuing waste discharge requirements. Additionally, section 13267 requires the regional water board to ensure that "the burden, including costs, of [monitoring] reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports."

²⁰ Eastern San Joaquin Agricultural General WDRs, Attach. A, pp. 44-48. The analysis is based on an economic study conducted for the Central Valley Water Board in support of its long-term irrigated lands program for the region. (AR 31796- 32232.)

²¹ See Eastern San Joaquin Agricultural General WDRs, finding 37, pp. 10-11. SJCRCD also argues that the General WDRs improperly treat crop irrigation water as a discharge of waste. To the contrary, the General WDRs specifically state that "irrigation water, the act of irrigating cropland, and the discharge of irrigation water unto itself is not 'waste' as defined by the Water Code, but . . . irrigation water may contain constituents that are considered to be 'waste' as defined by Water Code section 13050(d)." (*Id.*, p. 1, fn. 1.)

We have taken up some of the issues raised by AGUA and CSPA. Because the issues raised by AGUA and CSPA are generally related and appropriate for consideration together, we refer hereinafter to arguments raised by AGUA and CSPA jointly as raised by the “Environmental Petitioners.”

We have organized our discussion in this order to correspond to the different categories of requirements set up in the Eastern San Joaquin Agricultural General WDRs. We address the Environmental Petitioners’ arguments as well as related recommendations of the Agricultural Expert Panel Report under each category.

The Eastern San Joaquin Agricultural General WDRs were issued under authority of the Porter-Cologne Water Quality Control Act (Porter-Cologne Act), specifically Water Code sections 13263 and 13267. Among other mandates, section 13263 requires the Central Valley Water Board to set waste discharge requirements that implement relevant water quality control plans.²² The Eastern San Joaquin Agricultural General WDRs must primarily implement the Water Quality Control Plan for the Sacramento and San Joaquin River Basins (Basin Plan)²³ which sets the beneficial uses of the surface water bodies and groundwater in the region and sets water quality objectives to be achieved in those waters. The Eastern San Joaquin Agricultural General WDRs must also conform to State Water Board policies.²⁴ Of relevance here are our Policy for the Implementation and Enforcement of the Nonpoint Source Pollution Control Program²⁵ (Nonpoint Source Policy) and our Statement of Policy with Respect to Maintaining High Quality Waters, State Water Board Resolution No. 68-16²⁶ (Antidegradation Policy). Water Code section 13267 grants the Central Valley Water Board authority to require monitoring and reporting as a component of the Eastern San Joaquin Agricultural General WDRs. The Nonpoint Source Policy additionally directs that any nonpoint source program incorporate monitoring and reporting requirements.

We begin our review of the petitions in Section A with consideration of the Eastern San Joaquin Agricultural General WDRs’ consistency with the Water Code in light of the direction

²² Wat. Code, §13263, subd. (a).

²³ Available at http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/sacsjr.pdf (as of Jan. 5, 2016), AR 33039-33339. In addition, the Eastern San Joaquin Agricultural General WDRs must implement applicable statewide water quality control plans.

²⁴ Wat. Code, §13146.

²⁵ Available at http://www.waterboards.ca.gov/water_issues/programs/nps/docs/plans_policies/nps_iepolicy.pdf (as of Jan. 5, 2016), AR 36138-36157.

²⁶ Available at http://www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/1968/rs68_016.pdf (as of Jan. 5, 2016), AR 35945-35946.

provided in the Nonpoint Source Policy as to how to effectuate Water Code requirements in the context of control of nonpoint source discharges. We focus in particular on the Nonpoint Source Policy's direction to require management practices with a high likelihood of leading to attainment of water quality requirements and direction to incorporate sufficient feedback mechanisms to determine if, in fact, the program is meeting its stated purposes. Some of the arguments raised by Environmental Petitioners under the umbrella of compliance with the Antidegradation Policy concern the mandates under that policy for discharges not to unreasonably affect beneficial uses, not to result in water quality less than the quality specified by water quality objectives, and not cause a pollution or nuisance; these arguments are more appropriately considered under compliance with the Water Code and Nonpoint Source Policy and are addressed in Section A. In Section B, we separately consider the Eastern San Joaquin Agricultural General WDRs' compliance with the Antidegradation Policy's mandate to maintain high quality waters except as allowed under the Policy.

A. Compliance with the Water Code and the Nonpoint Source Policy

Agricultural discharges, including both irrigation water and storm water running off of agricultural fields into surface waters or percolating to groundwater, may carry constituents considered to be waste as defined under Water Code section 13050(d).²⁷ Water Code section 13260 requires persons "discharging waste, or proposing to discharge waste . . . that could affect the quality of the waters of the state" to file a report of waste discharge. Water Code section 13263 in turn directs a regional water board to prescribe requirements for the discharge that "implement any relevant water quality control plans that have been adopted, and that . . . take into consideration beneficial uses to be protected, the water quality objectives reasonably required for that purpose, other waste discharges, and the need to prevent nuisance," as well as certain additional factors, including economic considerations.²⁸ The regional water board may prescribe

²⁷ "Waste" includes sewage and any and all other waste substances, liquid, solid, gaseous, or radioactive, associated with human habitation, or of human or animal origin, or from any producing, manufacturing, or processing operation, including waste placed within containers of whatever nature prior to, and for purposes, of disposal." (Wat. Code, §13050, subd. (b).)

²⁸ In issuing waste discharge requirements, the Water Code requires the Central Valley Water Board to take the factors listed in Water Code section 13241 into consideration, including, but not limited to, "(a) past, present, and probable future beneficial uses of water; (b) Environmental characteristics of the hydrographic unit under consideration, including the quality of water available thereto; (c) Water quality conditions that could reasonably be achieved through the coordinated control of all factors which affect water quality in the area; (d) Economic considerations; (e) The need for developing housing within the region; (f) The need to develop and use recycled water." See *City of Burbank v. State Water Resources Control Bd.* (2005) 35 Cal.4th 613. As we have already discussed above, the Central Valley Water Board included a thorough discussion of economic considerations in an economic study conducted in support of its long-term irrigated lands program for the region (AR 31796- 32232) and at pages 44 through 48 of Attachment A to the Eastern San Joaquin Agricultural General WDRs. While petitioners complained generally about the breadth of the economic analysis, the record does not establish that the costs of complying with the requirements contained in the Eastern San Joaquin Agricultural General WDRs, including the
(Continued)

general waste discharge requirements to a category of discharges, such as agricultural discharges, rather than issue individual waste discharge requirements to separate operations.²⁹

While waste discharge requirements require compliance with the water quality objectives specified in the water quality control plans, such compliance need not be achieved immediately. A time schedule for compliance with water quality requirements is explicitly permitted by Water Code section 13263, which states that WDRs “may contain a time schedule subject to revision in the discretion of the [regional water] board.”³⁰ Further, consistent with Water Code section 13263’s requirement to consider the water quality objectives “reasonably required” to protect beneficial uses, a regional water board has some discretion to determine where and how compliance with a water quality objective must be demonstrated. It is not always necessary for the reasonable protection of beneficial uses that each water quality objective be met at each discrete point in time and space. For example, in determining compliance with water quality objectives in groundwater to protect drinking water beneficial uses, the regional water board may specify a specific well screening interval for monitoring or may rely on averaging. Similarly, the regional water board may determine appropriate averaging periods for surface waters, or rely on monitoring for general surface water quality compliance at a point downstream of multiple discharge points, rather than at each and every discharge point.³¹

The Nonpoint Source Policy further guides our interpretation and implementation of Water Code requirements, including Water Code sections 13263 and 13267, in the context of nonpoint source discharges. Nonpoint source discharges, such as irrigated lands discharges, pose unique challenges that are not easily addressed by strategies designed to address point source pollution. The Nonpoint Source Policy explains that nonpoint source discharges typically

insubstantial additional costs to comply with the requirements added by this order, would warrant relaxation of those requirements.

²⁹ Wat. Code, §13263, subd. (i).

³⁰ Wat. Code, §13263, subd. (c).

³¹ It is important for us to note that the Eastern San Joaquin Agricultural General WDRs regulate current discharges that may be causing or contributing to exceedances of the limitations imposed under the Water Code. Where water bodies already have pollutant levels detrimental to beneficial uses due to historic discharges, the regional water board may rely on other authority, including but not limited to the authority to require cleanup and abatement under Water Code 13304, to address the issue. The Central Valley Salinity Alternatives for Long Term Sustainability (CV-SALTS) initiative, a collaborative, stakeholder process initiated by the Central Valley Water Board, is currently studying and developing alternatives to address existing groundwater salinity problems in the Central Valley. We cautiously endorse this approach, with the expectation that it will eventually bear fruit. We will, of course, be paying close attention to these efforts and other efforts to manage existing groundwater quality and quantity problems, including the substantial work required under the Sustainable Groundwater Management Act of 2014. (AB 1739 (Dickinson), SB 1168 (Pavley), SB 1319 (Pavley)). In the meantime, we will continue to work diligently with communities, especially disadvantaged communities, that are disproportionately impacted by poor drinking water supplies, to find appropriate solutions. We have focused many of our grant and loan programs to provide them with needed assistance while longer term approaches continue to evolve.

occur as a result of contact between pollutants and land runoff, precipitation, atmospheric deposition, drainage, seepage, or hydrologic modification.³² Nonpoint sources are thus diffuse and are most effectively addressed by control of the sources of pollution, typically with implementation of management practices, rather than by attempts to treat the discharge at the multiple, and often indeterminate, number of discharge points. The Nonpoint Source Policy further recognizes that, “given the extent and diversity” of nonpoint source discharges, the regional water boards must be creative and efficient in addressing nonpoint source pollution and may rely on third-party programs that are effective in reaching a large number of dischargers.³³

The Nonpoint Source Policy requires that any nonpoint source pollution control implementation program, including one primarily administered by a third-party group, incorporate several key elements.³⁴ Key element 1 states as follows:³⁵

1. A nonpoint source control implementation program’s ultimate purpose shall be explicitly stated. Implementation programs 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.³⁶

In compliance with Water Code section 13263 and with key element 1, the Eastern San Joaquin Agricultural General WDRs set out their ultimate purpose by establishing water quality requirements in Section III. Receiving Water Limitations:

A. Surface Water Limitations

1. Wastes discharged from Member operations shall not cause or contribute to an exceedance of applicable water quality objectives in surface water, unreasonably affect applicable beneficial uses, or cause or contribute to a condition of pollution or nuisance.

B. Groundwater Limitations

1. Wastes discharged from Member operations shall not cause or contribute to an exceedance of applicable water quality objectives in the underlying groundwater, unreasonably affect applicable

³² Nonpoint Source Policy, p. 7, AR 36146.

³³ *Id.*, p. 9, AR 36148.

³⁴ The Nonpoint Source Policy uses several acronyms that we have spelled out in this order. These include “NPS” for “nonpoint source,” “MP” for “management practice,” “SWRCB” for “State Water Board,” and “RWQCB” for “regional water board.”

³⁵ The Nonpoint Source Policy establishes five key elements. Four are discussed here. The fifth key element (“Each regional water board shall make clear, in advance, the potential consequences for failure to achieve a nonpoint source control implementation program’s stated purposes” (Nonpoint Source Policy, pp. 14-15, AR 36153-36154)) is not addressed because no party has raised it as an issue in the proceedings.

³⁶ *Id.*, pp. 11-12, AR 36150-36151. Key Element 1 is inclusive of antidegradation requirements. As previously stated, we discuss the Eastern San Joaquin Agricultural General WDRs’ compliance with antidegradation requirements separately in section II.B.

beneficial uses, or cause or contribute to a condition of pollution or nuisance.

The General WDRs state that these receiving water limitations are effective immediately except where Members are implementing an approved Surface Water Quality Management Plan (SQMP) or Groundwater Quality Management Plan (GQMP), with an approved timeline, as authorized by the General WDRs.³⁷ The SQMP and GQMP requirements are discussed in greater detail below; a primary purpose of the SQMP and GQMP provisions is to address water quality problems in areas where exceedances of water quality objectives have been detected. The Order allows Members that are part of the SQMP or GQMP plan area up to ten years for compliance with the Receiving Water Limitations.³⁸ But this allowance does not run counter to the Water Code or the Nonpoint Source Policy. As we already stated, a time schedule for compliance with water quality requirements is explicitly permitted by the Water Code. Further, Key Element 3 of the Nonpoint Source Policy states that, where a regional water board finds that it is necessary to allow time for achievement of water quality requirements, an order implementing a nonpoint source program shall specify a time schedule and quantifiable milestones designed to measure progress toward achieving the water quality requirements.³⁹ Although a time schedule allowed in WDRs must not be any longer than necessary,⁴⁰ the Eastern San Joaquin Agricultural General WDRs comply with the Nonpoint Source Policy by setting ten years as the maximum time permitted for a time schedule, but requiring the Third Party to propose a schedule that is “as short as practicable” and is supported by technical or economic justification as to why it is as short as practicable.⁴¹ The General WDRs require the SQMP or GQMP to incorporate a specific schedule and milestones for the implementation of management practices and tasks and measurable performance goals.⁴² Thus the General WDRs’ receiving water limitations are consistent with the Water Code and the Nonpoint Source Policy.⁴³

³⁷ Eastern San Joaquin Agricultural General WDRs, § III, fns. 15-16, p. 17.

³⁸ *Id.*, § XII, p. 37.

³⁹ Nonpoint Source Policy, p.13, AR 36152.

⁴⁰ Cal. Code of Regs, tit. 23, §2231.

⁴¹ Eastern San Joaquin Agricultural General WDRs, § XII, p. 37. The provisions allow the Central Valley Water board to modify approved schedules where evidence is presented that the compliance date is technically or economically infeasible or where evidence shows that an earlier compliance date is feasible. (*Ibid.*)

⁴² *Id.*, Attach. B., MRP, Appen. MRP-1, §§ I.C.d-e, p. 5.

⁴³ Even where the maximum permitted time frame of ten years may be allowed by the Central Valley Water Board, the time schedule is not necessarily unreasonable. This order sets out a number of new metrics and approaches to measuring and reporting on management practices, particularly with regard to nitrogen application, and also requires revisions to both the surface water and groundwater monitoring provisions of the General WDRs. Our direction is intended to strengthen the link between management practice implementation and water quality outcomes so that we (*Continued*)

The receiving water limitations -- to not cause or contribute to exceedances of water quality objectives, unreasonably affect beneficial uses, or cause or contribute to a condition of pollution or nuisance -- establish clear water quality based requirements for the Eastern San Joaquin Agricultural General WDRs.⁴⁴ But key element 1 also requires nonpoint source programs to address nonpoint source pollution “*in a manner* that achieves and maintains water quality objectives and beneficial uses (emphasis added).” A regional water board’s obligation under the Water Code and the Nonpoint Source Policy does not terminate with establishing the appropriate water quality objectives; the regional water board must determine “that there is a high likelihood the implementation program will attain [the regional water board’s] stated water quality objectives.”⁴⁵

Yet a broad scale nonpoint source regulatory program does not necessarily generate the type of data that facilitates easy determination and enforcement of compliance with receiving water limitations. In a permit for a traditional point-source facility, the water boards set a water quality-based effluent limitation to be met at the discharge point and require monitoring of the discharge to verify that the limitation is being met. As we will discuss in greater detail in the section on surface water and groundwater quality monitoring, in a landscape-based, nonpoint source program such as the irrigated lands program, monitoring the numerous and sometimes indeterminate set of farm discharge points is an impractical, prohibitively costly, and often

have the information needed to guide the program more quickly toward compliance. But development and implementation of the revised monitoring and reporting requires investment of time. And research to determine appropriate nitrogen application metrics is needed, as well as to correlate practices with the data received through the monitoring and the reporting of the nitrogen application data. As a result, we cannot say that ten years is per se an unreasonable time frame for compliance with the receiving water limitations.

