CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER R5-2013-0100

WASTE DISCHARGE REQUIREMENTS GENERAL ORDER FOR DISCHARGES FROM IRRIGATED LANDS WITHIN THE CENTRAL VALLEY REGION FOR DISCHARGERS NOT PARTICIPATING IN A THIRD-PARTY GROUP

TABLE OF CONTENTS

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

Findings

SCOPE OF 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 Dischargers who voluntarily enroll or are required by the Central Valley Water Board to enroll as individuals. The Board intends to issue general WDRs for geographic areas and/or commodities that will be administered by third-party groups. This order will apply to Dischargers who fail to enroll under applicable Board-adopted WDRs administered by a third-party, who fail to meet the obligations described in the applicable third-party administered WDRs, or who choose to enroll under this Order.

3 To enroll under this Order, Dischargers must submit a complete Notice of Intent (NOI) and appropriate fee to the Central Valley Water Board. The NOI will include the information described in section IV.B of Attachment B to this Order (Monitoring and Reporting Program Order R5-2013-0100, or MRP). Central Valley Water Board staff will make the NOI form available electronically and will provide the form to Dischargers upon request. Upon submittal of a complete NOI and appropriate fee, the Executive Officer may issue a Notice of Applicability (NOA), after which the Discharger will be covered under this Order.

The board intends for this Order to apply to all Dischargers not enrolled under an applicable Board-adopted WDRs administered by a third-party. Therefore, the Central Valley Water Board may issue an NOA to a Discharger following a hearing, even though no NOI has been submitted. In these cases, the Discharger's coverage under this Order will begin upon issuance of an NOA.

4 Dischargers are required to comply with the Water Code, but are not required to join a third-party group. Dischargers not covered by a conditional waiver may comply with the Water Code by joining a third-party group and enrolling under a general waste discharge requirements order, filing for coverage under this Order, filing a Report of Waste Discharge

[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).

(RWD) to obtain individual WDRs, or by ceasing to discharge wastes that may affect the quality of state waters.

5 "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.

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

7 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.

8 This Order implements the long-term ILRP for Dischargers not enrolled in a third-party group. 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.

9 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. Both the landowner and operator are ultimately responsible for complying with the terms and conditions of this Order.

REASONS FOR THE CENTRAL VALLEY WATER BOARD ISSUING THIS ORDER

10 The Central Valley Region has approximately 7,800,000 acres of cropland under irrigation and approximately 35,000 individuals and operations with "waste discharges from irrigated lands," as defined in Attachment E to this Order. Currently, approximately 567,000 thousand acres are regulated under the Water Board's General Order for Existing Milk Cow Dairies (R5-2007-0035) and most of the remaining acres will be enrolled under WDRs administered by a third-party group (third-party WDRs). However, those Dischargers whose discharges are not regulated under third-party WDRs must comply with Porter-Cologne by obtaining WDRs. In lieu of issuing potentially hundreds of individual WDRs, a general WDR is

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

[3] 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

necessary and appropriate for those individual Dischargers not governed by third-party WDRs.

11 The Central Valley Region contains 84 groundwater basins and 135 groundwater sub basins (34 and 76, respectively, that are overlain by irrigated agriculture). The Central Valley also contains approximately 34,000 linear miles of surface water courses (including approximately 5,000 linear miles of named surface water courses) that are, or could be, affected by discharges of waste from irrigated lands. This does not include many thousands of miles of surface water courses in the foothill and mountainous regions, 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.

12 Within the Central Valley Region, there are approximately 1.3 million 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 1.3 million acres, approximately 580,000 acres of the irrigated lands are within DPR GWPAs that are characterized as vulnerable to leaching of pesticides (leaching areas), approximately 660,000 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 30,000 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 contamination 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 pathways to groundwater with soluble pesticides.

13 The Central Valley Water Board's *Irrigated Lands Regulatory Program Existing Conditions Report* (ECR)[4] identifies waters of the state with impaired water quality attributable to or influenced by agriculture in areas of irrigated lands. The *Irrigated Lands 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…"*

14 Approximately 280 water bodies encompassing 6,500 linear miles of surface water courses within the Central Valley Region have been listed as impaired pursuant to Clean Water Act Section 303(d).[5] The 303(d) list of impaired water bodies identifies agriculture as a potential source of constituents that impair beneficial uses of some waters within the Central Valley Region and threaten the quality of waters of the state. Approximately 83 of those water bodies are listed with agriculture as an identified potential source of the impairment. Many other water bodies are listed with an unknown source of impairment.

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

15 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) 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.[6]

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.[7] Available data (see Information Sheet and the PEIR) indicate that there are many wells in the Central Valley that have exceeded the MCL for nitrate. Groundwater in the Central Valley 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 Central Valley. Where nitrate groundwater quality data are not available, information on the hydrogeological characteristics of the area suggest that significant portions of the Central Valley 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.

16 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).

17 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 Central Valley Region 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; and (d) due to the large number of operations, these types of operations are more appropriately regulated under general rather than individual requirements.

[6] 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.
[7] PEIR, Appendix A.

18 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).

19 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."*

20 Technical reports are necessary to evaluate Discharger 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 Discharger waste discharges on water quality, to verify the adequacy and effectiveness of the Order's conditions, and to evaluate Discharger compliance with the terms and conditions of the Order. A Discharger who is covered under this Order must comply with MRP Order R5-2013-0100 which is part of this Order, and future revisions thereto or with an individual monitoring and reporting program, as specified by the Central Valley Water Board or Executive Officer.

21 The Central Valley Water Board's *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins* and the *Water Quality Control Plan for the Tulare Lake Basin* (hereafter Basin Plans) designate beneficial uses, establish water quality objectives, contain programs of implementation needed to achieve water quality objectives, and reference 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 Findings 23 and 24.

22 This Order implements the Basin Plans 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 waste discharges on water quality and the effectiveness of management practices designed to comply with applicable water quality objectives.

23 Pursuant to the Basin Plans 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 surface waters in the Central Valley Region 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. Estuarine Habitat
m. Preservation of Biological Habitats of Special Significance
n. Shellfish Harvesting
o. Navigation
p. Rare, Threatened, and Endangered Species
q. Freshwater Replenishment
r. Groundwater Recharge
s. Industrial Process Supply
t. Aquaculture
u. Commercial and Sportfishing

24 Pursuant to the Basin Plans and State Water Board plans and policies, including State Water Board Resolution 88-63, all ground waters in the region are considered as suitable or potentially suitable at a minimum, for:

a. Municipal and Domestic Supply
b. Agricultural Supply
c. Industrial Service Supply
d. Industrial Process Supply

25 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.

26 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.

27 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.

28 Section 106.3 of the Water Code establishes the policy of the State of California that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes. This Order promotes that policy by, among other things, utilizing a tiered system that imposes more stringent requirements in areas deemed "high vulnerability" based on threat to surface or groundwater quality, requiring surface and groundwater monitoring and management plans, requiring an identification and evaluation of management practices that are protective of surface and groundwater quality, and requiring discharges to meet applicable water quality objectives, which include maximum contaminant levels designed to protect human health and ensure that water is safe for domestic uses. Protection of the beneficial uses of groundwater and surface water is described throughout this Order, including the discussion in Attachment A to this Order of State Water Board Resolution 68-16 *Statement of Policy with Respect to Maintaining High Quality Waters in California*. As discussed below, this Order is established consistent with the Program Environmental Impact Report (PEIR) for the Irrigated Lands Regulatory Program. The PEIR includes a specific goal and objective to ensure that discharges from irrigated lands do not impair access to safe and reliable drinking water.

CALIFORNIA ENVIRONMENTAL QUALITY ACT

29 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.

30 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 Dischargers 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).

31 The requirements of this Order are based on elements of Alternative 5 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 to 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 of practices implemented in response to this Order will be substantially similar to those described in the PEIR for Alternative 5. 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.

32 Where potentially significant environmental impacts identified in Attachment D may occur as a result of Dischargers' compliance activities, this Order requires that Dischargers 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.

33 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

34 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.

35 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 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

36 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 as a whole. The estimated costs were derived by analyzing the six alternatives evaluated in the PEIR. This Order, which implements the long-term ILRP across the Central Valley Region, is based primarily on Alternative 5 of the PEIR. The estimated average annual per acre cost of compliance with this Order, e.g., summation of costs for administration, monitoring, reporting, tracking, implementation of management practices, is expected to be 184.29 dollars per year.[8]

Approximately $121.12 of the estimated $184.29 per acre annual cost of the Order is associated with implementation of management practices. This Order does not require that Dischargers implement specific water quality management practices.[9] 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 Dischargers 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 Dischargers and those vendors or individuals providing services or equipment and not based on an estimate of those costs provided by the board. 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.*[10] Attachment A includes further discussion regarding the cost estimate for this Order.

[8] A per acre cost is provided here because it is unknown how many irrigated lands operations will be enrolled under this Order. Without information regarding the potential irrigated acreage that may enroll, a reliable total cost cannot be determined. It is assumed, however, that very few operations will be enrolled under this Order.

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

[10] 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

37 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

38 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.

39 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 support the development of information needed for the CV-SALTS process.

40 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 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 existing approved TMDLs given in the Basin Plans.

41 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, individual waste discharge requirements, or an order administered by a third-party.

COORDINATION AND COOPERATION WITH OTHER AGENCIES

42 *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 action plans can support or supplement efforts to evaluate potential impacts of irrigated agricultural discharges on groundwater.

43 *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.

44 *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. This Order leverages CDFA's work and expertise with respect to nitrogen management training and technical support to the professionals that will be developing nitrogen management plans for individual Dischargers.

45 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

46 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 of waste discharged; 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.

47 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 Dischargers 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 Discharger. The purpose of an informal enforcement action is to quickly bring the violation to the Discharger's attention and to give the Discharger 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 Discharger is implementing a Central Valley Water Board approved SWAP or GWAP in accordance with the time schedule provisions of this Order (section X).
c) The discharge of waste to lands not owned, leased, or controlled by the Discharger 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 Farm Water Quality Plan (FWQP), Surface Water Action Plan (SWAP), or Groundwater Action Plan (GWAP).
g) Failure to pay annual fees, penalties, or liabilities.
h) Failure to monitor or provide information to the Central Valley Water Board as required.
i) Failure to submit required reports on time.

GENERAL FINDINGS

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

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

50 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.

51 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.

52 This Order requires Dischargers to provide the Central Valley Water Board 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 Discharger representatives so that the board may more efficiently monitor compliance with the provisions of this Order.

53 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.

54 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.

55 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 Discharger.

56 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.

57 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.

58 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.

59 The Central Valley Water Board has notified interested agencies and persons of its intent to issue this Order for discharges of waste from irrigated lands by individuals not enrolled in a third-party, and has provided them with an opportunity for a public hearing and an opportunity to submit comments.

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

61 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 Dischargers that have received a Notice of Applicability[11] their agents, successors, and assigns shall comply with the following:

I. 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.

II. Receiving Water Limitations

A. Surface Water Limitations[12]

1. Wastes discharged 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[13]

1. Wastes discharged 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.

III. Provisions

A. General Specifications

1. Dischargers shall comply with all applicable provisions of the California Water Code, the applicable Basin Plan, and State Water Board plans and policies.

[11] The board intends for this Order to apply to all Dischargers not enrolled under applicable Board-adopted WDRs administered by a third-party. Therefore, the Central Valley Water Board may issue an NOA to a Discharger following a hearing, even though no NOI has been submitted.

[12] These limitations are effective immediately except where Dischargers are implementing an approved Surface Water Action Plan (SWAP) for a specified waste parameter in accordance with an approved time schedule authorized pursuant to sections VI.C and X of this Order.

[13] These limitations are effective immediately except where Dischargers are implementing an approved Groundwater Action Plan (GWAP) for a specified waste parameter in accordance with an approved time schedule authorized pursuant to sections VI.D and X of this Order.

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

3. Dischargers shall comply with the attached Monitoring and Reporting Program R5-2013-0100, and future revisions thereto or with an individual monitoring and reporting program, as specified by the Central Valley Water Board or the Executive Officer.

4. Dischargers shall implement water quality management practices described in their FWQP and, as necessary, to achieve compliance with surface and groundwater limitations of this Order (section II.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. Where applicable, the implementation of practices must be in accordance with the time schedule contained in an approved Surface Water Action Plan or Groundwater Action Plan.

5. Dischargers 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.

6. 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)[14] shall be mitigated in accordance with the mitigation measures provided in Attachment C to this Order.

7. Dischargers shall implement effective sediment discharge and erosion prevention practices to minimize or eliminate the discharge of sediment above background levels.

