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For Petitioners Asociación de Gente Unida por el Agua (AGUA), Fairmead Community and Friends, and Planada en Accion.

Sent Via: Electronic Submission

BEFORE THE STATE WATER RESOURCES CONTROL BOARD

In the Matter of Waste Discharge Requirements General Order for Growers Within The Eastern San Joaquin River Watershed That Are Members Of The Third-Party Group - Central Valley Region Order No. R5-2012-0116	**PETITION FOR REVIEW**

Pursuant to Section 13320 of California Water Code and Section 2050 of Title 23 of the California Code of Regulations (CCR), Asociación de Gente Unida por el Agua (AGUA), Fairmead Community and Friends, and Planada en Accion, ("petitioners") petition the State Water Resources Control Board ("State Board") to review and amend the final decision of the California Regional Water Quality Control Board for the Central Valley Region ("Regional Board") adopting the Waste Discharge Requirements General Order for Growers Within the Eastern San Joaquin River Watershed That Are Member of

the Third-Party Group ("General Order") on December 7, 2012. See Order No. R5-2012-0116. The issues raised in this petition were raised in timely written comments and direct testimony.

1. NAME AND ADDRESS OF THE PETITIONERS:

Asociación de Gente Unida por el Agua
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2. THE SPECIFIC ACTION OR INACTION OF THE REGIONAL BOARD WHICH THE STATE BOARD IS REQUESTED TO REVIEW AND A COPY OF ANY ORDER OR RESOLUTION OF THE REGIONAL BOARD WHICH IS REFERRED TO IN THE PETITION:

Petitioners seek review of Order No. R5-2012-0116, Waste Discharge Requirements General Order for Growers Within the Eastern San Joaquin River Watershed That Are Member of the Third-Party Group. Copies of the order adopted by the Regional Board at its Dec. 7, 2012 meeting are attached hereto.

3. THE DATE ON WHICH THE REGIONAL BOARD ACTED OR REFUSED TO ACT OR ON WHICH THE REGIONAL BOARD WAS REQUESTED TO ACT:

December 7, 2012.

4. A FULL AND COMPLETE STATEMENT OF THE REASONS THE ACTION OR FAILURE TO ACT WAS INAPPRORPRIATE OR IMPROPER:

Thirteen years after the passage of legislation requiring the Regional Water Boards to review and revise their conditional waivers of waste discharge for irrigated agriculture, and ten years after the legislative deadline to do so, the Regional Board has failed to pass general waste discharge requirements for approximately 3600 subject growers that adequately protect water quality for the beneficial uses of the region. This lapse is particularly grievous in its impact on municipal drinking water use of groundwater, which receives no protection under either the original waiver or the current conditional waiver.

Residents of this region are heavily dependent upon groundwater. According to the State Board's own draft report "Communities Reliant Upon Contaminated Groundwater" 300,000 residents of Stanislaus and Merced Counties rely upon contaminated groundwater. Up to 100,000 people in these two counties rely upon domestic wells.[1]. Today the vast majority of San Joaquin Valley community water systems rely on groundwater as a drinking water source. According to the 2008 Existing Conditions Report, nitrate concentrations in groundwater in the eastern San Joaquin Valley exceeded drinking water standards in approximately 25% of domestic water

[1] Data cited was added to the record in the EJ Comment letter to Central Valley Regional Water Quality Control Board, dated May 21, 2012, signed by California Rural Legal Assistance Foundation, Clean Water Action and Community Water Center.

supply wells, and 23 different pesticides were detected in 41 of 60 groundwater samples collected.

There is no question that irrigated lands are responsible for a significant share of this nitrate contamination and that current practices on irrigated lands continue to contribute to nitrate pollution of groundwater used as a source of drinking water. The Existing Conditions report makes that finding[2], which has been reinforced by Thomas Harter and Jay R. Lund in their report, *Addressing Nitrate in California's Drinking Water, With a Focus on Tulare Lake Basin and Salinas Valley Groundwater*, Report for the State Water Resources Control Board Report to the Legislature (2012) and all 7 technical reports, *available at* http://groundwaternitrate.oucdavis.edu. That report indicated that contamination is ongoing and that 96% of the nitrate contribution to groundwater in these agricultural areas could be attributed to agriculture. While the report does not measure specific loading in this region, its finding that agriculture is the overwhelming source of contamination must also provide a similar certainty for this region.

The Porter Cologne Water Quality Control Act[3] and the State's Anti-degradation Policy[4] require that the Regional Board issue waste discharge requirements that protect the region's water quality for designated beneficial uses, as set out in the Basin Plans. However, this General Order allows the maximum amount of groundwater degradation and even pollution to continue from the region's approximately 835,000 acres of irrigated

[2] *Irrigated Lands Regulatory Program, Existing Conditions Report*, Page 4-223-224, Central Valley Regional Water Quality Control Board, 2008

[3] California Water Code §§ 13000 et seq.

[4] Resolution 68-16.

lands in contravention of the Basin Plan, State Anti-degradation Policy, and the Porter Cologne Water Quality Control Act.[5]

In doing so, the General Order violates California Law by failing to comply with the State's Anti-degradation policy, permits pollution and nuisance in violation of the Water Code, unlawfully delegates authority exclusively held by the Board to the Executive Officer and disproportionately impacts low-income, communities of color[6], in violation of California's Civil Rights and Fair Housing Laws.

Petitioner's written and oral testimony before and during the December 7, 2012 hearing clearly outline the failures of the General Order to adequately protect human health, particularly with regard to groundwater degradation. The comment letters and power point presentations presented to the Regional Board are attached hereto. The arguments contained in those comments are outlined below.

I. This general WDR will allow for degradation and even pollution of groundwater quality, in violation of the State's Anti-degradation Policy and state law.

The Anti-degradation Policy requires that the Regional Board set waste discharge requirements that will maintain the highest water quality consistent with the maximum benefit to the people of the State.[7] Specifically, the highest water quality that has existed

[5] See California Water Code §§ 13240, 13241, and 13263, requiring that waste discharge requirements implement the relevant water quality control plans, including the Basin Plans, which in turn include the Anti-degradation Policy, as well as water quality objectives.

[6] Data cited was added to the record in the EJ Comment letter to the Central Valley Regional Water Quality Control Board dated September 27, 2010, signed by Community Water Center et.al.

[7] Resolution 68-16 states,

> Any activity which produces or may produce a waste or increased volume or concentration of waste and which discharges or proposes to discharge to existing high quality waters will be required to meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that (a) pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained.

since 1968[8] (Asociacion de Gente Unida por el Agua v. Central Valley Regional Water Quality Control Bd. (2012) 210 Cal. App. 4th 1255, 1270) is to be maintained unless it has been demonstrated to the State that any change in water quality 1) will be consistent with the 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 state policies.[9] Furthermore, any activity that produces or may produce a waste or increased volume or concentration of waste and which discharges or proposes to discharge to existing high quality waters must meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained.[10]

This WDR allows for discharge into high quality waters while failing to make required findings permitting it to do so by:

1. Failing to establish a baseline for water quality or a mechanism for doing so to determine the level of degradation or change from baseline water quality occurring and permitted by this WDR;

[8] Baseline water quality has been interpreted to mean "the best quality of the receiving water that has existed since 1968,… unless subsequent lowering was due to regulatory action consistent with State and federal antidegradation policies." APU 90-004. Asociacion de Gente Unida por el Agua v. Central Valley Regional Water Quality Control Bd. (2012) 210 Cal. App. 4th 1255, 1270. Additionally, the California Environmental Protection Agency, and the Regional Water Quality Control Board Central Valley Region's, *A Compilation of Water Quality Goals* (August 2003), defines background levels to be maintained as "the concentration of substances in natural waters that are unaffected by waste management practices or contamination incidents." p. 6. Under either interpretation, this general WDR fails to protect baseline water quality.

[9] See California Environmental Protection Agency, Regional Water Quality Control Board Central Valley Region. *A Compilation of Water Quality Goals* (August 2003), p. 6.

[10] State Water Resources Control Board Resolution No. 68-16.

2. Failing to require sufficient monitoring and reporting requirements to detect degradation or enforce water quality limitations;
3. Failing to set appropriate Receiving Water Limitations for compliance to meet the requirements of anti-degradation;
4. Allowing "limited degradation" without making required anti-degradation finding permitting it to do so;
5. Allowing continued degradation, exceedances of water quality objectives, and even nuisance to areas operating under a Ground Water Quality Management Plan;
6. Failing to require Best Practicable Treatment and Control (BPTC).

These failures render the permit, in essence, an improper authorization to continue degradation of our groundwater.

a. <u>The State anti-degradation policy applies to the East San Joaquin River Watershed</u>

The State Board's anti-degradation policy applies whenever (a) there is existing high quality water, and (b) an activity which produces or may produce waste or an increased volume or concentration of waste that will discharge into such high quality water. (Asociacion de Gente Unida por el Agua v. Central Valley Regional Water Quality Control Bd. (2012) 210 Cal. App. 4th 1255, 1268, citing SWRQCB Resolution 68-16) The East San Joaquin River Watershed is predominantly composed of high quality waters and is thus subject to the States Anti-Degradation Policy.

The State's anti-degradation policy defines high quality waters as those where the best quality that has existed since 1968 is better than the water quality objectives, as laid out in the Water Quality Control Plan for the California Regional Quality Control Plan Central Valley Region Sacramento Basin San Joaquin River Basin (Basin Plan).

Despite the failure of the Order to lay out baseline water quality or even include a mechanism to establish baseline quality, as required by law, other data shows that the Eastside San Joaquin River Watershed is nearly entirely made up of high quality waters. The information sheet of the Order (Attachment A) states that only "22% of sampled square mile sections had maximum nitrate levels above applicable water quality objectives."[11] That number presumably over estimates the amount of water that does not qualify as high quality water as defined by the state law since high quality water is that water that was of better quality than water quality objectives at some point since 1968 (Asociacion de Gente Unida por el Agua at 1270). As acknowledged by the information sheet, "it is unknown when the degradation occurred" and water is considered high quality pursuant to the Resolution if it was better than the water quality objective at some point since 1968. Furthermore, the fact that 22% of the water tested above the water quality objective for nitrates has no bearing on whether or not the water is high quality with respect to other constituents.[12]

Therefore, according to the State anti-degradation policy, the region contains high quality water, and, as such, the Order must comply with said policy.

i. The Order applies to activities which produce or may produce a waste or increase in volume or concentration of waste to high quality water

[11] Attachment A to Order R5-2012-0116-Information Sheet, pg. 35
[12] Id.

The order, by its own admission, allows for limited degradation of groundwater[13]. Furthermore, as discussed in greater detail below, its policies allow for the continued degradation of high quality water[14]. Thus, again, the State's anti-degradation policy applies to this order.

II. The Order is in violation of the anti-degradation policy

a. The General Order fails to establish a baseline in violation of the anti-degradation policy

The Board failed to establish a baseline for enforcement of anti-degradation policy, and failed to require any information to establish a baseline to determine levels of degradation occurring and permitted under this permit. When undertaking an anti-degradation analysis, the Regional Board must compare the baseline water quality to the water quality objectives. Asociacion de Gente Unida por el Agua, et al., v. Central Valley Regional Water Quality Control Board 210 Cal. App. 4th 1255, 1270. By failing to establish a baseline, the General Order, ipso facto, makes anti-degradation analysis impossible and is thus violative of the anti-degradation policy.

b. The General Order fails to require sufficient monitoring requirements to track or detect degradation.

The Regional Board finds in the Information Sheet of the General Order that, "Regional trend monitoring of surface water and groundwater together with periodic assessments of available surface water and groundwater information is required to determine compliance with water quality objectives and determine whether any trends in

[13] Order R5-2012-0116, pg. 10, Finding 36
[14] Id., pg. 16, section III.B.

water quality improvement or degradation are occurring[15]." Therefore, the Regional Board is relying on the Trend Monitoring to determine trends and degradation, and yet the monitoring requirements do not provide sufficient information to see any trends or detect degradation for most contaminants.

i. Trend Monitoring Plans do not require monitoring of all Constituents of Concern.

The General Order does not require Trend Monitoring Plans to include all constituents of concern (COCs) related to agricultural discharges in the region – specifically, deleterious minerals, pesticide run-off or degradation products from pesticides. Only through inclusion of these products in trend monitoring wells, can the General order determine actual degradation trends and ensure the General Order adequately protects groundwater from these contaminants.

Similarly, lack of trend monitoring for Contaminants of Concern, particularly pesticides and degradates, means that the Board does not have a mechanism to detect degradation or ensure compliance with limitations for those constituents. The Order requires no monitoring for pesticides or degradates in groundwater.

The Order gives the Executive Officer the authority to require additional monitoring or the development of management plans if it is determined that "irrigated agriculture may be causing or contributing to a trend of degradation of groundwater." But it is unclear how that determination can be made if trend monitoring is only focused on the narrow band of contaminants of concern identified in Table 3 of the Monitoring and Reporting Program[16].

[15] Attachment A to Order R5-2012-0116-Information Sheet, pg. 30

[16] Attachment B to Order R5-2012-0116-MRP Order, pg. 19

In order to meet the requirements of the anti-degradation policy and the basin plan, sufficient monitoring should be required in the General Order for all COCs that are related to agricultural discharges in the region. At a minimum, that means that the General Order must require monitoring of all COC for a region, rather than just the handful required by the order.

ii. The General Order fails to require adequate reporting of nitrogen application despite nitrogen's documented impact on groundwater

The nitrogen ratio is an essential tool for understanding the efficiency of nitrogen use and provides a good basis for comparing operations. However, it does not provide needed information on potential nitrogen loading to groundwater because it does not provide direct information about the amount of nitrogen applied to the surface. This inhibits the ability of the water board to prioritize enforcement based on threats to water quality. In the Existing Conditions Report, staff noted the relationship between nitrogen application and nitrate concentrations in groundwater[17]. The order requires that information on nitrogen application be collected by the grower and reported to the third party coalition, but does not include such reporting in the annual summary report to the Board. The third party coalition is not required to maintain this information in a usable format, and may destroy it after five years, severely limiting the utility of such reporting. Without nitrogen application reporting, and therefore no indicator of nitrogen loading or impact to water quality on a farm basis, the permit lacks the ability to ensure it is complying with the Basin Plan and the anti-degradation policy. Furthermore, it is

[17] *Irrigated Lands Regulatory Program Existing Conditions Report, Groundwater Quality pp 4-223, -224*

critical that nitrogen application reporting apply to all waters – both high and low vulnerability areas – to ensure that there is some mechanism to determine threats to high quality waters to ensure compliance with the anti-degradation policy.

iii. Reporting at a township level does not adequately monitor threats to groundwater quality.

The Regional Water Quality Control Board's late change to the geographic unit subject to reporting requirements – township level reporting – further undermines meaningful efforts to protect groundwater. The township-level reporting requirement has no hydrologic justification. A 36-square mile region can straddle groundwater basins, contain plumes of contamination and dozens of crops with differing nitrogen application rates. This gross level of reporting will make it difficult, if not impossible, to confirm compliance with the Order. A better example is the United States Geological Survey (USGS), which served as the technical lead for the State Water Board's Priority Basin Project, part of its Groundwater Ambient Monitoring and Assessment Program, beginning in 2004. The USGS was responsible for water quality sampling in California's groundwater basins to characterize the water quality in each basin and identify trends in groundwater quality. USGS used a grid of one well per square mile to provide an accurate overview of the aquifer.

Additionally, reporting of nitrogen use efficiency should be required for all waters, not just high vulnerability areas[18]. In order to ensure that all high quality waters are adequately protected under the anti-degradation policy, there must be a mechanism to determine whether degradation is occurring and a way of determining whether BPTC is

[18] Order R5-2012-0116, Pg.26, section VII.D.2.

being implemented. (Asociacion de Gente Unida por el Agua v. Central Valley Regional Water Quality Control Bd. (2012) 210 Cal. App. 4th 1255, 1274.) Currently, the requirement to report nitrogen use efficiency ratios is only for high vulnerability areas, leaving most high quality waters in the region without any adequate or effective indicator of BPTC or where nitrogen use efficiency may indicate a threat to groundwater quality.

d. The General Order fails to set appropriate Receiving Water Limitations for compliance to meet the requirements of anti-degradation.

The Receiving Water Limitations[19] in the General Order fail to comply with Anti-degradation Policy or the Basin Plans, and do not support the findings in the order. Far from only allowing, "limited degradation" the order only requires that "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 beneficial uses, or cause or contribute to a condition of pollution or nuisance," and then allows at least up to 10 years of continued contribution to exceedances, pollution or nuisance in the footnote attached to those limitations[20]. Allowing contribution to exceedances, pollution or nuisance to occur for 10 years is not consistent with the requirements of the anti-degradation policy or Porter Cologne or the basin plan. While the Board can allow for phased compliance, the board may not authorize time schedules that allow for unnecessary time lag (23 CCR 2231(b)). The California Code of Regulations also makes clear that time schedules are designed to ensure rapid, and not delayed compliance. (22 CCR 2231(d): Time schedules should be periodically reviewed

[19] Order R5-2012-0116 pg.16
[20] Id. Footnote 15

and should be updated, when necessary, to assure the most rapid compliance). Similarly, the undue delay in the Management Practices Effectiveness Report – not due until 2021 – undermines the enforceability of BPTC and violates the Board's duty to ensure rapid compliance through this order. Furthermore, by allowing exceedances and further degradation of groundwater in areas subject to a Groundwater Quality Monitoring Plan, the Order permits not only the highest possible levels of degradation without an anti-degradation analysis, but pollution and nuisance for up to 10 years, which is prohibited by the anti-degradation policy, and inconsistent with the findings of the order.

e. The General order allows for degradation without making required findings permitting it do so.

The General Order, on its face, allows for degradation in excess of and in violation of that allowed by the state anti-degradation policy. As noted above, Finding 36 states that "this Order authorizes limited degradation of high quality waters, not to exceed water quality objectives…" The very order sets out the wrong standard for compliance with state anti-degradation law.

State anti-degradation law requires that baseline water quality[21] is to be maintained unless it has been demonstrated to the State that any change in water quality 1) will be consistent with the 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

[21] Baseline water quality has been interpreted to mean "the best quality of the receiving water that has existed since 1968,… unless subsequent lowering was due to regulatory action consistent with State and federal antidegradation policies." APU 90-004. Associacion de Gente Unida Para el Agua, at 1270. Additionally, the California Environmental Protection Agency, and the Regional Water Quality Control Board Central Valley Region's, *A Compilation of Water Quality Goals* (August 2003), defines background levels to be maintained as "the concentration of substances in natural waters that are unaffected by waste management practices or contamination incidents." p. 6. Under either interpretation, this general WDR fails to protect baseline water quality.

not result in water quality less than prescribed in state policies.[22] Any activity which produces or may produce a waste or increased volume or concentration of waste and which discharges or proposes to discharge to existing high quality waters will be required to meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that (a) pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained.

Thus, analysis of whether the General Order violates the anti-degradation policy is a 3 step process: (1) Will baseline water quality be maintained; (2) If not, has the board demonstrated that the change in water quality (a) will be consistent with the maximum benefit to the people of the state; (b) will not unreasonably affect present or probable future beneficial uses of such water; and (c) will not result in water quality less than prescribed in state policies and (3) has the Board established that the activities subject to this order that will or may produce a waste or increased volume or concentration of waste and which discharges or proposes to discharge to existing high quality waters will be required to meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that (a) pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained.

i. Baseline water quality will not be maintained

[22] See California Environmental Protection Agency, Regional Water Quality Control Board Central Valley Region. *A Compilation of Water Quality Goals* (August 2003), p. 6.

Baseline water quality has been interpreted to mean "the best quality of the receiving water that has existed since 1968,… unless subsequent lowering was due to regulatory action consistent with State and federal anti-degradation policies." APU 90-004. *See* Associacion de Gente Unida Para el Agua, at 1270. Additionally, the California Environmental Protection Agency, and the Regional Water Quality Control Board Central Valley Region's, *A Compilation of Water Quality Goals* (August 2003), defines background levels to be maintained as "the concentration of substances in natural waters that are unaffected by waste management practices or contamination incidents." p. 6. Under either interpretation, this general WDR fails to protect baseline water quality. The WDR fails entirely to protect baseline water quality by failing to establish a baseline or set in place a mechanism for doing so.

ii. The Order Fails to Demonstrate that the Benefits of Degradation outweigh its Costs

The Order fails to demonstrate that a change in water quality (a) will be consistent with the maximum benefit to the people of the state; (b) will not unreasonably affect present or probable future beneficial uses of such water; and (c) will not result in water quality less than prescribed in state policies.

1. The Order fails to demonstrate that the change in water quality will be consistent with the maximum benefit to the people of the state.

The WDR states conclusively that "limited degradation" is consistent with maximum benefit to the people of the state.[23] A determination as to whether degradation is consistent with maximum benefit to the people of the state is made on a case-by-case basis and is based on considerations of reasonableness under the circumstances at the site. Factors to be considered include (1) past, present, and probable beneficial uses of the water (specified in Water Quality Control Plans); (2) economic and social costs, tangible and intangible, of the proposed discharge compared to the benefits, (3) environmental aspects of the proposed discharge; and (4) the implementation of feasible alternative treatment or control methods.[24] The Board, in this WDR engaged in no such analysis, much less demonstrated that any change in water quality will be consistent with the maximum benefit to the people of the state. Furthermore, the Board neither demonstrated that the change in water quality would not unreasonably affect present or probable future beneficial uses of such water; nor result in water quality less than prescribed in state policies. To the extent that it conclusively stated such, monitoring and reporting requirements, as discussed above, fail to ensure that this will be the case.

2. Allowance of "limited degradation" lacks certainty necessary to assess compliance with State Law

Additionally, the Board's conclusive and inoperably vague allowance of "limited degradation" makes any analysis of the extent to which such degradation will result in the maximum benefit to the people of the state impossible.[25] There must be a finding that

[23] Order R5-2012-0116 pg.10, and Attachment A to Order R5-2012-0116-Information Sheet, pg. 42.
[24] See [State Board] Order No. WQ 86-17, at 22,
[25] The determination of what level of degradation is in the maximum benefit to the people of the state is made on a case-by-case basis and is based on considerations of reasonableness under the circumstances at

sets forth the change to the baseline – that is the level of water quality that is consistent with the maximum benefit to the people of the state – and that level must be protected. There is no finding as to what that level is.

The finding that "limited degradation" is allowed is far too vague to mean anything. As discussed above, neither the Regional Board nor the public has any idea of how much degradation is being allowed, particularly given that while the finding is only for "limited degradation," the General Order actually allows every ounce of degradation up to the water quality objectives, and even then to exceed water quality objectives for up to 10 years. Fundamentally, the General Order is missing adequate findings and consideration for the Board to make an informed decision.

If the General Order allows degradation up to water quality objectives and only sets that as the enforceable compliance goal, then it is permitting all degradation from baseline up to just below the level of exceedance – far from limited degradation, this is the maximum amount of degradation possible to permit. If the Board wants to permit this maximum level of degradation, it needs to determine that this is the highest water quality for the maximum benefit to the people of the state. There is no such finding, no analysis or basis for such a finding.

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the site. Factors to be considered include (1) past, present, and probable beneficial uses of the water (specified in Water Quality Control Plans); (2) economic and social costs, tangible and intangible, of the proposed discharge compared to the benefits, (3) environmental aspects of the proposed discharge; and (4) the implementation of feasible alternative treatment or control methods. With reference to economic costs, both costs to the discharger and the affected public must be considered. 'Cost savings to the discharger, standing alone, absent a demonstration of how these savings are necessary to accommodate "important social and economic development" are not adequate justification' for allowing degradation. See [State Board] Order No. WQ 86-17, at 22, n.10. With respect to social costs, consideration must be given to whether a lower water quality can be abated through reasonable means. In other words, the lower water quality should not result from inappropriate treatment facilities or less than-optimal operation of treatment facilities. Local ordinances concerning water quality or nuisance and the use of the water as a water supply may also be factors in determining maximum benefit to the people."(St. Water Res. Control Bd., Guidance Memorandum (Feb. 16, 1995) pp. 4-5.

3. The Order Fails to demonstrate that "limited degradation" will not unreasonably affect present or probable future beneficial uses of such water.

Furthermore, the effective meaning of "limited degradation" that allows for degradation up to water quality objectives, means that the Order violates anti-degradation policy by failing to protect the beneficial use of groundwater for drinking water. Setting the "limited degradation" level at essentially the same point as the level of impairment creates a standard that will ensure impacts to domestic water users and other beneficial uses as they have to ensure reliable access to safe sources. Public water systems charged with treating drinking water to meet drinking water standards do not treat the water to just below the standard, but set a target well below that level to ensure that fluctuations in treatment or in the quality of the source water do not result in an exceedance of water quality standards. Additionally, systems that rely on source water that is near an MCL must meet significantly increased monitoring burdens to ensure that levels do not exceed an MCL (for example, if a system relies on water that is over ½ the MCL for nitrate they are required to conduct much more frequent monitoring, which can mean significant costs to systems and consumers). This order must set a goal for limited degradation far enough below that water quality objective to ensure that high quality waters do not exceed water quality objectives and beneficial uses are not impaired.

iii. The WDR fails to establish that discharges to existing high quality waters will result in the best practicable treatment or control (BPTC) of the discharge necessary to assure that (a) pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained.

Furthermore, for the same reasons listed above, the WDR fails to meet the best practicable treatment and control requirements of the anti-degradation policy. This general WDR will allow for discharge of pollutants above baseline, or highest quality, levels into the region's groundwater,[26] without imposing the best practicable treatment or control ("BPTC") requirements, which by definition require first determining that it will not result in degradation that will unreasonably affect present or probable beneficial uses and that it will result in maintaining the highest water quality consistent with maximum benefit to the people of the State.[27] As by definition BPTC cannot result in pollution or nuisance, while the requirements of the order expressly allow for those results for up to 10 years through a groundwater management plan, the permit on its face fails to meet BPTC requirements. For the reasons outlined above, this permit not only fails to make the necessary findings and determinations, but fails to require sufficient requirements to ensure those standards can be met. As such, this permit does not require the BPTC or adequate performance standards or sufficient reporting and monitoring requirements to protect high quality groundwater.

In particular, in the information sheet of the General Order, the Regional Board states that the SQMPs/GQMPs are reviewed periodically[28] to determine whether adequate progress is being made to address the degradation trend or impairment. However, there is not only no determination of baseline, but there is no determination of the level of degradation allowed beyond a vague reference to "limited degradation." Fundamentally, the General Order fails to set the right goal and then fails to be able to measure whether it

[27] State Water Resources Control Board Resolution No. 68-16.
[28] Attachment A, pg. 36

is meeting that goal. Therefore, by definition, this cannot be best practical treatment and control.

III. The Order allows pollution and nuisance to groundwater in violation of the anti-degradation policy and state law.

The State anti-degradation policy prohibits occurrence of pollution or nuisance as a result of discharge (Resolution 68-16). According to the Water Code, "Pollution" means an alteration of the quality of the waters of the state by waste to a degree which unreasonably affects ...: (A) The waters for beneficial uses. (Cal. Water Code 13050(l)(1)). For all the reasons that the Order violates the state's anti-degradation policies, the Order, too, will result in Pollution as defined by the Water Code. Such reasons include but are not limited to:

a) Explicitly allow "limited degradation" up to the water quality objectives without the required findings permitting such "limited degradation."

b) Allowing discharges to contribute to exceedances of water quality objectives and nuisance for up to 10 years in areas subject to GQMPs permits.

c) Failure to establish a baseline to assess and analyze degradation or the impacts of discharge.

d) Failure to establish adequate monitoring and reporting procedures to adequately monitor degradation or potential impacts to beneficial uses.

"Nuisance" means anything which is (1) Is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property, (2) Affects at the same time an entire community or neighborhood, or any considerable number of persons, (3) Occurs during, or as a result of, the treatment or disposal of wastes. (Cal. Water Code 13050(m).

By allowing degradation of groundwater up to the water quality objective, by disregarding relevant public health goals in favor of often less protective water quality objectives, by failing to monitor for all constituents of concern, and allowing continued discharger contribution to exceedences of water quality objectives and nuisance for up to the next ten years, the Order allows for discharge of waste that is both injurious to health and interferes with the enjoyment of property for those whose domestic water quality will be impacted.

Separate and apart from prohibitions in the State's anti-degradation policy, California law prohibits outright pollution and nuisance with respect to the state's groundwater. (Cal. Water Code Section 13050 *et seq.*) These prohibitions in state law are applicable to both high quality waters, subject also to the anti-degradation policy and other waters. Thus to the extent that this order permits discharges that constitute nuisance or pollution, as discussed above, this Order violates California law with respect to its treatment of and failure to protect all groundwater in the East San Joaquin River Watershed.

IV. <u>The substantive requirements of this order are not subject to review and approval of the Board.</u>

The Board may not delegate authority to the Executive Officer to issue, modify, or revoke waste discharge requirements. Cal. Water Code Section 13223(a)(2). By approving a General Order without specific requirements and instead just containing deadlines for the Executive Officer to approve the requirements without board or public review in the future, the Board has effectively attempted to move its authority and responsibility for issuing waste discharge requirements to the Executive Officer.

In this WDR, the Board essentially approved a framework of documents -- and timelines for their preparation -- to implement the program that have yet to be developed. A number of those documents and plans will set the substantive requirements of this order, yet this Order delegates the authority for approving those documents to the Executive Officer without any review or oversight by the Board. We have no idea what this order will actually look like or accomplish 2 years, 5 years, or 10 years from now. Specifically, these essential documents and determinations include the following: 1) Groundwater Quality Assessment Report, 2) Establishment of and changes to high and low vulnerability areas for groundwater, 3) Trend Monitoring Plan, 4) Management Practices Evaluation Program. By essentially reserving the substantive components for subsequent reports – all subject to Executive Officer review and approval - the Board has effectively delegated waste discharge requirements to the Executive Officer in violation of the water code. Cal. Water Code Section 13223(a)(2)

The Groundwater Quality Assessment Report (GAR) is a foundational document of the order; multiple reports and requirements tier off its contents, and its adequacy will determine the extent of other planning efforts, including: (1) the designation of high and

low vulnerability areas which are based in existing information compiled in the GAR, and which determine the level of oversight and protection provided by the regulations, (2) the constituents and locations to be tracked through the Trend Monitoring Plan, and (3) the focus and priorities of the Management Practices Evaluation Program. The establishment of high and low vulnerability areas sets monitoring and reporting requirements for growers and determines whether discharge limits must be adhered to. The Trend Monitoring Plan determines which constituents will be tracked for purposes of complying with the anti-degradation policy. The Management Practices Effectiveness Program determines the effectiveness of practices enacted to meet the discharge limitation of the order and therefore defines BPTC.

Instead the only documents available for public review (but not Board approval) are the reporting templates and the Surface and Groundwater Quality Management Plans. These plans and designations without any Board or public review listed above are so central and substantively determinative of the actual waste discharge requirements that will be imposed, that, by excluding them from public review, the Board has effectively illegally delegated authority to staff or the Executive Officer to establish waste discharge requirements in violation of Porter Cologne Cal. Water Code Section 13223(a)(2)and the sunshine laws of this state. Additionally, the General Order allows for reduced vulnerability designation and reduced reporting requirements without Board or public review or approval. Specifically, the General Order allows that "after 1 March 2017, the Executive Officer may approve reduction in the frequency of updates and submission of Farm Evaluations, if the third-party demonstrates that year to year changes in Farm Evaluation updates are minimal, and the Executive Officer concurs that the practices

identified in the Farm Evaluations are consistent with practices that, when properly implemented, will achieve receiving water limitations or best practicable treatment or control, where applicable.[29]" The initial Farm Evaluations will be completed between 2014 and 2017, depending upon the size of the farm and whether it is located in a low or high vulnerability area. That would provide just 0-3 years of information on which to base a decision to reduce the frequency, which is inadequate to determine trends and justify any reductions. A decision to relax reporting requirements is a significant amendment that should be considered and approved in a public process by the Water board, or at least allow for public review and input.

Similarly, the General Order allows that, "after 1 March 2017, the Executive Officer may approve reduction in the frequency of submission of Nitrogen Management Plan Summary Reports, if the third-party demonstrates that year to year changes in Nitrogen Management Summary Reports are minimal. and the Executive Officer concurs that the implemented practices are achieving the performance standard (see section IV.B.8).[30]" This reduction in reporting is in High-Vulnerability areas. Initial Nitrogen Management Plans will be completed between 2014 and 2017, depending upon the size of the farm and whether it is located in a low or high vulnerability area. That would provide just 0-3 years of information on which to base a decision. Again, a decision to relax reporting requirements is a significant amendment that should be considered and approved in a public process by the Water Board or at least have public review and input.

[29] Order R5-2012-0116, pg.23 VII.B.2
[30] Order Pg.26, VII.D.1

V. This general WDR will disproportionately impact low income communities and communities of color because it does not protect groundwater from continued degradation.

The general WDR will allow further groundwater degradation, particularly nitrate contamination, which is the number one cause of drinking water well closure in the State. Already Latino and low-income communities are more likely to have contaminated drinking water in the Central Valley region, and this is most often due to high levels of nitrate in the groundwater.[31] Specifically in the San Joaquin Valley, small communities with high concentrations of Latinos are disproportionately impacted by nitrate contamination from agricultural waste, meaning Latino communities are more likely to have higher levels of nitrates in their drinking water[32]. Additionally, Latino and low-income communities are less likely to have health care and access to treatment or substitute water sources, and are more likely to be exposed to cumulative impacts through other media (such as air).

By disparately impacting low income, communities of color, the Board's failure to enact groundwater protections, violates our states commitment to equality and freedom from discrimination as laid out in California Government Code, Section 11135 which states that no person in the State of California shall, on the basis of race, national origin, ethnic group identification, religion, age, sex, sexual orientation, color, or disability, be unlawfully denied full and equal access to the benefits of, or be unlawfully subjected to discrimination under, any program or activity that is conducted, operated, or administered

[31] Environmental Justice Coalition for Water, *Thirsty for Justice: A People's Blueprint for California Water* (2005)

[32] Carolina Balasz, et.al., *Social Disparities in Nitrate Contaminated Drinking Water in California's San Joaquin Valley*, Environmental Health Perspectives June 2011. Document added to record in draft form in EJ comment letter on ILRP PEIR dated September 27, 2010.

by the state or by any state agency. Furthermore, the Board's failure to enact groundwater protections threatens California's Fair Employment and Housing Act, California Government Code 12900, et seq., which guarantee all Californians the right to hold and enjoy housing without discrimination based on race, color or national origin.

The California Government Code Section 65008 renders null and void any action undertaken by a local governmental agency that denies to any individual or group of individual the enjoyment of their residence, landownership or tenancy. The Board's decision, if it fails to protect the drinking water for California's most vulnerable communities, may be null and void.

Therefore, this General Order would disproportionately impact low-income communities and communities of color, in violation of California Government Code Section 11135, Fair Employment and Housing Act and Cal. Gov. Code Section 65008.

5. THE MANNER IN WHICH THE PETITIONERS ARE AGGRIEVED.

Petitioner AGUA is an unincorporated association made up of residents of Central Valley communities, as well as community-based and non-profit organizations working in the Central Valley. The mission of AGUA is to ensure that all Central Valley residents have access to safe, clean and affordable water.

Many of the members' drinking water sources have high levels of nitrate and pesticide contamination, due in large part to contamination from agricultural activities, and many others have had their drinking water quality degraded and are at risk for exceeding water standards in the future as a result of continued agricultural discharges.

Because AGUA members and other residents are low-income, many have no choice but to drink contaminated water, for which they pay a monthly water bill, while many others must spend additional money to buy bottled water for their family. Some residents spend up to 10% of their household income on drinking water alone because of nitrate and/or pesticide contamination.

Many of the small water systems in the communities in which AGUA members reside are forced to spend up to $1 million for a new well when possible, or $14 million for groundwater treatment when the entire aquifer has been contaminated. This means significant increased costs to AGUA members, as well as other similarly situated residents.

Petitioner Fairmead Community and Friends is an unincorporated association made up of residents of Madera County, primarily the community of Fairmead, an unincorporated community in the County of Madera. Fairmead's water has tested above the MCL for nitrates.

Petitioner Planada en Accion is an unincorporated association made up of residents of the unincorporated community of Planada in Merced County. The community of Planada relies on high quality groundwater for its drinking water. The community is a low income community.

Nitrate in drinking water is an acute contaminant that can cause death in infants and birth defects, impaired thyroid and spleen and kidney disease, and which has been linked to cancer. The primary sources of nitrate contamination include agricultural discharges into groundwater.

Petitioners' health, interests and finances are directly harmed by the failure of the Regional Board to develop an effective and legally defensible program preventing groundwater contamination from irrigated lands.

6. THE SPECIFIC ACTION BY THE STATE OR REGIONAL BOARD WHICH PETITIONERS REQUESTS.

Petitioners seek an Order by the State Board to:

A. Review Order No. R5-2012-0116

B. Either amend the General Order or remand the matter to the Regional Board with an order to amend the general order to address the points outlined above and include at a minimum all of the following conditions:

i. Require the Board to establish baseline water quality, or require the Groundwater Assessment Report or another requirement to provide data to identify the best water quality since 1968 for purposes of applying/enforcing the state's Anti-degradation policy.

ii. Require Trend Monitoring Plans or some other monitoring program to include trend monitoring for all constituents of concern identified in the Groundwater Assessment Report for the watershed, and to identify any degradation that occurs relative to the baseline for the purposes of anti-degradation.

iii. Require nitrogen application reporting, in addition to nitrogen use efficiency ratios for all dischargers (in both high and low vulnerability areas), and require reporting by parcel, discharger, or square mile to ensure there are sufficient data collected to identify

potential threats and impacts to water quality for all high quality waters.

iv. Require Board review and approval of the following key plans, programs and fundamental changes in requirements: (1) Groundwater Quality Assessment Report, (2) Trend Monitoring Plan, (3) Management Practice Evaluation Program, (4) Changes in groundwater vulnerability designations, and (5) Changes in requirements of frequency for farm evaluation plan and nutrient management plan reporting.

v. Delete footnote in the groundwater limitations allowing for up to 10 years compliance for exceedances of WQ objectives, nuisance or pollution and eliminate this in the timetable for compliance (footnote 15, page16, section III.B)

vi. Set clear level of degradation (change from baseline water quality) that is in maximum benefit of the people of the state with sufficient consideration and findings.

vii. Include clear and enforceable limits on degradation in the Receiving Water Limitations and requirements of the Order.

7. A STATEMENT OF THE POINTS AND AUTHORITIES IN SUPPORT OF LEGAL ISSUES RAISED IN THE PETITION.

Petitioner's arguments and points of authority are detailed above and in their comment letters, as well as the testimony and the PowerPoint presentations presented to

the Regional Board, and attached to this petition. Should the State Board have additional questions regarding the issues raised in this petition, the petitioners will provide additional briefing on any such questions.

8. A STATEMENT THAT THE PETITION HAS BEEN SENT TO THE APPROPRIATE REGIONAL BOARD AND TO THE DISCHARGERS, IF NOT THE PETITIONER.

A true and correct copy of this petition was submitted electronically on January 7, 2013 to the Central Valley Regional Board, Care of Ms. Pamela Creedon, Executive Officer.

In addition, a true and correct copy of this petition was electronically circulated to Parry Klassen and Theresa Dunham, as representatives of potential dischargers that may seek coverage under this General Order.

9. A STATEMENT THAT THE ISSUES RAIESD IN THE PETITION WERE PRESENTED TO THE REGIONAL BOARD BEFORE THE REGIONAL BOARD ACTED, OR AN EXPLAINATION OF WHY THE PETITIONER COULD NOT RAISE THOSE OBJECTIONS BEFORE THE REGIONAL BOARD.

The petitioner presented the issues raised in this petition to the Regional Board during or before the December 7, 2012 hearing on the Waste Discharge Requirements General Order for Growers Within the Eastern San Joaquin River Watershed That Are Member of the Third-Party Group.

If you have any questions regarding this petition, please contact Phoebe Seaton at (559) 233-6710 x 315 or Laurel Firestone at (559) 789-7245.

Dated January 7, 2013

Respectfully Submitted,

Laurel Firestone, Community Water Center

For: Phoebe Seaton, CRLA, Inc.

Attorneys for Petitioners, Asociación de Gente Unida por el Agua (AGUA), Fairmead Community and Friends, and Planada en Accion.

Attachments:

1. Order No. R5-2012-0116
2. EJ Comments on draft ILRP PEIR 9/27/10
3. Environmental Health Perspectives , *Social Disparities in Nitrate Contaminated Drinking Water in California's San Joaquin Valley*, 2011 Final published article by Balazs et. al (June 2011) (draft report was referenced in PEIR comments)
4. East San Joaquin River draft order, EJ comments August 6, 2012
5. EJ pesticide memo, August 6, 2012
6. Central Valley Board EJ Presentation, November 30, 2012 powerpoint
7. Central Valley Board EJ Presentation, December 7, 2012 powerpoint

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER R5-2012-0116

WASTE DISCHARGE REQUIREMENTS GENERAL ORDER
FOR
GROWERS WITHIN THE EASTERN SAN JOAQUIN RIVER WATERSHED
THAT ARE MEMBERS OF THE THIRD-PARTY GROUP

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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

Order R5-2012-0116

WASTE DISCHARGE REQUIREMENTS GENERAL ORDER FOR GROWERS IN THE EASTERN SAN JOAQUIN RIVER WATERSHED THAT ARE MEMBERS OF THE THIRD-PARTY GROUP

The California Regional Water Quality Control Board, Central Valley Region (hereafter, Central Valley Water Board or board), finds that:

Findings

SCOPE AND COVERAGE OF THIS ORDER

1 This Order serves as general waste discharge requirements (WDRs) for waste discharges from irrigated lands (or "discharges") that could affect ground and/or surface waters of the state. The discharges result from runoff or leaching of irrigation water and/or stormwater from irrigated lands. Discharges can reach waters of the state directly or indirectly.[1]

2 This Order applies to owners and operators of irrigated lands within the Eastern San Joaquin River Watershed. Either the owner or operator may enroll an irrigated lands parcel under this Order. The owners or operators that enroll the respective irrigated lands parcels are considered members of the third-party representing this area (hereinafter "Members"). The Member is required to provide written notice to the non-Member owner or operator that the parcel has been enrolled under the Order. Enforcement action by the board for non-compliance related to an enrolled irrigated lands parcel may be taken against both the owner and operator. Although the third-party representative has not yet been selected, this Order contains eligibility requirements for a third-party representative and describes the process by which the Executive Officer may approve a request for third-party representation.

3 The Eastern San Joaquin River Watershed is bounded by the crest of the Sierra Nevada Mountain Range to the east, the Stanislaus River Watershed to the north, the San Joaquin River to the west, and the San Joaquin River Basin boundary to the south as identified in the Sacramento and San Joaquin River Basin Plan. This area is referred to as the "Order watershed area" or "third-party area" in this Order. See Figure 1 for a map of the third-party area.

There are some locations within the Eastern San Joaquin River Watershed where it may be more effective for owners and operators of irrigated lands that are not "Members" to enroll under an irrigated lands regulatory program (ILRP) order that recognizes a different third-party representative. Growers are only required to obtain coverage under one ILRP order.

[1] Definitions for "waste discharges from irrigated lands," "waste," "groundwater," "surface water," "stormwater runoff," and "irrigation runoff," as well as all other definitions, can be found in Attachment E to this Order. It is important to note 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 that irrigation water may contain constituents that are considered to be a "waste" as defined by Water Code section 13050(d).

4 "Irrigated lands" means land irrigated to produce crops or pasture used for commercial purposes including lands that are planted to commercial crops that are not yet marketable (e.g., vineyards and tree crops). Irrigated lands also include nurseries, and privately and publicly managed wetlands.

5 This Order is not intended to regulate water quality as it travels through or remains on the surface of a Member's agricultural fields or the water quality of soil pore liquid within the root zone.[2]

6 This Order does not apply to discharges of waste that are regulated under other Water Board issued WDRs or conditional waiver of WDRs. If the other Water Board WDRs/waiver of WDRs only regulates some of the waste discharge activities (e.g., application of treated wastewater to crop land) at the regulated site, the owner/operator of the irrigated lands must obtain regulatory coverage for any discharges of waste that are not regulated by the other WDRs/waiver. Such regulatory coverage may be sought through enrollment under this Order or by obtaining appropriate changes in the owner/operator's existing WDRs or conditional waiver of WDRs.

7 This Order implements the long-term ILRP in the Eastern San Joaquin River Watershed. The long-term ILRP has been conceived as a range of potential alternatives and evaluated in a programmatic environmental impact report (PEIR).[3] The PEIR was certified by the Central Valley Water Board on 7 April 2011; however, the PEIR did not specify any single program alternative. The regulatory requirements contained within this Order fall within the range of alternatives evaluated in the PEIR. This Order, along with other orders to be adopted for irrigated lands within the Central Valley, together will constitute the long-term ILRP. Upon adoption of this Order, Order R5-2006-0053, Coalition Group Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands (Coalition Group Conditional Waiver), is rescinded as applied to irrigated lands within the Eastern San Joaquin River Watershed. Existing Members that had previously enrolled under the Coalition Group Conditional Waiver will be enrolled under this Order upon timely submittal of a Notice of Confirmation (see section VII.A of this Order).

GROWERS REGULATED UNDER THIS ORDER

8 This Order regulates both landowners and operators of irrigated lands from which there are discharges of waste that could affect the quality of any waters of the state. In order to be covered by this Order, the landowners or operators must be Members. Because this Order regulates both landowners and operators, but does not require enrollment of both parties, the provisions of this Order require that the Member provide notification to the non-Member responsible party of enrollment under this Order. The third-party group representing Members will assist with carrying out the conditions of this Order. Both the landowner and operator are ultimately responsible for complying with the terms and conditions of this Order.

9 The third-party entity proposing to represent Members in the Order watershed area (the third-party) is required to submit to the Central Valley Water Board an application to represent

[2] Water that travels through or remains on the surface of a Member's agricultural fields includes ditches and other structures (e.g., ponds, basins) that are used to convey supply or drainage water within that Member's parcel or between contiguous parcels owned or operated by that Member.

[3] ICF International. 2011. *Irrigated Lands Regulatory Program, Program Environmental Impact Report.* Final and Draft. March. (ICF 05508.05.) Sacramento, CA. Prepared for: Central Valley Regional Water Quality Control Board, Sacramento, CA

growers within this Order's coverage area. The third-party representation will become effective upon Central Valley Water Board Executive Officer approval of the third party's application. The East San Joaquin Water Quality Coalition served as the third-party group representing owners and operators of irrigated lands within the Order watershed area during the interim irrigated lands regulatory program, Order R5-2006-0053 (Coalition Group Conditional Waiver).

10 The third-party will be responsible for fulfilling the regional requirements and conditions (e.g., surface and groundwater monitoring, regional management plan development and tracking) of this Order and associated Monitoring and Reporting Program Order R5-2012-0116 (MRP). By retaining its third-party membership or establishing a new membership, a Member is agreeing to be represented by the third-party for the purposes of this Order. Any requirements or conditions not fulfilled by the third-party are the responsibility of the individual Member. The Member and non-Member owners and operators are responsible for conduct of operations on the Member's enrolled property.

11 To apply for coverage under this Order, a grower that is not a current Member in the third-party group will have different application requirements depending on the timing of its request for regulatory coverage (see section VII.A of this Order for specific requirements). Growers that enroll within 120 days of Executive Officer approval of the third-party will enroll under this Order by obtaining membership in the third-party group. This will streamline the initial enrollment process for the bulk of the irrigated agricultural operations within the Eastern San Joaquin River Watershed. Growers who do not enroll within 120 days of Executive Officer approval of the third-party, or whom are prompted to apply by Central Valley Water Board enforcement or inspection, are required to submit a Notice of Intent (NOI) to comply with the terms and conditions of this Order to the Central Valley Water Board and obtain membership with the third-party group. This additional step for late enrollees is intended to provide incentive for growers to enroll promptly. There will be an administrative fee for submitting an NOI to the board. The fee will help recover costs for board efforts to conduct outreach to ensure growers subject to this Order enroll or submit reports of waste discharge.

REASON FOR THE CENTRAL VALLEY WATER BOARD ISSUING THIS ORDER

12 The Eastern San Joaquin River Watershed region has approximately one million acres of cropland under irrigation and approximately 3,900 growers with "waste discharges from irrigated lands," as defined in Attachment E to this Order. Currently, approximately 165,000 acres are regulated under the Water Board's General Order for Existing Milk Cow Dairies (R5-2007-0035) and 538,121 acres are regulated under the Coalition Group Conditional Waiver. Approximately 3,600 growers and 835,000 associated irrigated acres will require regulatory coverage under this Order or other WDRs or conditional waivers of WDRs. Small Farming Operations are those with a total farming operation that comprises less than 60 acres of irrigated land. In counties within the Eastern San Joaquin River Watershed, Small Farming Operations are operated by approximately 61 percent of the growers, but account for approximately 6% of the total irrigated lands.[4]

13 The Eastern San Joaquin River Watershed region contains all or portions of seven groundwater sub basins and has approximately 3,000 linear miles of surface water courses (including 700 linear miles of named surface water courses) that are, or could be, affected by

[4] Data are for Madera, Mariposa, Merced, Stanislaus, and Tuolumne Counties; United States Department of Agriculture. 2007. *Census of Agriculture*.

discharges of waste from irrigated lands. This does not include surface water courses in the foothill and mountainous regions of the third-party area, where there are few irrigated lands operations. Discharges of waste from irrigated lands could adversely affect the quality of the "waters of the state," as defined in Attachment E to this Order.

14 Within the third-party area, there are approximately 359,000 acres of irrigated lands within Department of Pesticide Regulation (DPR) Groundwater Protection Areas (GWPAs). DPR identifies these areas as vulnerable to groundwater contamination from the agricultural use of certain pesticides, based upon either pesticide detections in groundwater or upon the presence of certain soil types (leaching and/or runoff) and a depth to groundwater shallower than 70 feet. Of the 359,000 acres, approximately 236,000 acres of the irrigated lands are within DPR GWPAs that are characterized as vulnerable to leaching of pesticides (leaching areas), approximately 120,000 acres are within GWPAs that are characterized as vulnerable to movement of pesticides to groundwater by runoff from fields to areas were they may move to groundwater (runoff areas), and 2,510 acres of irrigated lands are characterized as both leaching and runoff areas. For leaching areas, certain water soluble pesticides are carried mainly with excess irrigation water or rainwater through the soil profile and potentially to the underlying aquifer. For runoff areas, certain water soluble pesticides are carried mainly with runoff over the land surface to potential conduits to groundwater. However, DPR has not established or analyzed the GWPAs with fertilizers and nitrate in mind, and its GWPAs are established based upon detections of certain pesticides, many of which are of lower solubility. Solubility is one factor that can lead to groundwater contamination. Depending on the frequency of application and amount applied, certain water soluble constituents, such as nitrate, may share common pathways to groundwater with soluble pesticides. This Order includes consideration of DPR's vulnerability factors and GWPAs by the third-party in the determination of high vulnerability areas for nitrate.

15 The Central Valley Water Board's *Irrigated Lands Regulatory Program Existing Conditions Report* (ECR)[5] identifies waters of the state with impaired water quality attributable to or influenced by irrigated agriculture, including within the third-party area. The *Irrigated Lands Regulatory Program Environmental Impact Report* (PEIR) describes that "*[f]rom a programmatic standpoint, irrigated land waste discharges have the potential to cause degradation of surface and groundwater…."*

16 Approximately 25 water bodies encompassing 450 linear miles of surface water courses have been listed as impaired pursuant to Clean Water Act section 303(d)[6] within the third-party area. Approximately 15 of those water bodies identify the potential source of the impairment as agriculture, and the remaining water bodies identify an unknown source impairment. For example, Berenda Creek, Berenda Slough, Deadman Creek, Dry Creek, Duck Slough, Harding Drain, Highline Canal, Merced River, Mustang Creek, San Joaquin River, Stanislaus River, and the Tuolumne River are listed as impaired by the pesticide chlorpyrifos. Agriculture is identified as the potential source of impairment.

17 Elevated levels of nitrates in drinking water can have significant negative health effects on sensitive individuals. The Basin Plan contains a water quality objective for nitrate to protect the drinking water uses. The water quality objective for nitrate is the maximum contaminant level (MCL) of 10 mg/L for nitrate plus nitrite as nitrogen (or 45 mg/L of nitrate as nitrate)

[5] California Regional Water Quality Control Board, Central Valley Region, and Jones and Stokes. 2008. *Irrigated Lands Regulatory Program Existing Conditions Report.* Sacramento, CA.
[6] 2008-2010 303(d) List.

established by the California Department of Public Health (22 CCR § 64431) that has been set at a level to protect the most at risk groups – infants under six months old and pregnant women.[7]

In some areas, nitrate from both agricultural and non-agricultural sources has resulted in degradation and/or pollution of groundwater beneath agricultural areas in the Central Valley.[8] Available data (see Information Sheet and the PEIR) indicate that there are a number of wells within the Eastern San Joaquin River Watershed that have exceeded the MCL for nitrate. Groundwater in the Eastern San Joaquin Watershed has been designated for drinking water uses; therefore, the water quality objective of 10 mg/L for nitrate plus nitrite (as nitrogen) applies to groundwaters in the Eastern San Joaquin River Watershed. Where nitrate groundwater quality data are not available, information on the hyrdrogeological characteristics of the area suggest that significant portions of the Eastern San Joaquin River Watershed are vulnerable to nitrate contamination. Sources of nitrate in groundwater include leaching of excess fertilizer, confined animal feeding operations, septic systems, discharge to land of wastewater, food processor waste, unprotected well heads, improperly abandoned wells, and lack of backflow prevention on wells.

18 The Central Valley Water Board's authority to regulate waste discharges that could affect the quality of the waters of the state, which includes both surface water and groundwater, is found in the Porter-Cologne Water Quality Control Act (California Water Code Division 7).

19 Water Code section 13263 requires the Central Valley Water Board to prescribe WDRs, or waive WDRs, for proposed, existing, or material changes in discharges of waste that could affect water quality. The board may prescribe waste discharge requirements although no discharge report under Water Code section 13260 has been filed. The WDRs must implement relevant water quality control plans and the Water Code. The Central Valley Water Board may prescribe general waste discharge requirements for a category of discharges if all the following criteria apply to the discharges in that category:

a. The discharges are produced by the same or similar operations.
b. The discharges involve the same or similar types of waste.
c. The discharges require the same or similar treatment standards.
d. The discharges are more appropriately regulated under general requirements than individual requirements.

The rationale for developing general waste discharge requirements for irrigated agricultural lands in the Eastern San Joaquin River Watershed includes: (a) discharges are produced by similar operations (irrigated agriculture); (b) waste discharges under this Order involve similar types of wastes (wastes associated with farming); (c) water quality management practices are similar for irrigated agricultural operations; (d) due to the large number of operations and their contiguous location, these types of operations are more appropriately regulated under general rather than individual requirements; and (e) the geology and the climate are similar, which will tend to result in similar types of water quality problems[9] and similar types of solutions.

[7] See, for example, the California Department of Public Health Nitrate Fact Sheet: http://www.cdph.ca.gov/certlic/drinkingwater/Documents/Nitrate/FactSheet-Nitrate-05-23-2012.pdf.
[8] PEIR, Appendix A
[9] "Water quality problem" is defined in Attachment E.

20 Whether an individual discharge of waste from irrigated lands may affect the quality of the waters of the state depends on the quantity of the discharge, quantity of the waste, the quality of the waste, the extent of treatment, soil characteristics, distance to surface water, depth to groundwater, crop type, management practices and other site-specific factors. These individual discharges may also have a cumulative effect on waters of the state. Waste discharges from some irrigated lands have impaired or degraded and will likely continue to impair or degrade the quality of the waters of the state within the Central Valley Region if not subject to regulation pursuant to the Porter-Cologne Water Quality Control Act (codified in Water Code Division 7).

21 Water Code section 13267(b)(1) states: "(1) *In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge, waste outside of its region that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports. (2) When requested by the person furnishing a report, the portions of a report that might disclose trade secrets or secret processes may not be made available for inspection by the public but shall be made available to governmental agencies for use in making studies. However, these portions of a report shall be available for use by the state or any state agency in judicial review or enforcement proceedings involving the person furnishing the report."*

22 Technical reports are necessary to evaluate Member compliance with the terms and conditions of this Order and to assure protection of waters of the state. Consistent with Water Code section 13267, this Order requires the implementation of a monitoring and reporting program (MRP) that is intended to determine the effects of Member waste discharges on water quality, to verify the adequacy and effectiveness of the Order's conditions, and to evaluate Member compliance with the terms and conditions of the Order. The requirements for reports and monitoring specified in this Order and attached MRP are based in part on whether an operation is within a high or low vulnerability area. The third-party is tasked with describing high and low vulnerability areas based on definitions provided in Attachment E to this Order and guidance provided in the MRP for development of the Groundwater Assessment Report. The Executive Officer will review third-party proposed high and low vulnerability areas and make the final determination of these areas. High and low vulnerability areas will be reviewed and updated throughout the implementation of this Order. A Member who is covered under this Order must comply with MRP Order R5-2012-0116 which is part of this Order, and future revisions thereto by the Executive Officer or board.

23 The surface water quality monitoring and trend groundwater quality monitoring under this Order are regional in nature instead of individual field discharge monitoring. The benefits of regional monitoring include the ability to determine whether water bodies accepting discharges from numerous irrigated lands are meeting water quality objectives and to determine whether practices, at the watershed level, are protective of water quality. However, there are limitations to regional monitoring's effectiveness in determining possible sources of water

quality problems, the effectiveness of management practices, and individual compliance with this Order's requirements.

Therefore, through the Management Practices Evaluation Program and the Surface Water Quality Management Plans and Groundwater Quality Management Plans, the third-party must evaluate the effectiveness of management practices in protecting water quality. In addition, Members must report the practices they are implementing to protect water quality. Through the evaluations and studies conducted by the third-party, the reporting of practices by the Members, and the board's compliance and enforcement activities, the board will be able to determine whether a Member is complying with the Order.

Where required monitoring and evaluation does not allow the Central Valley Water Board to determine potential sources of water quality problems or identify whether management practices are effective, this Order requires the third-party to provide technical reports at the direction of the Executive Officer. Such technical reports are needed when monitoring or other available information is not sufficient to determine the effects of irrigated agricultural waste discharges to state waters. It may also be necessary for the board to conduct investigations by obtaining information directly from Members to assess individual compliance.

24 The Central Valley Water Board's *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins* (hereafter Basin Plan) designates beneficial uses, establishes water quality objectives, contains programs of implementation needed to achieve water quality objectives, and references the plans and policies adopted by the State Water Board. The water quality objectives are developed to protect the beneficial uses of waters of the state. Compliance with water quality objectives will protect the beneficial uses listed in Finding 26.

25 This Order implements the Basin Plan by requiring the implementation of management practices to achieve compliance with applicable water quality objectives and requiring the prevention of nuisance. The Order requires implementation of a monitoring and reporting program to determine effects of discharges on water quality and the effectiveness of management practices designed to comply with applicable water quality objectives.

26 Pursuant to the Basin Plan and State Water Board plans and policies, including State Water Board Resolution 88-63, and consistent with the federal Clean Water Act, the existing and potential beneficial uses of waters in the Eastern San Joaquin River Watershed may include:

a. Municipal and Domestic Supply
b. Agricultural Supply
c. Industrial Service Supply
d. Hydropower Generation
e. Water Contact Recreation
f. Non-Contact Water Recreation
g. Warm Freshwater Habitat
h. Cold Freshwater Habitat
i. Migration of Aquatic Organisms
j. Spawning, Reproduction and Development
k. Wildlife Habitat
l. Freshwater Replenishment
m. Industrial Process Supply

27 In May 2004, the State Water Board adopted the *Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program* (NPS Policy). The purpose of the NPS Policy is to improve the state's ability to effectively manage NPS pollution and conform to the requirements of the Federal Clean Water Act and the Federal Coastal Zone Act Reauthorization Amendments of 1990. The NPS Policy requires, among other key elements, an NPS control implementation program's ultimate purpose to be explicitly stated. It also requires implementation programs to, at a minimum, address NPS pollution in a manner that achieves and maintains water quality objectives and beneficial uses, including any applicable antidegradation requirements.

28 This Order constitutes an NPS Implementation Program for the discharges regulated by the Order. The ultimate purpose of this program is expressly stated in the goals and objectives for the ILRP, described in the PEIR and Attachment A to this Order. Attachment A, Information Sheet, describes the five key elements required by the NPS Policy and provides justification that the requirements of this Order meet the requirements of the NPS Policy. This Order is consistent with the NPS Policy.

29 The United States Environmental Protection Agency adopted the National Toxics Rule (NTR) on 5 February 1993 and the California Toxics Rule (CTR) on 18 May 2000, which was modified on 13 February 2001. The NTR and CTR contain water quality criteria which, when combined with beneficial use designations in the Basin Plans, constitute enforceable water quality standards for priority toxic pollutants in California surface waters.

CALIFORNIA ENVIRONMENTAL QUALITY ACT

30 For purposes of adoption of this Order, the Central Valley Water Board is the lead agency pursuant to CEQA (Public Resources Code sections 21100 et seq.). Pursuant to board direction in Resolutions R5-2006-0053 and R5-2006-0054, a Program Environmental Impact Report (PEIR) was prepared. In accordance with CEQA, the Central Valley Water Board, acting as the lead agency adopted Resolution R5-2011-0017 on 7 April 2011, certifying the PEIR for the Irrigated Lands Regulatory Program.

31 This Order relies on the environmental impact analysis contained in the PEIR to satisfy the requirements of CEQA. Although the Order is not identical to any of the PEIR alternatives, the Order is comprised entirely of elements of the PEIR's wide range of alternatives. Therefore, the PEIR identified, disclosed, and analyzed the potential environmental impacts of the Order. The potential compliance activities undertaken by the regulated Members in response to this Order fall within the range of compliance activities identified and analyzed in the PEIR. Therefore, all potentially adverse environmental impacts of this Order have been identified, disclosed, and analyzed in the PEIR. If it is determined that a grower filing for coverage under this Order could create impacts not identified in the PEIR, individual WDRs would be prepared for that grower and additional CEQA analysis performed, which would likely tier off the PEIR as necessary. (See Title 14, CCR § 15152).

32 The requirements of this Order are based on elements of Alternatives 2 through 6 of the PEIR. The PEIR concludes that implementation of some of these elements has the potential to cause significant adverse environmental impacts. Such impacts are associated, directly and indirectly, with specific compliance activities growers may conduct in response to the Order's regulatory requirements. Such activities are expected to include implementation of water quality management practices and monitoring well installation and operation. Attachment A of this Order describes example water quality management practices that may be implemented

as a result of this Order and that monitoring wells may be installed as a result of this Order. The types and degrees of implementation will be similar to those described in the PEIR for Alternatives 2 through 6. Also, because the cost of this Order is expected to fall within the range of costs described for Alternatives 2 through 6, significant impacts to agriculture resources under this Order will be similar to those described in the PEIR. Because of these similarities, this Order relies on the PEIR for its CEQA analysis. A listing of potential environmental impacts, the written findings regarding those impacts consistent with § 15091 of the CEQA Guidelines, and the explanation for each finding are contained in a separate Findings of Fact and Statement of Overriding Considerations document (Attachment D), which is incorporated by reference into this Order.

33 Where potentially significant environmental impacts identified in Attachment D may occur as a result of Members' compliance activities, this Order requires that Members either avoid the impacts where feasible or implement identified mitigation measures, if any, to reduce the potential impacts to a less than significant level. Where avoidance or implementation of identified mitigation is not feasible, use of this Order is prohibited and individual WDRs would be required. The Monitoring and Reporting Program (MRP) Order, Attachment B, includes a Mitigation Monitoring and Reporting Program to track the implementation of mitigation measures.

34 The PEIR finds that none of the program alternatives will cause significant adverse impacts to water quality. Consistent with alternatives in the PEIR, this Order contains measures needed to achieve and maintain water quality objectives and beneficial uses, reduce current pollutant loading rates, and minimize further degradation of water quality. As such, this Order will not cause significant adverse impacts to water quality.

STATE WATER RESOURCES CONTROL BOARD RESOLUTION 68-16

35 State Water Resources Control Board (State Water Board) Resolution 68-16 *Statement of Policy with Respect to Maintaining High Quality of Waters in California* (Resolution 68-16 or "antidegradation policy") requires that a Regional Water Quality Control Board maintain high quality waters of the state unless the board determines that any authorized degradation is consistent with maximum benefit to the people of the state, will not unreasonably affect beneficial uses, and will not result in water quality less than that described in a Regional Water Quality Control Board's policies (e.g., quality that exceeds applicable water quality objectives). The board must also assure that any authorized degradation of existing high quality waters is subject to waste discharge requirements which will result in the best practicable treatment or control (BPTC) of the discharge necessary to assure that pollution, or nuisance will not occur and the highest water quality consistent with the maximum benefit to the people of the state will be maintained.

36 The Central Valley Water Board has information in its records that has been collected by the Central Valley Water Board, growers, educational institutions, and others that demonstrates that many water bodies within the Central Valley Region are impaired for various constituents, including pesticides, nitrates, and salts. Many water bodies have been listed as impaired pursuant to Clean Water Act section 303(d). This Order does not authorize further degradation of such waters.

Appendix A to the PEIR for the Irrigated Lands Program describes that "*there may be cases where irrigated agricultural waste discharges threaten to degrade high quality waters."* For discharges to water bodies that are high quality waters, this Order is consistent with

Resolution 68-16. Attachment A to this Order summarizes applicable antidegradation requirements and provides detailed rationale demonstrating how this Order is consistent with Resolution 68-16. As indicated in the summary, this Order authorizes limited degradation of high quality waters, not to exceed water quality objectives, threaten beneficial uses, or cause a condition of pollution or nuisance. The Order will also result in the implementation of BPTC by those discharging to high quality waters and assure that any change in water quality will be consistent with maximum benefit to the people of the state.

CALIFORNIA WATER CODE SECTIONS 13141 AND 13241

37 California Water Code section 13141 states that "*prior to implementation of any agricultural water quality control program, an estimate of the total cost of such a program, together with an identification of potential sources of financing, shall be indicated in any regional water quality control plan*." Section 13141 concerns approvals or revisions to a water quality control plan and does not necessarily apply in a context where an agricultural water quality control program is being developed through waivers and waste discharge requirements rather than basin planning. However, the Basin Plan includes an estimate of potential costs and sources of financing for the long-term irrigated lands program. The estimated costs were derived by analyzing the six alternatives evaluated in the PEIR. This Order, which implements the long-term ILRP within the Eastern San Joaquin River Watershed, is based on Alternatives 2-6 of the PEIR; therefore, estimated costs of this Order fall within the Basin Plan cost range.[10] The total annual cost of compliance with this Order, e.g., summation of costs for administration, monitoring, reporting, tracking, implementation of management practices, is expected to be approximately $4.10 per acre greater than the current surface water only protection program under the Coalition Group Conditional Waiver. The total estimated cost of compliance of continuation of the previous Coalition Group Conditional Waiver within the Eastern San Joaquin River Watershed is expected to be approximately 96 million dollars per year ($114.45 per acre annually). The total estimated cost of compliance with this Order is expected to be approximately 99 million dollars per year ($118.55 per acre annually).

Approximately $113.34 of the estimated $118.55 per acre annual cost of the Order is associated with implementation of management practices. This Order does not require that Members implement specific water quality management practices.[11] Many of the management practices that have water quality benefits can have other economic and environmental benefits (e.g., improved irrigation can reduce water and energy consumption, as well as reduce runoff). Management practice selection will be based on decisions by individual Members in consideration of the unique conditions of their irrigated agricultural lands; water quality concerns; and other benefits expected from implementation of the practice. As such, the cost estimate is an estimate of potential, not required costs of implementing specific practices. Any costs for water quality management practices will be based on a market transaction between Members and those vendors or individuals providing services or equipment and not based on an estimate of those costs provided by the board. The cost estimates include estimated fees the third-party may charge to prepare the required reports and conduct the required monitoring, as well as annual permit fees that are charged to permitted dischargers for permit coverage. In accordance with the State Water Board's Fee Regulations, the current annual

[10] When compared on a per irrigated acre basis; as the Basin Plan cost range is an estimate for all irrigated lands in the Central Valley versus this Order's applicability to a portion thereof (irrigated lands in Eastern San Joaquin River Watershed).

[11] Per Water Code section 13360, the Central Valley Water Board may not specify the manner in which a Member complies with water quality requirements.

permit fee charged to members covered by this Order is $0.56/acre. The combined total estimated costs that include third-party and state fees are estimated to be $4.50 /acre annually or less than 5% of the total estimated cost of $118.55 per acre. These costs have been estimated using the same study used to develop the Basin Plan cost estimate, which applies to the whole ILRP. The basis for these estimates is provided in the *Draft Technical Memorandum Concerning the Economic Analysis of the Irrigated Lands Regulatory Program.*[12] Attachment A includes further discussion regarding the cost estimate for this Order.

38 California Water Code section 13263 requires that the Central Valley Water Board consider the following factors, found in section 13241, when considering adoption of waste discharge requirements.

(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.

These factors have been considered in the development of this Order. Attachment A, Information Sheet, provides further discussion on the consideration of section 13241 factors.

RELATIONSHIP TO OTHER ONGOING WATER QUALITY EFFORTS

39 Other water quality efforts conducted pursuant to state and federal law directly or indirectly serve to reduce waste discharges from irrigated lands to waters of the state. Those efforts will continue, and will be supported by implementation of this Order.

40 The Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) initiative has the goal of developing sustainable solutions to the increasing salt and nitrate concentrations that threaten the achievement of water quality objectives in Central Valley surface and groundwater. This Order requires actions that will reduce nitrate discharges and should result in practices that reduce salt loading. The board intends to coordinate all such actions with the CV-SALTS initiative. CV-SALTS may identify additional actions that need to be taken by irrigated agriculture and others to address these constituents. This Order can be amended in the future to implement any policies or requirements established by the Central Valley Water Board resulting from the CV-SALTS process. This Order includes provisions to promote coordination with CV-SALTS and to support the development of information needed for the CV-SALTS process.

41 Total Maximum Daily Loads (TMDLs) are established for surface waters that have been placed on the State Water Board's 303(d) list of Water Quality Limited Segments for failure to meet applicable water quality standards. A TMDL, which may be adopted by the Central Valley Water Board as Basin Plan amendments, is the sum of allowable loads of a single pollutant from all contributing point sources and nonpoint sources. The Central Valley Water

[12] ICF International. 2010. *Draft Technical Memorandum Concerning the Economic Analysis of the Irrigated Lands Regulatory Program.* Draft. July. (ICF 05508.05.) Sacramento, CA. Prepared for: Central Valley Regional Water Quality Control Board, Sacramento, CA

Board is currently developing a pesticide TMDL and organochlorine pesticide TMDL, among others in development. This Order will implement these and other future TMDLs to the extent there are established requirements that pertain to irrigated agriculture, as well as the following approved TMDLs: San Joaquin River Deep Water Ship Channel dissolved oxygen; San Joaquin River salt, boron, selenium, diazinon, and chlorpyrifos.

42 The General Order for Existing Milk Cow Dairies (R5-2007-0035) and NPDES Dairy General Permit CAG015001 (Dairy General Orders) regulates discharges of waste to surface waters and groundwater from existing milk cow dairies in the Central Valley. Discharges from irrigated agricultural parcels are regulated by the Dairy General Orders if the owner or operator of the parcel applies dairy waste from its dairy operation. Irrigated agricultural parcels that receive dairy waste from external sources must obtain regulatory coverage for their discharge under this Order or waste discharge requirements that apply to individual growers. The Central Valley Water Board encourages the dairy industry and the third-party to coordinate the surface water and groundwater quality monitoring required of the two orders and coordinate their response to identified water quality problems.

43 The Central Valley Water Board approved the East San Joaquin Water Quality Coalition Management Plan on 25 November 2008. This plan includes implementation of the approved TMDLs listed in Finding 41. This plan (along with updates and modifications approved by the Executive Officer) will continue to be implemented under this Order to address the surface water quality problems identified therein, unless and until such time the Executive Officer requires modification of the plan or deems it to be complete, as described in this Order.

COORDINATION AND COOPERATION WITH OTHER AGENCIES

44 *Integrated Regional Water Management Plans:* Pursuant to part 2.75 of Division 6 of the Water Code (commencing with section 10750), local agencies are authorized to adopt and implement groundwater management plans (hereinafter "local groundwater management plans"), including integrated regional water management plans. The legislation provides recommended components to the plans such as control of saline water intrusion, regulation of the migration of contaminated water, monitoring of groundwater levels and storage, and the development of relationships with regulatory agencies. The information collected through implementation of groundwater management plans can support or supplement efforts to evaluate potential impacts of irrigated agricultural discharges on groundwater. This Order requires the third-party to develop regional groundwater monitoring workplans and, where necessary, groundwater quality management plans (GQMPs). The third-party is encouraged to coordinate with local groundwater management plans and integrated regional water management plans, where applicable, when developing regional groundwater monitoring workplans and GQMPs.

45 *California Department of Pesticide Regulation (DPR)*: DPR has developed a Groundwater Protection Program under the authority of the Pesticide Contamination Prevention Act (PCPA) (commencing with Food and Agriculture Code section 13142). The program is intended to prevent contamination of groundwater from the legal application of pesticides. In addition to activities mandated by the PCPA, DPR's program has incorporated approaches to identify areas vulnerable to pesticide movement, develop mitigation measures to prevent pesticide contamination, and monitor domestic drinking water wells located in groundwater protection areas. The Groundwater Protection Program can provide valuable information on potential impacts to groundwater from agricultural pesticides. If necessary, DPR and the county agricultural commissioners can use their regulatory authorities to address any identified

impacts to groundwater or surface water attributable to pesticide discharges from agricultural fields.

46 *California Department of Food and Agriculture (CDFA)*: The CDFA Fertilizer Research and Education Program (FREP) coordinates research to advance the environmentally safe and agronomically sound use and handling of fertilizer materials. Currently, CDFA is developing nitrogen management training programs for farmers and Certified Crop Advisors (CCA). Among other certification options available for nitrogen management plans, the CDFA training programs will be recognized as providing the training necessary for a farmer or CCA to certify nitrogen management plans in high vulnerability groundwater areas. In addition, this Order requires the development of a template for a nitrogen management plan. CDFA has had an active role in working with the agricultural community on the concepts related to the template and that role is expected to continue. This Order leverages CDFA's work and expertise with respect to nitrogen management training and technical support to the professionals and third-parties that will be developing nitrogen management plans for individual Members.

47 The Central Valley Water Board will continue to work cooperatively with the other state agencies to identify and leverage their efforts.

ENFORCEMENT FOR NONCOMPLIANCE WITH THIS ORDER

48 California Water Code section 13350 provides that any person who violates Waste Discharge Requirements may be: 1) subject to administrative civil liability imposed by the Central Valley Water Board or State Water Board in an amount of up to $5,000 per day of violation, or $10 per gallon if the discharge involves a discharge of pollutants; or 2) be subject to civil liability imposed by a court in an amount of up to $15,000 per day of violation, or $20 per gallon. The actual calculation and determination of administrative civil penalties must be set forth in a manner that is consistent with the State Water Board's Water Quality Enforcement Policy.

49 The State Water Board's Water Quality Enforcement Policy (Enforcement Policy) endorses progressive enforcement action for violations of waste discharge requirements when appropriate, but recommends formal enforcement as a first response to more significant violations. Progressive enforcement is an escalating series of actions that allows for the efficient and effective use of enforcement resources to: 1) assist cooperative Members in achieving compliance; 2) compel compliance for repeat violations and recalcitrant violators; and 3) provide a disincentive for noncompliance. Progressive enforcement actions may begin with informal enforcement actions such as a verbal, written, or electronic communication between the Central Valley Water Board and a Member. The purpose of an informal enforcement action is to quickly bring the violation to the Member's attention and to give the Member an opportunity to return to compliance as soon as possible. The highest level of informal enforcement is a Notice of Violation.

The Enforcement Policy recommends formal enforcement actions for the highest priority violations, chronic violations, and/or threatened violations. Violations of this Order that will be considered a priority include, but are not limited to:

a) Failure to obtain required regulatory coverage.

b) Failure to meet receiving water limitations, unless the Member is implementing a Central Valley Water Board approved SQMP or GQMP in accordance with the time schedule provisions of this Order (section XII).[13]
c) The discharge of waste to lands not owned, leased, or controlled by the Member without written permission from the landowner.
d) Failure to prevent future exceedances of water quality objectives once made aware of an exceedance.
e) Falsifying information or intentionally withholding information required by applicable laws, regulations or an enforcement order.
f) Failure to implement a SQMP/GQMP.
g) Failure to pay annual fees, penalties, or liabilities.
h) Failure to monitor or provide information to the third-party as required.
i) Failure to submit required reports on time.
j) Failure to implement the applicable management practices, or equivalent practices, identified as protective of groundwater in the Management Practices Evaluation Report.

50 Under this Order, the third-party is tasked with developing monitoring plans, conducting monitoring, developing water quality management plans, and informing Members of requirements. It is intended that the following progressive enforcement steps will generally be taken in the event that the third-party fails to comply with the terms and conditions of this Order or attached MRP:

a) First notification of noncompliance to the third-party. The Central Valley Water Board intends to notify the third-party of the non-compliance and allow a period of time for the third-party to come back into compliance. This notification may be in the form of a verbal notice, letter, or written notice of violation, depending on the severity of the noncompliance.
b) Second notification of noncompliance to the third-party. If the third-party fails to adequately respond to the first notification, the board intends to provide written notice to the third-party and potentially affected Members of the failure to address the first notice.
c) Failure of the third-party to adequately respond to the second notification. Failure to adequately respond to the second notification may result in partial (e.g., affected areas or Members) or full disapproval of the third-party to act as a lead entity, depending on the severity of noncompliance. Growers that were Members affected by a partial or full third-party disapproval would be required to obtain coverage for their waste discharge under other applicable general waste discharge requirements or submit a Report of Waste Discharge to the Central Valley Water Board.

GENERAL FINDINGS

51 This Order does not authorize violation of any federal, state, or local law or regulation.

52 This Order does not authorize any act that results in the taking of a threatened or endangered species or any act that is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish and Game Code sections 2050 to 2097) or the Federal Endangered Species Act (16 U.S.C.A. sections 1531 to 1544). If a "take" will result

[13] A Member participating in a Management Practices Evaluation Program study (i.e., the study is taking place on the Member's farm) where data indicate the discharge from the study area is not meeting receiving water limitations will not be a priority for enforcement, if the Member is implementing a Central Valley Water Board approved SQMP or GQMP in accordance with the time schedule provisions of this Order (section XII).

from any action authorized under this Order, the Member shall obtain authorization for an incidental take prior to construction or operation of the project. The Member shall be responsible for meeting all requirements of the applicable Endangered Species Act.

53 This Order does not supersede the Central Valley Water Board's Basin Plans and policies, including prohibitions (e.g., pesticides) and implementation plans (e.g., Total Maximum Daily Loads), or the State Water Board's plans and policies.