⁴⁴ In Order WQ 2013-0101, we added a provision to the Central Coast Agricultural Order to clarify that, in order to comply with the receiving water limitations, “Dischargers must (1) implement management practices that prevent or reduce discharges of waste that are causing or contributing to exceedances of water quality standards; and (2) to the extent practice effectiveness evaluation or reporting, monitoring data, or inspections indicate that the implemented management practices have not been effective in preventing the discharges from causing or contributing to exceedances of water quality standards, the Discharger must implement improved management practices.” (State Water Board Order WQ 2013-0101, p. 26.). The Sacramento Superior Court Ruling questioned whether the requirement to implement “improved” management practices, in the absence of additional standards and verification of what constitutes an improved management practice, would in fact ensure effective reduction of pollution. (Sacramento Superior Court Ruling, pp. 33-35.) The Sacramento Superior Court Ruling appears to read the revision as requiring only nominal improvements without a clear mandate to achieve the receiving water limitations over some defined timeframe. Although we disagree that the revision should be read in that manner, to the extent the Superior Court’s interpretation is affirmed on appeal, we note that the Eastern San Joaquin Agricultural General WDRs are clearer in mandating that discharges may not cause or contribute to exceedances of water quality objectives except where a clearly articulated program of management practice implementation with a finite time schedule is established.

⁴⁵ Nonpoint Source Policy, p.11, AR 36150. See also *Asociacion de Gente Unida por el Agua v. Central Valley Water Board* (2012) 210 Cal.App.4th 1255,1260-61 (stating that “[t]he wish is not father to the action” and finding that a prohibition against water quality impacts is insufficient, in and of itself, to meet water quality requirements, in the absence of additional permit measures to implement and verify achievement of the prohibition).

ineffective method for compliance determination and the Nonpoint Source Policy accordingly does not mandate such monitoring. As a result, a nonpoint source regulatory program does not necessarily yield data establishing whether individual growers are in fact causing or contributing to exceedances. Recognizing this challenge, the Nonpoint Source Policy provides that, although management practice implementation is not a substitute for actual compliance with water quality requirements, a schedule of management practice implementation, assessment, and adaptive management may act as a proxy for assessing regulatory program progress.⁴⁶ This direction is captured in key elements 2 and 4:

2. A nonpoint source control implementation program shall include a description of the management practices and other program elements that are expected to be implemented to ensure attainment of the implementation program's stated purpose(s), 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.⁴⁷
- ...
4. A nonpoint source control implementation program shall 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.⁴⁸

Accordingly, the management practice implementation requirements form the backbone of any nonpoint source regulatory framework.

The Eastern San Joaquin Agricultural General WDRs state that Members "shall implement management practices, as necessary, to protect water quality and to achieve compliance with applicable water quality objectives."⁴⁹ Members are further required to implement management practices that 1) minimize waste discharge offsite in surface water; 2) minimize percolation of waste to groundwater; and 3) protect wellheads from surface water intrusion.⁵⁰ Members prepare Farm Evaluations to document implemented management practices.⁵¹ Members also propose and implement management practices to minimize excess nutrient

⁴⁶ Nonpoint Source Policy, p.12, AR 36151.

⁴⁷ *Ibid.*

⁴⁸ *Id.*, pp. 13-14, AR 36152-36153.

⁴⁹ Eastern San Joaquin Agricultural General WDRs, § IV.A.3, p.18.

⁵⁰ *Id.*, § IV.B.20, p.20. Under Water Code section 13360, the Central Valley Water Board generally may not specify "the design, location, type of construction, or particular manner in which compliance may be had with" waste discharge requirements. For structural management practices, the Eastern San Joaquin Agricultural General WDRs must therefore strike a balance between setting standards that must be achieved and leaving Members flexibility as to the type of design and construction that may be used to meet those standards.

⁵¹ Eastern San Joaquin Agricultural General WDRs, § VII.B, pp. 24-25.

application relative to crop need as specified in a Nitrogen Management Plan.⁵² Members with potential to cause erosion and discharge sediment that may degrade surface waters propose and implement sediment discharge and erosion prevention practices to minimize or eliminate the discharge of sediment above background levels consistent with a Sediment and Erosion Control Plan.⁵³ Where the Third Party is required to prepare a SQMP or GQMP, specifying additional or improved management practices to address detected exceedances in a given area, Members also implement management practices in accordance with that plan.⁵⁴

Of course, 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. Instituting effective management practices requires sufficient monitoring and reporting to determine if existing management practices are leading to compliance with water quality requirements and implementation of improved water quality practices where they are not. 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, captured in Key Elements 1, 2, and 4. But the Nonpoint Source Policy does not specify a particular level of granularity in monitoring and reporting and therefore leaves significant discretion to the water boards to determine the appropriate level of data gathering and reporting for different programs and different program components. The water boards must strike a balance that, on the one hand, requires sufficient data collection and reporting to allow for meaningful feedback on the program, but, on the other hand, avoids extensive data requirements that demand excessive and unwarranted time and cost to produce and analyze on the side of the Members, the third-party, and water board staff. In striking that balance, the water boards also take into consideration Member concerns with disclosure of trade secrets and proprietary business information.

The particular balance struck on this issue in the Eastern San Joaquin Agricultural Order requires significant reliance on the Third Party. The Third Party fulfills the role of collecting data on the management practices that are implemented by the Members. The Farm Evaluation and a Nitrogen Management Plan Summary Report are submitted by the Members to the Third

⁵² *Id.*, § IV.B.8, p.19.

⁵³ *Id.*, § IV.B.7, p.19.

⁵⁴ *Id.*, § IV.B.6, pp.18-19.

Party.⁵⁵ The Third Party in turn reports the information in these plans to the Central Valley Water Board with the data identified or aggregated at a township level, without Member identification or location information.⁵⁶ The Third Party must submit a Management Plan Progress Report to the Central Valley Water Board each year reporting on the degree of implementation of management practices and evaluation of the effectiveness of the management practices with the data in aggregated form.⁵⁷ The Third Party also fulfills the role of monitoring surface water and groundwater quality. Such monitoring is regional in scale and all data is reported to the Central Valley Water Board.⁵⁸

We continue to support third-party approaches to regulating agricultural discharges, as permitted by the Nonpoint Source Policy. We stated our reasons for supporting third-party approaches in Order WQ 2013-0101, in which we encouraged the Central Coast Water Board to consider the third-party structure in future iterations of the Central Coast Agricultural Order:

From a resource perspective, third parties allow a regional water board to leverage limited regulatory staff by acting as intermediaries between the regional water board staff and the growers, freeing regional water board resources to focus on problem areas or actors. Third parties also may have the expertise to provide technical assistance and training to growers at a scale that cannot be matched by regional water board staff resources, and, in many cases, third parties already have relationships in place with the dischargers.⁵⁹

Because third parties build on relationships already in place with growers, third parties can engender a high level of trust and more effectively reach out to growers to increase understanding of the permit provisions and to facilitate management practice development and deployment, especially in cases where improved management practices are required of particular growers. In addition, there are a number cost benefits to the growers enrolled in a third-party program. These include centralization of fee collection and the resulting reduction in the growers' annual water board fee, potentially reduced costs in management practice implementation facilitated by access to management practice effectiveness information, significantly reduced monitoring costs due to allowance for regional and trend water quality monitoring by the third party in lieu of individual farm monitoring under an individual permit, and reduced reporting costs when the third party

⁵⁵ *Id.*, §§ VII.B, p. 24-25, VII.D, pp. 26-27.

⁵⁶ *Id.*, Attach. B, MRP, § V.C., Report Components (17)&(18), pp.23-24.

⁵⁷ *Id.*, Attach. B, MRP, Appen. MRP-1, § I.F, p. 6.

⁵⁸ *Id.*, Attach. B, MRP, §§ III & IV, pp. 3-20.

⁵⁹ State Water Board Order WQ 2013-0101, pp. 13-14.

shoulders responsibility for data entry into systems such as CEDEN and GeoTracker.⁶⁰ The Agricultural Expert Panel also endorsed the third-party based approach of the Central Valley Water Board irrigated lands program and recommended that other regional water boards follow a similar approach.⁶¹ For these reasons, we continue to support a third-party based approach to regulation of agricultural discharges.

Nevertheless, we acknowledge that there are challenges associated with a third-party based approach to nonpoint source regulation. One such challenge is to ensure sufficient granularity to the data collected and reported to provide meaningful information on the performance of the program and on required improvements. Where a third party acts as an intermediary between the growers and the regional water board, the program's success depends not only on whether the third party is collecting appropriate and relevant data but also on whether the third party is reporting that data to the regional water board with sufficient detail to allow appropriate regulatory oversight as well as transparency in implementation of the program and water quality results. In particular, concerns with privacy and protection of proprietary information may create strong incentives in support of a framework where the third party retains most information on farm-level management practice and water quality performance rather than submitting that information to the regional water board and, by extension, making it available to the public.

The Environmental Petitioners argue that the Eastern San Joaquin Agricultural General WDRs require monitoring and reporting at a level of granularity too general to achieve the feedback mechanism the Nonpoint Source Policy requires: the adopted regulatory program cannot establish that the required management practices have a high likelihood of achieving the receiving water limitations because there is insufficient monitoring and reporting to verify that link or to require appropriate adaptive management to achieve progress. The Environmental Petitioners assert that the weaknesses of the Eastern San Joaquin Agricultural General WDRs are two-fold: First, there is insufficient disclosure and transparency with regard to the management practices being implemented on the ground by the Members because only limited, aggregated data must be reported regarding such practices. Second, the representative and regional monitoring program does not produce specific enough data to determine if any of the implemented management practices are in fact leading to meeting water quality requirements.

⁶⁰ CEDEN is the State Water Board's data system for surface water quality in California. GeoTracker is a statewide database and geographic information system that provides online access to environmental data. The Eastern San Joaquin Agricultural General WDRs require entry of surface water quality data collected under the General WDRs into CEDEN and groundwater quality data collected into GeoTracker.

⁶¹ Agricultural Expert Panel Report, p. 27.

The Environmental Petitioners advocate for farm-level reporting of data, which, the Environmental Petitioners imply, would provide the necessary detail and accountability to tie management practices implemented by Members with their direct impact on water quality.

In the sections that follow, we review the core requirements of the Eastern San Joaquin Agricultural General WDRs to determine whether the required implementation of management practices have a high likelihood of leading to achievement of the water quality requirements of the General WDRs and, more specifically, whether the monitoring and reporting requirements constitute a sufficient feedback mechanism to verify that appropriate management practices are being proposed and implemented in pursuit of the water quality requirements. We find that the data required to be reported by the Members to the Third Party is generally appropriate, but direct several revisions, primarily with regard to nitrogen application reporting. With regard to reporting of the data from the Third Party to the Central Valley Water Board, we revise the General WDRs to require reporting of some of the data at a field-level. We also revise elements of the water quality monitoring provisions, although we generally keep the regional, watershed-based approach to monitoring intact and do not require farm-level monitoring.

Our revisions are based on recommendations of the Agricultural Expert Panel Report and on our own review of the General WDRs. The directed revisions are designed to strengthen the correlation between the management practices implemented, the monitoring and reporting required, and the water quality requirements of the General WDRs, as well as to address the need for transparency. We conclude that the Order is consistent with the Water Code and with the Nonpoint Source Policy with the revisions that we direct.

Appendix A is a copy of the Eastern San Joaquin Agricultural General WDRs with revisions directed by us shown in red in underline/strikeout format. We reference Appendix A throughout our discussion below and hereinafter refer to it as the “Modified Eastern San Joaquin Agricultural General WDRs.” In addition to the revisions referenced specifically in this order, Appendix A contains a number of conforming revisions to make other sections of the Modified Eastern San Joaquin Agricultural General WDRs consistent with the directed revisions (such as revisions to Attachment A, Information Sheet, and Attachment E, Definitions), as well as additional substantive and non-substantive minor revisions throughout.⁶²

⁶² We note that this order provides the rationale for the significant revisions to the Eastern San Joaquin Agricultural General WDRs. We have not updated all findings of the General WDRs and supporting documents related to the revisions. Nor have we updated the findings of the General WDRs and supporting documents to reflect all new and changed information since the issuance of the General WDRs.

1. Vulnerability Determinations

Before we proceed with our step-by-step review of the core requirements of the Eastern San Joaquin Agricultural General WDRs, we take up an issue that informs a number of the requirements. One premise of the Eastern San Joaquin Agricultural General WDRs is that regulatory requirements, and limited resources for regulatory oversight, should be concentrated on those activities or conditions that constitute the highest risk to water quality. Throughout, the General WDRs impose requirements in part based on whether an operation is in an area that has high or low vulnerability for water quality impacts. The term “high vulnerability” is defined for surface water and groundwater (see discussion that follows);⁶³ the Third Party is tasked with designation of the areas, with review by the Executive Officer.⁶⁴

The vulnerability approach of the Eastern San Joaquin Agricultural General WDRs is similar to the risk-based tier designations of the Central Coast Agricultural Order that we reviewed in Order WQ-2013-0101. The Central Coast Agricultural Order assigns dischargers to one of the three tiers based on a number of criteria intended to capture the risk posed by the operation to water quality and imposes increasingly more stringent requirements from Tier 1 to Tier 2 to Tier 3. The Central Coast Agricultural Order also requires determination of a nitrate loading risk level and uses that determination to further focus requirements. In Order WQ 2013-0101, we acknowledged that neither the tier determinations nor the nitrate loading risk level determinations were exact proxies for actual risk to water quality, but we found them to be reasonable and declined to substitute another imperfect but reasonable set of criteria for those chosen by the Central Coast Water Board. We tasked the Agricultural Expert Panel with evaluating methodologies for determining risk in the context of an agricultural regulatory program.⁶⁵

In considering the appropriateness of risk-based tiering in agricultural regulatory programs, the Agricultural Expert Panel focused on the Eastern San Joaquin Agricultural General WDRs’ high vulnerability definition for groundwater. A high vulnerability groundwater area is an area identified by the Third Party “where known groundwater quality impacts exist for which irrigated agricultural operations are a potential contributor or where conditions make groundwater more vulnerable to impacts from irrigated agricultural activities.” Additionally, areas are

⁶³ Eastern San Joaquin Agricultural General WDRs, Attach. E, Definitions, §§13-14, pp. 2-3.

⁶⁴ *Id.*, finding 22, p. 6; see also *id.*, Att. B, MRP, §IV, pp. 12-13.