8. Where utilized, 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. Alternatively, within Runoff Groundwater Protection Areas, Dischargers can follow the DPR approved management practice for recycling of runoff at 3 CCR section 6487.4(h)(1).

9. Dischargers shall implement practices that minimize excess nutrient application relative to crop consumption. Dischargers shall prepare and implement a farm-specific nitrogen management plan as required by section VI.B of this Order.

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

11. Where applicable, Dischargers 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 Discharger

[14] 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.

shall follow the standards and guidelines described in the California Department of Water Resources' *Water Well Standards (Bulletins 74-81 & 74-90 combined)*.

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

13. 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.

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

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

16. 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.

17. The Discharger 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 Discharger 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 Discharger, 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.

18. The Discharger shall provide the Central Valley Water Board with the phone number(s) of the individual(s) with authority to provide consent to access its facilities as described in provision III.A.17 above.

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

20. The Discharger shall submit all required documents in accordance with section VII of this Order.

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

IV. Effective Dates

1. This Order is effective upon adoption by the Central Valley Water Board on 26 July 2013 and remains in effect unless rescinded or revised by the Central Valley Water Board.

2. Regulatory coverage under this Order is effective upon Central Valley Water Board issuance of an NOA, which may be issued upon receipt of a complete Notice of Intent and appropriate enrollment fee from the Discharger.

V. 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 Plans* (Basin Plans) *for the Sacramento River and San Joaquin River Basins*, and *for the Tulare Lake Basin*.

2. The filing of a request by the Discharger 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. Dischargers 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 Discharger, or to determine compliance with the requirements of this Order.

4. After notice and opportunity for a hearing, the Order may be terminated or modified for cause as applied to individual Dischargers 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.

5. The Order is not transferable to any person except after notice to the Central Valley Water Board. The Central Valley Water Board may modify or revoke and re-issue the Order to incorporate such other requirements as may be necessary under the California Water Code.

6. In the event of any change in control or ownership of the irrigated agricultural operation covered under this Order, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter at least 60 days in advance of such change, a copy of which shall be immediately forwarded to the appropriate Central Valley Water Board office.

7. To assume operation under the Order, any succeeding owner or operator must request, in writing, that the Executive Officer transfer coverage under this Order. The succeeding owner or operator shall provide their full legal name, address and telephone number of the persons responsible for contact with the Central Valley Water Board and a signed statement in compliance with section VII, Reporting Provisions, below. The request will also include a statement and signature that the new owner or operator assumes full responsibility for compliance with the Order and that the new owner or operator will implement the FWQP prepared by the preceding owner or operator. Transfer of the Order shall be approved or disapproved in writing by the Executive Officer. The succeeding owner or operator is not

authorized to discharge under the Order and is subject to enforcement until written approval of the coverage transfer from the Executive Officer.

8. If the Discharger wishes to terminate coverage under this Order, the Discharger shall submit a complete Notice of Termination (NOT). Central Valley Water Board staff will post a NOT form on the internet and will provide the form to Dischargers upon request. Termination of regulatory coverage will occur on the date specified in the NOT, unless specified otherwise. All discharges shall cease before the date of termination, and any discharges on or after this date shall be considered in violation of the Water Code, unless other WDRs or waivers of WDRs cover the discharge.

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

VI. Required Reports and Notices

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 Discharger, and only to the extent that the Discharger has access to the equipment that allows for them to submit the information electronically. If the Discharger does not have such access, reports and notices must be submitted by mail or in person. Reports and notices shall be submitted in accordance with section VII, Reporting Provisions, as well as MRP Order R5-2013-0100. Dischargers must prepare and maintain the following reports as instructed below, and shall submit or make available such reports to the Central Valley Water Board as identified below.

A. Notice of Intent

To apply for coverage under this Order, the Discharger must submit a complete Notice of Intent (NOI) to comply with the conditions of the Order for approval by the Executive Officer. Central Valley Water Board staff will post an NOI form on the internet and will provide the form to Dischargers upon request. The information that must be provided in the NOI is described in section IV.B of the MRP.

B. Farm Water Quality Plan

Within one (1) year of issuance of an NOA, the Discharger shall develop a Farm Water Quality Plan (FWQP), which will include a nitrogen management plan, and submit the plan to the Central Valley Water Board. The FWQP shall describe the water quality management practices used or to be used to meet the requirements of this Order and shall include the elements specified in section IV.C of the MRP. The FWQP shall be updated annually, or if the Executive Officer requests that additional information be included. It shall be maintained at the Discharger's farming operations headquarters or primary place of business; and must be produced, upon request by board staff, should board staff or authorized representative conduct an inspection of the Discharger's irrigated agricultural operation.

C. Surface Water Action Plan

The Discharger shall develop a Surface Water Action Plan (SWAP) when surface water discharge monitoring results required by the MRP exceed an applicable water quality objective or trigger limit twice in a three year period for the same constituent or as required in the MRP. The Discharger shall develop a SWAP if the Executive Officer determines monitoring results indicate a trend in degradation that may threaten applicable Basin Plan beneficial uses. The SWAP shall describe the water quality management practices to be

implemented and shall include the elements specified in section IV.D of the MRP. The Discharger shall submit the SWAP to the Central Valley Water Board Executive Officer within 60 days of receipt of data or information indicating that the requirement to develop a SWAP has been triggered or within 60 days of the Executive Officer informing the Discharger that monitoring results indicate a trend in degradation of a constituent that may threaten applicable beneficial uses. The SWAP is subject to Executive Officer review and approval. The Discharger shall begin implementing the SWAP immediately and will implement any changes to the SWAP required by the Executive Officer.

SWAP completion. A SWAP is considered completed for a constituent when the Executive Officer concurs that the elements of the SWAP have been successfully completed and the water quality condition requiring the SWAP has been successfully addressed.

D. Groundwater Action Plan

The Discharger shall develop a Groundwater Action Plan (GWAP) when groundwater monitoring shows that its discharge is causing or contributing to groundwater quality conditions that exceed applicable water quality objectives or trigger limits; or where management practices currently in use are not protective of groundwater quality based upon information contained in the management practices evaluation report (section IV.F, MRP). The Discharger shall develop a GWAP if the Executive Officer determines monitoring results indicate a trend in degradation that may threaten applicable Basin Plan beneficial uses. The GWAP shall describe the water quality management practices to be implemented and shall include the elements specified in section IV.E of the MRP. The Discharger shall submit the GWAP to the Central Valley Water Board Executive Officer within 60 days of receipt of data or information indicating that the requirement to develop a GWAP has been triggered or within 60 days of the Executive Officer informing the Discharger that monitoring results indicate a trend in degradation of a constituent that may threaten applicable beneficial uses. The GWAP is subject to Executive Officer review and approval. The Discharger shall begin implementing the GWAP immediately and will implement any changes to the GWAP required by the Executive Officer.

GWAP completion. A GWAP is considered completed for a constituent when the Executive Officer concurs that the elements of the GWAP have been successfully completed and the water quality condition requiring the GWAP has been successfully addressed.

E. Annual Monitoring Report (AMR)

The Discharger shall submit an AMR in accordance with section IV.G of the MRP to the Central Valley Water Board by 1 May of each year.

F. Management Practices Evaluation Workplan

Per the schedule in section III.C of the attached MRP, Dischargers within a high vulnerability groundwater area shall submit a management practices evaluation workplan to the Executive Officer for review and approval. The workplan shall be designed to achieve the objectives and requirements described in section III.C of the attached MRP. The Discharger shall implement the workplan upon Executive Officer approval.

G. Management Practices Evaluation Workplan Reports

The Discharger shall submit reports on the implementation of their management practices evaluation workplan in accordance with section IV.F of the MRP to the Executive Officer. The final report is subject to Executive Officer approval.

VII. Reporting Provisions

1. Dischargers are required to submit reports and notices in accordance with the requirements in this Order and attached Monitoring and Reporting Program Order R5-2013-0100, unless otherwise requested by the Executive Officer.

2. All reports shall be accompanied by a cover letter containing the certification specified in section VII.3 below. The cover letter shall be signed by a person duly authorized under California law to bind the party submitting the report.

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 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). If the Discharger 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 Discharger 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 Discharger 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 Dischargers or an authorized representative shall be submitted using the Geotracker ESI (Electronic Submittal of Information) system. Geotracker ESI is a web-based electronic reporting tool maintained by the State Water Board. If unable to submit the report electronically, the Discharger shall email, mail or personally deliver the report to the Central Valley Water Board.

VIII. Record-keeping Requirements

The Discharger shall maintain any reports or records required by this Order for five years. The maintained reports or records shall be made available to the Central Valley Water Board upon request. 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.

IX. 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. Dischargers 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 2200.6.

X. Time Schedule for Compliance

When a SWAP or GWAP is required pursuant to the provisions in sections VI.C and D, the following time schedules shall apply as appropriate in order to allow Dischargers sufficient time to achieve compliance with the surface and groundwater receiving water limitations described in section II 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 V of this Order). Any applicable time schedules for compliance established in the Basin Plan supersede 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 SWAP for addressing the problem triggering its preparation (including, but not limited to violation of the Surface Water Limitation II.A) shall be as short as practicable, but may not exceed 10 years from the date the SWAP is submitted for approval by the Executive Officer. The proposed time schedule in the SWAP must be supported with appropriate technical or economic justification as to why the proposed schedule is as short as practicable. The maximum time schedule of 10 years may not be extended based on approval of a new or revised SWAP that addresses the same waste constituent addressed by an existing SWAP.

Groundwater: The time schedule identified in a GWAP for addressing the problem triggering its preparation (including, but not limited to violation of Groundwater Limitation II.B) shall be as short as practicable, but may not exceed 10 years from the date the GWAP is submitted for approval by the Executive Officer. The proposed time schedules in the GWAP must be supported with appropriate technical or economic justification as to why the proposed schedules are as short as practicable. The maximum time schedule of 10 years may not be extended based on approval of a new or revised GWAP that addresses the same waste constituent addressed by an existing GWAP.

This Order becomes effective on July 26, 2013 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, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on July 26, 2013.

Original signed by
PAMELA C. CREEDON, Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ATTACHMENT A TO Order R5-2013-0100
INFORMATION SHEET

WASTE DISCHARGE REQUIREMENTS GENERAL ORDER
FOR
DISCHARGES FROM IRRIGATED LANDS WITHIN THE CENTRAL VALLEY REGION
FOR DISCHARGERS NOT PARTICIPATING IN A THIRD-PARTY GROUP

Table of Contents

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ATTACHMENT A to Order R5-2013-0100
INFORMATION SHEET

WASTE DISCHARGE REQUIREMENTS GENERAL ORDER
FOR
DISCHARGES FROM IRRIGATED LANDS WITHIN THE CENTRAL VALLEY REGION
FOR DISCHARGERS NOT PARTICIPATING IN A THIRD-PARTY GROUP

Overview

This attachment to Waste Discharge Requirements General Order for Discharges from Irrigated Lands within the Central Valley Region for Dischargers not Participating in a Third-Party group, Order R5-2013-0100 (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 approximately 7.8 million acres of land. 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 (California Water Code (CWC), section 13050[e]).

The Central Valley Water Board completed an Existing Conditions Report [1] (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

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

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)[2] and Economics Report[3] 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. Towards this goal, on 7 December 2012 the board adopted 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.

This Order regulates irrigated lands owners/operators that are not part of a third-party group. It is currently the only long-term irrigated lands program order that would implement waste discharge requirements applicable to individual growers not participating in a third-party group, or coalition.

Goals and Objectives of the Irrigated Lands Regulatory Program

The goals and objectives of this Order, which implements the long term ILRP for growers not participating in a third-party group, are described below. These are the goals described in the PEIR for the ILRP.[4]

[2] 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.

[3] 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 (Economics Report).

[4] PEIR, page 2-6

"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.*
- *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 Central Valley Region[5]

The Central Valley region stretches from the Oregon border to the northern tip of Los Angeles County and includes all or part of 38 of the state's 58 counties. Three major watersheds have been delineated within this region, namely the Sacramento River Basin, the San Joaquin River Basin, and the Tulare Lake Basin. The three basins cover about 40 percent of the total area of the state and approximately 75 percent of the irrigated acreage. Much of the surface water supplies in the Central Valley originate north of the Sacramento–San Joaquin River Delta (Delta), while much of the water use is south of the Delta. While there is plenty of surface water in the Sacramento River Basin to meet the present level of demand, surface water supplies in the San Joaquin River and Tulare Lake Basins are inadequate to support the

[5] Adapted from the December 2008 *Irrigated Lands Regulatory Program Existing Conditions Report*, ICF Jones and Stokes.

present level of agriculture and other development. In these basins, groundwater resources are being used to meet existing water supply demands.