54 As stated in California Water Code section 13263(g), the discharge of waste into waters of the state is a privilege, not a right, and regulatory coverage under this Order does not create a vested right to continue the discharge of waste. Failure to prevent conditions that create or threaten to create pollution or nuisance will be sufficient reason to modify, revoke, or enforce this Order, as well as prohibit further discharge.

55 This Order requires Members to provide the third-party with contact information of the person(s) authorized to provide access to the enrolled property for inspections. This requirement provides a procedure to enable board staff to contact grower representatives so that it may more efficiently monitor compliance with the provisions of this Order.

56 Any instance of noncompliance with this Order constitutes a violation of the California Water Code and its regulations. Such noncompliance is grounds for enforcement action, and/or termination of coverage for waste discharges under this Order, subjecting the discharger to enforcement under the Water Code for further discharges of waste to surface or groundwater.

57 All discharges from the irrigated agricultural operation are expected to comply with the lawful requirements of municipalities, counties, drainage districts, and other local agencies regarding discharges to storm drain systems or to other courses under their jurisdiction.

58 The fact that it would have been necessary to halt or reduce the discharge in order to maintain compliance with this Order shall not be a defense for violations of the Order by the Member.

59 This Order is not a National Pollutant Discharge Elimination System Permit issued pursuant to the Federal Clean Water Act. Coverage under this Order does not exempt a facility from the Clean Water Act. Any facility required to obtain such a permit must notify the Central Valley Water Board.

60 Water Code section 13260(d)(1)(A) requires persons subject to waste discharge requirements to pay an annual fee established by the State Water Board.

61 The Findings of this Order, supplemental information and details in the attached Information Sheet (Attachment A), and the administrative record of the Central Valley Water Board relevant to the Irrigated Lands Regulatory Program, were considered in establishing these waste discharge requirements.

62 The Central Valley Water Board has notified interested agencies and persons of its intent to adopt this Order for discharges of waste from irrigated lands within the Eastern San Joaquin River Watershed, and has provided them with an opportunity for a public hearing and an opportunity to submit comments.

63 The Central Valley Water Board, in a public meeting, heard and considered all comments pertaining to this Order.

64 Any person affected by this action of the Central Valley Water Board may petition the State Water Board to review this action. The State Water Board must receive the petition within 30 days of the date on which the Central Valley Water Board adopted this Order. Copies of the law and regulations applicable to filing petitions will be provided upon request.

IT IS HEREBY ORDERED that, pursuant to California Water Code sections 13260, 13263, and 13267 and in order to meet the provisions contained in Division 7 of the California Water Code and regulations and policies adopted there under; all Members of the third-party group, their agents, successors, and assigns shall comply with the following:

I. Coverage

1. Order 2006-0053, Coalition Group Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands (Coalition Group Conditional Waiver), is hereby rescinded as it applied to Members of the East San Joaquin Water Quality Coalition in the Eastern San Joaquin River Watershed.

II. Prohibitions

1. The discharge of waste to waters of the state, from irrigated agricultural operations other than those defined in the Findings of this Order, is prohibited.

2. The discharge of hazardous waste, as defined in California Water Code section 13173 and Title 23 CCR section 2521(a), respectively, is prohibited.

3. The discharge of wastes (e.g., fertilizers, fumigants, pesticides) into groundwater via backflow through a water supply well is prohibited.

4. The discharge of any wastes (e.g., fertilizers, fumigants, pesticides) down a groundwater well casing is prohibited.

III. Receiving Water Limitations

A. Surface Water Limitations[14]

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[15]

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

[14] These limitations are effective immediately except where Members are implementing an approved Surface Water Quality Management Plan (SQMP) for a specified waste parameter in accordance with an approved time schedule authorized pursuant to sections VIII.H and XII of this Order.

[15] These limitations are effective immediately except where Members are implementing an approved Groundwater Quality Management Plan (GQMP) for a specified waste parameter in accordance with an approved time schedule authorized pursuant to sections VIII.H and XII of this Order.

IV. Provisions

A. General Specifications

1. The third-party will assist its Members in complying with the relevant terms and provisions of this Order, including required monitoring and reporting as described in MRP Order R5-2012-0116. However, individual Members of the third-party group continue to bear ultimate responsibility for complying with this Order.

2. Irrigated lands owners or operators with waste discharges to state waters (or "Dischargers") that are not Members of the third-party group, or whose property is not enrolled by a Member of the third-party group, shall not be subject to coverage provided by the terms of this Order. Such Dischargers shall be required to obtain coverage for their waste discharge under individual waste discharge requirements or any applicable general waste discharge requirements that apply to individuals that are not represented by a third-party.

3. Members who are subject to this Order shall implement water quality management practices, as necessary, to protect water quality and to achieve compliance with applicable water quality objectives. Where applicable, the implementation of practices must be in accordance with the time schedule contained in an approved Groundwater Quality Management Plan or Surface Water Quality Management Plan.

4. Installation of groundwater monitoring wells or implementation of management practices to meet the conditions of this Order at a location or in a manner that could cause an adverse environmental impact as identified in the *Irrigated Lands Regulatory Program, Final Program Environmental Impact Report* (PEIR)[16] shall be mitigated in accordance with the mitigation measures provided in Attachment C of this Order.

5. The provisions of this Order are severable. If any provision of the Order is held invalid, the remainder of the Order shall not be affected.

B. Requirements for Members of the Third-Party Group

1. Members shall comply with all applicable provisions of the California Water Code, the *Water Quality Control Plan for the Sacramento and San Joaquin River Basins,* and State Water Board plans and policies.

2. All Members shall comply with the attached Monitoring and Reporting Program (MRP) R5-2012-0116, and future revisions thereto.

3. Members who are covered under this Order shall comply with the terms and conditions contained in this Order.

4. Each Member shall participate in third-party outreach events, at least annually, if any of the Member's parcels are in a designated "high vulnerability" area or governed by a SQMP/GQMP. The Member shall review outreach materials to become informed of any water quality problems to address and the management practices that are available to address those issues. The Member shall provide annual confirmation to the third-party that the Member has attended an outreach event during the previous year and reviewed the applicable outreach materials.

[16] On 7 April 2011, the Central Valley Water Board adopted Resolution R5-2011-0017, certifying the PEIR for the long-term irrigated lands regulatory program.

5. All Members shall provide the third-party with information requested for compliance with this Order.

6. All Members shall implement water quality management practices in accordance with any water quality management plans approved by the Central Valley Water Board Executive Officer, and/or as necessary to protect water quality and to achieve compliance with surface and groundwater receiving water limitations of this Order (sections III.A and B). Water quality management practices can be instituted on an individual basis, or implemented to serve multiple growers discharging to a single location.

7. All Members shall implement effective sediment discharge and erosion prevention practices to minimize or eliminate the discharge of sediment above background levels. Members with the potential to cause erosion and discharge sediment that may degrade surface waters, as identified by the Member in their Farm Evaluation, by the third-party in the Sediment Discharge and Erosion Assessment Report, or by the Executive Officer shall prepare and implement a Sediment and Erosion Control Plan as specified in section VII.C below.

8. All Members shall implement practices that minimize excess nutrient application relative to crop need. Members shall prepare and implement a farm-specific nitrogen management plan as required by section VII.D of this Order.

9. In addition to the reports identified in section VII of this Order, the Executive Officer may require the Member to submit additional technical reports pursuant to California Water Code section 13267.

10. The requirements prescribed in this Order do not authorize the commission of any act causing injury to the property of another, or protect the Member from liabilities under other federal, state, county, or local laws. However, enrollment under this Order does protect the Member from liability alleged for failing to comply with Water Code 13260.

11. This Order does not convey any property rights or exclusive privileges.

12. This Order shall not create a vested right, and all such discharges of waste shall be considered a privilege, as provided for in Water Code section 13263.

13. The Member understands that the Central Valley Water Board or its authorized representatives, may, at reasonable hours, inspect the facilities and irrigated lands of persons subject to this Order to ascertain whether the purposes of the Porter-Cologne Act are being met and whether the Member is complying with the conditions of this Order. To the extent required by Water Code section 13267(c) or other applicable law, the inspection shall be made with the consent of the Member, owner or authorized representative, or if consent is withheld, with a duly issued warrant pursuant to the procedure set forth in Title 13 Code of Civil Procedure Part 3 (commencing with section 1822.50). In the event of an emergency affecting the public health and safety, an inspection may be performed without the consent or the issuance of a warrant.

14. The Member shall provide the third-party with the phone number(s) of the individual(s) with authority to provide consent to access its facilities as described in provision IV.B.13 above.

15. The Member shall properly operate and maintain in good working order any facility, unit, system, or monitoring device installed to achieve compliance with the Order.

16. Settling ponds, basins, and tailwater recovery systems shall be constructed, maintained, and operated to prevent groundwater degradation, erosion, slope failure; and minimize the discharge of sediment. The construction and operation must be consistent with the applicable Natural Resources Conservation Service (NRCS) conservation practice standard, an NRCS or University of California Cooperative Extension recommendation, or an equivalent alternative standard.

17. Where applicable, the Member shall follow state, county or local agency standards with respect to water wells and groundwater quality when constructing new wells, modifying existing wells, or destroying wells. Absent such standards, at a minimum, the Member shall follow the standards and guidelines described in the California Department of Water Resources' *Water Well Standards (Bulletins 74-81 & 74-90 combined)*.

18. The Member shall maintain a copy of this Order at the primary place of business, or the Member's headquarters for its farming operation so as to be available at all times to operations personnel. The Member and his/her designee shall be familiar with the content of this Order.

19. The Member, or the third-party on its behalf as applicable, shall submit all required documents in accordance with section IX of this Order.

20. Members shall, at a minimum, implement water quality management practices that meet the following farm management performance standards:
    a. Minimize waste discharge offsite in surface water,
    b. Minimize percolation of waste to groundwater,
    c. Protect wellheads from surface water intrusion.

21. Members shall implement the applicable management practices, or equivalent practices, identified as protective of groundwater in the Management Practices Evaluation Report.

C. Requirements for the Third-Party Group

In order to remain eligible to serve as a third-party representative to Members, the third-party shall perform the following:

1. Provide the Central Valley Water Board documentation of its organizational or management structure. The documentation shall identify persons responsible for ensuring that program requirements are fulfilled. The documentation shall be made readily available to Members.

2. Prepare annual summaries of expenditures of fees and revenue used to comply with this Order. The summaries shall be provided to or made readily available to Members.

3. If the third-party group receives a notice of violation (NOV) from the Central Valley Water Board, the third-party must provide to Members in the area addressed by the NOV appropriate information regarding the reason(s) for the violation. The notification must be provided to all Members within the area affected by the NOV within thirty (30) days of receiving the NOV from the board. The third-party group must provide confirmation to the board of each notification. A summary of all notices of violation received by the third-party group must be provided to all Members annually.

4. Develop and implement plans to track and evaluate the effectiveness of water quality management practices, pursuant to approved Surface Water Quality Management Plans and Groundwater Quality Management Plans.

5. Provide timely and complete submittal of any plans or reports required by this Order.

6. Conduct required water quality monitoring and assessments in conformance with quality assurance/quality control requirements. Provide timely and complete submittal of any reports required by this Order.

7. Within 30 days of receiving an NOA from the Central Valley Water Board (as described in section VIII.A), inform Members of this Order's requirements by providing a notice of confirmation form to be completed by each Member.

8. Conduct education and outreach activities to inform Members of program requirements and water quality problems, including exceedances of water quality objectives or degradation of water quality, identified by the third-party or Central Valley Water Board. The third-party shall:

    a. Maintain attendance lists for outreach events, provide Members with information on water quality management practices that will address water quality problems and minimize the discharge of wastes from irrigated lands, and provide informational materials on potential environmental impacts of water quality management practices to the extent known by the third-party group.

    b. Provide an annual summary of education and outreach activities to the Central Valley Water Board. The annual summary shall include copies of the educational and management practice information provided to the growers. The annual summary must report the total number of growers who attended the outreach events and describe how growers could obtain copies of the materials presented at these events.

9. Work cooperatively with the Central Valley Water Board to ensure all Members are providing required information and taking necessary steps to address exceedances or degradation identified by the third-party or board. As part of the Membership List submittal, identify the growers who have: (1) failed to implement improved water quality management practices within the timeframe specified by an applicable SQMP/GQMP; (2) failed to respond to an information request associated with any applicable SQMP/GQMP or other provisions of this Order; (3) failed to participate in third-party studies for which the third-party is the lead; (4) failed to provide confirmation of participation in an outreach event (per section IV.B.4 of this Order); or (5) failed to submit required fees to the third-party.

10. Ensure that any activities conducted on behalf of the third-party by other groups meet the requirements of this Order. The third-party is responsible for any activities conducted on its behalf.

11. Collect any fees from Members required by the State Water Board pursuant to the fee schedule contained in Title 23 CCR. Such fees shall then be submitted to the State Water Board.

V. Effective Dates

1. This Order is effective upon adoption by the Central Valley Water Board on **7 December 2012** and remains in effect unless rescinded or revised by the Central Valley Water Board.

2. Regulatory coverage under this Order for discharges of waste from Members already enrolled under Order R5-2006-0053 is effective upon adoption of this Order by the Central Valley Water Board. Regulatory coverage under this Order is automatically terminated, if a Notice of Confirmation (NOC) is not received by the third-party from the currently enrolled Member within 120 days of Executive Officer issuance of an NOA to the third-party.

3. Regulatory coverage for Dischargers not already enrolled under Order R5-2006-0053 as of the date of adoption of this Order can be obtained directly through obtaining membership in the third-party group within 120 days of Executive Officer issuance of a Notice of Applicability (NOA) to the third-party. Regulatory coverage is effective when the third-party notifies the Central Valley Water Board that the Discharger's application for membership has been accepted.

4. After the initial 120-day period following issuance of an NOA to the third-party group, regulatory coverage is effective upon notification by the Central Valley Water Board that this Order applies to the grower through the issuance of an NOA. The Central Valley Water Board shall only issue an NOA after it has received a Notice of Intent (NOI) as required by section VII.A, and after the Central Valley Water Board has received notification from the third-party that the Discharger is a Member. The Discharger must pay any applicable State Water Board administrative fees associated with the filing of NOIs.

VI. Permit Reopening, Revision, Transfer, Revocation, Termination, and Reissuance

1. This Order may be reopened to address any changes in state statutes, regulations, plans, or policies that would affect the water quality requirements for the discharges, including, but not limited to, the Central Valley Water Board *Water Quality Control Plan* (Basin Plan) *for the Sacramento River and San Joaquin River Basins*.

2. The filing of a request by the third-party on behalf of its Members for modification, revocation and re-issuance, or termination of the Order, or notification of planned changes or anticipated noncompliance, does not stay any condition of the Order.

3. The third-party, on behalf of its Members, shall provide to the Executive Officer any information which the Executive Officer may request to determine whether cause exists for modifying, revoking and re-issuing, or terminating the Order, or to determine compliance with the requirements of this Order that apply directly to the third-party. Members shall provide to the Executive Officer, any information which the Executive Officer may request to determine whether cause exists for modifying, revoking and re-issuing, or terminating the Order as applied to the individual Member, or to determine compliance with the provisions of this Order that apply directly to the Member.

4. After notice and opportunity for a hearing, the Order may be terminated or modified for cause as applied to individual Members identified by the Central Valley Water Board. Cause for such termination or modification, includes, but is not limited to:

    a. Violation of any term or condition contained in the Order;
    b. Obtaining the Order by misrepresentation; or
    c. Failure to fully disclose all relevant facts.

    A Member's regulatory coverage shall be automatically revoked if the NOC is not timely submitted (see section VII.A).

5. After notice and opportunity for a hearing, the approval of the third-party to act as a lead entity representing Members may be partially (e.g., affected areas or Members) or fully revoked. Cause for such termination or modification includes, but is not limited to consideration of the factors in Finding 50 of this Order, and/or:

a. Violation of any term or condition contained in the Order that applies directly to the third-party;
b. Third-party misrepresentation;
c. Failure by the third-party to fully disclose all known relevant facts; or
d. A change in any condition that results in the third-party's inability to properly function as the third-party entity representing Member interests or in facilitating Member compliance with the terms and conditions of this Order.

6. The Central Valley Water Board will review this Order periodically and may revise this Order when necessary.

VII. Required Reports and Notices – Member

The Central Valley Water Board or the Executive Officer may require any of the following reports and notices to be submitted electronically as long as the electronic format is reasonably available to the Member, and only to the extent that the Member has access to the equipment that allows for them to submit the information electronically. If the Member does not have such access, reports and notices must be submitted by mail. Reports and notices shall be submitted in accordance with section IX, Reporting Provisions, as well as MRP Order R5-2012-0116. Members must prepare and maintain the following reports as instructed below, and shall submit or make available such reports to the third-party or the Central Valley Water Board as identified below.

A. Notice of Confirmation / Notice of Intent / Membership Application

1. To confirm coverage under this Order, Members that, as of the effective date of this Order, are enrolled under Order R5-2006-0053 as Members of the East San Joaquin Water Quality Coalition must submit a completed notice of confirmation (NOC) to the third-party within 120 days of Executive Officer approval of the third-party (as provided by issuance of an NOA to the third-party, see section VIII.A of this Order). The third-party will provide a NOC form to Members within 30 days of receiving an NOA (see section VIII.A) from the Central Valley Water Board. As part of the NOC, Members must provide certification that they have provided written notice to any responsible non-Member parties of the Member's enrollment under this Order and of the requirements of this Order (a responsible non-Member is a landowner whose parcel has been enrolled by an operator-Member under this Order or an operator who farms a parcel that has been enrolled by a landowner-Member). If the Member is a landowner that leases their land, the Member must provide the name and contact information of the lessee.

2. Within 120 days of Executive Officer issuance of an NOA to the third-party, all other growers within this Order's boundaries must become Members of the third-party to avoid additional fees and administrative requirements (see section VII.A.3 below). To obtain membership, a grower must submit a completed third-party Membership application to the third-party group. As part of the membership application, growers must provide certification that they have provided written notice to any responsible non-Member parties of the Member's enrollment under this Order and of the requirements of this Order. Upon submittal of a complete application, the third-party group may confirm membership, after which the Member will be considered covered under this Order. This provision does not apply to Members of the San Joaquin County and Delta Coalition; Westside San Joaquin River Watershed Coalition; or Southern San Joaquin Valley Water Quality Coalition governed by the Coalition Group Conditional Waiver whose parcel(s) are located in the Eastern San Joaquin River Watershed.

3. Beginning 121 days after Executive Officer issuance of an NOA to the third-party, any growers within this Order's boundaries that are not yet Members of the third-party or a Coalition

governed by the Coalition Group Conditional Waiver must submit (1) a completed Notice of Intent (NOI) to the Central Valley Water Board to comply with the conditions of this Order, (2) any required State Water Board administrative processing fee for the NOI, and (3) a Membership application to the third-party group. Upon submittal of a complete NOI, and after receiving confirmation from the third-party group that the grower is now a Member, the Central Valley Water Board Executive Officer may then issue a Notice of Applicability (NOA), after which the Member will be considered covered under this Order. In lieu of issuing an NOA, the Executive Officer may deny the NOI and require the submittal of a report of waste discharge or issue an NOA for regulatory coverage under any applicable general waste discharge requirements for individual dischargers not represented by a third-party.

4. As an alternative to receiving regulatory coverage under this Order, a discharger may submit a report of waste discharge in accordance with Water Code section 13260 or a Notice of Intent for regulatory coverage under any applicable general waste discharge requirements for individual dischargers not represented by a third-party.

B. Farm Evaluation

After the Executive Officer approves the Farm Evaluation Template (see Section VIII.C. below), Members shall complete a Farm Evaluation and submit a copy of the completed Farm Evaluation to the third-party group according to the schedule below. The Member must use the Farm Evaluation Template approved by the Executive Officer (see section VIII.C below). A copy of the Farm Evaluation shall be maintained at the Member's farming headquarters or primary place of business, and must be produced upon request by Central Valley Water Board staff. In addition, Members shall comply with the following requirements where applicable:

1. Members in Low Vulnerability Areas

a. Members with Small Farming Operations

By 1 March 2017, Members with Small Farming Operations must prepare their Farm Evaluation and submit it to the third-party. An updated Farm Evaluation must be prepared and submitted to the third-party every five years thereafter.

b. All other Members[17]

By 1 March 2015, all other Members must prepare their Farm Evaluation and submit it to the third-party. An updated Farm Evaluation must be prepared and submitted to the third-party every five years thereafter.

2. All Members in High Vulnerability Areas (Surface/Groundwater)

By 1 March 2014, all Members within a high vulnerability area must prepare their Farm Evaluation and submit it to the third-party. An updated Farm Evaluation must be prepared and submitted to the third-party by 1 March annually thereafter. As part of the Farm Evaluation, the Member shall provide information on any outreach events attended in accordance with section IV.B.4 of this Order. After 1 March 2017, the Executive Officer may approve reduction in the frequency of updates and submission of Farm Evaluations, if the third-party demonstrates that year to year changes in Farm Evaluation updates are minimal and the Executive Officer concurs that the practices identified in the Farm Evaluations are consistent with practices that, when properly implemented, will achieve receiving water limitations or best practicable treatment or control, where applicable.

[17] Members with parcels that do not meet the Small Farming Operation definition (see Attachment E).

C. Sediment and Erosion Control Plan

The requirements and deadlines of this section apply as specified to Members that are required to develop a Sediment and Erosion Control Plan per section IV.B.7 of this Order. The Member must use the Sediment and Erosion Control Plan Template approved by the Executive Officer (see section VIII.C below), or equivalent. The Sediment and Erosion Control Plan must be prepared in one of the following ways:

- The Sediment and Erosion Control Plan must adhere to the site-specific recommendation from the Natural Resources Conservation Service (NRCS), NRCS technical service provider, the University of California Cooperative Extension, the local Resource Conservation District; or conform to a local county ordinance applicable to erosion and sediment control on agricultural lands. The Member must retain written documentation of the recommendation provided and certify that they are implementing the recommendation; or

- The Sediment and Erosion Control Plan must be prepared and self-certified by the Member, who has completed a training program that the Executive Officer concurs provides necessary training for sediment and erosion control plan development; or

- The Sediment and Erosion Control Plan must be written, amended, and certified by a Qualified Sediment and Erosion Control Plan Developer possessing one of the following registrations or certifications, and appropriate experience with erosion issues on irrigated agricultural lands: California registered professional civil engineer, geologist, engineering geologist, landscape architect; professional hydrologist registered through the American Institute of Hydrology; certified soil scientist registered through the American Society of Agronomy; Certified Professional in Erosion and Sediment Control (CPSEC)^{TM}/Certified Professional in Storm Water Quality (CPSWQ)^{TM} registered through Enviro Cert International, Inc.; professional in erosion and sediment control registered through the National Institute for Certification in Engineering Technologies (NICET); or

- The Sediment and Erosion Control Plan must be prepared and certified in an alternative manner approved by the Executive Officer. Such approval will be provided based on the Executive Officer's determination that the alternative method for preparing the Sediment and Erosion Control Plan meets the objectives and requirements of this Order.

The plan shall be maintained and updated as conditions change. A copy of the Sediment and Erosion Control Plan shall be maintained at the farming operations headquarters or primary place of business; and must be produced by the Member, if requested, should Central Valley Water Board staff, or an authorized representative, conduct an inspection of the Member's irrigated lands operation.

1. Deadline for Members with Small Farming Operations

Within one (1) year of the Executive Officer accepting the third party's Sediment Discharge and Erosion Assessment Report, Members with Small Farming Operations must complete and implement a Sediment and Erosion Control Plan.

2. Deadline for all Other Members[18]

Within 180 days of the Executive Officer accepting the third party's Sediment Discharge and Erosion Assessment Report, all other Members must complete and implement a Sediment and Erosion Control Plan.

[18] Members with parcels that do not meet the Small Farming Operation definition (see Attachment E).

D. Nitrogen Management Plan

Members must prepare and implement a Nitrogen Management Plan and submit the Nitrogen Management Plan Summary Report for the previous crop year as described below. The Member must use the Nitrogen Management Plan Template approved by the Executive Officer (see section VIII.C below). The Nitrogen Management Plan and Nitrogen Management Plan Summary Report shall be maintained at the Member's farming operations headquarters or primary place of business. The Member must provide the Nitrogen Management Plan and Summary Report to board staff, if requested or, should board staff or an authorized representative conduct an inspection of the Member's irrigated agricultural operation. In addition, Members shall comply with the following requirements where applicable:

1. All Members within a High Vulnerability Groundwater Area

For Members located within a high vulnerability groundwater area, for which nitrate is identified as a constituent of concern, the Member must prepare and implement a certified Nitrogen Management Plan. The plan must be certified in one of the following ways:

- Self-certified by the Member who attends a California Department of Food and Agriculture or other Executive Officer approved training program for nitrogen plan certification. The Member must retain written documentation of their attendance in the training program; or

- Self-certified by the Member that the plan adheres to a site-specific recommendation from the Natural Resources Conservation Service (NRCS) or the University of California Cooperative Extension. The Member must retain written documentation of the recommendation provided; or

- Certified by a nitrogen management plan specialist as defined in Attachment E of this Order. Such specialists include Professional Soil Scientists, Professional Agronomists, Crop Advisors[19] certified by the American Society of Agronomy, or Technical Service Providers certified in nutrient management in California by the National Resource Conservation Service (NRCS).

- Certified in an alternative manner approved by the Executive Officer. Such approval will be provided based on the Executive Officer's determination that the alternative method for preparing the Nitrogen Management Plan meets the objectives and requirements of this Order.

a. Deadlines for Members with Small Farming Operations

By 1 March 2016, Members with Small Farming Operations shall prepare, and update by 1 March annually thereafter, a Nitrogen Management Plan. By 1 March 2017, and by 1 March annually, thereafter, Members with Small Farming Operations shall submit to the third-party the Nitrogen Management Plan Summary Report for the previous year.

b. Deadlines for all other Members[20]

By 1 March 2014, all other Members shall prepare, and update by 1 March annually thereafter, a Nitrogen Management Plan. By 1 March 2015, and by 1 March annually, thereafter, all other

[19] Should the California Department of Food and Agriculture and the California Certified Crop Adviser's establish a specific nitrogen management certification, any Certified Crop Adviser who certifies a nitrogen management plan must have a nitrogen management certification.

[20] Members with parcels that do not meet the Small Farming Operation definition (see Attachment E).

Members shall submit to the third-party the Nitrogen Management Plan Summary Report for the previous year.

c. Deadlines for Members re-designated from Low Vulnerability to High Vulnerability Groundwater Areas

Members with parcel(s) re-designated from low vulnerability to high vulnerability groundwater areas must prepare a Nitrogen Management Plan in compliance with this section (VII.D.1).[21] The schedule for certifying the Nitrogen Management Plan and submitting the initial Nitrogen Management Plan Summary Report will be established by the Executive Officer.

After 1 March 2017, the Executive Officer may approve reduction in the frequency of submission of Nitrogen Management Plan Summary Reports, if the third-party demonstrates that year to year changes in Nitrogen Management Summary Reports are minimal and the Executive Officer concurs that the implemented practices are achieving the performance standard (see section IV.B.8).

2. Members within a Low Vulnerability Groundwater Area

By 1 March 2016, all Members within low vulnerability areas shall prepare, and update by 1 March annually thereafter, a Nitrogen Management Plan. The Member must use the Nitrogen Management Plan Template approved by the Executive Officer (see section VIII.C below), or equivalent. Certification of the Nitrogen Management Plan and submittal of a Nitrogen Management Plan Summary Report are not required.

E. Mitigation Monitoring

As specified in this Order, certain members are required to implement the mitigation measures included in Attachment C. Such Members shall submit mitigation monitoring by 1 March of each year to the third-party. Mitigation monitoring shall include information on the implementation of CEQA mitigation measures, including the mitigation measure implemented, potential environmental impact the mitigation measure addressed, location of the mitigation measure [parcel number, county], and any steps taken to monitor the ongoing success of the measure.

F. Notice of Termination

If the Member wishes to terminate coverage under this Order and withdraw its membership from the third-party, the Member shall submit a complete notice of termination (NOT) to the Central Valley Water Board and the third-party. Termination of regulatory coverage will occur on the date specified in the NOT, unless the Central Valley Water Board specifies otherwise. All discharges of waste to surface and groundwaters shall cease before the date of termination, and any discharges on or after this date shall be considered in violation of the California Water Code, unless other WDRs or waivers of WDRs regulate the discharge.

VIII. Required Reports and Notices – Third-Party

The Central Valley Water Board or the Executive Officer may require any of the reports and notices to be submitted electronically, as long as the electronic format is reasonably available to the third-party. The third-party shall submit reports and notices in accordance with section IX, Reporting Provisions. The third-party must prepare the following reports:

A. Application to Serve as a Third-Party Representing Members

Within 30 days of the effective date of this Order, the third-party must submit a letter to the Executive Officer requesting that the third-party serve as a third-party representing Members to

[21] The designation of the vulnerability area may change based on updates to the Groundwater Quality Assessment Report (see the MRP – Attachment B).

carry out the third-party responsibilities. The Executive Officer will consider the following factors in determining whether to approve the request by issuing a Notice of Applicability (NOA) to the third-party.

1. Ability of the third-party to carry out the identified third-party responsibilities.

2. Whether the third-party is a legally defined entity (i.e., non-profit corporation; local or state government; Joint Powers Authority) or has a binding agreement among multiple entities that clearly describes the mechanisms in place to ensure accountability to its members.

3. Whether the third-party has binding agreements with any subsidiary group (e.g., subwatershed group) to ensure any third-party responsibilities carried out by the subsidiary group, including the collection of fees, are done so transparently and with accountability to the third party. If the third-party will not rely on any subsidiary group to carry out any of its responsibilities, the third-party must state that in its application letter.

4. Whether the third-party has a governance structure that includes a governing board of directors composed in whole or in part of Members, or otherwise provides Members with a mechanism to direct or influence the governance of the third-party through appropriate by-laws.

5. Should the Central Valley Water Board terminate an organization's role as a third-party or the third-party submit a notice of termination, the Executive Officer will apply the above factors in evaluating the request of any successor organization to serve as a third-party and determining whether to approve the request by issuing an NOA.

B. Membership (Participant) List

The third-party shall submit a list of its Members to the Central Valley Water Board within 180-days of receiving an NOA from the board and then annually by 31 July of each year (beginning the year following initial submission of the list). The membership list shall identify Members. The list shall also identify growers that have had their membership revoked and Members that are pending revocation. The membership list shall contain, at a minimum, the following information for each member: all parcel numbers covered under the membership, the county of each parcel, the section, township, and range associated with each parcel, the number of irrigated acres for each parcel, the Member's name, mailing address, the contact name and phone number of the individuals authorized to provide access to the enrolled parcels, the name of the farm operator for each parcel, if different from the Member, and identification of each parcel that is part of a Small Farming Operation, if applicable. In lieu of providing Members' phone numbers as part of the membership list, the third-party may provide the office contact name(s) and phone number(s) of a representative of the third-party. Any listed third-party office contact must be available for Central Valley Water Board staff to contact Monday through Friday (except established state holidays) from 8 am to 5 pm.

C. Templates

Through the process described below, the Central Valley Water Board intends to provide templates to all Members that must be used to comply with the requirements of this Order. The board intends that these templates be developed by the third-party or Central Valley Water Board staff in coordination with other agricultural groups and experts to ensure the templates are applicable and relevant for Members. To the extent possible, the templates need to collect information consistently across irrigated agricultural areas and commodities. Consistent information collection will facilitate analysis within a geographic area and across the Central Valley. However, the board recognizes that templates may vary (e.g., by commodity group) and may need to be tailored more specifically to

ensure relevant information is collected. For example, templates for irrigated pasture would focus on collecting different types of data than templates for orchards.

1. Farm Evaluation Template

Template development shall be in accordance with the requirements specified in Attachment B to this Order. Templates will be developed as follows:

a. Farm Evaluation Template Group Option

The third-party may develop a Farm Evaluation Template with other agricultural water quality coalitions and agricultural commodity groups. Should it choose the group option, the third-party shall submit a Farm Evaluation Template to the Central Valley Water Board within 90-days from receiving an NOA from the board. The third-party shall make the Farm Evaluation Template available to its Members within 30-days of approval by the Executive Officer. Requirements for the Farm Evaluation Template Group Option are described in MRP section VI.A., or

b. Central Valley Water Board Farm Evaluation Template

The third-party shall work with Central Valley Water Board staff in the development of a Farm Evaluation Template. Should it choose this option, the third-party shall make the Farm Evaluation Template available to its Members within 30-days of receiving the final Farm Evaluation Template as provided by the Central Valley Water Board's Executive Officer.

2. Nitrogen Management Plan Template

Template development shall be in accordance with the requirements specified in Attachment B to this Order. Templates will be developed as follows:

a. Nitrogen Management Plan Template Group Option

The third-party may develop a Nitrogen Management Plan Template with other agricultural water quality coalitions and agricultural commodity groups. Should it choose the group option, the third-party shall submit the Nitrogen Management Plan Template to the Central Valley Water Board's Executive Officer within 90-days from receiving an NOA from the board. The third-party shall make the Nitrogen Management Plan Template available to its Members within 30-days of approval by the Central Valley Water Board Executive Officer. Requirements for the Nitrogen Management Plan Template Group Option are described in MRP section VI.B, or

b. Central Valley Water Board Nitrogen Management Plan Template

The third-party shall work with Central Valley Water Board staff in the development of a Nitrogen Management Plan Template (including the associated Nitrogen Management Plan Summary Report). Should it choose this option, the third-party shall make the Nitrogen Management Plan Template available to its Members within 30-days of receiving the final Nitrogen Management Plan Template as provided by the Central Valley Water Board's Executive Officer.

3. Sediment and Erosion Control Plan Template

Template development shall be in accordance with the requirements specified in Attachment B to this Order. Templates will be developed as follows:

a. Sediment and Erosion Control Plan Template Group Option

The third-party may develop a Sediment and Erosion Control Plan Template with other agricultural water quality coalitions and agricultural commodity groups. Should it choose the group option, the third-party shall submit the Sediment and Erosion Control Plan Template to the Central Valley Water Board's Executive Officer within 90-days from receiving an NOA from the board. The third-party shall make the Sediment and Erosion Control Plan Template available to

its Members within 30-days of approval by the Central Valley Water Board Executive Officer. Requirements for the Sediment and Erosion Control Plan Template Group Option are described in MRP section VI.C., or

b. Central Valley Water Board Sediment and Erosion Control Plan Template

The third party shall work with Central Valley Water Board staff in the development of a Sediment and Erosion Control Plan Template. Should it choose this option, the third-party shall make the final Sediment and Erosion Control Plan Template available to those Members required to develop a Sediment and Erosion Control Plan within 30-days of receiving the final Sediment and Erosion Control Plan Template as provided by the Central Valley Water Board's Executive Officer.

D. Groundwater Quality Assessment Report and Evaluation/Monitoring Workplans

This Order's strategy for evaluating groundwater quality and protection consists of 1) a Groundwater Assessment Report, 2) a Management Practices Evaluation Program, and 3) a Groundwater Quality Trend Monitoring Program. Each of these elements has its own specific objectives briefly described below, with more detail provided in the attached MRP.

1. Groundwater Quality Assessment Report

The Groundwater Quality Assessment Report (GAR) provides the foundational information necessary for design of the Management Practices Evaluation Program, the Groundwater Quality Trend Monitoring Program, and the Groundwater Quality Management Plan. To accomplish this purpose, the GAR must include the following:

- Assessment of all available, applicable and relevant data and information to determine the high and low vulnerability areas where discharges from irrigated lands may result in groundwater quality degradation,
- Establish priorities for implementation of monitoring and studies within high vulnerability areas;
- Provide a basis for establishing workplans to assess groundwater quality trends;
- Provide a basis for establishing workplans and priorities to evaluate the effectiveness of agricultural management practices to protect groundwater quality; and
- Provide a basis for establishing groundwater quality management plans in high vulnerability areas and priorities for implementation of those plans.

The GAR shall include the elements described in MRP section IV. The GAR shall be submitted to the Central Valley Water Board and Central Valley Salinity Coalition within one (1) year of receiving an NOA from the Executive Officer.

2. Management Practice Evaluation Program Workplan

Upon Executive Officer approval of the GAR, the third-party shall develop, either solely, or as a coordinated effort (see group option below), a Management Practice Evaluation Program Workplan. The workplan must meet the goals, objectives, and other requirements described in section IV of the attached MRP. The overall goal of the Management Practice Evaluation Program (MPEP) is to determine the effects, if any, irrigated agricultural practices have on first encountered groundwater under different conditions that could affect the discharge of waste from irrigated lands to groundwater (e.g., soil type, depth to groundwater, irrigation practice, crop type, nutrient management practice). A MPEP must address the conditions relevant to high vulnerability groundwater areas. The third-party may develop the workplan in accordance with one of the options described below.

a. Management Practices Evaluation Program Group Option

The third-party may fulfill its requirements as part of a larger Management Practices Evaluation Program Group. A Management Practices Evaluation Program (MPEP) Group refers to an entity that is formed to develop and carry out the management practices effectiveness evaluations required of this and other Orders applicable to the irrigated lands in the Central Valley.

At the time the GAR is submitted, the third-party must submit a copy of the agreement of the parties included in the MPEP Group. The agreement must include a description of the roles and responsibilities of each of the organizations in the MPEP Group; identification of the technical experts who will prepare and implement the workplans, along with their qualifications; the person(s) responsible for the timely completion of the workplans and reports required by this Order; and an organizational chart showing the reporting relationships and responsibilities of the participants in the group.

The third-party may use the group option if approved by the Executive Officer. The Executive Officer may disapprove the use of the group option, if 1) the group fails to meet required deadlines or implement the approved workplans; 2) the agreement submitted is not complete; or 3) the agreement submitted is deficient.

The MPEP Group Workplan shall be submitted to the Central Valley Water Board within two (2) years after written approval of the GAR by the Executive Officer.

b. Third-party Only Management Practices Evaluation Program

Under this option, the third-party MPEP Workplans shall be submitted to the Central Valley Water Board within one (1) year after written approval of the GAR by the Executive Officer.

3. Groundwater Quality Trend Monitoring Workplan

Upon Executive Officer approval of the GAR, the third-party shall develop a Groundwater Quality Trend Monitoring Workplan. The workplan must meet the goals, objectives, and other requirements described in section IV of the attached MRP. The overall objectives of groundwater trend monitoring are to determine current water quality conditions of groundwater relevant to irrigated agriculture and develop long-term groundwater quality information that can be used to evaluate the regional effects of irrigated agricultural practices. The workplan shall be submitted to the Central Valley Water Board within one (1) year after written approval of the GAR by the Executive Officer.

E. Sediment Discharge and Erosion Assessment Report

The Sediment Discharge and Erosion Assessment Report shall be submitted to the Central Valley Water Board within one (1) year of receiving an NOA from the Executive Officer. Within 30 days of written acceptance of the Sediment Discharge and Erosion Assessment Report, the third-party shall inform those Members with parcels in areas identified in the report of their obligation to prepare a Sediment and Erosion Control Plan. The Sediment Discharge and Erosion Assessment Report shall include the elements described in MRP section VII.

F. Surface Water Exceedance Reports

The third-party shall provide exceedance reports if surface water monitoring results show exceedances of adopted numeric water quality objectives or trigger limits, which are based on interpretations of narrative water quality objectives. Surface water exceedance reports shall be submitted in accordance with the requirements described in section V.D of the MRP.

G. Monitoring Report

The third-party shall submit the Monitoring Report to the Central Valley Water Board in accordance with the requirements in section V.C of the MRP.

H. Surface Water/Groundwater Quality Management Plan (SQMP/GQMP)

1. SQMP/GQMP General Requirements

SQMP/GQMPs submitted by the third-party shall conform to the requirements provided in the MRP, Appendix MRP-1. Existing SQMPs that were developed and approved under the Coalition Group Conditional Waiver (Conditional Waiver Order R5-2006-0053) continue to apply under this Order and shall be implemented as previously approved. Changes to any management plan may be implemented by the third-party only after approval by the Executive Officer. The Executive Officer may require changes to a management plan if the current management plan approach is not making adequate progress towards addressing the water quality problem or if the information reported by the third-party does not allow the Central Valley Water Board to determine the effectiveness of the management plan. Members shall comply with the revised management plans once they are approved by the Executive Officer.

For newly triggered SQMP/GQMPs, the third-party shall submit a SQMP/GQMP to the Central Valley Water Board within sixty (60) days. For any SQMP or GQMP that addresses salt or nitrates, the SQMP or GQMP shall also be submitted to the Chair of the CV-SALTS Executive Committee. This 60-day period begins the first business day after the third party's receipt of the field or laboratory results that reported the triggering exceedance. The Central Valley Water Board will post the proposed SQMP/GQMP for a public review and comment period. Stakeholder comments will be considered by Central Valley Water Board staff to determine if additional revisions are appropriate. The third-party may, at its discretion, implement outreach or monitoring contained in a proposed management plan before approval. Members shall comply with the management plans once they are approved by the Executive Officer.

The third-party shall ensure continued implementation of SQMP/GQMPs until completed by the Executive Officer pursuant to the provisions contained in the attached MRP, Appendix MRP-1, section III. The third-party shall submit a progress report in compliance with the provisions contained in the attached MRP, Appendix MRP-1, section I.F.

2. Conditions Requiring Preparation of SQMP/GQMP

Surface Water Quality Management Plan (SQMP)

A SQMP shall be developed by the third-party where: (1) an applicable water quality objective or applicable water quality trigger limit is exceeded (considering applicable averaging periods[22]) twice in a three year period for the same constituent at a monitoring location (trigger limits are described in section VIII of the MRP) and irrigated agriculture may cause or contribute to the exceedances; (2) the Basin Plan requires development of a surface water quality management

[22] Exceedances of water quality objectives or water quality triggers will be determined based on available data and application of the appropriate averaging period. The averaging period is typically defined in in the Basin Plan, as part of the water quality standard established by the USEPA, or as part of the criteria being used to interpret narrative objectives. If averaging periods are not defined in the Basin Plan, USEPA standard, or criteria, or approved water quality trigger, the Central Valley Water Board will use the best available information to determine an appropriate averaging period.

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 surface water that may threaten applicable Basin Plan beneficial uses.

Groundwater Quality Management Plan (GQMP)

A GQMP shall be developed by the third-party where: (1) there is a confirmed exceedance[23] (considering applicable averaging periods) of a water quality objective or applicable water quality trigger limit (trigger limits are described in section VIII of the MRP) in a groundwater well and irrigated agriculture may cause or contribute to the exceedance; (2) in high vulnerability groundwater areas to be determined as part of the Groundwater Assessment Report process (see MRP section IV); (3) the Basin Plan requires development of a groundwater quality management plan for a constituent or constituents discharged by irrigated agriculture; or (4) 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.

If the extent of Member contribution to a water quality exceedance(s) or degradation trend is unknown, the third-party may propose activities to be conducted to determine the cause, or eliminate irrigated agriculture as a potential source instead of initiating a management plan. Requirements for source identification studies are set forth in the MRP, Appendix MRP-1, section I.G.

3. SQMP/GQMP Not Required

At the request of the third-party or upon recommendation by Central Valley Water Board staff, the Executive Officer may determine that the development of a SQMP/GQMP is not required. Such a determination may be issued if there is sufficient evidence indicating that Members discharging waste to the affected surface or groundwater are meeting the receiving water limitations given in section III of this Order (e.g., evidence indicates that irrigated agriculture does not cause or contribute to the water quality problem) or the Executive Officer determines that the exceedance is not likely to be remedied or addressed by a management plan.

4. Comprehensive Groundwater Quality Management Plan

In lieu of submitting separate groundwater quality management plans in the timeframe identified in section VIII.H.1, the third-party may submit a Comprehensive Groundwater Quality Management Plan along with its Groundwater Quality Assessment Report. With the exception of the timeframe identified in section VIII.H.1, all other provisions applicable to groundwater quality management plans in this Order and the associated MRP apply to the Comprehensive Groundwater Quality Management Plan. The Comprehensive Groundwater Quality Management Plan must be updated at the same time as the Management Plan Progress Report (see attached MRP, Appendix MRP-1, section I.F) to address any constituents and areas that would have otherwise required submittal of a Groundwater Quality Management Plan.

5. Comprehensive Surface Water Quality Management Plan

In lieu of submitting separate surface water quality management plans in the timeframe identified in section VIII.H.1, the third-party may submit a Comprehensive Surface Water Quality Management Plan or update the Surface Water Quality Management Plan approved under the

[23] A "confirmed exceedance of a water quality objective in a groundwater well" means that the monitoring data are determined to be of the appropriate quality and quantity necessary to verify that an exceedance has occurred.

Coalition Group Conditional Waiver to conform to this Order and MRP. With the exception of the timeframe identified in section VIII.H.1, all other provisions applicable to surface water quality management plans in this Order and the associated MRP apply to the Comprehensive Surface Water Quality Management Plan or an updated Surface Water Quality Management Plan approved under the Coalition Group Conditional Waiver. The Comprehensive Surface Water Quality Management Plan must be updated at the same time as the Management Plan Progress Report (see attached MRP, Appendix MRP-1, section I.F) to address any constituents and areas that would have otherwise required submittal of a Surface Water Quality Management Plan.

I. Technical Reports

Where monitoring required by this Order is not effective in allowing the board to determine the effects of irrigated agricultural waste discharge on state waters or the effectiveness of water quality management practices being implemented, the Executive Officer may require technical reports be provided to determine the effects of irrigated agricultural operations or implemented management practices on surface water or groundwater quality.

J. Notice of Termination

If the third-party wishes to terminate its role in carrying out the third-party responsibilities set forth in section VIII of this Order and other applicable provisions, the third-party shall submit a notice of termination letter to the Central Valley Water Board and all of its Members. Termination of the third-party will occur 30-days from submittal of the notice of termination letter, unless otherwise specified in the letter. With its notice of termination sent to its Members, the third-party shall inform its Members of their obligation to obtain coverage under other WDRs or a waiver of WDRs for their discharges, or inform such Members that they shall cease all discharges of waste to surface and groundwaters.

K. Total Maximum Daily Load (TMDL) Requirements

Approved TMDLs in the Basin Plan that apply to water bodies within the third-party's geographic area and have allocations for irrigated agriculture shall be implemented in accordance with the applicable Basin Plan provisions. Where required, the third-party shall coordinate with Central Valley Water Board staff to develop a monitoring design and strategy for TMDL implementation. Where applicable, SQMPs shall address TMDL requirements.

IX. Reporting Provisions

1. Members and the third-party must submit required reports and notices in accordance with the requirements in this Order and attached Monitoring and Reporting Program Order R5-2012-0116, unless otherwise requested by the Executive Officer.

2. All reports shall be accompanied by a cover letter containing the certification specified in section IX.3 below. The cover letter shall be signed by a person identified below, or by a duly authorized representative of that person:

   For all reports:
   a. For a sole proprietorship: by the proprietor;
   b. For a partnership: by a general partner;
   c. For a corporation or the third-party: by a principal executive officer of at least the level of senior vice-president.

A person is a duly authorized representative only if:

i. The authorization is made in writing by a person described in subsection a, b, or c of this provision; and
ii. The authorization specifies either an individual or a position having responsibility for the overall operation of the facility or organization, such as the position of manager. A duly authorized representative may thus be either a named individual or an individual occupying a named position; and
iii. The written authorization is submitted to the Central Valley Water Board.

3. Each person signing a report required by this Order or other information requested by the Central Valley Water Board shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel or represented Members properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for violations."

4. All reports prepared and submitted to the Executive Officer in accordance with the terms of this Order will be made available for public inspection at the offices of the Central Valley Water Board, except for reports, or portions of such reports, subject to an exemption from public disclosure in accordance with California law and regulations, including the Public Records Act, Water Code section 13267(b)(2), and the California Food and Agriculture Code. If the third-party or a Member or the third-party asserts that all or a portion of a report is subject to an exemption from public disclosure, it must clearly indicate on the cover of the report that it asserts that all or a portion of the report is exempt from public disclosure. The complete report must be submitted with those portions that are asserted to be exempt in redacted form, along with separately-bound unredacted pages (to be maintained separately by staff). The Member/third-party shall identify the basis for the exemption. If the Executive Officer cannot identify a reasonable basis for treating the information as exempt from disclosure, the Executive Officer will notify the Member/third-party that the information will be placed in the public file unless the Central Valley Water Board receives, within 10 calendar days, a satisfactory explanation supporting the claimed exemption. Data on waste discharges, water quality, meteorology, geology, and hydrogeology shall not be considered confidential. NOIs shall generally not be considered exempt from disclosure.

5. To the extent feasible, all reports submitted by Members shall be submitted electronically to irrlands@waterboards.ca.gov, unless the Member is unable to submit the report electronically. If unable to submit the report electronically, the grower shall mail or personally deliver the report to the Central Valley Water Board. All reports from the third-party shall be submitted electronically to its Central Valley Water Board-assigned staff liaison. Upon notification by the Central Valley Water Board, all reports shall be submitted directly into an online reporting system, to the extent feasible.

X. Record-keeping Requirements

The Member and the third-party shall maintain any reports or records required by this Order for five years. Records maintained by the third-party include reports and plans submitted by Members to the third-party for purposes of complying with this Order. Individual Member information used by the

third-party to prepare required reports must be maintained electronically and associated with the Member submitting the information. The maintained reports or records, including electronic information, shall be made available to the Central Valley Water Board upon written request of the Executive Officer. This includes all monitoring information, calibration and maintenance records of sampling equipment, copies of reports required by this Order, and records of all data used to complete the reports. Records shall be maintained for a minimum of five years from the date of sample, measurement, report, or application. This five-year period shall be extended during the course of any unresolved litigation regarding the discharge or when requested in writing by the Executive Officer.

XI. Annual Fees

1. Water Code section 13260(d)(1)(A) requires persons subject to waste discharge requirements to pay an annual fee established by the State Water Resources Control Board (State Water Board).

2. Members shall pay an annual fee to the State Water Board in compliance with the Waste Discharge Requirement fee schedule set forth at 23 CCR section 2200. The third-party is responsible for collecting these fees from Members and submitting them to the State Water Board on behalf of Members.

XII. Time Schedule for Compliance

When a SQMP or GQMP is required pursuant to the provisions in section VIII.H, the following time schedules shall apply as appropriate in order to allow Members sufficient time to achieve compliance with the surface and groundwater receiving water limitations described in section III of this Order. The Central Valley Water Board may modify these schedules based on evidence that meeting the compliance date is technically or economically infeasible, or when evidence shows that compliance by an earlier date is feasible (modifications will be made per the requirements in section VI of this Order). Any applicable time schedules for compliance established in the Basin Plan supersedes the schedules given below (e.g., time schedules for compliance with salinity standards that may be established in future Basin Plan amendments through the CV-SALTS process, or time schedules for compliance with water quality objectives subject to an approved TMDL).

Surface water: The time schedule identified in the SQMP for compliance with Surface Water Limitation III.A must be as short as practicable, but may not exceed 10 years from the date the SQMP is submitted for approval by the Executive Officer. The proposed time schedule in the SQMP must be supported with appropriate technical or economic justification as to why the proposed schedule is as short as practicable.

Groundwater: The time schedule identified in a GQMP for compliance with Groundwater Limitation III.B must be as short as practicable, but may not exceed 10 years from the date the GQMP is submitted for approval by the Executive Officer. The proposed time schedules in the GQMP must be supported with appropriate technical or economic justification as to why the proposed schedules are as short as practicable.

This Order becomes effective on 7 December 2012 and remains in effect unless rescinded or revised by the Central Valley Water Board.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify the foregoing is a full and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region on 7 December 2012.

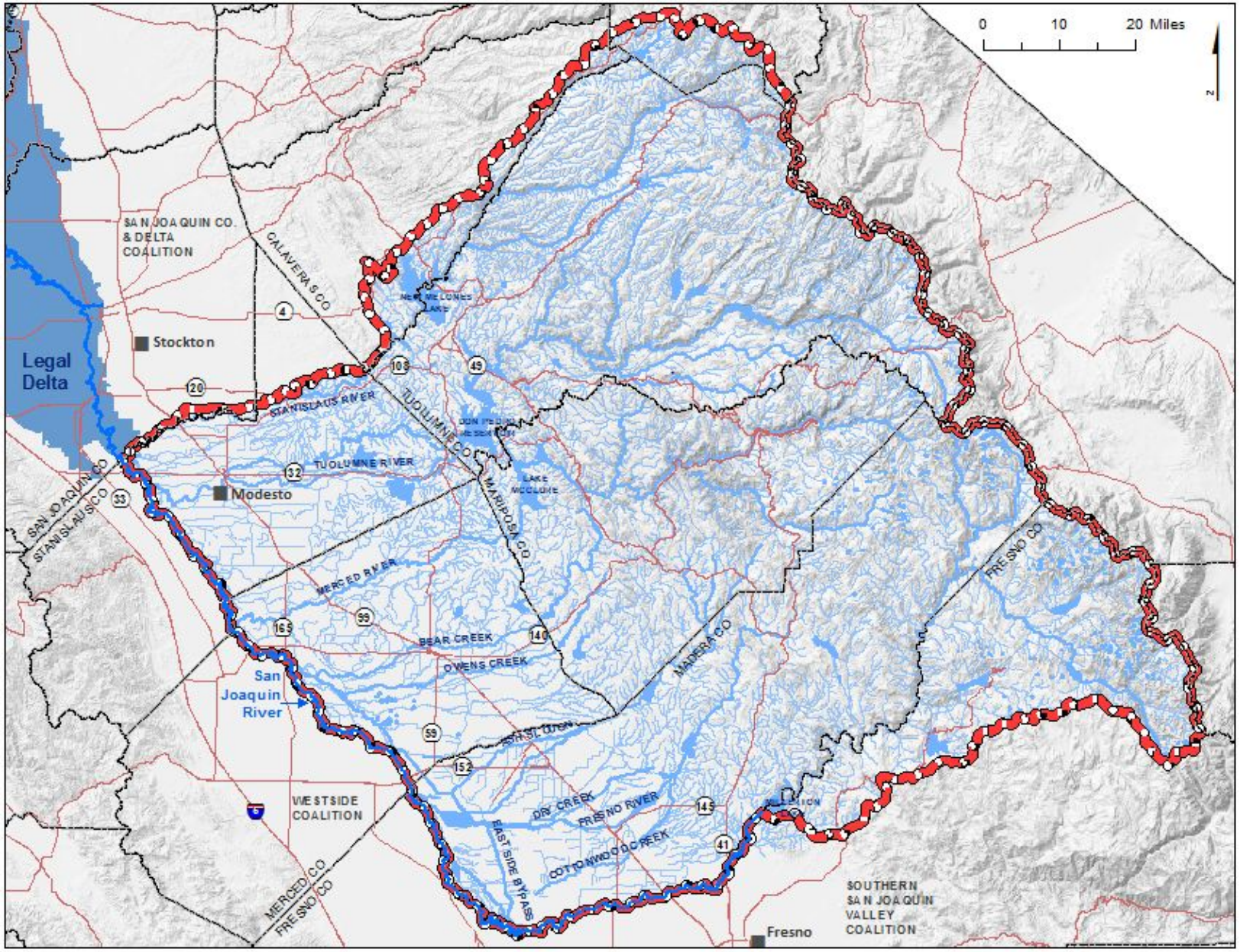
Original signed by

PAMELA C. CREEDON, Executive Officer

7 December 2012

Date

Figure 1. Map of the Eastern San Joaquin River Watershed Area.



CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

Attachment A to Order R5-2012-0116
INFORMATION SHEET

WASTE DISHARGE REQUIREMENTS GENERAL ORDER
FOR
GROWERS WITHIN THE EASTERN SAN JOAQUIN RIVER WATERSHED
THAT ARE MEMBERS OF THE THIRD-PARTY GROUP

Table of Contents

Overview

This attachment to Waste Discharge Requirements General Order for Growers within the Eastern San Joaquin River Watershed that are Members of the Third-Party group, Order R5-2012-0116 (referred to as the "Order") is intended to provide information regarding the rationale for the Order, general information on surface and groundwater monitoring that has been conducted, and a discussion of this Order's elements that meet required state policy.

Introduction

There are numerous irrigated agricultural operations within the boundaries of the Central Valley Water Board on over 7 million acres. Common to all types of these operations is the use of water to sustain crops. Depending on irrigation method, water use, geography, geology, climate, and the constituents (e.g., nutrients, pesticides, pathogens) present or used at a site, water discharged from the site may carry these constituents as waste off site and into groundwater or surface waters.

The Central Valley Regional Water Quality Control Board Irrigated Lands Regulatory Program (ILRP) was initiated in 2003 with the adoption of a conditional waiver of WDRs for discharges from irrigated lands. The 2003 conditional waiver was renewed in 2006. The conditional waiver's requirements are designed to reduce wastes discharged from irrigated agricultural sites (e.g., tailwater, runoff from fields, subsurface drains) to Central Valley surface waters (Central Valley Water Board 2006).

In addition to providing conditions, or requirements, for discharge of waste from irrigated agricultural lands to surface waters, the Central Valley Water Board's conditional waiver included direction to board staff to develop an environmental impact report for a long-term ILRP that would protect waters of the state (groundwater and surface water) from discharges of waste from irrigated lands. Although the requirements of the conditional waiver are aimed to protect surface water bodies, the directive to develop a long-term ILRP and environmental impact report is not as limited, as waters of the State include ground and surface waters within the State of California (CWC, Section 13050[e]).

The Central Valley Water Board completed an Existing Conditions Report (ECR) for Central Valley irrigated agricultural operations in December 2008. The ECR was developed to establish baseline conditions for estimating potential environmental and economic effects of long-term ILRP alternatives in a program environmental impact report (PEIR) and other associated analyses.

In fall 2008, the Central Valley Water Board convened the Long-Term ILRP Stakeholder Advisory Workgroup (Workgroup). The Workgroup included a range of stakeholder interests representing local government, industry, agricultural coalitions, and environmental/environmental justice groups throughout the Central Valley. The main goal of the Workgroup was to provide Central Valley Water Board staff with input on the development of the long-term ILRP. Central Valley Water Board staff and the Workgroup developed long-term program goals and objectives and a range of proposed alternatives for consideration in a PEIR and corresponding economic analysis. In August 2009 the Workgroup generally

approved the goals, objectives, and range of proposed alternatives for the long-term ILRP. The Workgroup did not come to consensus on a preferred alternative.

The Central Valley Water Board's contractor, ICF International, developed the Program Environmental Impact Report (PEIR)[1] and Economics Report[2] for consideration by the board. The PEIR analyzed the range of proposed alternatives developed by the Workgroup. The Draft PEIR was released in July 2010, and the Final PEIR was certified by the board in April 2011 (referred to throughout as "PEIR"). In June 2011, the board directed staff to begin developing waste discharge requirements (orders) that would implement the long-term ILRP to protect surface and groundwater quality. During 2011, the board reconvened the Stakeholder Advisory Workgroup to provide additional input in the development of the orders. Also, during the same time, the board worked with the Groundwater Monitoring Advisory Workgroup to develop an approach for groundwater monitoring in the ILRP.

The board's intent is to develop seven geographic and one commodity-specific general waste discharge requirements (general orders) within the Central Valley region for irrigated lands owners/operators that are part of a third-party group. In addition, the board intends to develop a general order for irrigated lands owners/operators that are not part of a third-party group.

The geographic/commodity-based orders will allow for tailoring of implementation requirements based on the specific conditions within each geographic area. At the same time, the board intends to maintain consistency in the general regulatory approach across the orders through the use of templates for grower reporting, as well as in the focus on high vulnerability areas and areas with known water quality issues. The Order includes provisions to reduce the reporting requirements for small farming operations and areas of low vulnerability. The Eastern San Joaquin River Watershed General Order is the first of these orders to be considered by the board.

Goals and Objectives of the Irrigated Lands Regulatory Program

The goals and objectives of this Order, which implements the long term ILRP in the Eastern San Joaquin River Watershed, are described below. These are the goals described in the PEIR for the ILRP.[3]

"Understanding that irrigated agriculture in the Central Valley provides valuable food and fiber products to communities worldwide, the overall goals of the ILRP are to (1) restore and/or maintain the highest reasonable quality of state waters considering all the demands being placed on the water; (2) minimize waste discharge from irrigated agricultural lands that could degrade the quality of state waters; (3) maintain the economic viability of agriculture in California's Central Valley; and (4) ensure that irrigated agricultural discharges do not impair access by Central Valley communities and residents to safe and reliable drinking water. In accordance with these goals, the objectives of the ILRP are to:

- *Restore and/or maintain appropriate beneficial uses established in Central Valley Water Board water quality control plans by ensuring that all state waters meet applicable water quality objectives.*
- *Encourage implementation of management practices that improve water quality in keeping with the first objective, without jeopardizing the economic viability for all sizes of irrigated agricultural operations in the Central Valley or placing an undue burden on rural communities to provide safe drinking water.*

[1] ICF International. 2011. Irrigated Lands Regulatory Program, Program Environmental Impact Report. Draft and Final. March. (ICF 05508.05.) Sacramento, CA. Prepared for Central Valley Regional Water Quality Control Board, Sacramento, CA.
[2] ICF International. 2010. Draft Technical Memorandum Concerning the Economic Analysis of the Irrigated Lands Regulatory Program) (Economics Report).
[3] PEIR, page 2-6

- *Provide incentives for agricultural operations to minimize waste discharge to state waters from their operations.*
- *Coordinate with other Central Valley Water Board programs, such as the Grasslands Bypass Project WDRs for agricultural lands total maximum daily load development, CV-SALTS, and WDRs for dairies.*
- *Promote coordination with other regulatory and non-regulatory programs associated with agricultural operations (e.g., DPR, the California Department of Public Health [DPH] Drinking Water Program, the California Air Resources Board [ARB], the California Department of Food and Agriculture, Resource Conservation Districts [RCDs], the University of California Extension, the Natural Resources Conservation Service [NRCS], the USDA National Organic Program, CACs, State Water Board Groundwater Ambient Monitoring and Assessment Program, the U.S. Geological Survey [USGS], and local groundwater programs [SB 1938, Assembly Bill [AB] 3030, and Integrated Regional Water Management Plans]) to minimize duplicative regulatory oversight while ensuring program effectiveness."*

Description of the Eastern San Joaquin Watershed Area[4]

The Eastern San Joaquin Watershed area includes portions of Stanislaus, Merced, Calaveras, Fresno, and Alpine Counties, as well as the entire counties of Madera, Tuolumne, and Mariposa. See Figure 1 of the Order for a map of the area. There are approximately 1,000,000 acres of irrigated agricultural land within the watershed area, although approximately 165,000 of these acres are regulated under the Central Valley Water Board's General Order for Existing Milk Cow Dairies. See Table 1 below for more detailed acreage information.

Surface water flows northward and out of the watershed area via the San Joaquin River. The San Joaquin drains watersheds on the east and west side of the San Joaquin Valley, though only east side watersheds are included in this Order's watershed area. In addition to the San Joaquin River, which forms the southern and western boundary of the watershed, there are five major rivers in the watershed: the Fresno River, the Chowchilla River, the Merced River, the Tuolumne River and the Stanislaus River. In addition, the Eastside Bypass is considered a major waterbody. These eastern tributaries of the San Joaquin River drain the Sierra Nevada range from east to west. The region also contains all or portions of seven groundwater basins; see Figure 5 for a map of the groundwater basins.

The Eastern San Joaquin River Watershed area includes portions of two geomorphic provinces: the Sierra Nevada and Great Valley provinces. The San Joaquin Valley, part of the Great Valley, is a large sediment-filled trough, thousands of feet thick in some locations (Figure 1, Thiros 2010).[5] Scattered throughout the sediment-filled trough in the subsurface exist many lenses at varying depths of fine-grained deposits, including Corcoran Clay deposits, which form confining layer(s) (Figure 2, Bertold, Johnston, Evenson 1991).[6] Figure 3 from Thiros 2010 is a generalized diagram of the Central Valley, showing the basin-fill deposits and the components of the groundwater system under modern conditions.

[4] This section is adapted from the East San Joaquin Water Quality Coalition's 20 October 2010 Monitoring and Reporting Program Plan.
[5] Thiros, S.A., 2010. Section 13. Conceptual Understanding and Groundwater Quality of the Basin-Fill Aquifer in the Central Valley, California *in* Conceptual Understanding and Groundwater Quality of Selected Basin-Fill Aquifers in the Southwestern United States. United States Geological Survey Professional Paper 1781.
[6] Bertold, G.L., Johnston, R.H., Evenson, K.D. 1991. Groundwater in the Central Valley, California—A summary report. United States Geological Survey Professional Paper 1401-A.

Figure 1. Generalized Geology of the Eastern San Joaquin River Watershed – adapted from Thiros (2010)

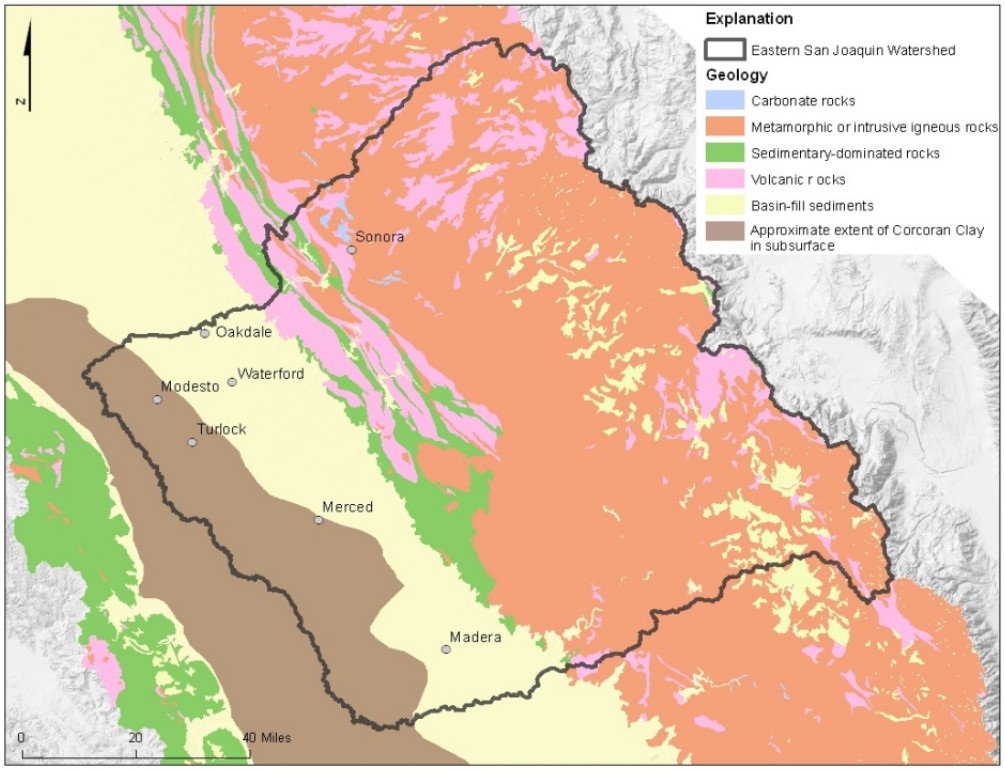
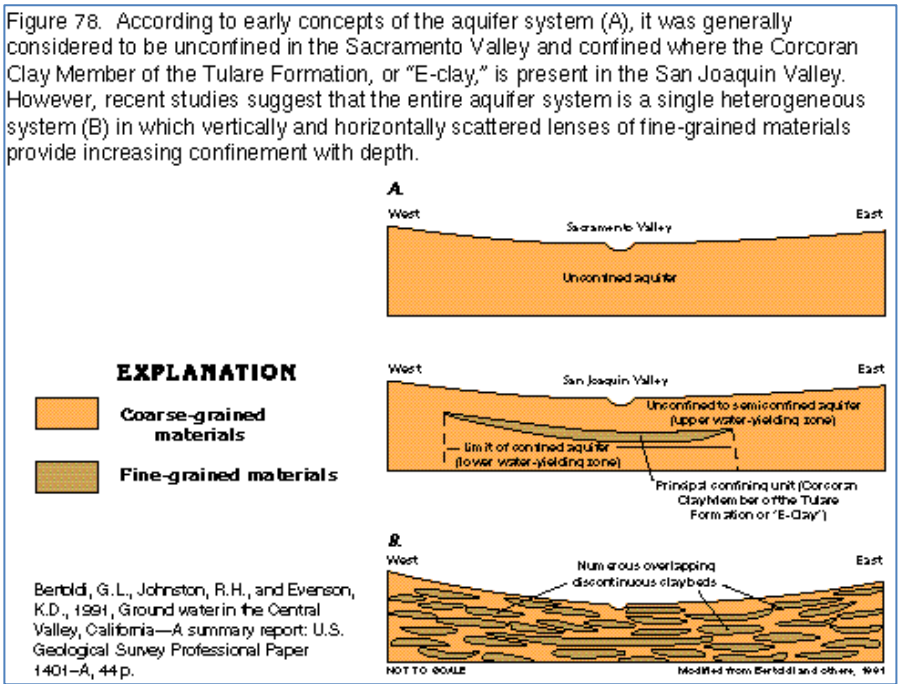


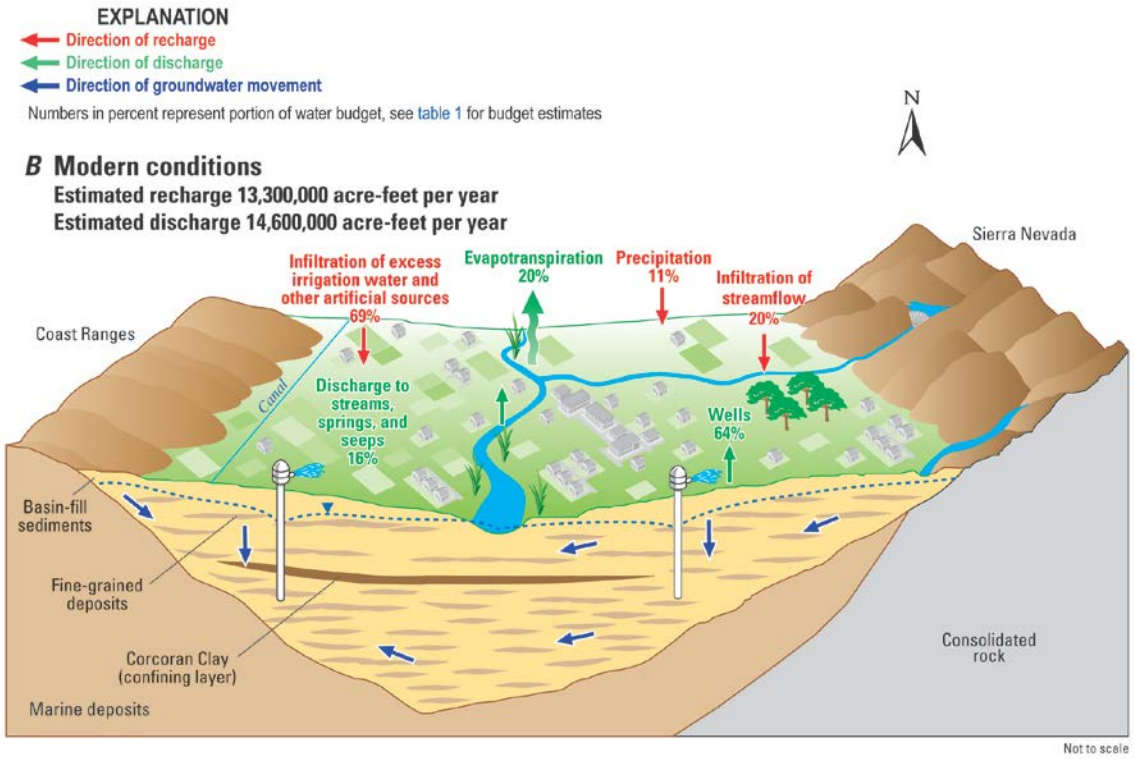
Figure 2. Cross-sectional Diagram of Groundwater Confining Layers in the San Joaquin Valley – Bertold, Johnston, and Evenson (1991)



From Tanji and Kielen (2002)[7]:

> The eastern side of the valley was formed from the alluvium of the Sierra Nevada, which consists mainly of granitic rocks. The soils derived from Sierran alluvium tend to be coarse textured and non-saline. The eastern groundwaters are characterized as low-salt calcium-bicarbonate-type water with total dissolved solids (*TDS*) typically in the 200-500 mg/litre range. In contrast, the soils on the western side were formed from alluvium of the Coast Range made up of uplifted marine sedimentary rocks. The soils on the western side tend to be finer textured and saline. The groundwaters on the western side are characterized as moderately saline sodium-sulphate-type waters with *TDS* typically in the 1 000-10 000 mg/litre range. The unconfined aquifer in both sides of the valley is gradually being filled up with decades of irrigation deep percolation. The soils in the valley and lowest part of the alluvial fans in the western side are waterlogged and salt affected. A nearly water-impermeable clay layer known as the Corcoran clay, about 200 m deep, serves as the boundary between the unconfined and confined aquifer. The groundwaters in the confined aquifer contain from 500 to 1 000 mg/litre TDS…

Figure 3. Generalized Diagram for the Central Valley, Showing the Basin-fill Deposits and Components of the Groundwater System under Modern Conditions – Thiros (2010)



Under Conditional Waiver Order R5-2006-0053, (Coalition Group Conditional Waiver) the East San Joaquin Water Quality Coalition (ESJ WQC) divided the area into six zones based on hydrology, crop types, land use, soil types, and rainfall. Zone names are based on the Core Monitoring location within that zone: 1) Dry Creek at Wellsford Zone, 2) Prairie Flower Drain at Crows Landing Zone, 3) Highline Canal at Hwy 99 Zone, 4) Merced River at Santa Fe Zone, 5) Duck Slough at Gurr Rd Zone, and 6)

[7] Tanji, K. and N. Kielen, 2002. Agricultural drainage water management in arid and semi-arid areas. FAO Irrigation and Drainage Paper 61, Food and Agriculture Organization of the United Nations, Rome.

Cottonwood Creek at Rd 20 Zone. See Table 1 for characteristics of each region. See Figure 4 for a map of the zones.

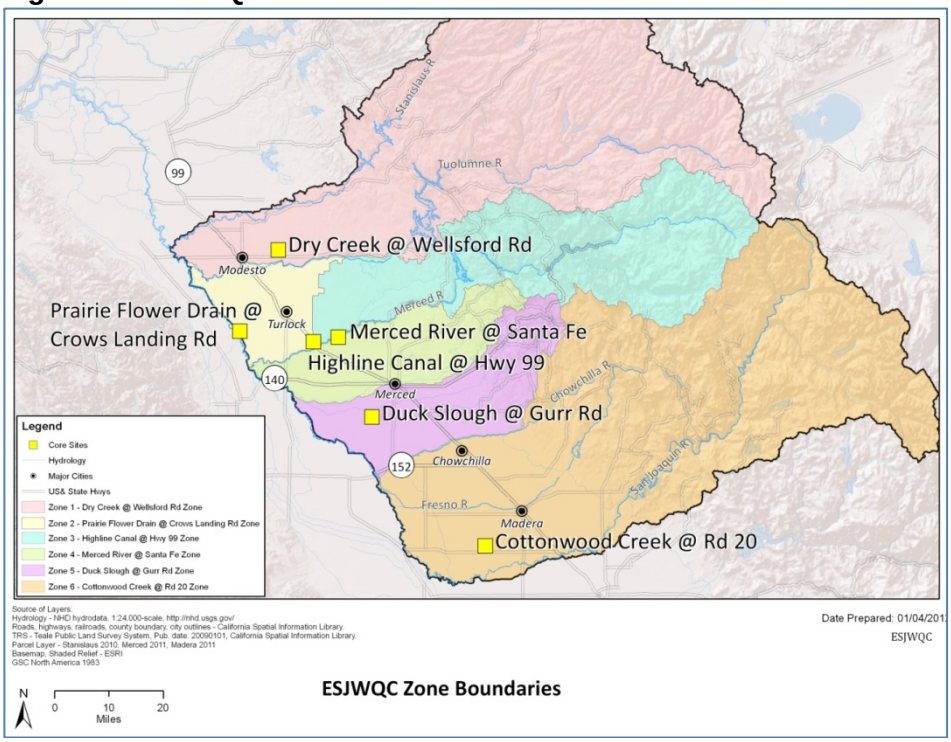
Table 1. Zone Characteristics in the Eastern San Joaquin River Watershed Area

	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6
	Dry Creek	Prairie Flower Drain	Highline Canal	Merced River	Duck Slough	Cottonwood Creek
Irrigated Acres	134,307	164,633	88,617	121,746	142,686	335,069
Soil (average %):						
Sand	56	71	62	59	40	64
Silt	25	19	24	25	36	22
Clay	18	10	15	16	24	14
Land Use (% of irrigated acres):						
Deciduous Fruits/Nuts	39	38	61	38	19	32
Field Crops	16	23	16	22	33	15
Grains/Hay	1	1	2	4	6	4
Pasture	35	31	11	20	31	13
Vineyard	4	3	9	6	2	31
Dairies:						
% of irrigated acres	15	28	12	20	23	10
Number of operations	109	270	25	72	56	49
Depth to Groundwater:						
Weighted Average, feet	49	30	138	46	69	120
Annual average precipitation in the San Joaquin Hydrologic Region is 20 inches.[8]						

The top ten crops based on 2010 total harvested acreage in the San Joaquin River Watershed are (listed in decreasing order): almonds, hay, silage, corn, grapes, tomatoes, irrigated pasture, wheat, cotton and walnuts. This list includes the acreage on both sides of the San Joaquin River, so does not necessarily represent the top ten crops for the Eastern San Joaquin River Watershed area covered by this Order. There were over 100 crops grown in the Eastern San Joaquin River Watershed in 2010.

[8] California Department of Water Resources, Division of Flood Management, Regional Climate Data.

Figure 4. ESJWQC Zone Boundaries



East San Joaquin Water Quality Coalition (ESJWQC) Organization

The ESJ WQC submitted a Notice of Intent in October 2003 and received a Notice of Applicability (NOA) from the Executive Officer in February 2004. The NOA approved the ESJ WQC's request to operate as a lead entity under the previous Coalition Group Conditional Waiver within its boundaries. Similar to the Coalition Group Conditional Waiver, this Order has been written for a third-party to provide a lead role in conducting monitoring, educating member growers (Members), developing water quality management plans, and interacting with the Central Valley Water Board on behalf of Members. Due to a substantial number of new requirements, this Order requires that the third-party submit a new application to serve as a third-party representing growers under this Order. The Central Valley Water Board anticipates that the ESJ WQC will continue to operate as the third-party lead entity under this Order.