⁶⁵ State Water Board Order WQ 2013-0101, pp. 20, 43. In reviewing Order WQ 2013-0101, the Sacramento Superior Court Ruling stated that the fact that only a small number of growers are subject to Tier 3 was “a fundamental problem with the Waiver” (at 35); however, the court did not find issue generally with a risk-based tiering structure.

considered high vulnerability areas for groundwater if “(1) there is a confirmed exceedance (considering applicable averaging periods) of a water quality objective or applicable water quality trigger limit . . . in a groundwater well and irrigated agriculture may cause or contribute to the exceedance; (2) the Basin Plan requires development of a groundwater quality management plan for a constituent or constituents discharged by irrigated agriculture; or (3) the Executive Officer determines that irrigated agriculture may be causing or contributing to a trend of degradation of groundwater that may threaten applicable Basin Plan beneficial uses.”⁶⁶

The Agricultural Expert Panel found that this definition of high vulnerability in the General WDRs was vague, ambiguous, circular, and not supported by a sound technical rationale. In particular, the Agricultural Expert Panel pointed to the difficulty of directly linking water supply well nitrate concentrations to above-ground practices. In many cases groundwater nitrate concentrations reflect a mixture of waters with wide-ranging spatial and temporal origins. Therefore, groundwater wells exhibiting exceedances of water quality standards may not provide the information needed to directly link groundwater conditions to land uses in the immediate area.⁶⁷

More significantly, the Agricultural Expert Panel further found that good nitrogen management is essential in all areas, not just high vulnerability areas, and recommended against differential requirements for nitrogen management based on risk. The Agricultural Expert Panel Report stated:

Because deep percolation of nitrates is universal within irrigated agriculture, a good regulatory program must encompass all irrigated areas, not only lands directly above high nitrate aquifers, those previously identified to be in a high vulnerability area, or those with a certain farm or field size.⁶⁸

The Agricultural Expert Panel thus effectively rejected risk categorization for groundwater requirements, recommending that uniform requirements apply to all dischargers.

We agree with the Agricultural Expert Panel’s conclusion that distinguishing between high vulnerability and low vulnerability areas for groundwater is at best an inexact science and that groundwater protection requirements should instead apply uniformly to all areas. In most instances, groundwater is vulnerable to agricultural nitrate impacts, regardless of the time it takes for those impacts to appear in groundwater due to soil conditions, geologic conditions,

⁶⁶ Eastern San Joaquin Agricultural General WDRs, Attach. E, Definitions, §13, pp. 2-3. Water quality trigger limits are limits developed by the Central Valley Water Board staff to implement narrative Basin Plan objectives. (*Id.*, Attach. B, MRP, § VIII, pp. 26-27.)

⁶⁷ Agricultural Expert Panel Report, p. 18.

⁶⁸ *Id.*, p. 26.

and/or depth to groundwater. We will direct revisions to the Eastern San Joaquin Agricultural General WDRs throughout this order to remove the distinction between the requirements for high vulnerability and low vulnerability groundwater areas and to impose the requirements currently imposed only on Members in high vulnerability groundwater areas on all Members. These revisions are discussed under the headings for each set of core requirements.

The Agricultural Expert Panel did not consider whether the terms high vulnerability and low vulnerability should continue to be used in the context of surface water requirements. The Eastern San Joaquin Agricultural General WDRs' determination of high vulnerability areas for surface water is based on exceedances of water quality objectives or water quality triggers twice in a three year period in the area, any Basin Plan requirements for development of a water quality management plan for an irrigated lands related constituent in the area, or an Executive Officer determination that discharges from irrigated lands may be causing or contributing to a trend of degradation of surface water in the area.⁶⁹ Determining whether an area is a high vulnerability area for surface water does not necessarily suffer from the same level of technical uncertainty as the determination of high vulnerability areas for groundwater. Nevertheless, we will remove the distinction from the Eastern San Joaquin Agricultural General WDRs because, in light of our revisions to eliminate the distinction between high and low vulnerability for groundwater, the categories for surface water are left with little utility in the General WDRs.⁷⁰ We note these revisions under the appropriate discussion.

The Agricultural Expert Panel Report left open the possibility that the concept of high vulnerability or similar risk-based category may be used for prioritization where requirements need to be phased in for sets of dischargers over time.⁷¹ We are cognizant that much of the work to designate high and low vulnerability areas in the Eastern San Joaquin River Watershed has already been completed. Although we will no longer require designation of high and low vulnerability areas, we leave open the possibility that the designations may be used as the basis for prioritizing areas to comply with the requirements of the Eastern San Joaquin Agricultural General WDRs, where such prioritization is permissible under the conditions of the General

⁶⁹ Eastern San Joaquin Agricultural General WDRs, Attach. E., Definitions, §14, p.3.

⁷⁰ There are only two provisions where the distinction between high and low vulnerability areas for surface water are called out in the Eastern San Joaquin Agricultural General WDRs – the requirement to participate annually in outreach events applies only to Members in high surface water or groundwater vulnerability areas (*id.*, § IV.B.4, p.18) and only Members in high surface water or groundwater vulnerability areas must update the Farm Evaluation annually (*id.*, § VII.B, pp.24-25.). By eliminating the distinction between high and low groundwater vulnerability areas, we have imposed these requirements uniformly on all Members and rendered the question of whether the Members are in a high or low surface water vulnerability area moot.

⁷¹ Agricultural Expert Panel Report, pp. 16-17.

WDRs. In particular, under our revisions, the high/low vulnerability designations may continue to be used for prioritization in the context of the groundwater monitoring requirements, as we will discuss in section II.A.6 of this order.⁷² Further, the criteria forming the definition of high vulnerability will continue to inform the requirement to prepare a water quality management plan for both surface water and groundwater.

For a number of other requirements of the Eastern San Joaquin Agricultural General WDRs that are currently phased in, we direct the use of a simpler set of categories, based on operation size, rather than risk, for the phasing. We revise Attachment E to define three categories of Members based on size of the operation. The category of “Members with Small Farming Operations” (less than 60 acres) is already defined in the Eastern San Joaquin General WDRs.⁷³ This category represents roughly 61% of the Members but only 6% of the irrigated lands acreage in the area covered by the Eastern San Joaquin General WDRs.⁷⁴ We additionally define the categories of “Members with Medium Farming Operations” (60 acres or more but less than 250 acres) and “Members with Large Farming Operations” (250 acres or more), with the threshold acreage for the categories chosen to roughly divide the remaining operations in two for phasing purposes. The Medium Farming Operations represent roughly 22% of Members and approximately 14% of the acreage, while the Members with Large Farming Operations represent roughly 17% of Members and approximately 80% of the acreage. Under the revised provisions, Members with Small Farming Operations are allowed additional time to implement certain requirements as compared to Members with Medium Farming Operations and Members with Large Farming Operations.⁷⁵

We find that phasing by size is an appropriate tool for the Eastern San Joaquin Agricultural General WDRs for two reasons: First, as acknowledged by the Central Valley Water Board, small operations have limited resources and less access to technical experts and may

⁷² The groundwater monitoring requirements of the Eastern San Joaquin Agricultural General WDRs, discussed in section II.A.7, are carried out by the Third Party and implemented and phased in in part based on determinations of high and low vulnerability. Because of the time and resources that have already been invested by the Third Party and Central Valley Water Board in setting up the vulnerability-based framework for the groundwater monitoring programs, we continue to allow phasing based on vulnerability for those requirements.

⁷³ Eastern San Joaquin Agricultural General WDRs, Attach. E, Definitions, §36, p.5.

⁷⁴ *Id.*, finding 12, p.3.

⁷⁵ In this order, we have grouped deadlines for Large Farming Operations and Medium Farming Operations together because we are revising a permit already in place with established, past deadlines. In future permits, we expect that it will be appropriate to stagger compliance dates for each category of operation size.

require additional time to prepare relevant plans.⁷⁶ Second, time is needed to train relevant professionals or Members for certification of required plans.⁷⁷

We indicate where farm-size based phasing will be used as appropriate in the sections that follow.

2. Requirement to Participate in Outreach Events

Under the Eastern San Joaquin Agricultural General WDRs, members in high vulnerability areas are required to participate in outreach events and review outreach materials to become informed of any known water quality problems and the management practices that are available to address those problems.⁷⁸ The result of removing the high and low vulnerability distinctions is that all Members are required to participate in outreach events. This is consistent with the direction of the Agricultural Expert Panel for the development of a “very strong, comprehensive, and sustained educational and outreach program.”⁷⁹ However, we recognize the additional burden on some Members created by applying the outreach participation requirement uniformly. Because all Members must now participate in third-party outreach events, at least annually, we also revise the provision to allow for the possibility of participation to occur without in-person attendance.

The directed revisions are indicated at Appendix A, Modified Eastern San Joaquin Agricultural Order, section IV.B.4, page 20.

3. Farm Evaluation

The Eastern San Joaquin Agricultural General WDRs require that all Members complete a Farm Evaluation describing management practices implemented to protect surface water and groundwater quality. The Farm Evaluations also include information such as the location of the farm, surface water discharge points, and the location of wells. Farm Evaluations are required of all Members, but only Members in high vulnerability areas must update the Farm Evaluation annually. The Farm Evaluation must be prepared by the Member and submitted to the Third Party. The Member must keep a copy and must produce it upon request by the Central Valley Water Board staff.⁸⁰ The Third Party aggregates and summarizes information collected

⁷⁶ *Id.*, Attach. A, Information Sheet, p. 24.

⁷⁷ Although we are requiring the Central Valley Water Board to phase in some requirements based on farm size, we acknowledge that there may be other appropriate criteria for phasing. We find, however, that any phasing method adopted by irrigated lands programs should lead to initial compliance of a large number of acres represented by a small number of growers.

⁷⁸ Eastern San Joaquin Agricultural General WDRs., § IV.B.4, p.18.

⁷⁹ Agricultural Expert Panel Report, p.27.

⁸⁰ Eastern San Joaquin Agricultural General WDRs., § VII.B, pp. 24-25.

from Farm Evaluations in the annual Monitoring Report submitted to the Central Valley Water Board.⁸¹ We make several revisions to the Farm Evaluation provisions as laid out below.

a. Requirement for All Members to Annually Update the Farm Evaluation

Since we have eliminated the high and low vulnerability area distinction, under our revisions, all Members will now be required to update the Farm Evaluation annually. We find that annual updates to the Farm Evaluations are appropriate for all Members given that the Farm Evaluations are the mechanism for identification of the on-farm management practices implemented to achieve the General WDRs' management practice performance standards and that iterative updating of the management practices implemented is a key component of a nonpoint source program.

The Eastern San Joaquin Agricultural General WDRs phase in the requirement to prepare a Farm Evaluation based on vulnerability determinations and farm size. We will also phase in the requirement, but will base the phasing solely on farm size. Under the General WDRs, Members that are not small farming operations submitted a Farm Evaluation on or prior to March 1, 2015.⁸² We keep this past deadline in the Modified General WDRs. We also make no revision to the deadline for Members with Small Farming Operations to begin implementing the Farm Evaluation elements of the General WDRs by March 1, 2017. However, we allow Members who were previously not required to update the Farm Evaluation annually until March 1, 2017, to commence annual updates of the Farm Evaluation.⁸³

The directed revisions are indicated at Appendix A, Modified Eastern San Joaquin Agricultural General WDRs, section VII.B, page 26.

b. Content of Farm Evaluation Template

In terms of the content of the Farm Evaluation, we direct changes to the information fields of the Farm Evaluation template. The Central Valley Water Board has approved a template for the Farm Evaluation.⁸⁴ The Farm Evaluation Template lists management practices appropriate for pesticide application, irrigation, nitrogen management, and sediment and erosion management and directs Members to identify those management practices employed at their operations. We expand the list of management practices a Member should consider with the

⁸¹ *Id.*, Attach. B, MRP, § V.C, Report Component (18), pp.23-24.

⁸² Members in high vulnerability areas were required to submit the Farm Evaluation by May 1, 2014.

⁸³ Appen. A, Modified Eastern San Joaquin Agricultural Order, § VII.B, p. 26, fn. 25.

⁸⁴ Farm Evaluation Survey, East San Joaquin Water Quality Coalition, available at http://www.waterboards.ca.gov/centralvalley/water_issues/irrigated_lands/forms/eastside_sjr_coalition/2014_0117_fe_survey.pdf (as of Jan. 5, 2016).

purpose of making the list more comprehensive. We additionally revise the Farm Evaluation Template to add two questions inquiring whether the Member has been identified as having a significantly higher than average nitrogen application value and whether the Member has been identified as being part of an area subject to a SQMP or GQMP. (Those requirements are discussed in section II.A.8 of this order.) The additional questions are designed to verify that the Third Party is effectively communicating with the Member where there is a need for improved management practices.

The directed revisions are indicated at Appendix A, Modified Eastern San Joaquin Agricultural General WDRs, section VIII.C.1, page 33 and Attachment B, MRP, section VI.A, page 29. Additionally, a template for the Farm Evaluation is attached as new Attachment B, Appendix MRP-3.

c. Submission of Farm Evaluations to the Central Valley Water Board

Our most significant revision to the Farm Evaluation requirement is the addition of provisions directing the Third Party to submit to the Central Valley Water Board field-specific Farm Evaluation data identified by location. As discussed in the introduction to this section, waste discharge requirements must implement the relevant water quality control plans and consider the beneficial uses and water quality objectives specified in those plans. The Nonpoint Source Policy allows reliance on management practice implementation to control sources of pollution, but specifies that a nonpoint source program relying on management practice implementation must incorporate a feedback mechanism whereby a nonpoint source discharge control program links its implementation requirements, with a high level of confidence, to expected water quality outcomes, and adaptively manages the program to institute improved management practices where additional measures are needed to meet the water quality requirements. 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.

As we have previously stated, the Eastern San Joaquin Agricultural General WDRs require Members to implement management practices that minimize waste discharge offsite in surface water, minimize percolation of waste to groundwater, and protect wellheads from surface water intrusion.⁸⁵ The General WDRs require the Members to submit Farm Evaluations, which include implemented management practices, to the Third Party. The Third Party summarizes and aggregates the data, conducts a quality assessment of the information, and submits the summary

⁸⁵ Eastern San Joaquin Agricultural General WDRs, § IV.B.20, p.20.

to the Central Valley Water Board. The Third Party additionally submits the individual data records used to develop the summary in an electronic format, but the data is submitted to the Central Valley Water Board identified at a township level rather than by field location.⁸⁶ The Central Valley Water Board may, however, at any time request the underlying data for a particular Member or area.⁸⁷

The aggregation and summary provided by the Third Party is a useful analysis for characterizing the trends in management practice implementation in the Eastern San Joaquin River Watershed and we acknowledge the key role of the Third Party in facilitating and compiling the analysis.⁸⁸ This notwithstanding, we will additionally require the Third Party to submit the Farm Evaluation data to the Central Valley Water Board at field level *and* identified by location. Our intent in doing so is to allow for meaningful evaluation of management practices and their effectiveness with regard to improving water quality. Where, for example, 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. Linking the management practice implementation and water quality monitoring data for the area in this scenario significantly enhances the Central Valley Water Board's ability to determine whether Member-implemented management practices are in fact minimizing waste discharges to surface water and to exercise reasonable oversight over the Third Party in its follow-up engagement with the Members to require improved management practices through outreach or through a SQMP.

The most direct manner in which to link management practice implementation at the field level with water quality data is to use location as the common identifier. In particular, identifying field-level data by location allows for location-based analyses, enabling layering of multiple sets of data geographically within the watershed, including water quality monitoring data and other data such as the nitrogen application data that we will discuss extensively in Section II.A.5 of this order. When such correlation of management practice implementation data and surface water and groundwater quality data is completed at a watershed, regional, or even

⁸⁶ *Id.*, Attach. B, MRP, § V.C, Report Component (18), pp. 23-24.