The crests of the Sierra Nevada on the east and the Coast Ranges and Klamath Mountains on the west border the Sacramento and San Joaquin River Basins. The Sacramento and San Joaquin River Basins cover about one-fourth of the total area of the state and contain over 43 percent of the state's irrigable land. Surface waters from these two basins meet and form the Delta, which ultimately drains to San Francisco Bay. Major groundwater resources underlie both river valley floors.

The Sacramento River Basin covers 27,210 square miles. The principal streams in the basin are the Sacramento River and its larger tributaries: the Pit, Feather, Yuba, Bear, and American Rivers on the east; and Cottonwood, Stony, Cache, and Putah Creeks on the west. Major reservoirs include Shasta, Oroville, and Folsom.

The San Joaquin River Basin covers 15,880 square miles. The principal streams in the basin are the San Joaquin River and its larger tributaries: the Cosumnes, Mokelumne, Calaveras, Stanislaus, Tuolumne, Merced, Chowchilla, and Fresno Rivers. Major reservoirs include Pardee, New Hogan, Comanche, Millerton, McClure, Don Pedro, and New Melones.

The Tulare Lake Basin comprises the drainage area of the San Joaquin Valley south of the San Joaquin River and encompasses approximately 17,650 square miles. The valley floor makes up slightly less than one-half the total basin land area. The Kings, Kaweah, Tule, and Kern Rivers, which drain the west face of the Sierra Nevada, provide the bulk of the surface water supply native to the basin. Major reservoirs are Pine Flat, Kaweah, Success, and Isabella. Imported surface water enters the Tulare Lake Basin through the San Luis Canal/California Aqueduct System, Friant-Kern Canal, and the Delta-Mendota Canal. This watershed comprises the entire valley floor and is called the South Valley Floor Watershed.

There are approximately 7.8 million acres of irrigated agricultural land within the Central Valley, although approximately 560,000 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.

Figure 1 (Thiros 2010) shows the generalized geology of the Central Valley region.[6] The Central Valley is a large sediment-filled trough, thousands of feet thick in some locations. Scattered throughout the sediment-filled trough in the subsurface exist many lenses at varying depths of fine-grained deposits, including Corcoran Clay deposits in the San Joaquin Basin, which form confining layer(s) (Figure 2, Bertold, Johnston, Evenson 1991).[7] 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.

[6] 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.

[7] 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 Central Valley Region – adapted from Thiros (2010)

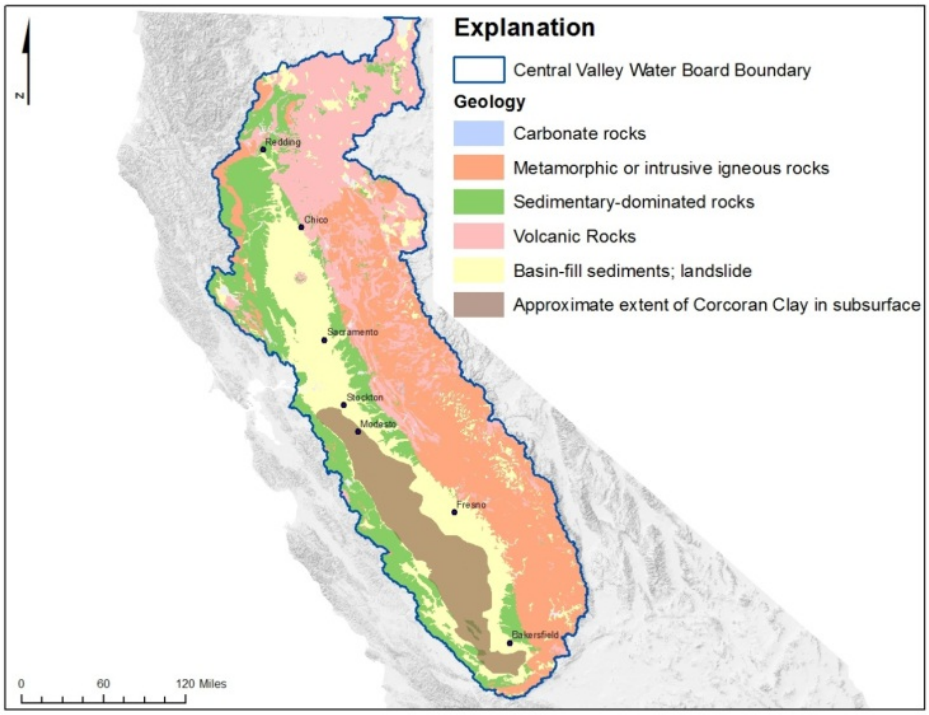

Figure 2. Cross-sectional diagram of groundwater confining layers in the Central Valley region– Bertold, Johnston, and Evenson (1991)

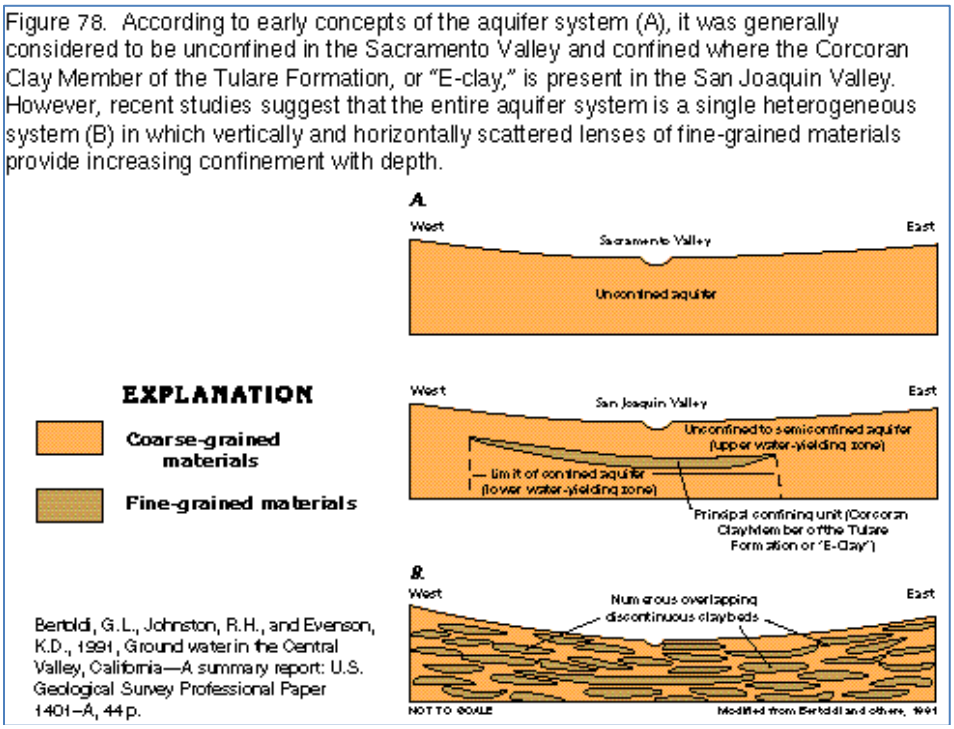

Figure 3. Generalized diagram for the Central Valley, showing the basin-fill deposits and components of the groundwater system under modern conditions – Thiros (2010)

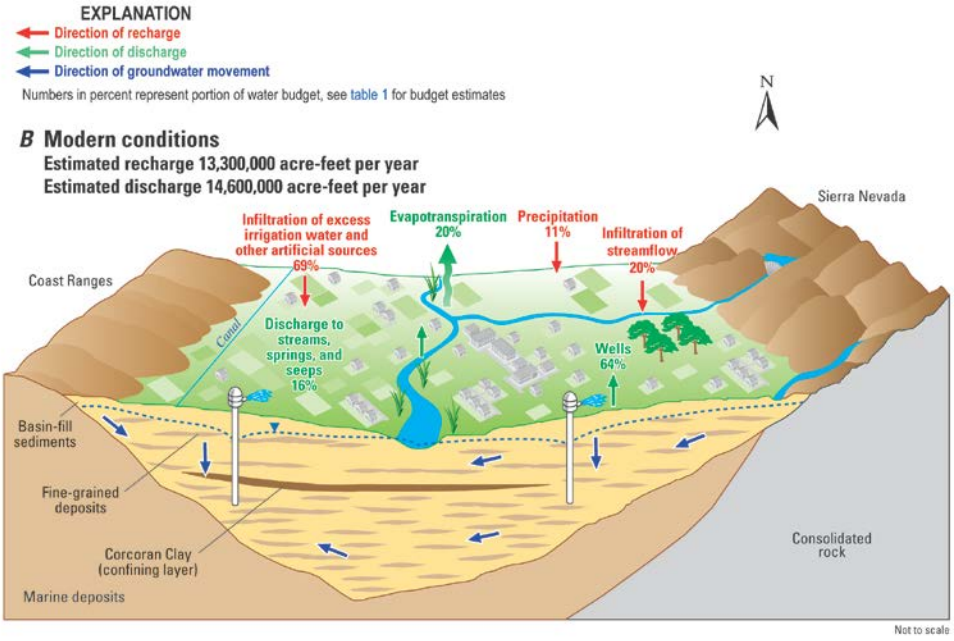

Table 1. Land use characteristics of Central Valley Region basins.[8]

	Sacramento River Basin	San Joaquin River Basin	Tulare Lake Basin	Region 5 Totals
Agricultural Land Use (*thousands of acres*):				
Citrus & subtropical	33	9	237	279
Deciduous fruits & nuts	392	511	602	1,505
Field crops	185	570	1,062	1,817
Grains	242	153	342	737
Idle cropland	87	30	48	165
Pasture	506	433	382	1,321
Rice	605	21	0	626
Truck, nursery & berry crops	116	221	254	591
Vineyard	36	254	444	734
TOTAL [9]	2,202	2,202	3,371	**7,775**

[8] Land use acreages compiled from the Department of Water Resources Land Use Survey GIS data, 1994-2008.

[9] Approximately 560,000 of the irrigated agricultural acres within the Central Valley are covered under the Dairy General Order.

Surface and Groundwater Quality Monitoring

Surface Water Quality Monitoring

Growers under this Order will be required to monitor discharges of storm water, irrigation tailwater, and tile drainage discharge from their farms that may reach surface waters of the state. Required constituents for monitoring include flow, turbidity, temperature, pH, electrical conductivity, dissolved oxygen, nitrate, nitrite, ammonia, *E. coli*, and pesticides (see section describing pesticides below). Growers will also be required to monitor sediment toxicity at their off-site discharge points if pyrethroid pesticides or chlorpyrifos are used. Growers will be required to monitor the first and final irrigation discharges of the growing season, as well as the first event of the storm season. There are additional monitoring events that may be required depending on pesticide application and fertigation timings.

The individual surface water quality monitoring requirements are necessary to answer the following questions:

1. Is the irrigated agricultural operation in compliance with the Order?
2. Are implemented management practices effective in meeting applicable receiving water limitations?
3. Are the applicable surface water action plans effective in addressing identified water quality problems?

The required surface water monitoring addresses the above questions because the monitoring results will be compared with water quality triggers to assess compliance with water quality objectives and determine the effectiveness of management practices. If discharges are not meeting water quality trigger levels, management practices will need to be adjusted or new ones implemented to achieve trigger levels. Because trigger levels are based on water quality objectives, meeting the triggers will ensure that the discharge meets the Orders receiving water limitations. The surface water action plans (SWAP) will lay out what will be done and track the progress when triggers are not met or where there is degradation that may threaten an applicable beneficial use, and management practices are not yet effective. Monitoring subsequent to additional management practice implementation will assess the effectiveness of the new practices.

This field-level monitoring design differs from the representative monitoring of receiving waters under the third-party orders, and is appropriate due to the sporadic nature of the discharges covered under this Order. This Order is designed to regulate individual farms that have chosen not to participate in, that no longer qualify for participation, or otherwise do not participate in a third-party group. Consequently, individual monitoring is needed to evaluate compliance with the provisions of the Order.