Grower Enrollment Process

The enrollment process whereby growers obtain membership in the third-party group under this Order is designed to incentivize speedy enrollment by increasing both submittal requirements and fees due for those that wait to obtain regulatory coverage. Members in good standing when the Order is adopted, as well as growers needing membership, will have a 120-day period (after the NOA is issued by the Executive Officer for the third-party) to complete enrollment before additional requirements are initiated. Members in good standing will submit a one-page Notice of Confirmation (NOC) to the third-party, confirming that they would like to continue membership in the third-party and that they are familiar with the Order's requirements. Other growers will submit a membership application to the third-party and will be notified by the third-party when their membership is approved. This will streamline the initial enrollment process for the bulk of the irrigated agricultural operations within the Eastern San Joaquin River Watershed.

Growers that do not enroll within the 120-day enrollment period, or are prompted to apply due to Central Valley Water Board enforcement or inspection, will be required to submit (1) a Notice of Intent (NOI) to comply with the terms and conditions of the Order to the Central Valley Water Board, (2) an administrative processing fee for the increased workload associated with the grower outreach (as applicable), and (3) a Membership application to the third-party group. These additional steps of submitting an NOI and fee

directly to the board after the initial enrollment deadline are intended to provide an incentive for growers to enroll promptly.

The third-party will provide an annual Membership List to the Central Valley Water Board that will include everyone who enrolled. The Membership List will specify Members in good standing as well as revoked memberships or pending revocations. Board staff will conduct enforcement activities as needed using the list of revoked/pending revocations.

Groundwater Quality Vulnerability
The concept of higher and lower vulnerability areas was integrated into the Order to allow the board to tailor requirements to applicable waste discharge conditions. Resources can be focused on areas that need enhanced water quality protection, because the third-party has the option to identify low vulnerability areas where reduced program requirements would apply.

Vulnerability may be based on, but is not limited to, the physical conditions of the area (soil type, depth to groundwater, beneficial uses, etc.), water quality monitoring data, and the practices used in irrigated agriculture (pesticide permit and use conditions, label requirements, application method, etc.). Additional information such as models, studies, and information collected may also be considered in designating vulnerability areas.

High vulnerability areas for groundwater are those areas that meet the requirements for preparing a Groundwater Quality Management Plan or areas identified in the Groundwater Assessment Report, where available information indicates irrigated lands could cause or contribute to an exceedance of water quality objectives or degradation of groundwater quality that may threaten applicable beneficial uses. The Groundwater Assessment Report may rely on water quality data to identify high vulnerability areas and on assessments of hydrogeological conditions and other factors (e.g., areas of high fertilizer use) to identify high vulnerability areas. The third-party is also expected to review readily available studies and assessments of groundwater quality to identify those areas that may be impacted by irrigated agricultural operations. Examples of assessments that the third-party should review include: the Department of Pesticide Regulation (DPR) Ground Water Protection Areas and the State Water Resources Control Board (State Water Board) Hydrogeologically Vulnerable Areas.

In general, low vulnerability areas for groundwater are areas that do not exhibit characteristics of high vulnerability groundwater areas (as defined in the MRP).

Vulnerability designations will be proposed by the third-party, based on the high and low vulnerability definitions provided in Attachment E of the Order. Vulnerability designations will be refined and updated periodically per the Groundwater Assessment Report and Monitoring Report processes (described in Attachment B, Monitoring and Reporting Program [MRP] Order R5-2012-0116). The Executive Officer will make the final determination regarding the irrigated lands waste discharge vulnerability areas.

Surface Water and Groundwater Monitoring

Surface Water Quality Monitoring

Irrigated Lands Regulatory Program (ILRP) – Surface Water Quality Monitoring
The ESJ WQC has been operating under a Monitoring and Reporting Program Plan (MRP Plan) prepared according to the Monitoring and Reporting Program Order R5-2008-0005 for Coalition Groups under the amended Coalition Group Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands Order R5-2006-0053. The MRP Plan, together with the ESJ WQC's Management Plan (described below), is the workplan for the monitoring and reporting program, including environmental monitoring, quality assurance and quality control, outreach, and tracking and reporting on progress.

Under previous MRP Order R5-2008-0005, the ESJ WQC conducted three types of water quality monitoring: Core, Assessment, and Special Project. Monitoring design was specific to each of the six zones designated in 2008 by the ESJ WQC within the Eastern San Joaquin River Watershed. The zone designations were based on hydrology, crop types, land use, soil types, and rainfall. Each zone contained one Core Monitoring site and several Assessment Monitoring sites that would rotate every two years. Core Monitoring was designed to evaluate general water quality trends over time at the Core sites and included general physical parameters, nutrients, and pathogens. Assessment Monitoring rotated through Assessment sites and included analyses for a large suite of constituents. Core Monitoring sites underwent Assessment Monitoring every three years. Special Project Monitoring occurred when the requirement for a management plan was triggered and additional data were needed to identify sources of the exceedances, as well as to assess water quality improvement due to implementation of management practices. Special Project Monitoring also occurred in areas where total maximum daily load (TMDL) studies are required by the Basin Plan.

The basic questions to be answered by the updated surface water quality monitoring program are similar to those established under the previous MRP Order (R5-2008-005):

1. Are receiving waters to which irrigated lands discharge meeting applicable water quality objectives and Basin Plan provisions?
2. Are irrigated agricultural operations causing or contributing to identified water quality problems?[9] If so, what are the specific factors or practices causing or contributing to the identified problems?
3. Are water quality conditions changing over time (e.g., degrading or improving as new management practices are implemented)?
4. Are irrigated agricultural operations of Members in compliance with the provisions of the Order?
5. Are implemented management practices effective in meeting applicable receiving water limitations?
6. Are the applicable surface water quality management plans effective in addressing identified water quality problems?

The questions are addressed through the following monitoring and information gathering approaches:

1. The “Core” and “Represented” monitoring sites cover represented sections of the Eastern San Joaquin River Watershed with irrigated agricultural operations. The requirement to evaluate materials applied to crops or constituents mobilized by irrigated agricultural operations will result in monitoring of those constituents in receiving waters.
2. The monitoring and evaluation approach required as part of the surface water quality monitoring and management plan development and implementation will address this question (see below and the requirements associated with surface water quality management plans).
3. Both “special project” monitoring associated with management plans and the monitoring conducted at “Core” monitoring sites should be sufficient to allow for the evaluation of trends. The requirements to gather information on management practices will provide additional information to help estimate whether any changes in trends may be associated with the implementation of practices.
4. The surface water monitoring required should allow for a determination as to whether discharges from irrigated lands are protective of beneficial uses and meeting water quality objectives. Other provisions in the MRP should result in the gathering of information that will allow the board to evaluate overall compliance with the Order.
5. The monitoring conducted as part of the implementation of a management plan, in addition to any special project monitoring required by the Executive Officer, should allow the board to determine

[9] “Water quality problem” is defined in Attachment E.

whether management practices representative of those implemented by irrigated agriculture are effective. In addition, information developed through studies outside of these requirements can be used to evaluate effectiveness.

6. The "special project" monitoring associated with management plans will be tailored to the specific constituents of concern and the time period when they are impacting water quality. Therefore, the water quality data gathered, together with management practice information, should be sufficient to determine whether the management plans are effective.

The surface water monitoring required by this Order's Monitoring and Reporting Program R5-2012-0116 (MRP) has been developed using the ESJ WQC's August 2008 MRP Plan as a foundation. However, a number of changes were made to improve the cost-effectiveness of the surface water monitoring effort and ensure the data collected are the most appropriate for answering the monitoring questions.

The four primary changes were to: 1) eliminate the set frequency for monitoring; 2) eliminate the set parameter list for metals and pesticides; 3) change approach to trend monitoring to focus on parameters associated with irrigated agricultural waste discharges; and 4) modify the monitoring approach at previous "Core" and "Rotating" sites.

The rationale for the above changes are:

1) The previous requirement to monitor monthly resulted in monitoring during months in which no problems would be expected and infrequent monitoring during peak periods when potential problems could occur. The third-party will be required to evaluate pesticide use patterns and peak times when metals from irrigated agriculture operations may cause problems in surface water. Based on that evaluation, they will propose a frequency and time period to conduct monitoring that will adequately characterize surface waters receiving irrigated agricultural waste discharges.
2) The set list of parameters resulted in monitoring of some pesticides and metals that are unlikely to result in water quality problems. Also, in some cases pesticides that could cause or contribute to a water quality problem were not monitored. The third-party will be required to evaluate use patterns and properties (e.g., physical-chemical characteristics) and propose a list of metals to monitor. Board staff will work with DPR, third-party groups, and engage the ILRP Technical Issues Committee (TIC) to develop a process for selecting the list of pesticides and specific pesticides for monitoring by the third-party.
3) The general parameters that were monitored as part of previous core monitoring have been of limited value for monitoring trends related to irrigated agricultural waste discharge. Rather than requiring monitoring of general parameters to try to determine trends, trend monitoring will occur as part of management plan monitoring and through more frequent monitoring at "Core" sites.
4) The previous requirement included monitoring a broad suite of parameters once every three years on a monthly monitoring schedule. The "trigger" for requiring preparation of a management plan is more than one exceedance every three years. The previous approach reduces the likelihood of identifying and addressing a problem, especially if a problem is primarily prevalent in a single month – a management plan might never be triggered. In addition, by not sampling a broad suite of parameters two out of three years, significant problems related to hydrology or climate could be missed – for example, heavy pest pressure in a non-monitored year could result in heavy pesticide use and higher discharge that would not be identified. The new MRP requires two years of monitoring/two years off at the "Core" monitoring sites (any monitoring triggered by management plans would continue even if a site had an "off" year for monitoring). This approach will ensure that each "zone" includes one or more sites in which comprehensive assessment monitoring is being conducted, which should allow the board to track and identify any significant changes, while not imposing an undue cost burden.
5) The previous monitoring program included a set schedule for monitoring at previously identified "Rotating" sites. The MRP for this Order does not establish a set schedule for monitoring "Rotating" sites. Instead, the third-party will monitor two "Core" sites per zone with monitoring at additional sites ("Represented" monitoring sites) when "Core" site monitoring indicates that there is a water quality problem or as part of special studies and management plans. This change will

facilitate a better process for targeted follow-up monitoring where there are water quality problems.

Surface Water Management Plans

Since 2004, the ESJ WQC has collected water quality monitoring data at 47 sites. Under Conditional Waiver Order R5-2006-0053, surface water quality management plans (SQMPs) were required for watersheds where there was an exceedance of a water quality objective or trigger limit[10] more than one time in a three year period. There are currently surface water management plans required for the following constituents: ammonia, arsenic, chlorpyrifos, copper, DDE, diazinon, diuron, dissolved oxygen, electrical conductivity, *E. coli*, lead, molybdenum, nitrate, pH, simazine, total dissolved solids, thiobencarb, algae toxicity, sediment toxicity to *Hyalella azteca*; and water column toxicity to algae (*Selenastrum capricornutum*), fathead minnows (*Pimephales promelas*), and water fleas (*Ceriodaphnia dubia*). The ESJ WQC's Management Plan, which covers all of these constituents, was approved on 25 November 2008 and is updated annually. Table 2 provides a brief summary of the water quality sampling results for these constituents. This Order requires the ESJ WQC's 2008 Management Plan to be implemented.

[10] Trigger limits are discussed below under "Water Quality Objectives."

Table 2. Summary of ILRP Surface Water Monitoring Data for Management Plan Constituents in the Eastern San Joaquin River Watershed, 2004 through 2010

Constituent	No. of sites requiring a management plan	Range of detected levels	Number of exceedances	Trigger limit
Pesticides				
Chlorpyrifos	23	ND[1] to 3.7 ug/L	90	0.015 ug/L
DDE	1	ND to 0.022 ug/L	4	0.00059 ug/L
Diazinon	1	ND to 0.24 ug/L	3	0.1 ug/L
Diuron	5	ND to 68 ug/L	17	2 ug/L
Simazine	2	ND to 25 ug/L	5	4 ug/L
Thiobencarb	1	ND to 5.8 ug/L	3	Must not be detected (ND)
Toxicity				
Water, *Selenastrum*	18	1.8% to 100% growth [2]	82	< 80% growth [2, 3]
Water, *Pimephales*	3	0% to 100% survival [2]	12	< 80% survival [2, 3]
Water, *Ceriodaphnia*	12	0% to 100% survival[2]	48	< 80% survival [2, 3]
Sediment, *Hyalella*	13	0% to 100% survival[2]	55	< 80% survival [2, 3]
Metals (total)				
Arsenic	4	ND to 30 ug/L	31	10 ug/L
Copper	17	0.4 to 120 ug/L	13	Variable[4]
Lead	11	ND to 24 ug/L	69	Variable[4]
Molybdenum	1	0.25 to 6.8 ug/L	5[5]	Variable[4]
Nutrients & Salts				
Ammonia	5	ND to 155.4 mg/L	27	Variable[6]
Nitrate as N	6	ND to 68 mg/L	63	10 mg/L
Total dissolved solids	8	<4 to 2,900 mg/L	126	450 mg/L
Electrical conductivity	12	<1 to 4,798 uS/cm	193	700 uS/cm
Other				
Dissolved oxygen	21	0 to 25.9 mg/L	335	>5 or >7 mg/L
E. coli	27	0 to 2,400 MPN/100mL	340	235 MPN/100mL
pH	15	5.02 to 9.7	81	>8.5 or <6.5

[1] ND = Not detected at measurable levels
[2] Compared to the control sample
[3] And statistically significant
[4] Hardness-dependent water quality objectives
[5] This management plan and associated 5 exceedances occurred in 2011
[6] Water quality objectives are dependent on pH and temperature

Similar to the previous Order (Coalition Group Conditional Waiver), this Order requires the third-party to develop SQMPs for watersheds where there is an exceedance of a water quality objective or trigger limit more than one time in a three year period. SQMPs may also be required where there is a trend of degradation that threatens a beneficial use. SQMPs will only be required for wastes that may be discharged by some or all of irrigated lands in the identified area. SQMPs are the key mechanism under this Order to help ensure that waste discharges from irrigated lands are meeting Surface Water Receiving Water Limitation III.A. The limitations apply immediately unless the Member is implementing the SQMP in accordance with the approved time schedule. The SQMP will include a schedule and milestones for the implementation of management practices (see Appendix MRP-1). The schedule must identify the time needed to identify new management practices necessary to meet the receiving water limitations, as well as a timetable for implementation of identified management practices. The SQMP will include a schedule for implementing practices that are known to be effective in partially or fully protecting surface water quality. The SQMP must also identify an approach for determining the effectiveness of the implemented management practices in protecting surface water quality.

The main elements of SQMPs are to A) investigate potential irrigated agriculture sources of waste discharge to surface water; B) review physical setting information for the plan area such as existing water quality data; C) considering elements A and B, develop a strategy with schedule and milestones to implement practices to ensure waste discharges from irrigated agriculture are meeting Surface Water Limitation III.A.1; D) develop a monitoring strategy to provide feedback on SQMP progress; E) develop methods to evaluate data collected under the SQMP; and F) provide annual reports to the Central Valley Water Board on progress.

Elements A – F are necessary to establish a process by which the third-party and Central Valley Water Board are able to investigate waste sources and the important physical factors in the plan area that may impact management decisions (elements A and B), implement a process to ensure effective practices are adopted by Members (element C), ensure that adequate feedback monitoring is conducted to allow for evaluation of SQMP effectiveness (elements D and E), and facilitate efficient board review of data collected on the progress of the SQMP (element F).

The SQMPs required by this Order require the third-party to include the above elements. SQMPs will be reviewed and approved by the Executive Officer. Also, because SQMPs may cover broad areas potentially impacting multiple surface water users in the plan area, these plans will be circulated for public review. Prior to plan approval, the Executive Officer will consider public comments on proposed SQMPs.

The burden of the SQMP, including costs, is reasonable. The Central Valley Water Board must be informed of the efforts being undertaken by irrigated agricultural operations to address identified surface water quality problems. In addition, a regional SQMP is a reasonable first step to address identified surface water quality problems, since the monitoring and planning costs are significantly lower, when undertaken regionally by the third-party, than requiring individuals to undertake similar monitoring and planning efforts. However, if the regional SQMP does not result in the necessary improvements to water quality, the burden, including costs, of requiring individuals in the impacted area to conduct monitoring, describe their plans for addressing the identified problems, and evaluate their practices is a reasonable subsequent step. The benefits and necessity of such individual reporting, when regional efforts fail, include, but are not limited to: 1) the need of the board to evaluate the compliance of regulated growers with applicable orders; 2) the need of the board to understand the effectiveness of practices being implemented by regulated growers; and 3) the benefits to all users of that surface water of improved water quality.

Groundwater Quality

Groundwater Monitoring Advisory Workgroup
The Groundwater Monitoring Advisory Workgroup (GMAW) consists of groundwater experts representing state agencies, the United States Environmental Protection Agency (USEPA), the United States Geological Survey (USGS), academia, and private consultants. The following questions were identified by the GMAW and Central Valley Water Board staff as critical questions to be answered by groundwater monitoring conducted to comply with the ILRP.

1. What are irrigated agriculture's impacts to the beneficial uses of groundwater and where has groundwater been degraded or polluted by irrigated agricultural operations (horizontal and vertical extent)?
2. Which irrigated agricultural management practices are protective of groundwater quality and to what extent is that determination affected by site conditions (e.g., depth to groundwater, soil type, and recharge)?
3. To what extent can irrigated agriculture's impact on groundwater quality be differentiated from other potential sources of impact (e.g., nutrients from septic tanks or dairies)?

4. What are the trends in groundwater quality beneath irrigated agricultural areas (getting better or worse) and how can we differentiate between ongoing impact, residual impact (vadose zone) or legacy contamination?
5. What properties (soil type, depth to groundwater, infiltration/recharge rate, denitrification/ nitrification, fertilizer and pesticide application rates, preferential pathways through the vadose zone [including well seals, abandoned or standby wells], contaminant partitioning and mobility [solubility constants]) are the most important factors resulting in degradation of groundwater quality due to irrigated agricultural operations?
6. What are the transport mechanisms by which irrigated agricultural operations impact deeper groundwater systems? At what rate is this impact occurring and are there measures that can be taken to limit or prevent further degradation of deeper groundwater while we're identifying management practices that are protective of groundwater?
7. How can we confirm that management practices implemented to improve groundwater quality are effective?

The workgroup members reached consensus that the most important constituents of concern related to agriculture's impacts to the beneficial uses of groundwater are nitrate (NO_3-N) and salinity. In addition to addressing the widespread nitrate problems, the presence of nitrates in groundwater at elevated levels would serve as an indicator of other potential problems associated with irrigated agricultural practices. Central Valley Water Board staff utilized the recommended salinity and nitrate parameters and added general water quality parameters contained within a majority of the groundwater monitoring programs administered by the board (commonly measured in the field) and some general minerals that may be mobilized by agricultural operations (general minerals to be analyzed once every five years in Trend wells). The general water quality parameters will help in the interpretation of results and ensure that representative samples are collected. The board considered the above questions in developing the Order's groundwater quality monitoring and management practices assessment, and evaluation requirements.

Groundwater Quality Monitoring and Management Practice Assessment, and Evaluation Requirements

The groundwater quality monitoring, assessment, and evaluation requirements have been developed in consideration of the critical questions developed by the Groundwater Monitoring Advisory Workgroup (listed above). The third-party must collect sufficient data to describe irrigated agricultural impacts on groundwater quality and to determine whether existing or newly implemented management practices comply with the groundwater receiving water limitations of the Order. The strategy for evaluating groundwater quality and protection consists of: 1) a Groundwater Quality Assessment Report (GAR), 2) a Management Practices Evaluation Program, and 3) a Groundwater Quality Trend Monitoring Program.

The general purpose of the Groundwater Quality Assessment Report is to analyze existing monitoring data and provide the foundation for designing the Management Practices Evaluation Program and the Groundwater Quality Trend Monitoring Program, as well as identifying high vulnerability groundwater areas where a groundwater quality management plan must be developed and implemented.

A Management Practices Evaluation Program (MPEP) is to be developed 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 (high vulnerability areas). The purpose of the MPEP is to identify whether existing site-specific and/or commodity-specific agricultural management practices are protective of groundwater quality in the high vulnerability areas and to assess the effectiveness of any newly implemented management practices instituted to improve groundwater quality. Given the wide range of management practices/commodities within the third-party's boundaries, it is anticipated that the third-party will rank or prioritize their high vulnerability areas and commodities, and present a phased approach to implementing the MPEP. The

MPEP must be designed to answer GMAW questions 2, 5, 6, and 7. Where applicable, management practices identified as protective of groundwater quality through the MPEP (or equivalent practices) must be implemented by Members, whether the Member is in a high or low vulnerability area (see section IV.B.21 of the Order).

Since the focus of the MPEP is answering the questions related to management practices, the method or tools to be used are not prescribed by the board. The third-party is required to develop a workplan that describes the tools or methods to be used to associate management practice activities on the land surface with the effect of those activities on underlying groundwater quality. The board anticipates that the MPEP workplan will likely propose using a variety of tools, such as vadose zone monitoring, modeling, and groundwater monitoring. The third-party has the option of developing the workplan as part of a group effort that may include other agricultural water quality coalitions and commodity groups. Such a joint effort may avoid duplication of effort and allow collective resources to be more effectively focused on the highest priority studies, while ensuring the goals of the MPEP are met. Existing monitoring wells can be utilized where available for the MPEP.

The trend monitoring program is designed to determine current water quality conditions of groundwater in the third-party area, and to develop long-term groundwater quality information that can be used to evaluate the regional effects (i.e., not site-specific effects) of irrigated agriculture and its practices. Trend monitoring has been developed to answer GMAW questions 1 and 4. At a minimum, trend monitoring must include annual monitoring for electrical conductivity, pH, dissolved oxygen, temperature, nitrate as nitrogen (N), and once every five year monitoring for total dissolved solids, carbonate, bicarbonate, chloride, sulfate, boron, calcium, sodium, magnesium, and potassium. Existing shallow wells, such as domestic supply wells, will be used for the trend groundwater monitoring program. The use of existing wells is less costly than installing wells specifically designed for groundwater monitoring, while still yielding data which can be compared with historical and future data to evaluate long-term groundwater trends.

As the management practices identified as protective of groundwater quality through the MPEP are implemented, the trend monitoring, together with other data included in updates to the GAR, should show improvements in water quality. The trend monitoring and GAR updates will, therefore, provide a regional view as to whether the collective efforts of Members are resulting in water quality improvements. If groundwater quality trends indicate degradation in low vulnerability areas, then a Groundwater Quality Management Plan must be developed and implemented. Negative trends of groundwater quality in high vulnerability areas over time would be an indicator that the existing Groundwater Quality Management Plan is not effective or is not being effectively implemented.

The third party may also look to and explore using existing monitoring networks such as those being conducted in accordance with local groundwater management plans (e.g., AB 3030, SB 1938, Integrated Regional Water Management Plans).

GMAW question 3, which seeks to differentiate sources of existing impact, cannot be easily answered by traditional groundwater monitoring. The MPEP and trend monitoring will help to answer this question, but other methods such as isotope tracing and groundwater age determination may also be necessary to fully differentiate sources. The MRP does not require these advanced source methods because they are not necessary to determine compliance with the Order. The MPEP will be used to help determine whether waste discharge at represented sites is of high enough quality to meet the groundwater limitations of the Order.

Data Summary, Pesticides

Monitoring data collected for two studies conducted by the State Water Resources Control Board and the USGS in 2006 and 2008 showed detections of pesticides used by agriculture in groundwater within the

Eastern San Joaquin River Watershed.[11] Pesticides and pesticide degradates were detected in 59 percent of wells in the Central-Eastside San Joaquin Basin in 2006 and 30 percent of wells in the Madera-Chowchilla Study Unit in 2008. Most frequently detected pesticides in the studies include deethylatrazine (degradate of triazine herbicides), simazine, atrazine, metolachlor, DBCP, and deisopropylatrazine (degradate of triazine herbicides). Most pesticide detections were below health-based thresholds and applicable water quality objectives. Analyses were not run for all pesticides used in the study areas.

The California Department of Pesticide Regulation (DPR), as part of its regulatory requirements under the Pesticide Contamination Prevention Act (PCPA) enacted in 1985, is required to maintain a statewide database of wells sampled for pesticide active ingredients and, in consultation with the California Department of Public Health (DPH) and the State Water Resources Control Board (State Water Board), provide an annual report of the data contained in the database and the actions taken to prevent pesticides contamination to the Legislature and other state agencies. DPR also initiated the Ground Water Protection Program that focuses on evaluating the potential for pesticides to move through soil to groundwater, improving contaminant transport modeling tools, and outreach/training programs for pesticide users. There are approximately 359,000 acres of irrigated lands in the Eastern San Joaquin River Watershed within DPR Groundwater Protection Areas (GWPAs). Of the 359,000 acres, approximately 236,000 acres of the irrigated lands are within DPR GWPAs that are characterized as vulnerable to leaching of pesticides (leaching areas), approximately 120,000 acres are within GWPAs that are characterized as vulnerable to movement of pesticides to groundwater by runoff from fields to areas were they may move to groundwater (runoff areas), and 2,510 acres of irrigated lands are characterized as both leaching and runoff areas. See Figure 5 for a map of the Groundwater Protection Areas within the Eastern San Joaquin River Watershed.

DPR's current groundwater quality monitoring program should be sufficient to identify any emerging pesticides of concern and to track water quality trends of identified pesticides of concern. However, the presence of pesticides in groundwater indicates a discharge of waste subject to Water Board regulation. Therefore, should the board or DPR identify groundwater quality information needs related to pesticides in groundwater, the board may require the third-party to conduct studies or implement a monitoring plan to address those information needs. Where additional information collected indicates a groundwater quality problem, a coordinated effort with DPR to address the identified problem will be initiated and the board may require the third party to develop a GQMP.

Data Summary Nitrates – GeoTracker GAMA

The State Water Board's GeoTracker GAMA (Groundwater Ambient Monitoring and Assessment) online information system integrates groundwater data from multiple sources, such as GAMA, DPR, Department of Water Resources (DWR), USGS, Department of Public Health (DPH), and Lawrence Livermore National Laboratory. Staff queried GeoTracker GAMA. In January 2012 there were 35,640 nitrate results in GeoTracker GAMA within the Eastern San Joaquin River Watershed Area. These results were collected from environmental monitoring wells and water supply wells (94 percent of the samples were collected from water supply wells). The samples considered in this summary were collected from 1978 through 2011, although 84 percent of the samples were collected in years 2000 or later. There is only one nitrate sample in the GAMA database collected prior to 1979 (for the Eastern San Joaquin River Watershed area). Samples were collected within all 6 counties in the Eastern San Joaquin River Watershed, although most were collected in Stanislaus (62 percent), Merced (14 percent), and Madera (12 percent) Counties.

[11] Landon, M.K., and Belitz, K., 2008. Ground-water quality data in the Central Eastside San Joaquin Basin 2006: Results from the California GAMA Program: U.S. Geological Survey Data Series 325, 88 p. See also Shelton, J.L., Fram, M.S., and Belitz, K., 2009. Groundwater-quality data for the Madera–Chowchilla study unit, 2008: Results from the California GAMA program: U.S. Geological Survey Data Series 455, 80 p. Available at http://pubs.usgs.gov/ds/455.

Sample collection depth information is not available for download from GeoTracker GAMA. However, 86 percent (30,807) of the samples were collected by DPH from water supply wells. DPH monitors water quality in public supply wells, which are typically hundreds to thousands of feet deep and pump large volumes of water from deeper aquifers. This indicates that this particular set of 35,639 nitrate results focuses primarily on conditions in deeper groundwaters. Since DPH primarily monitors active municipal supply wells, wells that have excessive nitrates (that are not treated or blended with better quality water) are generally taken out of water supply service, so monitoring ceases. Therefore, DPH data for active municipal wells generally do not include nitrate-contaminated wells. Additional data collected at shallower depths (where applicable) may be needed to adequately assess current groundwater quality conditions in the area.

Six percent of sample results for all GAMA well data for the Eastern San Joaquin River Watershed were greater than the nitrate drinking water standard of 45 mg/L (as nitrate). An additional 34 percent of results fell between the drinking water standard and half of the standard (22.5 mg/L).

Of the 5,601 samples collected from 1979 through 1999, 9 percent were greater than the nitrate drinking water standard and an additional 29 percent fell between the drinking water standard and half of the standard. Of the 30,038 samples collected 2000 through 2011, 6 percent were greater than the nitrate drinking water standard and an additional 35 percent fell between the drinking water standard and half of the standard.

All nitrate results collected between 1979 and 1999 were reported by DPH. Of the 4,832 nitrate results reported by groups other than DPH that were collected 2000 through 2011, 14 percent were greater than the nitrate drinking water standard and an additional 17 percent fell between the standard and half of the standard.

There were 1,004 square-mile sections of land (township, range, and section or TRS) within the Eastern San Joaquin River Watershed Area with nitrate results in the GeoTracker GAMA dataset. When data were analyzed per TRS, three percent of sampled sections had an average nitrate level above the drinking water standard and an additional 18 percent of sections had an average nitrate level between 45 and 22.5 mg/L. Twenty-two percent of sampled sections had a maximum nitrate level above 45 mg/L and an additional 28 percent of sampled sections had a maximum level between 45 and 22.5 mg/L. See Figure 6 for a map showing the maximum nitrate result per square mile section of land with detections.

Hydrogeologically Vulnerable Areas

In 2000, the State Water Resources Control Board created a map showing locations where published hydrogeologic information indicated conditions that may be more vulnerable to groundwater contamination. They termed these areas “Hydrogeologically Vulnerable Areas.” The map identifies areas where geologic conditions allow recharge to underlying water supply aquifers at rates or volumes substantially higher than in lower permeability or confined areas of the same groundwater basin. The map does not include hydrogeologically vulnerable areas (HVAs) where local groundwater supplies occur mainly in the fractured igneous and metamorphic rocks which underlie the widespread mountain and foothill regions of the Sierra Nevada, or in permeable lava flows which may provide primary recharge for extensive but sparsely populated groundwater basins. See Figure 5 for a map of the HVA areas within the third-party region.

Groundwater Quality Management Plans (GQMPs)

Under this Order, groundwater quality management plans will be required where there are exceedances of water quality objectives, where there is a trend of degradation[12] that threatens a beneficial use, as well as for "high vulnerability groundwater areas" (to be designated by the third-party in the Groundwater Assessment Report based on definitions provided in Attachment E). Instead of development of separate GQMPs, the Order allows for the submittal of a comprehensive GQMP along with the Groundwater Assessment Report. GQMPs will only be required if irrigated lands may cause or contribute to the groundwater quality problem. GQMPs are the key mechanism under this Order to help ensure that waste discharges from irrigated lands are meeting Groundwater Receiving Water Limitation III.B. The limitations apply immediately unless the Member is implementing the GQMP in accordance with the approved time schedule. The GQMP will include a schedule and milestones for the implementation of management practices (see Appendix MRP-1). The schedule must identify the time needed to identify new management practices necessary to meet the receiving water limitations, as well as a timetable for implementation of identified management practices. The MPEP will be the process used to identify the effectiveness of management practices, where there is uncertainty regarding practice effectiveness under different site conditions. However, the GQMP will also be expected to include a schedule for implementing practices that are known to be effective in partially or fully protecting groundwater quality. For example, the ratio of total nitrogen available to crop consumption of nitrogen that is protective of water quality may not be known for different site conditions and crops. However, accounting for the amount of nitrate in irrigation supply water is known to be an effective practice at reducing the amount of excess nitrogen applied.

The main elements of GQMPs are to A) investigate potential irrigated agricultural sources of waste discharge to groundwater, B) review physical setting information for the plan area such as geologic factors and existing water quality data, C) considering elements A and B, develop a strategy with schedules and milestones to implement practices to ensure discharge from irrigated lands are meeting Groundwater Receiving Water Limitation III.B, D) develop a monitoring strategy to provide feedback on GQMP progress, E) develop methods to evaluate data collected under the GQMP, and F) provide reports to the Central Valley Water Board on progress.

Elements A – F are necessary to establish a process by which the third-party and Central Valley Water Board are able to investigate waste sources and the important physical factors in the plan area that may impact management decisions (elements A and B), implement a process to ensure effective practices are adopted by Members (element C), ensure that adequate feedback monitoring is conducted to allow for evaluation of GQMP effectiveness (elements D and E), and facilitate efficient board review of data collected on the progress of the GQMP (element F).

This Order requires the third-party to develop GQMPs that include the above elements. GQMPs will be reviewed and approved by the Executive Officer. Also, because GQMPs may cover broad areas potentially impacting multiple groundwater users in the plan area, these plans will be circulated for public review. Prior to plan approval, the Executive Officer will consider public comments on proposed GQMPs.

In accordance with Water Code section 13267, the burden of the GQMP, including costs, is reasonable. The Central Valley Water Board must be informed of the efforts being undertaken by Members to address identified groundwater quality problems. In addition, a regional GQMP is a reasonable first step to address identified groundwater quality problems, since the monitoring and planning costs are significantly lower when undertaken regionally by the third-party than requiring individual Members to undertake similar monitoring and planning efforts. However, if the regional GQMP does not result in the necessary improvements to water quality, the burden, including costs, of requiring individual Members in the impacted area to conduct monitoring, describe their plans for addressing the identified problems, and

[12] A trend in degradation could be identified through the required trend monitoring or through the periodic updates of the Groundwater Quality Assessment Report.

evaluate their practices is a reasonable subsequent step. The benefits and necessity of such individual reporting, when regional efforts fail, include, but are not limited to: 1) the need of the board to evaluate the compliance of regulated Members with applicable orders; 2) the need of the board to understand the effectiveness of practices being implemented by Members; and 3) the benefits of improved groundwater quality to all users.

Farm Evaluations

The Order requires that all Members complete a farm evaluation describing management practices implemented to protect surface and groundwater quality. The evaluation will also include information such as location of the farm, surface water discharge points, location of in service wells and abandoned wells and whether wellhead protection practices have been implemented.

The Order requires development of a farm evaluation template to assist Members in completing the evaluation. Once the Executive Officer approves the final template, all Members will be required to complete a farm evaluation. The Order establishes prioritization for Member completion and updating of the evaluations based on farm size and whether the operation is within a high or low vulnerability area. Farm evaluations must be maintained at the Member's farming operations headquarters or primary place of business and submitted to the third-party for summary reporting to the Central Valley Water Board.

The farm evaluation is intended to provide the third-party and the Central Valley Water Board with information regarding individual Member implementation of the Order's requirements. Without this information, the board would rely solely on regional surface and groundwater monitoring to determine compliance with water quality objectives. The regional monitoring cannot determine whether all Members are implementing protective practices, such as wellhead protection measures for groundwater. Regional monitoring also does not allow identification of which practices are protective in areas where impacts are observed and multiple practices are employed. For groundwater protection practices, it may take years in many areas (even decades in some areas) before broad trends in groundwater may be measured and associated with implementation of this Order. Farm evaluations will provide assurance that Members are implementing management practices to protect groundwater quality while trend data are collected.

The reporting of practices identified in the farm evaluation will allow the third-party and board to effectively implement the MPEP. Evaluating management practices at representative sites (in lieu of farm-specific monitoring) only works if the results of the monitored sites can be extrapolated to non-monitored sites. One of the key ways to extrapolate those results will be to have an understanding of which farming operations have practices similar to the site that is monitored. The reporting of practices will also allow the board to determine whether the GQMP is being implemented by Members according to the approved schedule.

In addition, reporting of practices will allow the third-party and board to evaluate changes in surface water quality relative to changes in practices. The SQMP will include a schedule and milestones for the implementation of practices to address identified surface water quality problems. The reporting of practices will allow the board to determine whether the SQMP is being implemented by Members according to the approved schedule. Absent information on practices being implemented by Members, the board would not be able to determine whether Members are complying with the Order.

The focus of the reporting is on parcels in high vulnerability areas. The board needs to have an understanding of whether Members are improving practices in those areas where surface or groundwater quality are most impacted (or potentially impacted). Reporting frequency is annual for all sizes of farming operations in high vulnerability areas. The reporting frequency is every five years for all farming operations in low vulnerability areas, however, the first report for small farming operations in low vulnerability areas is not due until 2017. The Executive Officer is given the discretion to reduce the reporting frequency for Members in high vulnerability areas, if there are minimal year to year changes in

the practices reported. This discretion is provided, since the reporting burden would be difficult to justify given the costs if there were minimal year to year changes in the information provided.

While the focus of the reporting is on high vulnerability areas, the MPEP requirement affects management practices implemented in both high and low vulnerability areas. Management practices identified as protective of groundwater quality through the MPEP (or equivalent practices) must be implemented by Members, where applicable, whether the Member is in a high or low vulnerability area (see section IV.B.21 of the Order).

Nitrogen Management Plans

Nitrate derived from both agricultural and non-agricultural sources has resulted in degradation and/or pollution of groundwater beneath agricultural areas in California's Central Valley.[13] As shown in Figure 6, there are a number of wells within the Eastern San Joaquin River Watershed area with nitrate concentrations that are higher than drinking water quality objectives. To address these concerns, the Order requires that Members implement practices that minimize excess nitrogen application relative to crop need. Proper nutrient management will work to reduce excess plant nutrients, such as nitrogen, from reaching state waters. Nitrogen management must take site-specific conditions into consideration in identifying steps that will be taken and practices that will be implemented to minimize nitrate movement through surface runoff and leaching past the root zone.

This Order requires the development of a nitrogen management plan template to assist Members with nitrogen management. The template must be approved by the Executive Officer, and will either be proposed by the third-party according to the criteria listed in the Order, or will be developed by the staff in consultation with the third party based on those same criteria. The template should consider, to the extent appropriate, the major criteria established in Code 590 of the NRCS Nutrient Management document, including soil and plant tissue testing, nitrogen application rates, nitrogen application timing, consideration of organic nitrogen fertilizer, consideration of irrigation water nitrogen levels to minimize surface and groundwater pollution and meet crop nitrogen requirements and crop yield potential.

Once the Executive Officer approves the nitrogen management plan template, all Members will be required to complete a nitrogen management plan according to the schedule in the Order. Growers in low vulnerability areas are required to prepare nitrogen management plans, but do not need to certify the plans or provide summary reports to the third-party. Should the groundwater vulnerability designation change from "low" to "high" vulnerability, those Members in the previously designated low vulnerability area would then need to have their nitrogen management plan certified and submit summary reports in accordance with a schedule issued by the Executive Officer.

Members with small farming operations are given an additional two years to complete their first nitrogen management plan. The plan must be maintained at the Member's farming operations headquarters or primary place of business.

For Members located within a high vulnerability groundwater area, for which nitrate is identified as a constituent of concern, the plan must be certified in one of the following ways:

- Self-certified by the Member who attends a California Department of Food and Agriculture or other Executive Officer approved training program for nitrogen plan certification. The Member must retain written documentation of their attendance in the training program; or

[13] ICF International. 2011. *Irrigated Lands Regulatory Program - Program Environmental Impact Report*. Final and Draft. March. (ICF 05508.05.) Sacramento, CA. Prepared for Central Valley Regional Water Quality Control Board, Sacramento, CA. Appendix A, page 46.

- Self-certified by the Member that the plan adheres to a site-specific recommendation from the Natural Resources Conservation Service (NRCS) or the University of California Cooperative Extension. The Member must retain written documentation of the recommendation provided; or

- Certified by a nitrogen management plan specialist as defined in Attachment E of this Order. Such specialists include Professional Soil Scientists, Professional Agronomists, Crop Advisors[14] certified by the American Society of Agronomy, or Technical Service Providers certified in nutrient management in California by the National Resource Conservation Service (NRCS).

- Certified in an alternative manner approved by the Executive Officer. Such approval will be provided based on the Executive Officer's determination that the alternative method for preparing the nitrogen management plan meets the objectives and requirements of this Order.

The Order requires nitrogen management reporting (nitrogen management plan summary reports) for Members in high vulnerability groundwater areas. The first nitrogen management plan summary report must be submitted one year after the first nitrogen management plan must be developed. The nitrogen management plan summary report provides information based on what was actually done the previous crop year, while the plan indicates what is planned for the upcoming crop year. Therefore, the first summary report is due the year following the implementation of the first nitrogen management plan. This reporting will provide the third-party and the Central Valley Water Board with information regarding individual Member implementation of the Order's requirements. Without this information, the board would rely primarily on groundwater monitoring to determine compliance with water quality objectives. Groundwater monitoring alone would not provide a real-time indication as to whether all Members are managing nutrients to protect groundwater. Improved nitrogen management may take place relatively quickly, although it may take many years before broad trends in nitrate reduction in groundwater may be measured. Nitrogen management reporting will provide assurance that Members are managing nutrients to protect groundwater quality while trend data are collected.

Spatial Resolution of Nitrogen Management Plan and Farm Evaluation Information

The Order requires reporting to the Central Valley Water Board of nitrogen management information and management practices identified through the farm evaluation. These data are required to be associated with the township (36 square mile area) where the farm is located. The spatial resolution by township provides a common unit that should facilitate analysis of data and comparisons between different areas.

Although the data collected by the third-party from individual Members will be reported to the board, those data will only be associated with the township where the enrolled parcel is located and will not be associated with the Member or their enrolled parcel. For example, the third-party may have information submitted for 180 different parcels in a given township. The board would receive 180 different data records for that township, but the individual data records would not be associated with a specific parcel or Member.

In order to determine whether growers in a given township are improving their practices, the third-party will need to assess the data and evaluate trends. The third-party's assessment and evaluation, along with the data used to make the evaluation, will be provided in the third-party's annual monitoring report. Since a report on management practice information and nitrogen management summary reports will be provided annually, the board will be able to determine whether trends are positive. If the data suggest that growers are not improving their practices, the Executive Officer can require the third-party to submit the management practice or nitrogen management plan summary information for individual Members.

[14] Should the California Department of Food and Agriculture and the California Certified Crop Adviser's establish a specific nitrogen management certification, any Certified Crop Adviser who certifies a nitrogen management plan must have a nitrogen management certification.

Sediment and Erosion Control Plans

The Order requires that Members with the potential to cause erosion and discharge sediment that may degrade surface waters prepare a sediment and erosion control plan. Control of sediment discharge will work to achieve water quality objectives associated with sediment and also water quality objectives associated with sediment bound materials such as pesticides. To ensure that water quality is being protected, this Order requires that sediment and erosion control plans be prepared in one of the following ways:

- The sediment and erosion control plan must adhere to the site-specific recommendation from the Natural Resources Conservation Service (NRCS), NRCS technical service provider, the University of California Cooperative Extension, the local Resource Conservation District; or conform to a local county ordinance applicable to erosion and sediment control on agricultural lands. The Member must retain written documentation of the recommendation provided and certify that they are implementing the recommendation; or

- The plan must be prepared and self-certified by the Member, who has completed a training program that the Executive Officer concurs provides necessary training for sediment and erosion control plan development; or

- The plan must be written, amended, and certified by a qualified sediment and erosion control plan developer possessing one of the registrations shown in Table 3 below; or

- The plan must be prepared and certified in an alternative manner approved by the Executive Officer. Such approval will be provided based on the Executive Officer's determination that the alternative method for preparing the plan meets the objectives and requirements of this Order.

Table 3. Qualified Sediment and Erosion Control Plan Developers

Title/Certification	Certifier
Professional Civil Engineer	State of California
Professional Geologist or Engineering Geologist	State of California
Landscape Architect	State of California
Professional Hydrologist	American Institute of Hydrology
Certified Professional in Erosion and Sediment Control™ (CPESC)	Enviro Cert International Inc.
Certified Professional in Storm Water Quality™ (CPSWQ)	Enviro Cert International Inc.
Certified Soil Scientist	American Society of Agronomy

The sediment and erosion control plan will: (1) help identify the sources of sediment that affect the quality of storm water and irrigation water discharges; and (2) describe and ensure the implementation of water quality management practices to reduce or eliminate sediment and other pollutants bound to sediment in storm water and irrigation water discharges. The plan must be appropriate for the Member's operations and will be developed and implemented to address site specific conditions. Each farming operation is unique and requires specific description and selection of water quality management practices needed to address waste discharges of sediment. The plan must be maintained at the farming operations headquarters or primary place of business.

The Order requires development of a sediment and erosion control plan template to assist Members and qualified developers in completing the plan. The Order establishes prioritization for Member completion of the plan based on farm size. Small farming operations will have additional time to complete the plan.

To assist Members in determining whether they need to prepare a sediment and erosion control plan, the third-party must prepare a sediment and erosion control assessment report that identifies the areas susceptible to erosion and the discharge of sediment that could impact receiving waters. In addition, the

Executive Officer may identify areas requiring such plans based on evidence of ongoing erosion or sediment control problems.

Small Farming Operations

In counties within the Eastern San Joaquin River Watershed, small farming operations are operated by approximately 61 percent of the growers, but account for approximately 6% of the total irrigated lands.[15] During the development of the Order, concerns were raised regarding the ability of small farms to comply with the requirements of the Order. Although there were recommendations to exempt small farms from this Order, no evidence was provided to demonstrate that small farms could not affect water quality and, therefore, justify an exemption from being governed by waste discharge requirements. In addition, there was no evidence presented to suggest that, on a per acre basis, small farming operations would have a reduced impact on water quality then larger farmers.

However, the board recognizes that small farming operations have more limited resources and access to technical experts. The additional time provided for small farming operations to initially prepare applicable farm evaluations, nitrogen management plans, and sediment and erosion control plans should allow small farmers to more feasibly access available technical resources, such as their third-party, the Natural Resources Conservation Service, University of California Cooperative Extension, and local resource conservation districts.

These changes should not impact the board's ability to determine progress for the watershed as a whole, since most of the irrigated acreage in the watershed is managed by large farming operations. However, small farming operations may prove to have significant localized impacts, so this Order does not preclude the Executive Officer from obtaining information from small farming operations to address such impacts.

To accommodate differing requirements for small farming operations, the board needs to know who is farming a given parcel. Although the landowner can be the Member of the third-party, the landowner must still identify the lessee, if the landowner is not also the farmer. This requirement is necessary to avoid a situation in which multiple parcels of less than 60 acres are farmed by the same farming operation, but are incorrectly identified as associated with "small farming operations" based on the individual landowners being the Members rather than the farm operator.

Technical Reports

The surface water and trend groundwater quality monitoring under the Order is regional in nature instead of individual field discharge monitoring. The benefits of regional monitoring include the ability to determine whether water bodies accepting discharges from numerous irrigated lands are meeting water quality objectives. Regional monitoring also allows the Central Valley Water Board to determine, at the regional level, whether practices are protective of water quality. There are limitations to regional monitoring when trying to determine possible sources of water quality problems.

Therefore, through the Management Practices Evaluation Program and the Surface Water Quality Management Plans and Groundwater Quality Management Plans, the third-party must evaluate the effectiveness of management practices in protecting water quality. In addition, Members must report the practices they are implementing to protect water quality. Through the evaluations and studies conducted by the third-party, the reporting of practices by the Members, and the board's compliance and

[15] Data are for Madera, Mariposa, Merced, Stanislaus, and Tuolumne Counties; United States Department of Agriculture. 2007. *Census of Agriculture*.

enforcement activities, the board will be able to determine whether a Member is complying with the Order.

An effective method of determining compliance with water quality objectives is water quality monitoring at the individual level. Individual monitoring may also be used to help determine sources of water quality problems. Individual monitoring of waste discharges is required under many other Water Board programs. Examples of such programs include regulation of wastewater treatment plants and the Central Valley Water Board's Dairy Program.[16] The costs of individual monitoring would be much higher than regional surface and groundwater quality monitoring required under the Order. Regional monitoring provides a general measure of compliance over a large area, reducing the number of samples collected.

This Order requires the third-party to provide technical reports. These reports may include special studies at the direction of the Executive Officer. The Executive Officer may require special studies where regional monitoring is ineffective in determining potential sources of water quality problems or to identify whether management practices are effective. Special studies help ensure that the potential information gaps described above under the Order's regional monitoring requirements may be filled through targeted technical reports, instead of more costly individual monitoring programs.

Reports and Plans

Staff will post all plans and reports required for approval by the Executive Officer on the board's website upon approval.

Water Quality Objectives

Surface water and groundwater receiving water limitations in section III of the Order specify that waste discharge from irrigated lands may not cause or contribute to an exceedance of water quality objectives in surface water or underlying groundwater, unreasonably affect beneficial uses, or cause a condition of pollution or nuisance.

Water quality objectives that apply to surface water are described in the *Water Quality Control Plan for the Sacramento and San Joaquin River Basins* (Basin Plan). Applicable water quality objectives include, but are not limited to, (1) the numeric objectives, including the bacteria objective, the chemical constituents objective (includes listed chemicals and state drinking water standards, i.e., maximum contaminant levels (MCLs) promulgated in Title 22 California Code of Regulations (CCR) Division 4, Chapter 15 sections 64431 and 64444 that are applicable through the Basin Plan to waters designated as municipal and domestic supply), dissolved oxygen objectives, pH objectives, the salinity objectives, and the turbidity objectives; and (2) the narrative objectives, including the biostimulatory substances objective, the chemical constituents objective, and the toxicity objective. The Basin Plan also contains numeric water quality objectives that apply to specifically identified water bodies, such as specific temperature objectives. Federal water quality criteria that apply to surface water are contained in federal regulations referred to as the California Toxics Rule and the National Toxics Rule. See 40 CFR sections 131.36 and 131.38.

Water quality objectives that apply to groundwater include, but are not limited to, (1) numeric objectives, including the bacteria objective and the chemical constituents objective (includes state MCLs promulgated in Title 22 CCR Division 4, Chapter 15 section 64431 and 64444 and are applicable through the Basin Plan to municipal and domestic supply), and (2) narrative objectives including the chemical constituents, taste and odor, and toxicity objectives.

[16] The dairy program requires individual monitoring of surface water discharges and allows for a "representative" groundwater monitoring in lieu of individual groundwater monitoring.

The requirements that waste discharge not unreasonably affect beneficial uses or cause a condition of pollution or nuisance are prescribed pursuant to sections 13263 and 13241 of the California Water Code. Section 13263 of the California Water Code requires Regional Water Boards, when establishing waste discharge requirements, to consider the need to prevent nuisance and the provisions in section 13241 of the California Water Code. Section 13241 requires Regional Water Boards to consider several factors when establishing water quality objectives including prevention of nuisance and reasonable protection of beneficial uses.

Implementation of Water Quality Objectives

The Basin Plan includes numeric and narrative water quality objectives. The narrative toxicity objective states: "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.*" The Basin Plan states that material and relevant information, including numeric criteria, and recommendations from other agencies and scientific literature will be utilized in evaluating compliance with the narrative toxicity objective. The narrative chemical constituent objective states that waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses. At a minimum, *"…water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs)*" in Title 22 of the California Code of Regulations (CCR). The Basin Plan further states that, to protect all beneficial uses, the Regional Water Board may apply limits more stringent than MCLs. The narrative tastes and odors objective states: "*Water shall not contain taste- or odor-producing substances in concentrations that impart undesirable tastes or odors to domestic or municipal water supplies or to fish flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses.*"

The Sacramento-San Joaquin Basin Plan at page IV-16.00, contains an implementation policy, "Policy for Application of Water Quality Objectives," that specifies that the Central Valley Water Board "*will, on a case-by-case basis, adopt numerical limitations in orders which will implement the narrative objectives*." With respect to narrative objectives, the Regional Water Board must establish limitations using one or more of three specified sources, including: (1) USEPA's published water quality criteria, (2) a proposed state criterion (i.e., water quality objective) or an explicit state policy interpreting its narrative water quality criteria (i.e., the Regional Water Board's "Policy for Application of Water Quality Objectives"), or (3) an indicator parameter. For purposes of this Order, all three sources will be used as part of the process described below.

Implementation of numeric and narrative water quality objectives under the Order involves an iterative process. The Order's MRP establishes management plan trigger limits that are equivalent to the applicable Basin Plan numeric water quality objectives. For constituents that are not assigned Basin Plan numeric water quality objectives, board staff will develop trigger limits in consultation with the Department of Pesticide Regulation (for pesticides) and other agencies as appropriate. Board staff will provide interested parties, including the third-party representing Members, with an opportunity to review and comment on the trigger limits. The Executive Officer will then provide the trigger limits to the third-party. Those trigger limits will be considered the numeric interpretation of the applicable narrative objectives. In locations where trigger limits are exceeded, water quality management plans must be developed that will form the basis for reporting which steps have been taken by growers to achieve compliance with numeric and narrative water quality objectives.

Non-Point Source (NPS) Program

This Order regulates waste discharges from irrigated agricultural lands to state waters as an NPS program. Accordingly, the waste discharge requirements must implement the provisions of the State Water Board's *Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program* (NPS Policy). Under the NPS Policy, the Regional Water Board must find that the program will

promote attainment of water quality objectives. The nonpoint-source program also must meet the requirements of five key structural elements. These elements include (1) the purpose of the program must be stated and the program must address NPS pollution in a manner that achieves and maintains water quality objectives and beneficial uses, including any applicable antidegradation requirements; (2) describe the practices to be implemented and processes to be used to select and verify proper implementation of practices; (3) where it is necessary to allow time to achieve water quality requirements, include a specific time schedule, and corresponding quantifiable milestones designed to measure progress toward reaching specified requirements; (4) feedback mechanisms to determine whether the program is achieving its purpose; and (5) the consequences of failure to achieve the stated purpose.

This Order addresses each of the five key elements, as described below.

(1) The purpose of the long-term irrigated lands regulatory program, of which this Order is an implementing mechanism, is stated above under the section titled "Goals and Objectives of the Irrigated Lands Regulatory Program."[17] The program goals and objectives include meeting water quality objectives. The requirements of this Order include requirements to meet applicable water quality objectives and the requirements of State Water Board Resolution 68-16 (antidegradation requirements). Further discussion of this Order's implementation of antidegradation requirements is given below under the section titled "State Water Board Resolution 68-16."

(2) The board is prevented by Water Code section 13360 from prescribing specific management practices to be implemented. However, it may set forth performance standards and require dischargers to report on what practices they have or will implement to meet those standards. Examples of the types of practices that irrigated agricultural operations may implement to meet program goals and objectives have been described in the Economics Report[18] and evaluated in the Program Environmental Impact Report (PEIR)[19] for the long-term ILRP. This Order requires each individual operation to develop a farm evaluation that will describe their management practices in place to protect surface water and groundwater quality. This Order also requires the development of surface/groundwater quality management plans (SQMPs/GQMPs) in areas where there are exceedances of water quality objectives. The requirements for SQMPs and GQMPs include that the third-party identify management practices and develop a process for evaluating the effectiveness of such practices. The requirements of this Order are consistent with Key Element 2.

(3) This Order requires the development of SQMPs/GQMPs in areas where water quality objectives are not met. SQMPs/GQMPs must include time schedules for implementing the plans and meeting the surface and groundwater receiving water limitations (section III of the Order) as soon as practicable, but within a maximum of 10 years for surface and groundwater. The time schedules must be consistent with the requirements for time schedules set forth in this Order. The time schedules must include quantifiable milestones that will be reviewed by the Executive Officer and the public prior to approval. The time schedule requirements in this Order are consistent with Key Element 3.

[17] The goals and objectives were developed as part of the ILRP Program Environmental Impact Report, ICF International. 2011. *Irrigated Lands Regulatory Program - Program Environmental Impact Report*. Final and Draft. March. (ICF 05508.05.) Sacramento, CA. Prepared for Central Valley Regional Water Quality Control Board, Sacramento, CA.

[18] ICF International. 2010. *Draft Technical Memorandum Concerning the Economic Analysis of the Irrigated Lands Regulatory Program.* July. (ICF 05508.05.) Sacramento, CA. Prepared for: Central Valley Regional Water Quality Control Board, Sacramento, CA.

[19] ICF International. 2011. *Irrigated Lands Regulatory Program - Program Environmental Impact Report*. Final and Draft. March. (ICF 05508.05.) Sacramento, CA. Prepared for Central Valley Regional Water Quality Control Board, Sacramento, CA.

(4) To provide feedback on whether program goals are being achieved, this Order requires surface and groundwater quality monitoring, tracking of management practices, and evaluation of effectiveness of implemented practices. This feedback will allow iterative implementation of practices to ensure that program goals are achieved. This feedback mechanisms required by this Order are consistent with Key Element 4.

(5) This Order establishes the following consequences where requirements are not met:

(a) The third-party or Members will be required, in an iterative process, to conduct additional monitoring and/or implement management practices where water quality objectives are not being met;
(b) Appropriate Central Valley Water Board enforcement action where the iterative management practices process is unsuccessful, program requirements are not met, or time schedules are not met;
(c) Require noncompliant Members, or all Members where the third-party fails to meet the requirements of this Order, to submit a report of waste discharge to obtain individual waste discharge requirements from the Central Valley Water Board (i.e., revoke coverage under this Order).

This Order describes consequences for failure to meet requirements and is consistent with Key Element 5.

California Environmental Quality Act (CEQA)

For the purposes of adoption of this Order, the Central Valley Water Board is the lead agency pursuant to CEQA (Public Resources Code sections 21100 et seq.). The Central Valley Water Board has prepared a Final Program Environmental Impact Report (PEIR)[20] that analyzes the potential environmental impacts of six program alternatives for a long term ILRP. As described more fully in Attachment D, this Order relies upon the PEIR for CEQA compliance. The requirements of the Order include regulatory elements that are also contained in the six alternatives analyzed in the PEIR. Therefore, the actions by Members to protect water quality in response to the requirements of this Order are expected to be similar to those described for Alternatives 2-6 of the PEIR (Alternative 1 does not include groundwater protection).

The PEIR describes that potential environmental impacts of all six alternatives are associated with implementation of water quality management practices, construction of monitoring wells, and impacts to agriculture resources (e.g., loss of production of prime farmland) due to increased regulatory costs. Under this Order, Members will be required to implement water quality management practices to address water quality concerns. The PEIR describes and evaluates potential impacts of practices likely to be implemented to meet water quality and other management goals on irrigated lands. These water quality management practices include:

- Nutrient management
- Improved water management
- Tailwater recovery system
- Pressurized irrigation
- Sediment trap, hedgerow, or buffer
- Cover cropping or conservation tillage

[20] ICF International. 2011. *Irrigated Lands Regulatory Program Final Program Environmental Impact Report.* Final and Draft. March. (ICF 05508.05.) Sacramento, CA. Prepared for: Central Valley Regional Water Quality Control Board, Sacramento, CA

- Wellhead protection

These practices are examples of the types of practices that would be broadly applied by irrigated agricultural operations throughout the Central Valley and are considered representative of the types of practices that would have potential environmental impacts. It is important to note that the evaluated practices are not required; operators will have the flexibility to select practices to meet water quality goals. This Order represents one order in a series of orders that will be developed, based on the alternatives evaluated in the PEIR for all irrigated agriculture within the Central Valley. The requirements of this Order would lead to implementation of the above practices within the Eastern San Joaquin River Watershed to a similar degree as is described for Alternatives 2-6 analyzed in the PEIR. Also, the requirements of this Order will require installation of monitoring wells (with the extent depending on the adequacy of existing wells for water quality monitoring).

As described in the PEIR for Alternatives 2-6, the combination of an operator's choice of management practice and where that practice is implemented (i.e., located within a sensitive resource area) may result in significant environmental impacts for the following resource areas:

- Cultural resources: Potential loss of resources from construction and operation of management practices and monitoring wells.
- Noise and vibration: Exposure of sensitive land uses to noise from construction and operation of management practices (e.g., construction of tailwater return system, pump noise) and monitoring wells.
- Air quality: Generation of construction and operational emissions from management practices and monitoring wells (e.g., equipment and pump emissions generated during construction and continued operation of practices).
- Climate change: Cumulative, from a potential increase in greenhouse gas emissions.
- Vegetation and wildlife: Loss of habitat, wildlife, and wetland communities from reduced surface water discharge and construction and operation of practices and monitoring wells (e.g., loss of habitat if a practice is sited in a previously undisturbed area). Cumulative loss of habitat.
- Fisheries: Loss of habitat from construction of management practices, monitoring wells, and toxicity attributable to coagulant additives.
- Agriculture resources: Loss of farmland from increased regulatory cost. Cumulative loss of agriculture resources.

* The above is a generalized summary of affected resource areas. The reader is directed to the Attachment D, Findings of Fact and Statement of Overriding Considerations, of this Order for specific impacts and discussion. Attachment D provides a listing of the above impacts, the written findings regarding those impacts consistent with § 15091 of the CEQA Guidelines, and the explanation for each finding.

Mitigation Measures

The impacts described above, except for agriculture resources, cumulative climate change, and cumulative vegetation and wildlife can be reduced to a less than significant level through the employment of alternate practices or by choosing a location that avoids sensitive areas (e.g., installing a sedimentation basin in a portion of the property that is already developed rather than in an area that provides riparian habitat). Where no alternate practice or less sensitive location for a practice exists, this Order requires that the third-party and Members choosing to employ these practices to avoid impacts to sensitive resources by implementing the mitigation measures described in Attachment C. A CEQA Mitigation Monitoring and Reporting Program is included in Attachment B of this Order, Monitoring and Reporting Program R5-2012-0116.

Statement of policy with respect to maintaining high quality waters in California (State Water Board Resolution 68-16)

This section of the Information Sheet first provides background on State Water Board Resolution 68-16 *Statement of Policy with Respect to Maintaining High Quality of Waters in California* (Resolution 68-16). Following the background discussion, the Information Sheet describes how the various provisions in the WDR and MRP collectively implement Resolution 68-16. In summary, the requirements of Resolution 68-16 are met through a combination of upfront planning and implementation at the farm level; regional monitoring and assessments to determine whether trends in degradation are occurring; and regional planning and on-farm implementation when trends in degradation are identified.

Initially, all Members will need to conduct an on-farm evaluation to determine whether their practices are protective of water quality and whether they are meeting the established farm management performance standards. Through the process of becoming aware of effective management practices; evaluating their practices; and implementing improved practices; Members are expected to meet the farm management performance measures and, thereby, achieve best practicable treatment or control (BPTC), where applicable. All Members must prepare and implement a farm-specific nitrogen management plan. In addition, each Member with the potential to cause erosion and discharge sediment that may degrade surface waters must prepare and implement a sediment and erosion control plan. Implementation of the sediment/erosion control plan should result in achieving BPTC for sediment associated pollutants. Implementation of the nitrogen management plan should result in achieving BPTC for nitrates discharged to groundwater.

Regional trend monitoring of surface water and groundwater together with periodic assessments of available surface water and groundwater information is required to determine compliance with water quality objectives and determine whether any trends in water quality improvement or degradation are occurring. If trends in such degradation are identified that could result in impacts to beneficial uses, a surface (or groundwater) quality management plan must be prepared by the third-party. The plan must include the identification of practices that will be implemented to address the trend in degradation and an evaluation of the effectiveness of those practices in addressing the degradation. The third party must report on the implementation of practices by their Members. Failure to implement practices or address the degradation by individual Members will result in further direct regulation by the board, including, but not limited to, requiring individual farm water quality management plans; regulating the individual grower directly through WDRs for individual farmers; or taking other enforcement action.

As discussed further below, the combination of these requirements fulfill the requirements of Resolution 68-16 for any degradation of high quality waters authorized by this Order.

Background

Basin Plan water quality objectives are developed to ensure that ground and surface water beneficial uses are protected. The quality of some state ground and surface waters is higher than established Basin Plan water quality objectives. For example, nutrient levels in good, or "high quality" waters may be very low, or not detectable, while existing water quality standards for nutrients may be much higher. In such waters, some degradation of water quality may occur without compromising protection of beneficial uses. State Water Board Resolution 68-16 *Statement of Policy with Respect to Maintaining High Quality of Waters in California* (Resolution 68-16) was adopted in October of 1968 to address high quality waters in the state. Title 40 of the Code of Federal Regulations, Section 131.12—Antidegradation Policy (40 CFR 131.12) was developed in 1975 to ensure water quality necessary to protect existing uses in waters of the United States. Resolution 68-16 applies to discharges to all high quality waters of the state, including groundwater and surface water (Water Code section 13050[e]); 40 CFR 131.12 applies only to surface waters.

The requirement to implement the Antidegradation Policy is contained in Resolution 68-16 (provision 2 presented below) and in the Basin Plan. The Basin Plan states that the Central Valley Water Board

actions must conform with State Water Board plans and policies and among these policies is Resolution 68-16, which requires that:

1. *"Whenever the existing quality of water is better than the quality established in policies as of the date on which such policies become effective, such existing high quality will be maintained until it has been demonstrated to the State that any change will be consistent with maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial use of such water and will not result in water quality less than that prescribed in the policies."*
2. *"Any activity which produces or may produce a waste or increased volume or concentration of waste and which discharges or proposes to discharge to existing high quality waters will be required to meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained."*

For discharges to surface waters only, the Federal Antidegradation Policy (Section 131.12, Title 40, CFR) requires:

1. *"Existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.*
2. *Where the quality of the waters exceed levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected unless the State finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the State's continuing planning process, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In allowing such degradation or lower water quality, the State shall assure water quality adequate to protect existing uses fully. Further, the State shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control.*
3. *When high quality waters constitute an outstanding National resource, such as waters of National and State parks and wildlife refuges and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected.*
4. *In those cases where potential water quality impairment associated with a thermal discharge is involved, the antidegradation policy and implementing method shall be consistent with section 316 of the Act."*

The State Water Board has interpreted Resolution 68-16 to incorporate the Federal Antidegradation Policy in situations where the policy is applicable. (SWRCB Order WQ 86-17.). The application of the Federal Antidegradation Policy to nonpoint source discharges (including discharges from irrigated agriculture) is limited.[21]

[21] 40 CFR 131.12(a)(2) requires that the "State shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and *all cost-effective and reasonable best management practices for nonpoint source control.*" The EPA Handbook, Chapter 4, clarifies this as follows: "Section 131.12(a)(2) does not mandate that States establish controls on nonpoint sources. The Act leaves it to the States to determine what, if any, controls on nonpoint sources are needed to provide attainment of State water quality standards (See CWA Section 319). States may adopt enforceable requirements, or voluntary programs to address nonpoint source pollution. Section 40 CFR 131.12(a)(2) does not require that States adopt or implement best management practices for nonpoint sources prior to allowing point source degradation of a high quality water. However, States that have adopted nonpoint source controls must assure that such controls are properly implemented before authorization is granted to allow point source degradation of water quality." Accordingly, in the context of nonpoint discharges, the BPTC standard established by state law controls.

Administrative Procedures Update 90-004, Antidegradation Policy Implementation for NPDES Permitting, provides guidance for the Regional Water Boards in implementing Resolution 68-16 and 40 CFR 131.12, as these provisions apply to NPDES permitting. APU 90-004 is not applicable in the context of this Order because nonpoint discharges from agriculture are exempt from NPDES permitting.

A number of key terms are relevant to application of Resolution 68-16 and 40 CFR 131.12 to this Order. These terms are described below.

High Quality Waters: Resolution 68-16 applies whenever "existing quality of water is better than quality established in policies as of the date such policies become effective,"[22] and 40 CFR 131.12 refers to "quality of waters [that] exceed levels necessary to support propagation of fish, shellfish, and wildlife and recreation." Such waters are "high quality waters" under the state and federal antidegradation policies. In other words, high quality waters are waters with a background quality of better quality than that necessary to protect beneficial uses.[23] The Water Code directs the State Water Board and the Regional Water Boards to establish water quality objectives for the reasonable protection of beneficial uses. Therefore, where water bodies contain levels of water quality constituents or characteristics that are better than the established water quality objectives, such waters are considered high quality waters.

Both state and federal guidance indicates that the definition of high quality waters is established by constituent or parameter [State Water Board Order WQ 91-10; USEPA Water Quality Handbook, Chapter 4 Antidegradation (40 CFR 131.12) ("EPA Handbook")]. Waters can be of high quality for some constituents or beneficial uses but not for others. With respect to degraded groundwater, a portion of the aquifer may be degraded with waste while another portion of the same aquifer may not be degraded with waste. The portion not degraded is high quality water within the meaning of Resolution 68-16. See State Water Board Order WQ 91-10.

In order to determine whether a water body is a high quality water with regard to a given constituent, the background quality of the water body unaffected by the discharge must be compared to the water quality objectives. If the quality of a water body has declined since the adoption of the relevant policies and that subsequent lowering was not a result of regulatory action consistent with the state antidegradation policy, a baseline representing the historically higher water quality may be an appropriate representation of background.[24] However, if the decline in water quality was permitted consistent with state and federal antidegradation policies, the most recent water quality resulting from permitted action constitutes the relevant baseline for determination of whether the water body is high quality. See, e.g., SWRCB Order WQ 2009-0007 at 12. Additionally, if water quality conditions have improved historically, the current higher water quality would again be the point of comparison for determining the status of the water body as a high quality water.

Best Practicable Treatment or Control: Resolution 68-16 requires that, where degradation of high quality waters is permitted, best practicable treatment or control (BPTC) limits the amount of degradation that may occur. Neither the Water Code nor Resolution 68-16 defines the term "best practicable treatment or control."

[22] Such policies would include policies such as State Water Board Resolution 88-63, Sources of Drinking Water Policy, establishing beneficial uses, and water quality control plans.
[23] USEPA Water Quality Handbook, Chapter 4 Antidegradation (40 CFR 131.12) , defines "high quality waters" as "those whose quality exceeds that necessary to protect the section 101(a)(2) goals of the Act [Clean Water Act], regardless of use designation."
[24] The state antidegradation policy was adopted in 1968, therefore water quality as far back as 1968 may be relevant to an antidegradation analysis. For purposes of application of the federal antidegradation policy only, the relevant year would be 1975.

Despite the lack of a BPTC definition, certain State Water Board water quality orders and other documents provide direction on the interpretation of BPTC. The State Water Board has stated: "one factor to be considered in determining BPTC would be the water quality achieved by other similarly situated dischargers, and the methods used to achieve that water quality." (See Order WQ 2000-07, at pp. 10-11). In a "Questions and Answers" document for Resolution 68-16 (the Questions and Answers Document), BPTC is interpreted to additionally include a comparison of the proposed method to existing proven technology; evaluation of performance data (through treatability studies); comparison of alternative methods of treatment or control, and consideration of methods currently used by the discharger or similarly situated dischargers.[25] The costs of the treatment or control should also be considered. Many of the above considerations are made under the "best efforts" approach described later in this section. In fact, the State Water Board has not distinguished between the level of treatment and control required under BPTC and what can be achieved through "best efforts."

The Regional Water Board may not "specify the design, location, type of construction, or particular manner in which compliance may be had with [a] requirement, order, or decree" (Water Code 13360). However, the Regional Water Board still must require the discharger to demonstrate that the proposed manner of compliance constitutes BPTC (SWRCB Order WQ 2000-7). The requirement of BPTC is discussed in greater detail below.

Maximum Benefit to People of the State: Resolution 68-16 requires that where degradation of water quality is permitted, such degradation must be consistent with the "maximum benefit to people of the state." Only after "intergovernmental coordination and public participation" and a determination that "allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located" does 40 CFR 131.12 allow for degradation.

As described in the Question and Answers Document, factors considered in determining whether degradation of water quality is consistent with maximum benefit to people of the State include economic and social costs, tangible and intangible, of the proposed discharge, as well as the environmental aspects of the proposed discharge, including benefits to be achieved by enhanced pollution controls. Closely related to the BPTC requirement, consideration must be given to alternative treatment and control methods and whether lower water quality can be abated or avoided through reasonable means, and the implementation of feasible alternative treatment or control methods should be considered.

USEPA guidance clarifies that the federal antidegradation provision "is not a 'no growth' rule and was never designed or intended to be such. It is a policy that allows public decisions to be made on important environmental actions. Where the state intends to provide for development, it may decide under this section, after satisfying the requirements for intergovernmental coordination and public participation, that some lowering of water quality in "high quality waters" is necessary to accommodate important economic or social development" (EPA Handbook for Developing Watershed Plans to Restore and Protect Our Waters, Chapter 4). Similarly, under Resolution 68-16, degradation is permitted where maximum benefit to the people of the state is demonstrated.

Water Quality Objectives and Beneficial Uses: As described above, Resolution 68-16 and Section 40 CFR 131.12 are both site-specific evaluations that are not easily employed to address large areas or broad implementation for classes of discharges. However, as a floor, any degradation permitted under the antidegradation policies must not cause an exceedance of water quality objectives or a pollution or nuisance. Furthermore, the NPS Policy establishes a floor for all water bodies in that implementation programs must address NPS pollution in a manner that achieves and maintains water quality objectives and beneficial uses.

Waters that are Not High Quality: The "Best Efforts" Approach: Where a water body is at or exceeding water quality objectives already, it is not a high quality water and is not subject to the

[25] See *Questions and Answers, State Water Resources Control Board, Resolution 68-16* (February 16, 1995).

requirements of the antidegradation policy. As stated previously, data collected by the Central Valley Water Board, dischargers, educational institutions, and others demonstrate that many water bodies in the Central Valley Region are already impaired for various constituents associated with irrigated agricultural activities.

Where a water body is not high quality and the antidegradation policies are accordingly not triggered, the Central Valley Water Board should, under State Water Board precedent, set limitations more stringent than the objectives set forth in the Basin Plan. The State Water Board has directed that, "where the constituent in a groundwater basin is already at or exceeding the water quality objective, . . . the Regional Water Board should set limitations more stringent than the Basin Plan objectives if it can be shown that those limitations can be met using 'best efforts.'" SWRCB Order WQ 81-5; *see also* SWRCB Orders Nos. WQ 79-14, WQ 82-5, WQ 2000-07. Finally, the NPS Policy establishes standards for management practices.

The "best efforts" approach involves the Regional Water Board establishing limitations expected to be achieved using reasonable control measures. Factors which should be analyzed under the "best efforts" approach include the effluent quality achieved by other similarly situated dischargers, the good faith efforts of the discharger to limit the discharge of the constituent, and the measures necessary to achieve compliance. SWRCB Order WQ 81-5, at p. 7. The State Water Board has applied the "best efforts" factors in interpreting BPTC. (See SWRCB Order Nos. WQ 79-14, and WQ 2000-07).

In summary, the board may set discharge limitations more stringent than water quality objectives even outside the context of the antidegradation policies. The "best efforts" approach must be taken where a water body is not "high quality" and the antidegradation policies are accordingly not triggered.

Application of Resolution 68-16 Requirements to this Order

The determination of a high quality water within the meaning of the antidegradation policies is water body and constituent-specific. Very little guidance has been provided in state or federal law with respect to applying the antidegradation policy to a program or general permit where multiple water bodies are affected by various discharges, some of which may be high quality waters and some of which may, by contrast, have constituents at levels that already exceed water quality objectives. Given these limitations, the board has used readily available information regarding the water quality status of surface and ground waters in the Eastern San Joaquin River Watershed to construct provisions in this Order to meet the substantive requirements of Resolution 68-16.

This Order regulates discharges from thousands of individual fields to a very large number of water bodies within the Eastern San Joaquin River Watershed. There is no comprehensive, waste constituent–specific information available for all surface waters and groundwater aquifers accepting irrigated agricultural wastes that would allow site-specific assessment of current conditions. Likewise, there is no comprehensive historic data.[26]

However, data collected by the Central Valley Water Board, dischargers, educational institutions, and others demonstrate that many water bodies within the Eastern San Joaquin River Watershed are already impaired for various constituents that are or could be associated with irrigated agricultural activities. As described above, there are surface water quality management plan requirements for the following constituents and indicators: ammonia, arsenic, chlorpyrifos, copper, DDE, diazinon, diuron, dissolved oxygen, electrical conductivity, *E. coli*, lead, molybdenum, nitrate, pH, simazine, total dissolved solids, thiobencarb, algae toxicity, sediment toxicity, fathead minnow toxicity, and water flea toxicity. Those same data collection efforts also indicate that surface water bodies within the watershed meet objectives

[26]Irrigated lands discharges have been regulated under a conditional waiver since 1982, but comprehensive data as to trends under the waiver are not available.

for particular constituents and would be considered "high quality waters" with respect to those constituents.

Similarly, as described above in the "Groundwater Quality Monitoring" section, 22 percent of sampled square mile sections (i.e., sections containing wells for which sampling information is available) had a maximum nitrate level above applicable water quality objectives. The groundwater represented by these wells may not be considered "high quality" with respect to nitrates. However, it is unknown when the degradation occurred. Available data show that currently existing quality of certain water bodies is better than the water quality objectives; for example, deeper groundwaters, represented by municipal supply wells, are generally high quality with respect to pesticides and nitrates. Degradation of such waters can be permitted only consistent with the state and federal antidegradation policies.

Given the significant variation in conditions over the broad areas covered by this Order, any application of the antidegradation requirements must account for the fact that at least some of the waters into which agricultural discharges will occur are high quality waters (for some constituents). Further, the Order provisions should also account for the fact that even where a water body is not high quality (such that discharge into that water body is not subject to the antidegradation policy), the board should, under State Water Board precedent, impose limitations more stringent than the objectives set forth in the Basin Plan, if those limits can be met by "best efforts."

Consistency with BPTC and the "Best Efforts" Approach

Due to the numerous commodities being grown on irrigated agricultural lands and varying geological conditions within the Eastern San Joaquin River Watershed, identification of a specific technology or treatment device as BPTC or "best efforts" has not been accomplished. By contrast, there are a variety of technologies that have been shown to be effective in protecting water quality. For example, Chapter 5 of the Irrigated Lands Program Existing Conditions Report[27] (ECR) describes that there are numerous management practices that Members could implement to achieve water quality protection goals. The Central Valley Water Board recognizes that there is often site-specific, crop-specific, and regional variability that affects the selection of appropriate management practices, as well as design constraints and pollution-control effectiveness of various practices.

Growers need the flexibility to choose management practices that best achieve a management measure's performance expectations given their own unique circumstances. Management practices developed for agriculture are to be used as an overall system of measures to address nonpoint-source pollution sources on any given site. In most cases, not all of the practices will be needed to address the nonpoint sources at a specific site. Operations may have more than one constituent of concern to address and may need to employ two or more of the practices to address the multiple sources. Where more than one source exists, the application of the practices should be coordinated to produce an overall system that adequately addresses all sources for the site in a cost-effective manner.

There is no specific set of technologies, practices, or treatment devices that can be said to achieve BPTC/best efforts universally in the watershed. This Order, therefore, establishes a set of performance standards that must be achieved and an iterative planning approach that will lead to implementation of BPTC/best efforts. The iterative planning approach will be implemented as two distinct processes, 1) establishment of a baseline set of universal farm water quality management standards combined with upfront evaluation, planning and implementation of management practices to attain those goals, and 2) additional planning and implementation measures where degradation trends are observed that threaten to impair a beneficial use or where beneficial uses are impaired (i.e., water quality objectives are not being met). Taken together, these processes are considered BPTC/best efforts. The planning and implementation processes that growers must follow on their farms should lead to the on-the-ground

[27] California Regional Water Quality Control Board, Central Valley Region, and Jones and Stokes. 2008. *Irrigated Lands Regulatory Program Existing Conditions Report.* Sacramento, CA.

implementation of the optimal practices and control measures to address waste discharge from irrigated agriculture.