⁸⁷ *Id.*, § X, p. 36.

⁸⁸ We acknowledge that the underlying individual data will be made available to the Central Valley Water Board (but without location information) for verification of the analysis. Additionally, we recognize that the Eastern San Joaquin Agricultural General WDRs currently require the Third Party to identify, as part of its annual Membership List submission, Members who have failed to implement improved water quality management practices within the timeframe specified by an applicable SQMP or GQMP. (*Id.*, § IV.C.9, p. 21.) This already required information is significant in that it allows the Central Valley Water Board to follow up with or take enforcement against Members in violation of the SQMP or GQMP requirements, but it does not replace the need for a broader set of data, including data for management practices implemented in the absence of a SQMP or GQMP, to support effective program implementation.

statewide level, the water boards will be able to identify effective and ineffective management practices under a variety of conditions. Use of the complete, correlated data sets makes it possible to identify effective management practices under a variety of conditions, unlike field studies conducted under location-specific conditions. Use of the complete, correlated data sets additionally enables the water boards and others to study the effect of management practice implementation on trends in water quality throughout the entire watershed. This will be critical for the ongoing development and improvement of the irrigated lands regulatory program to appropriately protect water quality.

We recognize that there may be other means of identifying field data by location that would retain some of the privacy protections currently built into the Eastern San Joaquin Agricultural General WDRs and still allow for a sufficiently robust feedback mechanism to link management practices and water quality requirements for purposes of the General WDRs. For example, we could require the Third Party to link the data using a non-location identifier and provide this to the Central Valley Water Board so that the link between management practices, nitrogen application data, and water quality monitoring is established without disclosure of location information; we could additionally build in triggers that automatically require the data, as linked, to be reported to the Central Valley Water Board by location where the field is identified as having significantly higher than average nitrogen application values or where surface water or groundwater monitoring indicates an exceedance. This option would allow the Central Valley Water Board to look at management practice data in conjunction with water quality data in cases where there is a water quality problem and exercise oversight over necessary actions to address the problem, without allowing the Central Valley Water Board automatic access to all of the data. However, this option is less compelling because it limits use of the data to analysis and oversight where management practices have failed and does not allow for the more complete analysis and identification of effective management practices described above.

Although we recognize the strong and genuine concern among growers with regard to privacy, we are not persuaded that submission of management practice information to the Central Valley Water Board runs counter to competitive advantage and trade secret concerns. While a Member may develop and use planning and management documents that contain sensitive information, those documents need not be submitted to the Central Valley Water Board. Rather, the Farm Evaluation form in Appendix MRP-3 is designed to require the submission of only generalized information that will be used by the water boards for water quality protection purposes, none of which is likely to raise significant privacy concerns. In Order WQ 2013-0101, we retained the requirement for growers to make available to the Central Coast Water Board

information related to management practice implementation. In doing so, we recognized growers' arguments that such reporting could lead, through a Public Records Act⁸⁹ request, to disclosure of sensitive business information. However, we found that the existing exceptions to the Water Code and to the Public Records Act, which allow withholding of information deemed trade secrets and secret processes, was sufficient to protect the most sensitive submitted data.⁹⁰ As with the Central Coast Agricultural Order, any database system developed to receive member data under the Eastern San Joaquin Agricultural General WDRs will allow submitters to specify that certain information is exempt from disclosure, subject to review by the water boards.⁹¹

In sum, we revise the Eastern San Joaquin Agricultural General WDRs to require the Third Party to report to the Central Valley Water Board field-specific data submitted on the Farm Evaluations by location. We require the Third Party to submit the data for years 2016 through 2018 by May 1, 2019, and for subsequent years on May 1 annually thereafter. We delay submission of the first two years' data in part because time is needed to develop a database that can receive the data⁹² and in part because the farm evaluation data is only a component of the full dataset, which will not be complete until 2019, as described further in Section II.A.5.e. In the interim, in order to eliminate the possibility that the data could be lost or compromised, the Third Party is directed to propose and implement a mechanism for backing up and storing the data in a secure offsite location managed by an independent entity that specializes in the protection of data. Further, the Executive Officer of the Central Valley Water Board continues to have the discretion to request the data at any time.⁹³

In section II.A.10 of this order, we set out our direction to the Central Valley Water Board on the appropriate use of the submitted data.

⁸⁹ Gov. Code, § 6250 et seq.

⁹⁰ Wat. Code, § 13267, subd. (b)(2); Gov. Code, § 6254, subd. (k); Evid. Code, § 1060; see State Water Board Order WQ 2013-0101, p. 28. Our discussion regarding proprietary information addressed the requirement for growers to make available to the Central Coast Water Board a farm plan upon request, but we also retained the requirement to report management practice implementation to the Central Coast Water Board through the annual report. (We recognize that, in that case, there was no third-party group acting as an intermediary between the growers and the Central Coast Water Board.) Our conclusions as to how to address proprietary information in the context of an agricultural regulatory program were not questioned by the Sacramento Superior Court Ruling.

⁹¹ The Eastern San Joaquin Agricultural General WDRs establish at section IX.4 (p. 37) the process by which a Member may assert that all or a portion of a report is exempt from public disclosure.

⁹² To the extent GeoTracker or another electronic database is not available to receive the data by May 1, 2019, the Third Party is directed to submit electronic copies of the Farm Evaluations in pdf format.

⁹³ Eastern San Joaquin Agricultural General WDRs, § X, p. 36.

The directed revisions are indicated at Appendix A, Modified Eastern San Joaquin Agricultural General WDRs, Attachment B, MRP, section V.C, page 23 and section V.E, Report Component (19), pages 27-28.

4. Sediment and Erosion Control Plan

Under the Eastern San Joaquin Agricultural General WDRs, Members with potential to cause erosion and discharge sediment that may degrade surface waters must propose and implement sediment discharge and erosion prevention practices to minimize or eliminate the discharge of sediment above background levels, consistent with a Sediment and Erosion Control Plan.⁹⁴ The Sediment and Erosion Control Plan must be prepared by the Member and must either conform to a site-specific recommendation from the Natural Resources Conservation Service or be certified. The Plan must be kept on site to be produced upon request by the Central Valley Water Board staff.⁹⁵

Members with potential to cause erosion and discharge sediment must already report management practices implemented to minimize or eliminate sediment and erosion on the Farm Evaluation; as a result, the information is made available to the Central Valley Water Board through our revisions to the Farm Evaluation provisions. We find that the Sediment and Erosion Control Plan requirements of General WDRs are appropriate as written and do not direct any revisions to the provisions.⁹⁶

5. Nitrogen Management Plans

The Eastern San Joaquin Agricultural General WDRs require Members to “implement practices that minimize excess nutrient application relative to crop need.”⁹⁷ This requirement is implemented in part by preparation of a Nitrogen Management Plan. All Members must prepare a Nitrogen Management Plan and all Members must keep the Nitrogen Management Plan on site and make it available to Central Valley Water Board staff upon request. Members in high vulnerability groundwater areas have additional requirements for certification of the Nitrogen Management Plan and submittal to the Third Party of a Summary Report of the past year’s implementation of the Plan.⁹⁸ The Third Party in turn must report aggregated data to the

⁹⁴ *Id.*, § IV.B.7, p.19.

⁹⁵ *Id.*, § VII.C, p.25.

⁹⁶ However, for consistency we change “all Other Members” to “Members with Medium and Large Farming Operations” when referencing members that are not Members with Small Farming Operations. (Appen. A, Modified Eastern San Joaquin Agricultural General WDRs, § VII.C.2, p. 27.)

⁹⁷ Eastern San Joaquin Agricultural General WDRs, § IV.B.8, p.19.

⁹⁸ *Id.*, § VII.D, pp. 26-28.

Central Valley Water Board summarizing the range of nitrogen consumption ratios (i.e. nitrogen available for crop uptake divided by the estimated crop consumption of nitrogen) by crop types and soil conditions reported by the Members on the Summary Report. The data is aggregated at the township level and need not identify the Member and associated parcel for a particular nitrogen consumption ratio.⁹⁹ The Central Valley Water Board may, however, at any time request the underlying data for a particular Member or area.¹⁰⁰

The nitrogen management provisions of the Eastern San Joaquin Agricultural General WDRs are of particular significance because nitrate pollution in groundwater is a significant public health threat in the Central Valley.¹⁰¹ Nitrates consumed at a concentration above the maximum contaminant level (MCL) of 10 milligrams per liter (mg/L) of nitrate+nitrite as N¹⁰² pose serious risks to pregnant women and infants. Nitrate contamination in groundwater in the Central Valley was extensively documented in the 2012 Report “Addressing Nitrate in California’s Drinking Water” (UCD Nitrate Report)¹⁰³ prepared for the Legislature. The Agricultural Expert Panel was proposed as one of the recommendations in the State Water Board’s Report to the Legislature accompanying the UCD Nitrate Report and the Panel addressed multiple questions posed to it regarding nitrogen management. We make significant revisions to the nitrogen planning and reporting requirements of the Eastern San Joaquin Agricultural General WDRs as detailed below, primarily to address recommendations by the Agricultural Expert Panel.

a. Consideration of Irrigation Practices

We first add several required planning elements to facilitate crop irrigation management planning, including consideration of irrigation method, crop evapotranspiration, and anticipated crop irrigation. The Agricultural Expert Panel emphasized that nitrogen management must be done hand-in-hand with irrigation management, pointing out that water movement

⁹⁹ *Id.*, Attach. B, MRP, § V.C, Report Component (17), p.23.

¹⁰⁰ *Id.*, § X, p. 36.

¹⁰¹ Fertilizers may contain nitrogen in multiple forms (i.e. ammonia, nitrate, etc.), but the form of nitrogen that moves through the soil to groundwater is nitrate. (Nitrite may also be present but typically in very small quantities and is often discounted in general discussions.)

¹⁰² The MCL is also expressed as 45 mg/L of nitrate as NO₃. The authority to set the MCL for nitrate previously resided with the California Department of Public Health (CDPH) (and the Department of Health Services prior to the establishment of CDPH), but the authority to set the MCL for nitrate is now within the purview of the State Water Board.

¹⁰³ Harter, T. et al. *Addressing Nitrate in California’s Drinking Water*. (UC Davis Groundwater Nitrate Project, March 2012) (Harter Report). The Harter Report is included in the administrative record of the proceedings to adopt the Eastern San Joaquin Agricultural General WDRs, submitted to the State Water Board by the Central Valley Water Board. (AR 34141-35717.)

through the soil is the mechanism for nitrate transport.¹⁰⁴ We will hereinafter refer to the plan as revised in the Modified Eastern San Joaquin Agricultural General WDRs as the Irrigation and Nitrogen Management Plan or “INMP,” and to the summary submitted to the Third Party as the “INMP Summary Report.”

b. Extension of Certification and Summary Reporting Requirements to All Members

We next make revisions to the nitrogen management provisions of the Eastern San Joaquin Agricultural General WDRs to remove the distinction in requirements for high and low vulnerability groundwater areas. This revision means that all Members must now have a *certified* INMP and must submit an INMP Summary Report to the Third Party. We allow phasing of the requirements based on farm size. Members with Medium or Large Farming Operations must have completed an INMP by March 1, 2015, complete a certified INMP by March 1, 2016, and complete and submit the INMP Summary Report by March 1, 2016, as already established in the General WDRs. However, some Members with Medium or Large Operations may have been previously considered to be in low vulnerability areas and therefore not required to meet the March 1, 2015, and March 1, 2016, deadlines. The Modified Eastern San Joaquin Agricultural General WDRs allow these Members two additional years to comply with the requirements. Members with Small Farming Operations are permitted two additional years to begin implementing nitrogen management provisions of the General WDRs, as compared to Members with Large Farming Operations. The phasing allows limited certification resources to continue to focus on the greatest amount of acreage while available training develops to match the demand for certification.

The directed revisions are indicated at Appendix A, Modified Eastern San Joaquin Agricultural General WDRs, section VII.D, pages 28-31.

c. New Metric for Nitrogen Application Management

We make additional revisions to the nitrogen management provisions of the Eastern San Joaquin Agricultural General WDRs in response to recommendations made by the Agricultural Expert Panel regarding methodologies for measuring appropriate nitrogen application and assessing nitrogen over-application. The purpose of the nitrogen management planning requirements in the Eastern San Joaquin Agricultural General WDRs is two-fold. First, the INMP aids Members in projecting the total nitrogen a given crop will require for a single growing season. This is done by considering the nitrogen already available in soil and irrigation water, which allows a grower to plan for the appropriate amount of fertilizer to be applied to meet crop requirements.

¹⁰⁴ Agricultural Expert Panel Report, p.ii.

Such planning helps avoid over-application of nitrogen fertilizer that may lead to excess loss of nitrogen to groundwater. Second, the data made available to the Third Party and the Central Valley Water Board through the INMP Summary Report enables those entities to consider the range of nitrogen application values reported for similar crops and identify outliers for follow-up actions with the goal of reducing over-application.

We considered nitrogen application planning and reporting in the Central Coast Agricultural Order in Order WQ 2013-0101. In that case, we struck a requirement for Central Coast dischargers to “make progress toward” a target ratio of nitrogen application to nitrogen uptake in favor of requiring all Tier 2 and Tier 3 dischargers to report total nitrogen applied by fields or management blocks. We stated that the directed revisions “reflect[ed] our best judgment as to temporary measures required to keep work on this important public health and environmental issue moving forward” but that we would look to the Agricultural Expert Panel to “propose a comprehensive, consistent approach that will inform agricultural regulatory programs statewide.”¹⁰⁵ In reviewing the Eastern San Joaquin Agricultural General WDRs, we now have the benefit of the Agricultural Expert Panel Report, and make revisions to the General WDRs consistent with the Panel’s recommendations on nitrogen management.

The Agricultural Expert Panel, after reviewing the crop uptake ratio we rejected in Order WQ 2013-0101, the nitrogen consumption ratio in the Eastern San Joaquin Agricultural General WDRs, and the difficulties associated with determining field level nitrogen balances,¹⁰⁶ proposed a different metric for evaluating appropriate nitrogen management. The metric proposed by the Agricultural Expert Panel as the simplest metric of good management is the multi-year ratio of nitrogen applied to the field to nitrogen removed from the field, or the A/R ratio. The nitrogen applied includes nitrogen from any source (i.e. organic amendments, synthetic fertilizer, and/or nitrogen in irrigation water). The nitrogen removed includes the nitrogen present in all harvested materials removed from the field (including any prunings, removed vegetation, etc.) plus, in the case of perennial crops, the nitrogen sequestered in the permanent wood.¹⁰⁷ Nitrogen removed is based on a measurable value of yield. Crop yield is multiplied by a

¹⁰⁵ State Water Board Order WQ 2013-0101, p. 42. The Sacramento Superior Court Ruling stated that the court “is not persuaded that an adequate Waiver necessarily must include nitrogen balancing ratios,” but questioned the State Water Board’s rationale in removing them as reportable milestones. (Sacramento Superior Court Ruling at 36.) As we discuss in this order, the Agricultural Expert Panel, building on work by the Nitrogen Tracking Task Force, proposed a metric for nitrogen balancing which we now direct all irrigated lands programs to adopt.

¹⁰⁶ Agricultural Expert Panel Report, pp. 21-22.