Pesticides for Surface Water Monitoring

The surface water monitoring requirements for pesticides were written in consideration of the California Department of Pesticide Regulation's (DPR) regulatory program. Rather than require monitoring for all pesticides used by irrigated agriculture in the Central Valley, which includes hundreds of different active ingredients, board staff used available information on pesticides that pose a threat to surface water to create a subset list required for monitoring. This prioritization is intended to focus the growers' resources where water quality threats are highest. Initial prioritization criteria included pesticides on the 303(d) list, ILRP management plan pesticides,

and high overall relative risk level pesticides (Pesticide TMDL Staff Report, February 2009). Next, staff removed pesticides that are not registered for legal use in California. Finally, staff considered available monitoring data and removed pesticides with data indicating that surface water exceedances are not likely to occur. This included pesticides where substantial data existed and where there were either no detections or detections were below toxicity levels. Pesticides remain on the monitoring list if there is not monitoring data available, if there is limited data available, or if there are detections above toxicity levels. DPR staff provided input on the draft pesticide monitoring list, which was further refined based on DPR's comments. The surface water monitoring list for pesticides is intended to be updated periodically to reflect newly available information. Staff intend to review, and if needed, update the list based on monitoring data and other available information every five years. Staff intend to notify interested parties of any proposed changes to the list of pesticides.

Growers are required to monitor the first irrigation and/or storm event discharge that occurs within 60-days of an application of certain pesticides listed in the MRP. These pesticides were chosen using the process described above. If there is no discharge within 60-days of an application, no sample collection will be required. This sampling requirement is triggered each time a listed pesticide is used. In developing surface water monitoring requirements, the board reviewed information on environmental degradation of pesticides (half-lives) and consulted with DPR. Average half-lives for the MRP pesticides vary considerably, ranging from less than a day to 56-days in surface water and 2,800-days in soil.[10,11] DPR has provided the recommendation that 60-days would allow for most of the pesticides to undergo substantial degradation based on its analysis of dissipation half-lives. Therefore, the sampling for these pesticides is targeted to evaluate the quality of runoff prior to the 60-day mark. This requirement will reduce costs by focusing sampling during the period of time when the pesticides have not undergone substantial degradation, rather than requiring pesticide sampling for each runoff event. This requirement provides the incentive for Dischargers to institute practices that will hold runoff during high-risk periods (i.e., prior to 60 days).

Under DPR's pesticide use reporting system, growers are required to report all pesticide use monthly to the local agricultural commissioner. Staff intends to utilize this established reporting system to evaluate Dischargers' compliance with the requirement to sample within 60-days of an application of a MRP pesticide. Staff intends to conduct verification reviews of reported usage versus monitoring reported in the annual monitoring reports to assess whether monitoring was conducted in compliance with Order requirements.

Surface Water Action Plans (SWAPs)

Surface water action plans (SWAPs) are the key mechanisms under this Order to help ensure that waste discharges from irrigated lands are meeting the Order's Surface Water Receiving Water Limitation A.1. SWAPs are required when grower-specific surface water discharge

[10] University of Hertfordshire Pesticide Properties Database (FOOTPRINT PPDB). Database available online at: http://sitem.herts.ac.uk/aeru/footprint/en/index.htm.

[11] DPR Environmental Monitoring Branch, 2012. Methodology for Evaluating Pesticides for Surface Water Protection I: Initial Screening. Report available online at: http://www.cdpr.ca.gov/docs/emon/surfwtr/review/report1.pdf.

monitoring results exceed an applicable water quality objective or trigger limit twice in a three year period for the same constituent. SWAPs will also be triggered if the Executive Officer determines monitoring results indicate a trend in degradation that may threaten applicable Basin Plan beneficial uses. The main elements of SWAPs are to (1) describe the constituents of concern and exceedances, (2) describe the onsite source(s) of the constituent of concern, (3) describe and justify the practices chosen to be implemented and proposed monitoring to evaluate effectiveness of practices, (4) propose a time schedule for implementation of the management practices to address the problem triggering the SWAP (including, but not limited to reducing the discharge of the constituent(s) to achieve compliance with the Order's receiving water limitation for surface water), and (5) provide updates to the Central Valley Water Board within the annual monitoring reports on the progress made towards completing the SWAP.

Elements 1 through 5 are necessary to establish a process by which the Discharger and the Central Valley Water Board are able to investigate waste sources and the important physical factors on the farming operation that may impact management decisions (elements 1 and 2), implement a process to ensure effective practices are adopted by Dischargers where needed (element 3), ensure that compliance with water quality objectives and triggers occurs within a reasonable amount of time (element 4), and facilitate efficient board review of data collected on the progress of the SWAP (element 5).

The SWAPs required by this Order require the Discharger to include the above elements. SWAPs will be reviewed and approved by the Executive Officer.

The burden of the SWAP, including costs, is reasonable. Absent a third-party to conduct monitoring, collect information on management practices, and evaluate those practices, the Central Valley Water Board must be informed of the efforts being undertaken by irrigated agricultural operations to address identified surface water quality problems. The benefits and necessity of individual reporting 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 Monitoring

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.

Groundwater Monitoring Program

The objective of the individual groundwater monitoring program is to characterize existing groundwater quality at the agricultural operation (GMAW question 1), identify whether existing management practices are protective of groundwater quality (GMAW question 2), and to assess the effectiveness of any newly implemented management practices instituted to improve groundwater quality (GMAW questions 4 and 7). Central Valley Water Board staff utilized the recommended salinity and nitrate parameters and added ammonium and some general minerals that may be mobilized by agricultural operations. In addition, groundwater monitoring will include the pesticides listed in Title 3, Section 6800(a) of the California Code of Regulations, if the pesticide is used by the Discharger. These pesticides have been designated as having the potential to degrade groundwater. The board considered the above Groundwater Monitoring Advisory Workgroup questions in developing the Order's groundwater monitoring requirements.

A management practices evaluation workplan is to be developed where known groundwater quality impacts exist or where conditions make groundwater more vulnerable to impacts from irrigated agricultural activities (high vulnerability groundwater areas). The purpose of the workplan is to identify whether existing management practices are protective of groundwater quality and to assess the effectiveness of any newly implemented management practices instituted to improve groundwater quality. The workplan must be designed to identify whether existing management practices are protective of groundwater quality and whether the waste discharge is achieving compliance with the Order's groundwater limitation and other requirements (e.g., farm management performance standards).

The board does not prescribe the method or tools to be used by the Discharger in preparing the management practices evaluation workplan. The Discharger 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 workplan will likely propose using a variety of tools, such as vadose zone monitoring, modeling, and groundwater monitoring. Existing monitoring wells can be utilized where available for the management practices evaluation workplan.

The Order requires that Dischargers conduct existing well characterization monitoring for pH, dissolved oxygen, temperature, conductivity, nitrate, nitrite, general minerals, and DPR 6800(a) pesticides. This monitoring will inform whether Dischargers need to develop a management practices evaluation workplan and for which constituents of concern the plan should be developed. If groundwater quality problems are found, Dischargers will be required to develop and implement a groundwater action plan and modify an existing management practices evaluation workplan to assess whether its practices are protective of groundwater quality with respect to the water quality problem.

This individual groundwater monitoring design differs from the groundwater monitoring under the third-party orders, and is appropriate due to the sporadic nature of the discharges covered under this Order. This Order is designed to regulate individual farms that have chosen not to participate in, that no longer qualify for participation, or otherwise do not participate in a third-party group. Consequently, individual monitoring is needed to evaluate compliance with the provisions of the Order.

Groundwater Action Plans (GWAPs)

Groundwater action plans (GWAPs) are the key mechanisms under this Order to help ensure that waste discharges from irrigated lands are meeting the Order's Groundwater Limitation II.B.1. GWAPs are required when groundwater monitoring shows that the discharge is causing or contributing to groundwater quality conditions that exceed applicable water quality objectives or trigger limits or where management practices currently in use are not protective of groundwater quality based upon information contained in the management practices evaluation report, and therefore are not confirmed to be sufficient to ensure compliance with the groundwater receiving water limitations of the Order. GWAPs will also be triggered if the Executive Officer determines monitoring results indicate a trend in degradation that may threaten applicable Basin Plan beneficial uses. The main elements of GWAPs are to (1) describe the constituents of concern and exceedances, (2) describe the onsite source(s) of the constituent(s) of concern, (3) describe and justify the practices chosen to be implemented and proposed monitoring to evaluate effectiveness of practices (coordinated with management practices evaluation workplan), (4) propose a time schedule for implementation of the management practices to address the problem triggering the GWAP (including, but not limited to reducing the discharge of the constituent(s) to achieve compliance with the Order's receiving water limitation for groundwater), and (5) provide updates to the Central Valley Water Board within the annual monitoring reports on the progress made towards completing the GWAP.

Elements 1 through 5 are necessary to establish a process by which the Discharger and the Central Valley Water Board are able to investigate waste sources and the important physical factors on the farming operation that may impact management decisions (elements 1 and 2), implement a process to ensure effective practices are adopted by Dischargers where needed (element 3), ensure that compliance with water quality objectives and triggers occurs within a

reasonable amount of time (element 4), and facilitate efficient board review of data collected on the progress of the GWAP (element 5).

The GWAPs required by this Order require the Discharger to include the above elements. GWAPs will be reviewed and approved by the Executive Officer.

The burden of the GWAP, including costs, is reasonable. Absent a third-party to conduct monitoring, collect information on management practices, and evaluate those practices, the Central Valley Water Board must be informed of the efforts being undertaken by irrigated agricultural operations to address identified groundwater quality problems. The benefits and necessity of individual reporting 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 groundwater of improved water quality.

Farm Water Quality Plan (FWQP)

The Order requires the Discharger to develop a farm-specific water quality plan which describes management practices implemented to protect surface and groundwater quality. The plan will also include information such as location and size of the farm, surface water discharge points, water quality sampling locations, pesticides used, and a nitrogen management plan.

Nitrogen Management Plan (NMP)

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.[12,13] There are many wells within the Central Valley region with nitrate concentrations that are higher than drinking water quality objectives. To address these concerns, the Order requires that Dischargers implement practices that minimize excess nitrogen application relative to crop consumption. 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.

The Order requires that all Dischargers develop a NMP as part of the farm water quality plan. The purpose of the NMP is to document that the Discharger has a plan to budget for and manage the nitrogen applied, considering all sources of nitrogen, crop consumption, soil types, climate, and local conditions, in order to prevent adverse impacts to the beneficial uses of surface water and groundwater. For Dischargers within a high vulnerability groundwater area, the nitrogen management plan must be certified in one of the following ways:

[12] 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.

[13] Harter, T., J. R. Lund, J. Darby, G. E. Fogg, R. Howitt, K. K. Jessoe, G. S. Pettygrove, J. F. Quinn, J. H. Viers, D. B. Boyle, H. E. Canada, N. DeLaMora, K. N. Dzurella, A. Fryjoff-Hung, A. D. Hollander, K. L. Honeycutt, M. W. Jenkins, V. B. Jensen, A. M. King, G. Kourakos, D. Liptzin, E. M. Lopez, M. M. Mayzelle, A. McNally, J. Medellin-Azuara, and T. S. Rosenstock. 2012. 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. Center for Watershed Sciences, University of California, Davis. 78 p. http://groundwaternitrate.ucdavis.edu.

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

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

- Certified by a nitrogen management plan specialist. Such specialists include Professional Soil Scientists, Professional Agronomists, Crop Advisers[14] certified by the American Society of Agronomy, or Technical Service Providers certified in nutrient management in California by the 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.

For Dischargers not within a high vulnerability groundwater area, nitrogen management plan certification is optional.

The Order requires that information on the nitrogen management plan be reported in each annual monitoring report (AMR) for Dischargers within high vulnerability areas. This will include confirmation that the Discharger is implementing the nitrogen management plan; the name and contact information of the certified specialist who prepared or approved the plan; a report of total nitrogen applied; and an estimate of crop nitrogen consumption.

The nitrogen management plan summary information contained in the AMR provides information on what was actually done the previous crop year, while the nitrogen management plan indicates what is planned for the upcoming crop year. Therefore, the first summary information is due the year following the implementation of the nitrogen management plan. FWQP submission to the board and NMP reporting will provide the Central Valley Water Board with information regarding individual grower implementation of the Order's requirements (e.g., management practices implementation). Without this information, the board would rely primarily on surface and groundwater monitoring to determine compliance with water quality objectives and farm management performance standards. FWQP submittal and nitrogen management reporting will provide assurance that growers are implementing practices and managing nutrients to protect surface and groundwater quality while monitoring data are collected. This information is also necessary to achieve consistency with the State Water Board's Nonpoint Source Policy (NPS Policy). The NPS Policy requires that the board gather information on management practices as part of any nonpoint source program (ILRP is a nonpoint source program); see the section below titled "Non-point Source (NPS) Program" for more detailed discussion on the NPS Policy.

[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.

Plans and Reports

All approved and/or final reports or portions of reports that are not exempt from public disclosure in accordance with California law and regulations will be available for public inspection through Geotracker, the Central Valley Water Board Office, or the board's website.