1. Farm Management Performance Standards

This Order establishes on farm standards for implementation of management practices that all Members must achieve. The selection of appropriate management practices must include analysis of site-specific conditions, waste types, discharge mechanisms, and crop types. Considering this, as well as the Water Code 13360 mandate that the Regional Water Board not specify the manner of compliance with its requirements, selection must be done at the farm level. Following are the performance standards that all Members must achieve:

a. minimize waste discharge offsite in surface water,
b. minimize or eliminate the discharge of sediment above background levels,
c. minimize percolation of waste to groundwater,
d. minimize excess nutrient application relative to crop need,
e. prevent pollution and nuisance
f. achieve and maintain water quality objectives and beneficial uses,
g. protect wellheads from surface water intrusion.

BPTC is not defined in Resolution 68-16. However, the State Water Board describes in their 1995 Questions and Answers, Resolution 68-16: "To evaluate the best practicable treatment or control method, the discharger should compare the proposed method to existing proven technology; evaluate performance data, e.g., through treatability studies; compare alternative methods of treatment or control; and/or consider the method currently used by the discharger or similarly situated dischargers." Available state and federal guidance on management practices may serve as a measure of the types of water quality management goals for irrigated agriculture recommended throughout the state and country (e.g., water quality management goals for similarly situated dischargers). This will provide a measure of whether implementation of the above performance standards will lead to implementation of BPTC/best efforts.

- As part of California's Nonpoint Source Pollution Control Program, the State Water Board, California Coastal Commission, and other state agencies have identified seven management measures to address agricultural nonpoint sources of pollution that affect state waters (*California's Management Measures for Polluted Runoff*, referred to below as "Agriculture Management Measures").[28] The agricultural management measures include practices and plans installed under various NPS programs in California, including systems of practices commonly used and recommended by the USDA as components of resource management systems, water quality management plans, and agricultural waste management systems.

- USEPA's National Management Measures to Control Nonpoint Source Pollution from Agriculture (EPA 841-B-03-004, July 2003;),[29] "*is a technical guidance and reference document for use by State, local, and tribal managers in the implementation of nonpoint source pollution management programs. It contains information on the best available, economically achievable means of reducing pollution of surface and ground water from agriculture."*

[28] *California's Management Measures for Polluted Runoff* (<http://www.waterboards.ca.gov/water_issues/programs/nps/docs/cammpr/info.pdf>)
[29] (<http://water.epa.gov/polwaste/nps/agriculture/agmm_index.cfm>)

Both of the above guidance documents describe a series of management measures, similar to the farm management performance standards and related requirements of the Order. The agricultural management measures described in the state and USEPA reference documents generally include: 1) erosion and sediment control, 2) facility wastewater and runoff from confined animal facilities, 3) nutrient management, 4) pesticide management, 5) grazing management, 6) irrigation water management, and 7) education and outreach. A comparison of the recommendations with the Order's requirements is provided below.

Management measure 1, erosion and sediment control. Practices implemented to minimize waste discharge offsite and erosion (performance standards a and b) are consistent with this management measure to achieve erosion and sediment control. The Order requires that all Members implement sediment discharge and erosion prevention practices to minimize or eliminate the discharge of sediment above background levels. Those Members that have the potential to cause erosion and discharge sediment that may degrade surface waters must develop a farm-specific sediment and erosion control plan.

Management measure 2 is not applicable, as this Order does not address waste discharges from confined animal facilities.

Management measure 3, nutrient management. As described in the State's Agricultural Management Measures document, *"this measure addresses the development and implementation of comprehensive nutrient management plans for areas where nutrient runoff is a problem affecting coastal waters and/or water bodies listed as impaired by nutrients."* Nutrient management practices implemented to meet performance standard d are consistent with this measure. The Order also requires nitrogen management plans to be developed by Members within both high vulnerability and low vulnerability groundwater areas. Nitrogen management plans require Members to document how their fertilizer use management practices meet performance standard d. Finally, where nutrients are causing exceedances of water quality objectives in surface waters, this Order would require development of a detailed SQMP which would address sources of nutrients and require implementation of practices to manage nutrients. Collectively, these requirements work together in a manner consistent with management measure 3.

Management measure 4, pesticide management. As described in the State's Agricultural Management Measures document, this measure *"is intended to reduce contamination of surface water and groundwater from pesticides."* Performance standards a, c, e, f, and g are consistent with this management measure, requiring Members to implement practices that minimize waste discharge to surface and groundwater (such as pesticides), prevent pollution and nuisance, achieve and maintain water quality objectives, and implement wellhead protection measures.

Management measure 5, grazing management. As described in the state Agriculture Management Measures document, this measure is "*intended to protect sensitive areas (including streambanks, lakes, wetlands, estuaries, and riparian zones) by reducing direct loadings of animal wastes and sediment.*" While none of the Order's farm management goals directly address grazing management, performance standards a, b, e and f, when considered by an irrigated pasture operation would lead to the same management practices, e.g., preventing erosion, discharge of sediment, and ensuring that animal waste loadings do not cause pollution, nuisance, and achieve water quality objectives. The Order also requires that all Members implement sediment discharge and erosion prevention practices to minimize or eliminate the discharge of sediment above background levels.

Management measure 6, irrigation water management. As described in the state Agricultural Management Measures document, this measure "*promotes effective irrigation while reducing pollutant delivery to surface and ground waters.*" Performance standards a and c, requiring Members to minimize waste discharge to surface and groundwater will lead to practices that will also achieve this management measure. For example, a Member may choose to implement efficient irrigation management programs (e.g., timing, uniformity testing), technologies (e.g., spray, drip irrigation, tailwater return), or other methods to minimize discharge of waste to surface water and percolation to groundwater.

Management measure 7, education and outreach. The Order requires that third-party groups conduct education and outreach activities to inform Members of program requirements and water quality problems.

Implementation of practices to achieve the Order's water quality requirements described above is consistent with the state and federal guidance for management measures. Because these measures are recommended for similarly situated dischargers (e.g., agriculture), compliance with the requirements of the Order will lead to implementation of BPTC/best efforts by all Members.

2. Additional Planning and Implementation Measures (SQMP/GQMPs)

This Order requires development of water quality management plans (surface or groundwater) where degradation trends are observed that threaten to impair a beneficial use or where beneficial uses are impaired (i.e., water quality objectives are not being met). SQMPs/GQMPs include requirements to investigate sources, develop strategies to implement practices to ensure waste discharges are meeting the Orders surface and groundwater receiving water limitations, and develop a monitoring strategy to provide feedback on the effectiveness of the management plan. In addition, the SQMPs/GQMPs must include actions to "Identify, validate, and implement management practices to reduce loading of COC's [constituents of concern] to surface water or groundwater, as applicable, thereby improving water quality" (see Appendix MRP-1). Under these plans, additional management practices will be implemented in an iterative manner, to ensure that the management practices represent BPTC/best efforts and that degradation does not threaten beneficial uses. The SQMPs/GQMPs need to meet the performance standards set forth in this Order. The SQMPs/GQMPs are also reviewed periodically to determine whether adequate progress is being made to address the degradation trend or impairment. If adequate progress is not being made, then the Executive Officer can require field monitoring studies, on-site verification of implementation of practices, or the board may revoke the coverage under this Order and regulate the discharger through an individual WDR.

In cases where effectiveness of practices in protecting water quality is not known, the data and information gathered through the SQMP/GQMP and MPEP processes will result in the identification of management practices that meet the performance standards and represent BPTC/best efforts. Since the performance standards also apply to low vulnerability areas with high quality waters, those data and information will help inform the Members and board of the types of practices that meet performance standard requirements.

It is also important to note that in some cases, other agencies may establish performance standards that are equivalent to BPTC and may be relied upon as part of a SQMP or GQMP. For example, the Department of Pesticide Regulation (DPR) has established Groundwater Protection Areas within the Eastern San Joaquin River Watershed that require growers to implement specific groundwater quality protection requirements for certain pesticides. The practices required under DPR's Groundwater Protection Program are considered BPTC for those pesticides requiring permits in groundwater protection areas, since the practices are designed to prevent those pesticides from reaching groundwater and they apply uniformly to similarly situated dischargers in the area.

The State Water Board indicates in its Questions and Answers, Resolution 68-16: "To evaluate the best practicable treatment or control method, the discharger should…evaluate performance data, e.g., through treatability studies..." Water quality management plans, referred to as SQMPs/GQMPs above, institute an iterative process whereby the effectiveness of any set of practices in minimizing degradation will be periodically reevaluated as necessary and/or as more recent and detailed water quality data become available. This process of reviewing data and instituting additional practices where necessary will continue to assure that BPTC/best efforts are implemented and will facilitate the collection of information necessary to demonstrate the performance of the practices. This iterative process will also ensure that the highest water quality consistent with maximum benefit to the people of the state will be maintained.

Resolution 68-16 does not require Members to use technology that is better than necessary to prevent degradation. As such, the board presumes that the performance standards required by this Order are sufficiently achieving BPTC where water quality conditions and management practice implementation are already preventing degradation. Further, since BPTC determinations are informed by the consideration of costs, it is important that discharges in these areas not be subject to the more stringent and expensive requirements associated with SQMPs/GQMPs. Therefore, though Members in "low vulnerability" areas must still meet the farm management performance standards described above, they do not need to incur additional costs associated with SQMPs/GQMPs where there is no evidence of their contributing to degradation of high quality waters.

3. Management Practices Evaluation Program (MPEP) and Other Reporting and Planning Requirements

In addition to the SQMPs/GQMPs, the Order includes a comprehensive suite of reporting requirements that should provide the board with the information it needs to determine whether the necessary actions are being taken to achieve BPTC and protect water quality, where applicable. In high vulnerability groundwater areas, the third-party must develop and implement a Management Practices Evaluation Program (MPEP). The MPEP will include evaluation studies of management practices to determine whether those practices are protective of groundwater quality (e.g., that will not cause or contribute to exceedances of water quality objectives) for identified constituents of concern under a variety of site conditions. If the management practices are not protective, new practices must be developed, implemented, and evaluated. Any management practices that are identified as being protective of water quality, or those that are equally effective, must be implemented by Members who farm under similar conditions (e.g., crop type, soil conditions) (see provision IV.B.21 of the Order).

Farm management performance standards are applicable to both high and low vulnerability areas. The major difference in high and low vulnerability areas is the priority for action. High vulnerability areas may contain both high and low quality waters with respect to constituents discharged by irrigated agriculture, and the MPEP and other reporting, planning, and implementation requirements will determine and require actions to achieve BPTC and best efforts for high and low quality waters, respectively. Because low vulnerability areas present less of a threat of degradation or pollution, additional time is provided, or a lower level of review and certification is required, for some of the planning and reporting requirements. Also, while an MPEP is not required for the low vulnerability areas, the actions required by the MPEP must be implemented as applicable by Members in both high and low vulnerability areas, and will therefore result in the implementation of BPTC and best efforts in high and low vulnerability areas, and will inform evaluation of compliance with performance standards in all areas. The Order requires implementation of actions that achieve BPTC and best efforts for both high and low quality waters, respectively.

To determine whether a degradation trend is occurring, the Order requires surface water monitoring of specific "core" monitoring sites on a rotating basis. The data gathered from the surface water monitoring effort will allow the board to determine whether there is a trend in degradation of water quality related to discharges from irrigated agriculture. For groundwater, a trend monitoring program is required in both "low vulnerability" and "high vulnerability" areas. The trend monitoring for the low vulnerability areas is required to help the board determine whether any trend in degradation of groundwater quality is occurring. For pesticides in groundwater, the board will initially rely on the information gathered through the Department of Pesticide Regulation's (DPR) monitoring efforts to determine whether any degradation related to pesticides is occurring. If the available groundwater quality data (e.g., nitrates, pesticides) in a low vulnerability area suggests that degradation is occurring that could threaten to impair beneficial uses, then the area would be re-designated as a high vulnerability area.

The third-party is required to prepare a Groundwater Quality Assessment Report (GAR) and update that report every five years. The GAR will include an identification of high vulnerability and low vulnerability areas, including identification of constituents that could cause degradation. The initial submittal of the GAR will include a compilation of water quality data, which the board and third-party will use to evaluate trends. The periodic updates to the GAR will require the consideration of data collected by the third-party, as well as other organizations, and will also allow the board and third-party to evaluate trends. The GAR will provide a reporting vehicle for the board to periodically evaluate water quality trends to determine whether degradation is occurring. If the degradation triggers the requirement for a GQMP, then the area in which the GQMP is required would be considered "high vulnerability" and all of the requirements associated with a high vulnerability area would apply to those Members.

All Members will also need to report on their management practices through the farm evaluation process. In addition, all members will need to prepare nitrogen management plans prepared in accordance with the nitrogen management plan templates approved by the Executive Officer. The plans require Members to document how their fertilizer use management practices minimize excess nutrient application relative to crop need. The planning requirements are phased according to threat level such that members in low vulnerability areas have more time to complete their plans than those in high vulnerability areas. Members in high vulnerability areas will need to submit nitrogen management plan summary reports. Through the farm evaluation, the Member must identify "…on-farm management practices implemented to achieve the Order's farm management performance standards." (see Attachment B, section VI.A). In addition, the nitrogen management plan summary reports required in high vulnerability areas will include, at a minimum, information on the ratio of total nitrogen available for crop uptake to the estimated crop consumption of nitrogen. Nitrogen management plans and nitrogen management plan summary reports provide indicators as to whether the Member is meeting the performance standard to minimize excess nutrient application relative to crop need for nitrogen. The MPEP study process would be used to determine whether the nitrogen consumption ratio meets the performance standard of the Order.

Summary

Members are required to implement practices to meet the above goals and periodically review the effectiveness of implemented practices and make improvements where necessary. Members in both high and low vulnerability areas will identify the practices they are implementing to achieve water quality protection goals as part of farm evaluations and nitrogen management plans. Members in high vulnerability areas have additional requirements associated with the SQMPs/GQMPs; preparing sediment and erosion control plans; implementing practices identified as protective through the MPEP studies; and reporting on their activities more frequently.

Also, the Order requires water quality monitoring and assessments aimed to identify trends, evaluate effectiveness of management practices, and detect exceedances of water quality objectives. The process of periodic review of SQMPs/GQMPs provides a mechanism for the board to better ensure that Members are meeting the requirements of the Order, if the third-party led efforts are not effective in ensuring BPTC is achieved, where applicable.

Requirements for individual farm evaluations, nitrogen management plans, sediment and erosion control plans, management practices tracking, and water quality monitoring and reporting are designed to ensure that degradation is minimized and that management practices are protective of water quality. These requirements are aimed to ensure that all irrigated lands are implementing management practices that minimize degradation, the effectiveness of such practices is evaluated, and feedback monitoring is conducted to ensure that degradation is limited. Even in low vulnerability areas where there is no information indicating degradation of a high quality water, the farm management performance standards act as a preventative requirement to ensure degradation does not occur. The information and evaluations conducted as part of the GQMP/SQMP process will help inform those Members in low vulnerability areas of the types of practices that meet the performance standards. In addition, even Members in low vulnerability groundwater areas must implement practices (or equivalent practices) that are identified as protective through the MPEP studies (where these practices are applicable to the Members site conditions). The farm evaluations and nitrogen management plan requirements for low vulnerability areas provide indicators as to whether Members are meeting applicable performance standards. The required monitoring and periodic reassessment of vulnerability designations will allow the board to determine whether degradation is occurring and whether the status of a low vulnerability area should be changed to high vulnerability.

The Order is designed to achieve site-specific antidegradation and antidegradation-related requirements through implementation of BPTC/best efforts as appropriate and monitoring, evaluation, and reporting to confirm the effectiveness of the BPTC/best efforts measures in achieving their goals. The Order relies on implementation of practices and treatment technologies that constitute BPTC/best efforts, based to the extent possible on existing data, and requires monitoring of water quality and evaluation studies to ensure that the selected practices in fact constitute BPTC where degradation of high quality waters is or may be occurring, and best efforts where waters are already degraded. Because the State Water Board has not distinguished between the level of treatment and control required under BPTC and what can be achieved through best efforts, the requirements of this Order for BPTC/best efforts apply equally to high quality waters and already degraded waters.

This Order allows limited degradation of existing high quality waters. This limited degradation is consistent with maximum benefit to the people of the state for the following reasons:

- At a minimum, this Order requires that irrigated agriculture achieve and maintain compliance with water quality objectives and beneficial uses;
- The requirements implementing the Order will result in use of BPTC where irrigated agricultural waste discharges may cause degradation of high quality waters; where waters are already degraded, the requirements will result in the pollution controls that reflect the “best efforts” approach. Because BPTC will be implemented, any lowering of water quality will be accompanied by implementation of the most appropriate treatment or control technology;
- Central Valley communities depend on irrigated agriculture for employment (PEIR, Appendix A);
- The state and nation depend on Central Valley agriculture for food (PEIR, Appendix A);
- Consistent with the Order’s and PEIR’s stated goal of ensuring that irrigated agricultural discharges do not impair access to safe and reliable drinking water, the Order protects high quality waters relied on by local communities from degradation of their water supplies by current practices on irrigated lands. The Order is designed to prevent irrigated lands discharges from

causing or contributing to exceedances of water quality objectives, which include maximum contaminant levels for drinking water. The Order also is designed to detect and address exceedances of water quality objectives, if they occur, in accordance with the compliance time schedules provided therein. Therefore, local communities should not incur any additional treatment costs associated with the limited degradation authorized by this Order; and

- The Order includes performance standards that would work to prevent further degradation of surface and groundwater quality.

The requirements of the Order and the limited degradation that would be allowed are consistent with State Water Board Resolution 68-16. The requirements of the Order will result in the implementation of BPTC necessary to assure the highest water quality consistent with the maximum benefit to the people of the state. The receiving water limitations in section III of the Order, the compliance schedules in section XII, and the Monitoring and Reporting Program's requirements to track compliance with the Order, are designed to ensure that the limited degradation will not cause or contribute to exceedances of water quality objectives, unreasonably affect beneficial uses, or cause a condition of pollution or nuisance. Finally, the iterative process of reviewing data and instituting additional management practices where necessary will ensure that the highest water quality consistent with the maximum benefit to the people of the state will be maintained.

California Water Code Sections 13141 and 13241

The total estimated annual cost of compliance with this Order, e.g., summation of costs for administration, monitoring, reporting, tracking, implementation of management practices, is expected to be approximately $4.10 per acre greater than the cost associated with the protection of surface water only under the Coalition Group Conditional Waiver. The total estimated cost of compliance associated with continuation of the previous Coalition Group Conditional Waiver within the Eastern San Joaquin River Watershed is expected to be approximately 96 million dollars per year ($114.45 per acre annually). The total estimated cost of this Order is 99 million dollars per year ($118.55 per acre annually).

Approximately $113.34 of the estimated $118.55 per acre annual cost of the Order is associated with implementation of water quality management practices (see discussion below for a breakdown of estimated costs). This Order does not require that Members implement specific water quality management practices.[30] Many of the management practices that have water quality benefits can have other economic and environmental benefits (e.g., improved irrigation can reduce water and energy consumption, as well as reduce runoff). Management practice selection will be based on decisions by individual Members in consideration of the unique conditions of their irrigated agricultural lands; water quality concerns; and other benefits expected from implementation of the practice. As such, the cost estimate is an estimate of potential, not required costs of implementing specific practices. Any costs for water quality management practices will be based on a market transaction between Members and those vendors or individuals providing services or equipment and not based on an estimate of those costs provided by the board. The cost estimates include estimated fees the third-party may charge to prepare the required reports and conduct the required monitoring, as well as annual permit fees that are charged to permitted dischargers for permit coverage. In accordance with the State Water Board's Fee Regulations, the current annual permit fee charged to members covered by this Order is $0.56/acre. The combined total estimated costs that include third-party and state fees are estimated to be $4.50 /acre annually or less than 5% of the total estimated cost of $118.55 per acre. There are a number of funding programs that may be available to assist growers in the implementation of water quality management practices through grants and loans (e.g., Environmental Quality Incentives Program, State Water Board Agricultural Drainage Management Loan Program). Following is a discussion regarding derivation of the cost estimate for the Order.

[30] Per Water Code section 13360, the Central Valley Water Board may not specify the manner in which a Member complies with water quality requirements.

This Order, which implements the long-term ILRP within the Eastern San Joaquin River Watershed, is based mainly on Alternatives 2 and 4 of the PEIR, but does include elements from Alternatives 2-5. The Order contains the third-party lead entity structure, regional surface and groundwater management plans, and regional surface water quality monitoring approach similar to Alternative 2 of the PEIR; farm planning, management practices tracking, nitrogen tracking, and regional groundwater monitoring similar to Alternative 4 of the PEIR; sediment and erosion control plan (under Alternative 3, "farm plan") recommendation/ certification requirements similar to Alternative 3; prioritized installation of groundwater monitoring wells similar to Alternative 5; and a prioritization system based on systems described by Alternatives 2 and 4. Therefore, potential costs of the Order are estimated using the costs for these components of Alternatives 2-5 given in Tables 2-19, 2-20, 2-21, and 2-22 of the *Draft Technical Memorandum Concerning the Economic Analysis of the Irrigated Lands Regulatory Program* (Economics Report).[31] Estimated costs of management practices are based on costs for Alternatives 2 and 4. Table 4 summarizes the major regulatory elements of the Order and provides reference to the PEIR alternative basis.

Table 4. Summary of regulatory elements

Order elements	Equivalent element from Alternatives 2-5
Third-party administration	Alternative 2
Farm evaluation Sediment and erosion control plan Nitrogen management plans	Alternative 4: farm water quality management plan and certified nutrient management plan
Recommended/ certified sediment and erosion plans	Alternative 3: certification of farm water quality plans
Surface and groundwater management plans	Alternative 2 surface and groundwater management plans
Regional surface water monitoring	Alternative 2 regional surface water monitoring
Regional trend groundwater monitoring	Alternative 4 regional groundwater monitoring
Management practices evaluation program	Alternative 4 regional groundwater monitoring, targeted site-specific studies to evaluate the effects of changes in management practices on groundwater quality and Alternative 5 installation of groundwater monitoring wells at prioritized sites
Management practice reporting	Alternative 4 tracking of practices
Nitrogen management plan summary reporting	Alternative 4 nutrient tracking
Management practices implementation	Alternative 2 or 4 costs of management practice implementation

The administrative costs of the Order are estimated to be similar to the costs shown for Alternative 2 in Table 2-19 of the Economics Report. Farm evaluation, sediment and erosion control plan and nitrogen management planning (farm plans) costs are estimated to be similar to the costs shown for Alternative 4 for farm planning (Table 2-21, Economics Report). Alternative 3's cost estimate for certification of individual farm water quality plans is included to estimate the potential cost of recommended/certified sediment and erosion control plans (Table 2-20, Economics Report). Total surface water monitoring and reporting costs are estimated to be similar to the costs shown for Alternative 2 –essentially a continuation of the current regional surface water monitoring approach. Total regional groundwater monitoring and reporting costs are estimated to be similar to the costs shown for Alternative 4 in Table 2-21 of the Economics Report minus the "Tier 3 individual monitoring." Costs for installation of groundwater monitoring wells are estimated to be similar to the costs shown for Alternative 5 in Table 2-22 of the Economics Report. Tracking costs of management practices and nitrogen management plan information are estimated to be similar to the costs shown for Alternative 4 in Table 2-21 of the economics report –

[31] ICF International. 2010. *Draft Technical Memorandum Concerning the Economic Analysis of the Irrigated Lands Regulatory Program.* Draft. July. (ICF 05508.05.) Sacramento, CA. Prepared for: Central Valley Regional Water Quality Control Board, Sacramento, CA

under "tracking." Estimated management practices costs are equal under Alternatives 2 and 4. Estimated average annualized costs per acre of the Order relative to full implementation of the current waiver program in the San Joaquin River Watershed (per acre costs are applicable to the Eastern San Joaquin River Watershed) are summarized below in Table 5.

Table 5. Estimated annual average per acre cost of the Order relative to full implementation of the current program (PEIR Alternative 1) in the San Joaquin River Watershed (applicable to the Eastern San Joaquin River Watershed)

	Order	Current program	Change
Administration	0.84	0.77	0.07
Farm plans	0.71	--	0.71
Monitoring/reporting/tracking	3.66	1.18	2.48
Management practices	113.34	112.50	0.84
Total	118.55	114.45	4.10

* Totals may not sum due to rounding. Estimated cost figures are from Tables 2-18, 2-19, 2-20, 2-21, and 2-22 of the Economics Report for the San Joaquin River Watershed. Per acre costs have been developed using the acres in the San Joaquin River Watershed (est. 2,126,028, Table 3-3, Economics Report).
** These costs are an estimate of *potential*, not required costs of implementing specific practices.

The Sacramento and San Joaquin River Basin Plan includes an estimate of potential costs and sources of financing for the long-term irrigated lands program. The estimated costs were derived by analyzing the alternatives evaluated in the PEIR using the cost figures provided in the Economics Report. The Basin Plan cost estimate is provided as a range applicable to implementation of the program throughout the Central Valley. The Basin Plan's estimated total annualized cost of the irrigated lands program is $216 million to $1.3 billion, or $27 to $168 per acre.[32] The estimated total annual cost of this Order of $99 million dollars ($118.55 per acre) falls within the estimated cost range for the irrigated lands program as described in the Sacramento and San Joaquin River Basin Plan when considering per acre costs ($27-$168 per acre).

The estimated total annual cost per acre of Alternative 4 in the San Joaquin River Watershed is $121 (applicable to the Eastern San Joaquin River Watershed). The Order, based substantially on Alternative 4, has a similar cost and is expected to have similar overall economic impacts, as described in the Economics Report.

California Water Code Section 13263

California Water Code section 13263 requires that the Central Valley Water Board consider the following factors, found in section 13241, when considering adoption of waste discharge requirements.

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

The Central Valley Water Board's Water Quality Control Plan for the Sacramento and San Joaquin River Basins (Basin Plan) identifies applicable beneficial uses of surface and groundwater within the Sacramento River Basin. The Order protects the beneficial uses identified in the Basin Plan. Applicable past, present, and probable future beneficial uses of Sacramento and San Joaquin River Basin waters were considered by the Central Valley Water Board as part of the Basin Planning process and are reflected in the Basin Plans themselves. The Order is a general order applicable to a wide geographic area. Therefore, it is appropriate to consider beneficial uses as identified in the

[32] Per acre average cost calculated using an estimate for total irrigated agricultural acres in the Central Valley (7.9 million acres, Table 3-3, Economics Report).

Basin Plan and applicable policies, rather than a site specific evaluation that might be appropriate for WDRs applicable to a single discharger.

(b) Environmental characteristics of the hydrographic unit under consideration, including the quality of water available thereto

Environmental characteristics of the Eastern San Joaquin River Basin have been considered in the development of irrigated lands program requirements as part of the Central Valley Water Board's 2008 *Irrigated Lands Regulatory Program Existing Conditions Report* and the PEIR. In these reports, existing water quality and other environmental conditions throughout the Central Valley have been considered in the evaluation of six program alternatives for regulating waste discharge from irrigated lands. This Order's requirements are based on the alternatives evaluated in the PEIR.

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

This Order provides a process to review these factors during implementation of water quality management plans (SQMPs/GQMPs). The Order requires that discharges of waste from irrigated lands to surface water and groundwater do not cause or contribute to an exceedance of applicable water quality objectives. SQMPs and GQMPs are required in areas where water quality objectives are not being met –where irrigated lands are a potential source of the concern, and in areas where irrigated agriculture may be causing or contributing to a trend of degradation that may threaten applicable beneficial uses. GQMPs are also required in high vulnerability groundwater areas. Under these plans, sources of waste must be estimated along with background water quality to determine what options exist for reducing waste discharge to ensure that irrigated lands are not causing or contributing to the water quality problem. The SQMPs and GQMPs must be designed to ensure that waste discharges from irrigated lands do not cause or contribute to an exceedance of a water quality objective and meet other applicable requirements of the Order, including, but limited to, section III.

(d) Economic considerations

The PEIR was supported by the *Draft Technical Memorandum Concerning the Economic Analysis of the Irrigated Lands Regulatory Program* (Economics Report). An extensive economic analysis was presented in this report to estimate the cost and broader economic impact on irrigated agricultural operations associated with the five alternatives for the irrigated lands program, including the lands regulated by this Order. Staff was also able to use that analysis to estimate costs of a sixth alternative, since the sixth alternative fell within the range of the five alternatives. This cost estimate is found in Appendix A of the PEIR. This Order is based on the alternatives evaluated in the PEIR, which is part of the administrative record. Therefore, potential economic considerations related to the Order have been considered as part of the overall economic analysis for implementation of the long-term irrigated lands program. This Order is a single action in a series of actions to implement the ILRP in the Central Valley region. Because the Order has been developed from the alternatives evaluated in the PEIR, economic effects will be within the range of those described for the alternatives.

One measure considered in the PEIR is the potential loss of Important Farmland[33] due to increased regulatory costs. This information has been used in the context of this Order to estimate potential loss of Important Farmland within the Eastern San Joaquin River Watershed. It is estimated that approximately 56 thousand acres of Important Farmland within the Eastern San Joaquin River Watershed potentially would be removed from production under full implementation of the previous conditional waiver program (Conditional Waiver Order R5-2006-0053); it is estimated that an additional 4,100 acres of Important Farmland may be removed from production due to increased regulatory costs of this Order (total of approximately 60 thousand acres, as described in Attachment

[33] *Important Farmland* is defined in the PEIR as farmland identified as prime, unique, or of statewide importance by the California Department of Conservation, Farmland Mapping and Monitoring Program.

D of this Order). As described in the Economics Report, most of the estimated losses would be to lower value crop land, such as irrigated pasture and forage crops.

(e) The need for developing housing within the region

This Order establishes waste discharge requirements for irrigated lands in the eastern San Joaquin River Basin. The Order is not intended to establish requirements for any facilities that accept wastewater from residences or stormwater runoff from residential areas. This Order will not affect the development of housing within the region.

(f) The need to develop and use recycled water

This Order does not establish any requirements for the use or purveyance of recycled wastewater. Where an agricultural operation may have access to recycled wastewater of appropriate quality for application to fields, the operation would need to obtain appropriate waste discharge requirements from the Central Valley Water Board prior to initiating use. This need to obtain additional waste discharge requirements in order to recycle wastewater on agricultural fields instead of providing requirements under this Order may complicate potential use of recycled wastewater on agricultural fields. However, the location of agricultural fields in rural areas generally limits access to large volumes of appropriately treated recycled wastewater. As such, it is not anticipated that there is a need to develop general waste discharge requirements for application of recycled wastewater on agricultural fields in the Eastern San Joaquin River Watershed.

Figure 5. Groundwater Protection Areas and Hydrogeologically Vulnerable Areas within the Eastern San Joaquin River Watershed Area.

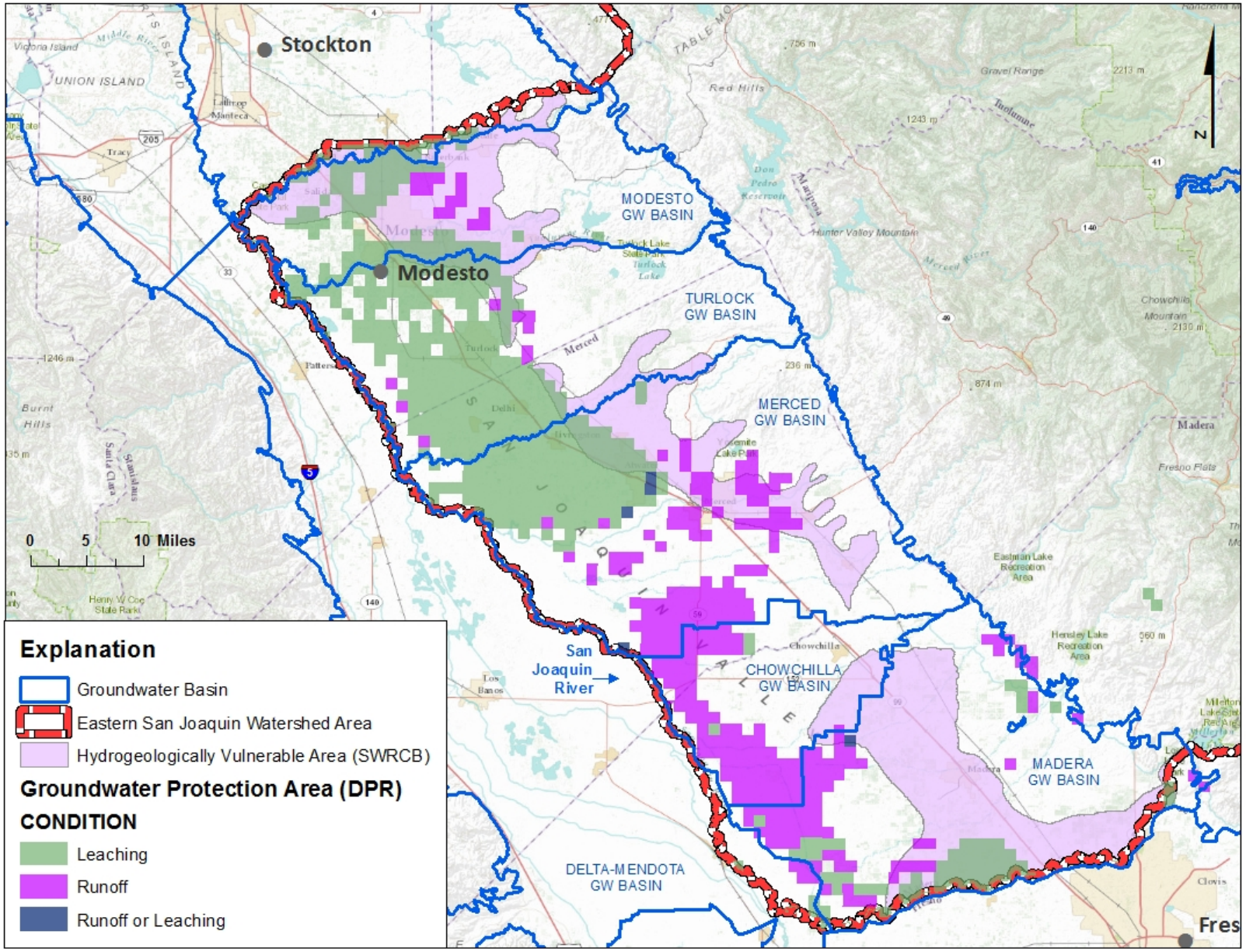
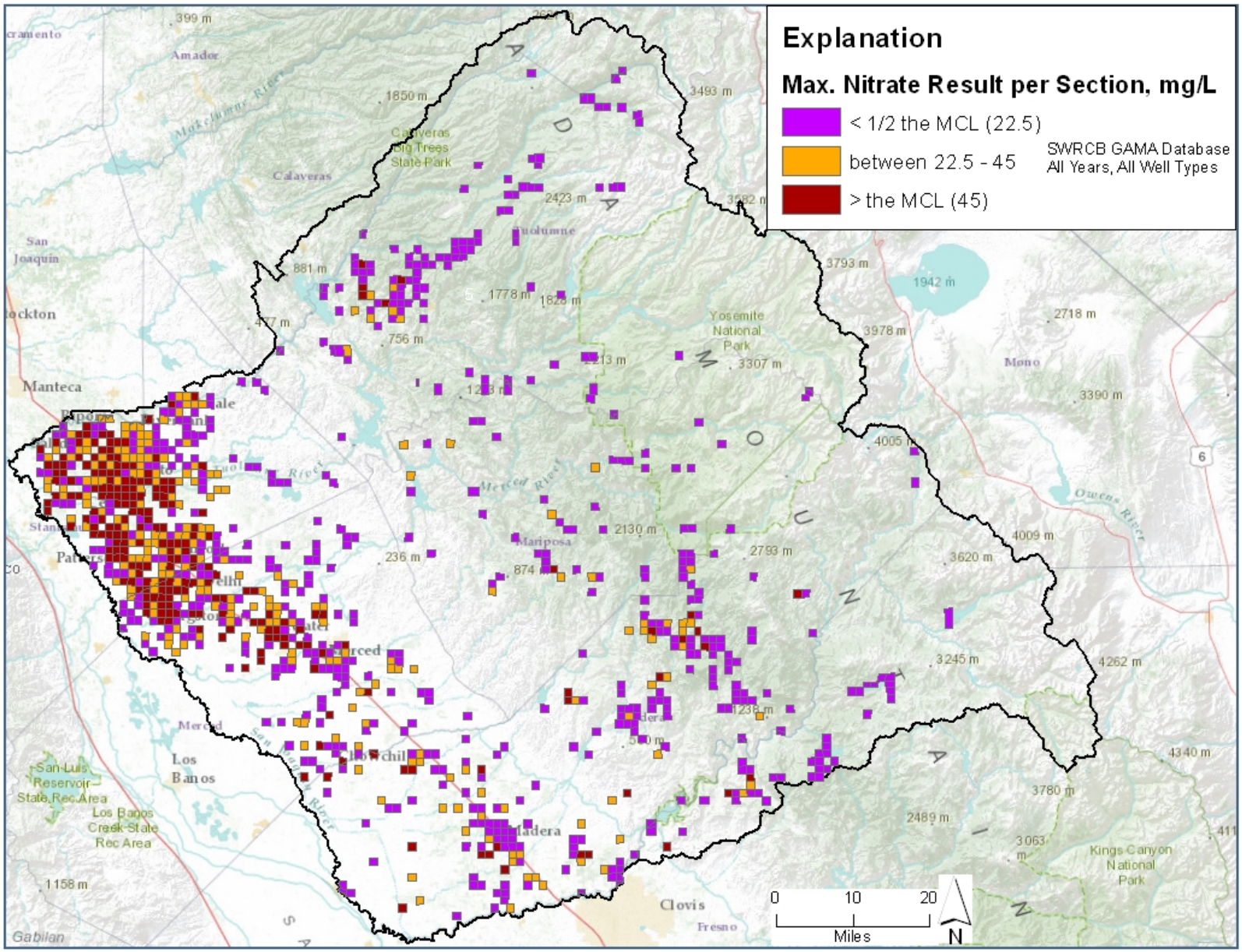


Figure 6. Maximum Nitrate Concentrations per Square Mile Section of Land for Samples with Nitrate Detections. GAMA Database, 1978-2011.



CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER R5-2012-0116
ATTACHMENT B TO ORDER R5-2012-0116
MONITORING AND REPORTING PROGRAM

WASTE DISCHARGE REQUIREMENTS GENERAL ORDER
FOR
GROWERS WITHIN THE EASTERN SAN JOAQUIN RIVER WATERSHED
THAT ARE MEMBERS OF THE THIRD-PARTY GROUP

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I. Introduction

This Monitoring and Reporting Program (MRP) is issued pursuant to California Water Code (Water Code) section 13267 which authorizes the California Regional Water Quality Control Board, Central Valley Region (hereafter Central Valley Water Board or "board"), to require preparation and submittal of technical and monitoring reports. This MRP includes requirements for a third-party representative entity assisting individual irrigated lands operators or owners that are members of the third-party (Members), as well as requirements for individual Members subject to and enrolled under Waste Discharge Requirements General Order for Growers within the Eastern San Joaquin River Watershed that are Members of the Third-Party Group, Order R5-2012-0116 (hereafter referred to as the "Order"). The requirements of this MRP are necessary to monitor Member compliance with the provisions of the Order and determine whether state waters receiving discharges from Members are meeting water quality objectives. Additional discussion and rationale for this MRP's requirements are provided in Attachment A of the Order.

This MRP establishes specific surface and ground water monitoring, reporting, and electronic data deliverable requirements for the third-party. Due to the nature of irrigated agricultural operations, monitoring requirements for surface waters and groundwater will be periodically reassessed to determine if changes should be made to better represent irrigated agriculture discharges to state waters. The monitoring schedule will also be reassessed so that constituents are monitored during application and/or release timeframes when constituents of concern are most likely to affect water quality. The third-party shall not implement any changes to this MRP unless the Central Valley Water Board or the Executive Officer issues a revised MRP.

II. General Provisions

This Monitoring and Reporting Program (MRP) conforms to the goals of the Non-point Source (NPS) Program as outlined in *The Plan for California's Nonpoint Source Pollution (NSP) Program* by:

- tracking, monitoring, assessing and reporting program activities,
- ensuring consistent and accurate reporting of monitoring activities,
- targeting NPS Program activities at the watershed level,
- coordinating with public and private partners, and
- tracking implementation of management practices to improve water quality and protect existing beneficial uses.

Monitoring data collected to meet the requirements of the Order must be collected and analyzed in a manner that assures the quality of the data. The third-party must follow sampling and analytical procedures as specified in Attachment C, Order No. R5-2008-0005, Coalition Group Monitoring Program Quality Assurance Project Plan Guidelines (QAPP Guidelines) and any revisions thereto approved by the Executive Officer.[1]

To the extent feasible, all technical reports required by this MRP must be submitted electronically in a format specified by the Central Valley Water Board that is reasonably available to the third-party.

This MRP requires the third-party to collect information from its Members and allows the third-party to report the information to the board in a summary format. The third-party must submit specific Member information collected as part of the Order and this MRP when requested by the Executive Officer or as specified in the Order.

[1] Central Valley Water Board staff will circulate proposed revisions of the QAPP Guidelines for public review and comment prior to Executive Officer consideration for approval.

This MRP Order becomes effective on 7 December 2012. The Central Valley Water Board Executive Officer may revise this MRP as necessary. Upon the effective date of this MRP, the third-party, on behalf of the individual Members, shall implement the following monitoring and reporting.

III. Surface Water Quality Monitoring Requirements

A. Surface Water Monitoring Sites

There are three different types of monitoring sites described below: 1) Core sites; 2) Represented sites; and 3) Special Project sites. Core sites are monitored comprehensively on an ongoing basis to track trends in surface water quality and to identify water quality problems. Represented sites generally have characteristics similar to, and are, therefore, represented by the Core sites within their common zone.[2] When a water quality problem is identified at a Core site, the represented sites are evaluated and potentially monitored to determine whether the water quality problem is also occurring at the Represented site (some represented water bodies may not have a monitoring site, e.g. in cases when there is no access). Special Project sites are identified and monitored to investigate identified water quality problems. A Core site or Represented site may also be a Special Project site.

1. Core Site Monitoring

At a minimum, surface water monitoring (as described in section III.C.1) within each zone shall be conducted at one of the designated Core sites (see Table 1) for two consecutive years, followed by two years of monitoring at the second Core monitoring site. Core site monitoring shall alternate continuously between the two Core sites. When a water quality objective or trigger limit at a monitored Core site is exceeded, the parameter associated with the exceedance must be monitored for a third consecutive year.[3]

2. Represented Site Monitoring

When a water quality objective or trigger limit is exceeded at a Core site, the third-party must evaluate the potential for similar risks or threats to water quality associated with that parameter at the sites represented by the Core site (Represented sites). The evaluation must be included in the Monitoring Report (see section V below). If pesticide use information or other factors indicate a risk, monitoring for that parameter must be performed in the appropriate Represented water bodies. The proposed monitoring plan must be included in the Monitoring Plan Update (see section III.C below). Any such monitoring must occur for a minimum of two years during the time period of highest risk of exceedance of water quality objectives for that parameter. When a water quality objective at a monitored Represented site is exceeded, the parameter associated with the exceedance must be monitored for a third consecutive year.[4]

Any watershed area that does not contain a monitoring site due to issues of access or location downstream of urban influence must be represented by the Core sites in that zone. Any applicable

[2] As part of their 25 August 2008 Monitoring and Reporting Program Plan (2008 MRPP), the East San Joaquin Water Quality Coalition (the Coalition) designated six zones within its area based on hydrology, crop types, land use, soil types, and rainfall. The zones identified in the 2008 MRPP are the same zones as those identified in Table 1.

[3] If two exceedances have occurred within the two years the Core site is being monitored, a third year of monitoring is not required. However, the parameter would need to be monitored in accordance with the Management Plan for that parameter and site.

[4] If two exceedances have occurred within the two years the Represented site is being monitored, a third year of monitoring is not required. However, the parameter would need to be monitored in accordance with the Management Plan for that parameter and site.

surface water quality management plan (SQMP) actions associated with the Core site must take place in these watershed areas (represented drainages without monitoring sites).

3. Special Project Sites

In addition to Core and Represented sites, the third-party may designate Special Project sites as needed in a surface water quality management plan (SQMP) to evaluate commodity or management practice-specific effects on identified water quality problems,[5] or to evaluate sources of identified water quality problems.

The Executive Officer may require the third-party to conduct local or site-specific monitoring to address a parameter associated with a management plan or TMDL (see section III.C.5. below). Core sites and Represented sites located in areas where management plans are required will also be considered Special Project sites for the parameter(s) subject to the management plan(s).

B. Monitoring Locations

The location of Core and monitored Represented sites are identified in Table 1 below. The third-party may submit written requests (including technical justification) for removal/addition of monitoring sites for approval by the Executive Officer.

Table 1. Third-party Core and Monitored Represented* Sites By Zone

ID	Zone	Site Type	Site Name	Station Code	Latitude	Longitude
B	1	Core	Dry Creek @ Wellsford Rd	535XDCAWR	37.6602	-120.8743
	1	Core	TBD[6]			
F	2	Core	Prairie Flower Drain @ Crows Landing Rd	535XPFDCL	37.4422	-121.0024
	2	Core	TBD			
D	3	Core	Highline Canal @ Hwy 99	535XHCHNN	37.4153	-120.7557
	3	Core	TBD			
E	4	Core	Merced River @ Santa Fe	535XMRSFD	37.4271	-120.6721
	4	Core	TBD			
C	5	Core	Duck Slough @ Gurr Rd	535XDSAGR	37.2142	-120.5596
	5	Core	TBD			
A	6	Core	Cottonwood Creek @ Rd 20	545XCCART	36.8686	-120.1818
	6	Core	TBD			
1	6	Represented	Ash Slough @ Ave 21	545XASAAT	37.05450	-120.41580
2	4	Represented	Bear Creek @ Kibby Rd	535XBCAKR	37.31280	-120.41380
3	6	Represented	Berenda Slough along Ave 18 1/2	545XBSAAE	37.01820	-120.32650
4	4	Represented	Black Rascal Creek @ Yosemite Rd	535BRCAYR	37.33210	-120.39470
5	1	Represented	Burnett Lateral @ 28 Mile Rd	535BLATMR	37.80343	-120.83992
6	4	Represented	Canal Creek @ West Bellevue Rd	535CCAWBR	37.36075	-120.54941

[5] "Water quality problem" is defined in Attachment E.
[6] "To be determined" (TBD) monitoring sites will be established by the third-party and the Water Board.

Table 1. Third-party Core and Monitored Represented* Sites By Zone

ID	Zone	Site Type	Site Name	Station Code	Latitude	Longitude
7	5	Represented	Deadman Creek @ Gurr Rd	535XDCAGR	37.19360	-120.56120
8	5	Represented	Deadman Creek @ Hwy 59	535DMCAHF	37.19810	-120.48690
9	6	Represented	Dry Creek @ Rd 18	545XDCARE	36.98180	-120.21950
11	2	Represented	Hatch Drain @ Tuolumne Rd	535XHDATR	37.51490	-121.01220
12	3	Represented	Highline Canal @ Lombardy Ave	535XHCHNN	37.45560	-120.72070
13	2	Represented	Hilmar Drain @ Central Ave	535XHDACA	37.39060	-120.95820
14	4	Represented	Howard Lateral @ Hwy 140	535XHLAHO	37.30790	-120.78200
15	2	Represented	Lateral 2 1/2 near Keyes Rd	535LTHNKR	37.54780	-121.09274
16	2	Represented	Lateral 5 1/2 @ South Blaker Rd	535LFHASB	37.45823	-120.96726
17	2	Represented	Lateral 6 and 7 @ Central Ave	535LSSACA	37.39779	-120.95971
18	2	Represented	Levee Drain @ Carpenter Rd	535XLDACR	37.47903	-121.03012
19	4	Represented	Livingston Drain @ Robin Ave	535XLDARA	37.31690	-120.74230
20	2	Represented	Lower Stevinson @ Faith Home Rd	535LSAFHR	37.37238	-120.92318
21	4	Represented	McCoy Lateral @ Hwy 140	535XMLAHO	37.30945	-120.78759
22	5	Represented	Miles Creek @ Reilly Rd	535XMCARR	37.25820	-120.47550
35	1	Represented	Mootz Drain Downstream of Langworth Pond	535XMDDLP	37.70551	-120.89438
24	3	Represented	Mustang Creek @ East Ave	535XMCAEA	37.49180	-120.68390
26	1	Represented	Rodden Creek @ Rodden Rd	535XRCARD	37.79042	-120.80790
27	4	Represented	Silva Drain @ Meadow Dr	535XSDAMD	37.42910	-120.62610
30	2	Represented	Unnamed Drain @ Hogin Rd	535XUDAHR	37.43129	-120.99380

*Monitored Represented sites in the table are not an exhaustive list; the Executive Officer may require the third-party to add monitoring sites for represented water bodies as necessary to meet the requirements of the Order.

C. Monitoring Requirements and Schedule

1. Surface Water Monitoring

Surface water monitoring must provide sufficient data to describe irrigated agriculture's impacts on surface water quality and to determine whether existing or newly implemented management practices comply with the receiving water limitations of the Order. Surface water monitoring shall include a comprehensive suite of constituents (also referred to as "parameters") monitored periodically in a manner that allows for an evaluation of the condition of a water body and determination of whether irrigated agriculture operations in the Eastern San Joaquin Watershed are causing or contributing to any surface water quality problems.

Surface water assessment monitoring shall be conducted at Core sites and shall consist of the general water quality parameters, nutrients, pathogen indicators, water column and sediment toxicity, pesticides, and metals identified in section III.C.3. By 1 August of the calendar year in which monitoring begins the third-party shall identify a specific set of monitoring parameters

(Monitoring Plan Update) for each site that is scheduled to be monitored (see section III.C.3 below).[7] The third-party shall continue monitoring as described in the Coalition's 25 August 2008 Monitoring and Reporting Program Plan (2008 MRPP) until the Executive Officer has approved the Monitoring Plan Update. If the there are no proposed or required changes to the previous Monitoring Program Plan or Monitoring Plan Update, the third-party is not required to submit the Monitoring Plan Update.

Follow-up sampling: The Central Valley Water Board Executive Officer may request that a parameter(s) of concern continue to be monitored at a specific Core or Represented site during non-scheduled years. Parameters of concern may include, but are not limited to, parameters that exceed an applicable water quality objective or water quality trigger (see section VIII).

Sampling events shall be scheduled to capture at least two storm runoff events per year, except where a different frequency has been required or approved by the Executive Officer. The third-party shall identify storm runoff monitoring criteria that are based on precipitation levels and knowledge of soils or other factors affecting when storm runoff is expected to occur at monitoring sites. The collection of storm runoff samples shall not be contingent upon the timing of other sampling events and could result in monitoring more than once during a month.

2. Monitoring Schedule and Frequency

The third-party shall identify the appropriate monitoring periods (e.g., months, seasons) for all parameters that require testing (Table 2), including a discussion of the rationale to support the proposed schedule.

For metals, pesticides, and aquatic toxicity, the monitoring periods shall be determined utilizing previous monitoring results, knowledge of agricultural use patterns (if applicable), pesticide use trends, chemical characteristics, and other applicable criteria. All other required parameters shall be monitored according to an approved schedule and frequency during the years in which monitoring is conducted at the Core and Represented sites.

Monitoring must be conducted when the pollutant is most likely to be present. If there is a temporal or seasonal component to the beneficial use, monitoring must also be conducted when beneficial use impacts could occur. The frequency of data collection must be sufficient to allow determination of compliance with the relevant numeric water quality objective(s) or water quality triggers. The third-party may submit written requests for the removal or addition of monitoring sites or parameters, or to modify the monitoring schedule and frequency, for approval by the Executive Officer.

3. Monitoring Parameters

Water quality and flow monitoring shall be used to assess the wastes in discharges from irrigated lands to surface waters and to evaluate the effectiveness of management practice implementation. Water quality is evaluated with both field-measured parameters and laboratory analytical data as listed on Table 2 of this MRP. The pesticides identified as "to be determined" (TBD) on Table 2 shall be identified as part of a process that includes input from qualified scientists and coordination with the Department of Pesticide Regulation. Based on this process, the Executive Officer will provide the third-party with a list of pesticides that require monitoring in areas where they are applied and have the potential to impair water quality.

Parameters that are part of an adopted TMDL that is in effect and for which irrigated agriculture is a source within the Eastern San Joaquin River Watershed shall be monitored in accordance with the adopted Basin Plan provisions or as directed by the Executive Officer. Current adopted TMDLs

[7] A monitoring year is defined according to water year, which is 1 October through 30 September.

within the Eastern San Joaquin River Watershed for which irrigated agriculture is a source include the San Joaquin River Deep Water Ship Channel dissolved oxygen; San Joaquin River salt, boron, selenium, diazinon, and chlorpyrifos.

The metals to be monitored at sites within each site subwatershed shall be determined through an evaluation of several factors. The evaluation will provide the basis for including or excluding each metal. Evaluation factors shall include, but not be limited to: documented use of the metal applied to lands for irrigated agricultural purposes in the last three years; prior monitoring results; geological or hydrological conditions; and mobilization or concentration by irrigated agricultural operations. The third-party may also consider other factors such as acute and chronic toxicity thresholds and chemical characteristics of the metals. The third-party shall evaluate the monitoring parameters listed in Table 2 to determine which metals warrant monitoring for each site subwatershed. Documentation of the evaluations must be provided to the Central Valley Water Board as part of the Monitoring Plan Update.

The third-party shall identify in the Monitoring Plan Update all parameters to be monitored and the proposed monitoring periods and frequency at selected sites by 1 August of the year in which monitoring begins (monitoring period begins 1 October). If there are no changes from the previous Executive Officer approved monitoring (i.e., approved MRPP, or previously approved Monitoring Plan Update), the third-party is not required to submit the Monitoring Plan Update. The Monitoring Plan Update shall be subject to Executive Officer review and approval prior to the initiation of changes in monitoring activities.

Table 2: Monitoring Parameters

	Measured Parameter	Matrix	Required
Field Measurements	Estimated Flow (cfs)	Water	x
	Photo Documentation	Site	x
	Conductivity (at 25 ºC) (µs/cm)	Water	x
	Temperature (ºC)	Water	x
	pH	Water	x
	Dissolved Oxygen (mg/L)	Water	x
Drinking Water	*E. coli*	Water	x
	Total Organic Carbon (TOC)	Water	x
Gen Phys	Hardness (as $CaCO_3$)	Water	TBD
	Total Suspended Solids (TSS)	Water	x
	Turbidity	Water	x
Metals	Arsenic (total)	Water	TBD
	Boron (total)	Water	TBD
	Cadmium (total and dissolved)**	Water	TBD
	Copper (total and dissolved)**	Water	TBD
	Lead (total and dissolved)**	Water	TBD
	Molybdenum (total)	Water	TBD

Table 2: Monitoring Parameters

	Measured Parameter	Matrix	Required
	Nickel (total and dissolved)**	Water	TBD
	Selenium (total)	Water	TBD
	Zinc (total and dissolved)**	Water	TBD
Nutrients	Total Ammonia (as N)	Water	x
	Unionized Ammonia (calc value)	Water	x
	Nitrogen, Nitrate+Nitrite	Water	x
	Soluble Orthophosphate	Water	x
Pesticides	Registered pesticides determined according to the process identified in section III.C.3.	Water	TBD
303(d)	TMDL constituents required by the Basin Plan 303(d) listed constituents to be monitored if irrigated agriculture is identified as a contributing source within the Eastern San Joaquin River Watershed and requested by the Executive Officer.	Water or Sediment	TBD
Water Toxicity	*Ceriodaphnia dubia*	Water	x
	Pimephales promelas	Water	x
	Selenastrum capricornutum	Water	x
	Toxicity Identification Evaluation	Water	see section III.C.4
Sediment Toxicity	*Hyalella azteca*	Sediment	x
Pesticides & Sediment Parameters	Bifenthrin	Sediment	As needed*
	Cyfluthrin	Sediment	As needed*
	Cypermethrin	Sediment	As needed*
	Deltamethrin	Sediment	As needed*
	Esfenvalerate/Fenvalerate	Sediment	As needed*
	Fenpropathrin	Sediment	As needed*
	Lambda cyhalothrin	Sediment	As needed*
	Permethrin	Sediment	As needed*
	Piperonyl butoxide (PBO)	Sediment	As needed*
	Chlorpyrifos	Sediment	As needed*
	Total Organic Carbon	Sediment	x
	Grain Size	Sediment	x

* For sediment samples measuring significant toxicity and < 80% organism survival compared to the control, the sediment pesticide analysis will be performed. Sediment pesticide analyses may be identified according to an evaluation of PUR data (see sediment toxicity testing requirements in section III.C.4 below).
** Hardness samples shall be collected when sampling for these metals.

4. Toxicity Testing

The purpose of toxicity testing is to: 1) evaluate compliance with the Basin Plan narrative toxicity water quality objective; 2) identify the causes of toxicity when and where it is observed (e.g. metals, pesticides, ammonia, etc.); and 3) evaluate any additive toxicity or synergistic effects due to the presence of multiple constituents.

a. Aquatic Toxicity

Aquatic toxicity testing shall include *Ceriodaphnia dubia*, *Pimephales promelas*, and *Selenastrum capricornutum* in the water column. Testing for *C. dubia* and *P. promelas* shall follow the USEPA acute toxicity testing methods.[8] Testing for *S. capricornutum* shall follow the USEPA short-term chronic toxicity testing methods.[9] Toxicity test endpoints are survival for *C. dubia* and *P. promelas*, and growth for *S. capricornutum*.

Water column toxicity analyses shall be conducted on 100% (undiluted) sample for the initial screening. A sufficient sample volume shall be collected in order to allow the laboratory to conduct a Phase I Toxicity Identification Evaluation (TIE) on the same sample, should toxicity be detected, in an effort to identify the cause of the toxicity.

If a 50% or greater difference in *Ceriodaphnia dubia* or *Pimephales promelas* mortality in an ambient sample, as compared to the laboratory control, is detected at any time in an acceptable test, a TIE shall be initiated within 48 hours of such detection. If a 50% or greater reduction in *Selenastrum capricornutum* growth in an ambient sample, as compared to the laboratory control, is detected at the end of an acceptable test, a TIE shall be initiated within 48 hours of such detection.

At a minimum, Phase I TIE[10] manipulations shall be conducted to determine the general class(es) (e.g., metals, non-polar organics, and polar organics) of the chemical(s) causing toxicity. The laboratory report of TIE results submitted to the Central Valley Water Board must include a detailed description of the specific TIE manipulations that were utilized.

If within the first 96 hours of the initial toxicity screening, the mortality reaches 100%, a multiple dilution test shall be initiated. The dilution series must be initiated within 24 hours of the sample reaching 100% mortality, and must include a minimum of five (5) sample dilutions in order to quantify the magnitude of the toxic response. For the fathead minnow test, the laboratory must take the steps to procure test species within one working day, and the multiple dilution tests must be initiated the day fish are available.

Ceriodaphnia dubia and Pimephales promelas Media Renewal

Daily sample water renewals shall occur during all acute toxicity tests to minimize the effects of rapid pesticide losses from test waters. A feeding regime of 2 hours prior to test initiation and 2 hours prior to test renewal shall be applied. Test solution renewal must be 100% renewal for

[8] USEPA. 2002. Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Fifth Edition. Office of Water, Washington, D.C. USEPA-821-R-02-012.
[9] USEPA. 2002. Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition. Office of Water, Washington, D.C. USEPA-821-R-02-013.
[10] USEPA. 1991. Methods for Aquatic Toxicity Identification Evaluations. Phase I Toxicity Characterization Procedures. Office of Research and Development, Washington DC. 20460. EPA-600-6-91-003.

Ceriodaphnia dubia by transferring organisms by pipet into fresh solutions, as defined in the freshwater toxicity testing manual.

Selanastrum capricornutum Pre-Test Treatment

Algae toxicity testing shall not be preceded with treatment of the chelating agent EDTA. The purpose of omitting this agent is to ensure that metals used to control algae in the field are not removed from sample aliquots prior to analysis or during the initial screening.

b. Sediment Toxicity

Sediment toxicity analyses shall be conducted according to EPA Method 600/R-99/064. Sampling and analysis for sediment toxicity testing utilizing *Hyalella azteca* shall be conducted at each monitoring location established by the third-party for water quality monitoring, if appropriate sediment (i.e. silt, clay) is present at the site. If appropriate sediment is not present at the designated water quality monitoring site, an alternative site with appropriate sediment shall be designated for all sediment collection and toxicity testing events. Sediment samples shall be collected and analyzed for toxicity twice per year, with one sample collected between 15 August and 15 October, and one sample collected between 1 March and 30 April, during each year of monitoring. The *H. azteca* sediment toxicity test endpoint is survival. The Executive Officer may request different sediment sample collection timing and frequency under a SQMP.

All sediment samples must be analyzed for total organic carbon (TOC) and grain size. Analysis for TOC is necessary to evaluate the expected magnitude of toxicity to the test species. Note that sediment collected for grain size analysis shall not be frozen. If the sample is not toxic to the test species, the additional sample volume can be discarded.

Sediment samples that show significant toxicity to *Hyalella azteca* at the end of an acceptable test and that exhibit < 80% organism survival compared to the control will require pesticide analysis of the same sample in an effort to determine the potential cause of toxicity. The third-party may use the previous three years of available PUR data to determine which of the parameters listed in Table 2 require testing in the sediment sample. Analysis at practical reporting limits of 1 ng/g on a dry weight basis for each pesticide is required to allow comparison to established lethal concentrations of these chemicals to the test species. This follow-up analysis must begin within five business days of when the toxicity criterion described above is exceeded. The third-party may also follow up with a sediment TIE when there is ≥ 50% reduction in test organism survival as compared to the laboratory control. Sediment TIEs are an optional tool.

5. Special Project Monitoring

The Central Valley Water Board or Executive Officer may require the third-party to conduct local or site-specific monitoring where monitoring identifies a water quality problem (Special Project Monitoring). The studies shall be representative of the effects of changes in management practices for the parameters of concern. Once Special Project Monitoring is required, the third-party must submit a Special Project Monitoring proposal. The proposal must provide the justification for the proposed study design, specifically identifying how the study design will quantify irrigated agriculture's contribution to the water quality problem, identify sources, and evaluate management practice effectiveness. When such a study is required, the proposed study must include an evaluation of the feasibility of conducting commodity and management practice specific field studies for those commodities and irrigated agricultural practices that could be associated with the pollutants of concern. Special Project Monitoring studies will be designed to evaluate the effectiveness of practices used by multiple Members and will not be required of the third-party to evaluate compliance of an individual Member.

D. Surface Water Data Management Requirements

All surface water field and laboratory data must be uploaded into the Central Valley Regional Data Center (CV RDC) database and will be exported to the California Environmental Data Exchange Network (CEDEN) once data have been approved as CEDEN comparable. The third-party will input its data into a replica of the CV RDC database following CV RDC and CEDEN business and formatting rules.

The third-party shall utilize the most current version of the database and update associated lookup lists on a routine basis. The third-party shall ensure that the data loaded meet the formatting and business rules as detailed in the most current version of the document "Format and Business Rules for the CV RDC CEDEN Comparable Database."

The Central Valley Water Board has developed several tools to assist the third-party with processing and loading of its data. These tools, whether required or optional, will help the third-party to efficiently conduct data processing and loading and meet data management requirements.

CEDEN Comparable Field Sheets (Required)

The third party shall use CEDEN comparable field sheets when entering data. An example CEDEN comparable field sheet can be found on the CV RDC webpage. This field sheet was designed to match the entry user interface within the CEDEN comparable database to allow for easier data entry of all sample collection information. Modified versions of the field sheet may be submitted to the Central Valley Water Board Executive Officer for approval.

Format Quick Guide (Optional Tool)

The Format Quick Guide is a guidance document for the formatting of data tailored specifically for the third-party. It contains a column by column guide for filling out the CV RDC data templates with the applicable required codes. The Central Valley Water Board CV RDC will provide this document, and updates to it, upon request based on an approved monitoring plan and associated QAPP.

EDD Checklist (Optional Tool)

The electronic data deliverable (EDD) checklist provides for a structured method for reviewing data deliverables from data entry staff or laboratories prior to loading. An updated checklist will be made available on the CV RDC website.

Online Data Checker (Optional Tool)

An online data checker was developed to automate the checking of the datasets against the current format requirements and business rules associated with CEDEN comparable data. The data checker can be accessed on the CV RDC webpage. Please note that data submission will not be accepted through this tool; however, the checker can still be used to check data for errors.

Electronic Quality Assurance Program Plan (eQAPP) (Required)

The third-party shall use an eQAPP when collecting and analyzing monitoring data. The eQAPP is a spreadsheet document containing the quality control requirements for each analyte and method as detailed in the most current version of the third-party's approved QAPP. Each analyte, method, extraction, units, recovery limits, QA sample requirement, etc. is included in this document using the appropriate codes required for the CEDEN comparable database. The third party shall use the document to format the reported data and conduct a quality control review prior to loading. Data that do not meet the project quality assurance acceptance requirements must be flagged accordingly and must include brief notes detailing the problem within the provided comments field. Included in this file are also the most recent CEDEN comparable station name and code list as well as the applicable project CEDEN codes for retrieving data from the CEDEN website once data arrive there.

IV. Groundwater Quality Monitoring and Management Practice Assessment, and Evaluation Requirements

The groundwater quality monitoring, assessment, and evaluation requirements in this MRP have been developed in consideration of the critical questions developed by the Groundwater Monitoring Advisory Workgroup (questions are presented in the Information Sheet, Attachment A). The third-party must collect sufficient data to describe irrigated agricultural impacts on groundwater quality and to determine whether existing or newly implemented management practices comply with the groundwater receiving water limitations of the Order.

The strategy for evaluating groundwater quality and protection consists of 1) Groundwater Assessment Report, 2) Management Practices Evaluation Program, and 3) Groundwater Quality Trend Monitoring Program.

1. The Groundwater Quality Assessment Report (GAR) provides the foundational information necessary for design of the Management Practices Evaluation Program and the Groundwater Quality Trend Monitoring Program. The GAR also identifies the high vulnerability groundwater areas where a Groundwater Quality Management Plan must be developed and implemented.
2. The overall goal of the Management Practice Evaluation Program (MPEP) is to determine the effects, if any, irrigated agricultural practices have on first encountered groundwater under different conditions that could affect the discharge of waste from irrigated lands to groundwater (e.g., soil type, depth to groundwater, irrigation practice, crop type, nutrient management practice).
3. The overall objectives of the Groundwater Quality Trend Monitoring Program are to determine current water quality conditions of groundwater relevant to irrigated agriculture and develop long-term groundwater quality information that can be used to evaluate the regional effects of irrigated agricultural practices.

Each of these elements has its own specific objectives (provided below), and the design of each will differ in accordance with the specific objectives to be reached. While it is anticipated that these programs will provide sufficient groundwater quality and management practice effectiveness data to evaluate whether management practices of irrigated agriculture are protective of groundwater quality, the Executive Officer may also, pursuant to Water Code section 13267, order Members to perform additional monitoring or evaluations, where violations of this Order are documented or the irrigated agricultural operation is found to be a significant threat to groundwater quality.

A. Groundwater Quality Assessment Report

The purpose of the Groundwater Quality Assessment Report (GAR) is to provide the technical basis informing the scope and level of effort for implementation of the Order's groundwater monitoring and implementation provisions. Three (3) months after receiving an NOA from the Central Valley Water Board, the third-party will provide a proposed outline of the GAR to the Executive Officer that describes data sources and references that will be considered in developing the GAR.

1. Objectives. The main objectives of the GAR are to:

- Provide an assessment of all available, applicable and relevant data and information to determine the high and low vulnerability areas where discharges from irrigated lands may result in groundwater quality degradation.
- Establish priorities for implementation of monitoring and studies within high vulnerability areas.
- Provide a basis for establishing workplans to assess groundwater quality trends.

- Provide a basis for establishing workplans and priorities to evaluate the effectiveness of agricultural management practices to protect groundwater quality.
- Provide a basis for establishing groundwater quality management plans in high vulnerability areas and priorities for implementation of those plans.

2. *GAR components.* The GAR shall include, at a minimum, the following data components:
   - Detailed land use information with emphasis on land uses associated with irrigated agricultural operations. The information shall identify the largest acreage commodity types in the third-party area, including the most prevalent commodities comprising up to at least 80% of the irrigated agricultural acreage in the third-party area.
   - Information regarding depth to groundwater, provided as a contour map(s).
   - Groundwater recharge information, including identification of areas contributing recharge to urban and rural communities where groundwater serves as a significant source of supply.
   - Soil survey information, including significant areas of high salinity, alkalinity and acidity.
   - Shallow groundwater constituent concentrations (potential constituents of concern include any material applied as part of the agricultural operation, including constituents in irrigation supply water [e.g., pesticides, fertilizers, soil amendments, etc.] that could impact beneficial uses or cause degradation).
   - Information on existing groundwater data collection and analysis efforts relevant to this Order (e.g., Department of Pesticide Regulation [DPR] United States Geological Survey [USGS] State Water Board Groundwater Ambient Monitoring and Assessment [GAMA], California Department of Public Health, local groundwater management plans, etc.). This groundwater data compilation and review shall include readily accessible information relative to the Order on existing monitoring well networks, individual well details, and monitored parameters. For existing monitoring networks (or portions thereof) and/or relevant data sets, the third-party should assess the possibility of data sharing between the data-collecting entity, the third-party, and the Central Valley Water Board.

3. *GAR data review and analysis.* To develop the above data components, the GAR shall include review and use, where applicable, of relevant existing federal, state, county, and local databases and documents. The GAR shall include an evaluation of the above data components to:
   - Determine 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.
   - Determine the merit and feasibility of incorporating existing groundwater data collection efforts, and their corresponding monitoring well systems for obtaining appropriate groundwater quality information to achieve the objectives of and support groundwater monitoring activities under this Order. This shall include specific findings and conclusions and provide the rationale for conclusions.
   - Prepare a ranking of high vulnerability areas to provide a basis for prioritization of workplan activities.
   - The GAR shall discuss pertinent geologic and hydrogeologic information for the third-party area(s) and utilize GIS mapping applications, graphics, and tables, as appropriate, in order to clearly convey pertinent data, support data analysis, and show results.

4. *Groundwater vulnerability designations.* The GAR shall designate high/low vulnerability areas for groundwater in consideration of high and low vulnerability definitions provided in Attachment E of the Order. Vulnerability designations may be refined/ updated periodically during the Monitoring Report process. The third-party must review and confirm or modify vulnerability

designations every five (5) years after Executive Officer approval of the GAR. The vulnerability designations will be made by the third-party using a combination of physical properties (soil type, depth to groundwater, known agricultural impacts to beneficial uses, etc.) and management practices (irrigation method, crop type, nitrogen application and removal rates, etc.). The third-party shall provide the rationale for proposed vulnerability determinations. The Executive Officer will make the final determination regarding vulnerability designations.

If the GAR is not submitted to the board by the required deadline, the Executive Officer will designate default high/low vulnerability groundwater areas using such information as 1) those areas that have been identified by the State Water Board as Hydrogeologically Vulnerable Areas, 2) California Department of Pesticide Regulation groundwater protection areas, and 3) areas with exceedances of water quality objectives for which irrigated agriculture waste discharges may cause or contribute to the exeedance.

5. *Prioritization of high vulnerability groundwater areas.* The third-party may prioritize the areas designated as high vulnerability areas to comply with the requirements of this Order, including conducting monitoring programs and carrying out required studies. When establishing relative priorities for high vulnerability areas, the third party may consider, but not be limited to, the following:
   - Identified exceedances of water quality objectives for which irrigated agriculture waste discharges are the cause, or a contributing source.
   - The proximity of the high vulnerability area to areas contributing recharge to urban and rural communities where groundwater serves as a significant source of supply.
   - Existing field or operational practices identified to be associated with irrigated agriculture waste discharges that are the cause, or a contributing source.
   - The largest acreage commodity types comprising up to at least 80% of the irrigated agricultural acreage in the high vulnerability areas and the irrigation and fertilization practices employed by these commodities.
   - Legacy or ambient conditions of the groundwater.
   - Groundwater basins currently or proposed to be under review by CV-SALTS.
   - Identified constituents of concern, e.g., relative toxicity, mobility.

   Additional information such as models, studies, and information collected as part of this Order may also be considered in designating and prioritizing vulnerability areas for groundwater. Such data includes, but is not limited to, 1) those areas that have been identified by the State Water Board as Hydrogeologically Vulnerable Areas, 2) California Department of Pesticide Regulation groundwater protection areas, and 3) areas with exceedances of water quality objectives for which irrigated agriculture waste discharges may cause or contribute to the exeedance.

   The Executive Officer will review and may approve or require changes to any third-party proposed high/low vulnerability areas and the proposed priority ranking. The vulnerability areas, or any changes thereto, shall not be effective until third-party receipt of written approval by the Executive Officer.

B. Management Practice Evaluation Program

The goal of the Management Practice Evaluation Program (MPEP) is to determine the effects, if any, irrigated agricultural practices[11] have on groundwater quality. A MPEP is required in high vulnerability groundwater areas and must address the constituents of concern described in the

[11] In evaluating management practices, the third-party is expected to focus on those practices that are most relevant to the Members' groundwater quality protection efforts.

GAR. This section provides the goals, objectives, and minimum reporting requirements for the MPEP. As specified in section IV.D of this MRP, the third-party is required to develop a workplan that will describe the methods that will be utilized to achieve the MPEP requirements.

1. *Objectives*. The objectives of the MPEP are to:
   - Identify whether existing site-specific and/or commodity-specific management practices are protective of groundwater quality within high vulnerability groundwater areas,
   - Determine if newly implemented management practices are improving or may result in improving groundwater quality.
   - Develop an estimate of the effect of Members' discharges of constituents of concern on groundwater quality in high vulnerability areas. A mass balance and conceptual model of the transport, storage, and degradation/chemical transformation mechanisms for the constituents of concern, or equivalent method approved by the Executive Officer, must be provided.
   - Utilize the results of evaluated management practices to determine whether practices implemented at represented Member farms (i.e., those not specifically evaluated, but having similar site conditions), need to be improved.

   Given the wide range of management practices/commodities that are used within the third-party's boundaries, it is anticipated that the third-party will rank or prioritize its high vulnerability areas and commodities, and present a phased approach to implement the MPEP.

2. *Implementation*. Since management practices evaluation may transcend watershed or third-party boundaries, this Order allows developing a MPEP on a watershed or regional basis that involves participants in other areas or third-party groups, provided the evaluation studies are conducted in a manner representative of areas to which it will be applied. The MPEP may be conducted in one of the following ways:

   - By the third-party,
   - by watershed or commodity groups within an area with known groundwater impacts or vulnerability, or
   - by watershed or commodity groups that wish to determine the effects of regional or commodity driven management practices.

   A master schedule describing the rank or priority for the investigation(s) of the high vulnerability areas (or commodities within these areas) to be examined under the MPEP shall be prepared and submitted to the Executive Officer as detailed in the Management Practices Evaluation Program Workplan section IV.D below.

3. *Report.* Reports of the MPEP must be submitted to the Executive Officer as part of the third-party's Monitoring Report or in a separate report due on the same date as the Monitoring Report. The report shall include all data[12] (including analytical reports) collected by each phase of the MPEP since the previous report was submitted. The report shall also contain a tabulated summary of data collected to date by the MPEP. The report shall summarize the activities conducted under the MPEP, and identify the number and location of installed monitoring wells relative to each other and other types of monitoring devices. Within each report, the third-party shall evaluate the data and make a determination whether groundwater is being impacted by activities at farms being monitored by the MPEP.

[12] The data need not be associated with a specific parcel or Member.

Each report shall also include an evaluation of whether the specific phase(s) of the Management Practices Evaluation Program is/are on schedule to provide the data needed to complete the Management Practices Evaluation Report (detailed below) by the required deadline. If the evaluation concludes that information needed to complete the Management Practices Evaluation Report may not be available by the required deadline, the report shall include measures that will be taken to bring the program back on schedule.

4. *Management Practices Evaluation Report*. No later than six (6) years after implementation of each phase of the MPEP, the third-party shall submit a Management Practices Evaluation Report (MPER) identifying management practices that are protective of groundwater quality for the range of conditions found at farms covered by that phase of the study. The identification of management practices for the range of conditions must be of sufficient specificity to allow Members of the third-party and staff of the Central Valley Water Board to identify which practices at monitored farms are appropriate for farms with the same or similar range of site conditions, and generally where such farms may be located within the third-party area (e.g., the summary report may need to include maps that identify the types of management practices that should be implemented in certain areas based on specified site conditions). The MPER must include an adequate technical justification for the conclusions that incorporates available data and reasonable interpretations of geologic and engineering principles to identify management practices protective of groundwater quality.

   The report shall include an assessment of each management practice to determine which management practices are protective of groundwater quality. If monitoring concludes that management practices currently in use are not protective of groundwater quality based upon information contained in the MPER, and therefore are not confirmed to be sufficient to ensure compliance with the groundwater receiving water limitations of the Order, the third-party in conjunction with commodity groups and/or other experts (e.g., University of California Cooperative Extension, Natural Resources Conservation Service) shall propose and implement new/alternative management practices to be subsequently evaluated. Where applicable, existing GQMPs shall be updated by the third-party group to be consistent with the findings of the Management Practices Evaluation Report.

C. Groundwater Quality Trend Monitoring

This section provides the objectives and minimum sampling and reporting requirements for Groundwater Quality Trend Monitoring. As specified in section IV.E of this MRP, the third-party is required to develop a workplan that will describe the methods that will be utilized to achieve the trend monitoring requirements.

1. *Objectives.* The objectives of Groundwater Quality Trend Monitoring are (1) to determine current water quality conditions of groundwater relevant to irrigated agriculture, and (2) to develop long-term groundwater quality information that can be used to evaluate the regional effects (i.e., not site-specific effects) of irrigated agriculture and its practices.

2. *Implementation.* To reach the stated objectives for the Groundwater Quality Trend Monitoring program, the third-party shall develop a groundwater monitoring network that will (1) be implemented over both high and low vulnerability areas in the third-party area; and will (2) employ shallow wells, but not necessarily wells completed in the uppermost zone of first encountered groundwater. The use of existing wells is less costly than installing wells specifically designed for groundwater monitoring, while still yielding data which can be compared with historical and future data to evaluate long-term groundwater trends. The third

party may also consider using existing monitoring networks such as those used by AB 3030 and SB 1938 plans.

The third-party shall submit a proposed Trend Groundwater Monitoring Workplan described in section IV.E below to the Central Valley Water Board. The proposed network shall consist of a sufficient number of wells to provide coverage in the third-party geographic area so that current water quality conditions of groundwater and composite regional effects of irrigated agriculture can be assessed according to the trend monitoring objectives. The rationale for the distribution of trend monitoring wells shall be included in the workplan.

3. *Reporting.* The results of trend monitoring are to be included in the third-party's Monitoring Report and shall include a map of the sampled wells, tabulation of the analytical data, and time concentration charts. Groundwater monitoring data are to be submitted electronically to the State Water Board's GeoTracker Database and to the Central Valley Water Board.