¹⁰⁷ *Id.*, p. 28.

coefficient determined via direct testing of the harvested materials. The nitrogen removed coefficient expresses the amount of nitrogen for a given crop per unit of crop yield.

The multi-year A/R ratio, as proposed by the panel and implemented in this order, is distinguished from previous ratios in two ways. First, it utilizes removed nitrogen instead of nitrogen uptake/consumption. This is an important simplification as it is based on a measurement instead of an estimate. The basis of any good performance metric is that it relies on quantitative measurements that can be performed simply and repeatedly with relative accuracy and that it is easy to understand. The uptake/consumption of nitrogen by a crop as it was employed by the previous orders was based on estimation, not a measurement. Often the published guidance regarding plant uptake/consumption has wide ranges of values from which to select, with variation from low to high values ranging as much as 40 percent. Because of these inherent complexities and inaccuracies, using uptake/consumption as part of a performance metric is problematic. Second, utilizing the measurements of applied and removed nitrogen over several years allows for variations that happen from year to year to cancel out and the carryover of nitrogen in soil to become insignificant for purposes of tracking and reporting. A multi-year approach to a performance metric related to nitrogen management serves to simplify some of the inherent complexity of trying to perform a nitrogen balance on an annual basis and justly account for nitrogen present in its many varied states within a field and crop system.

When evaluated over multiple years, the A/R ratio provides a reliable measurement of the nitrogen left in the field. In each consecutive year, the nitrogen left in the field from the prior year, as approximated by the A/R ratio, will either be utilized by the next crop or move further down in the soil column with potential to be leached to groundwater. If, over several years, the ratio of nitrogen applied and nitrogen removed from the field remains high, a significant portion of the nitrogen applied to the field is remaining in the field and potentially reaching groundwater over time through percolation.¹⁰⁸ A high multi-year A/R ratio thus alerts the grower, the third-party group, and the regional water board to the need to address over-application at the field level. As recommended by the Agricultural Expert Panel, 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.¹⁰⁹ 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-

¹⁰⁸ *Ibid.*

¹⁰⁹ *Id.*, pp. iii, 24, 38.

year A/R ratio will provide a fairly accurate picture of the amount of nitrogen being left on the field over several years. Similarly, 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.

We find that the INMP should require recording, and the INMP Summary Report should require reporting, of the multi-year A/R ratio and of the data supporting its calculation.¹¹⁰ We also find that the multi-year A/R ratio will be rendered more informative if additionally paired with an A-R difference value (nitrogen applied minus nitrogen removed) to further tease out potential nitrogen over-application in cases where use of only the multi-year A/R ratio may mask significant quantities of nitrogen left in the field.¹¹¹ We therefore additionally require recording and reporting of the A-R difference. 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. We will require Members to determine nitrogen applied and nitrogen removed values¹¹² and to calculate and report annual A/R ratio and A-R difference values. We will require the Third Party to additionally calculate a three-year running average for the A/R ratio and A-R difference for each Member.

We specify the minimum requirements for the templates for the INMP and the INMP Summary Report as revisions to the General WDRs. We also provide templates that meet those requirements. These may be used by the Third Party, or alternative templates may be proposed by the Third Party and used with approval from the Central Valley Water Board.

The directed revisions are indicated at Appendix A, Modified Eastern San Joaquin Agricultural General WDRs, section VII.D, pages 28-29; Attachment B, MRP, section V.E, Report Component (18), pages 26-27, section VI.B, pages 29-34. Additionally, templates for the INMP and INMP Summary Report are attached as new Attachment B, Appendix MRP-4.

d. Requirement for Third Party to Determine Nitrogen Removed Coefficients

One short-term challenge to using the multi-year A/R ratio is that certain information and data gaps need to be filled. There is insufficient information currently available to calculate multi-year A/R ratios for most crops. This data needs to be gathered over time. At this

¹¹⁰ We refer herein to "AR data" to encompass the multi-year A/R ratio and all data required to be reported in support of that ratio, including the A-R difference.

¹¹¹ For example, 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.

¹¹² See discussion in the next section regarding reporting where a coefficient for calculation of nitrogen removed is not yet available.

time, it is not a common practice for a grower to track the amount of nitrogen removed during harvest. Terminology currently used for nitrogen application recommendations focuses on crop nitrogen uptake or crop nitrogen need with the goal of maximizing crop yield. Use of the multi-year A/R ratio thus requires a change in nitrogen application recommendations and terminology.¹¹³

Research is required to determine crop removal values and to identify attainable multi-year A/R ratios for a range of crops and conditions. The Agricultural Expert Panel recommended research by third-party groups, commodity groups, and institutions to develop the data.¹¹⁴ Such research would determine values for how many pounds of nitrogen are contained in a unit of crop yield (e.g. lbs-N/ton of almonds). This can be expressed as a coefficient, that, when multiplied with a crop harvest, will estimate the nitrogen removed. The research will ultimately need to be completed for all harvested crop materials, including secondary, or complementary, harvests (i.e. prunings, removed vegetation, etc.).

We task the Third Party with conducting the appropriate testing and research to determine the relevant coefficients for calculating nitrogen removed by crop. We direct the Third Party to publish nitrogen removed coefficients for crops that cover 95% of acreage within the General WDRs' boundaries in time for use in the INMP Summary Reports due 1 March 2019 and 99% of the acreage in time for use in those due 1 March 2021 (with estimated coefficients based on similar crops being acceptable for crops covering the remaining 1%). In the interim, where the coefficient needed to calculate nitrogen removed is not yet available, the Member may report crop yield as a proxy. When the coefficient values become available, the Third Party must use those values to retroactively calculate the A/R ratio, both past annual reported values, and the three-year running average based on the three prior years. Thus, beginning in 2019, multi-year A/R ratios will be available for most of Member acreage in the Eastern San Joaquin River Watershed.

The directed revisions are indicated at Appendix A, Modified Eastern San Joaquin Agricultural General WDRs, Attachment B, MRP, Section VI.B, INMP Component (23), page 33.

e. Expansion of Reporting Requirements

The Eastern San Joaquin Agricultural General WDRs require Members to report nitrogen application data in the INMP Summary Report that is submitted to the Third Party; the Third Party in turn aggregates that data and reports it to the Central Valley Water Board in a manner that characterizes the input, uptake, and loss of the nitrogen application by specific crops,

¹¹³ Agricultural Expert Panel Report, pp. 27-28.

¹¹⁴ *Id.*, p.40.

but summarizes the data at the township level, rather than by Member or field.¹¹⁵ Because the multi-year A/R ratio will provide a concrete, measurable, and reliable benchmark by which progress in reducing groundwater nitrate impacts can be determined, we find that the data should be reported to the Central Valley Water Board by field, identified by location. Similar to the aggregated data reporting for management practices, the aggregated reporting of nitrogen application data required in the Eastern San Joaquin Agricultural General WDRs allows the Central Valley Water Board to analyze trends in nitrogen application and may indicate whether an area as a whole is making progress toward reducing the potential for nitrates to reach the groundwater.¹¹⁶ The aggregation and analysis by the Third Party is thus an important task that leads to valuable information. There are nevertheless compelling reasons for the non-aggregated nitrogen application data to also be reported to the Central Valley Water Board at a field level.

Most significantly, access to the full field-level data set will allow the Central Valley Water Board to develop the multi-year A/R ratio target values that were recommended by the Agricultural Expert Panel. As multi-year A/R ratio data becomes available over the next few years, we direct the Central Valley Water Board to determine acceptable ranges for multi-year A/R ratio target values by crop. (We lay out our specific direction to the Central Valley Water Board in the sections that follow.) In describing the assumptions underlying its recommendations, the Agricultural Expert Panel stated that, while there is currently insufficient information to assign target values to the multi-year A/R ratio, “[i]t will be a regulatory goal to learn what the ranges of these multi-year ratios are for multiple crops and situations, in order to define acceptable target values” and that “[i]t will be a regulatory goal to reduce the average value of this A/R metric in regions.”¹¹⁷ Development of acceptable multi-year A/R ratio target values is warranted because the multi-year A/R ratio is the most reliable measure of the potential for nitrogen to reach groundwater that is currently available to us. The AR data captures a particular set of management practices that require implementation at the individual operation and field level. However, the multi-year A/R ratio additionally acts as a proxy for groundwater quality monitoring, as we will discuss further in section II.A.6 of this order, by representing the amount of nitrogen in the soil that could potentially reach the groundwater. In the absence of an extensive -- and

¹¹⁵ Eastern San Joaquin Agricultural General WDRs, Attach. B, MRP, § V.C, Report Component (17), p.23.

¹¹⁶ Aggregated data reporting may, however, under some circumstances obscure the on-the-ground reality of how much aggregate nitrogen is being left in the fields because of the averaging effect of reporting fields with over-application along with fields with under-application of nitrogen. For example, the averaging may suggest a net effect of zero, whereas in reality significant nitrogen is left in the field in the first instance, and likely crop failure in the second instance does not act to mitigate the impacts from the nitrogen left in the first field.

¹¹⁷ Agricultural Expert Panel Report, p. 24.

expensive -- shallow groundwater monitoring network, the multi-year A/R ratio is currently the most promising method for determining whether implemented management practices are leading to a meaningful reduction in the nitrogen that has the potential to reach groundwater. Given this dual purpose served by the AR data, and given the magnitude of the problems due to nitrate impacts in groundwater, multi-year A/R ratio target values are expected to provide a valuable tool in irrigated lands programs for fair and even-handed consideration of nitrogen application practices. As the agency with primary oversight over water quality in the Eastern San Joaquin River Watershed, the Central Valley Water Board is the appropriate party to develop the acceptable target values; furthermore, in developing the target values, we expect the Central Valley Water Board to analyze data gathered through irrigated lands regulatory programs throughout the region, not just data gathered through the Eastern San Joaquin Agricultural General WDRs, and to collaborate with other regional water boards to share and compare data with support from the State Water Board.¹¹⁸

An additional reason we direct the Third Party to submit field-level data, identified by location, to the Central Valley Water Board, is that it allows for appropriate oversight by the Board. Access to the full field level data set enables auditing of the Third Party and allows the Central Valley Water Board to verify the accuracy and completeness of the Third Party's calculations and analyses. Further, it facilitates responding to indications of over-application by any given Member. We continue to believe that the Third Party is best suited (both in terms of expertise and in terms of developed relationships) for the role and responsibility of initial follow up with Members to address any potential over-application. The Third Party is the lead in outreach and education and as part of that responsibility will be expected to follow up with Members that have high multi-year A/R ratios. However, the Central Valley Water Board should exercise reasonable oversight over the process, including confirming that the appropriate Members have been identified and contacted. The Central Valley Water Board cannot exercise this type of oversight with only aggregated data. Under the framework of Eastern San Joaquin Agricultural General WDRs, the Central Valley Water Board is not precluded from access to the full field-level data set, but must specifically request it from the Third Party anytime the Board finds it necessary

¹¹⁸ Field studies are not a substitute for access to a complete data set of field-level A/R ratio data. A field study may result in determination of an acceptable A/R ratio target value for a specific set of conditions, but does not anticipate the variability in conditions throughout a region.

to exercise oversight;¹¹⁹ with our revisions the data set is available to the Central Valley Water Board without the need for a request.¹²⁰

Finally, as with the management practice implementation data, availability 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. 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. The correlated data set will also allow for watershed-based modeling for nitrate loading to groundwater. Such modeling 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. The data set will have uses beyond the short-term needs of the water boards; for 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.

We recognize that the Nitrogen Tracking Task Force recommended that data related to nitrogen application be aggregated prior to being reported to the regional water board.¹²¹ However, the Nitrogen Tracking Task Force issued its recommendation before the Agricultural Expert Panel was established, so the Nitrogen Tracking Task Force could not have anticipated that the Agricultural Expert Panel Report would recommend that nitrogen application data be used to develop acceptable multi-year A/R ratio target values. As explained above, in order to develop the target values, the Central Valley Water Board needs access to the field-level data. The Nitrogen Tracking Task Force was working with a different metric, a nitrogen mass balance, which is reported annually rather than on a multi-year basis, is complicated by uncertainty associated with how much nitrogen residual in the soil has the potential to percolate to groundwater, and is therefore not suitable as a performance measure. Because the Nitrogen Tracking Task Force's proposed nitrogen mass balance approach would not have been used to develop a performance measure, it would not have been necessary for the regional water boards to receive field-level data related to the nitrogen mass balance. Even so, the Nitrogen Tracking

¹¹⁹ Eastern San Joaquin Agricultural General WDRs, § X, p. 36.

¹²⁰ We also note 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.

¹²¹ Nitrogen Tracking Task Force Report, pp. 15-16.

Task Force acknowledged that, “if access to more fine-grained data is needed for quality control or problem-solving purposes, the Water Boards can reach down to access growers’ original raw data at field scale”¹²² and further that the regional water boards are “responsible for ensuring the accuracy of the data they receive and may consider developing an audit mechanism.”¹²³ The Agricultural Expert Panel found that the AR data needed to be tracked at a field level to be meaningful,¹²⁴ but the Panel did not specifically speak to whether the field-level data should be reported to a third-party group or to the regional water board. As we discussed in the previous section, the multi-year A/R ratio does not suffer from the uncertainties of previously proposed metrics; and, since the multi-year A/R ratio is less susceptible to misinterpretation or misrepresentation, the argument in favor of providing only aggregated data is less compelling. We find that field-level data, by location, should be submitted to the Central Valley Water Board for the reasons we have articulated: 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. In making this finding, we are acting on the cumulative knowledge gained through the proceedings of the Nitrogen Tracking Task Force¹²⁵ 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 accountability in that process.

Additionally, and as with the management practice implementation information reported in the Farm Evaluation, we are not persuaded that the INMP Summary Report data constitutes proprietary business information. In Order WQ-2013-0101 we similarly rejected the argument made by some petitioners that total nitrogen applied is sensitive proprietary information not appropriate for reporting and deferred to the protections for sensitive business information created by the Legislature in the Water Code and the Public Records Act, rather than carve out

¹²² *Id.*, p. 19.

¹²³ *Id.*, p. 21.

¹²⁴ Agricultural Expert Panel Report, pp. 37-38.

¹²⁵ We note that our direction maintains the majority of the recommendations of the Nitrogen Tracking Task Force. The Agricultural Expert Panel only modified two reporting items as recommended by the Nitrogen Tracking Task Force. The Panel eliminated reporting of residual soil nitrogen credits and added reporting of irrigation method. In addition to these two items, our direction departs from the Nitrogen Tracking Task Force’s recommendations primarily in the requirement to submit field-level, in addition to aggregated, data to the regional water board.

additional exceptions within the permit.¹²⁶ In that case, we required each discharger to report total nitrogen applied directly to the Central Coast Water Board and noted that the timing and frequency of nitrogen applications, rather than data regarding the total amount, was more likely to implicate competitive business practices. The additional information required to be reported here, i.e., the nitrogen removed from the field, does not significantly alter the balance that we must strike between the need for transparency and measurable benchmarks on the one hand, and the need for the agricultural community to protect trade secrets and other sensitive information on the other hand.¹²⁷ We note that the INMP Summary Report contains only specific, limited data that is necessary for use by the Central Valley Water Board for the purposes described above. We are not requiring that the entire INMP be submitted, nor are we requiring that other planning and management documents that Members may develop and use for operational purposes be submitted. Our purpose in requiring submission of field-level AR data to the Central Valley Water Board is to address, in an even-handed, data-driven manner, a crucial water quality and public health issue – nitrates in groundwater – by minimizing over-application of nitrogen to the fields, while at the same time preserving Members' need to manage their operations in accordance with confidential business practices and determinations.