Water Quality Objectives

Surface water and groundwater receiving water limitations in section II 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* and the *Water Quality Control Plan for the Tulare Lake Basin* (Basin Plans). 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 Plans 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 Plans also contain 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 Plans to municipal and domestic supply), and (2) narrative objectives including the chemical constituents, taste and odor, and toxicity objectives.

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 Plans include 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 Plans state 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 and the Tulare Lake Basin Plan at page IV-21.00 contain implementation policies for application of water quality objectives that specify 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 (e.g., 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.

Water Quality Triggers

Implementation of numeric and narrative water quality objectives under the Order involves an iterative process. The appropriate water quality triggers for a particular irrigated agricultural operation covered under this Order depend on the beneficial uses of the water as designated in the Basin Plan(s) and the water quality objectives necessary to protect all beneficial uses of the water. Water quality triggers will be based on Basin Plan water quality objectives, which are sometimes site specific; and therefore do not apply generally across the entire Central Valley region. Consequently, this Order establishes a process for providing Dischargers with site-specific water quality triggers for surface water and groundwater. This process is initiated when the Discharger files a Notice of Intent (NOI) for coverage under this Order. The Executive Officer will review the NOI and may issue a Notice of Applicability (NOA), approving the Discharger's coverage under this Order. The NOA will include the applicable beneficial uses, surface and groundwater water quality triggers, groundwater vulnerability designation, and any additional monitoring requirements based on review of the NOI. Additional monitoring requirements will include monitoring for compliance with any applicable Basin Plan TMDLs and associated load limits, as well as any additional groundwater monitoring requirements based on vulnerability status.

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."[15] 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 "Statement of Policy with Respect to Maintaining High Quality Waters in California (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[16] and evaluated in the Program Environmental Impact Report (PEIR)[17] for the long-term ILRP. This Order requires each individual operation to develop a farm water quality plan that will describe its management practices in place to protect surface water and groundwater quality. The MRP includes surface water monitoring to evaluate and verify proper implementation of management practices for surface water. For groundwater, the MRP requires the Discharger to evaluate whether its practices are protective of groundwater quality to verify proper implementation of management practices for groundwater – under the "management practices evaluation workplan." This Order also requires the development of surface water/groundwater action plans (SWAPs/GWAPs) when there are exceedances of water quality objectives or trigger limits, monitoring results indicate a trend in degradation that may threaten applicable Basin Plan beneficial uses, and where groundwater management practices are found ineffective at achieving the Order's groundwater receiving water limitations under the management practices evaluation workplan (i.e., not protective of groundwater quality). The requirements for SWAPs and GWAPs include that the Discharger identify and implement management

[15] 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.

[16] 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.

[17] 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.

practices to achieve water quality goals and continued monitoring to evaluate the effectiveness of such practices. The requirements of this Order are consistent with Key Element 2.

(3) This Order requires the development of SWAPs/GWAPs where individual monitoring indicates that waste discharge exceeds a trigger level or water quality objective or where monitoring results indicate a trend in degradation that may threaten applicable Basin Plan beneficial uses (generally referred to as 'water quality problem'). Also, GWAPs are required where the management practices evaluation report concludes that groundwater management practices are not protective of groundwater quality. SWAPs/GWAPs must include time schedules for implementing the plans and meeting the surface and groundwater receiving water limitations (section II of the Order) as soon as practicable, but within a maximum of 10 years. 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 prior to approval. The time schedule requirements in this Order are consistent with Key Element 3.

(4) To provide feedback on whether program goals are being achieved, this Order requires surface and groundwater quality monitoring, management practices implementation, and evaluation of effectiveness of implemented practices. This feedback will allow iterative implementation of practices to ensure that program goals are achieved. The 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 Discharger will be required, in an iterative process, to conduct additional monitoring and/or implement management practices when there are water quality problems;
(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 Dischargers 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)[18] 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

[18] 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

requirements of the Order include regulatory elements that are contained in Alternative 5 of the PEIR. Therefore, the actions by Dischargers to protect water quality in response to the requirements of this Order are expected to be similar to those described for Alternative 5 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, Dischargers 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
- 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 Central Valley to a similar degree as is described for Alternative 5 analyzed in the PEIR. Also, the requirements of this Order may require installation of monitoring wells (with the extent depending on the number of Dischargers enrolled under this Order and whether they are within high vulnerability groundwater areas).

As described in the PEIR for Alternatives 5, 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 Dischargers 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 to this Order, Monitoring and Reporting Program Order R5-2013-0100.

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; monitoring to evaluate whether waste discharges are meeting the Order's receiving water limitations and performance standards; and implementation of improved practices when waste discharges may cause or contribute to a water quality problem (e.g., exceedances of trigger levels, degradation trends are identified).

Initially, Dischargers will be required to develop a farm water quality plan to determine whether their practices are protective of water quality and whether they are meeting the established farm water quality management performance standards. Dischargers must also prepare and implement a nitrogen management plan as part of the farm water quality plan. Through the process of becoming aware of effective management practices; evaluating their practices; and implementing improved practices; Dischargers are expected to meet the farm water quality management performance standards and, thereby, achieve best practicable treatment or control (BPTC), where applicable. Implementation of the nitrogen management plan should result in achieving BPTC for nitrates discharged to groundwater.

Monitoring of surface water discharge and groundwater is required to evaluate whether waste discharges are meeting the Order's receiving water limitations. Where individual monitoring

indicates that waste discharges may cause or contribute to a water quality problem, the Discharger must prepare a surface/groundwater action plan. The plan must include the identification of practices that will be implemented to ensure waste discharge meets the Order's receiving water limitations. Continued surface and groundwater monitoring will provide an evaluation of the effectiveness of those practices in addressing the water quality problem. This process will work to ensure that implementation of farm water quality plans and nitrogen management plans continue to result in achievement of BPTC, and that any degradation of high quality waters permitted under the Order will not cause or contribute to an exceedance of a water quality objective in receiving waters. Failure to implement practices associated with a surface or groundwater action plan may result in 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.[19]

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,"[20] and 40

[19] 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.

[20] 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.

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.[21] 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.[22] However, if the decline in water quality was permitted consistent with state and federal antidegradation policies, the most recent water quality resulting from the 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."

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

[21] 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."

[22] 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.

performance data (through treatability studies); comparison of alternative methods of treatment or control, and/or consideration of methods currently used by the discharger or similarly situated dischargers.[23] 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. With reference to economic costs, both costs to the dischargers and the affected public are considered. 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.

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

Waters that are Not High Quality: The "Best Efforts" Approach: 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 Central Valley to construct provisions in this Order to meet the substantive requirements of Resolution 68-16.

This Order potentially regulates discharges from thousands of individual fields to a very large number of water bodies within the Central Valley. 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.[24]

However, data collected by the Central Valley Water Board, dischargers, educational institutions, and others demonstrate that many water bodies within the Central Valley are already impaired for various constituents that are or could be associated with irrigated agricultural activities. Those same data collection efforts also indicate that surface water bodies within the Central Valley meet objectives for particular constituents and would be considered "high quality waters" with respect to those constituents.

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

Similarly, ten percent of sampled wells in the Central Valley had a maximum nitrate level above applicable water quality objectives, and an additional 17 percent of wells had a maximum nitrate level between the water quality objective and half the objective.[25] However, it is unknown when the degradation occurred. While the lack of historical data prevents the board from being able to determine whether the groundwater represented by these wells are considered "high quality,"[26] 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.

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's 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 Central Valley, 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 dischargers 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

[25] State Water Board GAMA Program database, August 2012.
[26] As mentioned above, water quality data dating as far back as 1968 may be needed to determine whether such waters are considered "high quality" under Resolution 68-16.
[27] California Regional Water Quality Control Board, Central Valley Region, and Jones and Stokes. 2008. *Irrigated Lands Regulatory Program Existing Conditions Report.* Sacramento, CA.

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 performance standards combined with upfront evaluation, planning and implementation of management practices to attain those goals, and 2) additional planning and implementation measures where individual discharger monitoring indicates that waste discharge may cause or contribute to a water quality problem. Taken together, these processes are considered BPTC/best efforts. The planning and implementation processes that growers must follow on their farms should lead to on-the-ground implementation of optimal practices and control measures to address waste discharge from irrigated agriculture.

1. Farm Water Quality Management Performance Standards

This Order establishes on-farm water quality performance standards for implementation of management practices that all Dischargers 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 Dischargers 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 consumption,
e. prevent pollution and nuisance,
f. achieve and maintain water quality objectives and beneficial uses, and
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."*

Both of the above guidance documents describe a series of management measures, similar to the farm water quality 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 Dischargers implement sediment discharge and erosion prevention practices to minimize or eliminate the discharge of sediment above background levels.

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 that nitrogen management plans be developed by all Dischargers. Nitrogen management plans require Dischargers to document how their fertilizer use management practices meet performance standard d. Finally, where nutrients may cause exceedances of water quality objectives in surface waters, this Order would require development of a detailed SWAP which would address sources of nutrients and require implementation of practices to manage nutrients.

[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>)

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 Dischargers 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.

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 Dischargers to minimize waste discharge to surface and groundwater will lead to practices that will also achieve this management measure. For example, a Discharger 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 each Discharger develop a farm water quality plan (FWQP). Dischargers are encouraged to work with technical service organizations such as resource conservation districts and the University of California Cooperative Extension in the development of the entire plan. Working with technical service providers and specialists in the development of the FWQP will help to achieve education and outreach to all Dischargers regarding potential waste discharge and practices that may be implemented to achieve water quality goals.

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 Dischargers.

2. Additional Planning and Implementation Measures (SWAP/GWAPs)

This Order requires development of water quality action plans (surface or groundwater) where individual water quality monitoring indicates that the discharge may cause or contribute to a

water quality problem (this includes situations where Discharger monitoring results indicate a trend in degradation that may threaten applicable Basin Plan beneficial uses).

SWAPs/GWAPs include requirements to investigate sources and develop strategies to implement practices to ensure waste discharges are meeting the Order's surface and groundwater limitations. Continued surface and groundwater monitoring is required to monitor the effectiveness of the action plan. In addition, Dischargers in high vulnerability groundwater areas are required evaluate whether implemented practices are protective of groundwater quality and achieve the Order's groundwater receiving water limitation (management practices evaluation workplan). Under these plans, additional management practices will be evaluated and implemented in an iterative manner, to ensure that the management practices represent BPTC/best efforts and that waste discharge does not cause or contribute to degradation above water quality objectives. The SWAPs/GWAPs and management practices evaluation workplans need to meet the performance standards set forth in this Order.

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 SWAP or GWAP. For example, the Department of Pesticide Regulation (DPR) has established Groundwater Protection Areas 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..."* Surface and groundwater action plans and associated surface and groundwater monitoring institute an iterative process whereby the effectiveness of any set of practices 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 Dischargers 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 unless individual water quality monitoring indicates that waste discharge may cause or contribute a water quality problem. Further, since BPTC determinations are informed by the consideration of costs, it is important that Dischargers not be subject to the more stringent and expensive requirements associated with SWAPs/GWAPs when such measures are not needed to protect water quality.

Summary

Dischargers are required to implement practices to meet the above performance standards and periodically review the effectiveness of implemented practices and make improvements where necessary. Dischargers will identify the practices they are implementing to achieve water quality protection requirements as part of farm water quality plans, nitrogen management plans and SWAPs/GWAPs. Also, the Order requires water quality monitoring aimed to detect exceedances of water quality objectives and evaluate effectiveness of management practices (e.g., surface water discharge monitoring, management practices evaluation workplan).

Requirements for farm water quality plans, nitrogen management plans, SWAPs/GWAPs, and water quality monitoring are designed to ensure that degradation is minimized and that management practices are protective of water quality. These requirements will ensure that all Dischargers are implementing management practices that minimize degradation, the effectiveness of such practices is evaluated, and feedback monitoring is conducted to ensure that degradation does not threaten beneficial uses. Even in areas where there is no information indicating degradation of a high quality water, the farm water quality management performance standards act as a preventative requirement to ensure degradation does not occur. The farm water quality plans and nitrogen management plans provide indicators as to whether Dischargers are meeting applicable performance standards.

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 these goals. The Order relies on implementation of practices and treatment technologies that constitute BPTC/best efforts, and requires monitoring of water quality 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 not high quality. 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 those that are not.