   Following collection of sufficient data (sufficiency to be determined by the method of analysis proposed by the third-party) from each well, the third-party is to evaluate the data for trends. The methods to be used to evaluate trends shall be proposed by the third-party in the Trend Groundwater Monitoring Workplan described in section IV.E below.

D. Management Practices Evaluation Workplan

The third-party, either solely or in conjunction with a Management Practices Evaluation Group (watershed or commodity based), shall prepare a Management Practices Evaluation Workplan. The workplan shall be submitted to the Executive Officer for review and approval. The workplan must identify a reasonable number of locations situated throughout the high vulnerability groundwater area(s), and encompassing the range of management practices used, the major agricultural commodities, and site conditions under which these commodities are grown. The workplan shall be designed to meet the objectives and minimum requirements described in section IV.B of this MRP.

1. *Workplan approach.* The workplan must include a scientifically sound approach to evaluating the effect of management practices on groundwater quality. The proposed approach may include:

   - groundwater monitoring,
   - modeling,
   - vadose zone sampling, or
   - other scientifically sound and technically justifiable methods for meeting the objectives of the Management Practices Evaluation Program.

   Sufficient groundwater monitoring data should be collected or available to confirm or validate the conclusions regarding the effect of the evaluated practices on groundwater quality. Any groundwater quality monitoring that is part of the workplan must be of first encountered groundwater. Monitoring of first encountered groundwater more readily allows identification of the area from which water entering a well originates than deeper wells and allows identification of changes in groundwater quality from activities on the surface at the earliest possible time.

2. *Groundwater quality monitoring –constituent selection.* Where groundwater quality monitoring is proposed, the Management Practices Evaluation Workplan must identify:

   - the constituents to be assessed, and

- the frequency of the data collection (e.g., groundwater quality or vadose zone monitoring; soil sampling) for each constituent.

The proposed constituents shall be selected based upon the information collected from the GAR and must be sufficient to determine if the management practices being evaluated are protective of groundwater quality. At a minimum, the baseline constituents for any groundwater quality monitoring must include those parameters required under trend monitoring.

3. *Workplan implementation and analysis.* The proposed Management Practices Evaluation Workplan shall contain sufficient information/justification for the Executive Officer to evaluate the ability of the evaluation program to identify whether existing management practices in combination with site conditions, are protective of groundwater quality. The workplan must explain how data collected at evaluated farms will be used to assess potential impacts to groundwater at represented farms that are not part of the Management Practices Evaluation Program's network. This information is needed to demonstrate whether data collected will allow identification of management practices that are protective of water quality at Member farms, including represented farms (i.e., farms for which on-site evaluation of practices is not conducted).

4. *Master workplan –prioritization.* If the third-party chooses to rank or prioritize its high vulnerability areas in its GAR, a single Management Practices Evaluation Workplan may be prepared which includes a timeline describing the priority and schedule for each of the areas/commodities to be investigated and the submittal dates for addendums proposing the details of each area's investigation.

5. *Installation of monitoring wells.* Upon approval of the Management Practices Evaluation Workplan, the third-party shall prepare and submit a Monitoring Well Installation and Sampling Plan (MWISP), if applicable. A description of the MWISP and its required elements/submittals are presented as Appendix MRP-2. The MWISP must be approved by the Executive Officer prior to the installation of the MWISP's associated monitoring wells.

E. Trend Monitoring Workplan

The third-party shall develop a workplan for conducting trend monitoring within its boundaries that meets the objectives and minimum requirements described in section IV.C of this MRP. The workplan shall be submitted to the Executive Officer for review and approval. The Trend Monitoring Workplan shall provide information/details regarding the following topics:

1. Workplan approach. A discussion of the rationale for the number of proposed wells to be monitored and their locations. The rationale needs to consider: 1) the variety of agricultural commodities produced within the third-party's boundaries (particularly those commodities comprising the most irrigated agricultural acreage), 2) the conditions discussed/identified in the GAR related to the vulnerability prioritization within the third-party area, and 3) the areas identified in the GAR as contributing significant recharge to urban and rural communities where groundwater serves as a significant source of supply.

2. Well details. Details for wells proposed for trend monitoring, including:

i. GPS coordinates;
ii. Physical address of the property on which the well is situated (if available);
iii. California State well number (if known);
iv. Well depth;
v. Top and bottom perforation depths;

vi. A copy of the water well drillers log, if available;
vii. Depth of standing water (static water level), if available (this may be obtained after implementing the program); and
viii. Well seal information (type of material, length of seal).

3. *Proposed sampling schedule*. Trend monitoring wells will be sampled, at a minimum, annually at the same time of the year for the indicator parameters identified in Table 3 below.

4. *Workplan implementation and analysis.* Proposed method(s) to be used to evaluate trends in the groundwater monitoring data over time.

Table 3: Trend Monitoring Constituents

Annual Monitoring Conductivity (at 25 °C)* (µmhos/cm) pH* in pH units Dissolved oxygen (DO)* (mg/L) Temperature* (°C) Nitrate as nitrogen (mg/L) * field parameters
Trend monitoring wells are also to be sampled initially and once every five years thereafter for the following COCs: Total dissolved solids (TDS) (mg/L) General minerals (mg/L): Anions (carbonate, bicarbonate, chloride, and sulfate) Cations (boron, calcium, sodium, magnesium, and potassium)

V. Third-Party Reporting Requirements

Reports and notices shall be submitted in accordance with section IX of the Order, Reporting Provisions.

A. Quarterly Submittals of Surface Water Monitoring Results

Each quarter, the third-party shall submit the previous quarter's surface water monitoring results in an electronic format. The deadlines for these submittals are listed in Table 4 below.

Table 4. Quarterly Surface Water Monitoring Data Reporting Schedule

Due Date	Type	Reporting Period
1 March	Quarterly Monitoring Data Report	1 July through 30 September of previous calendar year
1 June	Quarterly Monitoring Data Report	1 October through 31 December of previous calendar year
1 September	Quarterly Monitoring Data Report	1 January through 31 March of same calendar year
1 December	Quarterly Monitoring Data Report	1 April through 30 June of same calendar year

Exceptions to due dates for submittal of electronic data may be granted by the Executive Officer if good cause is shown. The Quarterly Surface Water Monitoring Data Report shall include the following for the required reporting period:

1. An Excel workbook containing an export of all data records uploaded and/or entered into the CEDEN comparable database (surface water data). The workbook shall contain, at a minimum, those items detailed in the most recent version of the third-party's approved QAPP.
2. The most current version of the third-party's eQAPP.
3. Electronic copies of all field sheets.
4. Electronic copies of photos obtained from all surface water monitoring sites, clearly labeled with the CEDEN comparable station code and date.
5. Electronic copies of all applicable laboratory analytical reports on a CD.
6. For toxicity reports, all laboratory raw data must be included in the analytical report (including data for failed tests), as well as copies of all original bench sheets showing the results of individual replicates, such that all calculations and statistics can be reconstructed. The toxicity analyses data submittals must include individual sample results, negative control summary results, and replicate results. The minimum in-test water quality measurements reported must include the minimum and maximum measured values for specific conductivity, pH, ammonia, temperature, and dissolved oxygen.
7. For chemistry data, analytical reports must include, at a minimum, the following:
    a. A lab narrative describing QC failures,
    b. Analytical problems and anomalous occurrences,
    c. Chain of custody (COCs) and sample receipt documentation,
    d. All sample results for contract and subcontract laboratories with units, RLs and MDLs,
    e. Sample preparation, extraction and analysis dates, and
    f. Results for all QC samples including all field and laboratory blanks, lab control spikes, matrix spikes, field and laboratory duplicates, and surrogate recoveries.

Laboratory raw data such as chromatograms, spectra, summaries of initial and continuing calibrations, sample injection or sequence logs, prep sheets, etc., are not required for submittal, but must be retained by the laboratory in accordance with the requirements of section X of the Order, Record-keeping Requirements.

If any data are missing from the quarterly report, the submittal must include a description of what data are missing and when they will be submitted to the Central Valley Water Board. If data are not loaded into the CEDEN comparable database, this shall also be noted with the submittal.

B. Annual Groundwater Monitoring Results

Annually, by 1 May, the third-party shall submit the prior year's groundwater monitoring results as an Excel workbook containing an export of all data records uploaded and/or entered into the State Water Board GeoTracker database. If any data are missing from the report, the submittal must include a description of what data are missing and when they will be submitted to the Central Valley Water Board. If data are not loaded into the GeoTracker database, this shall also be noted with the submittal.

C. Monitoring Report

The Monitoring Report shall be submitted by 1 May every year, with the first report due 1 May 2014. The report shall cover the monitoring periods from the previous hydrologic water year. A hydrologic water year is defined as 1 October through 30 September. The report shall include the following components:

1. Signed transmittal letter;
2. Title page;
3. Table of contents;
4. Executive summary;
5. Description of the third-party geographical area;
6. Monitoring objectives and design;
7. Sampling site/monitoring well descriptions and rainfall records for the time period covered under the Monitoring Report;
8. Location map(s) of sampling sites/monitoring wells, crops and land uses;
9. Tabulated results of all analyses arranged in tabular form so that the required information is readily discernible;
10. Discussion of data relative to water quality objectives, and water quality management plan milestones, where applicable;
11. Sampling and analytical methods used;
12. Summary of Quality Assurance Evaluation results (as identified in the most recent version of the third-party's approved QAPP for Precision, Accuracy and Completeness);
13. Specification of the method(s) used to obtain estimated flow at each surface water monitoring site during each monitoring event;
14. Summary of exceedances of water quality objectives/trigger limits occurring during the reporting period and for surface water related pesticide use information;
15. Actions taken to address water quality exceedances that have occurred, including but not limited to, revised or additional management practices implemented;
16. Evaluation of monitoring data to identify spatial trends and patterns;
17. Summary of Nitrogen Management Plan information submitted to the third-party;
18. Summary of management practice information collected as part of Farm Evaluations;
19. Summary of mitigation monitoring;
20. Summary of education and outreach activities;
21. Conclusions and recommendations.

Additional requirements and clarifications necessary for the above report components are described below.

Report Component (1) —Signed Transmittal Letter

A transmittal letter shall accompany each report. The transmittal letter shall be submitted and signed in accordance with the requirements of section IX of the Order, Reporting Provisions.

Report Component (8) — Location Maps

Location map(s) showing the sampling sites/monitoring wells, crops, and land uses within the third party's geographic area must be updated (based on available sources of information) and included in the Monitoring Report. An accompanying GIS shapefile or geodatabase of monitoring site and monitoring well information must include the CEDEN comparable site code and name (surface water only) and Global Positioning System (GPS) coordinates (surface water sites and wells used for monitoring). The map(s) must contain a level of detail that ensures they are informative and useful. GPS coordinates must be provided as latitude and longitude in the decimal degree coordinate system (at a minimum of five decimal places). The datum must be either WGS 1984 or NAD83, and clearly identified on the map. The source and date of all data layers must be identified on the map(s). All data layers/shapefiles/geodatabases included in the map shall be submitted with the Monitoring Report.

Report Component (9) – Tabulated Results

In reporting monitoring data, the third-party shall arrange the data in tabular form so that the required information is readily discernible. The data shall be summarized in such a manner to clearly illustrate compliance with the data collection requirements of the MRP.

Report Component (10) — Data Discussion to Illustrate Compliance

The report shall include a discussion of the third-party's compliance with the data collection requirements of the MRP. If a required component was not met, an explanation for the missing data must be included. Results must also be compared to water quality objectives and trigger limits.

Report Component (12) — Quality Assurance Evaluation (Precision, Accuracy and Completeness)

A summary of precision and accuracy results (both laboratory and field) is required in the report. The required data quality objectives are identified in the most recent version of the third-party's approved QAPP; acceptance criteria for all measurements of precision and accuracy must be identified. The third-party must review all QA/QC results to verify that protocols were followed and identify any results that did not meet acceptance criteria. A summary table or narrative description of all QA/QC results that did not meet objectives must be included. Additionally, the report must include a discussion of how the failed QA/QC results affect the validity of the reported data. The corrective actions to be implemented are described in the QAPP Guidelines.

In addition to precision and accuracy, the third-party must also calculate and report completeness. Completeness includes the percentage of all quality control results that meet acceptance criteria, as well as a determination of project completeness. For further explanation of this requirement, refer to the most recent version of the QAPP Guidelines. The third-party may ask the laboratory to provide assistance with evaluation of their QA/QC data, provided that the third-party prepares the summary table or narrative description of the results for the Monitoring Report.

Report Component (14) — Summary of Exceedances

A summary of the exceedances of water quality objectives or triggers that have occurred during the monitoring period is required in the Monitoring Report. In the event of exceedances for pesticides or toxicity in surface water, pesticide use data must be included in the Monitoring Report. Pesticide use information may be acquired from the agricultural commissioner. This requirement is described further in the following section on Exceedance Reports.

Report Component (16) — Evaluation of Monitoring Data

The third-party must evaluate its monitoring data in the Monitoring Report in order to identify potential trends and patterns in surface and groundwater quality that may be associated with waste discharge from irrigated lands. As part of this evaluation, the third-party must analyze all readily available monitoring data that meet program quality assurance requirements to determine deficiencies in monitoring for discharges from irrigated agricultural lands and whether additional sampling locations are needed. If deficiencies are identified, the third-party must propose a schedule for additional monitoring or source studies. Upon notification from the Executive Officer, the third-party must monitor any parameter in a watershed that lacks sufficient monitoring data (i.e., a data gap should be filled to assess irrigated agriculture's effects on water quality).

The third-party should incorporate pesticide use information, as needed, to assist in its data evaluation. Wherever possible, the third-party should utilize tables or graphs that illustrate and summarize the data evaluation.

Report Component (17) – Summary of Reported Nitrogen Data

The third-party shall aggregate information from Members' Nitrogen Management Plan Summary Reports to characterize the input, uptake, and loss of nitrogen fertilizer applications by specific crops in the Eastern San Joaquin River Watershed. The third-party's assessment of Nitrogen Management Plan information must include, at a minimum, comparisons of farms with the same crops, similar soil conditions, and similar practices (e.g., irrigation management). This information will include a summary of nitrogen consumption ratios by crop or other equivalent reporting units and the estimated crop nitrogen needs for the different crop types. The nitrogen consumption ratio is the ratio of total nitrogen available for crop uptake (from sources including, but not limited to, fertilizers, manures, composts, nitrates in irrigation supply water and soil) to the estimated crop consumption of nitrogen. The third-party will also provide the data submitted by their Members that were used to develop this summary in an electronic format, compatible with ArcGIS, identified to at least the township level.[13]

Report Component (18) – Summary of Management Practice Information

The third-party will aggregate and summarize information collected from Farm Evaluations.[14] The third party will provide the data submitted by their Members to develop this summary in an electronic format, compatible with ArcGIS, identified to at least the township level.[13]

Report Component (19) – Mitigation Monitoring

As part of the Monitoring Report, the third-party shall report on the CEQA mitigation measures reported by Members to meet the provisions of the Order and any mitigation measures the third-party has implemented on behalf of Members. The third-party is not responsible for submitting information that Members do not send them directly by the 1 March deadline (see section VII.E of the Order for individual Discharger mitigation monitoring requirements). The Mitigation Monitoring Report shall include information on the implementation of CEQA mitigation measures (mitigation measures are described in Attachment C of the Order), including the measure implemented, identified potential impact the measure addressed, location of the mitigation measure (township, range, section), and any steps taken to monitor the ongoing success of the measure.

D. Surface Water Exceedance Reports

The third-party shall provide surface water exceedance reports if monitoring results show exceedances of adopted numeric water quality objectives or trigger limits, which are based on interpretations of narrative water quality objectives. For each surface water quality objective exceeded at a monitoring location, the third-party shall submit an Exceedance Report to the Central Valley Water Board. The estimated flow at the monitoring location and photographs of the site must be submitted in addition to the exceedance report but do not need to be submitted more than once. The third-party shall evaluate all of its monitoring data and determine exceedances no later than five (5) business days after receiving the laboratory analytical reports for an event. Upon determining an exceedance, the third-party shall send the Exceedance Report by email to the third-party's designated Central Valley Water Board staff contact by the next business day. The Exceedance Report shall describe the exceedance, the follow-up monitoring, and analysis or other actions the third-party may take to address the exceedance. Upon request, the third-party shall also notify the agricultural commissioner of the county in which the exceedance occurred and/or the director of the Department of Pesticide Regulation.

Surface water exceedances of pesticides or toxicity: When any pesticide or toxicity exceedance is identified at a location that is not under an approved management plan for toxicity or pesticides, follow-up actions must include an investigation of pesticide use within the location's watershed

[13] The Member and their associated parcel need not be identified.

[14] Note that the evaluation of the reported management practices information is discussed in Appendix MRP-1 and will be part of the annual Management Plan Progress Report.

area. For toxicity exceedances, the investigation must include all pesticides applied within the area that drains to the monitoring site during the four weeks immediately prior to the exceedance date. The pesticide use information may be acquired from the agricultural commissioner, or from information received from Members within the same drainage area. Results of the pesticide use investigation must be summarized and discussed in the Monitoring Report.

VI. Group Option - Templates

The Order provides the option for the third-party to develop templates as an alternative to templates provided by the Central Valley Water Board's Executive Officer. This section describes the minimum requirements that must be met prior to approval of those templates.

Prior to Executive Officer approval of any template, the Central Valley Water Board will post the draft template on its website for a review and comment period. Stakeholder comments will be considered by Central Valley Water Board staff. Based on information provided by the third-party and after consideration of comments provided by other interested stakeholders, the Central Valley Water Board's Executive Officer will either: (1) approve the template; (2) conditionally approve the template or (3) disapprove the template. Review of the template and the associated action by the Executive Officer will be based on findings as to whether the template meets applicable requirements and contains all of the information required.

A. Farm Evaluation Template

Should the third-party choose to develop the Farm Evaluation Template per the Group Option outlined in section VIII.C of the Order, the following provisions apply.

The third-party must develop a template or web-based information system to gather Farm Evaluation information from Members for each parcel enrolled. The goal of the template is to gather information on general site conditions and Member management practices in place to protect water quality. At a minimum, the template must be designed to collect the following information.

- Identification of the crops grown and acreage of each crop.
- Location of the farm.
- Identification of on-farm management practices implemented to achieve the Order's farm management performance standards. Specifically track which management practices recommended in management plans have been implemented at the farm.
- Identification of whether or not there is movement of soil during storm events and/or during irrigation drainage events (sediment and erosion risk areas) and a description of where this occurs.
- Identification of whether or not water leaves the property and is conveyed downstream and a description of where this occurs.
- Location of in-service wells and abandoned wells. Identification of whether wellhead protection and backflow prevention practices have been implemented.

As part of its submittal for approval, the third-party must identify the entities that participated in the development of the Farm Evaluation Template.

B. Nitrogen Management Plan Template

Should the third-party choose to develop the Nitrogen Management Plan Template per the Group Option outlined in section VIII.C of the Order, the following provisions apply.

The Nitrogen Management Plan template must be developed by the third-party in consultation with

the Central Valley Water Board, and as appropriate, the California Department of Food and Agriculture (CDFA), the University of California Extension, and the Natural Resource Conservation Services (NRCS). In developing the template, the third-party should consider, to the extent appropriate, the major criteria established in Code 590 of the NRCS Nutrient Management document, including soil and plant tissue testing, nitrogen application rates, nitrogen application timing, consideration of organic nitrogen fertilizer, consideration of irrigation water nitrogen levels.

In addition to the Nitrogen Management Plan Template, the third-party must provide a template for the Nitrogen Management Plan Summary Report. The Nitrogen Management Plan Summary Report Template must provide for reporting of the nitrogen consumption ratio for each crop grown for each parcel enrolled by the Member (this MRP requires reporting of this information to the board by township, Member/parcel need not be specified). The Nitrogen Management Plan Summary Report must also gather information required in the Monitoring Report and information needed for the Management Practices Evaluation Program.[15]

As part of its submittal for approval, the third-party must identify the entities that participated in the development of the Nitrogen Management Plan Template.

C. Sediment and Erosion Control Plan Template

Should the third-party choose to develop the Sediment and Erosion Control Plan Template per the Group Option outlined in section VIII.C of the Order, the following provisions apply.

The third-party will create a template to assist Members that must prepare a Sediment and Erosion Control Plan. The goal of the template shall be to assist Members in achieving the farm management performance standards of the Order, which include the requirement to minimize or eliminate the discharge of sediment above background levels. At a minimum, the template must be designed to facilitate Member consideration of the following.

- Identification of locations subject to erosion or locations subject to frequent water flow events that may mobilize sediment (sediment and erosion risk areas). Locations to be evaluated include the fields, roads or stream crossings within the enrolled parcel, and discharge points from the field.
- Identification of practices implemented at sediment and erosion risk areas to minimize or eliminate the discharge of sediment above background levels.

As part of its submittal for approval, the third-party must identify the entities that participated in the development of the Sediment and Erosion Control Plan Template.

VII. Sediment Discharge and Erosion Assessment Report

The third-party shall prepare a Sediment Discharge and Erosion Assessment Report. The report shall be submitted to the Executive Officer for review. The goal of the report is to determine which irrigated agricultural areas within the Eastern San Joaquin River Watershed are subject to erosion and may discharge sediment that may degrade surface waters. The objective of the report is to determine which Member operations are within such areas, and need to develop a Sediment and Erosion Control Plan. The report must be developed to achieve the above goal and objective and

[15] The Monitoring Report and MPEP will be developed by the third-party. This template is the mechanism by which the third-party will gather the information necessary to develop the Monitoring Report and conduct the MPEP. As such, this template will be a tool to facilitate Member reporting for third-party studies, analysis, and summary reporting to the board. Unless requested by the Executive Officer, Member completed templates will not be submitted directly to the board.

must at a minimum, provide a description of the sediment and erosion areas as a series of ArcGIS shapefiles with a discussion of the methodologies utilized to develop the report.

VIII. Water Quality Triggers for Development of Management Plans

This Order requires that Members comply with all adopted water quality objectives and established federal water quality criteria applicable to their discharges. The *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins* (Basin Plan) contains numeric and narrative water quality objectives applicable to surface water and groundwater within the Order's watershed area. USEPA's 1993 National Toxics Rule (NTR) and 2000 California Toxics Rule (CTR) contain water quality criteria which, when combined with Basin Plan beneficial use designations constitute numeric water quality standards. Table 5 of this MRP lists Basin Plan numeric water quality objectives and NTR/CTR criteria for constituents of concern that may be discharged by Members.

Table 5 does not include water quality criteria that may be used to interpret narrative water quality objectives, which shall be considered trigger limits. Trigger limits will be developed by the Central Valley Water Board staff through a process involving coordination with the Department of Pesticide Regulation (for pesticides) and stakeholder input. The trigger limits will be designed to implement narrative Basin Plan objectives and to protect applicable beneficial uses. The Executive Officer will make a final determination as to the appropriate trigger limits.

IX. Quality Assurance Project Plan (QAPP)

The third-party must develop and/or maintain a QAPP that includes watershed and site-specific information, project organization and responsibilities, and the quality assurance components in the QAPP Guidelines. Chemical, bacteriological, and bioassay analyses shall be conducted at a laboratory certified for such analyses by the California Department of Public Health (DPH), except where the DPH has not developed a certification program for the material to be analyzed.

The East San Joaquin Water Quality Coalition's existing QAPP was approved by the Executive Officer on 25 November 2008. The existing QAPP is acceptable for use by the third-party. Any necessary modifications to the QAPP for groundwater monitoring shall be submitted with the MPEP and groundwater trend monitoring workplans (section IV, MRP). Any proposed modifications to the approved QAPP must receive Executive Officer approval prior to implementation.

The Central Valley Water Board may conduct an audit of the third-party's contracted laboratories at any time in order to evaluate compliance with the most current version of the QAPP Guidelines. Quality control requirements are applicable to all of the constituents listed in the QAPP Guidelines, as well as any additional constituents that are analyzed or measured, as described in the appropriate method. Acceptable methods for laboratory and field procedures as well as quantification limits are described in the QAPP Guidelines.

Table 5. Basin Plan Numeric Water Quality Objectives for the Eastern San Joaquin River Watershed. ** Where more than one objective is applicable, the most stringent shall be applied.*

Constituent / Parameter (Synonym)	Basin Plan Water Quality Objective	Source of Numeric Threshold *(footnotes in parentheses are at bottom of table)*	Numeric Threshold (a)	Units	G= Groundwater IS= Inland Surface Water	Numeric Threshold Protects Designated Beneficial Use(s) in the Water Body:							
						Groundwater			Inland Surface Waters				
						MUN-MCL	MUN-Toxicity	AGR	MUN-MCL	MUN-Toxicity	Aquatic Life & Consump	AGR	CAS Number
Boron, total	Chemical Constituents	Basin Plan. SJR, mouth of Merced R to Vernalis (15 Mar – 15 Sep)	2,000	ug/L	IS							X	7440-42-8
		Basin Plan. SJR, mouth of Merced R to Vernalis (15 Mar – 15 Sep)	800 (b)	ug/L	IS							X	
		Basin Plan. SJR, mouth of Merced R to Vernalis (16 Sep – 14 Mar)	2,600	ug/L	IS							X	
		Basin Plan. SJR, mouth of Merced R to Vernalis (16 Sep – 14 Mar)	1,000 (b)	ug/L	IS							X	
		Basin Plan. SJR, mouth of Merced R to Vernalis (critical year) (c)	1,300 (b)	ug/L	IS							X	
		Basin Plan. SJR from Sack Dam to mouth of Merced River	5,800	ug/L	IS							X	
		Basin Plan. SJR from Sack Dam to mouth of Merced River	2,000 (b)	ug/L	IS							X	
Chlorpyrifos	Pesticides	Basin Plan. SJR from Mendota Dam to Vernalis; 1-hour average	0.025	ug/L	IS						X		2921-88-2
		Basin Plan. SJR from Mendota Dam to Vernalis; 4-day average	0.015	ug/L	IS						X		
Coliform, fecal	Bacteria	Basin Plan (d) (e)	200/100	MPN/mL	IS				X				--
		Basin Plan (d) (f)	400/100	MPN/mL	IS				X				
Coliform, total	Bacteria	Basin Plan	2.2/100	MPN/mL	G	X							--
Conductivity at 25 C	Salinity	Basin Plan. SJR, Friant Dam to Mendota Pool	150	umhos/cm	IS								--
(Electrical conductivity)		California Secondary MCL	900-1600	umhos/cm	G & IS	X	X		X	X			
Copper	Chemical Constituents	California Secondary MCL (total copper)	1,000	ug/L	G & IS	X			X	X			7440-50-8
	Toxicity	California Toxics Rule (USEPA), (g) (dissolved copper)	variable	ug/L	IS						X		
Diazinon	Pesticides	Basin Plan. SJR from Mendota Dam to Vernalis; 1-hour average	0.16	ug/L	IS						X		50-29-3
		Basin Plan. SJR from Mendota Dam to Vernalis; 4-day average	0.10	ug/L	IS						X		
Dissolved Oxygen, minimum	Dissolved Oxygen	Basin Plan. Merced R from Cressy to New Exchequer Dam, all year	8.0	mg/L	IS						X		7782-44-7
		Basin Plan. Tuolumne R, Waterford to La Grange, 15 Oct – 15 Jun	8.0	mg/L	IS						X		
		Basin Plan. Waters designated WARM	5.0	mg/L	IS						X		
		Basin Plan. Waters designated COLD and/or SPWN	7.0	mg/L	IS						X		
Lead	Chemical Constituents	California Primary MCL (total lead)	15	ug/L	G & IS	X			X				7439-92-1
	Toxicity	California Toxics Rule (USEPA) (g) (dissolved lead)	variable	ug/L	IS						X		

Constituent / Parameter (Synonym)	Basin Plan Water Quality Objective	Source of Numeric Threshold *(footnotes in parentheses are at bottom of table)*	Numeric Threshold (a)	Units	G= Groundwater IS= Inland Surface Water	Numeric Threshold Protects Designated Beneficial Use(s) in the Water Body:							
						Groundwater			Inland Surface Waters				
						MUN-MCL	MUN-Toxicity	AGR	MUN-MCL	MUN-Toxicity	Aquatic Life & Consump	AGR	CAS Number
Molybdenum, total	Chemical Constituents	Basin Plan. SJR, mouth of Merced R to Vernalis	15	ug/L	IS							X	7439-98-7
		Basin Plan. SJR, mouth of Merced R to Vernalis (monthly mean)	10	ug/L	IS							X	
		Basin Plan. SJR, Sack Dam to mouth of Merced R	50	ug/L	IS							X	
		Basin Plan. SJR, Sack Dam to mouth of Merced R (monthly mean)	19	ug/L	IS							X	
Nitrate (as nitrogen)	Chemical Constituents	California Primary MCL	10	mg/L	G & IS	X	X		X	X			14797-55-8
Nitrite (as nitrogen)	Chemical Constituents	California Primary MCL	1	mg/L	G & IS	X	X		X	X			14797-65-0
Nitrate+Nitrite (as nitrogen)	Chemical Constituents	California Primary MCL	10	mg/L	G & IS	X	X		X	X			--
pH – minimum	pH	Basin Plan	6.5	units	G & IS	X	X		X	X			--
pH – maximum			8.5	units	G & IS	X	X		X	X			
Selenium, total	Chemical Constituents	Basin Plan. SJR, mouth of Merced R to Vernalis	12	ug/L									7782-49-2
		Basin Plan. SJR, mouth of Merced R to Vernalis (4-day mean)	5	ug/L									
		Basin Plan. SJR, Sack Dam to mouth of Merced R	20	ug/L									
		Basin Plan. SJR, Sack Dam to mouth of Merced R (4-day mean)	5	ug/L									
		California Primary MCL	50	ug/L	G & IS	X			X				
	Toxicity	National Toxics Rule (USEPA), 4-day mean	5	ug/L	IS						X		
Simazine	Chemical Constituents	California Primary MCL	4	ug/L	G & IS	X	X		X	X			122-34-9
Temperature	Temperature	Basin Plan (h)	variable		IS								
Total Dissolved Solids (TDS)	Chemical Constituents	California Secondary MCL, recommended level	500 – 1,000	mg/L	G & IS	X	X		X	X			--
Turbidity	Turbidity	Basin Plan. Where natural turbidity is <1 NTU	2	NTU	IS								
		Where natural turbidity is between 1 and 5 NTUs, increases shall not exceed 1 NTU.	variable; 2-6	NTU	IS								
		Where natural turbidity is between 5 and 50 NTUs, increases shall not exceed 20%.	variable; 6 - 70	NTU	IS								
		Where natural turbidity is between 50 and 100 NTUs, increases shall not exceed 10 NTUs.	variable; 60-110	NTU	IS								
		Where natural turbidity is greater than 100 NTUs, increases shall not exceed 10%.	variable	NTU	IS								
Zinc	Chemical Constituents	California Secondary MCL (total zinc)	5,000	ug/L	G & IS	X			X				7440-66-6

Constituent / Parameter (Synonym)	Basin Plan Water Quality Objective	Source of Numeric Threshold *(footnotes in parentheses are at bottom of table)*	Numeric Threshold (a)	Units	G= Groundwater IS= Inland Surface Water	Numeric Threshold Protects Designated Beneficial Use(s) in the Water Body:							
						Groundwater			Inland Surface Waters				
						MUN-MCL	MUN-Toxicity	AGR	MUN-MCL	MUN-Toxicity	Aquatic Life & Consump	AGR	CAS Number
Zinc	Toxicity	California Toxics Rule (USEPA) (g) (dissolved zinc)	variable	ug/L	IS						X		

Footnotes to Table 8:

a	Numeric thresholds are maximum levels unless noted otherwise.
b	Monthly mean.
c	See Basin Plan for definition of Critical Year.
d	Applies in waters designated for contact recreation (REC-1).
e	Geometric mean of the fecal coliform concentration based on a minimum of not less than five samples for any 30-day period shall not exceed this number.
f	No more than ten percent of the total number of samples taken during any 30-day period shall exceed this number.
g	These numeric thresholds are hardness dependent. As hardness increases, water quality objectives generally increase.
h	The natural receiving water temperature shall not be altered unless it can be demonstrated to the satisfaction of the Water Board that such alteration does not adversely affect beneficial uses. However, at no time shall the temperature of WARM and COLD waters be increased more than 5 degrees F above natural receiving water temperature.

Abbreviations:

CAS	Chemical Abstracts Service Registry Number
fw	freshwater
MCL	maximum contaminant limit
MUN	municipal and domestic supply

Beneficial Uses:

AGR – Agricultural water uses, including irrigation supply and stock watering

Aquatic Life & Consump – Aquatic life and consumption of aquatic resources

MUN-MCL – Municipal or domestic supply with default selection of drinking water MCL when available

MUN-Toxicity – Municipal or domestic supply with consideration of human toxicity thresholds that are more stringent than drinking water MCLs

Monitoring and Reporting Program R5-2012-0116
Appendix MRP-1
Management Plan Requirements
Surface Water and Groundwater

Table of Contents

MRP - 1: Management Plan Requirements for Surface Water and Groundwater

I. Management Plan Development and Required Components

This appendix describes requirements for the development of water quality management plans under Waste Discharge Requirements General Order for Growers within the Eastern San Joaquin River Watershed that are Members of the Third-Party Group, Order R5-2012-0116 (hereafter "Order"). When a management plan has been triggered, the third-party shall ascertain whether or not irrigated agriculture is known to cause or contribute to the "water quality problem" (as defined in Attachment E). If the potential source(s) of the water quality exceedance(s) is unknown, the third-party may propose studies to be conducted to determine the cause, or to eliminate irrigated agriculture as a potential source (see Source Identification Study Requirements in section I.G. below).

When a Surface Water or Groundwater Quality Management Plan (SQMP/GQMP) has been triggered, the management plan shall contain the required elements presented and discussed in the following sections. The third-party may develop one SQMP or GQMP to cover all areas where plans have been triggered rather than developing separate management plans for each management area where plans have been triggered. The third-party would maintain the overarching plan as new information is collected, potentially triggering additional management areas and completion of other management areas.

If multiple constituents of concern (COCs) are to be included in a single management plan, a discussion of the prioritization process and proposed schedule shall be included in the plan. Prioritization schedules must be consistent with requirements described in section XII of the Order, Time Schedule for Compliance.

If a number of management plans are triggered, the third-party shall submit a SQMP/GQMP prioritization list to the Central Valley Water Board Executive Officer. This list may prioritize the order of SQMP/GQMP development based on, for example, 1) the potential to harm public health; 2) the beneficial use affected; and/or 3) the likelihood of meeting water quality objectives by implementing management practices. Prioritization schedules shall be consistent with requirements described in section XII of this Order, Time Schedule for Compliance. The third-party may continue to utilize the surface water quality prioritization process described in the East San Joaquin Water Quality Coalition's Management Plan Strategy,[1] as approved by the Executive Officer. The Executive Officer may approve or require changes be made to the SQMP/GQMP priority list. The third-party shall implement the prioritization schedule approved by the Executive Officer.

A. Introduction and Background Section

The introduction portion of the management plan shall include a discussion of the COCs that are the subject of the plan and the water quality objective(s) or trigger(s) requiring preparation of the management plan. The introduction shall also include an identification (both narrative and in map form) of the boundaries (geographic and surface water/ groundwater basin[s] or portion of a basin) to be covered by the management plan including how the boundaries were delineated.

For groundwater, previous work conducted to identify the occurrence of the COCs (e.g., studies, monitoring conducted) should be summarized for the GQMP area.

[1] The East San Joaquin Water Quality Coalition Management Plan, with Addendum, was submitted on 24 November 2008 and approved by the Executive Officer on 25 November 2008. References to this Management Plan include the original 24 November 2008 submittal and subsequent changes and updates approved by the Executive Officer.

B. Physical Setting and Information

1. General Requirements

The management plan needs to provide a discussion of the physical conditions that affect surface water (for a SQMP) or groundwater (for a GQMP) in the management plan area and the associated existing data. At a minimum, the discussion needs to include the following:

a. Land use maps which identify the crops being grown in the SQMP watershed or GQMP area. For groundwater, these maps may already be presented in the Groundwater Assessment Report (GAR) and may be referenced and/or updated as appropriate. Map(s) must be in electronic format using standard Arc-geographic information system (ArcGIS shapefiles).

b. Identification of the potential irrigated agricultural sources of the COC(s) for which the management plan is being developed. If the potential sources are not known, a study may be designed and implemented to determine the source(s) or to eliminate irrigated lands as a potential source. Requirements for source identification studies are given in section I.G below. In the alternative, instead of conducting a source identification study, the third-party may develop a management plan for the COC(s) that meets the management plan requirements as specified in this appendix.

c. A list of the designated beneficial uses as identified in the applicable Basin Plan.

d. A baseline inventory of identified existing management practices in use within the management plan area that could be affecting the concentrations of the COCs in surface water and/or groundwater (as applicable) and locations of the various practices.

e. A summary, discussion, and compilation of available surface water and/or groundwater quality data (as applicable) for the parameters addressed by the management plan. Available data from existing water quality programs may be used, including but not limited to: Surface Water Ambient Monitoring Program (SWAMP), California State Water Resources Control Board (State Water Board) Groundwater Ambient Monitoring Assessment (GAMA) Program, United States Geological Survey (USGS), California Department of Public Health (DPH), California Department of Pesticide Regulation (DPR), California Department of Water Resources (DWR), and local groundwater management programs. The GAR developed for the third-party's geographic area, and groundwater quality data compiled in that document, may serve as a reference for these data.

2. Surface Water – Additional Requirements

The SQMP shall also include a description of the watershed areas and associated COC being addressed by the plan. For a water body that is representative of other water bodies, those areas being represented must also be identified in the SQMP.

3. Groundwater – Additional Requirements

The GQMP shall include:

a. Soil types and other relevant soils data as described by the appropriate Natural Resources Conservation Service (NRCS) soil survey or other applicable studies. The soil unit descriptions and a map of their areal extent within the study area must be included. The GAR developed for the third-party's geographic area, and the soils mapping contained in that document, may satisfy this requirement.

b. A description of the geology and hydrogeology for the area covered by the GQMP. The description shall include:

i. Regional and area specific geology, including stratigraphy and existing published geologic cross-sections.

ii. Groundwater basin(s) and sub-basins contained within the GQMP area, including a discussion of their general water chemistry as known from existing publications, including the GAR (range of electrical conductivity [conductivity at 25 C, EC], concentrations of major anions and cations, nutrients, total dissolved solids [TDS], pH, dissolved oxygen and hardness). The discussion should reference and provide figures of existing Piper (tri-linear) diagrams, Stiff diagrams and/or Durov Diagrams for the GQMP area (see definitions contained in Attachment E of the Order).

iii. Known water bearing zones, areas of shallow and/or perched groundwater, as well as areas of discharge and recharge to the basin/sub-basin in the GQMP area (rivers, unlined canals, lakes, and recharge or percolation basins).

iv. Identification of which water bearing zones within the GQMP area are being utilized for domestic, irrigation, and municipal water production.

v. Aquifer characteristics such as depth to groundwater, groundwater flow direction, hydraulic gradient, and hydraulic conductivity, as known or estimated based on existing information (see definitions contained in Attachment E of the Order).

c. Identification, where possible, of irrigation water sources (surface water origin and/or groundwater) and their available general water chemistry (range of EC, concentrations of major anions and cations, nutrients, TDS, pH, dissolved oxygen and hardness).

C. Management Plan Strategy

This section provides a discussion of the strategy to be used in the implementation of the management plan and should at a minimum, include the following elements:

1. A description of the approach to be utilized by the management plan (e.g., multiple COC's addressed in a scheduled priority fashion, multiple areas covered by the plan with a single area chosen for initial study, or all areas addressed simultaneously [area wide]). Any prioritization included in the management plan must be consistent with the requirements in section XII of the Order, Time Schedule for Compliance.
2. The plan must include actions to meet the following goals and objectives:
   a. Compliance with the Order's receiving water limitations (section III of the Order).
   b. Educate Members about the sources of the water quality exceedances in order to promote prevention, protection, and remediation efforts that can maintain and improve water quality.
   c. Identify, validate, and implement management practices to reduce loading of COC's to surface water or groundwater, as applicable, thereby improving water quality.
3. Identify the duties and responsibilities of the individuals or groups implementing the management plan. This section should include:
   a. Identification of key individuals involved in major aspects of the project (e.g., project lead, data manager, sample collection lead, lead for stakeholder involvement, quality assurance manager).
   b. Discussion of each individual's responsibilities.
   c. An organizational chart with identified lines of authority.
4. Strategies to implement the management plan tasks.
   a. Identify the entities or agencies that will be contacted to obtain data and assistance.
   b. Identify management practices used to control sources of COCs from irrigated lands that are 1) technically feasible; 2) economically feasible; 3) proven to be effective at protecting water

quality, and 4) will comply with sections III.A and B of the Order. Practices that growers will implement must be discussed, along with an estimate of their effectiveness or any known limitations on the effectiveness of the chosen practice(s). Practices identified may include those that are required by local, state, or federal law. Where an identified constituent of concern is a pesticide that is subject to DPR's Groundwater Protection Program, the GQMP may refer to DPR's regulatory program for that pesticide and any requirements associated with the use of that pesticide provided that the requirement(s) are sufficient to meet water quality objectives.

c. Identify outreach that will be used to disseminate information to participating growers. This discussion shall include: the strategy for informing growers of the water quality problems that need to be addressed, method for disseminating information on relevant management practices to be implemented, and a description of how the effectiveness of the outreach efforts will be evaluated. The third-party may conduct outreach efforts or work with the assistance of the County Agricultural Commissioners, U.C. Cooperative Extension, Natural Resources Conservation Service, Resource Conservation District, California Department of Food and Agriculture, or other appropriate groups or agencies.

d. A specific schedule and milestones for the implementation of management practices and tasks outlined in the management plan. Items to be included in the schedule include: time estimated to identify new management practices as necessary to meet the Order's surface and groundwater receiving water limitations (section III of the Order); a timetable for implementation of identified management practices (e.g., at least 25% of growers identified must implement management practices by year 1; at least 50% by year 2).

e. Establish measureable performance goals that are aligned with the elements of the management plan strategy. Performance goals include specific targets that identify the expected progress towards meeting a desired outcome.

D. Monitoring Methods

1. General Requirements

The monitoring system must be designed to measure effectiveness at achieving the goals and objectives of the SQMP or GQMP and capable of determining whether management practice changes made in response to the management plan are effective and can comply with the terms of the Order.

Management practice-specific or commodity-specific field studies may be used to approximate the contribution of irrigated lands operations. Where the third-party determines that field studies are appropriate or the Executive Officer requires a technical report under CWC 13267 for a field study, the third-party must identify a reasonable number and variety of field study sites that are representative of the particular management practice being evaluated.

2. Surface Water – Additional Requirements

The strategy to be used in the development and implementation of the monitoring methods for surface water should address the general requirements and, at a minimum, include the following elements:

a. The location(s) of the monitoring site and schedule (including frequencies) for monitoring should be chosen to be representative of the COC discharge to the watershed.

b. Surface water monitoring data must be submitted electronically per the requirements given in section III.D of the MRP.

3. Groundwater – Additional Requirements

The third-party's Management Practice Evaluation Program and Groundwater Quality Trend Monitoring shall be evaluated to determine whether additional monitoring is needed in conjunction with the proposed management strategy(ies) to evaluate the effectiveness of the strategy(ies). This may include commodity-based representative monitoring that is conducted to determine the effectiveness of management practices implemented under the GQMP. Refer to section IV of the MRP for groundwater monitoring requirements.

E. Data Evaluation

Methods to be used to evaluate the data generated by SQMP/GQMP monitoring and to evaluate the effectiveness of the implemented management practices must be described. The discussion should include at a minimum, the following:

1. Methods to be utilized to perform data analysis (graphical, statistics, modeling, index computation, or some combination thereof).
2. Identify the information necessary to quantify program effectiveness going forward, including the tracking of management practice implementation. The approach for determining the effectiveness of the management practices implemented must be described. Acceptable approaches include field studies of management practices at representative sites and modeling or assessment to associate the degree of management practice implementation to changes in water quality. The process for tracking implementation of management practices must also be described. The process must include a description of how the information will be collected from growers, the type of information being collected, how the information will be verified, and how the information will be reported.

F. Records and Reporting

By 1 May of each year, the third-party must prepare a Management Plan Progress Report that summarizes the progress in implementing management plans. The Management Plan Progress Report must summarize the progress for the hydrologic water year.[2] The Management Plan Progress Report shall include the following components:

(1) Title page
(2) Table of contents
(3) Executive Summary
(4) Location map(s) and a brief summary of management plans covered by the report
(5) Updated table that tallies all exceedances for the management plans
(6) A list of new management plans triggered since the previous report
(7) Status update on preparation of new management plans
(8) A summary and assessment of management plan monitoring data collected during the reporting period
(9) A summary of management plan grower outreach conducted
(10) A summary of the degree of implementation of management practices
(11) Results from evaluation of management practice effectiveness
(12) An evaluation of progress in meeting performance goals and schedules
(13) Any recommendations for changes to the management plan

[2] A hydrologic water year is defined as 1 October through 30 September.

G. Source Identification Study Requirements

Should the third-party conduct a Source Identification Study to comply with this Order, the third-party must first receive approval from the Executive Officer. Once approved, the third party may proceed with its study.

The minimum components for a source identification study are:

(1) An evaluation of the types of practices, commodities, and locations that may be a source
(2) Continued monitoring at the management plan site/area and increased monitoring if appropriate.
(3) An assessment of the potential pathways through which waste discharges can occur.
(4) A schedule for conducting the study.

Commodity specific and/or management practice specific field studies (including edge-of field studies) may be required to approximate the contribution of irrigated agriculture. At a minimum, the third-party must evaluate the feasibility of field studies as part of their source identification study proposal. Where field studies are deemed appropriate, the third-party should identify a reasonable number and variety of field study sites that are representative of the particular commodity or management practice being evaluated. If field studies are not proposed, the third-party must demonstrate how the alternative source identification method will produce data or information that will enable the determination of contributions from irrigated agricultural operations to the water quality problem.

If an approved study shows that irrigated lands are not a source, then the third-party can request the Executive Officer to approve completion of the associated management plan. Where irrigated lands are identified as a source, a full SQMP/GQMP shall be prepared and implemented.

II. Approval and Review of the Management Plan

The following discussion describes the review and approval process for draft management plans submitted to the Executive Officer for approval. Any proposed changes to the management plan must be approved by the Executive Officer prior to implementation.

a. Water quality management plan approval – Prior to Executive Officer approval of any management plan, the Central Valley Water Board will post the draft management plan on its website for a review and comment period. Stakeholder comments will be considered by Central Valley Water Board staff. Based on information provided by the third-party and after consideration of comments provided by other interested stakeholders, the Central Valley Water Board's Executive Officer will either: (1) approve the management plan; (2) conditionally approve the management plan or (3) disapprove the management plan. Review of the management plan and the associated action by the Executive Officer will be based on findings as to whether the plan meets program requirements and goals and contains all of the information required for a management plan.

b. Periodic review of water quality management plans – At least once every five years, the Central Valley Water Board intends to review available data to determine whether the approved management plan is resulting in water quality improvements. Central Valley Water Board staff will meet with the third-party and other interested parties to evaluate the sufficiency of management plans. Based on input from all parties, the Executive Officer will determine whether and how the management plan should be updated based on new information and progress in achieving compliance with the Order's surface or groundwater receiving water limitations, as applicable (see section III of the Order). The Executive Officer also may require revision of the management plan based on available information indicating that irrigated agriculture waste

discharges are not in compliance with surface or groundwater receiving water limitations (as applicable) of the Order. The Executive Officer may also require revision to the management plan if available information indicates that degradation of surface and/or groundwater calls for the inclusion of additional areas, constituents of concern(s), or improved management practices in the management plan. During this review, the Executive Officer will make one of the findings described below:

1. Adequate progress – The Executive Officer will make a determination of adequate progress in implementing the plan if water quality improvement milestones and compliance time schedules have been met or the surface/groundwater receiving water limitations of the Order are met.
2. Inadequate progress – The Executive Officer will make a determination of inadequate progress in implementing the plan if the Order's surface or groundwater receiving water limitations are not being met; and water quality improvement milestones and compliance time schedules in the approved management plan have not been met.

The actions taken by the Executive Officer upon a determination of inadequate progress include, but are not limited to one or more of the following for the area in which inadequate progress has been made:

- Management practice field monitoring studies – The third-party may be required to develop and implement a field monitoring study plan to characterize the commodity-specific discharge of the constituent of concern and evaluate the pollutant reduction efficacy of specific management practices. Based on the study and evaluation, the Executive Officer may require the SQMP/GQMP to be revised to include additional practices to achieve compliance with the Order's surface and groundwater receiving water limitations.

- Independent, on-site verification of implementation of management practices and evaluation of their adequacy.

- Individual WDRs or waiver of WDRs – The board may revoke the third-party coverage for individual irrigated agricultural operations and require submittal of a report of waste discharge.

III. Management Plan Completion

Management Plans can be completed in one of two ways. The first way a Management Plan can be completed is if an approved source study shows that irrigated agriculture is not causing or contributing to the water quality problem. The second way a Management Plan can be completed is if the improved management practices have resolved the water quality problem.

The goal of all management plans is to identify the source(s) of COCs, track the implementation of effective management practices, and ultimately ensure that irrigated agriculture waste discharges are meeting the surface and groundwater receiving water limitations of the Order. If an approved source study shows that irrigated agriculture is not a source, then the third-party can request the Executive Officer to approve completion of the associated management plan.

A request for approval of completion of a management plan due to improved management practices will require credible evidence that the water quality problem has been resolved. The Executive Officer will evaluate each request on a case-by-case basis. The following key components must be addressed in the request:

a) Demonstration through evaluation of monitoring data that the water quality problem is no longer occurring (i.e., 3 or more years with no exceedances during the times of the year when previous

exceedances occurred) or demonstrated compliance with the Order's surface and groundwater receiving water limitations.

b) Documentation of third-party education and outreach to applicable Members in the watershed where water quality impairment occurred.

c) Documentation of Member implementation of management practices that address the water quality exceedances.

d) Demonstration that the management practices implemented by Members are effective in addressing the water quality problem.

Management plans may be completed for all or some of the constituents that prompted preparation of the management plan. When Executive Officer approval is given for completion of one or more management plan constituents, each constituent shall revert to regular, ongoing monitoring requirements (as described in the MRP). The third-party must also continue tracking on-going implementation of appropriate management practices by growers, which may be done through the Farm Evaluation process.

Requests for management plan completion must summarize and discuss all information and data being used to justify completion. The third-party shall not discontinue any of the associated management plan requirements prior to Executive Officer approval of its completion request.

Monitoring and Reporting Program R5-2012-0116
Appendix MRP-2

Monitoring Well Installation and Sampling Plan
and
Monitoring Well Installation Completion Report

I. Introduction

The provisions of Appendix MRP-2 are set out pursuant to the Central Valley Water Board's authority under California Water Code (CWC) section 13267. The purpose and requirements of the Management Practice Evaluation Program (MPEP) is set forth in Monitoring and Reporting Program (MRP) R5-2012-0116.

Implementation of the RGMP requires that the third-party develop and submit a Monitoring Well Installation and Sampling Plan (MWISP) to the Executive Officer for approval prior to installation of monitoring wells. Stipulations and required elements of the MWISP are presented in section II below.

Upon completion of any monitoring well network, the third-party shall submit to the Central Valley Water Board a Monitoring Well Installation Completion Report (MWICR) which describes the field activities performed during that phase of the work. Required elements to be included in the MWICR are presented in section III below.

II. Monitoring Well Installation and Sampling Plan

Prior to installation of groundwater monitoring wells, an MWISP and schedule prepared by, or under the direct supervision of, and certified by, a California registered civil engineer or a California registered geologist with experience in hydrogeology shall be submitted to the Central Valley Water Board for Executive Officer approval. If the third-party has chosen to rank or prioritize its high vulnerability areas, the initial MWISP must present an overview and justification for the phased approach. Separate MWISPs showing the proposed monitoring well locations are required prior to implementation of each phase (alternatively, the third-party may prepare a master MWISP covering all of the proposed phases of well installation). Installation of monitoring wells shall not begin until the Executive Officer notifies the third-party in writing that the MWISP is acceptable. The MWISP or an MWISP for the initial phase if the third-party has chosen to employ a phased approach must be submitted within 180 days after Executive Officer approval of the Management Practices Evaluation Workplan (see section IV of Monitoring and Reporting Program Order R5-2012-0116, "MRP").

A. Stipulations

1. All monitoring wells shall be constructed in a manner that maintains the integrity of the monitoring well borehole and prevents the well (including the annular space outside of the well casing) from acting as a conduit for waste/contaminant transport. Each monitoring well shall be appropriately designed and constructed to enable collection of representative samples of the first encountered groundwater.

2. Where applicable, the third-party shall follow state, county or local agency standards with respect to water wells and groundwater quality when constructing new wells, modifying existing wells, or destroying wells. Absent such standards, at a minimum, the third-party shall follow the standards and guidelines described in the California Department of Water Resources' *Water Well Standards (Bulletins 74-81 & 74-90 combined)*. More stringent practices shall be implemented if needed to prevent the well from acting as a conduit for the vertical migration of waste constituents.

3. The horizontal and vertical position of each monitoring well shall be determined by a registered land surveyor or other qualified professional. The horizontal position of each monitoring well shall be measured with one-foot lateral accuracy using the North American Datum 1983 (NAD83 datum). The vertical elevations of each monitoring well, at the point where depth to groundwater shall be measured to an absolute accuracy of at least 0.5 feet and a relative accuracy between monitoring wells of 0.01 feet referenced to the North American Vertical Datum 1988 (NAVD88 datum).

4. Once the groundwater monitoring network is installed pursuant to an approved MWISP, the third-party shall sample monitoring wells for the constituents and at the frequencies as specified in the approved RGMP. Groundwater monitoring shall include monitoring during periods of the expected highest and lowest annual water table levels and be of sufficient frequency to allow for evaluation of any seasonal variations.

5. Groundwater samples from monitoring wells shall be collected as specified in an approved MWISP and in accordance with the third-party's approved QAPP.

B. MWISP Required Elements

At a minimum, the MWISP must contain all of the information listed below.

1. General Information:

   a. Topographic map showing any existing nearby (about 2,000 feet) domestic, irrigation, municipal supply, and known monitoring wells, utilities, surface water bodies, drainage courses and their tributaries/destinations, and other major physical and man-made features, as reasonably known and appropriate.

   b. Site plan showing proposed well locations, other existing wells, unused and/or abandoned wells, and major physical site structures (such as tailwater retention systems, tile-drainage systems including discharge points, chemigation and/or fertigation tanks, flood control features, irrigation canals, etc.).

   c. Rationale for the number of proposed monitoring wells, their locations and depths, and identification of anticipated depth to groundwater. This information must include an explanation of how the location, number, and depths of wells proposed will result in the collection of data that can be used to assess groundwater at farms not directly monitored by the MPEP and under a variety of hydrogeologic conditions.

   d. Local permitting information (as required for drilling, well seals, boring/well abandonment).

   e. Drilling details, including methods and types of equipment for drilling and soils logging activities. Equipment decontamination procedures (as appropriate) should be described.

f. Health and Safety Plan.

2. Proposed Drilling Details:

   a. Drilling techniques.

   b. Well/soil sample collection and logging method(s).

3. Proposed Monitoring Well Design - all proposed well construction information must be displayed on a construction diagram or schematic. For items f. through i., the vertical location of all annular materials (filter pack, seals, etc.) shall be shown and a description of the material and its method of emplacement given. The construction diagram or schematic shall accurately identify the following:

   a. Well depth.

   b. Borehole depth and diameter.

   c. Well construction materials.

   d. Casing material and diameter - include conductor casing, if appropriate.

   e. Location and length of perforation interval, size of perforations, and rationale.

   f. Location and thickness of filter pack, type and size of filter pack material, and rationale.

   g. Location, thickness, and composition of any intermediate seal.

   h. Location, thickness, and composition of annular seal.

   i. Surface seal depth and composition.

   j. Type of well cap(s).

   k. Type of well surface completion.

   l. Well protection devices (such as below-grade water-tight vaults, locking steel monument, bollards, etc.).

4. Proposed Monitoring Well Development:

   a. Schedule for development (not less than 48 hours or more than 10 days after well completion).

   b. Method of development.

   c. Method of determining when development is complete.

   d. Parameters to be monitored during development.

5. Proposed Surveying:

a. How horizontal and vertical position of each monitoring well will be determined.

b. The accuracy of horizontal and vertical measurements to be obtained.

6. Proposed Groundwater Monitoring: refer to Monitoring and Reporting Program Order R5-2012-0116 and QAPP Guidelines.

III. Monitoring Well Installation Completion Report (MWICR)

Within 60 days after completion of any monitoring well network, the third-party shall submit to the Executive Officer a Monitoring Well Installation Completion Report (MWICR) prepared by, or under the direct supervision of, and certified by, a California registered civil engineer or a California registered geologist with experience in hydrogeology. In cases where monitoring wells are completed in phases or completion of the network is delayed for any reason, monitoring well construction data are to be submitted within 90 days of well completion, even if this requires submittal of multiple reports. At a minimum, the MWICR shall summarize the field activities as described below.

1. General Information:

   a. Brief overview of field activities including well installation summary (such as number, depths), and description and resolution of difficulties encountered during field program.

   b. A site plan depicting the positions of the newly installed monitoring wells, other existing wells, unused and/or abandoned wells, and major physical site structures (such as tailwater retention systems, tile-drainage systems including discharge points, chemigation and/or fertigation holding tanks, flood control features, irrigation canals, etc.).

   c. Period of field activities and milestone events (e.g., distinguish between dates of well installation, development, and sampling).

2. Monitoring Well Construction:

   a. Number and depths of monitoring wells installed.

   b. Monitoring well identification (i.e., numbers).

   c. Date(s) of drilling and well installation.

   d. Description of monitoring well locations including field-implemented changes (from proposed locations) due to physical obstacles or safety hazards.

   e. Description of drilling and construction, including equipment, methods, and difficulties encountered (such as hole collapse, lost circulation, need for fishing).

   f. Name of drilling company, driller, and logger (site geologist/engineer to be identified).

   g. As-builts for each monitoring well with the following details:

      i. Well identification.

ii. Total borehole and well depth.

iii. Date of installation.

iv. Boring diameter.

v. Casing material and diameter (include conductor casing, if appropriate).

vi. Location and thickness of slotted casing, perforation size.

vii. Location, thickness, type, and size of filter pack.

viii. Location, thickness, and composition of any intermediate seal.

ix. Location, thickness, and composition of annular seal.

x. Surface seal depth and composition.

xi. Type of well cap.

xii. Type of surface completion.

xiii. Depth to water (note any rises in water level from initial measurement) and date of measurement.

xiv. Well protection device (such as below-grade water-tight vaults, stovepipe, bollards, etc.).

xv. Lithologic log and electric log (if conducted) of well borings

xvi. Results of all soil tests (e.g., grain size, permeability, etc.)

h. All depth to groundwater measurements during field program.

i. Field notes from drilling and installation activities (e.g., subcontractor dailies, as appropriate).

j. Construction summary table of pertinent information such as date of installation, well depth, casing diameter, screen interval, bentonite seal interval, and well elevation.

3. Monitoring Well Development:

a. Date(s) and time of development.

b. Name of developer.

c. Method of development.

d. Methods used to identify completion of development.

e. Development log: volume of water purged and measurements of temperature, pH, electrical conductivity, and any other parameters measured during and after development.

f. Disposition of development water.

g. Field notes (such a bailing to dryness, recovery time, number of development cycles).

4. Monitoring Well Survey:

a. Identify coordinate system or reference points used.

b. Description of measuring points (e.g., ground surface, top of casing, etc.).

c. Horizontal and vertical coordinates of well casing with cap removed (measuring point where water levels are measured to nearest $\pm$ 0.01 foot).

d. Name, license number, and signature of California licensed professional who conducted survey.

e. Surveyor's field notes.

f. Tabulated survey data.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ATTACHMENT C TO ORDER R5-2012-0116
CEQA MITIGATION MEASURES

WASTE DISHARGE REQUIREMENTS GENERAL ORDER
FOR
GROWERS WITHIN THE EASTERN SAN JOAQUIN RIVER WATERSHED
THAT ARE MEMBERS OF THE THIRD-PARTY GROUP

A. Cultural Resources

1. Mitigation Measure CUL-MM-1: Avoid Impacts to Cultural Resources

The measure described below will reduce the severity of impacts on significant cultural resources, as defined and described in sections 5.3.1 and 5.3.3 of the PEIR.[1] Avoidance of such impacts also can be achieved when Members choose the least impactful management practices that will meet the quality improvement goals and objectives of Waste Discharge Requirements General Order for Growers within the Eastern San Joaquin River Watershed that are Members of the Third-Party Group, Order R5-2012-0116 (hereafter referred to as the "Order"). Note that these mitigation measures may not be necessary in cases where no ground-disturbing activities would be undertaken as a result of implementation of the Order.

Although cultural resource inventories and evaluations typically are conducted prior to preparation of a CEQA document, the size of the Order's coverage area and the lack of specificity regarding the location and type of management practices that would be implemented following adoption of the Order rendered conducting inventories prior to release of the draft Order untenable. Therefore, where the Order's water quality improvement goals cannot be achieved without modifying or disturbing an area of land or existing structure to a greater degree than through previously employed farming practices, individual farmers or third-party representatives will implement the following measures to reduce potential impacts to less-than-significant levels.

- Where construction within areas that may contain cultural resources cannot be avoided through the use of alternative management practices, conduct an assessment of the potential for damage to cultural resources prior to construction; this may include the hiring of a qualified cultural resources specialist to determine the presence of significant cultural resources.
- Where the assessment indicates that damage may occur, submit a non-confidential records search request to the appropriate CHRIS information center(s).
- Implement the recommendations provided by the CHRIS information center(s) in response to the records search request.

[1] ICF International. 2011. *Irrigated Lands Regulatory Program Final Program Environmental Impact Report.* Final and Draft. March. (ICF 05508.05.) Sacramento, CA. Prepared for: Central Valley Regional Water Quality Control Board, Sacramento, CA

- Where adverse effects to cultural resources cannot be avoided, undertake additional CEQA review and develop appropriate mitigation to avoid or minimize the potential impact.

In addition, California state law provides for the protection of interred human remains from vandalism and destruction. According to the California Health and Safety Code, six or more human burials at one location constitute a cemetery (section 8100), and the disturbance of Native American cemeteries is a felony (section 7052). section 7050.5 requires that construction or excavation be stopped in the vicinity of the discovered human remains until the County Coroner has been notified, according to PRC section 5097.98, and can determine whether the remains are those of Native American origin. If the coroner determines that the remains are of Native American origin, the coroner must contact the Native American Heritage Commission (NAHC) within 24 hours (Health and Safety Code section 7050[c]). The NAHC will identify and notify the most likely descendant (MLD) of the interred individual(s), who will then make a recommendation for means of treating or removing, with appropriate dignity, the human remains and any associated grave goods as provided in PRC section 5097.98.

PRC section 5097.9 identifies the responsibilities of the project proponent upon notification of a discovery of Native American burial remains. The project proponent will work with the MLD (determined by the NAHC) and a professional archaeologist with specialized human osteological experience to develop and implement an appropriate treatment plan for avoidance and preservation of, or recovery and removal of, the remains.

Members implementing management practices should be aware of the following protocols for identifying cultural resources.

- If built environment resources or archaeological resources, including chipped stone (often obsidian, basalt, or chert), ground stone (often in the form of a bowl mortar or pestle), stone tools such as projectile points or scrapers, unusual amounts of shell or bone, historic debris (such as concentrations of cans or bottles), building foundations, or structures are inadvertently discovered during ground-disturbing activities, the land owner should stop work in the vicinity of the find and retain a qualified cultural resources specialist to assess the significance of the resources. If necessary, the cultural resource specialist also will develop appropriate treatment measures for the find.
- If human bone is found as a result of ground disturbance, the land owner should notify the County Coroner in accordance with the instructions described above. If Native American remains are identified and descendants are found, the descendants may—with the permission of the owner of the land or his or her authorized representative—inspect the site of the discovery of the Native American remains. The descendants may recommend to the owner or the person responsible for the excavation work means for treating or disposing of the human remains and any associated grave goods, with appropriate dignity. The descendants will make their recommendation within 48 hours of inspection of the remains. If the NAHC is unable to identify a descendant, if the descendants identified fail to make a recommendation, or if the landowner rejects the recommendation of the descendants, the landowner will inter the human remains and associated grave goods with appropriate dignity on the property in a location not subject to further and future subsurface disturbance.

B. Vegetation and Wildlife

1. Mitigation Measure BIO-MM-1: Avoid and Minimize Impacts on Sensitive Biological Resources

Implementation of the following avoidance and minimization measures would ensure that the construction activities related to implementation of management practices and installation of monitoring wells on irrigated lands would minimize effects on sensitive vegetation communities (such as riparian habitat and wetlands adjacent to the construction area) and special-status plants and wildlife species as defined and listed in section 5.7.3 of the PEIR. In each instance where particular management practices could result in impacts on the biological resources listed above, Members should use the least impactful effective management practice to avoid such impacts. Where the Order's water quality improvement goals cannot be achieved without incurring potential impacts, individual farmers or third-party representatives will implement the following measures to reduce potential impacts to less-than-significant levels.

- Where detention basins are to be abandoned, retain the basin in its existing condition or ensure that sensitive biological resources are not present before modification.
- Where construction in areas that may contain sensitive biological resources cannot be avoided through the use of alternative management practices, conduct an assessment of habitat conditions and the potential for presence of sensitive vegetation communities or special-status plant and animal species prior to construction. This may include the hiring of a qualified biologist to identify riparian and other sensitive vegetation communities and/or habitat for special-status plant and animal species.
- Avoid and minimize disturbance of riparian and other sensitive vegetation communities.
- Avoid and minimize disturbance to areas containing special-status plant or animal species.
- Where adverse effects on sensitive biological resources cannot be avoided, undertake additional CEQA review where appropriate and develop a restoration or compensation plan to mitigate the loss of the resources.

2. Mitigation Measure BIO-MM-2: Determine Extent of Wetland Loss and Compensate for Permanent Loss of Wetlands

Prior to implementing any management practice that will result in the permanent loss of wetlands, conduct a delineation of affected wetland areas to determine the acreage of loss in accordance with current U.S. Army Corps of Engineers (USACE) methods. For compliance with the federal Clean Water Act section 404 permit and WDRs protecting state waters from unauthorized fill, compensate for the permanent loss (fill) of wetlands and ensure no net loss of habitat functions and values. Compensation ratios will be determined through coordination with the Central Valley Water Board and USACE as part of the permitting process. Such process will include additional compliance with CEQA, as necessary. Compensation may be a combination of mitigation bank credits and restoration/creation of habitat, as described below:

- Purchase credits for the affected wetland type (e.g., perennial marsh, seasonal wetland) at a locally approved mitigation bank and provide written evidence to the resource agencies (USFWS, NMFS) that compensation has been established through the purchase of mitigation credits.
- Develop and ensure implementation of a wetland restoration plan that involves creating or enhancing the affected wetland type.

C. Fisheries

1. **Mitigation Measure FISH-MM-1: Avoid and Minimize Impacts to Fish and Fish Habitat**

This mitigation measure incorporates all measures identified in Mitigation Measure BIO-MM-1: Avoid and Minimize Impacts on Sensitive Biological Resources. In each instance where particular management practices could result in impacts to special-status fish species (see "Regulatory Classification of Special-Status Species" in section 5.8.2 of the PEIR), Members should use the least impactful effective management practice to avoid such impacts. Where the Order's water quality improvement goals cannot be achieved without incurring potential impacts, individual farmers or third-party representatives will implement the following measures to reduce potential impacts to less-than-significant levels. Note that these measures may not be necessary in many cases and are dependent on the location of construction in relation to water bodies containing special-status fish.

- Where construction in areas that may contain special-status fish species cannot be avoided through the use of alternative management practices, conduct an assessment of habitat conditions and the potential for presence of special-status fish species prior to construction; this may include the hiring of a qualified fisheries biologist to determine the presence of special status fish species.
- Based on the species present in adjacent water bodies and the likely extent of construction work that may affect fish, limit construction to periods that avoid or minimize impacts to special-status fish species.
- Where construction periods cannot be altered to minimize or avoid effects on special-status fish, undertake additional CEQA review and develop a restoration or compensation plan to mitigate the loss of the resources.

2. **Mitigation Measure FISH-MM-2: Educate Members on the Use of Polyacrylamides (PAMs) for Sediment Control**

The third-party will provide information on the potential risks to aquatic life, including special-status fish, that may result from the use of cationic or neutral PAMs during water management activities. Information in the form of leaflets and website information will be provided to Member, encouraging the use of anionic PAMs. Application of anionic PAMs at prescribed rates will be emphasized in the information provided to Members. Adoption of the United States Department of Agriculture National Conservation Practice Standard 450 also will be recommended in the information.

D. Agriculture Resources

1. **Mitigation Measure AG-MM-1: Assist the Agricultural Community in Identifying Sources of Financial Assistance that would Allow Members to Keep Important Farmland in Production.**

The third-party will assist the agricultural community in identifying sources of financial assistance from existing federal, state, or local programs that promote water conservation and water quality through improved management practices. Funding received from grants, cost-sharing, or low interest loans would offset some of the local Members' expenditures for compliance with and implementation of the Order, and likely would reduce the estimated losses in irrigated acreage. Potential funding sources for this mitigation measure are discussed below. The programs described below are illustrative and are not intended to constitute a comprehensive list of funding sources.

Federal Farm Bill

Title II of the 2008 Farm Bill (the Food, Conservation, and Energy Act of 2008, in effect through 2012) authorizes funding for conservation programs such as the Environmental Quality Incentives Program (EQIP) and the Conservation Stewardship Program. Both of these programs provide financial and technical assistance for activities that improve water quality on agricultural lands.

State Water Resources Control Board

The Division of Financial Assistance administers water quality improvement programs for the State Water Resources Control Board (State Water Board). The programs provide grant and loan funding to reduce non-point-source pollution discharge to surface waters.

The Division of Financial Assistance currently administers two programs that improve water quality associated with agriculture—the Agricultural Drainage Management Loan Program and the Agricultural Drainage Loan Program. Both of these programs were implemented to address the management of agricultural drainage into surface water. The Agricultural Water Quality Grant Program provides funding to reduce or eliminate the discharge of non-point-source pollution from agricultural lands into surface water and groundwater. It currently is funded through bonds authorized by Proposition 84.

The State Water Board's Clean Water State Revolving Fund also has funding authorized through Proposition 84. It provides loan funds to a wide variety of point-source and non-point-source water quality control activities.

Potential Funding Provided by the Safe, Clean, and Reliable Drinking Water Supply Act of 2010

This act was placed on the ballot by the Legislature as SBX 7-2 and was scheduled for voter approval in November 2010. In August of 2010, the Legislature removed this issue from the 2010 ballot and intends to re-introduce it in November of 2012. If approved by the public, the new water bond would provide grant and loan funding for a wide range of water-related

activities, including agricultural water quality improvement, watershed protection, and groundwater quality protection. The actual amount and timing of funding availability will depend on its passage, on the issuance of bonds and the release of funds, and on the kinds of programs and projects proposed and approved for funding.

Other Funding Programs

Other state and federal funding programs have been available in recent years to address agricultural water quality improvements. Integrated Regional Water Management grants were authorized and funded by Proposition 50 and now by Proposition 84. These are administered jointly by the State Water Board and the California Department of Water Resources. Proposals can include agricultural water quality improvement projects. The Bureau of Reclamation also can provide assistance and cost-sharing for water conservation projects that help reduce discharges.

E. Mitigation Measure CC-MM-2: Apply Applicable California Attorney General Mitigation Measures to Reduce Construction and Operational GHG Emissions

A 2008 report by the California Attorney General's office entitled *The California Environmental Quality Act: Addressing Global Warming at the Local Agency Level* identifies various example measures to reduce GHG emissions at the project level (California Department of Justice 2008). The following mitigation measures and project design features were compiled from the California Attorney General's Office report. They are not meant to be exhaustive but to provide a sample list of measures that should be incorporated into future project design. Only those measures applicable to the Order are included.

Solid Waste Measures

- Reuse and recycle construction and demolition waste (including, but not limited to, soil, vegetation, concrete, lumber, metal, and cardboard).
- Provide interior and exterior storage areas for recyclables and green waste and adequate recycling containers.
- Recover by-product methane to generate electricity.

Transportation and Motor Vehicles

- Limit idling time for commercial vehicles, including delivery and construction vehicles.
- Use low- or zero-emission vehicles, including construction vehicles.

ATTACHMENT D

WASTE DISCHARGE REQUIREMENTS GENERAL ORDER FOR GROWERS WITHIN THE EASTERN SAN JOAQUIN RIVER WATERSHED THAT ARE MEMBERS OF THE THIRD-PARTY GROUP

FINDINGS OF FACT AND STATEMENT OF OVERRIDING CONSIDERATIONS

ORDER R5-2012-0116

December 2012

Contents

Acronyms and Abbreviations

2008 Farm Bill	Food, Conservation, and Energy Act of 2008
CACs	county agricultural commissioners
CCR	California Code of Regulations
Central Valley Water Board	California Regional Water Quality Control Board, Central Valley Region
CEQA	California Environmental Quality Act
CRHR	California Register of Historic Resources
CV-SALTS	Central Valley Salinity Alternatives for Long-Term Sustainability
DO	dissolved oxygen
DPH	California Department of Public Health
DPM	diesel particulate matter
DPR	California Department of Pesticide Regulation
EIR	environmental impact report
EPA	U.S. Environmental Protection Agency
EQIP	Environmental Quality Incentives Program
ESA	federal Endangered Species Act
PEIR	Long-Term Irrigated Lands Regulatory Program Final Program EIR (incorporates Draft)
FWQMP	Farm Water Quality Management Plans
GHGs	greenhouse gasses
GQMPs	groundwater quality management plans
HAPs	hazardous air pollutants
ILRP	Long-Term Irrigated Lands Regulatory Program
ILRP Framework Report	Recommended Irrigated Lands Regulatory Program Framework Staff Report, March 2011
MLD	most likely descendant
MMRP	Mitigation Monitoring and Reporting Program
NAHC	Native American Heritage Commission
NMFS	National Marine Fisheries Service
NOA	naturally occurring asbestos
NPS	nonpoint source
NPS Policy	State Water Board's Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program
NRHP	National Register of Historic Places
PAMs	polyacrylamides
PRC	California Public Resources Code
SB	Senate Bill
State Water Board	State Water Resources Control Board
TACs	toxic air contaminants
TMDLs	total maximum daily loads
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
WDRs	waste discharge requirements

Introduction

The California Environmental Quality Act (CEQA) (California Public Resources Code [PRC] sections 21002, 21002.1, 21081, 21081.5, 21100) and State CEQA Guidelines section 15091(a) provide that no public agency shall approve or carry out a project for which an environmental impact report (EIR) has been certified when one or more significant environmental effects of the project have been identified, unless the public agency makes one or more written findings for each of those significant effects, accompanied by a brief explanation of the rationale for each finding. These findings explain the disposition of each of the significant effects, including those that will be less than significant with mitigation. The findings must be supported by substantial evidence in the record.

There are three possible findings under section 15091(a). The public agency must make one or more of these findings for each significant effect. The section 15091(a) findings are:

1. Changes or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effect as identified in the Long-Term Irrigated Lands Regulatory Program (ILRP) Final Program EIR (PEIR) (ICF International 2011). Pub. Resources Code section 15091(a)(1).
2. Such changes or alterations are within the responsibility and jurisdiction of another public agency and not the agency making the finding. Such changes have been adopted by such other agency or can and should be adopted by such other agency. Pub. Resources Code section 15091(a)(2).
3. Specific economic, legal, social, technological, or other considerations, including provision of employment opportunities for highly trained workers, make infeasible the mitigation measures or project alternatives identified in the PEIR. Pub. Resources Code section 15091(a)(3).

Findings

The following findings discuss the significant direct, indirect, and cumulative effects of the program to be adopted, which is referred to throughout as Waste Discharge Requirements General Order for Growers within the Eastern San Joaquin River Watershed that are Members of the Third-party, Order R5-2012-0116 (Order). The Order is described in California Regional Water Quality Control Board, Central Valley Region Order R5-2012-0116 and supporting attachments, and is being approved consistent with the requirements of CEQA.

The requirements of this Order have been developed from the alternatives evaluated in the PEIR, and include regulatory elements contained within those alternatives. As described below (see Applicability of the Program EIR), there are no new effects that could occur or no new mitigation measures that would be required as a result of the Order that were not already identified and described in the PEIR. None of the conditions that would trigger the need to prepare a subsequent EIR under State CEQA Guidelines section 15162 exist with respect to the Order.

The findings adopted by the Central Valley Water Board address each of the Order's significant effects in their order of appearance in the PEIR certified for the Long-term ILRP. The findings also address the alternatives analyzed in the PEIR that were not selected as a basis for the Order.

For the purposes of section 15091, the documents and other materials that constitute the record of proceedings upon which the Central Valley Water Board based its decision are held by the Central Valley Water Board.

For findings made under section 15091(a)(1), required mitigation measures have been adopted for the Order. These mitigation measures are included in Attachment C of the Order. A Mitigation Monitoring and Reporting Program (MMRP) for these measures has been included in the Order's Monitoring and Reporting Program R5-2012-0116 (MRP).

Where mitigation measures are within the responsibility and jurisdiction of another public agency, the finding in section 15091(a)(2) should be made by the lead agency. In order to make the finding, the lead agency must find that the mitigation measures have been adopted by the other public agency or can and should be adopted by the other public agency.

Where the finding is made under section 15091(a)(3) regarding the infeasibility of mitigation measures or alternatives, the specific economic, legal, social, technological, or other considerations are described in a subsequent section.

Each of these findings must be supported by substantial evidence in the record.

The Order implements the Long-Term ILRP for irrigated lands in the Eastern San Joaquin River Watershed. The Order is intended to serve as a single implementing order in a series of orders that will implement the Long-Term ILRP for the entire Central Valley.

History of the Project

In 2003 the Central Valley Water Board adopted a conditional waiver of waste discharge requirements for discharges from irrigated agricultural lands. As part of the 2003 waiver program the Central Valley Water Board directed staff to prepare an Environmental Impact Report (EIR) for a long-term irrigated lands regulatory program (ILRP).

On 5 and 6 March 2003, CEQA scoping meetings were held in Fresno and Sacramento to solicit and receive public comment on the scope of the EIR as described in the Notice of Preparation (released on 14 February 2003). Following the scoping meetings, the Central Valley Water Board began preparation of the draft *Existing Conditions Report* (ECR) in 2004 to assist in defining the baseline condition for the EIR's environmental analyses. The draft ECR was circulated in 2006, public comment on the document was received and incorporated and it was released in 2008.[1]

In March and April 2008, the Central Valley Water Board conducted another series of CEQA scoping meetings to generate recommendations on the scope and goals of the long-term ILRP. Information was also gathered as to how stakeholders would like to be involved in development of the long-term program. Stakeholders indicated in these scoping meetings that they would like to be actively involved in developing the program. To address this interest, the Central Valley Water Board initiated the Long-term ILRP Stakeholder Advisory Workgroup. The Stakeholder Advisory Workgroup assisted in the development of long-term program goals and objectives and a range of alternatives to be considered in the PEIR.