We will require the Third Party to compile the INMP Summary Reports and submit them to the Central Valley Water Board without aggregating or otherwise obscuring the INMP Summary Report data, so that the data for total nitrogen applied, total nitrogen removed, the ratio, and the difference are available to the Central Valley Water Board. The Third Party must submit the INMP Summary Report data to the Central Valley Water Board commencing in May 2019. By May 1, 2019, the Third Party will be required to submit the data for years 2016-2018; thereafter the Third Party shall submit the data annually by May 1. The delayed submission of the first two years' data will allow for the development of a database to receive the data.¹²⁸ The delayed

¹²⁶ State Water Board Order WQ 2013-0101, p. 45, fn.103; see also *id.*, p. 28. The relevant code provisions are Water Code, section 13267, subdivision (b)(2), Government Code section 6254, subdivision (k), and Evidence Code section 1060. Our conclusions as to how to address proprietary information in the context of an agricultural regulatory program were not questioned by the Sacramento Superior Court Ruling. We also note that section IX.4 (p.36) of the Eastern San Joaquin Agricultural General WDRs establishes a process by which a Member may assert that all or a portion of a report is exempt from public disclosure.

¹²⁷ Under Order WQ-2013-0101, we limited nitrogen reporting to total nitrogen applied because we found that the ratio otherwise required to be reported in the Central Coast Agricultural Order relied on speculative values for crop nitrogen uptake (p. 49). As we have discussed above, the A/R ratio does not suffer from the same deficiency; while development of the appropriate coefficients for calculation for nitrogen removed from the field will require further data gathering and research, once the values are available, the multi-year A/R ratio is expected to be a reasonably accurate representation of nitrogen remaining on the field.

¹²⁸ To the extent the State Water Board GeoTracker database is not ready for uploading the data by May of 2019, the coalition shall submit the data in excel and pdf format.

submission further recognizes that the Member reporting requirements of the Modified Eastern San Joaquin Agricultural General WDRs are phased in such that only partial datasets of the AR data will be available in the first years of implementation, and further that the majority of coefficients for nitrogen removed calculations will not be available until 2019. Finally, because the A/R ratio should be analyzed as a multi-year value, for purposes of determining potential over-application of nitrogen to a field, the AR data has only limited utility prior to 2019. Because of the delayed submission of the data in the initial years of implementation of the Modified General WDRs, and in order to eliminate the possibility that the data could be lost or compromised, the Third Party is directed to propose and implement a mechanism for backing up and storing the data in a secure offsite location managed by an independent entity that specializes in the protection of data. Further, the Executive Officer of the Central Valley Water Board continues to have the discretion to request the data at any time.¹²⁹

In section II.A.10 of this order, we set out our direction to the Central Valley Water Board on how the submitted data shall be utilized.

In addition to submitting the underlying data, we direct the Third Party to continue to aggregate and analyze the data. We direct the Third Party to evaluate the data, providing comparisons of the A/R ratio and A-R difference by crop type, and within crop type, by irrigation method, soil condition, and farming operation size. The Third Party must identify the mean and standard deviation and report values that are higher than one standard deviation removed from the mean. The Third Party is directed to report this information by May 1 annually.

The directed revisions are indicated at Appendix A, Modified Eastern San Joaquin Agricultural General WDRs, Attachment B, MRP, section V.D, pages 23-24, section V.E, Report Component (18), pages 26-27.

f. Required Follow-Up

We further revise the Eastern San Joaquin Agricultural General WDRs to require specific actions of Members reporting three-year running average A/R ratio values that vary from the mean value for the relevant crop by more than one standard deviation. The Third Party must inform such Members that they are potentially over-applying nitrogen to their fields. Following receipt of notification, these Members must either attend additional INMP self-certification training in person or work with an irrigation and nitrogen management plan specialist for certification of the next INMP prepared following notification. These Members must also report on the next annual update to the Farm Evaluation that they were notified of a high three-year A/R ratio. The Farm

¹²⁹ Eastern San Joaquin Agricultural General WDRs, § X, p. 36.

Evaluation will then be expected to reflect additional or improved management practices implemented to address potential over-application of nitrogen.

The directed revisions are indicated at Appendix A, Modified Eastern San Joaquin Agricultural General WDRs, section IV.C.8.c, pages 22-23, section VII.D, page 30; Attachment B, MRP, section VI.A, page 29.

6. Surface Receiving Water Monitoring

The Eastern San Joaquin Agricultural General WDRs do not require water quality monitoring of discharges coming off the farms, but require monitoring in the receiving waters. The watershed is divided into six zones. Two “core” sites and several “represented” sites are designated in each zone. The represented sites are sites with characteristics similar to the core sites such that a water quality issue detected at the core site may be an indication of a similar issue at a represented site. The two core sites are continuously monitored on an alternating basis. An exceedance at a core site triggers the requirement to monitor at the represented sites within the same zone.¹³⁰

The Environmental Petitioners argue that the surface water quality monitoring is ineffective as a feedback mechanism that can tie management practice implementation with the water quality goals of the Eastern San Joaquin Agricultural General WDRs. We took up the question of the appropriate approach to surface water quality monitoring in State Water Board Order WQ 2013-0101. The Central Coast Agricultural Order incorporates both regional receiving water monitoring and, for Tier III discharges, edge-of-farm discharge monitoring. In Order WQ 2013-0101, we declined to revise the surface water discharge monitoring requirements but we also expressed our concerns with the approach:

We are skeptical that the Central Coast Water Board has adopted the monitoring program best suited to meet the purpose of identifying and following up on high-risk discharges. The variability in the composition of end-of-field discharges makes it difficult to characterize such discharges through sampling at a limited number of locations and in a limited number of sampling events. Further, even though the surface water discharge monitoring requirements are targeted to the highest risk dischargers, problem discharges and areas are likely to be found outside of the influence of farms operated by Tier 3 dischargers. The better approach may be to rely on receiving water monitoring data and to require the third party monitoring groups administering receiving water monitoring to pursue exceedances with increasingly focused monitoring in upstream channels designed to narrow down and identify the sources of the exceedances.¹³¹

¹³⁰ *Id.*, Attach. B, MRP, § III.A, pp. 3-6. The Third Party or the Executive Officer may additionally designate “Special Project Sites” to be monitored as part of a SQMP or to address a TMDL. (*Ibid.*)

¹³¹ State Water Board Order 2013-0101, pp. 37-38. The Sacramento Superior Court Ruling stated with regard to surface water monitoring: “Petitioners have failed to persuade the court that surface discharge monitoring of all
(Continued)

We presented the question of the appropriate surface water monitoring framework to the Agricultural Expert Panel. The Agricultural Expert Panel agreed that monitoring of surface water discharges from individual fields or farms is costly and complicated, as well as subject to serious challenges in identifying the appropriate timing for periodic sampling and coordinating with shifting field crew operations, pesticide applications, and sediment runoff events, and with schedules for lab operations. The Agricultural Expert Panel Report stated:

For surface water issues, the Panel recommends water quality monitoring of receiving water and a clear understanding of the watershed hydrology. Sufficient samples should be taken in the watershed streams to detect if problems do indeed exist. The sampling should be of sufficient density (spatially and temporally) to identify general locations of possible pollution. This is recommended rather than sampling at each discharge point. For example, a single measurement point at the downstream discharge of a very large watershed would be insufficient. When/if problems are identified, sampling should move upstream to locate the source of the problem.¹³²

We continue to support receiving water monitoring over surface water discharge monitoring in irrigated lands regulatory programs for the reasons articulated by us in Order WQ-2013-0101 and by the Agricultural Expert Panel. When an exceedance is detected through receiving water monitoring, the source or sources causing or contributing to the exceedance at the monitoring site will not necessarily be apparent in the absence of further investigation, but as long as sampling subsequently moves upstream to locate the source of the problem, receiving water monitoring is a more reliable and effective methodology for identifying water quality issues than costly, variable, and inexact end-of-field measurements.

We thus continue to endorse surface receiving water quality monitoring generally as appropriate for an agricultural monitoring program. This notwithstanding, having now carefully reviewed the particular surface water monitoring framework established in the Eastern San Joaquin Agricultural General WDRs, we cannot find that it is, in fact, "of sufficient density (spatially and temporally) to identify general locations of possible pollution." The General WDRs rely not on regional or watershed-based

discharges is required—or even possible given that there are approximately 435,000 acres of irrigated land and approximately 3000 agricultural operations generating discharges of waste." (Sacramento Superior Court Ruling at 41.) Although the Ruling held that the State Water Board had struck an appropriate balance in requiring individual surface discharge monitoring for Tier 3 dischargers only, the court did not hold that discharge monitoring for high risk discharges is a required element of a surface water monitoring program. To the contrary, the court held that "both the Water Code and the NPS policy expressly allow the use of cooperative or watershed-based monitoring. . . While individual monitoring might provide more information, it would be complicated, costly, and would threaten to overwhelm Regional Board staff." (*Ibid.*)

¹³² Agricultural Expert Panel Report, p. 41.

sampling, but on “representative monitoring.” The Third Party monitors only a few “core” sites, asserted to be representative of “represented” sites elsewhere in the watershed. The Third Party proceeds to monitor the represented sites only where a core site has an exceedance. There are two problems with this approach: First, in theory, because the core site and the represented sites have similar cropping, practices, and conditions, an exceedance at a core site would be indicative of an exceedance at a represented site. But we see no basis for this proposition in practice. Even if the crops, conditions, and practices in the core sites and the represented sites are roughly similar, a grower in one of the core site areas could cause a water quality problem exclusive of the represented site area and vice versa. Second, and perhaps more significantly, it is not clear that, even collectively, the core and represented monitoring sites have sufficient spatial density or distribution to be able to reasonably identify exceedances throughout the watershed.

The approach taken by the Eastern San Joaquin Agricultural General WDRs may be effective in monitoring for a narrower set of purposes, such as determining the effectiveness of a certain set of management practices, but it does not appear to be comprehensive enough to identify problem areas throughout the watershed. We recognize that water quality monitoring at core and represented sites is supplemented by additional, potentially upstream, monitoring under an SQMP, when triggered. But the problem is that a SQMP may not be triggered until an exceedance is detected at a core or represented site, and 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

The Nonpoint Source Policy does not require any particular framework for monitoring and does not necessarily even require comprehensive ambient monitoring. But 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.”¹³⁴ The representative monitoring of the General WDRs is not likely to meet that mandate. Especially given that monitoring to date has indicated that discharges from irrigated lands are leading to

¹³³ Eastern San Joaquin Agricultural General WDRs, § VIII.H.2, p. 33.

¹³⁴ Nonpoint Source Policy, p. 13, AR 36152.

some exceedances of receiving water limitations, a more comprehensive ambient monitoring program is in order.

Unlike with all other provisions of the Eastern San Joaquin Agricultural General WDRs, we will not make the specific revisions to the Surface Water Monitoring provisions of the General WDRs but will instead direct the Central Valley Water Board to review and reconsider the provisions and reopen the General WDRs by March 1, 2017, to adopt a revised program. 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. The revised program must incorporate monitoring elements that require the Third Party to pursue exceedances with increasingly focused monitoring in upstream channels designed to narrow down and identify the approximate area and sources of the exceedances. To 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. In the interim, the Central Valley Water Board and the Third Party shall continue to implement the existing program.

7. Groundwater Quality Monitoring

The Eastern San Joaquin Agricultural General WDRs contain a set of requirements for groundwater quality monitoring and management practice assessment and evaluation. The General WDRs first require preparation of a Groundwater Quality Assessment Report, which provides a baseline for groundwater quality conditions in the watershed by assessing all existing data.¹³⁵ Second, the General WDRs require implementation of a Management Practice Evaluation Program in which targeted studies are conducted to evaluate management practices that are protective of groundwater quality.¹³⁶ Third, the General WDRs require Groundwater Quality Trend Monitoring, based on sampling of a network of existing wells, to determine current and long-term regional groundwater quality trends.¹³⁷

We add to the groundwater monitoring provisions of the Eastern San Joaquin Agricultural General WDRs a set of monitoring and reporting requirements designed specifically to address identification of on-farm drinking water wells with nitrate concentrations that are detrimental to public health. We then make several revisions to the Groundwater Quality

¹³⁵ Eastern San Joaquin Agricultural General WDRs, Attach. B, MRP, § IV.A, pp.13-15.

¹³⁶ *Id.*, Attach. B, MRP, § IV.B, pp. 15-17.

¹³⁷ *Id.*, Attach. B, MRP, § IV.C, p.17.

Assessment, Management Practice Evaluation Program, and Groundwater Quality Trend Monitoring provisions of the General WDRs, but these modifications are comparatively minor.

a. Drinking Water Well Monitoring

Nitrates consumed at concentrations above the MCL of 10 milligrams per liter (mg/L) of nitrate+nitrite as N¹³⁸ can pose serious health risks to pregnant women and infants. In State Water Board Order WQ 2013-0101 we recognized the importance of making accurate, reliable nitrate concentration data available to the consumers of well water and established a framework where the nitrate concentration for every drinking water well was determined through existing data, direct sampling, or a statistically valid projection, and where users were notified of exceedances. We now add drinking water well monitoring provisions to the Eastern San Joaquin Agricultural General WDRs similar to those established for the Central Coast by Order WQ 2013-0101.

The new provisions require Members to monitor all drinking water supply wells on their property. Two rounds of sampling are required within the first year of monitoring, except where existing drinking water supply well sampling data is available from the prior five years. Where existing data or sampling data from initial rounds of sampling indicate nitrate concentration is at or above 8 mg/L nitrate+nitrite as N, a repeat sample must be taken within 12 months and annually thereafter unless an alternative sampling schedule is approved by the Executive Officer. Results of the drinking water supply well monitoring must be included in the Annual Monitoring Report submitted to the Central Valley Water Board by the Third Party. (As with other exceedances of a water quality objective in a groundwater well, the reported exceedance may trigger the requirement for the Third Party to develop a GQMP.¹³⁹)

The new provisions require that users receive notification if a drinking water exceeds 10 mg/L of nitrate+nitrite as N. The Member or Third Party must provide notification to the Central Valley Water Board within 24 hours of learning of the exceedance. Where the Member is the property owner, the Member must provide notice to users within ten days of the exceedance; where the Member is not the property owner, the Central Valley Water Board will promptly notify users of the exceedance. The State Water Board expects that the Central Valley Water Board will, where appropriate, act promptly to require the Member to provide users with safe drinking water for consumption.

¹³⁸ As stated previously, the MCL is also expressed as 45 mg/L of nitrate as NO₃.

¹³⁹ Eastern San Joaquin Agricultural General WDRs, § VIII.H.2, pp. 33-34.