This Order allows degradation of existing high quality waters. This 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 imposes more stringent requirements in areas deemed "high vulnerability" based on threat to groundwater beneficial uses, including the domestic and municipal supply use. 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;
- Because the Order institutes requirements for all Dischargers that will reduce waste discharge levels (e.g., nitrogen management, performance standards), prohibits degradation above a water quality objective, and establishes surface water and groundwater monitoring programs to determine whether waste discharges are in compliance with the Order's receiving water limitations, local communities should not incur any additional treatment costs associated with the degradation authorized by this Order. For example, reduced discharge of waste will work to reduce any degradation currently occurring and additional requirements associated with SWAPs/GWAPs will ensure discharge does not cause or contribute to exceedance of objectives. In situations where water bodies are already above water quality objectives and communities are currently incurring treatment costs to use the degraded water, the requirements established by this Order will institute requirements for reduction in waste discharge levels (nitrogen management/performance standards) and time schedules[30] for further reductions in irrigated agricultural sources to achieve the Order's receiving water limitations; therefore, this Order will, over time, work to reduce treatment costs of such communities; and
- The Order requires Dischargers to achieve farm water quality management practice performance standards and includes requirements to develop a farm management plan to ensure practices are implemented to achieve these standards. The iterative process whereby Dischargers implement practices to achieve farm management performance standards, coupled with surface and groundwater monitoring feedback to assess whether the practices are effective will minimize degradation of surface and groundwater quality and prevent any degradation above water quality objectives.

The requirements of the Order and the 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 II of the Order, the compliance schedules in section X, and the Monitoring and Reporting Program's requirements to track compliance with the Order, are designed to ensure that the 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

[30] It is important to note that neither the Water Code, NPS Policy, or the Antidegradation Policy requires immediate compliance with water quality objectives. Time schedules are allowed under state law and policy. This Order establishes that any time schedules shall be as short as practicable. Because time schedules must be as short as practicable, they are consistent with the maximum benefit to the people of the state.

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 average 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 $123.23 per acre greater than the cost associated with the protection of surface water only under the Coalition Group Conditional Waiver. The total average estimated cost of compliance associated with continuation of the previous Coalition Group Conditional Waiver within the entire Central Valley region is expected to be approximately $61.07 per acre annually. The total estimated average cost of this Order is $184.29 per acre annually.[31]

Approximately $121.12 of the estimated $184.29 per acre annual average 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 Dischargers implement specific water quality management practices.[32] 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 Dischargers 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 Dischargers and those vendors or individuals providing services or equipment and not based on an estimate of those costs provided by the board.

In addition to the cost estimates associated with the implementation of management practices, the cost estimates include estimated permit fees that are charged to dischargers for permit coverage. In accordance with the State Water Board's Fee Regulations, the current annual permit fee charged to Dischargers covered by this Order ranges from $300 to $6,500, depending on the number of irrigated acres in the agricultural operation. The combined total estimated costs that include monitoring, reporting, and state fees are estimated to be $62.13 per acre annually (average).

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.

[31] The estimate is on a "per acre" basis because this Order is not the primary mechanism for irrigated agriculture to comply with the California Water Code for waste discharges. It is anticipated that the majority of irrigated agriculture will enroll in geographically-based third-party administered orders. The Central Valley Water Board does not know how many operations will enroll under this Order, but assumes that enrollment will be minimal.

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

This Order, which implements the long-term ILRP for dischargers not participating in a third-party group, is based on Alternative 5 of the PEIR. The Order contains the individual Central Valley Water Board administration, individual farm planning, individual surface and groundwater quality monitoring, and prioritized installation of groundwater monitoring wells similar to Alternative 5. Therefore, potential costs of the Order are estimated based on the costs given in the *Draft Technical Memorandum Concerning the Economic Analysis of the Irrigated Lands Regulatory Program* (Economics Report).[33] Table 2 summarizes the major regulatory elements of the Order and provides reference to the PEIR alternative basis.

The board administrative costs of the Order are estimated using the 2011-12 Annual Agricultural and Irrigated Lands Fee Schedule.[34] Farm planning costs are estimated to be similar to the costs shown for Alternative 5 for farm planning (Table 2-22, Economics Report) plus an additional annual cost for updating farm planning. Total surface water monitoring and reporting costs are based on the sampling costs shown in Table 2-10, Economics Report.[35] Total groundwater monitoring and reporting costs have been estimated based on sampling costs and the costs for installation of groundwater monitoring wells given in Tables 2-10 and 2-15, Economics Report, respectively.[36] Tracking costs of management practices and nutrients applied are estimated to be similar to the costs shown for Alternative 5 in Table 2-22 of the economics report –under "tracking." Management practices costs have been estimated using Alternative 5 (Table 2-22, Economics Report). Estimated average annualized costs per acre of the Order relative to full implementation of the current waiver program in the Central Valley region are summarized below in Table 3.

[33] 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

[34] California Code of Regulations, Title 23, section 2200.6.

[35] Additional costs have been estimated for sediment toxicity monitoring requirements. These costs are based on communication with laboratories that conduct such monitoring and costs for sample collection in the Economics Report (Table 2-10).

[36] Average cost figures were developed assuming that operations in high vulnerability groundwater areas would need to install and sample, on average, four monitoring wells.

Table 2. Summary of regulatory elements

Order elements	PEIR alternative basis
Central Valley Water Board administration	Alternative 5: individual enrollment with the board
Farm water quality plan (FQMP) Surface water action plan (SWAP) Groundwater action plan (GWAP)	Alternative 5: farm water quality management plan
Certification of nitrogen management plans	Alternative 5: certified nutrient management plans
Individual surface water monitoring	Alternative 5: individual tailwater and stormwater quality monitoring
Individual groundwater monitoring	Alternative 5: individual supply well and tile drainage monitoring and requirements to install and sample monitoring wells based on a prioritized system
Tracking of nitrogen	Alternative 5: individual tracking of all nutrients applied
Management practices implementation	Alternative 5: costs of management practice implementation

Table 3. Estimated annual average per acre cost of the Order relative to full implementation of the current program (PEIR Alternative 1)

	Order	Current program	Change
Administration	7.75	0.90	6.84
Farm plans	1.05	--	1.05
Monitoring/reporting/tracking	54.38	0.86	53.52
Management practices	121.12	59.31	61.81
Total	184.29	61.07	123.23

* Totals may not sum due to rounding. Per acre costs have been developed using the estimated irrigated acres in the Central Valley region (est. 7,863,002, Table 3-3, Economics Report).

** These costs are an estimate of *potential*, not required costs of implementing specific practices.

On 17 July 2012, the Sacramento and San Joaquin River Basin Plan and the Tulare Lake Basin Plan (Basin Plans) were amended to estimate 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 average cost of the irrigated lands program is $216 million to $1.3 billion, or $27 to $168 per acre.[37]

The Order is not the primary mechanism for establishing regulations applicable to irrigated lands waste discharges. Unless there is a loss of third-party coverage, most, if not all operations will

[37] 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).

have the option to enroll under third-party implemented waste discharge requirements instead of the Order. Because third-party waste discharge requirements allow combining resources for monitoring and reporting, costs associated with compliance are much less than those estimated for the Order. Consequently, enrollment under the Order is expected to be minimal. Therefore, overall costs resulting from the Order are expected to be minimal, and will be dependent on the enrollment under the Order.

The average cost estimates in the Basin Plans are expressed as ranges applicable throughout the entire Central Valley. Because most growers will enroll under third-party orders, the overall cost of the irrigated lands program is better expressed as the costs under the third-party orders. For example, the board estimated the costs for the third-party order applicable to over 800,000 irrigated acres within Eastern San Joaquin River Watershed (Order R5-2012-0116) at approximately $119 per acre annually (average). The costs of this Order will add a cost to the overall program; but because of the expected minimal enrollment, such costs are expected to be small in comparison with the overall cost of the ILRP. The total costs of this Order are therefore consistent with the overall cost range expressed in the Basin Plan even though per acre average costs of this Order exceed the range. In the unlikely event that third-party implemented orders were to broadly fail and this Order were implemented Central Valley-wide, the average annual total cost of this Order would be applicable Central Valley-wide; representing an approximate 9 percent increase from the high-end of the Basin Plan average annual cost estimate.

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 Basin Plans identify applicable beneficial uses of surface and groundwater within the Central Valley. This Order protects the beneficial uses identified in the Basin Plans. Applicable past, present, and probable future beneficial uses of Sacramento River Basin, San Joaquin River Basin, and Tulare Lake 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 Basin Plans and applicable policies, rather than a site specific evaluation that might be appropriate for waste discharge requirements applicable to a single discharger.

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

Environmental characteristics of Central Valley waters 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 action plans (SWAPs/GWAPs) and through the management practices evaluation workplan process. 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. SWAPs and GWAPs 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 not limited to, section II.

(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.

(e) The need for developing housing within the region

This Order establishes waste discharge requirements for irrigated lands in the Central Valley. 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 Central Valley region.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ATTACHMENT B TO ORDER R5-2013-0100
MONITORING AND REPORTING PROGRAM

WASTE DISCHARGE REQUIREMENTS GENERAL ORDER
FOR
DISCHARGES FROM IRRIGATED LANDS WITHIN THE CENTRAL VALLEY REGION
FOR DISCHARGERS NOT PARTICIPATING IN A THIRD-PARTY GROUP

Table of Contents

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), to require preparation and submittal of technical and monitoring reports. This MRP establishes specific surface and groundwater monitoring and reporting requirements for individual irrigated lands owners and/or operators (Dischargers) subject to and enrolled under Waste Discharge Requirements General Order for Discharges from Irrigated Lands within the Central Valley Region for Dischargers not participating in a Third-Party Group, Order R5-2013-0100 (hereafter referred to as the "Order"). The requirements of this MRP are necessary to monitor Discharger compliance with the provisions of the Order and determine whether state waters accepting discharges from Dischargers are meeting water quality objectives. Additional discussion and rationale for this MRP's requirements are provided in Attachment A to the Order.

II. General Provisions

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.

To the extent feasible, all technical reports required by this MRP must be submitted electronically using the Geotracker ESI (Electronic Submittal of Information) system. Geotracker ESI is a web-based electronic reporting tool maintained by the State Water Board. The system may be accessed at: http://www.waterboards.ca.gov/ust/electronic_submittal/. If unable to submit the report electronically, the Discharger shall email, mail, or personally deliver the report to the Central Valley Water Board.

This MRP Order becomes effective on 26 July 2013. The Central Valley Water Board Executive Officer may revise this MRP as necessary. Upon the effective date of this MRP, the Discharger shall implement the following monitoring and reporting.

III. Monitoring Requirements

A. General Monitoring Requirements

1. Dischargers must follow sampling and analytical procedures approved by the Executive Officer. Sample collection and analytical procedure requirements are included in Tables 1 through 3 of Appendix MRP-1 to this Order. Dischargers are also required to use Forms 1 through 3 of Appendix MRP-1 to this Order. A Discharger may submit alternative procedures and forms for consideration, but must receive written approval from the Executive Officer before using them.

2. The Discharger may petition the Executive Officer to reduce surface water monitoring frequencies if, after three consecutive years of monitoring for a constituent, there are no exceedances and no trends of degradation that may threaten applicable Basin Plan beneficial uses. The monitoring reduction petition may be granted on the condition that the Discharger annually certifies (in the Annual Monitoring Report) that water quality management practices have not changed since the qualifying monitoring period on which the requested petition is based. The maximum surface water monitoring frequency reduction authorized by this section is one that reduces monitoring frequencies to one year of sampling for every five years. The Executive Officer may re-

instate the required monitoring if an exceedance occurs, a trend of degradation that may threaten applicable Basin Plan beneficial uses is indicated by available data, or management practices change in a manner that could result in an exceedance or a trend of degradation.

3. If conditions are not safe for sampling, the Discharger must provide documentation on Forms 1 and 2 (see Appendix MRP-1) of why samples could not be collected and analyzed (e.g., photo documentation, flow measurements/estimates). For example, the Discharger may be unable to collect samples during dangerous weather conditions. However, once the dangerous conditions have passed, the Discharger shall collect a sample of the discharge or, if the discharge has ceased, from the next discharge event.

4. The Discharger shall use clean sample containers and sample handling, storage, and preservation methods that are accepted or recommended by the selected analytical laboratory or, as appropriate, in accordance with approved United States Environmental Protection Agency analytical methods.

5. All samples collected shall be representative of the volume and nature of the material being sampled.

6. All sample containers shall be labeled with a unique identifier (e.g., field/well number) and records maintained to show the time and date of collection as well as the person collecting the sample, the sample location, and method of sample collection and preservation.

7. The Discharger shall ensure that all sample analyses are conducted by a laboratory certified for such analyses by the California Department of Public Health. The laboratory analyses shall be conducted in accordance with Title 40 Code of Federal Regulations Part 136 (*Guidelines Establishing Test Procedures for the Analysis of Pollutants*) or other test methods approved by the Executive Officer.