[1] ICF Jones & Stokes. 2008. *Irrigated Lands Regulatory Program Existing Conditions Report*. December. (ICF J&S 05508.05.) Sacramento, CA. Prepared for the State Water Resources Control Board and Central Valley Regional Water Quality Control Board, Rancho Cordova, CA.

On 28 July 2010, the Central Valley Water Board, serving as the lead agency under CEQA, released the Draft PEIR for the long-term ILRP. The PEIR provides programmatic analysis of impacts resulting from the implementation of six regulatory alternatives. Five of the alternatives were developed with the Stakeholder Advisory Workgroup. The sixth alternative was developed by staff in an effort to fulfill program goals and objectives, meet applicable state policy and law, and minimize potentially adverse environmental impacts and economic effects. The PEIR does not analyze a preferred program alternative, but rather equally analyzes the environmental impacts of each alternative. Further discussion regarding the PEIR alternatives is included below in the section titled "Feasibility of Alternatives Considered in the EIR."

The Central Valley Water Board provided a 60-day period for submitting written comments on the Draft PEIR. In September 2010, Central Valley Water Board staff held public workshops in Chico, Modesto, Rancho Cordova, and Tulare to receive input. The Central Valley Water Board provided substantive responses to all written comments received on the Draft PEIR. The Central Valley Water Board provided public notice of the availability of the Final PEIR on 8 March 2011. The Central Valley Water Board certified the PEIR on 7 April 2011 (Central Valley Water Board Resolution R5-2011-0017). The requirements of the Order have been developed from the alternatives evaluated in the PEIR.

Applicability of the Program EIR

Pursuant to Guidelines Section 15168(c)(2), the Central Valley Water Board finds that the Order is within the scope of the project covered by the PEIR, and no new environmental document is required. There are no new effects that could occur or no new mitigation measures that would be required as a result of the Order that were not already identified and described in the PEIR. None of the conditions that would trigger the need to prepare a subsequent EIR under State CEQA Guidelines section 15162 exist with respect to the Order.

This Order represents one order in a series of orders that will be developed, based on the alternatives evaluated in the PEIR, for all irrigated agriculture within the Central Valley. The PEIR describes that potential environmental impacts of all six alternatives are associated with implementation of water quality management practices, construction of monitoring wells, and impacts to agriculture resources (e.g., loss of production of prime farmland) due to increased regulatory costs.

The PEIR describes and evaluates potential impacts of practices likely to be implemented to meet water quality and other management goals on irrigated lands. The representative water quality management practices analyzed include:

- Nutrient management
- Improved water management
- Tailwater recovery system
- Pressurized irrigation
- Sediment trap, hedgerow, or buffer
- Cover cropping or conservation tillage
- Wellhead protection

As discussed in Attachment A, the requirements of the Order have been developed from the alternatives evaluated in the PEIR. Because the Order includes regulatory elements that are also contained in the six alternatives analyzed in the PEIR, the actions by Members to protect water

quality in response to the requirements of this Order are expected to be similar to those described for Alternatives 2-6 of the PEIR (Alternative 1 does not include groundwater protection). Therefore, the requirements of this Order would lead to implementation of the above practices within the Eastern San Joaquin River Watershed to a similar degree as is described for Alternatives 2-6 analyzed in the PEIR.

Specifically, project-level review of the requirements in the Order has revealed that the requirements of the Order most closely resemble those described for Alternatives 2 and 4 of the PEIR, but do include elements from Alternatives 2-5. The Order contains the third-party lead entity structure, regional surface and groundwater management plans, and regional surface water quality monitoring approach similar to Alternative 2 of the PEIR; farm planning, management practices tracking, nutrient tracking, and regional groundwater monitoring similar to Alternative 4 of the PEIR; sediment and erosion control plan (under Alternative 3, "farm plan") recommendation/ certification requirements similar to Alternative 3; prioritized installation of groundwater monitoring wells similar to Alternative 5; and a prioritization system based on systems described by Alternatives 2 and 4.

Impact Findings

Cultural Resources

Impact CUL-1. Physical destruction, alteration, or damage of cultural resources from implementation of management practices (Less than Significant with Mitigation)

Finding

As specified in section 15091(a)(1) of the State CEQA Guidelines, changes or alterations have been required in, or incorporated into, the Order that avoid or substantially lessen the significant environmental effect as identified in the PEIR.

Rationale for Finding

Upon implementation of the Order, Members may implement a variety of management practices that include physical and operational changes to agricultural land in the Order's regulated area. Such management practices may occur near cultural resources that are historically significant and eligible for listing in the California Register of Historic Resources (CRHR) or the National Register of Historic Places (NRHP). Implementation of these practices may lead to physical demolition, destruction, relocation, or alteration of cultural resources.

The location, timing, and specific suite of management practices to be chosen by Members to improve water quality are not known at this time. This impact is considered significant. **Mitigation Measure CUL-MM-1: Avoid Impacts to Cultural Resources** has been incorporated into the Order to reduce this impact to a less-than-significant level. Mitigation measures are included at the end of the *Impact Findings* section.

Impact CUL-2. Potential Damage to Cultural Resources from Construction Activities and Installation of Groundwater Monitoring Wells (Less than Significant with Mitigation)

Finding

As specified in section 15091(a)(1) of the State CEQA Guidelines, changes or alterations have been required in, or incorporated into, the Order that avoid or substantially lessen the significant environmental effect as identified in the PEIR.

Rationale for Finding

Under the Order, construction impacts would result from implementation of management practices that require physical changes, including, installation of groundwater monitoring wells. The location of monitoring wells, as well as the location, timing, and specific suite of management practices to be selected by Members are not known at this time, and will not be defined until the need for additional monitoring wells is established. This impact is considered significant. Mitigation **Measure CUL-MM-1: Avoid Impacts to Cultural Resources** has been incorporated into the Order to reduce this impact to a less-than-significant level. Mitigation measures are included at the end of the *Impact Findings* section.

Noise

Impact NOI-1. Exposure of Sensitive Land Uses to Noise from Construction Activities in Excess of Applicable Standards (Responsibility of Other Agencies)

Finding

As specified in section 15091(a)(2) of the State CEQA Guidelines, implementation of the mitigation measures for this impact is within the responsibility and jurisdiction of other public agencies that can and should implement the measures.

Rationale for Finding

Under the Order, construction noise impacts would result from implementation of management practices that require the use of heavy-duty construction equipment. Because management practices are a function of crop type and economics, it cannot be determined whether the management practices selected under this alternative would change relative to existing conditions. Accordingly, it is not possible to determine construction-related effects based on a quantitative analysis.

Noise levels from anticipated heavy-duty construction equipment are expected to range from approximately 55 to 88 A-weighted decibels (dBA) at 50 feet. These levels would be short term and would attenuate as a function of distance from the source. Noise from construction equipment operated within several hundred feet of noise-sensitive land uses has the potential to exceed local noise standards. This is considered a potentially significant impact. Implementation of **Mitigation Measure NOI-MM-1: Implement Noise-Reducing Construction Practices**, which is described at the end of the *Impact Findings* section, would reduce this impact to a less-than-significant level. Mitigation Measure NOI-MM-1 is within the responsibility and jurisdiction of local agencies, who can and should implement these measures.

Impact NOI-2. Exposure of Sensitive Land Uses to Noise from Operational Activities in Excess of Applicable Standards (Responsibility of Other Agencies)

Finding

As specified in section 15091(a)(2) of the State CEQA Guidelines, implementation of the mitigation measures for this impact is within the responsibility and jurisdiction of other public agencies that can and should implement the measures.

Rationale for Finding

Under the Order, a third-party group would perform regional surface water and groundwater quality monitoring. Surface and groundwater monitoring under the Order would be similar to the regional monitoring described for Alternatives 2 and 4 of the PEIR. The PEIR provides that operational noise from vehicle trips associated with water quality sampling for these alternatives is expected to be minimal.

Operation of new well pumps as part of tailwater recovery systems may result in increased noise levels relative to existing conditions. Noise generated from individual well pumps would be temporary and sporadic. Information on the types and number of pumps, as well as the number and distances of related vehicle trips, is currently unavailable.

Depending on the type of management practice selected, the Order also may result in noise benefits relative to existing conditions. For example, improved irrigation management may reduce the amount of time that pressurized pump generators are used. Enhanced nutrient application may minimize the number of tractors required to fertilize or plow a field. Removing these sources of noise may mediate any increases related to the operation of new pumps. However, in the absence of data, a quantitative analysis of noise impacts related to operations of the Order is not possible. Potential noise from unenclosed pumps located close to noise-sensitive land uses could exceed local noise standards. This is considered a potentially significant impact. Implementation of **Mitigation Measures NOI-MM-1: Implement Noise-Reducing Construction Practices** and **NOI-MM-2: Reduce Noise Generated by Individual Well Pumps**, which are described at the end of the *Impact Findings* section, should reduce this impact to a less-than-significant level. Mitigation measures NOI-MM-1and NOI-MM-2 are within the responsibility and jurisdiction of local agencies, who can and should implement these measures.

Air Quality

Impact AQ-1. Generation of Construction Emissions in Excess of Local Air District Thresholds (Responsibility of Other Agencies)

Finding

As specified in section 15091(a)(2) of the State CEQA Guidelines, implementation of the mitigation measures for this impact is within the responsibility and jurisdiction of other public agencies that can and should implement the measures.

Rationale for Finding

Under the Order, construction impacts would result from implementation of management practices that require physical changes or the use of heavy-duty construction equipment. It is difficult to

determine how management practices selected under this Order would change relative to existing conditions. Accordingly, it is not possible to determine construction-related effects based on a quantitative analysis. However, under the Order there would be selection and implementation of additional management practices to meet surface and groundwater quality goals. Consequently, implementation of the Order may result in increased criteria pollutant emissions from construction activities relative to existing conditions.

Construction emissions associated with the Order would result in a significant impact if the incremental difference, or increase, relative to existing conditions exceeds the applicable air district thresholds shown in Table 5.5-2 of the PEIR. Management practices with the greatest potential for emissions include those that break ground or move earth matter, thus producing fugitive dust, and those that require the use of heavy-duty construction equipment (e.g., backhoes or bulldozers), thus producing criteria pollutants from exhaust. The management practices fitting this description include sediment trap, hedgerow, or buffer; pressurized irrigation; and tailwater recovery systems.

While it is anticipated that any emissions resulting from construction activities would be minuscule on a per-farm basis, in the absence of a quantitative analysis, data are insufficient to determine whether emissions would exceed the applicable air district thresholds. Consequently, this is considered a potentially significant impact. Implementation of **Mitigation Measure AQ-MM-1: Apply Applicable Air District Mitigation Measures to Reduce Construction Emissions below the District Thresholds**, which is described at the end of the *Impact Findings* section, should reduce this impact to a less-than-significant level. Mitigation Measure AQ-MM-1 is within the responsibility and jurisdiction of local air districts, who can and should implement these measures.

Impact AQ-2. Generation of Operational Emissions in Excess of Local Air District Thresholds (Responsibility of Other Agencies)

Finding

As specified in section 15091(a)(2) of the State CEQA Guidelines, implementation of the mitigation measures for this impact is within the responsibility and jurisdiction of other public agencies that can and should implement the measures.

Rationale for Finding

Under the Order, operational emissions would result from vehicle trips made by the third-party groups to perform surface water and groundwater monitoring, and from new diesel-powered pumps installed as part of tailwater recovery systems.

Any new emissions generated under the Order are not expected to be substantial or to exceed applicable air district thresholds. In addition, they may be moderated by emissions benefits related to management practices that reduce irrigation and cover crops (see Table 5.5-8 of the PEIR). However, the difference in emissions relative to existing conditions is not known at this time and therefore cannot be compared to the significance criteria. This is considered a potentially significant impact. Implementation of **Mitigation Measure AQ-MM-2: Apply Applicable Air District Mitigation Measures to Reduce Operational Emissions below the District Thresholds**, which is described at the end of the *Impact Findings* section, should reduce this impact to a less-than-significant level. Mitigation Measure AQ-MM-2 is within the responsibility and jurisdiction of local air districts, who can and should implement these measures.

Impact AQ-3. Elevated Health Risks from Exposure of Nearby Sensitive Receptors to Toxic Air Contaminants/Hazardous Air Pollutants (TACS/HAPs) (Responsibility of Other Agencies)

Finding

As specified in section 15091(a)(2) of the State CEQA Guidelines, implementation of the mitigation measures for this impact is within the responsibility and jurisdiction of other public agencies that can and should implement the measures.

Rationale for Finding

Toxic air contaminants (TACs) and hazardous air pollutants (HAPs) resulting from the Order include diesel particulate matter (DPM) from diesel construction equipment and new pumps, pesticides/fertilizers, and asbestos. Sensitive receptors near Members could be affected by these sources.

As discussed in Chapter 3 of the PEIR, one of the goals of the nutrient management and conservation tillage management practices is to reduce the application of pesticides/fertilizers. Because the Order would result in greater likelihood of these management practices being implemented, it is reasonable to assume that pesticides/fertilizers—and thus the potential for exposure to these chemicals—would be reduced under the Order.

It is expected that construction emissions may increase relative to existing conditions, thus resulting in minor increases of DPM. Elevated levels of construction in areas where naturally occurring asbestos (NOA) is common may also increase the likelihood of exposure to asbestos. New diesel-powered pumps also would increase DPM emissions relative to existing conditions. This is considered a potentially significant impact. Implementation of **Mitigation Measures AQ-MM-1: Apply Applicable Air District Mitigation Measures to Reduce Construction Emissions below the District Thresholds**, **AQ-MM-2: Apply Applicable Air District Mitigation Measures to Reduce Operational Emissions below the District Thresholds**, and **AQ-MM-3: Apply Applicable Air District Mitigation Measures to Reduce TAC/HAP Emissions**, which are described at the end of the *Impact Findings* section, should reduce this impact to a less than significant level. Mitigation Measures AQ-MM-1, AQ-MM-2, and AQ-MM-3 are within the responsibility and jurisdiction of local air districts, who can and should implement these measures.

Vegetation and Wildlife

Impact BIO-1. Loss of Downstream Habitat from Reduced Field Runoff (Less than Significant with Mitigation)

Finding

As specified in section 15091(a)(1) of the State CEQA Guidelines, changes or alterations have been required in, or incorporated into, the Order that avoid or substantially lessen the significant environmental effect as identified in the PEIR.

Rationale for Finding

Under the Order, management practices that reduce field runoff would result in beneficial impacts on water quality but may adversely affect downstream wildlife and vegetation that depend on

agricultural surface runoff. These practices cause water to be recirculated or used at an agronomic rate, resulting in a minimal amount of agricultural runoff. This would result in a net loss of water entering waterways and potential habitat loss along runoff ditches and downstream water bodies.

Such habitat would be seasonally present, available only during times of irrigation, and unlikely to support sensitive communities or special-status plants. While reduced runoff leads to, or is the result of, reduced surface water diversions to fields, some regions rely largely on groundwater to irrigate. While it is anticipated that the loss of sensitive communities or special-status plants resulting from reduced runoff would be small, if any, data are insufficient to determine how much loss would occur. Consequently, this is considered a potentially significant impact. **Mitigation Measure BIO-MM-2: Avoid and Minimize Impacts on Sensitive Biological Resources** has been incorporated into the Order to reduce this impact to a less-than-significant level. Mitigation measures are included at the end of the *Impact Findings* section.

Impact BIO-3. Potential Loss of Sensitive Natural Communities and Special-Status Plants from Construction Activities (Less than Significant with Mitigation)

Finding

As specified in section 15091(a)(1) of the State CEQA Guidelines, changes or alterations have been required in, or incorporated into, the Order that avoid or substantially lessen the significant environmental effect as identified in the PEIR.

Rationale for Finding

Under the Order, construction impacts would result from implementation of management practices that require physical changes, such as construction of water and sediment control basins, temporary water checks, tailwater return systems, vegetated drain systems, windbreaks, wellhead protection berms, and filter strips. It is difficult to determine to what extent management practices selected under the Order would change relative to existing conditions; thus, it is not possible to quantify any construction-related effects. However, it is logical to assume that implementation of the Order would result in selection of more management practices to meet water quality goals. Consequently, implementation of the Order may result in effects on vegetation from construction activities.

In general, management practices would be implemented on existing agricultural lands and managed wetlands, which are unlikely to support native vegetation or special-status plants. However, construction that directly or indirectly affects natural vegetation communities adjacent to existing irrigated lands, particularly annual grasslands with inclusions of seasonal wetlands or vernal pools and riparian vegetation, could result in loss of sensitive wetland communities or special-status plants growing in the uncultivated or unmanaged areas. While it is anticipated that the loss of sensitive communities or special-status plants resulting from construction activities would be small, if any, data are insufficient to determine how much loss would occur. Consequently, this is considered a potentially significant impact. **Mitigation Measure BIO-MM-1: Avoid and Minimize Impacts on Sensitive Biological Resources** has been incorporated into the Order to reduce this impact to a less-than-significant level. Mitigation measures are described at the end of the *Impact Findings* section.

Impact BIO-4. Potential Loss of Wetland Communities due to Loss of Existing Sedimentation Ponds (Less than Significant with Mitigation)

Finding

As specified in section 15091(a)(1) of the State CEQA Guidelines, changes or alterations have been required in, or incorporated into, the Order that avoid or substantially lessen the significant environmental effect as identified in the PEIR.

Rationale for Finding

Under the Order, the assumed decrease in the use of surface water management practices that may be harmful to groundwater could result in abandonment or fill of tailwater sedimentation ponds in areas that currently percolate water to groundwater basins. Although they are not natural features, sedimentation ponds can develop vegetation communities that support wetland species, depending on the specific hydrologic regime of individual ponds. Ponds that hold water intermittently or seasonally may support plant species adapted to seasonal wetland conditions, and ponds that are continually flooded may support emergent vegetation adapted to permanent wetland conditions. Thus, the loss of these ponds could result in drying of artificially created wetlands and an indirect loss of wetland habitat. The loss of wetland communities resulting from abandonment or fill of retention ponds would be small but cannot be quantified. It is also important to note that implementation of one of the potential management practices under the Order—installation of tailwater return systems—would result in creation of tailwater ponds that could develop the same wetland characteristics as the abandoned or filled sedimentation ponds. Creation of new tailwater ponds could result in no net loss or potentially an increase in these wetland communities. However, the final extent of the tailwater ponds that could be created under the Order cannot be quantified. Consequently, the loss of existing sedimentation ponds is considered a potentially significant impact. **Mitigation Measure BIO-MM-2: Determine Extent of Wetland Loss and Compensate for Permanent Loss of Wetlands** has been incorporated into the Order to reduce this impact to a less-than-significant level. Mitigation measures are described at the end of the *Impact Findings* section.

Impact BIO-5. Impacts to Special-Status Wildlife Species due to Loss of Existing Sedimentation Ponds (Less than Significant with Mitigation)

Finding

As specified in section 15091(a)(1) of the State CEQA Guidelines, changes or alterations have been required in, or incorporated into, the Order that avoid or substantially lessen the significant environmental effect as identified in the PEIR.

Rationale for Finding

Under the Order, the assumed decrease in the use of surface water management practices that may be harmful to groundwater could result in abandonment or fill of tailwater sedimentation ponds in areas that currently percolate water to groundwater basins. Although they are not natural features, sedimentation ponds can provide habitat for special-status wildlife species. The banks of these ponds could support habitat for special-status burrowing wildlife species, including San Joaquin kit fox and western burrowing owl. Ponds that hold water intermittently or seasonally may support special-status wildlife species adapted to seasonal wetland conditions, such as vernal pool fairy shrimp and vernal pool tadpole shrimp, California red-legged frog, and California tiger salamander,

depending on the proximity of these ponds to natural habitats. The ponds also provide foraging habitat for many bird species. Ponds that hold water intermittently provide foraging habitat for wading birds, and ponds that are continually flooded may support foraging and nesting habitat for waterfowl. The abandonment or fill of retention ponds would be small and cannot be quantified but could affect wildlife species that are dependent on them. However, the creation of new tailwater ponds could mitigate part or all of this impact. Because the extent of new tailwater ponds cannot be quantified, the loss of existing sedimentation ponds is considered a potentially significant impact. **Mitigation Measure BIO-MM-1: Avoid and Minimize Impacts on Sensitive Biological Resources** has been incorporated into the Order to reduce this impact to a less-than-significant level. Mitigation measures are described at the end of the *Impact Findings* section.

Impact BIO-6. Loss of Sensitive Natural Communities and Special-Status Plants from Construction Activities and Installation of Groundwater Monitoring Wells (Less than Significant with Mitigation)

Finding

As specified in section 15091(a)(1) of the State CEQA Guidelines, changes or alterations have been required in, or incorporated into, the Order that avoid or substantially lessen the significant environmental effect as identified in the PEIR.

Rationale for Finding

Under the Order, construction impacts would result from installation of groundwater monitoring wells. The placement of monitoring wells cannot be predetermined; consequently, the potential impacts on sensitive natural communities and special-status plants cannot be quantified.

In general, management practices would be implemented on existing agricultural lands and managed wetlands, resulting in a less-than-significant impact. It was assumed that groundwater monitoring well placement also could be primarily limited to agricultural land and non-sensitive habitat. However, if construction related to installation of groundwater monitoring wells required changes to managed wetlands or to natural vegetation communities that are adjacent to existing irrigated lands, there would be a potential for loss of vegetation in sensitive wetland communities or loss of special-status plants growing in the uncultivated or unmanaged areas. While it is anticipated that the loss of sensitive communities or special-status plants resulting from construction activities would be small, if any, data are insufficient to determine how much loss would occur. Consequently, this is considered a potentially significant impact. **Mitigation Measure BIO-MM-1: Avoid and Minimize Impacts on Sensitive Biological Resources** has been incorporated into the Order to reduce this impact to a less-than-significant level. Mitigation measures are described at the end of the *Impact Findings* section.

Impact BIO-7. Loss of Special-Status Wildlife from Construction Activities and Installation of Groundwater Monitoring Wells (Less than Significant with Mitigation)

Finding

As specified in section 15091(a)(1) of the State CEQA Guidelines, changes or alterations have been required in, or incorporated into, the Order that avoid or substantially lessen the significant environmental effect as identified in the PEIR.

Rationale for Finding

Under the Order, construction impacts would result from installation of groundwater monitoring wells. The placement of monitoring wells cannot be predetermined; consequently, the potential impacts on special-status wildlife species and their habitat cannot be quantified.

In general, management practices would be implemented on existing agricultural lands and managed wetlands, resulting in a less-than-significant impact. It was assumed that placement of groundwater monitoring wells also could be limited primarily to agricultural land and non-sensitive habitat. However, construction of groundwater monitoring wells that requires changes to managed wetlands or to natural vegetation communities adjacent to existing irrigated lands could result in a loss of special-status wildlife species occurring in the uncultivated or unmanaged areas. While it is anticipated that the loss of special-status wildlife species resulting from construction activities would be small, if any, data are insufficient to determine how much loss would occur. Consequently, this is considered a potentially significant impact. **Mitigation Measure BIO-MM-1: Avoid and Minimize Impacts on Sensitive Biological Resources** has been incorporated into the Order to reduce this impact to a less-than-significant level. Mitigation measures are described at the end of the *Impact Findings* section.

Fisheries

Impact FISH-2. Temporary Loss or Alteration of Fish Habitat during Construction of Facilities for Management Practices (Less than Significant with Mitigation)

Finding

As specified in section 15091(a)(1) of the State CEQA Guidelines, changes or alterations have been required in, or incorporated into, the Order that avoid or substantially lessen the significant environmental effect as identified in the PEIR.

Rationale for Finding

Under the Order, construction impacts would result from implementation of management practices that require physical changes to lands in the Eastern San Joaquin River Watershed. These physical changes primarily include erosion and sediment controls with features such as construction of water and sediment control basins, temporary water checks, tailwater return systems, vegetated drain systems, windbreaks, wellhead protection berms, and filter strips. Physical changes may be associated with implementation of other management practices, such as construction of filter ditches for pesticide management. Installation of facilities for management practices such as pressurized irrigation and sediment traps is unlikely to significantly exceed the baseline disturbance that occurs during routine field preparation. Construction of features associated with management practices may temporarily reduce the amount or quality of existing fish habitat in certain limited circumstances (e.g., by encroachment onto adjacent water bodies, removal of riparian vegetation, or reduction in water quality—such as increases in sediment runoff during construction). It is difficult to determine whether the management practices selected under the Order would change relative to existing conditions, and it is not possible to quantify any construction-related effects. Implementation of the Order may result in effects on fish habitat from construction activities related to management practices.

While it is anticipated that the loss of fish habitat resulting from construction activities would be small, if any, data are insufficient to determine how much loss would occur. Consequently, this is considered a potentially significant impact. **Mitigation Measure FISH-MM-1: Avoid and Minimize Impacts to Fish and Fish Habitat** has been incorporated into the Order to reduce this impact to a less-than-significant level. Mitigation measures are described at the end of the *Impact Findings* section.

Impact FISH-3. Permanent Loss or Alteration of Fish Habitat during Construction of Facilities for Management Practices (Less than Significant with Mitigation)

Finding

As specified in section 15091(a)(1) of the State CEQA Guidelines, changes or alterations have been required in, or incorporated into, the Order that avoid or substantially lessen the significant environmental effect as identified in the PEIR.

Rationale for Finding

In some cases, permanent loss of fish habitat may occur as a result of construction required for implementation of management practices under the Order. Some of the impact may be due to loss of structural habitat (e.g., vegetation) whereas loss of dynamic habitat (e.g., wetted habitat) could be an issue where tailwater augments natural flows or makes seasonal streams into perennial systems. This may be of concern in areas where tailwater return flows are composed mostly of pumped groundwater. Because the extent of the loss is not known, the impact is considered potentially significant. **Mitigation Measure FISH-MM-1: Avoid and Minimize Impacts to Fish and Fish Habitat** has been incorporated into the Order to reduce this impact to a less-than-significant level. Mitigation measures are described at the end of the *Impact Findings* section.

Impact FISH-4. Toxicity to Fish or Fish Prey from Particle-Coagulant Water Additives (Less than Significant with Mitigation)

Finding

As specified in section 15091(a)(1) of the State CEQA Guidelines, changes or alterations have been required in, or incorporated into, the Order that avoid or substantially lessen the significant environmental effect as identified in the PEIR.

Rationale for Finding

Under the Order, polyacrylamides (PAMs) may be applied to reduce erosion and sediment runoff and thereby improve water quality (Sojka et al. 2000). Anionic PAMs are safe to aquatic life when used at prescribed rates (Sojka et al. 2000). Because neutral and cationic PAMs may be toxic to fish and their prey (Sojka et al. 2000; Mason et al. 2005), application of anionic PAMs is recommended in areas with sensitive fish species (Mason et al. 2005). This impact is considered potentially significant. **Mitigation Measure FISH-MM-2: Educate Growers on the Use of Polyacrylamides (PAMs) for Sediment Control** has been incorporated into the Order to reduce this impact to a less-than-significant level. Mitigation measures are described at the end of the *Impact Findings* section.

Impact FISH-6. Temporary Loss or Alteration of Fish Habitat during Construction of Facilities for Management Practices and Groundwater Monitoring Wells (Less than Significant with Mitigation)

Finding

As specified in section 15091(a)(1) of the State CEQA Guidelines, changes or alterations have been required in, or incorporated into, the Order that avoid or substantially lessen the significant environmental effect as identified in the PEIR.

Rationale for Finding

This impact is essentially the same as Impact FISH-2 except that, in addition to the temporary loss or alteration of habitat due to construction of management practices, further loss or alteration of fish habitat may occur from construction of groundwater monitoring wells under the Order. Accordingly, the impact is considered potentially significant. **Mitigation Measure FISH-MM-1: Avoid and Minimize Impacts to Fish and Fish Habitat** has been incorporated into the Order to reduce this impact to a less-than-significant level. Mitigation measures are described at the end of the *Impact Findings* section.

Impact FISH-7. Permanent Loss or Alteration of Fish Habitat during Construction of Facilities for Management Practices and Groundwater Monitoring Wells (Less than Significant with Mitigation)

Finding

As specified in section 15091(a)(1) of the State CEQA Guidelines, changes or alterations have been required in, or incorporated into, the Order that avoid or substantially lessen the significant environmental effect as identified in the PEIR.

Rationale for Finding

This impact is essentially the same as Impact FISH-3 except that, in addition to the temporary loss or alteration of habitat due to construction of features associated with management practices, permanent loss or alteration of fish habitat may occur from construction of groundwater monitoring wells under the Order. Accordingly, the impact is considered potentially significant. **Mitigation Measure FISH-MM-1: Avoid and Minimize Impacts to Fish and Fish Habitat** has been incorporated into the Order to reduce this impact to a less-than-significant level. Mitigation measures are described at the end of the *Impact Findings* section.

Agriculture Resources

Impact AG-1. Conversion of Prime Farmland, Unique Farmland, and Farmland of Statewide Importance to Nonagricultural Use (Significant and Unavoidable)

Finding

Pursuant to State CEQA Guidelines section 15091(a)(1), changes or alterations have been required in, or incorporated into, the Order, but these changes or alterations are not sufficient to reduce the significant environmental effect to less than significant as identified in the PEIR. As specified in section 15091(a)(3) of the State CEQA Guidelines, specific considerations make mitigation and

alternatives infeasible. A statement of overriding consideration has been adopted, as indicated in the Statement of Overriding Considerations Supporting Approval of the Order presented below.

Rationale for Finding

Under the Order, irrigated lands operations would be required to achieve surface and groundwater quality goals, and to conduct monitoring and reporting to verify such achievement. It is anticipated many or most operations will implement new management practices to achieve these surface and groundwater quality goals. Consequently, operations under the Order will experience increased operational costs due to increased monitoring and reporting activities, as well as increased management practices, if such practices are needed to meet goals. Where such increased costs make agricultural operations unlikely or unable to continue, agriculture lands may be at risk of conversion to nonagricultural use, resulting in a significant and unavoidable impact to prime and/or unique farmland, as well as farmland of statewide importance.

As described in Attachment A of the Order under "California Water Code Sections 13141 and 13241," the Order is based mainly on components of Alternatives 2-5 of the PEIR. It follows that, because the costs of the Order are similar to the costs of Alternative 4, economic impacts of the Order, including those causing potential loss of Important Farmland, may be estimated using the analysis of Alternative 4.

The PEIR describes that, under Alternative 1, described as full implementation of the previous conditional waiver program, 142 thousand acres of Important Farmland within the entire San Joaquin River Basin potentially would be removed from production. It is estimated that under Alternative 4, an additional 10 thousand acres of Important Farmland within the San Joaquin River Basin potentially would be removed from production because of the increased costs (total of 152 thousand acres). Applying the ratio of irrigated lands within the Eastern San Joaquin River Watershed that would be regulated under this Order (est. 835,000 acres) to the total irrigated lands within the San Joaquin River Basin (est. 2,126,028 acres, Table 3-3, Economics Report),[2] it is estimated that approximately 56 thousand acres of Important Farmland potentially would be removed from production under Alternative 1 (full implementation of the current program). Under the Order (estimated using Alternative 4), an additional 4,100 acres of Important Farmland potentially would be removed from production because of increased costs (total of 60 thousand acres). It is unlikely that all of this acreage would be converted to a nonagricultural use, but it is reasonable to assume that some unknown quantity would be impacted.

Because implementation of the Order potentially would result in conversion of Prime Farmland, Unique Farmland, and Farmland of Statewide Importance to nonagricultural use, this impact is considered significant. **Mitigation Measure AG-MM-1: Assist the Agricultural Community in Identifying Sources of Financial Assistance that would Allow Growers to Keep Important Farmland in Production** has been incorporated into the Order to reduce the magnitude of the impact, but no feasible mitigation measures have been identified that would reduce this impact to a less-than-significant level. Mitigation measures are described at the end of the *Impact Findings* section.

[2] ICF International 2010.

Cumulative Impacts

Cumulative Cultural Resource Impacts (Less than Cumulatively Considerable with Mitigation)

Finding

As specified in section 15091(a)(1) of the State CEQA Guidelines, changes or alterations have been required in, or incorporated into, the Order that avoid or substantially lessen the significant cumulative environmental effect as identified in the PEIR.

Rationale for Finding

Use of ground-disturbing management practices under the Long-term ILRP alternatives could result in cumulatively considerable effects to cultural resources in concert with other, non-program-related agricultural enterprises and nonagricultural development in the program area. **Mitigation Measure CUL-MM-1: Avoid Impacts to Cultural Resources** has been incorporated into the Order to reduce the Order's contribution to this impact to a level that is not cumulatively considerable. The mitigation measure calls for identification of cultural resources and minimization of impacts to identified resources. Mitigation measures are described at the end of the *Impact Findings* section.

Cumulative Climate Change Impacts (Significant and Unavoidable)

Finding

Pursuant to CEQA Guidelines section 15091(a)(1), changes or alterations have been required in, or incorporated into, the Order, but these changes or alterations are not sufficient to reduce the significant environmental effect to less than significant as identified in the PEIR. As specified in section 15091(a)(2) of the State CEQA Guidelines, implementation of **Mitigation Measure CC-MM-1: Apply Applicable Air District Mitigation Measures to Reduce Construction and Operational GHG Emissions** for this impact is within the responsibility and jurisdiction of other public agencies that can and should enforce the implementation of these measures. Further, as specified in section 15091(a)(3) of the Guidelines, specific considerations make mitigation and alternatives infeasible. A statement of overriding consideration has been adopted, as indicated in the Statement of Overriding Considerations Supporting Approval of the Order presented below.

Rationale for Finding

Unlike criteria pollutant impacts, which are local and regional, climate change impacts occur at a global level. The relatively long lifespan and persistence of GHGs (as shown in Table 5.6-1 of the PEIR) require that climate change be considered a cumulative and global impact. As discussed in the PEIR, it is unlikely that any increase in global temperature or sea level could be attributed to the emissions resulting from a single project. Rather, it is more appropriate to conclude that, under the Order, GHG emissions would combine with emissions across California, the United States, and the globe to cumulatively contribute to global climate change.

Given the magnitude of state, national, and international GHG emissions (see Tables 5.6-2 through 5.6-4 of the PEIR), climate change impacts from implementation of the Order likely would be negligible. However, scientific consensus concludes that, given the seriousness of climate change, small contributions of GHGs may be cumulatively considerable. Because it is unknown to what extent, if any, climate change would be affected by the incremental GHG emissions produced by the

Order, the impact to climate change is considered cumulatively considerable. **Mitigation Measure CC-MM-1: Apply Applicable Air District Mitigation Measures to Reduce Construction and Operational GHG Emissions** is within the responsibility and jurisdiction of local agencies, who can and should implement these measures. **Mitigation Measure CC-MM-2: Apply Applicable California Attorney General Mitigation Measures to Reduce Construction and Operational GHG Emissions** has been incorporated into the Order; these measures will result in lower GHG emissions levels than had they not been incorporated, but they will not completely eliminate GHG emissions that could result from the Order. No feasible mitigation measures have been identified that would reduce this impact to a less-than-significant level. Mitigation measures are described at the end of the *Impact Findings* section.

Cumulative Vegetation and Wildlife Impacts (Significant and Unavoidable)

Finding

Pursuant to State CEQA Guidelines section 15091(a)(1), changes or alterations have been required in, or incorporated into, the Order, but these changes or alterations are not sufficient to reduce the significant environmental effect to less than significant as identified in the PEIR. As specified in section 15091(a)(3) of the State CEQA Guidelines, specific considerations make mitigation and alternatives infeasible. A statement of overriding consideration has been adopted, as indicated in the Statement of Overriding Considerations Supporting Approval of the Order presented below.

Rationale for Finding

The Central Valley of California has been subjected to extensive human impacts from land conversion, water development, population growth, and recreation. These impacts have altered the physical and biological integrity of the Central Valley, causing loss of native riparian vegetation along river systems, loss of wetlands, and loss of native habitat for plant and wildlife species. **Mitigation Measures BIO-MM-1: Avoid and Minimize Impacts on Sensitive Biological Resources** and **BIO-MM-2: Determine Extent of Wetland Loss and Compensate for Permanent Loss of Wetlands** have been incorporated into the Order to reduce the severity of these effects. The measures are sufficient to mitigate any program-related impacts to rare or endangered plant or wildlife species, and to habitat for these species; however, the cumulative impact of the reduction in quality habitat and the take of individual listed plants or wildlife species is potentially cumulatively considerable. Mitigation measures are described at the end of the *Impact Findings* section.

Cumulative Fish Impacts (Less than Cumulatively Considerable with Mitigation)

Finding

As specified in section 15091(a)(1) of the State CEQA Guidelines, changes or alterations have been required in, or incorporated into, the Order that avoid or substantially lessen the significant cumulative environmental effect as identified in the PEIR.

Rationale for Finding

The ongoing impacts of impaired water quality from irrigated lands are likely to cumulatively affect fish, in combination with contaminants that remain in the Order's coverage area from past activities. Such activities include mining and past use of pesticides such as DDT that remain within sediments. Because many of the existing effects discussed in the section "Existing Effects of Impaired Water

Quality on Fish" are cumulative, it is difficult to determine the relative contribution of irrigated lands and other sources. For example, low dissolved oxygen (DO) in the Stockton Deepwater Ship Channel is a result of contamination from upstream nonpoint sources (possibly including agricultural runoff) and discharges from the Stockton sewage treatment plant (Lehman et al. 2004; Central Valley Regional Water Quality Control Board 2005). Application of pesticides to nonagricultural lands such as urban parks and the resultant contaminant runoff also cumulatively contribute to impacts of inputs from irrigated lands.

Given the U.S. Environmental Protection Agency's (EPA's) ongoing federal Endangered Species Act (ESA) consultation process for pesticides as a result of recent court orders, it is reasonably foreseeable that further reasonable and prudent measures would be required by the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) that would improve water quality within the Eastern San Joaquin River Watershed. Revision of water quality control plans and total maximum daily loads (TMDLs) also can be expected to improve water quality. These and other measures, in combination with the likely beneficial effects of the Order, suggest that the cumulative effects of the Order are not cumulatively considerable with implementation of mitigation measures. **Mitigation Measures FISH-MM-1: Avoid and Minimize Impacts to Fish and Fish Habitat** and **FISH-MM-2: Educate Growers on the Use of Polyacrylamides (PAMs) for Sediment Control** have been incorporated into the Order to reduce these impacts to a less than cumulatively considerable level. Mitigation measures are described at the end of the *Impact Findings* section.

Cumulative Agriculture Resources Impacts (Significant and Unavoidable)

Finding

Pursuant to CEQA Guidelines section 15091(a)(1) , changes or alterations have been required in, or incorporated into, the Order, but these changes or alterations are not sufficient to reduce the significant environmental effect to less than significant as identified in the PEIR. As specified in section 15091(a)(3) of the Guidelines, specific considerations make mitigation and alternatives infeasible. A statement of overriding consideration has been adopted, as indicated in the Statement of Overriding Considerations Supporting Approval of the Order presented below.

Rationale for Finding

Since 1984, the average biennial net conversion of prime and unique farmland, and farmlands of statewide importance in California has been 28,344 acres (California Department of Conservation, Division of Land Resource Protection 2008). However, conversion has increased substantially since 2000, with an average biennial net conversion of 114,003 acres (California Department of Conservation, Division of Land Resource Protection 2008). During the 2002–2004 period, prime farmland, unique farmland, and farmland of statewide importance was reduced by 133,024 acres (California Department of Conservation, Division of Land Resource Protection 2006). The trend continued during the 2004–2006 period, with a net reduction of 125,495 acres (California Department of Conservation, Division of Land Resource Protection 2008).

While conversion of important farmland may not continue at the accelerated rate of the past 10 years due to decreased demand for new housing, it is reasonably foreseeable that it will continue at a rate comparable to that seen since 1984. Given the magnitude of important farmland conversion expected from implementation of the Order, the Order could result in cumulatively considerable impacts to agriculture resources. **Mitigation Measure AG-MM-1** has been incorporated into the Order to reduce the severity of these effects. While implementation of AG-

MM-1 could reduce these impacts to a level that is not a cumulatively considerable contribution to this statewide impact, such a reduction cannot be quantified. As such, the Order's contribution to this impact is potentially cumulatively considerable. No feasible mitigation measures have been identified that would reduce this impact to a less-than-significant level. Mitigation measures are described at the end of the *Impact Findings* section.

Mitigation Measures

Cultural Resources

Mitigation Measure CUL-MM-1: Avoid Impacts to Cultural Resources

The measure described below will reduce the severity of impacts on significant cultural resources, as defined and described in sections 5.3.1 and 5.3.3 of the PEIR. Avoidance of such impacts also can be achieved when Members choose the least impactful management practices that will meet the Order's water quality improvement goals and objectives. Note that these mitigation measures may not be necessary in cases where no ground-disturbing activities would be undertaken as a result of implementation of the Order.

Although cultural resource inventories and evaluations typically are conducted prior to preparation of a CEQA document, the size of the Order's coverage area and the lack of specificity regarding the location and type of management practices that would be implemented following adoption of the Order rendered conducting inventories prior to release of the draft Order untenable. Therefore, where the Order's water quality improvement goals cannot be achieved without modifying or disturbing an area of land or existing structure to a greater degree than through previously employed farming practices, individual farmers or third-party representatives will implement the following measures to reduce potential impacts to less-than-significant levels.

- Where construction within areas that may contain cultural resources cannot be avoided through the use of alternative management practices, conduct an assessment of the potential for damage to cultural resources prior to construction; this may include the hiring of a qualified cultural resources specialist to determine the presence of significant cultural resources.
- Where the assessment indicates that damage may occur, submit a non-confidential records search request to the appropriate CHRIS information center(s).
- Implement the recommendations provided by the CHRIS information center(s) in response to the records search request.
- Where adverse effects to cultural resources cannot be avoided, undertake additional CEQA review and develop appropriate mitigation to avoid or minimize the potential impact.

In addition, California state law provides for the protection of interred human remains from vandalism and destruction. According to the California Health and Safety Code, six or more human burials at one location constitute a cemetery (section 8100), and the disturbance of Native American cemeteries is a felony (section 7052). section 7050.5 requires that construction or excavation be stopped in the vicinity of the discovered human remains until the County Coroner has been notified, according to PRC section 5097.98, and can determine whether the remains are those of Native American origin. If the coroner determines that the remains are of Native American origin, the coroner must contact the Native American Heritage Commission (NAHC) within 24 hours (Health and Safety Code section 7050[c]). The NAHC will identify and notify the most likely descendant

(MLD) of the interred individual(s), who will then make a recommendation for means of treating or removing, with appropriate dignity, the human remains and any associated grave goods as provided in PRC section 5097.98.

PRC section 5097.9 identifies the responsibilities of the project proponent upon notification of a discovery of Native American burial remains. The project proponent will work with the MLD (determined by the NAHC) and a professional archaeologist with specialized human osteological experience to develop and implement an appropriate treatment plan for avoidance and preservation of, or recovery and removal of, the remains.

Growers implementing management practices should be aware of the following protocols for identifying cultural resources.

- If built environment resources or archaeological resources, including chipped stone (often obsidian, basalt, or chert), ground stone (often in the form of a bowl mortar or pestle), stone tools such as projectile points or scrapers, unusual amounts of shell or bone, historic debris (such as concentrations of cans or bottles), building foundations, or structures are inadvertently discovered during ground-disturbing activities, the land owner should stop work in the vicinity of the find and retain a qualified cultural resources specialist to assess the significance of the resources. If necessary, the cultural resource specialist also will develop appropriate treatment measures for the find.
- If human bone is found as a result of ground disturbance, the land owner should notify the County Coroner in accordance with the instructions described above. If Native American remains are identified and descendants are found, the descendants may—with the permission of the owner of the land or his or her authorized representative—inspect the site of the discovery of the Native American remains. The descendants may recommend to the owner or the person responsible for the excavation work means for treating or disposing of the human remains and any associated grave goods, with appropriate dignity. The descendants will make their recommendation within 48 hours of inspection of the remains. If the NAHC is unable to identify a descendant, if the descendants identified fail to make a recommendation, or if the landowner rejects the recommendation of the descendants, the landowner will inter the human remains and associated grave goods with appropriate dignity on the property in a location not subject to further and future subsurface disturbance.

Noise

Mitigation Measure NOI-MM-1: Implement Noise-Reducing Construction Practices

Growers should implement noise-reducing construction practices that comply with applicable local noise standards or limits specified in the applicable county ordinances and general plan noise elements.

Mitigation Measure NOI-MM-2: Reduce Noise Generated by Individual Well Pumps

If well pumps are installed, Members should enclose or locate them behind barriers such that noise does not exceed applicable local noise standards or limits specified in the applicable county ordinances and general plan noise elements.

Air Quality

Mitigation Measure AQ-MM-1: Apply Applicable Air District Mitigation Measures to Reduce Construction Emissions below the District Thresholds

Growers should apply appropriate construction mitigation measures from the applicable air district to reduce construction emissions. These measures will be applied on a project-level basis and may be tailored in consultation with the appropriate air district, depending on the severity of anticipated construction emissions.

Mitigation Measure AQ-MM-2: Apply Applicable Air District Mitigation Measures to Reduce Operational Emissions below the District Thresholds

Growers should apply appropriate mitigation measures from the applicable air district to reduce operational emissions. These measures were suggested by the district or are documented in official rules and guidance reports; however, not all districts make recommendations for operational mitigation measures. Where applicable, measures will be applied on a project-level basis and may be tailored in consultation with the appropriate air district, depending on the severity of anticipated operational emissions.

Mitigation Measure AQ-MM-3: Apply Applicable Air District Mitigation Measures to Reduce TAC/HAP Emissions

Growers should apply appropriate TAC and HAP mitigation measures from the applicable air district to reduce public exposure to DPM, pesticides, and asbestos. These measures were suggested by the district or are documented in official rules and guidance reports; however, not all districts make recommendations for mitigation measures for TAC/HAP emissions. These measures will be applied on a project-level basis and may be tailored in consultation with the appropriate air district, depending on the severity of anticipated TAC/HAP emissions.

Vegetation and Wildlife

Mitigation Measure BIO-MM-1: Avoid and Minimize Impacts on Sensitive Biological Resources

Implementation of the following avoidance and minimization measures would ensure that the construction activities related to implementation of management practices and installation of monitoring wells on irrigated lands would minimize effects on sensitive vegetation communities (such as riparian habitat and wetlands adjacent to the construction area) and special-status plants and wildlife species as defined and listed in section 5.7.3 of the PEIR. In each instance where particular management practices could result in impacts on the biological resources listed above, Members should use the least impactful effective management practice to avoid such impacts. Where the Order's water quality improvement goals cannot be achieved without incurring potential impacts, individual farmers or third-party representatives will implement the following measures to reduce potential impacts to less-than-significant levels.

- Where detention basins are to be abandoned, retain the basin in its existing condition or ensure that sensitive biological resources are not present before modification.

- Where construction in areas that may contain sensitive biological resources cannot be avoided through the use of alternative management practices, conduct an assessment of habitat conditions and the potential for presence of sensitive vegetation communities or special-status plant and animal species prior to construction. This may include the hiring of a qualified biologist to identify riparian and other sensitive vegetation communities and/or habitat for special-status plant and animal species.
- Avoid and minimize disturbance of riparian and other sensitive vegetation communities.
- Avoid and minimize disturbance to areas containing special-status plant or animal species.
- Where adverse effects on sensitive biological resources cannot be avoided, undertake additional CEQA review and develop a restoration or compensation plan to mitigate the loss of the resources.

Mitigation Measure BIO-MM-2: Determine Extent of Wetland Loss and Compensate for Permanent Loss of Wetlands

Prior to implementing any management practice that will result in the permanent loss of wetlands, conduct a delineation of affected wetland areas to determine the acreage of loss in accordance with current U.S. Army Corps of Engineers (USACE) methods. For compliance with the federal Clean Water Act section 404 permit and WDRs protecting State waters from unauthorized fill, compensate for the permanent loss (fill) of wetlands and ensure no net loss of habitat functions and values. Compensation ratios will be determined through coordination with the Central Valley Water Board and USACE as part of the permitting process. Such process will include additional compliance with CEQA, as necessary. Compensation may be a combination of mitigation bank credits and restoration/creation of habitat, as described below:

- Purchase credits for the affected wetland type (e.g., perennial marsh, seasonal wetland) at a locally approved mitigation bank and provide written evidence to the resource agencies (USFWS, NMFS) that compensation has been established through the purchase of mitigation credits.
- Develop and ensure implementation of a wetland restoration plan that involves creating or enhancing the affected wetland type.

Fisheries

Mitigation Measure FISH-MM-1: Avoid and Minimize Impacts to Fish and Fish Habitat

This mitigation measure incorporates all measures identified in Mitigation Measure BIO-MM-1: Avoid and Minimize Impacts on Sensitive Biological Resources. In each instance where particular management practices could result in impacts to special-status fish species (see "Regulatory Classification of Special-Status Species" in section 5.8.2 of the PEIR), Members should use the least impactful effective management practice to avoid such impacts. Where the Order's water quality improvement goals cannot be achieved without incurring potential impacts, individual farmers or third-party representatives will implement the following measures to reduce potential impacts to less-than-significant levels. Note that these measures may not be necessary in many cases and are dependent on the location of construction in relation to water bodies containing special-status fish.

- Where construction in areas that may contain special-status fish species cannot be avoided through the use of alternative management practices, conduct an assessment of habitat conditions and the potential for presence of special-status fish species prior to construction; this may include the hiring of a qualified fisheries biologist to determine the presence of special status fish species.
- Based on the species present in adjacent water bodies and the likely extent of construction work that may affect fish, limit construction to periods that avoid or minimize impacts to special-status fish species.
- Where construction periods cannot be altered to minimize or avoid effects on special-status fish, undertake additional CEQA review and develop a restoration or compensation plan to mitigate the loss of the resources.

Mitigation Measure FISH-MM-2: Educate Growers on the Use of Polyacrylamides (PAMs) for Sediment Control

The third-party will provide information to Members on the potential risks to aquatic life, including special-status fish, that may result from the use of cationic or neutral PAMs during water management activities. Information in the form of leaflets or website information will be provided to Members, encouraging the use of anionic PAMs. Application of anionic PAMs at prescribed rates will be emphasized in the information provided to Members. Adoption of the United States Department of Agriculture National Conservation Practice Standard 450 also will be recommended in the information.

Agriculture Resources

Mitigation Measure AG-MM-1: Assist the Agricultural Community in Identifying Sources of Financial Assistance that would Allow Growers to Keep Important Farmland in Production

The third-party will assist the agricultural community in identifying sources of financial assistance from existing federal, state, or local programs that promote water conservation and water quality through increased management practices. Funding received from grants, cost-sharing, or low-interest loans would offset some of the local Members expenditures for compliance with and implementation of the Order, and likely would reduce the estimated losses in irrigated acreage. Potential funding sources for this mitigation measure are discussed below. The programs described below are illustrative and are not intended to constitute a comprehensive list of funding sources.

Federal Farm Bill

Title II of the 2008 Farm Bill (the Food, Conservation, and Energy Act of 2008, in effect through 2012) authorizes funding for conservation programs such as the Environmental Quality Incentives Program (EQIP) and the Conservation Stewardship Program. Both of these programs provide financial and technical assistance for activities that improve water quality on agricultural lands.

State Water Resources Control Board

The Division of Financial Assistance administers water quality improvement programs for the State Water Resources Control Board (State Water Board). The programs provide grant and loan funding to reduce non-point-source pollution discharge to surface waters.

The Division of Financial Assistance currently administers two programs that improve water quality associated with agriculture—the Agricultural Drainage Management Loan Program and the Agricultural Drainage Loan Program. Both of these programs were implemented to address the management of agricultural drainage into surface water. The Agricultural Water Quality Grant Program provides funding to reduce or eliminate the discharge of non-point-source pollution from agricultural lands into surface water and groundwater. It is currently funded through bonds authorized by Proposition 84.

The State Water Board's Clean Water State Revolving Fund also has funding authorized through Proposition 84. It provides loan funds to a wide variety of point-source and non-point-source water quality control activities.

Potential Funding Provided by the Safe, Clean, and Reliable Drinking Water Supply Act of 2010

This act was placed on the ballot by the Legislature as SBX 7-2 and was scheduled for voter approval in November 2010. In August of 2010, the Legislature removed this issue from the 2010 ballot and intends to re-introduce it in November of 2012. If approved by the public, the new water bond would provide grant and loan funding for a wide range of water-related activities, including agricultural water quality improvement, watershed protection, and groundwater quality protection. The actual amount and timing of funding availability will depend on its passage, on the issuance of bonds and the release of funds, and on the kinds of programs and projects proposed and approved for funding.

Other Funding Programs

Other state and federal funding programs have been available in recent years to address agricultural water quality improvements. Integrated Regional Water Management grants were authorized and funded by Proposition 50 and now by Proposition 84. These are administered jointly by the State Water Board and the California Department of Water Resources. Proposals can include agricultural water quality improvement projects. The Bureau of Reclamation also can provide assistance and cost-sharing for water conservation projects that help reduce discharges.

Cumulative Impacts

Mitigation Measure CC-MM-1: Apply Applicable Air District Mitigation Measures to Reduce Construction and Operational GHG Emissions

Several of the standard mitigation measures provided by Central Valley local air districts to reduce criteria pollutant emissions would also help to minimize GHG emissions (please see section 5.6.5 of the PEIR). Measures to reduce vehicle trips and promote use of alternative fuels, as well as clean diesel technology and construction equipment retrofits, should be considered by the program applicants.

Mitigation Measure CC-MM-2: Apply Applicable California Attorney General Mitigation Measures to Reduce Construction and Operational GHG Emissions

A 2008 report by the California Attorney General's office entitled *The California Environmental Quality Act: Addressing Global Warming at the Local Agency Level* identifies various example measures to reduce GHG emissions at the project level (California Department of Justice 2008). The following mitigation measures and project design features were compiled from the California

Attorney General's Office report. They are not meant to be exhaustive but to provide a sample list of measures that could be incorporated into future project design. Only those measures applicable to the Order are included.

Solid Waste Measures

- Reuse and recycle construction and demolition waste (including, but not limited to, soil, vegetation, concrete, lumber, metal, and cardboard).
- Provide interior and exterior storage areas for recyclables and green waste and adequate recycling containers.
- Recover by-product methane to generate electricity.

Transportation and Motor Vehicles

- Limit idling time for commercial vehicles, including delivery and construction vehicles.
- Use low- or zero-emission vehicles, including construction vehicles.

Feasibility of Alternatives Considered in the EIR

The following text presents findings relative to the project alternatives. Findings about the feasibility of project alternatives must be made whenever the project within the responsibility and jurisdiction of the lead agency will have a significant environmental effect.

In July 2010, the Central Valley Water Board released, for public review, the Draft PEIR and Draft Technical Memorandum Concerning the Economic Analysis of the Irrigated Lands Regulatory Program (Economics Report). In these reports, Alternatives 1-6 were evaluated considering environmental and economic impacts, and consistency with applicable state policies and law.[3] In Volume II: Appendix A of the PEIR, at page 136, each alternative was found to achieve some of the program evaluation measures but not others. As is shown in Table 11 of Appendix A, no single alternative of Alternatives 1-5 achieved complete consistency with all evaluation measures. However, after review of each of the alternatives and their common elements (lead entity, monitoring type), it was clear that a program that more completely satisfied the evaluation measures could be developed by selecting from the best-performing elements of the proposed alternatives. Alternative 6, described in Appendix A of the Draft PEIR, was developed by selecting these best-performing elements and became the draft staff recommended alternative.

In consideration of comments received concerning Alternative 6 during the Draft PEIR review process, staff developed the recommended ILRP Framework, and prepared the *Staff Report on Recommended Irrigated Lands Regulatory Framework,* or 'ILRP Framework Report' (Central Valley Water Board 2011). The Central Valley Water Board did not adopt the Framework, but advised staff to use the Framework as a starting point to support the development of ILRP Orders. The Framework is based upon the sixth alternative, and is composed of elements from the range of alternatives evaluated in the PEIR. The requirements of the Order were developed considering the

[3] Economic impacts of Alternatives 1-5 have been evaluated in the Economics Report. Staff was also able to use that analysis to estimate costs of the recommended program alternative (Alternative 6), since the recommended program alternative fell within the range of the five alternatives. This cost estimate is found in Appendix A of the PEIR.

Framework as a starting point per Central Valley Water Board direction (Central Valley Water Board hearing, June 2011). Project-level review of the requirements in the Order has revealed that the requirements of the Order most closely resemble those described for Alternatives 4 and 2 of the PEIR, but do include elements from Alternatives 2-5.

The Order implements the long-term irrigated lands program for irrigated lands in the Eastern San Joaquin River Watershed. The Alternatives in the PEIR have been developed for implementation throughout the entire Central Valley Region. The Order is intended to serve as a single implementing order in a series of orders that will implement the long-term irrigated lands program for the entire Central Valley. The findings below summarize why particular program alternatives are not being pursued.

Alternative 1: Full Implementation of the Current Program - No Project

Under Alternative 1, the Central Valley Water Board would renew the current program and continue to implement it into the future. This would be considered the "No Project" Alternative per CEQA guidance at Title 14 California Code of Regulations (CCR) section 15126.6(e)(3)(A): "When the project is the revision of an existing land use or regulatory plan, policy or ongoing operation, the 'No Project' Alternative will be the continuation of the existing plan, policy, or operation into the future." Given the reasonably foreseeable nature of the extension or renewal of the ongoing waiver, which would allow continuation of the existing program, Alternative 1 is best characterized as the "No Project" Alternative. This approach best serves the purpose of allowing the Central Valley Water Board to compare the impacts of revising the ILRP with those of continuing the existing program (14 CCR section 15126.6[e][1]).

Third-party groups would continue to function as lead entities representing growers (owners of irrigated lands, wetland managers, nursery owners, and water districts). This alternative is based on continuing watershed monitoring to determine whether operations are causing water quality problems. Where monitoring indicates a problem, third-party groups and growers would be required to implement management practices to address the problem and work toward compliance with applicable water quality standards. This alternative would not establish any new Central Valley Water Board requirements for discharges to groundwater from irrigated agricultural lands.

Monitoring under this alternative would be the same as the watershed-based monitoring required under the current ILRP. Under this monitoring scheme, third-party groups would work with the Central Valley Water Board to develop monitoring plans for Central Valley Water Board approval. These plans would specify monitoring parameters and site locations.

Finding

An order based on Alternative 1 is not being pursued to regulate irrigated agricultural operations in the Eastern San Joaquin River Watershed instead of the Order because it would not substantially reduce or eliminate any of the significant adverse effects of the Order (listed in the findings above) and it would not meet all of the goals and objectives of the program (program goals and objectives are described in Appendix A of the PEIR). Because Alternative 1 does not address discharges of waste from agricultural lands to groundwater, it would not be fully consistent with Program Goals 1 and 2:

- **Goal 1**—Restore and/or maintain the highest reasonable quality of State waters considering all the demands being placed on the water.

- **Goal 2**—Minimize waste discharge from irrigated agricultural lands that could degrade the quality of State waters.

In addition, the lack of a groundwater discharge component to this alternative makes it inconsistent with Goal 4 of the program:

- **Goal 4**—Ensure that irrigated agricultural discharges do not impair access by Central Valley communities and residents to safe and reliable drinking water.

Alternative 1 is also inconsistent with sections 13263 and 13269 of the California Water Code, the State Water Board's nonpoint source (NPS) program, and the State's antidegradation policy. These inconsistencies are documented in detail in the (PEIR), Appendix A, at pages 96-130. The Order is considered superior to Alternative 1 for implementation in the Eastern San Joaquin River Watershed.

Alternative 2: Third-Party Lead Entity

Under Alternative 2, the Central Valley Water Board would develop a single mechanism or a series of regulatory mechanisms (WDRs or conditional waivers of WDRs) to regulate waste discharges from irrigated agricultural lands to ground and surface waters.

Third-party groups would function as lead entities representing growers. Regulation of discharges to surface water would be similar to Alternative 1 (the current ILRP). However, this alternative allows for a reduction in monitoring under lower threat circumstances and where watershed or area management objective plans are being developed. This alternative also includes requirements for development of groundwater quality management plans (GQMPs) to minimize discharge of waste to groundwater from irrigated lands. Under Alternative 2, local groundwater management plans or integrated regional water management plans could be utilized, all, or in part for ILRP GQMPs, with Central Valley Water Board approval. This alternative relies on coordination with the California Department of Pesticide Regulation (DPR) for regulating discharges of pesticides to groundwater.

Growers would be required to track implemented management practices and submit the results to the third-party group. Surface water monitoring under this alternative would be similar to Alternative 1. The third-party group would report summary results to the Central Valley Water Board. The third-party group would be required to summarize the results of groundwater and surface water monitoring and tracking in an annual monitoring report to the Central Valley Water Board.

Finding

An order based wholly on Alternative 2 is not being pursued to regulate irrigated agricultural operations in the Eastern San Joaquin River Watershed instead of the Order because it would not substantially reduce or eliminate any of the significant adverse effects of the Order (listed in the findings above) and because it would not as consistently meet the Program's goals and objectives as would the Order. As indicated in Appendix A, pages 96–130 of the PEIR, Alternative 2 would be consistent with most of the Programs goals and objectives, but would be only partially consistent with the State Water Board's nonpoint source policy and the state's antidegradation policy. Alternative 2 includes third-party GQMPs, but does not require groundwater quality monitoring. The Order is considered superior to Alternative 2 for implementation in the Eastern San Joaquin River Watershed.

Alternative 3: Individual Farm Water Quality Plans

Under Alternative 3, growers would have the option of working directly with the Central Valley Water Board or another implementing entity (e.g., county agricultural commissioners [CACs]) in development of an individual farm water quality management plan (FWQMP). Growers would individually apply for a conditional waiver or WDRs that would require Central Valley Water Board approval of their FWQMP.

On-farm implementation of effective water quality management practices would be the mechanism to reduce or eliminate waste discharged to state waters. This alternative would provide incentive for individual growers to participate by providing growers with Central Valley Water Board certification that they are implementing farm management practices to protect state waters. This alternative relies on coordination with DPR for regulating discharges of pesticides to groundwater.

Unless specifically required in response to water quality problems, owners/operators would not be required to conduct water quality monitoring of adjacent receiving waters or underlying groundwater. Required monitoring would include evaluation of management practice effectiveness. The Central Valley Water Board, or a designated third-party entity, would conduct annual site inspections on a selected number of operations. They also would review available applicable water quality monitoring data as additional means of monitoring the implementation of management practices and program effectiveness.

Finding

An order based wholly on Alternative 3 is not being pursued to regulate irrigated agricultural operations in the Eastern San Joaquin River Watershed instead of the Order because it would not substantially reduce or eliminate any of the significant adverse effects of the Order (listed in the findings above) and because it would not as consistently meet the ILRP's goals and objectives as would the Order. As indicated in Appendix A, pages 96–130 of the PEIR, Alternative 3 would be only partially consistent with the Central Valley Water Board's program objectives (Objectives 4 and 5) to coordinate with other programs such as TMDL development, CV-SALTS and WDRs for dairies; and promote coordination with other agriculture-related regulatory and non-regulatory programs of the DPR, the California Department of Public Health (DPH), and other agencies. These objectives are:

- **Objective 4**—Coordinate with other Central Valley Water Board programs, such as the Grassland Bypass Project WDRs for agricultural lands, total maximum daily load development, CV-Salts, and WDRs for dairies.
- **Objective 5**—Promote coordination with other regulatory and non-regulatory programs associated with agricultural operations (e.g., DPR, DPH Drinking Water Program, the California Air Resources Board, the California Department of Food and Agriculture, Resource Conservation Districts, the University of California Extension, Natural Resource Conservation Service, National Organic Program, California Agricultural Commissioners, State Water Board Groundwater Ambient Monitoring and Assessment program, U.S. Geological Survey, and local groundwater programs [Senate Bill (SB) 1938, AB 3030, Integrated Regional Water Management Plans]) to minimize duplicative regulatory oversight while ensuring program effectiveness.

Alternative 3 makes it more difficult to coordinate with these programs because it involves direct interaction by the Central Valley Water Board with individual growers, rather than with third-party entities. Also, the lack of mandatory surface and groundwater quality monitoring and the primary reliance on visual inspection of management practices reduces this alternative's ability to be

consistent with the State Water Board's nonpoint source program. The Order is considered superior to Alternative 3 for implementation in the Eastern San Joaquin River Watershed.

Alternative 4: Direct Oversight with Regional Monitoring

Under Alternative 4, the Central Valley Water Board would develop WDRs and/or a conditional waiver of WDRs for waste discharge from irrigated agricultural lands to groundwater and surface water. As in Alternative 3, growers would apply directly to the Central Valley Water Board to obtain coverage ("direct oversight"). As in Alternative 3, growers would be required to develop and implement individual FWQMPs to minimize discharge of waste to groundwater and surface water from irrigated agricultural lands. Alternative 4 would also allow for formation of responsible legal entities that could serve a group of growers who discharge to the same general location and thus could share monitoring locations. In such cases, the legal entity would be required to assume responsibility for the waste discharges of member growers, to be approved by the Central Valley Water Board, and ultimately to be responsible for compliance with ILRP requirements.

Discharge of waste to groundwater and surface water would be regulated using a tiered approach. Fields would be placed in one of three tiers based on their threat to water quality. The tiers represent fields with minimal (Tier 1), low (Tier 2), and high (Tier 3) potential threat to water quality. Requirements to avoid or minimize discharge of waste would be the least comprehensive for Tier 1 fields and the most comprehensive for Tier 3 fields. This would allow for less regulatory oversight for low-threat operations while establishing necessary requirements to protect water quality from higher-threat discharges. This alternative relies on coordination with DPR for regulating discharges of pesticides to groundwater.

For monitoring, growers would have the option of enrolling in a third-party group regional monitoring program. In cases where responsible legal entities were formed, these entities would be responsible for conducting monitoring. All growers would be required to track nutrient, pesticide, and implemented management practices and submit the results to the Central Valley Water Board (or an approved third-party monitoring group) annually. Other monitoring requirements would depend on designation of the fields as Tier 1, Tier 2, or Tier 3. Similar to Alternative 3, this alternative also includes requirements for inspection of regulated operations.

Finding

An order based wholly on Alternative 4 is not being pursued to regulate irrigated agricultural operations in the Eastern San Joaquin River Watershed instead of the Order because it would not substantially reduce or eliminate any of the significant adverse effects of the Order (listed in the findings above) and because it would not as consistently meet the Program's goals and objectives as would the Order. As indicated in Appendix A, pages 96–130 of the PEIR, Alternative 4 would meet most of the Program goals and objectives. However, it relies on Central Valley Water Board staff interaction directly with each irrigated agricultural operation, making it less effective at meeting the coordination objectives (Objectives 4 and 5) (page 103 of Appendix A in the PEIR):

- **Objective 4**—Coordinate with other Central Valley Water Board programs, such as the Grassland Bypass Project WDRs for agricultural lands, total maximum daily load development, CV-Salts, and WDRs for dairies.
- **Objective 5**—Promote coordination with other regulatory and non-regulatory programs associated with agricultural operations (e.g., DPR, DPH Drinking Water Program, the California

Air Resources Board, the California Department of Food and Agriculture, Resource Conservation Districts, the University of California Extension, Natural Resource Conservation Service, National Organic Program, California Agricultural Commissioners, State Water Board Groundwater Ambient Monitoring and Assessment program, U.S. Geological Survey, and local groundwater programs [SB 1938, AB 3030, Integrated Regional Water Management Plans]) to minimize duplicative regulatory oversight while ensuring program effectiveness.

Alternative 4 makes it more difficult to coordinate with these programs because it involves direct interaction by the Central Valley Water Board with individual growers, rather than with third-party entities. The Order is considered superior to Alternative 4 for implementation in the Eastern San Joaquin River Watershed.

Alternative 5: Direct Oversight with Farm Monitoring

Alternative 5 would consist of general WDRs designed to protect groundwater and surface water from discharges associated with irrigated agriculture. All irrigated agricultural operations would be required to individually apply for and obtain coverage under the general WDRs working directly with the Central Valley Water Board ("direct oversight"). This alternative would include requirements to (1) develop and implement a FWQMP; (2) monitor (a) discharges of tailwater, drainage water, and storm water to surface water; (b) applications of irrigation water, nutrients, and pesticides; and (c) groundwater; (3) keep records of (a) irrigation water; (b) pesticide applications; and (c) the nutrients applied, harvested, and moved off the site; and (4) submit an annual monitoring report to the Central Valley Water Board. Similar to Alternative 3, Alternative 5 also includes requirements for inspection of regulated operations.

Finding

An order based wholly on Alternative 5 is not being pursued to regulate irrigated agricultural operations in the Eastern San Joaquin River Watershed instead of the Order because it would not substantially reduce or eliminate any of the significant adverse effects of the Order (listed in the findings above) and it would not as consistently meet the Program's goals and objectives as would the Order. As indicated in Appendix A, pages 96–130 of the PEIR, Alternative 5 would be only partially consistent with the Central Valley Water Board's Program objectives (Objectives 4 and 5) to coordinate with other programs such as TMDL development, CV-SALTS and WDRs for dairies; and promote coordination with other agriculture-related regulatory and non-regulatory programs of the DPR, the California Department of Public Health, and other agencies. These objectives are:

- **Objective 4**—Coordinate with other Central Valley Water Board programs, such as the Grassland Bypass Project WDRs for agricultural lands, total maximum daily load development, CV-Salts, and WDRs for dairies.
- **Objective 5**—Promote coordination with other regulatory and non-regulatory programs associated with agricultural operations (e.g., DPR, DPH Drinking Water Program, the California Air Resources Board, the California Department of Food and Agriculture, Resource Conservation Districts, the University of California Extension, Natural Resource Conservation Service, National Organic Program, California Agricultural Commissioners, State Water Board Groundwater Ambient Monitoring and Assessment program, U.S. Geological Survey, and local groundwater programs [SB 1938, AB 3030, Integrated Regional Water Management Plans]) to minimize duplicative regulatory oversight while ensuring program effectiveness.

Alternative 5 makes it more difficult to coordinate with these programs because it involves direct interaction by the Central Valley Water Board with individual growers, rather than with third-party entities.

Also, an order based on Alternative 5, due to its high relative cost as compared to the Order, would not be consistent with Program Goal 3:

- **Goal 3**—Maintain the economic viability of agriculture in California's Central Valley.

As indicated in the Draft Technical Memorandum Concerning the Economic Analysis of the Irrigated Lands Regulatory Program (ICF International 2010), the program costs funded by growers and operators would be significantly higher than other alternatives (see Economics Report Tables 2-18 through 2-22). This high cost could affect the viability of thousands of acres of irrigated agricultural land throughout the Central Valley. The Order is considered superior to Alternative 5 for implementation in the Eastern San Joaquin River Watershed.

Alternative 6: Staff Recommended Alternative in the Draft PEIR

Under Alternative 6, 8–12 general WDRs or conditional waivers of WDRs would be developed that would be geographic and/or commodity-based. The alternative would establish requirements for waste discharge from irrigated agricultural lands to groundwater and surface water. Similar to Alternatives 1 and 2, third-party groups would be responsible for general administration of the ILRP. The alternative would establish prioritization factors for determining the type of requirements and monitoring that would be applied. The prioritization would be applied geographically as a two tier system, where Tier 1 areas would be "low priority," and Tier 2 would be "high priority."

Program requirements, monitoring and management would be dependent on the priority (Tier 1 or 2). Generally, this alternative requires regional management plans to address water quality concerns and regional monitoring to provide feedback on whether the practices implemented are working to solve identified water quality concerns. In Tier 1 areas, irrigated agricultural operations and third-party groups would be required to describe management objectives to be achieved, report on management practices implemented, and make an assessment of ground and surface water quality every 5 years. In Tier 2 areas, irrigated agricultural operations and third-party groups would be required to develop and implement ground and/or surface water quality management plans, as appropriate to address water quality concerns, report on management practices, and provide annual regional ground and surface water quality monitoring. Similar to Alternative 2, Alternative 6 would allow local groundwater management plans or integrated regional water management plans to substitute, all, or in part for ILRP GQMPs, with Central Valley Water Board approval.

Alternative 6 would establish a time schedule for compliance for addressing surface and groundwater quality problems. The schedule would require compliance with water quality objectives within five to ten years for surface water problems and demonstrated improvement within five to ten years for groundwater problems.

Finding

An order based wholly on Alternative 6 is not being pursued to regulate irrigated agricultural operations in the Eastern San Joaquin River Watershed instead of the Order because it would not

substantially reduce or eliminate any of the significant adverse effects of the Order (listed in the findings above) and does not adequately reflect the clarifications and minor adjustments that were requested in comments on the Draft PEIR. The Order is considered superior to Alternative 6 for implementation in the Eastern San Joaquin River Watershed.

Statement of Overriding Considerations Supporting Approval of the Waste Discharge Requirements General Order for Growers Within the Eastern San Joaquin River Watershed that are Members of the Third-Party Group

Pursuant to the requirements of CEQA (PRC sections 21002, 21002.1, 21081) and State CEQA Guidelines (15 CCR 15093), the Central Valley Water Board finds that approval of the Order, whose potential environmental impacts have been evaluated in the PEIR, and as indicated in the above findings, will result in the occurrence of significant effects which are not avoided or substantially lessened, as described in the above findings. These significant effects include:

- Conversion of Prime Farmland, Unique Farmland, and Farmland of Statewide Importance to nonagricultural use.
- Cumulative climate change.
- Cumulative vegetation and wildlife impacts.
- Cumulative conversion of Prime Farmland, Unique Farmland, and Farmland of Statewide Importance to nonagricultural use.

Pursuant to PRC section 21081(b), specific overriding economic, legal, social, technological, or other benefits outweigh the unavoidable adverse environmental effects. The specific reasons to support this approval, given the potential for significant unavoidable adverse impacts, are based on the following.

Economic Benefits

The water quality improvements expected to occur in both surface and groundwater throughout the Eastern San Joaquin River Watershed as a result of implementing the Order is expected to create broad economic benefits for residents of the State. Control of pollutants contained in agricultural discharges, as summarized in pages 18–21 of Appendix A in the PEIR and documented in detail in the *Irrigated Lands Regulatory Program Existing Conditions Report*, should reduce water treatment costs for some communities in the Central Valley. Pages 5-3–5-5 of the *Draft Technical Memorandum Concerning the Economic Analysis of the Irrigated Lands Regulatory Program* (ICF International 2010) identifies the potential costs of upgrading wells or treating well water that is affected by nitrate contamination. The nitrate contamination is believed to be coming from a variety of sources, including fertilizers used on agricultural lands.

Consistency with NPS Policy and State Water Board Resolution 68-16 (Antidegradation Policy)

Waste discharges from irrigated agricultural operations have the potential to affect surface and groundwater quality. As documented in the *Irrigated Lands Regulatory Program Existing Conditions Report*, many state waters have been adversely affected due in part to waste discharges from irrigated agriculture. State policy and law requires that the Central Valley Water Board institute requirements that will implement Water Quality Control Plans (California Water Code sections 13260, 13269), the State Water Board's Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program (NPS Policy) and applicable antidegradation requirements (State Water Board Resolution 68-16). The Order is a necessary component of the Central Valley Water Board's efforts to be consistent with state policy and law through its regulation of discharges from irrigated agriculture. As documented in the PEIR Hydrology and Water Quality analysis, implementation of a long-term ILRP, of which the Order is an implementing mechanism, will improve water quality through development of farm management practices that reduce discharges of waste to state waters.

After balancing the above benefits of the Order against its unavoidable environmental risks, the specific economic, legal, and social benefits of the proposal outweigh the unavoidable adverse environmental effects, and these adverse environmental effects are considered acceptable, consistent with the Order, Central Valley Water Board Order R5-2012-0116.

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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ATTACHMENT E TO ORDER R5-2012-0116
DEFINITIONS, ACRONYMS & ABBREVIATIONS

WASTE DISHARGE REQUIREMENTS GENERAL ORDER
FOR
GROWERS WITHIN THE EASTERN SAN JOAQUIN RIVER WATERSHED
THAT ARE MEMBERS OF THE THIRD-PARTY GROUP

The following definitions, acronyms and abbreviations apply to this Order as related to discharges of waste from irrigated lands. All other terms shall have the same definitions as prescribed by the Porter-Cologne Water Quality Control Act (California Water Code Division 7), unless specified otherwise.

1. Antidegradation Policy– State Water Board Resolution 68-16, "*Statement of Policy with Respect to Maintaining High Quality Waters in California*," requires existing high quality water to be maintained until it has been demonstrated that any change will be consistent with maximum benefit to the people of the state, will not unreasonably affect present and anticipated beneficial use of water, and will not result in water quality less than that prescribed in Resolution 68-16. The Central Valley Water Board must establish standards in its orders for discharges to high quality waters that result in the implementation of best practicable treatment or control of the discharge necessary to avoid pollution or nuisance and to maintain the highest water quality consistent with maximum benefit to the people of the state. Resolution 68-16 has been approved by the USEPA to be consistent with the federal anti-degradation policy.

2. Aquifer – A geologic formation, group of formations, or portion of a formation capable of yielding usable quantities of groundwater to wells or springs (40 CFR Part 257.3-4).

3. Back flow prevention devices– Back flow prevention devices are installed at the well or pump to prevent contamination of groundwater or surface water when fertilizers, pesticides, fumigants, or other chemicals are applied through an irrigation system. Back flow prevention devices used to comply with this Order must be those approved by USEPA, DPR, DPH, or the local public health or water agency.[1]

4. Basin Plan – The Basin Plan is the Central Valley Regional Water Quality Control Plan for the Sacramento River and San Joaquin River Basins. The Basin Plan describes how the quality of the surface and groundwater in the Central Valley Region should be managed to ensure reasonable protection of beneficial uses. The Basin Plan includes beneficial uses, water quality objectives, and a program of implementation.

5. Certified Nitrogen Management Specialist – Certified nitrogen management plan specialists include Professional Soil Scientists, Professional Agronomists, Crop Advisors[2] certified by the American Society of Agronomy, or Technical Service Providers certified in nutrient management

[1] California Department of Public Health, Approved Backflow Prevention Devices List at http://www.cdph.ca.gov/certlic/drinkingwater/pages/publications.aspx. Requirements for backflow prevention for pesticide application are located in 6 CCR §6610.

[2] Should the California Department of Food and Agriculture and the California Certified Crop Adviser's establish a specific nitrogen management certification, any Certified Crop Adviser who certifies a nitrogen management plan must have a nitrogen management certification.

in California by the National Resource Conservation Service (NRCS); or other specialist approved by the Executive Officer.