Unlike in Order WQ 2013-0101, where we permitted a statistically valid projection of well nitrate levels, with this order we require actual sampling of all wells. The ultimately unsuccessful effort to characterize drinking water wells through representative monitoring under the Central Coast Agricultural Order has borne out that obtaining a statistically valid projection for nitrates is a subjective and problematic process in the absence of an extensive set of data points. We conclude 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 well.¹⁴⁰

The Environmental Petitioners argue that the Eastern San Joaquin Agricultural General WDRs disproportionately impact low-income communities and communities of color, are discriminatory, and are null and void by virtue of denying enjoyment of those communities' residence, landownership, and tenancy, because Latino and low-income communities are more likely to have drinking water contaminated by nitrates and less likely to have access to health care, treatment, or substitute water sources.¹⁴¹ With the revisions we have made to the General WDRs, including the additional drinking water well monitoring provisions added with this section, we find that the discharges of waste authorized by the General WDRs will not disproportionately impact or discriminate against Latino and low-income communities, or deny their enjoyment of their residences, property, or tenancy. We make this finding in particular because the Modified Eastern San Joaquin Agricultural General WDRs require (1) calculation and reporting of field-level AR data; (2) implementation and reporting of management practices where the Member is identified as having a significantly higher than average multi-year A/R ratio in order to reduce over-application of nitrogen; (3) monitoring of on-farm drinking water wells to determine if they

¹⁴⁰ In June 2015, Senate Bill 83 amended Water Code section 13752 to mandate public access to well completion reports. Well completion reports are required to be filed with the Department of Water Resources (DWR) for all groundwater wells at the time that they are constructed. The reports are required to contain information regarding each well's location and construction, and the lithology of the subsurface, among other items. As a result of the amendment, all well completion reports are available to the public, except that personal information (e.g., an individual's name and address) must be redacted. In the past, the State Water Board has obscured from public view in its online groundwater information systems, including GeoTracker, the precise locations of water supply wells for public water systems and private domestic wells by providing a randomly-generated point within approximately one mile of the well's precise location. In addition, the State Water Board's Division of Drinking Water has not released records that identify the precise location of water supply wells used by public water systems. Since well completion reports, including information about the location of the wells, are now publicly available by request from DWR, the State Water Board will no longer obscure groundwater well location information on its online groundwater information systems or withhold other records that identify the precise location of water supply wells used by public water systems. Not only will this be consistent with the Legislature's clear policy direction regarding the transparency of groundwater data, it will also help to facilitate efforts by governmental agencies and nongovernmental organizations to identify individuals and communities that are in need of infrastructure and replacement water supplies, and general research regarding groundwater quality.

¹⁴¹ See Gov't Code, §§ 11135, 12900 et seq., & 65008.

exceed public health standards; (4) prompt notification of users if a well exceeds public health standards. Further, although Water Code section 106.3, by its terms, does not apply to the issuance of a water quality order, it is appropriate for us to consider the human right to water in this context,¹⁴² and we find that our adoption of the order supports the basic human right “to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes,” expressed in Water Code section 106.3, for the same reasons articulated in this paragraph.

The directed revisions are indicated at Appendix A, Modified Eastern San Joaquin Agricultural General WDRs, section VIII.D.1, page 35; Attachment B, MRP, section IV.A, pages 14-15, section V.E, Report Component (17), page 26.

b. Removal of High/Low Vulnerability Distinctions

We make several revisions to the remainder of the groundwater monitoring provisions, primarily to de-emphasize the distinction the Eastern San Joaquin Agricultural General WDRs makes between high vulnerability and low vulnerability areas. Under our revisions, the Groundwater Quality Assessment Report no longer requires determination of high and low vulnerability areas. The Groundwater Quality Assessment Report must establish priorities for implementation of the management practice evaluation program and groundwater quality management plans, but such prioritization is no longer limited to high vulnerability areas, and the determination of high and low vulnerability is an optional prioritization tool rather than the basis for application of the implementation requirements.

Similarly, we revise the Management Practice Evaluation Program to require study of management practice effectiveness in all areas, not just areas designated as high vulnerability areas, although we explicitly acknowledge that prioritization may be based on the high vulnerability determination. We also require that any groundwater monitoring data supporting the Management Practice Evaluation Program be collected through shallow groundwater monitoring because shallow groundwater exhibits a more rapid response to practices on the field.¹⁴³

¹⁴² See State Water Board Order WQ 2013-0101, pp. 67-68.

¹⁴³ We define shallow groundwater as groundwater located less than ten feet below the soil surface. As we discuss below, the Agricultural Expert Panel Report found that groundwater quality monitoring will not provide useful data for purposes of evaluating the effectiveness of above-ground practices, except in very limited circumstances. (Agricultural Expert Panel Report, p. 8.) Monitoring of shallow groundwater constitutes the scenario in which the data is most likely to be meaningful. We note that the Agricultural Expert Panel’s conclusions were with regard to impacts associated with farming, and not with impacts from other potentially more concentrated sources, such as holding ponds at dairies.

Finally, we make minor revisions to the Groundwater Quality Trend Monitoring to clarify again that high and low vulnerability designations are optional prioritization tools rather than a requirement of the Modified Eastern San Joaquin Agricultural General WDRs.

The directed revisions are indicated at Appendix A, Modified Eastern San Joaquin Agricultural General WDRs, Attachment B, MRP, section IV.B-E, pages 15-21.

c. Trend Monitoring Constituents

In addition to nitrate as N, the Groundwater Quality Trend Monitoring provisions require monitoring for conductivity, pH, dissolved oxygen, temperature, total dissolved solids, and general minerals.¹⁴⁴ The Environmental Petitioners have asked us to expand the list of constituents further and argue specifically that the Groundwater Quality Trend Monitoring constituents should include pesticide run-off and degradation products from pesticides.¹⁴⁵ We will not expand the monitoring constituents to include pesticides and degradation products from pesticides because the Central Valley Water Board can rely instead on the monitoring conducted by the Department of Pesticide Regulation (DPR) for data on these constituents. We address that issue through a revision to the GQMP provisions under section II.8.

d. The Multi-Year A/R Ratio as a Proxy for Groundwater Monitoring for Nitrates

It is important to note in our discussion of groundwater quality monitoring that the role of groundwater quality monitoring in any agricultural regulatory program is primarily one of trend monitoring. Groundwater quality monitoring does not yield data responsive enough to above-the-ground impacts to allow correlation of management practices and water quality outcomes, except under very limited conditions. The Agricultural Expert Panel stated that monitoring of first-encountered groundwater as an indication of the effectiveness of above-ground practices is meaningful only in a context where “sampled groundwater volume can be attributed to a defined recharge area, which must be contained within the area where the regulated discharge occurs” and further that such attribution is meaningful primarily in “areas of very shallow groundwater tables, relatively steady groundwater flow directions, high recharge, large regulated units, and a strong introduced discharge signal.”¹⁴⁶ Where these conditions are present, there are

¹⁴⁴ Eastern San Joaquin Agricultural General WDRs, Attach. B, MRP, § IV.E, pp. 19-20.

¹⁴⁵ The Groundwater Quality Trend Monitoring constituents specified in the Eastern San Joaquin Agricultural General WDRs are conductivity, pH, dissolved oxygen, temperature, nitrate as N, total dissolved solid, and general minerals. (*Id.*, Attach. B, MRP, table 3, pp. 19-20.) In addition to advocating for addition of pesticides and degradation products from pesticides to that list, the Environmental Petitioners argue that the Groundwater Quality Trend Monitoring constituents should include deleterious minerals. On this point, we agree with the Central Valley Water Board’s conclusion that the presence of nitrates at elevated levels (plus general minerals) serves as an indicator of other potential problems associated with irrigated agricultural discharges. (*Id.*, Attach. A, Information Sheet, p. 15.)

¹⁴⁶ Agricultural Expert Panel Report, p. 8.

opportunities for studies of management practice effectiveness, as with the Management Practice Evaluation Program of the General WDRs. But another tool is needed to track the effectiveness of implemented practices in reducing discharges to groundwater under a broader set of regional conditions. Although one such tool may be conducting a soil profile analysis by monitoring soil samples for presence of constituents of concern, obtaining a statistically significant number of samples on an annual basis would be prohibitively expensive.

With this order, we are directing the regional water boards to instead use the multi-year A/R ratio as a proxy for groundwater quality monitoring with regard to nitrogen discharges as the feedback mechanism for determining the effectiveness of nitrogen management practices. The multi-year A/R ratio is both a cost-effective and a reliable methodology for tracking the amount of nitrogen left in the soil over a period of time. The multi-year A/R ratio identifies the upper limit of nitrogen that may enter the groundwater from the soil. Trends in the multi-year A/R ratio are expected to follow changes in management practices on the field, providing a reliable indication of whether management practices are working to reduce the potential for nitrogen loss to groundwater. The multi-year A/R ratio is thus an appropriate metric for determining measurable progress toward ensuring agricultural discharges are not causing or contributing to exceedances of water quality standards in the groundwater. The information obtained through the multi-year A/R ratio in a given area may also subsequently be matched with the groundwater quality trend monitoring data to evaluate and verify the results and conclusions of the methodology.

The multi-year A/R ratio is, of course, specific to nitrogen impact, and the groundwater monitoring provisions of the Eastern San Joaquin Agricultural General WDRs consider impacts from a wider set of constituents and remain an indispensable component of the regulatory program. However, with regard to nitrogen, we expect the multi-year A/R ratio to be the primary tool for management, reporting, and oversight going forward.

8. Surface Water and Groundwater Quality Management Plans

Under the Eastern San Joaquin Agricultural General WDRs, the Third Party proposes and implements a SQMP or GQMP in an area in response to certain triggers indicative of water quality problems related to agricultural discharges to surface water or groundwater. Once triggered, a SQMP or GQMP must have a specific schedule of management practices and tasks to be implemented to achieve compliance with receiving water limitations and a monitoring system designed to measure whether management practice changes are in fact effective at

achieving the requirements of the General WDRs.¹⁴⁷ In general, we do not disturb these provisions because we find that the triggers are appropriate for identifying areas in which additional or alternative management practice implementation and additional monitoring, above and beyond the baseline conditions of the General WDRs, is necessary to address exceedances.¹⁴⁸ However, we remove the references to high and low vulnerability area determinations, except as criteria for prioritization. In the previous section, we declined to expand groundwater monitoring constituents to include pesticides and degradation products from pesticides, but indicated that we would instead rely on data collected by DPR on pesticide impacts. That data is available in GeoTracker.¹⁴⁹ We will add to General WDRs a clarification that a GQMP may be triggered based on exceedances detected through monitoring programs outside the scope of the Eastern San Joaquin Agricultural General WDRs provisions. We will additionally direct that the Executive Officer consider the State Water Board Hydrogeologically Vulnerable Areas and the DPR Groundwater Protection Areas when determining if an area should be subject to a GQMP.¹⁵⁰

The SQMP and GQMPs are primary vehicles for requiring implementation of new and improved management practices under the General WDRs, but reporting on practices implemented with the SQMP and GQMP lacks specificity.¹⁵¹ The Third Party is directed to report “a summary of management plan grower outreach conducted” and a “summary of the degree of implementation of management practices.”¹⁵² But as discussed in the section on Farm Evaluations, we are already strengthening the requirements for reporting of management practice implementation to make it easier to verify the correlation between new or improved management practice implementation and water quality improvements. Because management practice

¹⁴⁷ Eastern San Joaquin Agricultural General WDRs., Attach. B, MRP, Appen. MRP-1, §§ I.C-D, pp. 4-6.

¹⁴⁸ The triggers for the preparation of SQMPs and GQMPs are based on the same criteria as the high vulnerability determinations. Although we have found that the baseline requirements of the General WDRs should be applied uniformly, for purposes of prioritizing areas for additional management practices, the criteria are appropriate.

¹⁴⁹ Although the DPR data in GeoTracker is not available by precise location, the exceedances are correlated with a small enough area to be appropriate as a trigger for a GQMP. See also discussion of DPR’s groundwater quality monitoring program at Eastern San Joaquin Agricultural General WDRs, Attachment A, Information Sheet, p. 17.

¹⁵⁰ Appen. A, Modified Eastern San Joaquin Agricultural General WDRs, § VIII.H.2, pp. 37-38.

¹⁵¹ Over the next several years, we expect that improvements made in response to a high multi-year A/R ratio, rather than in response to a GQMP, to become the primary vehicle for implementing improved management practices addressing nitrate impacts. However, the GQMP, or an equivalent approach, will continue to have a significant role in agricultural regulatory programs in addressing impacts from pollutants other than nitrates. There may also be some fields in areas with conditions -- soil types and depth to groundwater -- that lead to nitrate impacts even with a low multi-year A/R ratio. In those cases, programs would have to rely on the GQMP or an equivalent approach to require improved practices in the area.

¹⁵² Eastern San Joaquin Agricultural General WDRs, Attach. B, MRP, Appen. MRP-1, § I.F, p. 6.

implementation will be reported based on Farm Evaluation submissions and because the Central Valley Water Board may thus review the management practice implementation of those Members required by an SQMP or GQMP to implement more stringent requirements, we will not make revisions to the SQMP or GQMP reporting requirements themselves.

The directed revisions are indicated at Appendix A, Modified Eastern San Joaquin Agricultural General WDRs, section VIII.H.2, pages 37-38 and footnotes 38-39.

9. Monitoring and Reporting Requirements and Water Code Section 13267

The revisions we have directed in the above sections expand the monitoring and reporting requirements of the General WDRs. Water Code section 13267 states that “[t]he burden, including costs, of [monitoring and reporting] shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports.” This order revises the monitoring and reporting requirements of the General WDRs primarily as follows: (1) Members in low vulnerability areas must now submit annual Farm Evaluation Forms, obtain certification of the INMP, and submit INMP Summary Reports (these requirements are phased in to allow additional time for Members exempt under the General WDRs); (2) Members must fill out a Farm Evaluation that is expanded modestly from the Farm Evaluation currently used as a template; (3) Members must include irrigation-related information on the INMP and the INMP Summary Report; (4) the Third Party must identify by location the field-level data on management practice implementation from the Farm Evaluations (the General WDRs already require submissions to the Central Valley Water Board of this data, but identified by township); (5) Members must substitute the recording and reporting of AR data for recording and reporting of data supporting the nitrogen consumption ratio; (6) the Third Party must take the additional step of submitting to the Central Valley Water Board the data it receives from the INMP Summary Reports; (7) all Members must collect two initial water quality samples from on-farm drinking water wells; some Members may have an obligation for annual sampling and some Members may be required to provide notification of high nitrate levels. We find that the additional costs and burden associated with these revisions are not substantial.

We also find that the non-substantial additional burden bears a reasonable relationship to the benefits to be obtained from the expanded monitoring and reporting requirements. These benefits have been discussed at length in the sections above. In brief summary, the data reported is expected to be used as follows:

- The multi-year A/R ratio will provide the Member and the Third Party with a reliable metric for any field-level nitrogen over-application and will more effectively target Third Party follow up for potential nitrate impacts.

- The management practice implementation data and the AR data will allow the Central Valley Water Board 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.
- The AR data will enable the Central Valley Water Board to determine appropriate multi-year A/R ratio ranges by crop for potential incorporation into future regulatory programs.
- The drinking water well data will allow for notification of users consuming drinking water with nitrate levels above the public health standards.
- The Central Valley Water Board will be able to correlate management practice implementation data with multi-year A/R ratio data, surface water quality monitoring data, and groundwater quality monitoring (including drinking water well) data for use in statistically valid analyses to:
 1. Identify effective management practices to minimize impacts to surface water and groundwater generally;
 2. Identify effective management practices to reduce nitrate loading specifically;
 3. Identify ineffective management practices.
- The Central Valley Water Board may use the correlated data set 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).
- The correlated data set will be available to researchers to conduct relevant studies that may help advance the science supporting future developments in the regulatory program, to local agencies to support groundwater quality management efforts, and to cities, counties, and non-governmental organizations to aid in anticipating areas, especially disadvantaged communities, that may need drinking water assistance.