8. All samples collected for laboratory analyses shall be preserved and submitted to the laboratory within the required holding time appropriate for the analytical method used and the constituents analyzed.

9. All instruments and devices used by the Discharger for the monitoring program shall be properly maintained and shall be calibrated as recommended by the manufacturer to ensure their continued accuracy.

10. All samples submitted to a laboratory for analyses shall be identified in a properly completed and signed Chain of Custody form that should be obtained prior to sample collection from the analytical laboratory to be used. Alternatively, the Discharger may use Form 4 in the attached Appendix MRP-1 as the Chain of Custody if approved by the laboratory.

11. Field test instruments for pH, electrical conductivity, temperature, turbidity, and dissolved oxygen may be used provided:
    a. The operator is trained in the proper use and maintenance of the instruments;
    b. The instruments are calibrated prior to each monitoring event per manufacturer instructions and at the recommended frequency during sampling; and
    c. Instruments are serviced per the manufacturers recommended frequency.

12. All monitoring wells and supply wells (domestic and agricultural) must be identified with a unique identification (name/number) for the purposes of sample collection and data interpretation.

13. Groundwater samples from domestic wells shall be collected from the tap nearest to the pressure tank (and before the pressure tank if possible); otherwise collect samples from the tap nearest the pressure tank after water has been pumped from this tap for 10 to 20 minutes.

14. Groundwater samples from agricultural supply wells shall be collected as near as possible to the well head (installation of a sampling valve may be useful for future use). Samples shall be collected after allowing the pump to run for a minimum of 30 minutes or following evacuation of three well volumes. Samples from subsurface (tile) drains shall be collected at the discharge point into a canal or drain.

B. Surface Water Monitoring

1. Irrigation tailwater, stormwater and sediment toxicity monitoring

The Discharger shall monitor discharges of storm water, irrigation tailwater, and surface water channel-deposited sediments that have the potential to reach surface waters of the state as specified in Tables 1 and 2 below, unless modified by the Executive Officer. The purpose of this monitoring is 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. The monitoring required below does not apply to surface water discharges from tile drainage systems. Tile drainage system discharge monitoring requirements are included below in section III.B.3.

TABLE 1. SURFACE WATER DISCHARGE MONITORING

The following samples shall be collected each year from one third of the irrigation discharge points and stormwater discharge points.[a] The discharge points sampled shall be rotated each year, so that all discharge points from the Discharger's agricultural operation will be sampled every three years. Sample locations must be chosen such that the samples are representative of the quality and quantity of tailwater or stormwater discharged, and at a point downgradient of water quality management practices.

Irrigation Tailwater and Stormwater Discharges to Surface Water

Irrigation tailwater monitoring is not required where the irrigation system produces an effectively immeasurable[b] tailwater discharge. Irrigation tailwater samples and stormwater discharge samples shall be collected during the first hour of discharge per the following frequency:

D.1 First and final irrigation (estimated final irrigation event) discharge of the growing season.

D.2 First storm event discharge of the storm season.

D.3 First irrigation or storm event discharge that occurs within 60-days of application of a pesticide identified in section V (sample is not required if there is no irrigation or stormwater discharge within 60-days of application).[c] For each application of a pesticide identified in section V, a new 60-day monitoring window begins.

D.4 Irrigation discharges during employment of fertigation operations.

For each sample, the Discharger shall record the date, time, location,[d] and ultimate destination of the discharge. Irrigation tailwater and stormwater discharge samples shall be collected and analyzed for the constituents in Table 2 (as noted: D.1, D.2, D.3, D.4).

Sediment Toxicity

D.5 Sediment sample during the first irrigation or storm event discharge that occurs within 60-daysof application of a pesticide identified in section VI (sample is not required if there is no irrigation or stormwater discharge within 60-days of application). This shall be carried out at each location where surface water discharges are sampled, if the appropriate sediment (i.e., silt, clay) is present at the site.[e]

a. A discharge point is defined as a location where surface water discharges leave the Discharger's property. One discharge point per year shall be sampled for Dischargers that have one to three discharge points from the irrigated lands operation, two discharge points per year shall be sampled for Dischargers that have four to six discharge points, etc.
b. An effectively immeasurable discharge includes standing water (i.e., ponding; backflow) or where the total volume discharged in a 15 minute period of time is less than what is needed to collect the necessary sample volume.
c . See section V of this MRP for a list of pesticides that must be monitored.
d. The location of sample collection shall be recorded as latitude and longitude coordinates in decimal degrees, with at least four recorded decimal places.
e. Not more than one sediment sample is required to be collected each year.

2. Sediment toxicity testing

Sampling and analysis for sediment toxicity testing utilizing *Hyalella azteca* shall be conducted at the frequency specified in Table 1 above. The *H. azteca* sediment toxicity test endpoint is survival.

All sediment samples must be analyzed for total organic carbon (TOC) and grain size, as specified in Table 2 below. 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 exhibit less than 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 pesticide analysis must include, at a minimum, the pesticides that triggered the sediment sampling. If the pesticides used by the Discharger are detected in the sediment sample (sediment toxicity trigger), the Discharger shall conduct a surface water action plan (SWAP) and resample the receiving water or discharge channel one time per year if a surface water discharge occurs within 60-days of an application of a pyrethroid or chlorpyrifos. The annual sampling requirement shall be reduced to one sample every 5-years when the sediment toxicity trigger is not exceeded for three consecutive sampling events at the discharge/receiving water location where the sediment toxicity was initially triggered.

If the sediment toxicity sampling frequency is reduced as described above, the Discharger will continue the current, or equivalent, water quality management practices with respect to pyrethroids/chlorpyrifos use and sediment and erosion control with return sediment toxicity sampling once every 5-years. If equivalent management practices for pyrethroids/chlorpyrifos use or sediment and erosion control are discontinued, sediment toxicity monitoring reverts to the annual sampling described in Table 1. The Discharger may petition the Executive Officer to remove the sediment toxicity monitoring requirement based on information showing that employed management practices protect against sediment toxicity, e.g., practices in place result in no sediment discharge above background levels.

TABLE 2. DISCHARGE MONITORING OF TAILWATER, STORMWATER, AND SEDIMENT TOXICITY	
Constituent (a)	**Frequency (as given in Table 1)**
Flow or volume of discharge	D.1, D.2, D.3, D.4
Duration of discharge	D.1, D.2, D.3, D.4
Turbidity	D.1, D.2 (b)
Temperature (water)	D.4 (c)
pH	D.1, D.2, D.4 (c)
Electrical conductivity (EC) (at 25 C)	D.1
Nitrate + nitrite (as nitrogen)	D.1, D.2, D.4
Dissolved oxygen	D.1, D.2, D.4
Ammonia	D.4 (d)
E. coli	D.1, D.2 (e)
Pesticide(s)	D.3 (f)
Hardness (as $CaCO_3$)	D.3 (g)
Sediment toxicity to *Hyalella azteca*	D.5
Sediment Total Organic Carbon	D.5
Sediment Grain Size	D.5

a. Analytical methods, reporting limits, and reporting units are listed in Appendix MRP-1.
b. When measuring effluent turbidity, upstream receiving water turbidity shall also be measured.
c. For D.4 discharges, temperature and pH measurement is only required when ammonia is used.
d. Required when ammonia is used in fertigation.
e. Required for irrigated pasture operations, as well as any operation type where manure is applied within the last year.
f. Pesticides that must be monitored are listed in section V of this MRP.
g. Hardness samples are only required when sampling for dissolved copper.

3. Tile drainage system discharge monitoring

Beginning within six months of issuance of an NOA, the Discharger shall sample each subsurface (tile) drainage system discharge to surface water. This monitoring shall be conducted at the frequency and for the constituents specified in Table 3 below.

TABLE 3. TILE DRAINAGE SYSTEM DISCHARGE MONITORING [a]
<u>Annually during the irrigation season</u>: Flow rate or volume of discharge Duration of discharge Field measurements of electrical conductivity (at 25 °C) (µmhos/cm) Laboratory analyses of nitrate + nitrite (as nitrogen) (mg/L) <u>With initial annual monitoring and once every 5-years thereafter:</u> 6800(a) pesticides used within the previous 6-months [b]

a. Analytical methods, reporting limits, and reporting units are listed in Appendix MRP-1.

TABLE 3. TILE DRAINAGE SYSTEM DISCHARGE MONITORING [a]
b. 6800(a) pesticides are described in Title 3, section 6800(a) of the California Code of Regulations. As of the effective date of this MRP, the 6800(a) list includes atrazine, bentazon, bromacil, diuron, norflurazon, prometon, and simazine. Monitoring is not required for applied pesticides where the Discharger is implementing applicable DPR use requirement management practices for groundwater protection areas (CCR, Title 3, section 6487.5).

C. Groundwater Monitoring

1. High and low vulnerability areas - characterization of existing wells

Beginning within six months of issuance of an NOA, the Discharger shall annually sample each domestic and agricultural supply well for two (2) years, and then once every five (5) years, to characterize existing groundwater quality. This monitoring shall be conducted during the same time of the year for the constituents specified in Table 5.

This monitoring is not required for fields with tile drainage system monitoring described in section III.B.3. This monitoring is not required for Dischargers conducting the monitoring described in the Discharger's management practices evaluation workplan proposed pursuant to section III.C.2.

Table 5. Existing well characterization monitoring [a]	
Temperature	field measurement
pH	
Dissolved oxygen	
Conductivity (at 25 ºC)	laboratory measurement
General minerals [b]	
Nitrate + nitrite as nitrogen	
Ammonium	
6800(a) pesticides used within the last 5-years [c]	
a. Analytical methods, reporting limits, and reporting units are listed in Appendix MRP-1. b. "General minerals" include sodium, potassium, calcium, magnesium, chloride, carbonate, bicarbonate, and sulfate. c. 6800(a) pesticides are described in Title 3, section 6800(a) of the California Code of Regulations. As of the effective date of this MRP, the 6800(a) list includes atrazine, bentazon, bromacil, diuron, norflurazon, prometon, and simazine.	

2. High vulnerability groundwater monitoring

The following requirements apply if the Discharger's agricultural field is located within the Designated High Vulnerability Area[1] or within a high vulnerability area as identified in an approved Groundwater Assessment Report (GAR) prepared pursuant to a Central Valley Water Board third-party administered irrigated lands general waste discharge requirements order. Designated High Vulnerability Areas will be revised based on the results of any applicable approved GAR. The Executive Officer will provide notification to dischargers of any vulnerability change related to an approved GAR. The following

[1] For the purposes of this Order, the Designated High Vulnerability Area is comprised of the Department of Pesticide Regulation's Groundwater Protection Areas, and the State Water Resources Control Board's Hydrogeologically Vulnerable Areas. The Designated High Vulnerability Area will be revised based on the results of applicable approved third-party GARs.

requirements shall also apply to Dischargers with an exceedance of an applicable water quality objective or trigger limit in a groundwater well.

Management practices evaluation workplan

If the Discharger is located within a high vulnerability groundwater area as identified in its NOA, the Discharger shall submit a management practices evaluation workplan to the Executive Officer for review and approval within two (2) years of issuance of the NOA. Dischargers not within a high vulnerability groundwater area as identified in its NOA, but whose operation subsequently falls within a high vulnerability groundwater area shall submit a management practices evaluation workplan to the Executive Officer within one (1) year of notification from the Executive Officer. Dischargers not within a high vulnerability groundwater area with an exceedance of an applicable water quality objective/trigger limit in a well shall submit a management practices evaluation workplan to the Executive Officer within one (1) year of the exceedance. As applicable, the Discharger shall update the workplan to evaluate new management practices implemented under a groundwater action plan (per section VI.D of the Order). A new or updated workplan is required when the results of the management practices evaluation monitoring indicate existing practices are not protective of groundwater quality. Updates to the workplan shall be submitted to the Executive Officer for review and approval within 120 days of 1) Executive Officer approval of the groundwater action plan; or 2) the Executive Officer informing the Discharger that the information provided in the management practices evaluation status reports or final report indicate that existing practices are not protective of groundwater quality.

a. *Workplan Design.* The workplan shall be designed to achieve the following objectives:

- Identify whether existing management practices are protective of groundwater quality.
- Determine whether new management practices implemented in accordance with an approved groundwater action plan (as applicable) are protective of groundwater quality.
- Develop a scientifically sound estimate of the effect of the waste discharge on groundwater quality and whether the waste discharge is achieving compliance with the Order's groundwater receiving water limitation.
- Utilize the results of evaluated management practices to determine whether practices implemented need to be improved.