6. Degradation – Any measurable adverse change in water quality.

7. Durov Diagrams – A graphical representation of water quality. The Durov diagram is an alternative to the Piper diagram. The Durov diagram plots the major ions as percentages of milli-equivalents in two base triangles. The total cations and the total anions are set equal to 100% and the data points in the two triangles are projected onto a square grid which lies perpendicular to the third axis in each triangle. This plot reveals useful properties and relationships for large sample groups. The main purpose of the Durov diagram is to show clustering of data points to indicate samples that have similar compositions.

8. Exceedance – For the purposes of this Order, an exceedance is a reading using a field instrument or detection by a California state-certified analytical laboratory where the detected result indicates an impact to the beneficial use of the receiving water when compared to a water quality objective for the parameter or constituent. Exceedances will be determined based on available data and application of the appropriate averaging period. The appropriate averaging period may be defined in the Basin Plan, as part of the water quality criteria established by the USEPA, or as part of the water quality criteria being used to interpret a narrative water quality objective. If averaging periods are not defined as part of the water quality objective or the water quality criteria being used, then the Central Valley Water Board may use its best professional judgment to determine an appropriate period.

9. Farming Operation – A distinct farming business, organized as a sole proprietorship, partnership, corporation, limited liability company, cooperative, or other business entity that owns or operates irrigated lands.

10. Farm Operator – The person or entity, including, but not limited to a farm/ranch manager, lessee or sub-lessee, responsible for or otherwise directing farming operations in decisions that may result in a discharge of waste to surface water or groundwater. If a person or entity rents land to others or has land worked on shares by others, the person or entity is considered the operator only of the land which is retained for their own operation.

11. Fertigation – The process of applying fertilizer through an irrigation system by injecting the fertilizer into the irrigation water.

12. Groundwater – Water in the ground that is in the zone of saturation. The upper surface of the saturate zone is called the water table.

13. High vulnerability area (groundwater) – Areas identified in the approved Groundwater Quality Assessment Report "…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." (see section IV.A.3 of the MRP) or areas that meet any of the following requirements for the preparation of a Groundwater Quality Management Plan (see section VIII.H of the Order): (1) there is a confirmed exceedance[3] (considering applicable averaging periods) of a water quality objective or applicable water quality trigger limit (trigger limits are described in section VIII of the MRP) in a groundwater well and

[3] A "confirmed exceedance of a water quality objective in a groundwater well" means that the monitoring data are determined to be of the appropriate quality and quantity necessary to verify that an exceedance has occurred.

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.

14. High vulnerability area (surface water) – Areas that meet any of the following requirements for the preparation of a Surface Water Quality Management Plan (see section VIII.H of the Order): (1) an applicable water quality objective or applicable water quality trigger limit is exceeded (considering applicable averaging periods[4]) twice in a three year period for the same constituent at a monitoring location (trigger limits are described in section VIII of the MRP) and irrigated agriculture may cause or contribute to the exceedances; (2) the Basin Plan requires development of a surface water 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 surface water that may threaten applicable Basin Plan beneficial uses.

15. Hydraulic conductivity – The volume of water that will move through a medium (generally soil) in a unit of time under a unit hydraulic gradient through a unit area measured perpendicular to the direction of flow (a measure of a soils ability to transmit water).

16. Hydraulic gradient – The change in total hydraulic head per unit distance in a given direction yielding a maximum rate of decrease in hydraulic head.

17. Hydraulic Head - The height relative to a datum plane (generally sea level) of a column of water that can be supported by the hydraulic pressure at a given point in a groundwater system. For a well, the hydraulic head is equal to the distance between the water level in the well and the datum plane (sea level).

18. Impaired water body – A surface water body that is not attaining water quality standards and is identified on the State Water Board's Clean Water Act section 303(d) list.

19. Irrigated lands – Land irrigated to produce crops or pasture for commercial purposes;[5] nurseries; and privately and publicly managed wetlands.

[4] Exceedances of water quality objectives or water quality triggers will be determined based on available data and application of the appropriate averaging period. The averaging period is typically defined in in the Basin Plan, as part of the water quality standard established by the USEPA, or as part of the criteria being used to interpret narrative objectives. If averaging periods are not defined in the Basin Plan, USEPA standard, or criteria, or approved water quality trigger, the Central Valley Water Board will use the best available information to determine an appropriate averaging period.

[5] For the purposes of this Order, commercial irrigated lands are irrigated lands that have one or more of the following characteristics:

- The landowner or operator holds a current Operator Identification Number/ Permit Number for pesticide use reporting;
- The crop is sold to a third party including, but not limited to, (1) an industry cooperative, (2) harvest crew/company, or (3) a direct marketing location, such as farmers' markets;
- The landowner or operator files federal taxes using federal Department of Treasury Internal Revenue Service Form 1040, Schedule F *Profit or Loss from Farming*.

20. Irrigation return flow/runoff – Surface and subsurface water which leaves the field following application of irrigation water.

21. Kriging – A group of geostatistical techniques to interpolate the value of a random field (e.g., contaminant level in groundwater) at an unobserved location from observations of its value at nearby locations.

22. Low vulnerability area (surface and groundwater) – are all areas not designated as high vulnerability for either surface or groundwater.

23. Management practices to protect water quality – A practice or combination of practices that is the most effective and practicable (including technological, economic, and institutional considerations) means of controlling nonpoint pollutant sources at levels protective of water quality.

24. Member – Owners and operators of irrigated lands within the Eastern San Joaquin River Watershed that are members of the third-party group implementing this Order.

25. Monitoring – Monitoring undertaken in connection with assessing water quality conditions, and factors that may affect water quality conditions. Monitoring includes, but is not limited to, water quality monitoring undertaken in connection with agricultural activities, monitoring to identify short and long-term trends in water quality, nutrient monitoring, active inspections of operations, and management practice implementation and effectiveness monitoring. The purposes of monitoring include, but are not limited to, verifying the adequacy and effectiveness of the Order's requirements, and evaluating each Member's compliance with the requirements of the Order.

26. Nonpoint source waste discharge– The Sacramento and San Joaquin River Basin Plan states that "*A nonpoint source discharge usually refers to waste emanating from diffused locations.*" Nonpoint source pollution generally results from land runoff, precipitation, atmospheric deposition, drainage, seepage or hydrologic modification. The term "nonpoint source" is defined to mean any source of water pollution that does not meet the legal definition of "point source" in section 502(14) of the Clean Water Act. The Clean Water Act (CWA) defines a point source as a discernible, confined, and discrete conveyance, such as a pipe, ditch, or channel. Irrigated agricultural return flows and agricultural storm water runoff are excluded from the CWA's definition of point source. Nonpoint pollution sources generally are sources of water pollution that do not meet the definition of a point source as defined by the CWA.

27. Nuisance – "Nuisance" is defined at section 13050 of the Water Code as "…*anything which meets all of the following requirements:*
    (1) Is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property.
    (2) Affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal.
    (3) Occur during, or as a result of, the treatment or disposal of wastes."

28. Nutrient – Any element taken in by an organism which is essential to its growth and which is used by the organism in elaboration of its food and tissue.

29. Off-property discharge – The discharge or release of waste beyond the boundaries of the agricultural operation or to water bodies that run through the agricultural operation.

30. Perched groundwater – Groundwater separated from an underlying body of groundwater by an unsaturated zone.

31. Piper Diagram – A graphical representation of the chemistry of a water sample. The relative abundance of cations as percentages of milli-equivalents per liter (meq/L) of sodium, potassium, calcium, and magnesium are first plotted on the cation triangle. The relative abundance of chloride, sulfate, bicarbonate, and carbonate is then plotted on the anion triangle. The two data points on the cation and anion triangles are then combined into the quadrilateral field that shows the overall chemical property of the water sample.

32. Pollution – Defined in section 13050(l)(1) of the Porter-Cologne Water Quality Control Act as "…*an alteration of the quality of the waters of the state by waste to a degree which unreasonably affects either of the following: (A) The waters for beneficial uses. (B) Facilities which serve these beneficial uses*."

33. Qualified scientist – A person who has earned a professional degree in a scientific discipline that relates to engineering, environmental science, or chemistry with additional experience related to pesticides and water quality. This person should be familiar with the related local, state, and federal regulations.

34. Receiving waters – Surface water or groundwater that receives or has the potential to receive discharges of waste from irrigated lands.

35. Requirements of applicable water quality control plans – Water quality objectives, prohibitions, total maximum daily load implementation plans, or other requirements contained in water quality control plans adopted by the Central Valley Water Board and approved according to applicable law.

36. Small Farming Operation –Refers to Farming Operations that operate less than 60 total acres of irrigated land within the Eastern San Joaquin River Watershed. A parcel is not part of a Small Farming Operation if the total acres of irrigated land within the Eastern San Joaquin River Watershed managed by the Farming Operation and any of its Subsidiary or Affiliated Operations is 60 acres or greater.

37. Stiff Diagram - A graphical representation of the chemistry of a water sample. A polygon shaped figure created from four parallel horizontal axes using the equivalent charge concentrations (meq/L) of cations and anions. Cations are plotted on the left of the vertical zero axis and anions are plotted on the right.

38. Stormwater runoff – The runoff of precipitation from irrigated lands.

39. Subsidiary or Affiliated Operation – a Subsidiary or Affiliated Operation of a specified Farming Operation means a Farming Operation of which the principal(s) of the specified Farming Operation or the shares possessed by the specified Farming Operation have a controlling interest. A controlling interest is having 50 percent or more of the voting or management authority of the operation.

40. Subsurface drainage – Water generated by installing and operating drainage systems to lower the water table below irrigated lands. Subsurface drainage systems, deep open drainage ditches, or drainage wells can generate this drainage.

41. Surface water – Water pooled or collected at or above ground level. Surface waters include, but are not limited to, natural streams, lakes, wetlands, creeks, constructed agricultural drains, agricultural dominated waterways, irrigation and flood control channels, or other non-stream tributaries. Surface waters include all waters of the United States and their tributaries, interstate waters and their tributaries, intrastate waters, and all impoundments of these waters. For the purposes of this Order, surface waters do not include water in agricultural fields.

42. Tailwater – The runoff of irrigation water from an irrigated field.

43. Total Maximum Daily Load (TMDL) - From the Code of Federal Regulations (CFR), 40 CFR 130.2(i), a TMDL is: "*The sum of the individual WLAs [wasteload allocations] for point sources and LAs [load allocations] for nonpoint sources and natural background. … TMDLs can be expressed in terms of either mass per time, toxicity, or other appropriate measure. …*".

44. Toxicity – Refers to the toxic effect to aquatic organisms from waste contained in an ambient water quality sample.

45. Unsaturated Zone – The unsaturated zone is characterized by pore spaces that are incompletely filled with water. The amount of water present in an unsaturated zone varies widely and is highly sensitive to climatic factors.

46. Vadose Zone – See unsaturated zone.

47. 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 as defined in California Water Code section 13050(d). Wastes from irrigated lands that conform to this definition include, but are not limited to, earthen materials (such as soil, silt, sand, clay, rock), inorganic materials (such as metals, salts, boron, selenium, potassium, nitrogen, phosphorus), organic materials such as pesticides, and biological materials, such as pathogenic organisms. Such wastes may directly impact beneficial uses (e.g., toxicity of metals to aquatic life) or may impact water temperature, pH, and dissolved oxygen.

48. Waste discharges from irrigated lands – The discharge or release of waste to surface water or groundwater. Waste discharges to surface water include, but are not limited to, irrigation return flows, tailwater, drainage water, subsurface (tile) drains, stormwater runoff flowing from irrigated lands, aerial drift, and overspraying of pesticides. Waste can be discharged to groundwater through pathways including, but not limited to, percolation of irrigation or storm water through the subsurface, backflow of waste into wells (e.g., backflow during chemigation), discharges into unprotected wells and dry wells, and leaching of waste from tailwater ponds or sedimentation basins to groundwater.

    A discharge of waste subject to the Order is one that could directly or indirectly reach waters of the state, which includes both surface waters and groundwaters. Direct discharges may include, for example, discharges directly from piping, tile drains, wells, ditches or sheet flow to waters of the state, or percolation of wastes through the soil to groundwater. Indirect discharges may include aerial drift or discharges from one parcel to another parcel and then to waters of the state. See also the definition for "waste".

49. Waters of the State – Is defined in Water Code section 13050 as "*any surface water or groundwater, including saline waters, within the boundaries of the State*."

50. Water Quality Criteria – Levels of water quality required under section 303(c) of the Clean Water Act that are expected to render a body of water suitable for its designated uses. Criteria are based on specific levels of pollutants that would make the water harmful if used for drinking, swimming, farming, fish production, or industrial processes. The *California Toxics Rule* adopted by USEPA in April 2000 sets numeric water quality criteria for non-ocean surface waters of California for a number of toxic pollutants.

51. Water Quality Objectives – Defined in Water Code section 13050 as "*limits or levels of water quality constituents or characteristics which are established for the reasonable protection of beneficial uses of water or the prevention of nuisance within a specified area.*" Water quality objectives may be either numerical or narrative and serve as water quality criteria for purposes of section 303 of the Clean Water Act.

52. Water quality problem – Exceedance of an applicable water quality objective or a trend of degradation that may threaten applicable Basin Plan beneficial uses.

53. Water Quality Standards – Provision of state or federal law that consist of the designated beneficial uses of a waterbody, the numeric and narrative water quality criteria that are necessary to protect the uses of that particular waterbody, and an antidegradation statement. Water quality standards include water quality objectives in the Central Valley Water Board's two Basin Plans, water quality criteria in the California Toxics Rule and National Toxics Rule adopted by USEPA, and/or water quality objectives in other applicable State Water Board plans and policies. Under section 303 of the Clean Water Act, each state is required to adopt water quality standards.

Acronyms and Abbreviations

2008 Farm Bill	Food, Conservation, and Energy Act of 2008
Basin Plan	*Water Quality Control Plan for the Sacramento and San Joaquin River Basins* (4th Ed.)
BPTC	best practicable treatment or control
CAC	county agricultural commissioner
CCR	California Code of Regulations
CEDEN	California Environmental Data Exchange Network
Central Valley Water Board	California Regional Water Quality Control Board, Central Valley Region
CEQA	California Environmental Quality Act
COC	constituent of concern
CRHR	California Register of Historic Resources
CTR	California Toxics Rule
CV RDC	Central Valley Regional Data Center
CV-SALTS	Central Valley Salinity Alternatives for Long-Term Sustainability
CWC	California Water Code
DO	dissolved oxygen
DPH	California Department of Public Health
DPM	diesel particulate matter
DPR	California Department of Pesticide Regulation
DWR	California Department of Water Resources
ECR	Existing Conditions Report
EDD	electronic data deliverable
EIR	environmental impact report
EPA	U.S. Environmental Protection Agency
EQIP	Environmental Quality Incentives Program
ESA	federal Endangered Species Act
ESJ WQC	East San Joaquin Water Quality Coalition
FWQMP	farm water quality management plan
GeoTracker ESI	GeoTracker Electronic Submittal of Information Online System
GIS	Geographic Information System
GPS	Global Positioning System
GQMP	groundwater quality management plan
HAPs	hazardous air pollutants
ILRP	Irrigated Lands Regulatory Program
MDL	method detection limit
MLD	most likely descendant
MMRP	mitigation monitoring and reporting program
MRP	monitoring and reporting program
MRPP	monitoring and reporting program plan
MWICR	Monitoring Well Installation Completion Report
MWISP	Monitoring Well Installation and Sampling Plan
NAD83	North American Datum 1983
NAHC	Native American Heritage Commission

NAVD88	North American Vertical Datum 1988
NMFS	National Marine Fisheries Service
NOA	notice of applicability
NOC	notice of certification
NOI	notice of intent
NOT	notice of termination
NPDES	National Pollutant Discharge Elimination System
NPS	nonpoint source
NPS Policy	State Water Board's Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program
NRHP	National Register of Historic Places
NTR	National Toxics Rule
PAMs	polyacrylamides
PCPA	Pesticide Contamination and Prevention Act
PEIR	Long-Term Irrigated Lands Regulatory Program Final Program EIR (Final and Draft) (Certified by Resolution R5-2011-0017)
PRC	California Public Resources Code
PUR	pesticide use report, CA DPR
QAPP	quality assurance project plan
QA/QC	quality assurance and quality control
MPEP	management practice evaluation program
RL	reporting limit
RWD	report of waste discharge
SB	Senate Bill
SIP	*Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of CA* (State Implementation Plan)
SQMP	surface water quality management plan
State Water Board	State Water Resources Control Board
SWAMP	surface water ambient monitoring program
TAC	toxic air contaminant
TDS	total dissolved solids
TIE	toxicity identification evaluation
TMDL	total maximum daily load
TST	test of significant toxicity (USEPA method)
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
WDRs	waste discharge requirements

September 27, 2010

Via Electronic Mail

ILRP Comments
Ms. Megan Smith
630 K Street, Suite 400
Sacramento, CA 95814

Re: Comments on the Central Valley Regional Water Quality Control Board's Draft Irrigated Lands Regulatory Program Long-Term Program Development Staff Report (Staff Report), Draft Technical Memorandum Concerning the Economic Analysis of the Irrigated Lands Regulatory Program (Economic Analysis), and Draft Program Environmental Impact Report (DPEIR)

Dear Ms. Smith:

These comments are submitted on behalf of California Rural Legal Assistance, Inc., California Rural Legal Assistance Foundation, Clean Water Action, Community Water Center, Environmental Justice Coalition for Water, Food & Water Watch, and Pacific Institute. We are a group of nonprofit organizations concerned about the impacts of groundwater contamination on Central Valley communities and the environment.

I. Executive Summary

In producing this set of documents, staff for the Central Valley Regional Water Quality Control Board (the Board) has conducted a severely lopsided analysis that results in a program that does not sufficiently protect water quality objectives or beneficial uses. The economic analysis significantly overestimates agricultural costs while simultaneously failing to make an equal, balanced attempt at quantifying and analyzing the costs and impacts of continued agricultural waste discharges to community drinking water systems, public health and the environment. Likewise, the environmental analysis also fails to differentiate among the environmental and public health impacts and benefits of the various regulatory alternatives. By failing to provide any analysis of the tradeoffs and opportunity costs of adopting a more or less stringent regulatory program, these documents not only promote uninformed decision making by the Board, but result in an analysis that vastly undervalues the economic, public health, and environmental benefits that would be realized with the adoption of an effective regulatory program. As a result, staff has recommended a skewed program to the Board that is not sufficiently protective of water quality objectives and beneficial uses.

In essence, staff has placed undue weight on one of the goals of the long-term Irrigated Lands Regulatory Program (ILRP), while disregarding the other three program goals as well as legal mandates contained in the Porter-Cologne Water Quality Control Act, the relevant Central Valley basin plans, and the State Water Quality Control Board's Anti-Degradation and Non-Point Source policies. When all of the program goals and objectives and legal mandates are accorded their proper weight, it is clear that Alternative 2, on which the Staff-Recommended Program is largely based, falls short in numerous ways and that Alternative 4 is the vastly superior program alternative that should form the basis of a substantially-revised, final staff-recommended program.

In this next phase, staff should revisit both its economic and its environmental analyses as well as the components of the final program it will recommend to the Board. This time around, rather than arbitrarily and capriciously basing all of its decisions on the costs of regulation to agriculture alone, it should balance the costs of imposing each potential regulatory component against (a) that component's predicted effectiveness at protecting and improving water quality and public health and (b) the associated and countervailing cost savings of such protection and improvement to Central Valley residents.

After a more fair and balanced analysis, we believe that the staff-recommended program will include the following key regulatory components, necessary to implement an effective program:

1. Collect basic information on farm practices and water quality to establish a baseline and effectively evaluate management practices. Specifically, an effective program must obtain sufficient information on what practices are in use, how much fertilizer and other chemicals are applied that may be impacting water quality, levels of water quality currently in agricultural areas (by sampling existing wells), the location of recharge areas, wells (active, abandoned, dry & standby), and other features that may act as direct pathways for contamination of groundwater aquifers without adequate protection measures.

2. Result in real farm-level changes to protect groundwater by including mechanisms to ensure adoption of best management practices (BMPs or BPTC), requiring farm-level education and assistance, and ensuring that practices are effective through representative monitoring.
3. Contain effective mechanisms to ensure accountability by setting clear standards for compliance that ensure that dischargers are not contributing to exceedances of water quality objectives and are minimizing degradation, and by ensuring that the Board has effective enforcement mechanisms to compel compliance.
4. Include a component to address both clean-up of legacy agricultural contamination and mitigation of continued degradation and exceedances.

II. Table of Contents

III. Why The Central Valley Needs an Effective Program

A. Extensive Surface and Groundwater Contamination

Runoff and leaching of agricultural chemicals, animal waste, and other contaminants present great risks to the Central Valley's surface and groundwater aquifers. The Central Valley's population has grown from 2 million to 3.8 million people since 1980 and is projected to reach 6 million by 2020. Urban groundwater use, while not yet superseding use for agricultural irrigation, has increased along with the population, increasing pressure on groundwater resources and affirming the need to protect groundwater quality over the long term.[1] While there is no over-arching program to monitor the Central Valley's groundwater, available data indicate persistent contamination problems.

In one study of domestic wells in the San Joaquin Valley between 2001 and 2003, researchers found that 44 percent of wells sampled had nitrate levels above the drinking water standards.[2] A 2010 report released by the state's Groundwater Ambient Monitoring and Assessment (GAMA) Domestic Well Project found that in Tulare County, 40 percent of private wells studied did not meet the drinking water standard for nitrates, and 33 percent of the wells tested positive for total coliform bacteria.[3] According to the State Water Resources Control Board, compared to other parts of California, the Central Valley region has the highest number of public drinking wells contaminated with nitrate above the drinking water standard of 10 micrograms per liter (mg/L).[4]

Historical data in the Eastern San Joaquin Valley indicate that nitrate concentrations in groundwater have increased each decade since the 1950s. The data indicate that nitrogen fertilizer is the largest contributor to this increase, although dairy production plays a large role as well. This study also reveals higher concentrations of nitrate and pesticides in shallow groundwater compared to deep. Because water can take between forty and fifty years to travel from the water table to deeper parts of the aquifer, the levels of nitrates and pesticides in deeper groundwater are expected to increase over the next several decades.[5]

Surface water in the Central Valley is severely impaired as well. The 2008/2010 303(d) list adopted by the State Board on August 4, 2010 shows a 64 percent increase of impaired water bodies statewide compared to the number of listings identified in 2006. In Region 5 (Central Valley), 342 water bodies were impaired in the 2006 303(d) list; staff have recommended the

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[1]Faunt, Claudia, Editor. "Groundwater Availability of the Central Valley Aquifer, California." USGS Groundwater Resources Program, Professional Paper 1766. 2009 at 1, 104.

[2]Burow, Karen R., et al. "Regional nitrate and pesticide trends in ground water in the Eastern San Joaquin Valley, California." *Journal of Environmental Quality*. Vol. 37. 2008 at S-262.

[3]Groundwater Ambient Monitoring and Assessment Domestic Well Project, California State Water Resources Control Board. "Groundwater Quality Data Report Tulare County Focus Area." March 2010 at 17.

[4]Cochrane, Christopher. "Groundwater Information Sheet: Nitrate/Nitrite." State Water Regional Control Board, Division of Clean Water Programs Groundwater Special Studies Unit. October 2002 at 2.

[5]Burow, Karen R., et al. "Regional Nitrate and Pesticide Trends in Ground Water in the Eastern San Joaquin Valley, California." *Journal of Environmental Quality*. Vol. 37. 2008 at S-261. *See also* Harter, Thomas. (2009). Agricultural Impacts on Groundwater Nitrate. *Southwest Hydrology* 8(4): 23.

addition of another 411 water bodies -- an increase of 120 percent -- and the removal of only 23 water bodies, for a total number of 730 impaired surface water bodies, the second-highest number of all regions in the state.[6] The vast majority of nitrate-impaired surface water bodies in the state are located in the Central Valley, according to the State Board.[7]

B. Irrigated Agriculture is the Major Contributing Source

There is scientific consensus that irrigated agriculture is a major source of water contamination.[8] The U.S. Geological Survey (USGS) has found that nitrate pollution of both surface and groundwater in the Central Valley is due primarily to the region's intensive irrigated agriculture and its use of chemical fertilizer.[9] Irrigated agriculture in the San Joaquin Valley alone produces approximately 528 million pounds of nitrogen that are potentially leaching into the groundwater each year.[10] Even the California Regional Water Quality Control Board for the Central Valley

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[6]State Water Resources Control Board. "Staff Report: 2010 Integrated Report Clean Water Act Sections 303 (d) and 305 (b)." April 19, 2010, at iv.

[7]State Water Resources Control Board. "2010 Integrated Report — All Assessed waters for Nitrate as Nitrate (NO3)." Available at http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml.

[8]Harter (2009). Dubrovsky, Neil, et al. (1998). Water Quality in the San Joaquin-Tulare Basins, California, 1992-95. U.S. Geological Survey Circular, 1159. Davisson, M. and R. Criss. (1993). Stable isotope imaging of a dynamic groundwater system in the southwestern Sacramento Valley, California (USA). *Journal of Hydrology*. 144: 213–246. Davisson, M., and R. Criss. (1996). Stable isotope and groundwater flow dynamics of agricultural irrigation recharge into groundwater resources of the Central Valley, California. In: International Symposium on Isotopes in Water Resources Management. IAEA-SM-336/14. Vienna: International Atomic Energy Agency, 405-418. Burow, K., J. Shelton, and N. Dubrovsky. (1998). Occurrence of nitrate and pesticides in groundwater beneath three agricultural land-use settings in the eastern San Joaquin Valley, California, 1993-1995. Sacramento: U.S. Geological Survey.

[9]Gronberg, J., C. Kratzer, K. Burow, J. Domagalski, and S. Phillips. (2004). Water-Quality Assessment of the San Joaquin–Tulare Basins—Entering a New Decade. Sacramento: U.S. Geological Survey. Burrow et al. 1998. Burrow et al. 2008. Suen, C.J. 2008. Using Isotopic Ratios and Major Minerals Data to Identify the Sources of Ground Water and Ground Water Nitrate in Relation to Pesticide Residues: California Department of Pesticide Regulation, Environmental Monitoring Branch, June 24, 2008. Esser, B.K. et al. 2009. California GAMA Program: Impact of Dairy Operations on Groundwater Quality: Lawrence Livermore National Laboratory under Contract W-7405-ENG-48, August 17, 2009. Green, C.T., L.H. Fisher, and B.A. Bekins. 2008. Nitrogen Fluxes through Unsaturated Zones in Five Agricultural Settings across the United States: Journal of Environmental Quality, May–June 2008, Vol. 37, pp. 1073–1085. Harter, T. et al. 2005. Deep vadose zone hydrology demonstrates fate of nitrate in eastern San Joaquin Valley: California Agriculture, Vol. 59, No.2, p.124–132. Singleton, M.J. et al. 2007. Saturated Zone Denitrification: Potential for Natural Attenuation of Nitrate Contamination in Shallow Groundwater Under Dairy Operations: Environmental Science & Technology, Vol. 41, p. 759–765. McNab, W.W. et al. 2007. Assessing the Impact of Animal Waste Lagoon Seepage on the Geochemistry of an Underlying Shallow Aquifer: Environmental Science & Technology, Vol. 41, p.753–758.

[10]*See* Harter (2009). National Agricultural Statistics Service. (2007). The Census of Agriculture. Washington: United States Department of Agriculture. The Staff Report indicates that the entire Central Valley produces approximately 513 million kilos, or 565,000 tons, of nitrogen per year. Staff Report, p.18 (citing Ruddy, B.C., D.L. Lorenz, D.K. Mueller. 2006. County-Level Estimates of Nutrient Inputs to the Land Surface of the Conterminous United States, 1982–2001. U.S. Geological Survey, Reston, VA. Scientific Investigations Report 2006-5012).

Region (the Board) has acknowledged irrigated agriculture's significant, ongoing contribution to water quality contamination in the Central Valley in its Basin Plans to protect water quality for the region.[11]

While irrigated agriculture is certainly not the only source contributing to surface and ground water contamination in the Central Valley, it is the most significant source and the only major source that is not yet regulated by a Waste Discharge Requirement (WDR). Communities already treat their wastewater and (particularly in small rural communities) are paying very high rates to do so.[12] Dairies also have requirements to protect water quality under their recent general WDR, which includes requirements for every dairy in the region to conduct monitoring and implement nutrient management plans. But there are currently no regulatory requirements whatsoever under any Board program to protect groundwater from fertilizers and pesticides, which irrigated agriculture applies intensively and extensively throughout the valley. We cannot expect to solve our drinking water crisis and prevent the loss of many more community water supplies without creating an effective program to regulate agricultural pollution, and this regulatory program should be consistent with the requirements for other major dischargers.

C. Disparate Impacts on Communities of Color

Furthermore, we can't afford to take another decade to get changes in place. Already, the Board's failure to enact groundwater protections has disproportionately impacted environmental justice (EJ) communities, and these disparities only increase each year and with each new

[11]Both basin plans in the Central Valley region document the significant negative impact that discharges to state waters from irrigated agriculture continue to have on water quality in the region. *See* California Regional Water Quality Control Board, Central Valley Region, The Water Quality Control Plan for the Sacramento and San Joaquin River Basins, 4th ed. (September 2009) (*hereinafter* SSJR Basin Plan), p.IV-2.00 (observing that "[i]rrigated agriculture accounts for most water use in the two sub-basins [Sacramento River and San Joaquin River,]" that "[a]gricultural drainage contributes salts, nutrients, pesticides, trace elements, sediments, and other by-products that affect the water quality of the rivers of the Delta[,]" that "[p]esticides and nutrients are . . . major ingredients of surface agricultural drainage" that "have found their way to ground and surface waters *in many areas of the basins*[,]" and that "[n]itrate and DBCP (1,2-Dibromo-3-chloropropane) levels exceeding State drinking water standards *occur extensively in ground water in the basins* and public and domestic supply wells have been closed because of DBCP, EDB, nitrates, and other contaminants in several locations") (emphases added), *available at* http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/; California Regional Water Quality Control Board, Central Valley Region, The Water Quality Control Plan for the Tulare Lake Basin, 2d ed. (January 2004) (*hereinafter* TL Basin Plan), pp.IV-2 to IV-4 (observing that "[i]rrigated agriculture accounts for most water used in the Tulare Lake Basin[,]" that "[a]gricultural drainage . . . carries varying amounts of salts, nutrients, pesticides, trace elements, sediments, and other by-products to surface and ground waters[,]" that "[p]esticides and nutrients in agricultural drainage have found their way to ground waters *in many areas of the basin*[,]" that "[n]itrate and pesticide levels exceeding the State drinking water standards occur in some ground waters in the basin, and have caused closure of domestic supply wells in several locations[,]" and that "[o]ne of the biggest problems facing municipal water providers is the presence of the chemical dibromochloropropane (DBCP) in their wells") (emphasis added), *available at* http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/.

[12]Sewer treatment plants must secure an individual Waste Discharge Requirement (WDR) or NPDES permit, depending on the methods of disposal. In small rural communities like Yettem, sewer rates alone are over $75 per month, while the median household income is far below the poverty level.

community that loses a drinking water supply to agricultural contamination. Researchers at UC Berkeley have documented the reality that we already know on the ground, which is that nitrate contamination disproportionately impacts small, predominantly Latino communities and small communities with less homeowners.[13]

By disparately impacting low income, communities of color, the Board's failure to enact groundwater protections, violates our states commitment to equality and freedom from discrimination as laid out in California Government Code, Section 11135 which states that no person in the State of California shall, on the basis of race, national origin, ethnic group identification, religion, age, sex, sexual orientation, color, or disability, be unlawfully denied full and equal access to the benefits of, or be unlawfully subjected to discrimination under, any program or activity that is conducted, operated, or administered by the state or by any state agency. Furthermore, the Board's failure to enact groundwater protections threatens California's Fair Employment and Housing Act, California Government Code 12900, et seq., which guarantee all Californians the right to hold and enjoy housing without discrimination based on race, color or national origin.

Should the Board fail to choose an alternative that adequately addresses groundwater protection and protects communities of color most impacted by contaminated drinking water, the Board may violate California's Equal Protection and Fair Housing Laws, including the Fair Employment and Housing Act and California Government Code 11135. Furthermore, California Government Code Section 65008 renders null and void any action undertaken by a local governmental agency that denies to any individual or group of individual the enjoyment of their residence, landownership or tenancy. The Board's decision, if it fails to protect the drinking water for California's most vulnerable communities, may be null and void.

These EJ communities are more likely to have contaminated drinking water sources that result in being unable to provide safe drinking water to their residents on an on-going basis. As a result, families in these communities have to buy alternative sources of drinking water while still paying high water bills, leading to a huge financial burden for our state's poorest families. Many families continue to drink the water, resulting in health impacts that may ranging from thyroid and kidney problems, to death in infants.

But these communities are really just the canaries in the coal mine. Because they are more vulnerable, they show the impacts of this contamination first and more severely, but in reality communities large and small and rich and poor are impacted and will only continue to be without real, concrete changes to protect our water sources.

[13]Balazs et al. 2010. Social Disparities in Nitrate Contaminated Drinking Water in California's Central Valley. *Draft under review.*

IV. Staff's Evaluation of the Program Alternatives is Flawed and Should Demonstrate that Alternative 4 is the Clearly Superior Alternative.

The Staff Report's evaluation of the long-term program alternatives against the program's goals and objectives,[14] if performed correctly, should conclude that Alternative 4 is the clearly superior program alternative. We understand that this analysis is not an exact science, but based on the evidence in the documents and on proper application of the actual meanings of the goals and objectives,[15] staff should conclude that Alternative 4 is best-equipped to meet the goals of the ILRP. Staff attempts to justify its rejection of all four program alternatives and the creation of its own hybrid proposed program, based largely on the deeply-flawed Alternative 2, by selectively changing the meaning of the goals and objectives and failing to make an honest effort to determine the differences among each of the alternatives in terms of their effectiveness at improving water quality, public health and the environment. As a result, the Staff-Recommended Program is missing the fundamental elements of an effective program, most of which *are* included in Alternative 4.

A. The Staff Analysis of the alternatives improperly changes Objectives 4 & 5 to impose a new requirement that is different than the stated objectives and ignores the components of Alternative 4 that are designed to conform precisely with the stated objectives of 4 & 5.

The Staff Report erroneously concludes that Alternative 4 is only *partially* consistent with Objectives 4 & 5, but to reach this conclusion, it first reinterprets and thus effectively changes the meaning of these two objectives. In the section of the Staff Report entitled "Goals and Objectives of the Long-Term Irrigated Lands Regulatory Program," Objectives 4 and 5 are described as being that the ILRP promote coordination with other Central Valley Water Board programs and other regulatory and non-regulatory agencies.[16] In the section of the Staff Report entitled "Evaluation of Long-Term Program Alternatives," however, staff erroneously reinterprets Objectives 4 & 5 to mean that the ILRP must be managed at a regional level, on the theory that "management at the watershed level would promote coordination" better than "[m]anagement at the farm level . . . ."[17] There is no evidence to support that conclusion. Furthermore, such an interpretation substantively changes objectives that were established and approved by group consensus during the lengthy Stakeholder Advisory Workgroup process in August 2009.[18] In effect, staff appears to be changing Objectives 4 & 5 to mean that administrative costs for the Board must be minimized. While this is a laudable aim, it was *not* one of the Goals and Objectives of the program that were agreed upon during the lengthy stakeholder process. Instead, because administrative costs must ultimately be borne by the

[14]California Environmental Protection Agency, Regional Water Quality Control Board, Central Valley Region, Adam Laputz, et al., Irrigated Lands Regulatory Program Long-Term Program Development Staff Report (July 2010), attached as Appendix A to Draft Irrigated Lands Regulatory Program, Program Environmental Impact Report (*hereinafter* Staff Report), pp.96-136.

[15]These goals and objectives are described in the Staff Report at pages 92-93.

[16]Staff Report, p.93.

[17]*See* Staff Report, p.102-103.

[18]*See* Staff Report, p.92.

dischargers through fees, the administrative costs are already incorporated into the Economic Analysis in terms of impacts on agriculture. In other words, the Board's administrative costs were not included among the explicit Goals and Objectives because stakeholders felt that what mattered most was the overall economic impacts of the program on agriculture, local communities, and the environment. As these Goals and Objectives have already been settled upon, they are not properly subject to revisions at this stage in the development of a long-term ILRP.[19]

The Board cannot, in the course of evaluating the program alternatives, change those objectives to mean something different than their plain meaning, namely, that programs should promote coordination with other existing regulatory and non-regulatory programs.

In any event, contrary to staff's assertions, adding an additional layer to the program in the form of sub-regional lead entities further complicates coordination of this program with the other Central Valley Water Board programs, such as the dairy general order, because it removes information, management, and, ultimately, enforcement from the dominion of Board staff. Furthermore, by utilizing coalitions, the Staff-Recommended Program creates even less transparency and injects yet another layer of bureaucracy to navigate and coordinate - one that is not part of any other existing agency, nor under the control of the Regional Board, nor conforms to watershed boundaries.

In contrast, Alternative 4 includes two key components that directly ensure that this alternative will be consistent with Objectives 4 and 5, by: 1) allowing for growers to create legally responsible and transparent groups to facilitate coordination with the Regional Board and other entities and programs, and 2) creating a regional monitoring program run by a third party.[20] In fact, this Alternative is more consistent with Objectives 4 and 5 than either Alternative 2 or the Staff-Recommended Program, because it would allow "the formation of responsible legal entities that could serve a group of growers who discharge to the same general location and share monitoring locations."[21] Such a structure is entirely consistent with the Grasslands Bypass Project and even the recently-proposed supplemental monitoring program within the Dairy general order, and far more so than either Alternative 2 or the Staff-Recommended Program. In fact, the Staff Report points to exactly this structure in the Grasslands Bypass program as a successful example of how one primary and legally-responsible entity can coordinate with a group of growers to ensure that they meet the program goals.[22] Furthermore, by having a *legally-responsible* entity, rather than an entirely separate third party that is not legally responsible to the Board (as in Alternative 2 and the Staff-Recommended Program), the structure proposed in Alternative 4 will be able to ensure compliance through direct enforcement actions, while still

[19]In fact, such an interpretation conflicts with the interpretation contained in staff's analysis of the lead entities program element, which states that "[p]rogram goals and objectives and policy requirements do not require that the lead entity be the Central Valley Water Board *or a third party*." Staff Report, p.138 (emphasis added).

[20]*See* ICF International, Draft Irrigated Lands Regulatory Program Program Environmental Impact Report, July 2010 (prepared for Central Valley Regional Water Quality Control Board) (*hereinafter* DPEIR), pp.3-16; 3-20; 3-24 to 3-25.

[21]DPEIR, p.3-20.

[22]*See* Staff Report, pp.80-81 (discussing the Grasslands Bypass project, which is implemented exactly through this kind of legally responsible third-party structure).

coordinating work on the watershed level. This structure will also ensure quality control and transparent reporting, both of which are integral to promoting coordination with other regulatory and non-regulatory programs.

Furthermore, and perhaps most clearly, Alternative 4 furthers coordination with other regulatory and non-regulatory programs by creating a regional monitoring program. This component alone promotes coordination with regulatory and non-regulatory programs more than any other alternative, as it would explicitly integrate existing agencies that could help conduct and create the criteria for regional monitoring that could be funded through this program so as to ensure that the program data can be directly integrated into existing monitoring efforts.[23] This is far more consistent with promoting coordination with regulatory programs, such as the dairy and storm water programs, by ensuring that the quality of data and accessibility of that data is sufficient for use in both existing regulatory and non-regulatory programs.

The staff analysis ignores these specific additional regional coordination components of Alternative 4 and instead erroneously evaluates it as being equal to Alternatives 3 and 5 merely because each grower would be enrolled directly in the program and required to develop individual farm water quality management plans (FWQMPs). In fact, the minimal, non-certified FWQMPs envisioned in Alternative 4 will actually promote coordination with local groundwater management planning programs and other existing programs by encouraging the implementation of exactly the kinds of practices identified in local/regional plans to be implemented at the farm level.[24] Without FWQMPs, growers have no guidance on what practices or measures would be most effective or appropriate for their own individual operations and therefore will be unlikely to implement new practices into their operations, resulting in minimal actual changes on the ground. The local management plans required by Alternative 2 and the Staff-Recommended Program include no mechanisms to require implementation of any of the practices identified in plans, and the third party lead entities (coalitions and/or local water agencies) do not have authority to require individual growers to implement management practices or even participate in monitoring. By requiring FWQMPs,[25] Alternative 4 will complement existing planning programs by helping to promote actual changes at the farm level that are consistent with those plans. In contrast, Alternative 2 and the Staff-Recommended Program would require changes in the existing groundwater management plans to meet the requirements of this program (or duplication of such plans through the creation of entirely new management plans), thereby interfering with ongoing processes rather than providing a mechanism that complements those existing efforts and helping growers utilize the guidance from those plans to determine how their own operations can minimize impacts on groundwater.

Staff's conclusion that Alternative 4 if only partially consistent with Objectives 4 and 5 is not supported by substantial evidence. Staff cannot ignore the regional components that make

[23]*See* DPEIR, p.3-25.

[24]Local Groundwater Management Plans are voluntary documents that do not actually require any of the components lists in AB 3030 nor do local agencies that administer the plans have the authority to require implementation of management practices or participation in monitoring programs. *See* Staff Report, p.88-89.

[25]Many of the requirements in FWQMPs are similar to the recommended components of AB 3030, making them particularly complementary and encouraging the implementation of existing SB303 plan practices on the farm level. *Compare* Attachment F of the Staff Report with Staff Report, pp.88-89.

Alternative 4 fully consistent with Objectives 4 and 5 just because this alternative includes enforcement mechanisms with individual growers and farm-level planning. While there may be ways to promote these objectives even further in a final program, that is the case for every alternative and all of the evaluation criteria. The fact that is possible to improve Alternative 4 should not form a basis for finding that it is only partially consistent with the objectives, given that there are direct measures built in to the alternative to do precisely what is required by these objectives. In fact, these measures are even in many cases more effective than those contained in Alternative 2, which staff found to be consistent with Objectives 4 and 5, despite the fact that the regional lead entities envisioned in this alternative do not coincide with watershed boundaries or any other existing boundaries utilized by other relevant agency and non-agency programs.

B. The Staff Analysis should have found that Alternative 4 is consistent with all criteria and therefore should have based its proposed program around Alternative 4.

Alternative 4 is the clearly superior alternative and should have formed the basis for the Staff-Recommended Program. Only Alternative 4 is consistent with all of the evaluation criteria. Given that Alternative 2 does not satisfy the legal requirements of the State Board's Nonpoint Source Policy and Anti-degradation Policy, it is not a feasible alternative. Furthermore, although the DPEIR fails to differentiate among the environmental impacts of the various alternatives, it should have found that Alternative 4 would greatly outperform Alternative 2 in terms of accomplishing Goals 1, 2, and 4, and that Alternative 4 sufficiently meets Goal 3.

While the Staff Report, DPEIR and Economic Analysis went into great detail analyzing the alternatives' relative differences in performance with respect to Goal 3, none of these documents contain any real analysis of the alternatives' relative differences in performance with respect to Goals 1, 2 and 4. Instead, staff has concluded that because all alternatives ask growers to "prevent nuisance conditions and/or exceedance of water quality objectives in State waters associated with waste discharge from their irrigated lands,"[26] so long as they have any reference to groundwater, any alternative (including Alternatives 2-5 and the Staff-Recommended Program) will all result in equal implementation of BMPs and improvements and protections of water quality.[27] This seems absurd and without any basis in reality. As a result of essentially ignoring any difference in the alternatives' impact on water quality, staff seem to be basing their entire Staff-Recommended Program purely on pursuing Goal 3 over all others, rather than trying to maximize water quality protection in the most economic way, consistent with all four goals.

Although the DPEIR does not sufficiently analyze the Alternatives to determine what is the clear "environmentally superior alternative[,]"[28] (see CEQA comments below), Alternative 4 is clearly more likely to result in improvements in water quality and reductions in degradation than Alternative 2 or even the Staff-Recommended Program, since it incorporates mechanisms to ensure that farms have guidance for how to protect water quality in their own individual

[26]Staff Report, p. 99.

[27]Staff Report, p. 100, 162-163.

[28]*Watsonville Pilots Assn. v. City of Watsonville*, 183 Cal. App. 4th 1059, 1089 (2010).

operations (FWQMPs), and the Board will have the ability to verify whether management plans are effective and ensure that BPTC is implemented.

The assumption that all practices may be implemented to a similar degree under any alternative and therefore environmental impacts are not expected to vary widely is without any supportable evidence and contrary to the experience of even this Regional Board in its own regulatory programs.[29] Certainly coalitions in the current ILRP and entities overseeing AB3030 and SB1938 groundwater management plans have not been able to show that best management practices have been adopted nearly to the same extent as more direct regulatory programs, such as the Grasslands Bypass Project, the Dairy General Order, and California Department of Pesticide Regulation's (DPR) Ground Water Protection Area (GWPA) permits. Therefore, there is not substantial evidence that all the Alternatives will perform equally towards Goals 1, 2, and 4 as indicated in the staff report.

In contrast to Alternatives 4 & 5, Alternative 2 & the Staff-Recommended Program are effectively voluntary programs where third parties voluntarily try to help growers implement monitoring and identify best management plans on a regional level, without any enforcement mechanisms to require growers to actually implement BMPs or even report basic information. The only enforcement that exists is the threat that the Board could regulate individual farms individually, which is no different than the current situation because the Board already has that threat and could regulate farms individually. Therefore, Alternative 2 and the Staff-Recommended Program become nothing more than voluntary programs, which cannot be found to result in the same level of environmental protection as programs with actual enforcement mechanisms, and therefore really should be evaluated as performing only marginally better than Alternative 1. As discussed below in the CEQA section, the staff cannot rely on the implementation of best practices if there is no enforceable mechanism to ensure that they are implemented at the farm level nor any means of monitoring whether they are meeting BPTC standards and sufficiently protecting water quality.[30]

Finally, Alternative 4 performs well towards meeting Goal 3 and protecting the economic viability of agriculture. The costs are estimated at being only a 7% increase from doing no groundwater program at all (Alternative 1), and that is an overestimate since 90% of those costs are attributed to implementing the most expensive management practices, without taking into account more cost effective practices that are more likely to be used as well as the cost savings of implementing those management practices in terms of water, energy and fertilizer and pesticide costs that might be reduced. (See comments below.) Nonetheless, Alternative 4 was found to not impose an appreciable difference in terms of economic impact than not having a groundwater program at all (Alternative 1). In fact, Alternative 4 was equal to Alternative 2 in its impact on total acres changed and total value of production, but was *superior* to Alternative 2 because it actually results in a net *increase* in jobs for the Basin.[31]

[29]*See* Staff Report, p.131; DPEIR, pp.5.9-16 to 5.9-18.

[30]*See Federation of Hillside & Canyon Associations v. City of Los Angeles*, 83 Cal. App. 4th 1252, 1260-61, 100 Cal. Rptr. 2d 301, 308-09 (2000).

[31]Staff Report, pp.128-129.

While we understand that the Staff should and can suggest ways to improve Alternative 4 to better achieve the Goals and Objectives, it should be used as the base Alternative as it is the only one that is consistent with all the evaluation parameters.[32] Instead the Staff seem to have used Alternative 2 as the Base and made a few small changes that are not sufficient to meet all the Goals and Objectives and most fundamentally, not sufficient to protect water quality (Goals 1, 2, & 4). The application of the analysis in essence weighs cost to agriculture over all other objectives.

Comments on the Staff-Recommended Program are included in detail below. But we encourage staff to provide an evaluation of each of the Alternatives, including the Staff-Recommended Program in order to see how well they perform towards accomplishing all of the Goals and Objectives.

C. The Staff Anti-Degradation Analysis is inadequate and results in inadequate consideration of reasonable protection measures.[33]

We appreciate that the Staff Report does acknowledge that degradation will occur as a result of this program. And we agree that agricultural operations are important to the State of California. However, recognition of the importance of an activity does not alone provide sufficient information to determine how much degradation from that activity is in the best interest of the people of the state. Rather it is vital that the staff attempt to estimate the level of degradation that will occur, and the cost of that degradation on other beneficial uses (including community water supplies and the environment) so that the Board can make an informed decision as to what level of degradation is truly in the best interest to the people of the state. In addition, the staff should consider whether lower water quality can be abated through reasonable means, and consider the implementation of feasible alternative treatment or control methods.[34] Without adequate detail and information on degradation, additional reasonable means or alternative methods cannot be suggested or evaluated.

We are sympathetic to the difficulty of attempting to estimate the level of degradation that is likely to occur as well as the cost of that degradation on other beneficial uses, such as drinking water supplies, at this programmatic level for the entire Central Valley region. Given the level of detail in this stage in the development of the program, it may not be possible to do an effective anti-degradation analysis. Because the Anti-degradation analysis is not complete or sufficient at this programmatic level, further analysis must be done before approving the program implementation measures or approved plans, which would effectively constitute site-specific degradation approvals.[35] We look forward to working with the Staff to help provide adequate analysis for consideration by the Board in the development of those more specific Orders and approvals.

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[32] Staff Report, p.97.

[33] This Section refers to the Anti-Degradation discussion in the Staff Report. See Staff Report, pp.57-68.

[34] *See* Staff Report, p.63.

[35] *See* Staff Report, p.63, n.30.

Even at this programmatic this level, however, we discuss approaches that may be used to quantify the potential impacts on drinking water systems in our comments below on the Economic Analysis. We urge the consideration of the addition of a requirement for dischargers that do contribute to degradation or are found to be contributing to exceedances of groundwater objectives to provide funding for alternative water supplies for communities impacted as an alternative treatment or control method.

V. The Key Components of an Effective Program

There are four basic components that we believe must form part of the final program in order for it to be truly effective. Three of these are currently included as part of Alternative 4, which we believe to be the clearly superior alternative. Most of these components are not included in Alternative 2 and many are not adequately included in the Staff-Recommended Alternative.

A. Collect Basic Information on Farm Practices and Water Quality

Without a better understanding of water quality and the activities that impact it, any proposed program cannot effectively target growers and practices or evaluate its own effectiveness. Specifically, an effective program must obtain sufficient information on: 1) what practices are already in use; 2) how much fertilizer and other chemicals are applied that may be impacting groundwater; 3) the water quality in agricultural areas (particularly levels of nitrate in agricultural areas where there are not public water systems because local residents rely on private domestic wells); and 4) recharge areas, wells (active, abandoned, dry & standby), and other features that may act as direct pathways for contamination of groundwater aquifers. Without this basic information, it will be impossible for the program to establish an initial baseline and then evaluate improvements going forward. Therefore, this information should be required from all growers, including sampling for basic constituents in existing wells, as part of the initial and periodic reporting requirements.

Alternative 4 fills this vast information gap by requiring precisely this kind of basic information from all growers. Specifically, Tier 2 and Tier 3 growers would be required to report sampling results of existing on-site wells and tail water and information about cropping practices and nutrient and pesticide application, in addition to participating in a regional monitoring program to evaluate BMPs. In less vulnerable Tier 1 areas, where initial testing shows that nitrate levels are less than the Action Level, *i.e.*, half the nitrate Maximum Contaminant Level (MCL), and there does not appear to be water quality degradation attributable to agricultural activities, sampling frequency requirements are greatly reduced.

Unfortunately, neither Alternative 2 nor the Staff-Recommended Program propose measures to collect this kind of basic data. Alternative 2 makes no attempt to provide basic farm-level information. The Staff-Recommended Program seems to request that regional management plans in Tier 2 areas provide some information on implementation of practices, but this proposed program does not have a mechanism to establish a baseline and determine in which tier growers should be placed in a manner that is sufficient to ensure that Tier 2 includes all growers that are contributing to exceedances of water quality objectives or water quality degradation. At the very

least, the Staff-Recommended Program should require the reporting of information necessary to determine water quality in areas without public wells in order to establish a baseline and to evaluate changes in water quality, as well as sufficient data on implementation of practices to the Board to evaluate the effectiveness of the program.

Collecting this basic information should not constitute a significant extra expense, as growers should be factoring nitrate levels and other basic water quality parameters into their nutrient budgeting and irrigation practices. If they are not already doing this, such a requirement would help them potentially save money by reducing the need to purchase expensive fertilizer. Additionally, this information may help growers determine what water quality is in their own domestic wells, so that they can protect their families and workers.

B. Result in Farm-Level Changes to Protect Groundwater

1. Result in Adoption of BMPs at the Farm Level

While there is some utility in third parties assisting growers to pool resources and information, the recommended practices actually need to be implemented on a farm level, which means that growers need to have clear guidance on how they can best protect water quality in their own operations.

Regional groundwater management plans have been in existence for a number of years in many areas of the valley, but they have not been able to show significant improvements in water quality, nor have they been able to show widespread implementation of BMPs on their own. Instead, many have become expensive paperweights that water agencies have used to check a box to receive certain sources of funding. While some have been effective at developing regional projects and planning for new development, regional management plans alone will not result in the kind of widespread adoption of BMPs and protection of water quality that is necessary to meet water quality objectives. This is because these documents are planning documents, not regulatory programs. In fact, the implementing agencies, whether coalitions or local water agencies, do not have the authority to require growers to implement BMPs or even participate in monitoring, and therefore any program relying on these entities is completely voluntary. While adoption of either Alternative 2 or the Staff-Recommended Program may lead to better collection and reporting of information to the Board than under the status quo, there is no reason to believe that either of these programs would lead to greater implementation of management practices than under a purely voluntary, educational program.[36] At the end of the day, what is most important is that water quality is protected, and to ensure that, growers need to know how they can integrate protections into their own operations.

While we certainly support the development of – and/or coordination with existing – regional water quality management plans, individual farms must have some guidance for what those regional plans mean for their individual operations and circumstances. For example, given a particular farm's crops, water use and infrastructure, soil, hydrology, and the kinds of wellheads,

[36] *See* Staff Report, p.140 (acknowledging that under third-party coalition structures, particularly those without individual farm management plans, it is difficult for the Board to enforce requirements to implement BMPs).

recharge ponds, and other areas vulnerable to "run-in" on or adjacent to the farm's operations, what should the grower do to minimize water impacts that are economically feasible?

Alternative 2 and the Staff-Recommended Program both contain NO mechanisms to ensure that growers are able to identify exactly what they can and should do to protect water quality in their own operations most effectively. The minimal, non-certified FWQMP requirement set forth in Alternative 4, which is to be kept on the farm unless requested by the Board, would ensure that growers have exactly that – a plan to identify what they can do to protect water quality. Such FWQMPs could still utilize existing or updated regional/local management plans to help identify general practices that are priorities in each region, but by forcing each grower to engage in a thinking exercise about the conditions and needs of his/her particular farm, and encouraging each grower to seek outside technical assistance with this process, FWQMPs would ensure that the guidance is customized to individual farm conditions, rather than consisting merely of general recommendations.

The basic farm-level plans envisioned in Alternative 4 would not impose burdensome costs on individual farms, since growers would not be required to obtain certification or even submit them to the Board. (Growers would merely need to keep their farm-level plans on file to provide to the Board upon request.) Additionally, where farms are only a minimal threat and therefore not contributing to water quality degradation, such as farms in Tier 1 areas under Alternative 4, farm-level plans may be minimal or even unnecessary. In areas where irrigated agricultural discharges are contributing to water quality degradation or exceedances of water quality objectives (Tier 2 and 3 areas under Alternative 4, or parts of Tier 1 areas and all Tier 2 areas under the Staff-Recommended Program), however, these individual plans are necessary to help growers identify what they can and should do to protect water quality. In areas where agriculture is contributing to exceedances of water quality objectives for particular constituents or threatening beneficial uses (Tier 3 areas under Alternative 4 and Tier 2 areas under the Staff-Recommended Program), more in-depth individual management plans tailored to the constituent should be required.

Furthermore, any recommended program should also foresee and facilitate joint management among dischargers when management practices may need to be implemented in coordination with more than one discharger (such as constructed wetlands or combined tail water returns). Alternative 4 allows dischargers to address these regional issues through creation of a legally responsible third party (such as a joint power authority) as is currently being implemented in the Grasslands Bypass Project.

2. Provide Farm-Level Education and Assistance

A significant body of knowledge regarding BMPs is being developed by programs such as the California Department of Food and Agriculture's Fertilizer Research and Education Program (FREP), DPR's Ground Water Protection Program, NRCS, and the UC Cooperative Extension. In conjunction with a requirement for farm-level plans, therefore, an effective program must include an educational and/or technical assistance component to help transfer this knowledge to farm operators and aid them in developing their FWQMPs for their own operations. Such an educational component is included in Alternative 4. Other sources of technical educational

information/assistance could include commodity groups and local water management agencies. Using the model of the Dairy General Order, growers approved by certification programs or other approved environmental compliance assistance programs could receive a discount on program fees.

3. Provide a Feedback Mechanism (Representative Monitoring) to Ensure Management Practices are Effective

An effective program must include feedback mechanisms to ensure that the practices being implemented by growers are truly effective at protecting water quality and therefore truly constitute BMPs (also known as Best Practical Treatment and Control, or BPTC, as required under the Anti-degradation Policy). Not only is this legally required by the State Board's Anti-degradation Policy and Non-Point Source Policy, but it is also the only way to ensure that what growers are doing is truly resulting in reductions in agricultural contributions to water quality degradation and exceedances in water quality objectives. To be effective, the final program the Board adopts must: a) establish guidance for regional monitoring to ensure that it is in fact representative; and b) ensure that it is clear which areas are being represented by each monitoring site so that it is also clear which dischargers will need to implement changes in practices that are shown to be insufficient by these regional monitoring programs.

While Alternative 4 does include such measures, Alternative 2 contains no method for accomplishing this, and the Staff-Recommended Program is limited to *regional* monitoring – it does not require reporting of water quality levels on individual farms, even in vulnerable Tier 2 areas. Furthermore, the Staff-Recommended Program only requires this regional monitoring to take place in Tier 2 areas, despite the fact that many of the areas classified as Tier 1 (under the current definitions used in the Staff-Recommended Program) may also be contributing to significant water quality degradation.

C. Contain Effective Mechanisms to Ensure Accountability

1. Set Clear Standards for Compliance

One of the most critical components of an effective program, and one of our biggest concerns with the staff proposal, is that the proposed program does not even define program compliance as not contributing to exceedances in water quality objectives. Porter-Cologne requires that the Board establish effluent limitations in order to meet water quality objectives, not just ask dischargers to make some improvements. Moreover, the relevant Central Valley Basin Plans and the state Anti-Degradation Policy require that, at a minimum, irrigated agricultural waste discharges may not cause or contribute to exceedances of water quality objectives.[37] No matter which alternative the Board adopts, therefore, the Board must set a clear standard for compliance, namely, that dischargers must not be contributing to exceedances of water quality objectives.

[37]Resolution 68-16. *See also* SWRCB Order Nos. WQ 81-5; WQ 2000-07.

2. Ensure the Board has Effective Enforcement Mechanisms

Enforceability makes all the difference between an effective program and a program that is essentially voluntary. In fact, the Staff Report explicitly acknowledges the difficulty that the Board has already experienced with using third-party coalitions, rather than utilizing legally-responsible third-party entities, as outlined in Alternative 4.[38] Alternative 2 does not include sufficient enforcement mechanisms, as it relies on the same ineffective coalition structure currently in place, or an even less accountable structure of existing water planning groups that lack any ability to compel individual dischargers to implement management practices or participate in monitoring programs.

Although we still believe that Alternative 4 is the most effective balance, the Staff-Recommended Program may be sufficient if it is amended to: 1) include a Prohibition of Discharge for non-enrollment; 2) require dischargers to enroll directly with the Board; and 3) require that coalitions demonstrate sufficient transparency as a condition of Board approval to represent groups of individual growers. Transparency must include not only the requirement that coalitions provide the Board with information regarding individual member grower non-compliance and the coalition's communication of program requirements with member growers, but also the requirement that coalitions provide information and transparency regarding data that is gathered, both to the general public and to the Board upon request. Without such accountability mechanisms, we will continue to repeat the mistakes of the current program.

Secondly, regional monitoring must be conducted by a third party that is not paid directly by dischargers. Structuring the monitoring program in this way will avoid conflicts of interest, ensure that this monitoring program can be more easily integrated with other monitoring programs the Board is undertaking or may undertake, and ensure high-quality, consistent data. The costs of the monitoring program should be built into the discharger fees, and the Board should contract with a neutral, scientific third party such as UC Davis or USGS to design and implement a regional monitoring program. Alternative 4 includes this component, which, as mentioned above, furthers Objectives 4 and 5 of promoting coordination with other existing monitoring programs and the establishment of a regional monitoring program that can be easily integrated with other discharger programs administered by the Board. Alternative 2 is missing this requirement all together. And because the Staff-Recommended Program does not utilize neutral expert third parties, it does not provide sufficient safeguards to ensure effective, objective, reliable, high-quality regional monitoring programs.

D. Clean-Up and/or Mitigate Contamination

One of the components not addressed adequately in any of the Alternatives is the problem of legacy groundwater pollution that has already occurred due in large part to agricultural pollution, including nitrate and pesticide contamination,[39] nor does it try to require mitigation for continued

[38] *See* Staff Report, pp.116-117.

[39] The ECR's main groundwater quality findings explicitly find that legacy pesticides will need to be addressed during the development of the long-term irrigated lands regulatory program. *See* Staff Report, p.20.

degradation or continued contribution to exceedances of water quality objectives. As the staff report indicates, at least $20.5 to $47.5 million are needed just to fund immediate solutions for community water systems impacted by nitrate contamination due at least in part to agricultural contributions.[40] As described below, this is a significant underestimate of the true costs, as it does not include any non-community water systems, such as schools, or any domestic wells, nor does it include any future impacts due to continued degradation which is expected to occur as a result of the program, or treatment costs for both nitrate and pesticides. Unfortunately, there is limited funding for these costs and the long-term ILRP should include a proposal for how this problem will be cleaned up and/or mitigated through such projects.

One proposal is for the Executive Officer to develop a Supplemental Environmental Program (SEP) that could be funded through compliance order contributions after enforcement actions and supplemented by money through the Clean Up and Abatement Account that could provide funding for mitigation of contamination and/or clean-up projects such as those that would rehabilitate wells, treat water sources, or otherwise secure a safe source of water for community drinking water systems and domestic wells that have been impacted by nitrate and pesticide contamination. One benefit of such a program is that it could not only be funded through enforcement actions with this program, but also utilize contributions from enforcement actions from other regulatory programs where dischargers have impacted nutrient and pesticide levels, such as dairies, other CAFOs, and sewer treatment plants. Furthermore, it could help ensure that those dischargers continuing to contribute to the exceedance of water quality objectives could help mitigate their impacts on beneficial uses.

We believe that including a SEP clean-up/mitigation program as part of the long-term IRLP would significantly further the goals and objectives of the program:

- it would provide a means of funding programs to restore water quality (in furtherance of Goal 1 and Objective 1);
- it would provide an economic incentive not to exceed water quality objectives and comply with the program, while only burdening those bad actors that require enforcement actions (in furtherance of Goals 2 and 3 and Objectives 2 and 3);
- it would provide a source of funding to help ensure that even with continued degradation, communities and residents can access funds to help secure safe drinking water sources (in furtherance of Goal 4 and Objective 2);
- it can be coordinated easily with other discharge programs (in furtherance of Objective 4); and
- it would supplement and help promote coordination with California Department of Public Health (CDPH) and U.S. Department of Agriculture (USDA) rural drinking water

[40]Staff Report, pp.50-52.

funding programs by providing a source of funding for those projects or aspects not otherwise covered by their funding sources (in furtherance of Objective 5).

While such a program will not solve all of the problems of legacy pollution and unsafe drinking water in the Central Valley, we believe it will be an important interim step towards developing a truly comprehensive program and can serve as a model or pilot for how a more comprehensive system might work.

Additionally, the Executive Officer or Board should look for ways to assert their authority to ensure that continued contributions to water quality exceedances impacting domestic drinking water supplies are mitigated. Pursuant to Water Code Section 13267, the Executive Officer may require dischargers to conduct sampling of private domestic wells in or near agricultural areas with high nitrate in groundwater and submit technical reports evaluating the sampling results. In addition, pursuant to Water Code Section 13304, the Board may require dischargers to provide alternative water supplies or replacement water service, including wellhead treatment, to affected public water suppliers or private domestic well owners. These provisions should be utilized where appropriate.

VI. Comments on the Staff-Recommended Program

If, despite the fact that Alternative 4 is the clearly superior alternative, staff nevertheless chooses to move forward with its proposed program, we suggest that the following issues must be improved or clarified in order to ensure a truly effective program that meets all legal requirements and implements the program goals and objectives.

It should be noted, however, that the overall economic impact of the Staff-Recommended Program is worse than Alternative 4 in that it will result in overall job loss, rather than jobs gained, and that the savings from eliminating key components of Alternative 4 (including not requiring sampling of existing water quality and not requiring individual farm management plans) do not seem to result in any significant difference in the economic impact towards accomplishing Goal 3, but will result in significant loss in effectiveness towards Goals 1,2 & 4 of improving or protecting water quality and preventing impacts on community water supplies. Furthermore, the alternatives failed to show the varied water quality benefits by alternative, even though the economic analysis did have a clear cost differential by alternative. Just as economic impact is important to an assessment of an alternative relative to the recommended program, so to is the water quality benefits of each alternative relative to the staff-recommended program. The "Estimated Annualized Costs" show a cost differential on alternatives based in part on management practices, which will have a directly beneficial relationship with water quality. If the implementation of practices varies in cost (in particular in Alternative 5), then the water quality benefits must vary as well. Additional cost variables, like greater monitoring and administration can also have a positive effect on water quality. In order to provide the board with the tools to assess if the staff-recommended alternative is the preferred alternative, it is necessary to truly know the water quality benefits of each alternatives. If the presumption is that

the same goal will be attained by Alternatives 2, 3, and 4 but just in different time frames, then those varied timelines should be delineated as well.

A. The Lead Entity[41]

1. Ensuring Enforceability

Enforceability makes all the difference between an effective program and a program that is essentially voluntary, and is one of the elements required by the State Board's Non-point Source Policy.[42] Staff acknowledge the difficulty that the Board has already experienced with using third-party coalitions, rather than utilizing legally responsible third party entities (as proposed in Alternative 4).[43] Because coalition groups are not discharging waste, the Central Valley Water Board has limited authority to enforce program requirements directly. Program enforcement options are limited to direct actions upon irrigated agricultural operators, or revoking Water Board coalition approval. Most coalition groups do not have regulatory authority over members to require implementation of water quality management practices. As a result, the same difficulties experienced over the last five years with coalition implementation will continue into the long-term program under the Staff-Recommended Program.

While we are not clear why staff feel that it is preferable to continue to administer this program though third parties not directly accountable to the Board, we agree that it is critical that the long-term program enroll dischargers directly with the Board and incorporate transparency requirements before approval of any coalition representation of individual growers, including not only requiring coalitions to provide the Board with information regarding non-compliance, and requiring transparency and communication of requirements with growers, but also providing information and transparency regarding data gathered to the public or the Board upon request. Without accountability mechanisms we will continue to repeat the mistakes of the current program.

a. Public Accountability

The delegation of program elements to third party entities reduces the transparency of the program. To counter that problem, we suggest the following:

- Monitoring data submitted by coalitions should be made available in a publicly accessible form (for instance on Geotracker or other state databases) within 30 days of submission to the Board.
- The Board should establish a process for public review of and comment on management plans prior to approval.
- Annual reports submitted by the coalitions must contain detailed information about implementation of their management plans and be made publicly available at the time of

[41]Staff Report § X(B)(5), pp.147-49.
[42]Staff Report, p.55.
[43]*See* Staff Report, pp.116-117.

their submission to the Board. Furthermore, supporting data should be made available to the public or the Board upon request.

- Where the Board is asked to approve an existing plan – such as an existing groundwater management plan or an Integrated Regional Water Management Plan – the same requirements for public review and approval should apply.

These all seem consistent with the cost estimates of the Staff-Recommended Program, but should be made explicit in the description of the final long-term program adopted by the Board.

b. Failure to Enroll in ILRP

Full enrollment is a critical piece of an effective program and has a significant impact on water quality. Our understanding is that enrollment in the current coalitions varies widely. As the number of growers subject to this program increases with the inclusion of groundwater, so will the problem of full enrollment. Therefore, it is critical that the Board issue a Prohibition of Waste Discharge for all dischargers not enrolled in the program after a reasonable time period. After that time period, growers not enrolled should be issued an enforcement action and required to file a Report of Waste Discharge preparatory to issuance of an individual permit.

c. Inspections

In order to ensure that individual farms comply with the coalitions' regional water quality management plans, and in particular, implement required management practices, the Board or its contractor must conduct surprise inspections of 5% of growers, including annual inspections of growers within each coalition. This inspection requirement is already included in the DPEIR in Alternatives 3, 4, and 5 and should be consistent with the cost estimate for the Staff-Recommended Program. Inspections should be prioritized in ultra-high priority (Tier 2) areas that have been deemed extremely vulnerable. If, in addition to the Board inspections, the coalitions conduct their own inspections to verify the data that they are reporting, the Board must require that these inspections be without forewarning, and individual coalition employees should be subject to a significant civil penalty and removal from their position if it is discovered that they have forewarned farm operators of pending inspections.

d. Consequences for Non-Compliance

Existing law clearly establishes that noncompliant operations are to be held civilly liable for their violations. Under the California Water Code Section 13268, operations that have failed to furnish technical or monitoring program reports required by the Regional Board as part of a waste discharge requirement are guilty of a misdemeanor and may be held civilly liable by the Regional Board for a fine of up to $1,000 per day, for each day that the violation continues. California Water Code Section 13350 provides that any person who discharges waste in violation of WDR requirements shall be held civilly liable and may be subject to a fine imposed by the Regional Board of up to $5,000 per day, for each day that the violation continues. Imposition of civil liability on dischargers individually (including all dischargers covered by a coalition failing

to meet program requirements) should be explicitly included as a consequence in consideration of Key Element 5 of the State Board's Non-Point Source Policy.[44]

2. **Clarifying Coalition Responsibilities**

The coalition's main role is to facilitate communication between the Board and individual dischargers. In addition, the coalition should help disseminate best practices in order to assist dischargers with mitigating water pollution. In most cases, these best practices have already been developed by third-party groups (e.g. NRCS, UC Cooperative Extension, university researchers, commodity groups, etc.); the role of the coalitions is simply to facilitate the transfer of this information to dischargers and help identify which practices might be most appropriate for growers in the region. Unfortunately, there is almost no reference to this role for the coalitions in the Staff-Recommended Program.[45] The Staff-Recommended Program does not require a plan for how BMPs will be disseminated, or even a list of approved sources of BMP research and assistance from which the coalitions can draw.

To further this goal, the Staff-Recommended Program should incorporate a requirement for education and incentives to utilize technical assistance providers. This kind of a requirement is included in Alternative 4 but does not seem to be included in the Staff-Recommended Program. Including this requirement will further the goals of Objectives 4 and 5 to promote coordination with other Central Valley Water Board programs and other regulatory and non-regulatory agencies.[46]

Furthermore, using the model of the Dairy General Order, growers approved by certification programs or other approved environmental compliance assistance programs could receive a discount on program fees as it would reduce the administrative burden for coalitions or the Board to work with and oversee individual growers. Such a program would further the goals and objectives of providing incentives to reduce and minimize discharges and make implementation of BMPs more effective.

Although we do not believe the coalitions should play a role in the regional monitoring program laid out in the Staff-Recommended Program (see below), as part of its role in facilitating identification and implementation of BMPs, coalitions should be encouraged to facilitate monitoring at the individual farm level to assist growers in designing and implementing BMPs (e.g. sampling for nutrient levels as part of nutrient management plans). Dischargers may wish to undertake monitoring beyond what is required under the ILRP in order to gauge progress and impacts from changes to BMPs. Coalitions are in a position to assist with this internal technical monitoring, but this is separate and apart from the design and implementation of a regional monitoring program to gauge the effectiveness of the program implementation (again, see below.)

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[44] *See* Staff Report, p.167.

[45] The Staff Report only makes passing reference to this role on p.147 under "Lead Entity": "Work with the Central Valley Water Board to inform growers of program requirements, provide coordination to ensure that water quality concerns are addressed, and provide informational materials on potential environmental impacts of water quality management practices."

[46] Staff Report, p.93.

3. **Removing the Monitoring and Reporting Program from Coalition Jurisdiction**

We understand the utility of working within the existing coalition structure given the limited resources available to the Board and staff. That said, we are very concerned about turning over the administration and reporting of the monitoring program to coalition entities paid directly by the operations whose water they are monitoring. In the staff's proposal, very little direct communication takes place between the Board and the individual dischargers; most information, including suggestions on best practices and the results of monitoring tests, is communicated between the coalitions and the dischargers and then reported by the coalitions to the Board. This puts the coalitions in a position of effectively enforcing the program requirements because they are the first point of contact with the dischargers, even though they have no actual regulatory authority over members to require implementation.[47] This is problematic to say the least. It is particularly problematic given that the coalitions are paid directly by the dischargers for this service, a major conflict of interest, and are directly accountable to their discharger-members.[48] At the very least, the monitoring program -- essentially a way to gauge how well the ILRP is working -- should be administered by an entity accountable to the public.

We agree that all stakeholders need better data, collected in a cost-efficient manner, to evaluate what is working and what is not and to ensure that the operations can respond in a timely way to that data in order to mitigate contamination. But this can and must be accomplished in a way that does not create a direct financial connection between the operations and the coalition or other third-party administrators of the monitoring program. What is the coalition's interest in reporting data showing continued contamination, especially if the Board does not directly review the results of individual monitoring?

If the Board itself cannot administer this program, at the very least the direct financial connection between the dischargers and the monitoring program administrator must be broken. Rather than having the program administered by a third party paid by the dischargers, participating dischargers should pay a higher fee to the Board as part of their permit fee and the additional money should be used to pay a neutral third party hired by the Board to administer the program. This will ensure that the program administrator is accountable to the public, not to entities with a financial stake in the outcomes of the monitoring and reporting.

Having a neutral third party do the regional monitoring will facilitate the Board's goal of eventually establishing a regional monitoring program that will cover all of its programs, because this program can be more easily integrated with other programs. All programs could be feeding into the same regional monitoring program administered by the same publicly-accountable party. This vision for the monitoring program meets the goals of Objectives 4 and 5 to coordinate with state and regional agencies.

Finally, this administrative structure will protect against problems with quality control on the monitoring data. Alternative 4 accomplishes this by promoting the use of third parties, such as UC Davis or USGS to design and conduct the regional monitoring program with costs being

[47]Staff Report, p.9.
[48]Staff Report, p.147.

incorporated into the discharger fees and having the Board contract for those services directly. (See discussion above regarding Alternative 4).

B. Regulatory Requirements[49]

1. Improving Tier Classification and Collection of Basic Baseline Data

In order to develop a robust tiering system and track progress over time, basic data must be compiled both initially as a baseline and through implementation of the program. The Staff-Recommended Program proposes to use existing water quality data from Basin Plans, GAMA, the Department of Pesticide Regulations and other sources to develop the tiering system. This data, while an important piece of the puzzle, provides incomplete information on discharge potential and the impact of agricultural practices on water resources, and therefore must be supplemented.

a. Collect and Incorporate Data on Water Quality in Shallow Domestic Wells in Areas Without Sufficient Public Data.

Many rural agricultural areas may not have publicly available data on nutrients and pesticides because there may not be public drinking water systems in the immediate area. However, there are likely domestic wells in those agricultural areas and therefore all farms should be required to do an initial and periodic sampling of water quality in existing wells, including domestic wells on or nearby the property.

b. Collect and Incorporate Information on Practices and Pesticide and Fertilizer Use to Identify Areas of Higher Risk.

As noted in the Staff Report, water quality detections in public drinking water supply wells, which supplies most of the available groundwater data, likely underestimates the actual area of impact because they sample deeper waters below shallow, nitrate-affected waters or sample wells with long screen intervals.[50] The indicator of fertilizer and pesticide use (along with vulnerability maps as proposed in Alternative 4), rather than water quality data (along with vulnerability maps as in the Staff-Recommended Program), is a better indicator of actual areas of impact from agriculture.[51] Furthermore, the use of this data would further Objectives 2 & 3 of the program by providing incentives for agricultural operations to institute management practices and minimize waste by tying tier designation to actual use, rather than general deep-water well data that may be less immediately tied to growers' practices.

c . Vulnerable Areas Should Include Recharge Areas, Dry and Improperly Abandoned or Sealed Wells, and Other Pathways for "Run-In" Contamination.

[49]Staff Report § X(B)(6), pp.149-156.

[50]Staff Report, p.47.

[51]*See* Staff Report, p.47; *see also*

Burow, K.R., and Green, C.T., 2008, Spatial and temporal trends in nitrate concentration in the Eastern San Joaquin Valley Regional Aquifer and implications for nitrogen fertilizer management: California Plant and Soil Conference: Conservation of Agricultural Resources, February 5 & 6, 2008, Visalia, California, p. 47-52.

Nutrient and pesticide contaminants from agricultural dischargers can enter groundwater through (1) run-in, and (2) leaching.[52] While the groundwater vulnerability maps help identify those areas most likely to be impacted by leaching, run-in is not incorporated. Run-in is likely to impact areas with fractured bedrock, sinkholes, or poorly constructed wells.[53] However, nowhere does the staff alternative propose to collect information to identify those areas. Characterization of those areas susceptible to "run-in" should also be included as a requirement of reporting requirements and those areas should be classified as Tier 2 when appropriate.

2. Ensuring Tiers Reflect High and Low Priority Areas

The Tiers should first and foremost ensure that requirements are focused on high priority areas where agriculture is contributing to exceedances of water quality objectives, but also should ensure compliance with the Basin Plans by also prioritizing those areas where agriculture is contributing to significant degradation. As currently articulated, Tier 1 includes those in the latter category, where water quality is not yet exceeded and it is not in a vulnerable hydrologic area, but still may be in an area that is just below the water quality objective where agricultural contributions to degradation still may be significant. In order to address this issue, Tier 2 should include those areas exceeding the Action Level (50% of the MCL) for those contaminants attributable to agriculture operations, rather than just those areas exceeding MCL.

Alternatively the staff could approach this issue by limiting Tier 1 to growers who can definitively show that they are not contributing to the degradation of California's waters as defined by the California Water Code, and leave those that are contributing to degradation in Tier 2. Tier 1 growers should be allowed to show that they are not contributing to degradation by demonstrating effective implementation of the following practices: elimination of all tail water; use of integrated pest management techniques and no use of pesticides identified as having a high potential to degrade/pollute surface or groundwater; implementation of a nutrient management plan certified by an appropriate professional certification to be protective of water quality; and implementation of storm water control measures to minimize erosion and sediment deposition using best practicable treatment or control.