10. Direction to Central Valley Water Board Regarding Use of Submitted Data

As a result of the revisions we have directed in the above sections, the Central Valley Water Board will receive two data sets commencing in May of 2019, in addition to the water quality monitoring data submitted to the Central Valley Water Board under the existing Eastern San Joaquin Agricultural General WDRs: a data set with management practice implementation reported by Members on the Farm Evaluation and a data set with A/R ratios reported by Members on the INMP Summary Report. We direct the Central Valley Water Board to use the data in several specific ways.

First, the Central Valley Water Board is directed to use the data to verify the accuracy and completeness of the analyses and summaries submitted by the Third Party based on the Farm Evaluations and the INMP Summary Reports. Second, the Central Valley Water Board is directed to use the data to confirm that the Third Party is appropriately following up with its Members, including those with high multi-year A/R ratios, those failing to implement appropriate management practices, and those that fail to timely submit required reports. Third, the Central Valley Water Board is directed to evaluate the correlation between management practice

implementation data, A/R ratios, and water quality monitoring data. The evaluation should be designed to provide useful information regarding the effectiveness of current management practices in reducing over-application of nitrogen and in protecting surface water and groundwater quality.

Finally, we direct the Central Valley Water Board, in consultation with the Third Party and other coalitions formed under the Central Valley irrigated lands regulatory program, to evaluate the AR data submitted by the Third Party for the purposes of developing acceptable ranges for the multi-year A/R ratio target values for crops grown in the Eastern San Joaquin River Watershed. The Central Valley Water Board is directed to develop, in coordination with the State Water Board and other regional water boards, target values for each crop within three years of the availability of the nitrogen removed coefficient for that crop. It is expected that the multi-year A/R ratio target values will be further refined over time for different conditions (e.g., irrigation method, soil conditions) for each crop.

The Central Valley Water Board is directed to report annually to the State Water Board commencing September 1, 2019, on data received and progress toward identifying effective management practices and developing acceptable ranges for multi-year A/R ratio target values.

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. That determination will be informed by the data collected and the research conducted in the next several years. If we move forward with a new regulatory approach in the future, we expect to do so only after convening an 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.

11. Summary

We have directed significant revisions to the Eastern San Joaquin Agricultural General WDRs in the above discussions. With those revisions, the Modified General WDRs have the following key components:

1. The Modified General WDRs require compliance with receiving water limitations that prohibit discharges from causing or contributing to an exceedance of applicable water quality objectives, unreasonably affecting applicable beneficial uses, or causing or contributing to a condition of pollution or nuisance. The Members must show immediate compliance with the receiving water limitations except where the Member is implementing a SQMP or a GQMP for specified waste parameters in accordance with an approved time schedule.
2. The Modified General WDRs' first step in achieving compliance with the receiving water limitations is to impose baseline requirements on all Members:

- Members must implement management practices that minimize waste discharge offsite in surface water, minimize percolation waste to groundwater, and protect wellheads from surface water intrusion. Members plan and document the management practices by preparing a Farm Evaluation, an Erosion and Sediment Control Plan, and an INMP. Members participate in outreach activities to learn about management practice options.
 - Members report these management practices at the field level through submission of the Farm Evaluation and the INMP Summary Report to the Third Party. The INMP Summary Report also reports on the AR data of the Member by field.
3. The Modified General WDRs' second step in achieving compliance with the receiving water limitations is to impose additional requirements on Members where there are indications of water quality problems:
- Where a Member reports a high multi-year A/R ratio, the Member must to obtain additional training or employ an expert for certification of the INMP.
 - Where surface water or groundwater quality monitoring required to be conducted by the Third Party shows an exceedance, the Third Party must prepare a SQMP or GQMP that imposes additional management practice implementation requirements on Members in the area.
4. The Modified General WDRs' third step in achieving compliance with the receiving water limitations is to verify that implemented management practices are effective in addressing water quality problems.
- The Third Party submits the field-level data from the Farm Evaluations and the INMP Summary Reports by location to the Central Valley Water Board.
 - The Central Valley Water Board correlates the field-specific management practice implementation data, the AR data, and available water quality monitoring data using the location identifier.
 - The correlated data set allows the Central Valley Water Board to verify that identified Members are implementing additional management practices and that such implementation is leading to either an improved multi-year A/R ratio or improved water quality results.
 - The correlated data set additionally allows the Central Valley Water Board to verify that the Third Party is identifying the appropriate set of Members for follow up and additional requirements.
 - Finally, the correlated data set allows the Central Valley Water Board to identify trends in water quality, both degradation and improvement, and to associate the trends with management practice implementation so that a more complete set of information regarding the effectiveness of management practices and of the program as a whole is available.

We find that the approach in the Modified Eastern San Joaquin Agricultural General WDRs complies with the Water Code and of the Nonpoint Source Policy. The Modified General WDRs require compliance with receiving water limitations, but accomplish that compliance through implementation of management practices and through implementation of improved management practices where Members are not in compliance with the receiving water

limitations. The Modified General WDRs ensure that the Third Party and the Central Valley Water Board have the feedback mechanism needed to link management practice implementation to water quality results so that the effectiveness of the management practices required can be verified. As a result, we find that there is a high likelihood that the Modified Eastern San Joaquin Agricultural General WDRs will lead to attainment of the receiving water limitations.

B. Compliance with the Antidegradation Policy

The Environmental Petitioners argue that the Central Valley Water Board failed to comply with the Antidegradation Policy in many respects when it adopted the Eastern San Joaquin Agricultural General WDRs. As explained above, several of these contentions are more appropriately considered under the rubric of compliance with the Water Code and the Nonpoint Source Policy in Section II.A of this order. By its terms, the Antidegradation Policy applies only to waters that are high quality; it supplements the Water Code requirements discussed above by adding additional antidegradation requirements that apply if the receiving waters are considered to be high quality. We will discuss the Environmental Petitioners' remaining arguments that relate only to high quality waters in this section.

High quality waters are those surface waters or areas of groundwater that have a baseline water quality better than required by water quality control plans and policies. The Antidegradation Policy required the Central Valley Water Board to issue WDRs that maintain the high quality of those waters unless it finds that any degradation of water quality (1) will be consistent with maximum benefit to the people of the state; (2) will not unreasonably affect present or probable future beneficial uses of such water; and (3) will not result in water quality less than prescribed in water quality control plans or policies. In addition, the WDRs must require that discharges to high quality waters result in the best practicable treatment or control 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. We have already addressed the requirements to not unreasonably affect beneficial uses, not result in water quality less than the quality specified by water quality objectives, and not cause a pollution or nuisance in Section II.A, above. While we found merit in several of the Environmental Petitioners' contentions discussed above and accordingly made several modifications to the General WDRs, we find no merit in the remainder of their contentions discussed below. To the contrary, we find that the Central Valley Water Board properly identified and complied with the remaining requirements of the Antidegradation Policy when it adopted the Eastern San Joaquin Agricultural General WDRs.

1. Application of Antidegradation Policy to Nonpoint Source Discharges

The State Water Board has, to date, provided relatively little specific direction to the regional water boards on how to apply the Antidegradation Policy to nonpoint sources.¹⁵³ The Nonpoint Source Policy's only reference to the Antidegradation Policy simply states that nonpoint source control implementation programs must be designed to meet water quality requirements, which include "water quality objectives established to protect beneficial uses and any higher level of water quality needed to comply with the State's antidegradation policy."¹⁵⁴ We recently explained that a traditional antidegradation analysis for a discrete point source discharge has limited value when considering antidegradation in the context of storm water discharges from diffuse sources, conveyed through multiple outfalls, with multiple pollutants impacting multiple water bodies within a region.¹⁵⁵ These same practical considerations also make it inappropriate to apply a discrete point source discharge approach in the context of a general order regulating both surface water and groundwater discharges from irrigated agriculture operations across a large landscape.¹⁵⁶ The Central Valley Water Board included an excellent synopsis of relevant existing guidance, and appropriate findings, regarding the application of the Antidegradation Policy to the Eastern San Joaquin General WDRs in Attachment A.¹⁵⁷ We concur with that synopsis, which is generally applicable to all nonpoint source general orders, and also augment it by further addressing specific nonpoint source antidegradation issues below.

2. Baseline Water Quality

The baseline water quality considered in making the appropriate findings is the best quality of the water since 1968, the year of the adoption of the Antidegradation Policy, or a lower level if that lower level was allowed through a permitting action that was consistent with applicable antidegradation policies.¹⁵⁸ The Environmental Petitioners contend that the Central

¹⁵³ As correctly noted by the Central Valley Water Board, Administrative Procedures Update 90-004 applies to discharges regulated under the federal Clean Water Act's National Pollutant Discharge Elimination System. It does not apply to nonpoint source discharges. *Asociacion de Gente Unida por el Agua v. Central Valley Water Board*, *supra*, 210 Cal.App.4th at 1270.

¹⁵⁴ Nonpoint Source Policy, p.12, AR 36151.

¹⁵⁵ State Water Board Order WQ 2015-0075 (*Los Angeles MS4*), p.27.

¹⁵⁶ The diffuse, landscape level groundwater discharges regulated under the Eastern San Joaquin Agricultural General WDRs are unlike the concentrated discharges from dairy retention ponds and corral areas that were the subject of *Asociacion de Gente Unida por el Agua v. Central Valley Water Board*, *supra*, 210 Cal.App.4th 1255.

¹⁵⁷ Eastern San Joaquin Agricultural General WDRs, Attachment A, Information Sheet, pp. 31-44. Due to its length, we decline to reprint it here. The synopsis, with minor revisions, is included in Appendix A to this order.

¹⁵⁸ State Water Board Order WQ 2015-0075, p.24.

Valley Water Board's assessment of baseline water quality throughout the area regulated by the General Order is too general and vague. We disagree.

When assessing baseline water quality for a general order, we find a general review and analysis of readily available data is sufficient. Regional water boards need not generate new data or take extraordinary steps to search for existing data. It is unusual to find substantial amounts of high quality historical data from the 1970's and 1980's, let alone 1968, for such an extensive areas as that covered by the Central Valley Water Board's Eastern San Joaquin Agricultural General WDR. While new ambient surface water and groundwater quality data are constantly being produced, there will always be substantial data gaps. Generation and synthesis of new data to fill all these gaps would be time intensive and costly, delaying the ultimate implementation of what would likely be a vastly similar program with or without the data. If existing data has already been synthesized or analyzed, or can be done so with minimal effort, then the regional water boards should consider those syntheses or analyses. Regional water boards should not delay the implementation of a regulatory program in order to conduct a comprehensive baseline assessment and analysis -- especially where, as here, the general order imposes essentially the same iterative approach for management practices and other requirements regardless of whether or not the receiving water is high quality.

In almost all cases, it will be impossible for the regional water boards to establish an accurate numeric baseline for potentially hundreds of waterbodies and dozens of waste constituent in an area covered by a general order. Instead, regional water boards must conduct a general assessment of the existing water quality data that is reasonably available. Here, the Central Valley Water Board appropriately assessed thousands of surface water and groundwater data points and concluded that at least some of the surface waters and groundwater in the Eastern San Joaquin River watershed were high quality. Based on this finding, the Central Valley Water Board acted appropriately by then conducting a general antidegradation analysis for the General WDRs.

3. Maximum Benefit

The Central Valley Water Board appropriately found that the degradation allowed¹⁵⁹ by the General WDRs is consistent with the maximum benefit to the people of the state.¹⁶⁰ The Programmatic Environmental Impact Report for the Central Valley Irrigated Lands Regulatory

¹⁵⁹ Contrary to the Environmental Petitioners' assertion, the General WDRs do not automatically authorize all surface waters and groundwater to become degraded up to the water quality objectives. The General WDRs include requirements that dischargers implement management practices that minimize waste discharge offsite in surface water and minimize percolation waste to groundwater, among other requirements.

¹⁶⁰ Eastern San Joaquin Agricultural General WDRs, Attachment A, p. 43.

Program supports this finding, noting that the state depends on Central Valley agriculture for food and that Central Valley communities rely on agriculture for employment.¹⁶¹ The Central Valley Water Board considered social costs of the discharges and reasonably concluded that the General WDRs' requirements to address all exceedances of water quality objectives according to the terms of a time schedule, implement best practicable treatment and control where irrigated agricultural waste discharges may cause degradation, and the inclusion of performance standards that work to prevent further degradation of surface and groundwater quality, should ensure that local communities not incur any additional treatment costs associated with the limited degradation authorized by their Order. As discussed above, while dischargers are working to comply with the time schedule, if monitoring of drinking water wells indicates that MCLs are being exceeded, we expect dischargers that are causing or contributing to the exceedance to provide replacement water to the affected population. Given that the considerable societal benefits outweigh the costs associated with the effects of irrigated agriculture under the Modified General WDRs, any degradation allowed by the Modified General WDRs is consistent with the maximum benefit to the people of the state.

4. Best Practicable Treatment or Control

The Environmental Petitioners argue that the General WDRs fail to demonstrate that discharges to existing high quality waters will result in best practicable treatment or control. The General WDRs require farm evaluations for all growers and development of management plans when trends indicate degradation is threatening beneficial uses.¹⁶² Management plans will evolve over time as monitoring and other feedback leads to new practices being developed and refined as part of the Management Practice Evaluation Program that the General WDRs require. The General WDRs require growers to implement practices found to be protective of groundwater through the Management Practice Evaluation Program. In addition, 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 and identify dischargers whose management practices are less effective. The Modified General WDRs also require implementation of irrigation and nitrogen management plans and use of the multi-year A/R ratio in conjunction with the other management practices required by the Modified General WDRs. We find that these requirements, in combination with the other key components of the Modified General WDRs described in Section II.A.9, satisfy the best practical treatment or control standard. Not only do these requirements

¹⁶¹ Programmatic EIR, Appendix A, AR 31907-32232.

¹⁶² Eastern San Joaquin Agricultural General WDRs, §§ III.B, pp. 24-25, VIII.H.2, pp.33-34, and Attachment A, pp. 41-42.

represent the present best approach in the view of our Expert Panel, we are not aware of any more protective requirements for large scale irrigated agricultural operations elsewhere.

III. ORDER

For the reasons discussed in this order:

1. The Central Valley Water Board shall post and circulate a revised version of the Eastern San Joaquin Agricultural General WDRs as indicated in redline/strike-out format in Appendix A.
2. The Central Valley Water Board shall review and reconsider the provisions of the General WDRs addressing surface water quality monitoring and reopen the General WDRs by March 1, 2017, to adopt a revised program consistent with the direction of this order.
3. Commencing in May 2019, the Central Valley Water Board shall create and use a correlated set of field-level management practice implementation data, AR data, and water quality monitoring data to assist it with 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. Commencing in September 2019, the Central Valley Water Board shall report annually to the State Water Board on data received and progress toward identifying effective management practices and developing acceptable ranges for multi-year A/R ratio target values.

CERTIFICATION

The undersigned, Clerk to the Board, does hereby certify that the foregoing is a full, true, and correct copy of an order duly and regularly adopted at a meeting of the State Water Resources Control Board held on _____.

AYE:

NO:

ABSENT:

ABSTAIN:

DRAFT

Jeanine Townsend
Clerk to the Board