3. Requirements for Tier 1 Areas

As discussed above, Tier 1 growers should be limited to those who can definitively show that they are not contributing to the degradation of California's waters as defined by the California Water Code. However a widespread lack of data makes trend analysis (and therefore anti-degradation analysis) problematic in some cases. We recommend that those operations that cannot show that they are not contributing to degradation of surface or groundwater should be classified as Tier 2 operations until such data is forthcoming. If staff chooses not to do this, then it must assume that a number of Tier 1 operations are contributing to degradation and therefore subject to greater requirements to protect water quality. At a minimum, therefore, Tier 1 operators under the current definition or those operators that are contributing to degradation

[52]Staff Report, p.45.
[53]Staff Report, p.45.

should be required to prepare and implement a farm water quality management plan to control sources as described in Alternative 4.[54] Staff could avoid having all Tier 1 growers subject to FWQMP requirements by collecting basic data from growers sufficient to indicate whether or not they are contributing to groundwater degradation (not just exceedances), as discussed in the section above.

By the same token, all growers in the program, including Tier 1 growers, should be required to report their on-farm fertilizer application and report periodic water quality sampling results. These results should be included in the first and 5-year reports. There is precedent for this requirement, including DPR's requirement for full pesticide use reporting, and the Dairy program requirements for manure application.

4. Requirements for Tier 2 Areas

Tier 2 is currently defined as very vulnerable areas or areas that are already exceeding water quality objectives. In these cases, much more intervention is needed to ensure that changes are made that will result in ensuring that agricultural discharges are not contributing to exceedances of water quality objectives. In order to meet the requirements for compliance with Porter-Cologne and the State Board's Anti-Degradation Policy, the Board must have a means of ensuring BMPs/BPTCs are implemented at the farm level. In Tier 2 areas, which the Staff-Recommended Program currently limits to those areas where agriculture is (or is likely to be) contributing to exceedances of water quality objectives, the Board must at the very least require individual water quality management plans in order to provide a mechanism for enforcement with individual dischargers, or hold all dischargers covered by a Regional Water Management Plan liable for failure to achieve compliance. The latter option would not be possible under the coalition structure proposed in the Staff-Recommended Program without FWQMPs (although it would be possible under Alternative 4's proposed structure).[55] Therefore, if staff wants to use a coalition structure, it must at a minimum require individual farm water quality management plans for Tier 2 dischargers, in addition to any Regional Water Management Plan Requirements.

a. Individual Farm Water Quality Management Plans for all Tier 2 Dischargers

The current Staff-Recommended Program states that individual water quality management plans would be put into place where regional plans have been ineffective, but it is unclear how farms would be chosen for individual plans or why all farms in Tier 2 should not be required to do individual farm water quality management plans given that Tier 2 already currently limited to those areas with exceedances of water quality objectives where agriculture is a source, or at high risk of having agricultural sources cause exceedances. Staff appears to be weighing the economic considerations more heavily than the environmental ones or even legal obligations to achieve water quality objectives or the ability of the Board to reasonably enforce the program.

FWQMPs for Tier 2 should contain, at a minimum, identification of practices that are currently being or will be implemented to address irrigation management, pesticide management, nutrient

[54] *See* DPEIR, p.3-21.

[55] *See* Staff Report, p.140 (discussing individual and regional water management plans and implications for enforcement with dischargers).

management and erosion control to protect water quality. Plans should account for specific nitrate concentrations in irrigation water and soil in determining agronomic nitrogen application rates to ensure that current discharges to groundwater do not further degrade groundwater. Farm Plan nutrient management plan element must be certified by professional to be protective of water quality. Additionally, plans should contain a schedule for implementation of practices. Lists of water quality protection practices are available for several sources, including the University of California farm plan template available from the University of California and on-line at http://anrcatalogue.ucdavis.edu/merchant.ihtml?pid=5604&step=4.

Management practices must be designed and implemented to achieve improvements in water quality and compliance with the conditions in the Waivers and the State and Regional Board Plans and Policies. The plan must identify future actions necessary to improve and protect water quality.

b. Regional Groundwater Quality Management Plans (GQMPs)

Regional Groundwater Quality Management Plans (GQMPs) required in the Staff-Recommended Program should include the following clarifications for the current elements basic elements, as well as a number of additional requirements as follows:

Required Element #1: Identify areas covered by the plan

Particularly if regional monitoring is conducted by coalitions themselves, GQMPs should not only clearly identify all areas associated with constituents of concern addressed by the management plans but also explicitly link those areas to a specific representative area included in the regional monitoring program. (See comments in the Monitoring section regarding the importance of ensuring that regional monitoring programs actually are designed to be representative of the groundwater management areas for the constituents of concern.)

Required Element #2: Summarizing and Assessing Data

In summarizing and assessing water quality data generated by other entities that are available to the coalition at the outset, the coalition should be required to specify in the GQMP the detected *levels* of those constituents which the coalition has identified as "constituents of concern" in the region pursuant to Element #1. Thus, for example, if the coalition identifies nitrate as a constituent of concern in the GQMP, and the coalition has data at its disposal showing that wells in the region have detected nitrate at levels approaching the Maximum Contaminant Level (MCL), the coalition should indicate as much in the GQMP.

Required Element #3: Identifying Contamination Sources

In identifying the potential sources of water quality problems, including sites and management practices, abandoned wells in the region should be mapped out, as these constitute a significant potential vector of contamination absent wellhead protection measures. Furthermore, in order to promote coordination with Local Groundwater Quality Management Plans (consistent with Objective 5) GQMPs should be required to identify wellhead protection areas and recharge areas

as well as areas in need of wellhead abandonment that may be pathways for contamination via "run-in" and leaching.[56]

Required Element #4: Identifying Good Management Practices

GQMPs, at a minimum, should include the following management practices to address constituents of concern:

1. Practices to reduce pesticide and fertilizer use (i.e., Integrated Pest Management and nutrient management)
2. Measures to prevent groundwater wells from serving as a conduit for groundwater contamination, including
    a. Backflow prevention measures to prevent groundwater contamination for dischargers that fertigate, chemigate or otherwise apply chemicals through an irrigation system connected to a groundwater well;
    b. Destruction of all abandoned wells, test holes or exploration holes, as defined by DWR bulletin 74-81 as revised in 1988. in such a manner that they will not provide a conduit for mixing or otherwise transferring groundwater between permeable zones or aquifers;
3. Construction and maintenance of ponds, reservoirs or other water containment structures to avoid leaching of waste to groundwater
4. Irrigation practices that reduce leaching of contaminants below the root zone.

Required Element #5: Evaluation of Management Plan Effectiveness

The monitoring program adopted as part of the Groundwater Management Plan should be designed to ascertain the success of the adopted BMPs. As discussed below, the Board needs to provide as a basic guideline the requirement that regional monitoring be representative and that those farms being represented by the selected monitoring sites be bound by the same requirements to implement BMPs as the actual monitored site, where monitoring reveals water quality degradation or exceedances in water quality objectives.

Required Element #6: Description of Outreach to Growers

The coalition should help disseminate best practices in order to assist dischargers with mitigating water pollution. In most cases, these best practices have already been developed by third-party groups, including university researchers; the role of the coalitions is simply to facilitate the transfer of this information to dischargers. To further this goal, the GQMPs should require not just a description of outreach on the water quality issues in the area, but also a plan for how BMPs will be disseminated and a list of approved sources of BMP research and contacts of assistance providers.

Required Element #7: Tracking Management Practices

[56]*See* Staff Report, pp.88-89 (containing a description of AB 3030 recommended components of local groundwater management plans).

The use and efficacy of agreed-upon BMPS is a critical required element of the annual report to the Board. The report should specifically cite which growers are employing agreed upon or recommended BMPs and which are not. This should include identification of Tier 2 growers without FWQMPs.

Required Elements #8: Monitoring Plans to Track Changes in Water Quality

As stated above, we believe that a regional monitoring program is more effectively designed and implemented by a third party that is not paid directly by the dischargers. In general, however, we agree with the current description in this element of the contents of such a plan, although feel it is vital that the program be required to be representative of all growers in management plan areas and that each representative cite be explicitly linked with the areas of which it is representative. (See our comments on the monitoring section below as well as our comments regarding implementation of regional monitoring by coalitions.)

Required Element #9: Schedules and Milestone

See our comments below regarding compliance schedules.

Missing Educational Requirement / Assistance to farmers on BMPs

As discussed above, the Staff-Recommended Program should incorporate a requirement for growers to complete a set minimum hours of education on water protection practices, which could include utilizing technical assistance providers, such as UC Cooperative Extension, NRCS, etc. GQMPs should include a list of educational opportunities, contact information of technical assistance providers, and a list of dischargers that have not complied with this requirement.

Missing Mitigation Reporting

In addition to the current requirements for GQMPs, an element should be added to require reporting of mitigation actions undertaken to address impacts to sources of domestic water supplies by agricultural discharges. Such actions may include the sampling of private domestic wells in or near agricultural areas with high nitrate in groundwater, as well as contributions to the provision of alternative water supplies or replacement water service, including wellhead treatment, to affected public water suppliers or private domestic well owners.

5. Requirements for Growers Who Do Not Join Coalitions

Growers should have the option not to join a coalition, particularly if they already implement a full suite of BMPs recommended for their particular crop selection and soil type. In this case, individual WDRs for these growers should require the development of individual farm water quality management plans that are certified by a qualified third party. For organic farmers, this requirement could potentially be fulfilled through their current certification process, so long as they can show implementation of nutrient management practices (i.e. nutrient budgeting), measures to prevent groundwater wells from serving as a conduit for groundwater contamination, including backflow prevention measures to prevent groundwater contamination for dischargers that fertigate, chemigate or otherwise apply chemicals through an irrigation

system connected to a groundwater well, destruction of all abandoned wells, test holes or exploration holes, as defined by DWR bulletin 74-81 as revised in 1988. in such a manner that they will not provide a conduit for mixing or otherwise transferring groundwater between permeable zones or aquifers; construction and maintenance of ponds, reservoirs or other water containment structures to avoid leaching of waste to groundwater, and use of irrigation practices that reduce leaching of contaminants below the root zone. However, such operations should also be required to sample existing wells on the property for any constituents of concern and provide periodic reports to the Board to ensure that water quality objectives are being met.

C. Monitoring Provisions[57]

1. All Monitoring

a. The Monitoring Sites Selected by Coalitions Must Be Representative and Binding on All Represented Growers

We recognize and acknowledge that certain monitoring practices, such as the installation of monitoring wells, can be quite expensive and burdensome. Since this reality invariably limits the amount of monitoring that can be conducted pursuant to this program, it is that much more important that the monitoring that *is* conducted be meaningful and further the goals and objectives of the ILRP. Although the Board may very well need to develop more specifically-tailored monitoring requirements in the individual orders, it should at minimum establish in this program-wide document the general requirement that third party coalitions select locations for both "regional monitoring" and "[t]argeted site-specific studies" that are in fact representative. The Board itself need not identify the parameters by which the individual coalitions determine representativeness, but it should establish this requirement as a guiding consideration for the coalitions in selecting monitoring sites. The Board can impose this requirement on coalitions as a general rule without micromanaging the coalitions' siting decisions. If the Board does not include language in the ILRP establishing this basic requirement, such an omission might hinder its ability to impose such a requirement in individual enforcement actions once the program is underway.

Such a requirement is quite simply common sense and costs the Board nothing. Without it, coalitions, at least as they are currently structured, wherein they are directly funded by growers, have a structural incentive to select monitoring sites with the least likelihood of detecting water quality problems (*e.g.*, sites up gradient of discharges), so as to avoid the imposition of draconian management practice requirements on the growers that fund their existence. Unrepresentative monitoring is truly a waste of everyone's time and money and does not further the goals and objectives of the ILRP, including Objective 2, which is to "encourage implementation of management practices that improve water quality in keeping with the first objective [*i.e.*, ensuring that water quality objectives are met] without jeopardizing the economic viability [of agriculture] . . . ."[58]

[57]Staff Report § X(B)(7), pp.156-58.
[58]Staff Report, p.93.

Additionally, the ILRP should establish that if water quality problems are detected at the representative monitored site, all operations represented by that site must implement the changes in management practices deemed necessary at the monitored site.[59] Failure to include this requirement would undermine the entire purpose of having a third party lead entity in the first place (namely, to maximize administrative resources while still achieving maximum valley-wide compliance with ILRP requirements.)

To facilitate Board oversight of this requirement, water quality management plans should be required to include a provision specifying the parameters by which the coalition selects representative sites for monitoring and identifying which areas and farms are being represented by each monitoring site.

b. Sufficient Data

The sites a coalition selects for "regional" monitoring must not only be representative of those areas not being directly monitored, but also temporally and spatially sufficient in order to characterize water quality in the region adequately. Again, the Board can impose this requirement on coalitions as a general rule without micromanaging the coalitions' siting decisions.

2. Low-Priority Groundwater Monitoring (Tier 1 Areas)

The Staff-Recommended Program needs to be clear that in Tier 1 areas, growers will participate in regional monitoring every five years, and that this regional monitoring will include individual grower reporting of management practices, including rates of fertilizer and pesticide application. As part of this regional monitoring every five years, all growers also must be required to sample all existing wells on their farms for nitrate, at minimum. This requirement is neither particularly onerous nor expensive (*e.g.*, it generally costs about $40 to sample for nitrate.) Without this basic information generated every five years, the ILRP will never generate meaningful information from Tier 1 areas and will perpetuate the cycle of information gaps.

3. High-Priority Groundwater Monitoring (Tier 2 Areas)

In order to ensure that groundwater monitoring is effective in Tier 2 areas, a meaningful baseline must be established. In order to establish this baseline, all growers in Tier 2 areas must be required to sample all existing wells on their farms for nitrate, at minimum. This requirement is neither particularly onerous nor expensive (*e.g.*, it generally costs about $40 to sample for nitrate.) In addition, growers must provide a description of the groundwater hydrology for the aquifers from which they pump water and to which they discharge wastes.

[59]The issue of identifying represented farms is alluded to in Appendix D of the Staff Report, in the first element in the list of required elements for GQMPs, but the current language does not go far enough. First, it appears limited to monitored sites where there are "exceedances." Staff Report, p.D-3. Second, it suggests that not all sites will in fact be representative. *See id.* Third, it does not require that a coalition identify the parameters by which it determines representativeness or impose resulting management practice changes on all represented farms. *See id.*

D. Time Schedule for Compliance[60]

1. Defining What Constitutes "Compliance"

Porter-Cologne requires the Board to comply with applicable basin plans when adopting the long-term ILRP.[61] The relevant basin plans for the Central Valley are (1) the Water Quality Control Plan for the Sacramento and San Joaquin River Basins and (2) the Water Quality Control Plan for the Tulare Lake Basin.[62] These basin plans establish water quality objectives (WQOs) for various constituents, including nitrates and pesticides, which are legally-enforceable water quality standards.[63]

For all water resources in the Central Valley that include drinking water as a designated beneficial use, the basin plans establish numerical WQOs for nitrates and pesticides that are linked to the maximum contaminant levels (MCLs) specified in Title 22, Chapter 15 of the California Code of Regulations.[64] In other words, the WQO for each of these constituents in both basin plans is that the water resource shall not contain concentrations of the constituent in excess of that constituent's state MCL.

As currently proposed by Board staff, the long-term ILRP will serve as an overarching framework that will guide the Board in its subsequent adoption of eight to twelve general orders, either in the form of waste discharge requirements (WDRs) or conditional waivers.[65] These WDRs and conditional waivers will not just serve as implementation mechanisms for the long-term ILRP, however; they are also the primary vehicles for implementing the basin plans with respect to irrigated agriculture.[66] In other words, the subsequent general orders are the mechanisms for bringing irrigated agriculture into compliance with the water quality objectives established in the basin plans. In fact, Porter-Cologne explicitly directs the Board, when issuing

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[60]Staff Report § X(B)(8), pp.158-160.

[61]*See* California Water Code (CWC) § 13247 ("State offices, departments, and *boards, in carrying out activities which may affect water quality, shall comply with water quality control plans* approved or adopted by the state board unless otherwise directed or authorized by statute[.] . . .") (emphasis added).

[62]*See* California Environmental Protection Agency, Central Valley Regional Water Quality Control Board, Basin Planning, *at* http://www.swrcb.ca.gov/rwqcb5/water_issues/basin_plans/ (last visited September 15, 2010).

[63]*See* CWC § 13247.

[64]California Regional Water Quality Control Board, Central Valley Region, The Water Quality Control Plan for the Sacramento and San Joaquin River Basins, 4th ed. (September 2009) (*hereinafter* SSJR Basin Plan), p.III-3.00 (WQO for "Chemical Constituents" in surface water) *available at* http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/; *id.* at p.III-6.00 (WQO for Pesticides in surface water); *id.* at p.III-10.00 (WQO for "Chemical Constituents in groundwater); California Regional Water Quality Control Board, Central Valley Region, The Water Quality Control Plan for the Tulare Lake Basin, 2d ed. (January 2004) (*hereinafter* TL Basin Plan), pp.III-3 to III-4 (WQOs for "Chemical Constituents" and Pesticides in surface water), *available at* http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/; *id*. at p.III-7 (WQO for "Chemical Constituents" in groundwater).

[65]Staff Report, pp.144-146.

[66]*See* CWC §13263(a) (WDRs "shall implement any relevant water quality control plans"); CWC § 13242(a) (the basin plan's implementation program must include "actions" that are necessary to achieve water quality objectives); SSJR Basin Plan, p.III-2.00 ("[Water quality] objectives are to be achieved primarily through the adoption of waste discharge requirements . . . ."); TL Basin Plan, p.III-2 (same).

its subsequent WDRs, to include requirements in those WDRs "implement[ing]" the relevant basin plans and to "take into consideration" both "the beneficial uses to be protected[]" and "the water quality objectives reasonably required for that purpose[.]"[67] Likewise, if the Board opts to issue a conditional waiver in lieu of a WDR, both the waiver and its conditions must be "consistent with any applicable [basin] plan . . . ."[68] If the long-term ILRP and its subsequent general orders do not require irrigated agriculture to comply fully with the water quality objectives established in the basin plan, essentially nothing will. Such a program would directly undermine the basin plans, in violation of Sections 13247, 13263, and 13269 of the California Water Code.

Furthermore, the State Water Resources Control Board (the State Board) has adopted a Policy for Implementation and Enforcement of the Nonpoint Sources of Pollution Control Program (NPS Policy) that requires the ILRP to "promote attainment of water quality objectives."[69] Irrigated agricultural waste discharges to state waters constitute a form of nonpoint source pollution, so the NPS Policy requires that the implementation orders (the general WDRs and/or conditional waivers) address irrigated agricultural discharges "in a manner that *achieves* and maintains *water quality objectives* . . . ."[70] Thus, a long-term ILRP that does not define program compliance as compliance with water quality objectives also violates Key Element 1 of the State Board's NPS Policy.

As currently drafted, staff's proposed long-term ILRP does not require full compliance with water quality objectives. Instead, staff proposes to define compliance with the program as "demonstrated *improvement in water quality* or *reduction in discharge*" or "documented *implementation of management practices*," among other things.[71] Each of these standards falls far short of meeting WQOs, which are the basin plans' mandatory, enforceable, numeric water quality standards. We strongly recommend that staff revise this aspect of its proposed program to define an individual grower's compliance with the long-term ILRP as compliance with the basin plan, or, stated differently, to define compliance as not contributing to exceedances in WQOs.

Not only is there explicit legal authority for making this change, but it also makes sense from a policy standpoint. The Board has already incorporated considerations of technical and economic feasibility for dischargers into the establishment of WQOs in the region's two basin plans.[72]

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[67]CWC § 13263(a); *see also* SSJR Basin Plan, pp.IV-7.00 to IV-8.00 (discussing the types of remedial measures the Board can utilize to implement the water quality objectives, foremost among these being WDRs, and noting that "[w]hatever actions the Regional Water Board implements must be consistent with the Basin Plan's beneficial uses and water quality objectives"); TL Basin Plan, pp.IV-19 to IV-20 (same).

[68]*See* CWC § 13269(a)(1).

[69]*See* Staff Report, p.54. *See also* California Environmental Protection Agency, State Water Resources Control Board and California Coastal Commission, Nonpoint Source Program Strategy and Implementation Plan, 1998-2013 (January 2000), *available at* http://www.swrcb.ca.gov/water_issues/programs/nps/protecting.shtml.

[70]*See* Staff Report, p.55 (emphases added).

[71]Staff Report, p.160 (emphases added).

[72]*See* CWC § 13241(c), (d) (directing regional boards, in establishing water quality objectives, to consider both (a) the level of water quality "that could *reasonably* be achieved through the coordinated control of all factors which affect water quality in the area" and (b) "[e]conomic considerations") (emphasis added).

Moreover, the WQOs for areas designated for drinking water are linked to state MCLs, which also already balance public health against considerations of economic and technical feasibility.[73] In other words, both the Central Valley Regional Board and the California Department of Public Health have already deemed the WQOs to be reasonable standards that are both technically and economically feasible for dischargers to achieve.

Furthermore, staff's proposed program creates a significant loophole by permitting "modif[ication of] these [compliance] schedules based on evidence that meeting [water quality objectives by] the compliance date is *technically or economically infeasible* . . . ."[74] Since WQOs already incorporate technical and feasible considerations, extra time should only be given through enforcement orders so that some fee or mitigation can be required to offset impacts on beneficial uses, such as domestic water supplies. (See discussion above of mitigation programs that could be incorporated into this program to help address impacts to local drinking water sources.)

2. Establishing a *Reasonable* Time Schedule for Compliance

Although it is within the Board's authority to establish a time schedule for an irrigated agriculture operation to comply with WQOs "when it appears that the discharger cannot immediately meet the requirements[,]" both state regulation and the State Board's NPS Policy dictate that this time schedule may "not permit any unnecessary time lag" and must include a date for "*full compliance* with requirements."[75] The current compliance schedule does not contain a date for full compliance with WQOs; in fact, as discussed above, it does not currently require full compliance with WQOs *at all*. Thus, not only does staff need to revise its proposed program to require compliance with WQOs, but if it does not intend to require *immediate* compliance with those standards, it must establish a reasonable time schedule within which full compliance must be achieved.[76]

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[73]*See* California Health & Safety Code § 116365(b)(3); *see also* California Department of Public Health, CDPH's Process for Adoption of a Maximum Contaminant Level, *at* http://www.cdph.ca.gov/certlic/drinkingwater/Pages/MCLprocess.aspx (last visited September 22, 2010) (acknowledging that the agency sets an MCL "at a level as close as is *technically and economically feasible* to its public health goal") (emphasis added).

[74]Staff Report, p.159 (emphasis added).

[75]23 California Code of Regulations (CCR) § 2231(b), (c) (emphasis added). *See also* Staff Report, p.55 (construing Key Element 3 of the NPS Policy as requiring the Board to "include a *specific time schedule* and corresponding quantifiable milestones designed to measure progress toward reaching the specified requirements [water quality objectives]" when the Board "determines it is necessary to allow time to achieve water quality objectives").

[76]At the lower bound, the EPA has interpreted three years as a reasonable compliance period. *See Miccosukee Tribe of Indians of Florida v. United States of America, et al.*, 1998 U.S. Dist. LEXIS 15838, *26 (S.D. Fla. 1998) (quoting a deposition by the EPA official charged with deciding whether Florida's new time schedule for compliance de facto changed water quality standards in that case). At the upper bound, the Board has interpreted ten years as a reasonable compliance period. *See* SSJR Basin Plan, pp.III-2.00, IV-16.00; TL Basin Plan, pp.IV-22 to IV-23. Both of these terms are counted from the date a water quality standard is adopted, however, not from the commencement date of a program implementing those standards, such as the ILRP. Thus, for long-standing WQOs, such as that for nitrate, even with a ten-year compliance period, compliance should be immediate.

If the program sets the benchmark for program compliance at less than full compliance with water quality objectives, this constitutes an impermissible *de facto* change in water quality standards. The same goes for an unnecessarily lengthy (or, as here, indefinite) time schedule for compliance. The impact of delaying the deadline for full compliance is that the program suspends enforcement of the basin plan and authorizes growers to continue contributing to exceedances in water quality objectives in the interim, with impunity. If that interim period extends beyond what is reasonable and necessary, this effectively authorizes ongoing violation of WQOs; the clear force of such a program is to alter the water quality standards in this region.[77] The ILRP is not the appropriate vehicle for making such a change.

For the foregoing reasons, staff should amend its proposed program (1) to define compliance as not contributing to exceedances in WQOs and (2) to require all growers be in full compliance with all WQOs, as measured at first encountered groundwater, as soon as is practicable but in no case more than five years from the date of adoption of the ILRP implementation orders. The program should specify a penalty for growers that fail to comply with this deadline.

Finally, as stated above, pursuant to Water Code Section 13304, the Central Valley Water Board may require Dischargers to provide alternative water supplies or replacement water service. Including wellhead treatment, to affected public water suppliers or private domestic well owners. The provision of alternative water supply or replacement water service could take place within the basin; or could be program-wide in the form of a mitigation payment into a cleanup and abatement fund targeting small, low-income communities that are most at risk from the negative impacts of drinking water contamination that are largely attributable to continuing agricultural discharges into Central Valley waters.

VII. Comments on the Economic Analysis

A. The Economic Analysis is One-Sided and Distorts the Whole Program

Perhaps what is most clear from this document is that staff has looked very closely at the economic impacts to agriculture and barely considered impacts to the rest of valley residents and the environment – and apparently included none of those costs and benefits in its modeling efforts. As a result:

- There is insufficient information to determine the costs and benefits of each alternative;
- The determination of an environmentally superior alternative lacks any analysis of environmental costs and benefit;
- The relative impacts and benefits to agriculture, communities and the environment have been skewed and do not provide appropriate qualitative guidance on an appropriate preferred program;

[77] *See generally Miccosukee Tribe of Indians of Florida*, 1998 U.S. Dist. LEXIS at *43-*53. While obviously not binding precedent for the Board, this case could be deemed persuasive by a California court, as it provides a cogent and well-reasoned explanation for why an unnecessarily prolonged time schedule for compliance effectively constitutes a de facto change in water quality standards.

- There is insufficient evidence to make an anti-degradation determination in compliance with the Anti-degradation policy.
- The board lacks the information to make an informed decision.

An oversimplified and underestimated analysis of community costs and impacts was pasted on to the end of the economic analysis, but not included in the model that was actually used to develop the analysis – which means that environmental and community impacts were not meaningfully integrated into the process of developing a preferred alternative.

The IMPLAN model used in the analysis allows for the input of other costs and benefits. Direct costs and costs avoided for communities can and should be included in the model developed for this analysis and be treated in the IMPLAN model as a boost to disposable incomes just as the reduction agriculture profits was put into the model. Money that is not spent on bottled water or increased water treatment is money that could be spent on other things in the community. Below are several suggestions on how community costs of continued contamination can be quantified and integrated into the overall economic analysis. We also include some discussion of problems in the existing economic analysis.

Not only where community economic impacts left out of the economic impact (IMPLAN) model, but the assumptions used in the agricultural impact analysis where grossly overestimated, by including unrealistic assumptions, like in the implementation of practices and monitoring requirements, as well as cropping changes that where blind to other market forces.

B. Improving the Estimate of Community Costs

1. Including *All* Impacted Communities

The current economic analysis identifies a very narrow universe of impacted communities, consisting only of those small water systems that have identified an exceedance of nitrates but have not yet provided a long-term solution. This approach severely underestimates the total community impact of nitrate contamination, and therefore inaccurately compares the costs and benefits of the different alternatives. In particular, it skews the data in favor of Alternative 2, which does not set water quality objectives, and away from Alternative 4, which does.

a. The Cost Analysis for Communities Identified in the Report is Inaccurate and Incomplete.

The report uses the Department of Public Health Source Water Assessment data (collected from 2000-2003) to determine that only 45 wells currently listed as contaminated by nitrate were impacted by agriculture. Unfortunately, the data used to create these Source Water Assessments was extremely limited; recharge areas were not identified, nor were other aquifer characteristics. Essentially, these small systems were asked to draw a circle around their well and then list the Potentially Contaminating Activities that were situated within that circle - this bears little resemblance to the way an aquifer functions.. This lack of basic information about the aquifers makes the information unusable for this analysis. To gain a better understanding of the impact of agricultural activities on these wells, we recommend instead that the systems be identified by

their basin, and that the agricultural contribution to contamination be based on the presence or absence of agricultural activity within that basin. This creates an appropriately conservative estimate that also reflects the implementation mechanism proposed in the staff alternative.

A second difficulty is that the well costs identified fail to list the cost of drilling deep wells. When a contaminated source must be replaced by a new well, that well tends to be deeper, in order to access a cleaner part of the aquifer. Additionally, wells in the southern San Joaquin County tend to be deeper than in northern counties, a factor that should be included in the cost estimates.

The report also fails to provide information on the impact of pesticides on community water systems. While the Department of Pesticide Reform (DPR) has a groundwater protection policy, that policy does not meet the conditions of the anti-degradation policy that guides the Board's regulatory program; deferring to DPR's existing programs is not sufficient to achieve water quality objectives. In terms of cost, the detection of pesticides does not necessarily trigger well closure and replacement; in some cases, treatment is available, at a cost to the community. At a minimum, for the purposes of this analysis, staff should evaluate the data used to create Tables 5.9-1, -2, and -3 of the PEIR to identify trends in contamination and identify the cost of remediating drinking water in those wells that have exceeded a drinking water standard..

b. Analysis Fails to Include the Community Impact of Domestic Well Contamination.

According to the Groundwater Ambient Monitoring & Assessment Program, there are an estimated 600,000 private domestic wells in California and 10 percent of those tested have nitrate levels above the legal limit.[78] According to the USGS, there is a population of 813,390 in Central Valley counties who rely on domestic wells (See Table 2).[79] The percentage of wells contaminated per county in the Central Valley ranged widely, from less than 1% in Tehama to 40% of those tested in Tulare County. The extent to which contamination originates from agricultural run-off is not known, in part due to a lack of systematic monitoring of run-off and ground water quality. Most researchers agree that agriculture is the leading source of nitrate contamination of ground water in the Central Valley.[80]

[78]State Water Resources Board, Groundwater Ambient Monitoring & Assessment Program (2010). *Summary of Detections Above a Drinking Water Standard, GAMA Domestic Well Project*. Accessed on September 20, 2010 from http://www.swrcb.ca.gov/gama/domestic_well.shtml.

[79]USGS (2000) Estimated Use of Water in the United States County-Level Data for 2000. Online at http://water.usgs.gov/watuse/data/2000/index.html

[80]United States Geological Survey (1995) *Water Quality in the San Joaquin-Tulare Basins, California, 1992-95*. Accessed on September 20, 2010 from http://pubs.usgs.gov/circ/circ1159/sec6.html.

Table 2. Population Served by Domestic Wells in Central Valley Counties

County	Total Population	Population served by domestic wells	As percentage of total population
Butte	203,170	38,400	19%
Colusa	18,800	7,060	38%
Fresno	799,410	41,730	5%
Glenn	26,450	12,260	46%
Kern	661,650	76,050	11%
Kings	129,460	20,990	16%
Madera	123,110	49,070	40%
Merced	210,550	53,140	25%
Placer	248,400	25,920	10%
Sacramento	1,223,500	64,030	5%
San Joaquin	563,600	102,340	18%
Shasta	163,260	25,560	16%
Stanislaus	447,000	85,170	19%
Sutter	78,930	21,310	27%
Tehama	56,040	32,590	58%
Tulare	368,020	103,420	28%
Yolo	168,660	33,460	20%
Yuba	60,220	20,890	35%
TOTAL	**5,550,230**	**813,390**	**15%**

The cost of ensuring safe drinking water to the users of these wells must cover strategies for reducing nitrate levels or accessing an alternative water source. This may include installing treatment technology or a filter, drilling a new well, or buying bottled or vended water. According to Culligan, one of the leading purveyors of filter systems in the Valley, a typical nitrate filter costs $336 per fixture per year including

maintenance.[81] Our cost estimate assumes that only 10 percent of the Central Valley population relying on domestic wells have high nitrates. Assuming only 60% of the contamination affecting these 16,713 households have agricultural run-off as a contaminating activity, the costs for each of them to install a Culligan filter total at $5,615,734. In the above-mentioned EPA report on CAFOs, a domestic well owner's Willingness to Pay for nitrate levels being brought down to the MCL is valued at $718.67 per year (inflation adjusted from $583 in 2001 dollars). Using this as the annual cost per household, the annual costs to domestic well owners amount to $12,011,486.

c. Analysis Does Not Include Other Impacted Communities.

There are several other impacted groups that missing from this analysis:

- Schools and other non-community water systems. These systems, most run as part of private businesses, are impacted by a lack of clean drinking water. At a minimum, the cost of providing point of use treatment should be included as a cost for the smaller businesses. Schools face the same costs as small communities (new wells or centralized treatment costs).
- Communities who have removed wells from production or switched to wells with other contaminants. Systems with multiple wells typically blend contaminated water to meet safe drinking water requirements or removed contaminated wells from production, thereby reducing their overall capacity. In some cases this can lead to reliance on water with other contaminants; for instance, Monterey Park Tract in Stanislaus County is currently listed by the state as being in compliance with the drinking water standard for nitrate. However, compliance was achieved by turning off the well with nitrate contamination, and relying wholly on a single well that exceeds the drinking water standard for arsenic. This community still has unsafe drinking water. Unfortunately, the state does not maintain a database of wells closed due to contamination, but a review of wells that have exceeded the nitrate standard over the past 10 years to discover which are still in production would provide some guidance.
- Communities treating drinking water for agricultural contaminants. Where treatment is affordable - this could be because a treatment is inexpensive, like granular activated carbon for VOCs or some pesticides, or because a community is large enough to reduce the per capita cost - it is generally already in place. This report does not identify the costs paid by these communities for safe drinking water; the information is not maintained centrally, but could be obtained through a survey of Central Valley water systems located in vulnerable hydrologic regions.

d. Analysis Fails to Identify a Trend of Increasing Contamination.

The community impact analysis shows a snapshot of current contamination, but fails to identify the problem of increasing nitrate levels in Central Valley Drinking Water Wells. Our organizations worked with Pacific Institute to identify trends of nitrate contamination. Analysts at Pacific Institute carried out a regression analysis to estimate the number of wells currently under the MCL that can be expected to rise above this threshold in the next ten years. Using a

[81]Culligan (2010) Personal Communication 9/17/10.

database including all nitrate measurements from 1980 to present in the GAMA database for Kern County, wells were selected that had ten or more samples recorded (678 wells), and fit a trend line of nitrate concentration versus time, using ordinary least squares regression. Pacific Institute used the uncertainty associated with this relationship to calculate the percent likelihood of exceeding the 45 mg/L threshold in 2010, 2015, and 2020.

Based on this analysis, Pacific Institute found 33 wells where the likelihood of exceeding the MCL is 75%. In 2015, this increases to 50 and in 2020 rises to 65 (See Table below). This is almost a doubling of the number of wells with nitrate levels above the MCL by 2020, an increase from 5% to 10% of monitored wells. Based on current trends, we estimate that the number of wells exceeding the MCL in Kern County will double in the next ten years. See comments submitted by Pacific Institute for greater detail on this analysis

Trend analysis of nitrate levels in Kern County wells

Groundwater Basin	Total number of Wells	Number of wells with greater than 75% likelihood of exceeding MCL in 2010	Number of wells with greater than 75% likelihood of exceeding MCL in 2015	Number of wells with greater than 75% likelihood of exceeding MCL in 2020
Antelope Valley (6-44)	29	0	0	0
Brite Valley (5-80)	4	0	0	0
Castac Lake Valley (5-29)	6	0	0	0
Cuddy Canyon Valley (5-82)	5	0	0	0
Cuddy Ranch Area (5-83)	4	0	0	0
Cuddy Valley (5-84)	6	0	0	0
Cummings Valley (5-27)	14	2	2	3
Fremont Valley (6-46)	11	0	0	0
Indian Wells Valley (6-54)	36	0	0	0
Kern River Valley (5-25)	55	4	7	8
Mil Potrero Area (5-85)	2	0	0	0
No Basin Found	67	1	2	2
San Joaquin Valley - Kern County (5-22.14)	417	24	37	50
Tehachapi Valley East (6-45)	3	0	0	0
Tehachapi Valley West (5-28)	18	2	2	2
Walker Basin Creek Valley (5-26)	1	0	0	0
TOTAL	**678**	**33**	**50**	**65**

Kern County was chosen because it is the county with the highest number of nitrate detections in the Central Valley, and so had more data available to develop a trend analysis. A land use analysis by basin can provide a correlation between agriculture and nitrate contamination.

This analysis is not just important to inform this DPEIR; it is critical to predicting the success of the program. Mitigation of groundwater contamination is a long-term effort, and this type of analysis will be needed for each constituent of concern in each basin. in order to measure interim progress. We urge staff to develop this analysis for all of Region 5's groundwater resources.

2. Estimating the Cost to Community Members and Regions

The economic analysis fails assess the cost to communities that lack access to safe drinking water from their tap. This is a significant cost that reduces available income for other purposes, so it does shape the local economy. Additionally, impacts to the local economy are not calculated in this analysis. Our organizations have worked with Pacific Institute to develop some cost estimates for impacted households.

a. ILRP Costs to Drinking Water Consumers[82]

It has been well documented that households impacted by groundwater contamination incur significant costs to avoid contaminated tap water. A series of studies using the "avoidance cost" method—that is, "assessing the costs of actions taken to avoid or reduce damages from exposure to groundwater contaminants"—have demonstrated that household responses to contamination of domestic water supplies is far from inexpensive and that these expenditures must be taken into consideration in valuing the costs and benefits of groundwater protection.[83][1],[2],[3] To avoid nitrate-contaminated tap water, households must install costly reverse osmosis filters, order domestic water service to their home, or buy gallons of vended and bottled water for consumptive household uses such as cooking and drinking.
In the summer of 2010, Pacific Institute conducted a survey of 21 out of the 28 households connected to the community water system, Beverly Grand Mutual Water Company, which was in violation of the 45 mg/L MCL for nitrate concentration. Respondents were asked a series of questions about household socioeconomic and demographic information, perception of contamination, household water use, and expenditures on tap water, filters, and alternative sources of water (such as vended and bottled water).

Preliminary analysis of the survey shows that households that are aware of contamination in their water and that drink and cook with exclusively non-tap sources of water pay on average 77% more than they would have had they solely used tap water for these consumptive household uses. On average, non-tap water expenditures for these households constituted 2% of household

[82]See written comments by Pacific Institute for more details on the costs to consumers.
[83]Abdalla, Charles W. *Measuring Economic Losses from Ground Water Contamination: An Investigation of Household Avoidance Costs.* Water Resources Bulletin Vol. 26 No. 3, 451-463. Collins, Alan R. and Scott Steinback (1993). *Rural Household Response to Water Contamination in West Virgina.* Water Resources Bulletin Vol. 29 No. 2, 199-209. Laughland, Andrew S., Musser, Lynn M., Musser, Wesley N., and James S. Shortle (1993). *The Opportunity Cost of Time and Averting Expenditures for Safe Drinking Water.* Water Resources Bulletin Vol. 29 No. 2, 291-299.

income, although some households spent up to 4.2% of their income on bottled and vended water for use in the home. On average, households that exclusively use non-tap sources of water for cooking and drinking spend $5.46 per person per month on vended and bottled water for use in the home (although some households spent up to $14.08 per person per month). This suggests that, collectively, the 1.3 million people connected to water systems with contaminated groundwater supplies may spend approximately $7.1 million to avoid nitrate-contaminated water.

b. Regional Economic Impacts

Clearly, there are very real economic impacts to communities' ability to attract economic development when drinking water sources are contaminated that are above and beyond the direct costs to the residents and water systems trying to mitigate the problem. For instance, many communities are unable to provide will-serve letters to allow for new connections into the system because they have had to close wells due to nitrate or pesticides. For example, the community of Orosi has had to limit its capacity to provide water to new developments because it lacked sufficient supply after nitrate levels in a new well rose above the MCL between the time of a test well and the drilling and testing of the final well. Residents in the community of Strathmore had trouble getting loans for real estate sales after nitrate levels rose above the MCL.

These same impacts are felt at the county level, as scarce resources are directed to communities to help pay for new wells. These impacts come from several sources; counties often administer state and federal grants and loans for small communities; some provide matching funds; and Community Development Block Grants are used to solve problems in some systems. In each case, scarce county funding is diverted from other purposes.

When financing and water supplies are not available, development will not occur and valley communities are further economically harmed. The economic analysis fails to allocate any regional impacts or benefits to the provision of clean water, yet communities without safe water are clearly impacted by their inability to add homes or businesses. Several data points could be use to develop such regional costs. Property tax receipts for communities impacted by nitrates could be compared with unincorporated areas within the county as a whole; county expenditures for community expenses (such as administering grants, providing matching dollars for grants, or expenditure of Community Development Block Grants for new wells) could be analyzed to measure funds diverted from other needed services.

C. Flaws in the Current Economic Analysis for Agricultural Costs

The reality of economic impact reports is that they are based on assumptions. Based on the assumptions and the extension of time that the model examines, you can have varied results; in fact, you can have completely inversed results. The IMPLAN model has been used in the Central Valley many times to assess the impact of many land-use and water quality programs, like the Westlands Land Retirement Program that was found to have a net economic benefit to agriculture. Ironically, the Retirement Program was put in place because of the lack of drainage and therefore increasing salinity problem and harmful to the long-term viability for a sustainable agricultural productivity for the west side. Irrigated Lands Program is no different, in order to

secure a sustainable agricultural for the Central Valley we must protect our groundwater quality supply. CV Salts is a clear recognition that nutrient loading is not just a problem of nitrate contamination of drinking water supplies, but of overall excessive loading that if left unmanaged will result in an inevitable impact to agriculture productivity.

The economic analysis failed to evaluate the economic harm to agriculture of doing nothing or the economic harm of doing little to address the nutrient loading. The economic impact analysis should be analyzing the threshold on where the investment for agriculture today will pay off for tomorrow, for themselves and for their communities. Unfortunately, the assumptions used in the IMPLAN model fail to incorporate the variables and the time frame for truly beneficial analysis for developing this critical program. Including, failing to include integrated pest management as management practice, assuming the implementation of practices and monitoring requirements, assuming no outside market forces in cropping changes; the analysis fails to evaluate the relative costs and contribution to water quality of each of the management practices listed; and the analysis did not attribute any cost benefits to the implementation of the specified management practices, including practices that would reduce the use and therefore the cost of fertilizer, or conserve water.

D. The Legal Requirement to Do This

The Staff Report through its anti-degradation analysis is asking the board to make a finding that it is okay to allow for continued degradation of water quality in order to meet economic interests in reduced costs to agriculture. However, nowhere in the economic analysis does the staff provide an estimate of what level of degradation will be allowed or what the cost of that degradation will be. Without that basic information, it is impossible for the Board to make an informed decision or finding based on substantial evidence that allowing degradation is in the best interest of the people of the state, as required by the Anti-degradation Policy.

Furthermore, as described above, once the Economic Analysis attempts to conduct a comprehensive economic analysis above and beyond what is required by Porter Cologne,[84] which merely requires the Board to calculate the direct costs to dischargers, it must do so in a way that attempts to be truly comprehensive of both sides and not arbitrarily ignore the costs on one side of the equation and therefore distort the decision-making process. To do that would leave the Board without a substantial or rational basis for making a determination on what would be the preferred program.

VIII. Comments on the DPEIR

A. The DPEIR is Insufficient for a Tiered, Programmatic EIR

The Draft Irrigated Lands Regulatory Program Program Environmental Impact Report (the DPEIR) falls afoul of the California Environmental Quality Act (CEQA)[85] in numerous ways.

[84]CWC § 13141.

[85]California Public Resources Code § 21000 et seq.

To begin with, staff has titled this document a "*Program* Environmental Impact Report." If staff intends for this to serve as a programmatic environmental impact report (EIR), as contemplated in Section 15168, Title 14 of the California Code of Regulations, and if staff intends to roll out streamlined project EIRs for the general orders implementing the ILRP within a year of the program's adoption, then this DPEIR needs substantial additional documentation and analysis. The current draft cannot be characterized as an "exhaustive consideration of effects and alternatives" that has "deal[t] with the effects of [the ILRP] as specifically and comprehensively as possible."[86] As is, a significant amount of further environmental analysis will be required for each of the subsequent WDRs and conditional waivers that the Board intends to issue as implementation mechanisms for the ILRP, making staff's projected one-year timeline for the Board to adopt each of these mechanisms extremely unrealistic.

Staff has chosen to take a mile-high view of the program in this document, but in so doing, it has obscured the details to such an extent that the very purposes of CEQA have been undermined: this current DPEIR does not arm the Board with the information it needs to make an informed decision, nor does it provide the public with sufficient information to participate in the decision making process.[87]

B. The DPEIR Must Sufficiently Analyze the Proposed Project

Numerous revisions are necessary to transform this DPEIR into a useful document and a true programmatic EIR. Foremost among these is the requirement that staff analyze the environmental impacts of the *proposed project*, which is the staff-recommended alternative.[88] Currently, the extent of staff's impacts "analysis" of the recommended program is buried at the end of the Staff Report, a mere appendix to the DPEIR, and consists of less than two full pages. Not surprisingly, then, given its brevity, this section of the Staff Report consists of little more than cursory conclusions and fails to "reflect the analytic route the agency traveled from evidence to [recommended] action."[89] In this significant respect, the DPEIR does not satisfy CEQA's requirements, including that the DPEIR itself analyze the proposed project and that it do so with "a sufficient degree of analysis to provide decision makers [here, the Board and members of the public] with information which enables them to make a decision which intelligently takes account of environmental consequences."[90]

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[86] 14 CCR § 15168(b)(1), (c)(5).

[87] *In re Bay-Delta Programmatic Environmental Impact Report Coordinated Proceedings*, 43 Cal. 4th 1143, 1162 (2008) ("The purpose of an EIR is to give the public and government agencies the information needed to make informed decisions . . . .") (quoting *Citizens of Goleta Valley v. Board of Supervisors*, 52 Cal. 3d 553, 564 (1990)); *Marin Mun. Water Dist. v. Kg Land Cal. Corp.*, 235 Cal. App. 3d 1652, 1660 (1991) ("[T]he essential purpose of the EIR is to inform the public and its responsible officials of the environmental consequences of their decisions *before* they are made.") (emphasis added).

[88] 14 CCR § 15126(a).

[89] *Kings County Farm Bureau v. City of Hanford*, 221 Cal. App. 3d 692, 733, 270 Cal. Rptr. 650, 670 (1990). *See also Preservation Action Council v. City of San Jose*, 141 Cal. App. 4th 1336, 1353 (2006) (observing that the agency must "set forth facts and meaningful analysis . . . *rather than just the agency's bare conclusions or opinions*") (internal quotations omitted; emphasis added).

[90] 14 CCR §§ 15126(a), 15151.

C. The DPEIR Must Analyze a Reasonable Range of Alternatives

An EIR is an "informational document" – its essential purpose is to provide the Board with detailed information about the environmental consequences of the proposed program before any final decisions are made.[91] To satisfy this informational purpose, the DPEIR must consider a "reasonable range of alternatives" to the proposed program, the purpose of which is to "to allow the decision maker to determine whether there is an environmentally superior alternative that will meet most of the project's objectives[.] . . ."[92] To constitute a reasonable range, the alternatives put forth in the DPEIR must satisfy two basic requirements: (1) they must "feasibly attain most of the basic objectives of the project . . . [,]" and (2) they must "offer *substantial environmental advantages* over the project proposal[.]"[93] Ultimately, the DPEIR must "provide a meaningful basis for comparison" between the environmental impacts of the proposed project and the environmental impacts of the alternatives, in order for the Board to evaluate the proposed program properly and make the environmentally-informed decision that CEQA requires.[94]

With respect to water resources, in particular, the DPEIR as currently drafted does not fulfill this duty. Staff has cursorily concluded that none of the program alternatives will have any significant impact on water quality,[95] without "set[ting] forth facts and meaningful analysis of these alternatives . . . ."[96] Staff has chosen in the DPEIR to define a significant impact to water resources as "contribut[ion] to degradation of state waters as a result of agricultural discharge[.]"[97] Because each of the regulatory program alternatives put forth in the DPEIR is designed, at least in theory, to reduce irrigated agriculture's contribution to groundwater contamination in the Central Valley (except the no-project alternative, which would not extend the ILRP to groundwater), staff has reasoned that none of these alternatives will have a significant negative environmental impact on water resources. Staff may be correct, at least in theory, that each of the program alternatives promises some environmental benefit with respect to water quality, but this is no excuse for failing to perform the requisite comparative analysis among the different program alternatives.[98] Because staff has failed to conduct any rigorous analysis as to the relative environmental merits of the various program alternatives, this document does not provide any guidance or assistance to the Board in comparatively evaluating

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[91] *Goleta Union School Dist. v. Regents of University of California*, 37 Cal. App. 4th 1025, 1030 (1995); *In re Bay-Delta Programmatic Environmental Impact Report Coordinated Proceedings*, 43 Cal. 4th 1143, 1162 (2008); *Marin Mun. Water Dist. v. Kg Land Cal. Corp.*, 235 Cal. App. 3d 1652, 1660 (1991).

[92] *Watsonville Pilots Assn. v. City of Watsonville*, 183 Cal. App. 4th 1059, 1089 (2010); *City of Long Beach v. Los Angeles Unified School Dist.*, 176 Cal. App. 4th 889, 920 (2009); 14 CCR § 15126.6.

[93] *In re Bay-Delta*, 43 Cal. 4th at 1162; *City of Long Beach v. Los Angeles Unified School Dist.*, 176 Cal. App. 4th 889, 920 (2009) (quoting *Citizens of Goleta Valley v. Board of Supervisors*, 52 Cal.3d 553, 566 (1990)); *Watsonville Pilots Assn. v. City of Watsonville*, 183 Cal. App. 4th 1059, 1089 (2010) (emphasis added).

[94] *See Federation of Hillside & Canyon Associations v. City of Los Angeles*, 83 Cal. App. 4th 1252, 1264-65 (2000).

[95] *See* DPEIR, pp.5.9-16 to 5.9-18.

[96] *Preservation Action Council v. City of San Jose*, 141 Cal. App. 4th 1336, 1353 (2006) (internal quotations omitted).

[97] DPEIR, p.5.9-14.

[98] If the alternatives will truly result in no differences, then they are not sufficiently different to constitute a reasonable range of alternatives for the purposes of CEQA. *See, e.g., Federation of Hillside & Canyon Associations v. City of Los Angeles*, 83 Cal. App. 4th 1252, 1264 (2000).

the various program alternatives and identifying which among them are "environmentally superior," as CEQA requires.[99]

Furthermore, the long-term ILRP constitutes a regulatory program that establishes a performance standard (namely, the achievement of water quality objectives), within the meaning of Section 15187, Title 14 of the California Code of Regulations. Thus, the EIR for this program "must perform an environmental analysis of the reasonably foreseeable methods by which compliance with that rule or regulation will be achieved[,]"[100] including "[a]n analysis of the reasonably foreseeable *environmental impacts of the methods of compliance*" and "[a]n analysis of the reasonably foreseeable *alternative means of compliance* with the rule or regulation[.] . . ."[101] "[C]ompliance with the rule or regulation" here refers to compliance with the performance standard of achieving water quality objectives.[102] Clearly, a regulation establishing a performance standard will almost always be designed to improve on environmental conditions.[103] According to staff's reasoning, therefore, it would never need to conduct a comparative environmental analysis of the different potential program structures that could be deployed to achieve the performance standard, thereby evading acknowledgement of the tradeoffs in choosing more or less stringent program structures. This would clearly contravene Section 15187, which envisions comparative environmental analysis of the various alternative "methods of compliance[.]"[104]

To measure and facilitate comparison of each alternative's environmental impact, the DPEIR must attempt to project what the future will look like under each program alternative and compare that future scenario to the baseline of existing water quality conditions today.[105] In order for the DPEIR to fulfill its statutory purpose of serving as a meaningful, informative environmental document that will help guide the Board in making an environmentally-informed

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[99] *Watsonville Pilots Assn.*, 183 Cal. App. 4th at 1089.

[100] 14 CCR § 15187(a). More completely, this subsection provides:

> At the time of the adoption of a rule or regulation . . . establishing a performance standard, . . . all regional water quality control boards, . . . must perform an environmental analysis of the reasonably foreseeable methods by which compliance with that rule or regulation will be achieved.

Id.

[101] 14 CCR § 15187(b), (c)(1), (c)(3) (emphases added).

[102] *See* 14 CCR § 15189 ("This section applies to projects consisting solely of compliance with a performance standard . . . which was the subject of an environmental analysis as described in Section 15187.").

[103] As discussed elsewhere in these comments, the staff-recommended program does not even require compliance with water quality objectives, *see* Staff Report, pp.158-160, so it's not clear that the proposed project would even meet the goals of the program or meet the performance standard of meeting water quality objectives. *See* 14 §§ CCR 15187, 15189.

[104] *See* 14 CCR § 15187.

[105] To be clear, this baseline is not the current *rate* of agricultural discharge to state waters, but the actual conditions of water quality at the time of the CEQA analysis, *i.e.*, "real conditions on the ground" or "existing physical conditions in the affected area" today. *See Communities for a Better Environment v. South Coast Air Quality Management District et al.*, 48 Cal. 4th 310, 320-21, 226 P.3d 985, 992-93, 106 Cal. Rptr. 3d 502, 511-12 (2010).

choice, staff must provide some comparative analysis by evaluating the varying degrees to which each of the alternatives improve upon this baseline.

For example, common sense would suggest that less stringent regulatory programs like the proposed project (the Staff-Recommended Program) and Alternative 2, which have virtually no enforcement mechanisms and limited monitoring requirements, would not result in reductions in agricultural discharges and achievement of water quality objectives throughout the Central Valley as quickly as programs with real enforcement mechanisms and comprehensive monitoring and data collection like Alternatives 4 and 5. Staff's baseless conclusion to the contrary is founded on the unspoken assumption that each of the proposed regulatory programs would result, apparently instantaneously, in the universal adoption of best management practices (BMPs) by growers throughout the valley. However, if staff is going to assert that any given program alternative will have no significant impact on water resources on the theory that growers will be implementing required management practices pursuant to that program, then the program must actually make "provision" for ensuring that those practices will "actually be implemented" and fully enforceable through permit conditions, including a workable "monitoring program to ensure that [those management practices] are implemented."[106] If implementation of management practices cannot be meaningfully monitored and enforced on all growers, then it is purely speculative to suggest that these practices will actually be implemented and to use them as a basis for a finding that impacts on water quality will not be significant.

Thus, one obvious method by which staff could distinguish among the relative environmental merits of the various alternatives is by projecting how quickly each program will lead to valley-wide adoption of BMPs and the resulting situation in which irrigated agriculture no longer contributes to exceedances in water quality objectives (thereby achieving full compliance with the ILRP). Where data are available on the implementation rates of specific BMPs under current voluntary programs, staff should incorporate those data into the analysis.

For example, citing Orang et al. (2005),[107] the Staff Report indicates that under the current regulatory setting, in which growers' adoption of BMPs has been purely voluntary, there has been a 30% transition from gravity-driven "flood and furrow" irrigation systems to more environmentally-beneficial drip irrigation systems over the course of 30 years.[108] Staff could presume, therefore, that a purely voluntary program like those envisioned in the proposed project (the Staff-Recommended Program) and Alternative 2 will result in a drip irrigation implementation rate of 1% of total Central Valley irrigated acreage per year, meaning that all growers in the Central Valley would be utilizing drip irrigation systems by the year 2070. Thus, under these program alternatives, a steadily declining proportion of total irrigated acreage would continue to contribute to exceedances in water quality objectives for 59 years (from 2011 to 2069). Once staff completes a more robust analysis of the costs that ongoing contaminated

[106] *See Federation of Hillside & Canyon Associations v. City of Los Angeles*, 83 Cal. App. 4th 1252, 1260-61, 100 Cal. Rptr. 2d 301, 308-09 (2000).

[107] Orang, M., R. Snyder, and S. Matyac. 2005. Survey of Irrigation Methods in California. California Department of Water Resources and University of California, Davis. California Water Plan Update 2005. Volume 4, pg 299–318.

[108] *See* Staff Report, p.16. Here, drip irrigation is presumed to be a BMP, although a feedback mechanism in the form of adequate monitoring would be required to ensure that transition to such a system actually leads to compliance in terms of no longer contributing to exceedances in water quality objectives.

drinking water imposes on municipalities (specifically, treatment costs) and on smaller communities (including economic costs associated with driving to the market and purchasing bottled water to supplement a monthly flat rate for tap water and medical and lost income costs from health incidents related to exposure to contaminated water), the environmental and public health costs associated with each year of delay in valley-wide implementation of BMPs will become much more clear. This figure can be multiplied times the number of acres per year that are estimated as continuing to utilize non-BMP irrigation methods, such as flood and furrow.

Where data indicate that a particular BMP is *declining* in usage under voluntary programs, however, this also must be incorporated into the analysis. Thus, for example, citing Glass (2003),[109] the Staff Report indicates that synthetic nitrogen fertilizer usage has steadily increased in California, specifically threefold over the course of approximately 40 years (from 1961 to 2008).[110] Under voluntary programs like the proposed project and Alternative 2, staff must presume that nitrogen fertilizer use will continue to increase at this rate indefinitely, with associated annual economic, environmental, and public health costs on drinking water systems and Central Valley residents. Again, staff simply MUST perform a robust and balanced analysis of the impacts of the various program alternatives, including attempting to estimate community costs with as much dedication as it currently documents costs to the irrigated agriculture industry. Without this information, staff will continue to underestimate vastly the comparative environmental impacts and public health trade-offs of the various alternative regulatory structures being considered in the EIR.

In contrast, for program alternatives that include: (a) meaningful enforcement mechanisms; (b) comprehensive monitoring that serves as a feedback mechanism to ensure that management practices being implemented really are reducing discharges to state waters (and thus really do constitute BMPs); and (c) a reasonable time schedule for compliance, namely, reaching a point where irrigated agriculture no longer contributes to exceedances in water quality objectives, staff could presume that full compliance would be achieved by that deadline. Under this scenario, it is not speculative for staff to assume that required management practices will actually be implemented.[111] Irrigated agriculture's annual contribution to exceedances in water quality objectives could be measured at a declining rate over that period, and this figure could be multiplied by the foregoing estimated annual cost of contaminated water to drinking water systems and Central Valley communities.

Where staff does not yet have sufficient information regarding estimated implementation rates for the various potential management practices, including but not limited to those contained in Table 5.1.1 of the DPEIR, which, incidentally, omits any mention of Integrated Pest Management for the reduction of pesticide usage, CEQA requires it to conduct this further analysis. It is against everyone's interests, and furthermore illegal, for staff to rush forward with proposing an ILRP that not only violates CEQA but ultimately amounts to a paper tiger. The information that staff currently lacks is not unimportant and insignificant to the larger goals and objectives of the program, including protecting water quality and community drinking water

[109]The Staff Report, presumably by mistake, does not include a full citation to this source in its References section.
[110]Staff Report, p.16.
[111]*See Federation of Hillside & Canyon Assocs.*, 83 Cal. App. 4th at 1260-61.

sources.[112] By engaging in such a process, staff would be able to evaluate the various program alternatives in the DPEIR comparatively and quantitatively, which would allow the Board to identify the "environmentally superior alternative" and make a *truly* environmentally-informed decision about which program alternative to adopt, as CEQA requires.[113]

D. The Alternatives Must Be Feasible

The alternatives in the DPEIR must be feasible, meaning they must comply with existing law.[114] Only Alternatives 4 & 5 comply with the State Board's anti-degradation policy, however.[115] Therefore, Alternatives 2 & 3 are not feasible alternatives.

E. Mitigation in the Interim While Waiting to Meet Water Quality Objectives

Given that there is likely to be some period of delay between approval of the program and significant reductions in agricultural contributions to water quality degradation and even continued exceedances of water quality objectives, this program should include mitigation measures to offset these impacts on public health and the environment. Pursuant to Water Code Section 13267, the Executive Officer may require dischargers to conduct sampling of private domestic wells in or near agricultural areas with high nitrate in groundwater and submit technical reports evaluating the sampling results. In addition, pursuant to Water Code Section 13304, the Board may require dischargers to provide alternative water supplies or replacement water service, including wellhead treatment, to affected public water suppliers or private domestic well owners. This program should include utilizing this power, as well as the creation of a SEP to facilitate use of enforcement actions to support improvements in local impacted drinking water supplies, as described in the sections above.

F. The DPEIR fails to address both Programmatic and Cumulative Impacts to Public Health.

This document already acknowledges that the No Project Alternative fails to protect water quality; in addition, we assert in other areas of this document that Alternative 2 and the Staff Alternative also fail to do so. The failure of these alternatives to reverse the degradation of groundwater quality leads directly to a public health impact that is not analyzed in this document. Moreover, these health impacts are cumulative, as other environmental stressors already impact community health in Region 5. This document must identify the impact of nitrates on public

[112] *See* Staff Report, pp.92-93.

[113] *See Watsonville Pilots Assn.*, 183 Cal. App. 4th at 1089; *Federation of Hillside & Canyon Assocs.*, 83 Cal. App. 4th at 1264.

[114] *In re Bay-Delta Programmatic Environmental Impact Report Coordinated Proceedings*, 43 Cal. 4th 1143, 1162 (2008) ("CEQA defines 'feasible' as 'capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors.'") (quoting California Public Resources Code § 21061.1).

[115] *See* Staff Report, p.114 (Table 15).

health as a *significant impact* for Alternatives 1 and 2 that is not capable of mitigation, as well as the staff alternative.

1. Health Effects

The final document should acknowledge the following short and long-term risks of exposure to nitrates in the water supply.

In the short-term, nitrates can cause: Methemoglobinemia, or "Blue Baby Syndrome"[116]; Indigestion, inflammation of the stomach and gastrointestinal tract (gastroenteritis), with abdominal pain, diarrhea, and blood in the urine and feces[117]

In the long-term, scientific and medical studies have linked nitrates to:[118] Multiple digestive tract impairments, including dyspepsia[119]; Depression, headache and weakness[120]; Miscarriage,[121] stillbirths or premature birth[122]; Sudden Infant Death Syndrome (SIDS)[123]; Mutagenicity (DNA damage) and tetragenicity[124]; Impaired growth of fetuses *in utero*, leading to neural tube disabilities and other birth-related disabilities[125]; Cancers of the digestive system,[126] stomach,[127] esophagus,[128] lungs,[129] colon,[130] bladder and ovaries,[131] testicles,[132] uro-genital tract,[133] and non-

[116]U.S. Environmental Protection Agency. (2010). Basic Information about nitrate in drinking water. Retrieved June 4, 2010, from http://www.epa.gov/safewater/contaminants/basicinformation/nitrate.html. Knobeloch, L., B. Salna, A. Hogan, J. Postle, and H. Anderson. (2000). Blue Babies and Nitrate-Contaminated Well Water. *Environmental Health Perspectives* 108.

[117]Fassett, D. (1973). Nitrates and Nitrites. *Toxicants Occurring Naturally in Foods*. Washington: National Academy Press.

[118]Camargo and Alonso (2006).

[119]Fassett (1973).

[120]Ibid.

[121]Manassaram, D., L. Backer, and D. Moll. (2006). A review of nitrates in drinking water: maternal exposure and adverse reproductive and developmental outcomes. *Environmental Health Perspectives* 114:320-327. Fan, A., and V. Steinberg. (1996). Health implications of nitrate and nitrite in drinking water: an update on methemoglobinemia occurrence and reproductive and developmental toxicity. *Regulatory Toxicology and Pharmacology* 23:35-43.

[122]Manassaram et al (2006).

[123]U.S. EPA (2010).

[124]Camargo and Alonso (2006).

[125]Manassaram et al (2006). See also: Dorsch, M., R. Scragg, A. McMichael, P. Baghurst, and K. Dyer. (1984). Congenital Malformations and Maternal Drinking Water Supply in Rural South Australia: a Case-Control Study. *American Journal of Epidemiology* 119:473-86; Knox, E. (1972). Anencephalus and dietary intake. *British Journal of Preventive and Social Medicine.* 26: 219–23; Super, M., H. Heese, D. MacKenzie, W. Dempster, J. Du Plessis, and J. Ferreira. (1981). An epidemiological study of well-water nitrates in a group of South West African/Namibian infants. *Water Resources* 15:1265-1270. Croen, L., K. Todoroff, and G. Shaw. (2001). Maternal exposure to nitrate from drinking water and diet and risk for neural tube defects. *American Journal of Epidemiology*. 153:325–331.

[126]Powlson, D., T. Addiscott, N. Benjamin, K. Cassman, T. de Kok, H. van Grinsven, J. L'Hirondel, A. Avery, and C. van Kessel. (2003). When does nitrate become a risk for humans? *Journal of Environmental Quality* 37:291-5.

[127]World Health Organization International Agency for Research on Cancer Monograph Working Group. (2006). Carcinogenicity of nitrate, nitrite, and cyanobacterial peptide toxins. *Lancet Oncology*, 7:628-629.

[128]Zhang, X., Z. Bing, Z. Xing, Z. Chen, J. Zhang, S. Liang, F. Men, S. Zheng, X. Li, and X. Bai. (2003). Research and control of well water pollution in high esophageal cancer areas. *World Journal of Gastroenterology* 9:1187-90.

Hodgkins lymphoma[134]; Nervous system disabilities[135]; Dieresis (increased urination), increased starchy deposits and hemorrhaging of the spleen[136]; Active ulcerative colitis and Crohn's disease[137]; Pancreatitis,[138] which is highly associated with pancreatic cancer[139]; Thyroid disruption, including hypertrophy[140].

Vulnerable populations are especially sensitive to nitrate contamination, including children and pregnant women.[141] Nitrates can also have indirect health impacts. In particular, diabetes may be indirectly linked,[142] because impaired pancreas functioning can lead to diabetes mellitus, and

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[129]Greenblatt, M., S. Mirvish, and B. So. (1971). Nitrosamine Studies: Induction of Lung Adenomas by Concurrent Administration of Sodium Nitrite and Secondary Amines in Swiss Mice. *Journal of National Cancer Institute* 46:1029-1034.

[130]Ward, M. (2006). Workgroup report: Drinking-water nitrate and health--recent findings and research needs. *Environmental Health Perspectives* 114:A458-9; A459-61. See also: Gulis, G., M. Czompolyova, and J. Cerhan. (2002). An ecologic study of nitrate in municipal drinking water and cancer incidence in Trnava District, Slovakia. *Environmental Resources* 88:182-187.

[131]Weyer, P., J. Cerhan, B. Kross, G. Hallberg, J. Kantamneni, G. Breuer, M. Jones, W. Zheng, and C. Lynch. (2001). Municipal drinking water nitrate level and cancer risk in older women: the Iowa Women's Health Study. *Epidemiology* 12:327-38.

[132]Moller, H. (1997). Work in agriculture, childhood residence, nitrate exposure, and testicular cancer risk: a case-control study in Denmark. *Cancer Epidemiology, Biomarkers and Prevention* 6:141-144.

[133]Lubin, F., H. Farbstein, A. Chetrit, M. Farbstein, L. Freedman, E. Alfandary, and B. Modan. (2000). The role of nutritional habits during gestation and child life in pediatric brain tumor etiology. *International Journal of Cancer* 86:139-143.

[134]Gulis et al (2002).

[135]Manassaram, D., L. Backer, and D. Moll. (2006). Ingested nitrate and nitrite, and cyanobacterial peptide toxins. *Monographs On The Evaluation Of Carcinogenic Risks To Humans*. International Agency for Research on Cancer 94.

[136]U.S. E.P.A. (2010).

[137]Kimura, H., S. Miura, T. Shigematsu, N. Ohkubo, Y. Tsuzuki, I. Kurose, H. Higuchi, Y. Akiba, R. Hokari, M. Hirokawa, H. Serizawa, and H. Ishii. (1997). Increased nitric oxide production and inducible nitric oxide synthase activity in colonic mucosa of patients with active ulcerative colitis and Crohn's disease. *Digestive Diseases and Science* 42:1047-54. See also: National Institute of Public Health and Environmental Protection. (2010). Nitrate. International Program on Chemical Safety. Retrieved April 5, 2010, from http://www.inchem.org/documents/jecfa/jecmono/v35je14.htm.

[138]Carmargol et al (2008).

[139]Coss, A., K. Cantor, J. Reif, C. Lynch, and M. Ward. (2004). Pancreatic Cancer and Drinking Water and Dietary Sources of Nitrate and Nitrite. *American Journal of Epidemiology* 159:693.

[140]Van Maanen, J., A. van Dijk, K. Mulder, M. de Baets, P. Menheere, and D. van der Heide. (1994). Consumption of Drinking Water with High Nitrate Levels Causes Hypertrophy of the Thyroid. *Toxicology Lett*ers 72:365-374.

[141]McCasland, M., N. Trautmann, and S. Porter. (2008). Nitrate: Health Effects In Drinking Water. Natural Resources Cornell Cooperative Extension. Retrieved June 5, 2010, from http://psep.cce.cornell.edu/facts-slides-self/facts/nit-heef-grw85.aspx.

[142]Kostraba, J., E. Gay, M. Rewers, and R. Hamman. (1992). Nitrate Levels in Community Drinking Waters and Risk of IDDM, an Ecologic Analysis. *Diabetes Care* 15:1505-1508. See also: Parslow R., P. McKinney, G. Law, A. Staines, R. Williams, and H. Bodansky. (1997). Incidence of Childhood Diabetes Mellitus in Yorkshire, Northern England, is Associated with Nitrate in Drinking Water: an Ecologic Analysis. *Diabetologia* 40:550-556.

nitrates are associated with chronic pancreatitis. In fact, nitrate concentrations in blood have been recommended as a marker for diabetes.[143]

2. Measured Health Impacts in Tulare County

The Community Water Center has assembled detailed information on the rates of diseases in Tulare County (where 20% of public supply wells and 40% of domestic wells exceed the drinking water standard for nitrates) associated with nitrates, as outlined in scientific and medical literature. This data reinforces our contention that the health impacts of not reducing nitrate contamination in groundwater are significant.

The following tables present information on health outcomes that occur at elevated levels within Tulare County and are associated with high nitrate levels. Information for health outcomes that occur at average statewide rates are not included. All statistics are expressed as "death rates," which refer to the rate of death for each associated disease per 100,000 people. The death rate for each disease varies depending on the health outcome, but in each outcome listed, Tulare County's death rate occurred at levels significantly higher than the state rate.

3. Reproductive and Infant Health Concerns

Tulare County's infant mortality rate is higher than the state average – 6.4 versus 5.3 (per 100,000 infant births).[144] These rates have remained consistently high since 1990.[145] Another cause for concern is that studies have shown that drinking water contaminated with both bacteria and nitrates can make methemoglobinemia (blue baby syndrome) more likely.[146] In private well testing in Tulare County, 15 percent of wells tested exceeded MCLs in both categories.[147]

[143]Nunes, S., I. Figueiredo, P. Soares, N. Costa, M. Lopes, and M. Caramona. (2008). Semicarbazide-sensitive amine oxidase activity and total nitrite and nitrate concentrations in serum: novel biochemical markers for type 2 diabetes? *Acta Diabetologica* 46:135-140.

[144]California Department of Public Health. (2010). County Health Status Profiles. Retrieved June 8, 2010, from http://www.cdph.ca.gov/programs/ohir/Pages/CHSP.aspx.

[145]California Department of Health Services. (2005). Leading Causes of Infant Death, California Counties, 2005 (By Place of Residence). Sacramento: Center for Health Statistics.

[146]Fan and Steinberg (1996).

[147]State Water Resources Control Board (2006).

Health outcome associated with high nitrate levels	**Death rate in Tulare County**
Sudden Infant Death Syndrome	146 to 252 percent of state rate (2003)
Methemoglobinemia, or "Blue Baby Syndrome"	140 percent of state rate, ranking Tulare County 42nd of all California counties (2006)
Congenital malformations, deformations and chromosomal abnormalities, including neural tube disabilities[148]	109 percent of state rate (2003); leading cause of infant death in 2005
Certain Conditions Originating in the Prenatal Period	250 percent of state rate (2003)
Spontaneous abortion, miscarriage	211 percent of state rate (2001-2003)

Source: California Department of Public Health, Center for Health Statistics, Office of Health and Information Research.

[148]California Department of Health Services (2005).

4. Incidences of Cancers Associated with Nitrate Contamination

Health outcome associated with high nitrate levels	Death rate in Tulare County
Digestive System Cancers	125 percent of state rate
Pancreatic cancer	121 percent of state rate
Esophogus Cancer	Between 125 and 134 percent of state rate (2001 - 2005); as high as 153 percent for females
Stomach Cancer	#8 in state for deaths caused by stomach cancer (1988-2005)
Bladder Cancer	111 percent of state rate (2003)
Ovarian Cancer	116 percent of state rate (2001-2005)
Testicular Cancer	107 percent of state rate (2002 – 2006)
Colon Cancer	113 percent of state rate (2005)
Non-Hodgkin lymphoma	119 percent of state rate for females (2001-2005)
Lung Cancer	108 percent of state rate (2001-2005); as high as 115 percent in 2005

Source: California Department of Public Health, Center for Health Statistics, Office of Health and Information Research.

4. Gastrointestinal Illnesses

Many gastrointestinal illnesses are related to nitrates.[149] One of the acute impacts of consuming nitrate-contaminated water is a variety of gastrointestinal illnesses. Almost 17 percent of farm workers in Tulare experienced at least monthly bouts of diarrhea, vomiting, and/or stomach pains.[150] While these may or may not be linked to nitrates, gastrointestinal inflammation exacerbates the more serious health impacts of nitrate contamination, such as pancreatitis and cancers of the gastrointestinal tract.

[149]Laboratory for Toxicology, National Institute of Public Health and Environmental Protection. (n.d.). Nitrate. National Institute of Public Health and Environmental Protection: International Programme on Chemical Safety. Retrieved January 21, 2009, from http://www.inchem.org/documents/jecfa/jecmono/v35je14.htm.

[150]Frisvold, G., R. Mines., and J. Perloff. (1988). The Effects of Job Site Sanitation and Living Conditions on the Health and Welfare of Agricultural Workers. *American Journal of Agricultural Economics* 70(4):875-85.

Health outcome associated with high nitrate levels	Death rate in Tulare County
Diseases of the Digestive System	149 percent of state rate (2003)
Peptic Ulcer	140 percent of state rate (2003)
Chronic Liver Diseases and Cirrhosis	133 percent of state rate (2003)
Other Liver diseases	224 percent of state rate (2003)
Pancreatitis	180 percent of state rate (2003)

Source: California Department of Public Health, Center for Health Statistics, Office of Health and Information Research.

5. Additional Health Outcomes Associated with Nitrate Contamination

Several other health outcomes associated with nitrates occur at notably high rates in Tulare County. For example, consumption of water high in nitrates has been shown to increase hypertrophy, a condition marked by enlargement of the thyroid, which is responsible for many of the body's endocrine and hormonal functions.[151] Tulare County's rate of death for these diseases is exceptionally high. Another endocrine-related disease is diabetes mellitus, which is associated with the endocrine portion of the pancreas.[152] Nitrates are associated with chronic pancreatitis, and total nitrate concentrations in blood serum have been suggested as a prognostic marker for diabetes.[153]

Health outcome associated with high nitrate levels	Death rate in Tulare County
Endocrine, Nutritional and Metabolic Diseases (including thyroid disorders)	172 percent of the state rate (2003)
Respiratory problems; shortness of breath; acute respiratory infections	119 percent of state rate (2007)
Diabetes	148 - 158 percent of state rate (2003 - 2006)

Source: California Department of Public Health, Center for Health Statistics, Office of Health and Information Research.

6. Health Impacts are Cumulative

[151]Van Maanen et al (1994).

[152]Kostraba et al 1992. See also: Parslow et al (1997).

[153]Nunes et al (2008).

Health problems associated with nitrate contamination in drinking water may be exacerbated and/or compounded by many other environmental and health stressors.[154] As the National Academy of Sciences notes, multiple stressors, ranging from chemicals released from noxious land uses to socioeconomic factors, can exacerbate the impacts of one particular source. They recommend "that exposure assessment methods [for environmental hazards] be expanded to consider exposures to multiple chemicals with multiple routes of exposure...These models need to be able to assess the cumulative effects of chemicals that may have either synergistic or antagonistic actions."[155]

If cumulative risks make certain communities more vulnerable to stressors,[156] such as drinking water contamination, the residents in the San Joaquin Valley are extremely vulnerable. In addition to nitrate contamination, residents face a host of other drinking water pollutants, including pesticides, arsenic, disinfectant by-products, and gasoline additives.[157]

Residents of the San Joaquin Valley are also assaulted by some of the most polluted air in the U.S. According to the American Lung Association, five of the nation's top 25 cities most polluted by particle matter are in the San Joaquin Valley.[158] In addition, five San Joaquin Valley counties make the top 25 list of the most polluted counties for both ozone and particulate matter.[159]

Given the multiple and severe health risks encountered by communities in Tulare County, the cumulative impact of any one stressor is significant. In addition, without a strong regulatory program, such as that identified in Alternative 4, the number of wells with nitrates in excess of the drinking water standard can be expected to increase, exacerbating the already significant health impact of Alternatives 1 and 2.

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[154]Koppe, J., A. Bartonova, G. Bolte, M. Bistrup, C. Busby, M. Butter, P. Dorfman, A. Fucic, D. Gee, P. van den Hazel, V. Howard, M. Kohlhuber, M. Leijs, C. Lundqvist, H. Moshammer, R. Naginiene, P. Nicolopoulou-Stamati, R. Ronchetti, G. Salines, G. Schoeters, G. ten Tusscher, M. Wallis, and M. Zuurbier. (2006). Exposure to multiple environmental agents and their effect. Acta Paediatrica Supplement 95(453):106-13.

[155]Committee on Pesticides in the Diets of Infants and Children, National Research Council. (1993). *Pesticides in the Diets of Infants and Children*. Washington: National Academy Press.

[156]National Environmental Justice Advisory Committee Cumulative Risks and Impacts Group (2004).

[157]Gronberg et al (2004). See also: Ramos (2003); Ferriss, S. (August 18, 2009). Central Valley continues marathon fight for clean drinking water. *Sacramento Bee*; Troiano, J., T. Barry, C. Nordmark, and B. Johnson. (1997). Profiling areas of ground water contamination by pesticides in California: phase II - evaluation and modification of a statistical model. *Environmental Monitoring and Assessment* 45(3):301-318; Environmental Working Group. Drinking Water Quality Report, City of Tulare. Retrieved February 23, 2010, from http://www.ewg.org/tap-water/whatsinyourwater/CA/City-of-Tulare/5410015/. The State Water Resources Control Board's Geotracker database compiles cases of leaking underground storage tanks, leaking landfills, and other sources of potential aquifer contamination. The database on January 7, 2009 listed over 60,000 cases, of which over 24,000 are open. Most of the contaminants listed are gasoline, diesel, heating oil, hydraulic fluid, benzene and solvents.

[158]American Lung Association. (2010). *State of the Air 2010*. Washington: American Lung Association.

[159]Ibid.

Conclusion

Thank you for your consideration of these comments. If you have any questions or concerns, please do not hesitate to contact us. We look forward to continuing to work with staff and the Board to develop an effective long-term irrigated lands regulatory program.

Sincerely,

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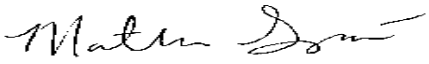

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