The workplan must include a scientifically sound approach to evaluating the effect of the Discharger's 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 workplan.

Sufficient groundwater monitoring data should be collected or available (e.g., from other applicable studies) 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.

b. *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 must be sufficient to determine if the management practices being evaluated are protective of groundwater quality. For workplans required due to a confirmed exceedance in a monitored well, the constituent causing the exceedance and the field parameters identified in Table 4 below must be included in the proposed management practices evaluation workplan. For workplans required due to the location of the irrigated lands in a high vulnerability area, the baseline constituents for any groundwater quality monitoring must include, at a minimum, the constituents listed in Table 4.

Table 4. Constituents for management practices evaluation program monitoring [a]

Temperature	field measurement
pH	
Dissolved oxygen	
Conductivity (at 25 ºC)	laboratory measurement
General minerals [b]	
Nitrate + nitrite as nitrogen	
Ammonium	
6800(a) pesticides detected in wells and will continue to be used onsite [c]	

a. Analytical methods, reporting limits, and reporting units are listed in Appendix MRP-1.
b. "General minerals" include sodium, potassium, calcium, magnesium, chloride, carbonate, bicarbonate, and sulfate.
c. 6800(a) pesticides are described in Title 3, section 6800(a) of the California Code of Regulations. As of the effective date of this MRP, the 6800(a) list includes atrazine, bentazon, bromacil, diuron, norflurazon, prometon, and simazine. Monitoring is not required for these pesticides where the Discharger is implementing applicable DPR use requirement management practices for groundwater protection areas (CCR, Title 3, section 6487.5).

c. *Workplan implementation and analysis.* The proposed workplan shall contain sufficient information/justification for the Executive Officer to evaluate the ability of the evaluation program to identify whether existing management practices and practices implemented as part of a groundwater action plan (as applicable) in combination with site conditions, are protective of groundwater quality. Upon approval of the workplan, the Discharger shall implement the workplan as approved by the Executive Officer or as approved with modifications required by the Executive Officer.

d. *Installation of monitoring wells.* Upon approval of the management practices evaluation workplan, the Discharger 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.

IV. Reporting Requirements

A. General Reporting Requirements

The results of any water quality monitoring conducted more frequently than required at the locations specified herein shall be maintained in accordance with the requirements specified in section VIII, Record Keeping Requirements, of Order R5-2013-0100 and included in Annual Monitoring Reports.

B. Notice of Intent (NOI)

To apply for coverage under this Order, the Discharger must submit a completed Notice of Intent (NOI) for approval by the Executive Officer and appropriate fee. Upon submittal of the appropriate fee and a complete NOI, the Executive Officer may issue a Notice of Applicability (NOA), after which the Discharger will be covered under this Order. The NOA will include trigger limits, any applicable TMDL load allocation requirements, groundwater vulnerability designation, and any additional monitoring requirements for all applicable constituents specific to the operation. NOI forms will be available on the Central Valley Water Board Irrigated Lands Regulatory Program website.

Information required by the NOI will include landowner name(s) and contact information; operator name(s) and contact information; facility/business/farm name and type of business operation; parcel-specific information, including Assessor Parcel Roll number(s), number of acres of irrigated agriculture, county, crop type(s), and irrigation method(s); map of the operation with surface water discharge locations, tile drains, location of any potential conduits to groundwater aquifers (e.g., active, inactive, or abandoned wells; dry wells; recharge basins; ponds); and any adjacent surface water courses identified on the map; Operator Identification Number(s) issued by the county, name of permit holder, and Site ID number(s); list of pesticides that may be used onsite; name of receiving surface water course(s); and authorized signature and certification statement.

C. Farm Water Quality Plan (FWQP)

The Order requires the Discharger to develop a farm-specific water quality plan and submit the plan to the Central Valley Water Board. Dischargers are encouraged to work with technical service organizations such as resource conservation districts, commodity groups, and the University of California Cooperative Extension in the development of the entire FWQP; however, a portion of the FWQP (the Nitrogen Management Plan) is required to be developed per section IV.C.6 below. The board recommends the University of California, Division of Agriculture and Natural Resources' Publication 8332 *The Farm Water Quality Plan*[2] as a reference to help complete this requirement, along with the nitrogen management plan requirements provided in this MRP.

Under a FWQP, the Discharger is required to track and evaluate the farm's current management practices, and describe those practices needed or currently in use to minimize waste discharge to achieve groundwater and surface water quality protection. The Executive Officer may require additional groundwater or surface water quality

[2] http://ucce.ucdavis.edu/files/repositoryfiles/8332-54334.pdf

monitoring to evaluate the effectiveness of the practices implemented. Additional practices/monitoring may be necessary, in an iterative process, to address water quality concerns.

The Farm Water Quality Plan shall include, at a minimum:

1. Description of the operation, including number of irrigated acres, crops;

2. Pesticides that may be applied, recommended rates, and practices associated with the pesticides that could affect the discharge of pesticides to surface or groundwater, such as application methods and irrigation related practices;

3. Map(s) (NOI map may be used) showing the location of irrigated production areas, discharge points to surface waters, surface water bodies, location of any potential conduits to groundwater aquifers (e.g., active, inactive, or abandoned wells; dry wells; recharge basins; ponds), water quality sampling locations;

4. Rationale for the water quality sampling locations;

5. Water quality management practices used or to be used (if planned, include timetable for implementation) to comply with the Order and reduce or eliminate discharge of waste to groundwater and surface waters. As described in the Order, following are the farm management performance standards that must be achieved:

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

6. **Farm-specific Nitrogen Management Plan**: The nitrogen management plan (NMP) will be a part of the FWQP. The purpose of the nitrogen management plan is to budget for and manage the nitrogen applied, considering all sources of nitrogen, crop consumption, soil types, climate, and local conditions, in order to prevent adverse impacts to the beneficial uses of surface water and groundwater. The NMP must take the site-specific conditions into consideration in identifying steps that will be taken and practices that will be implemented to minimize nitrogen movement through surface runoff or leaching past the root zone.

   The NMP should consider, to the extent appropriate, the major criteria established in the Natural Resource Conservation Service (NRCS), Conservation Standard for Nutrient Management (Code 590)[3] for California.

[3] A copy of the current version of the Conservation Standard for Nutrient Management can be found at http://efotg.sc.egov.usda.gov/references/public/WI/590.pdf

For growers in a high vulnerability groundwater area, the nitrogen management plan must be certified in one of the following ways:

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

- Self-certified by the Discharger that the plan adheres to a site-specific recommendation from the NRCS or the University of California Cooperative Extension. The Discharger must retain written documentation of the recommendation provided; or

- Certified by a nitrogen management plan specialist. Such specialists include Professional Soil Scientists, Professional Agronomists, Crop Advisors certified by the American Society of Agronomy, or Technical Service Providers certified in nutrient management in California by the 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.

Individual irrigated land operations within a high vulnerability groundwater area must provide annual confirmation through the annual monitoring report to the Central Valley Water Board that they are implementing a properly certified nitrogen management plan, and must provide the name and contact information of the nitrogen management plan specialist who prepared or certified the plan, if applicable.

Individual irrigated land operations that are not within a high vulnerability groundwater area must provide annual confirmation through the annual monitoring report to the Central Valley Water Board that they are implementing a nitrogen management plan.

D. Surface Water Action Plan (SWAP)

The Discharger shall develop a SWAP when required by section VI.C of the Order. The SWAP shall include the following elements.

1. Constituent(s) for which the SWAP is required (constituent(s) of concern), relevant sample results, and collection dates of the exceedances, if applicable, that triggered development of the plan.
2. Summary of onsite sources of the constituent(s) of concern.
3. Description and justification for the proposed management practices that will be implemented to reduce the discharge of the constituent(s) of concern to address the problem triggering preparation of the SWAP.
4. Proposed monitoring plan to evaluate the effectiveness of improved management.
5. Proposed time schedule for implementation of management practices to address the problem triggering the preparation of the SWAP. Time schedule must be consistent with section X of the Order, Time Schedule for Compliance.

Alternatively, the SWAP requirement may be satisfied by completing a technical report designed to gather information (e.g., samples, applicable studies) regarding the discharge and upstream/downstream receiving waters under varying conditions. The report must be designed to determine under limiting discharge and receiving water scenarios (e.g., maximum observed discharge concentration, high discharge flow, low receiving water flow) whether the discharge may cause or contribute to an exceedance of an applicable water quality objective for the constituent(s) of concern or degradation that may threaten any applicable Basin Plan beneficial use. The technical report shall include a discussion of the applicable water quality objective(s) for the constituent(s) of concern; and proposed 1) sample collection methods, 2) justification for selection of limiting discharge and receiving water conditions, 3) a discussion describing the existing management practices in place to control the constituent(s) of concern and explanation of how the practices meet the requirements of the Order, and 4) a time schedule for developing the technical report.

E. Groundwater Action Plan (GWAP)

The Discharger shall develop a GWAP when required by section VI.D of the Order. The GWAP shall include the following elements.

1. Constituent(s) for which the GWAP is required (constituent(s) of concern), relevant sample results, and collection dates of the exceedances, if applicable, that triggered development of the plan.
2. Summary of onsite sources of the constituent(s) of concern.
3. Description and justification for the proposed management practices that will be implemented to reduce the discharge of the constituent(s) of concern to address the water quality problem triggering the preparation of the GWAP.
4. Proposed time schedule for implementation of management practices to address the problem triggering the preparation of the GWAP. Time schedule must be consistent with section X of the Order, Time Schedule for Compliance.

F. Management Practices Evaluation Workplan Reports

1. Status reports. Status reports of the management practices evaluation workplan must be submitted to the Executive Officer as part of the annual monitoring report or in a separate report due on the same date as the annual monitoring report. The report shall include all data (including analytical reports) collected by each phase of the workplan since the previous report was submitted. The report shall also contain a tabulated summary of data collected to date under the workplan, including identification of any monitoring results that triggered a groundwater action plan. Within each report, the Discharger shall evaluate the data and make a determination whether groundwater is being impacted. The report shall summarize the activities conducted under the workplan and identify the number and location of installed monitoring wells relative to each other and other types of monitoring devices.

Each report shall also include an evaluation of whether the specific phase(s) of the workplan 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 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.

2. *Management practices evaluation final report (MPER)*. No later than six (6) years after Executive Officer approval of the management practices evaluation workplan, the Discharger shall submit, for Executive Officer approval, the final management practices evaluation report (MPER) describing whether its management practices are protective of groundwater quality. 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 whether management practices are protective of groundwater quality.

   The report shall include an assessment of each management practice to determine which management practices are protective of groundwater quality.

G. Annual Monitoring Report (AMR)

By 1 May of each year, for the previous annual monitoring period from 1 January through 31 December, the Discharger shall submit an annual monitoring report (AMR). Where feasible, the Discharger, or authorized representative, shall submit the AMR to the Central Valley Water Board using the Geotracker ESI system.[4] If unable to submit the report electronically through Geotracker ESI, the grower shall email, mail or personally deliver the AMR to the Central Valley Water Board. The AMR shall include the following sections and elements:

1. Surface water monitoring results:

Sample date
Constituent
Sample concentration result and trigger limit (see section VII below)
Indicate which results are exceedances of trigger limits
Sample collection location with latitude and longitude coordinates in decimal degrees to at least the fourth decimal place.
Sample site name / code

2. Groundwater monitoring results:

Sample date
Constituent
Sample concentration result and trigger limit
Indicate which results are exceedances of trigger limits
Sample collection location with latitude and longitude coordinates in decimal degrees to at least the fourth decimal place.
Well type (domestic, irrigation, monitoring, etc.)
Well name / code

3. The Discharger shall upload all groundwater monitoring results into Geotracker ESI's database system for well data and all surface water monitoring results into a database system as specified by the Executive Officer.

4. For growers within a high vulnerability groundwater area, confirmation that the Discharger is implementing a certified nitrogen management plan and the name and contact information of the certified specialist who prepared or approved the plan.[5]

[4] Geotracker ESI is a web-based electronic reporting tool maintained by the State Water Board. The system may be accessed at: http://www.waterboards.ca.gov/ust/electronic_submittal/.
[5] For growers not within a high vulnerability area, confirmation that the Discharger is implementing a nitrogen management plan.

5. For growers within a high vulnerability groundwater area, report of total nitrogen available and estimate of crop consumption for the previous year.

6. Copies of all field sheets associated with water quality sample collection.

7. Copies of all laboratory certified analytical reports associated with water quality samples.

8. For exceedances that have not triggered a SWAP, a summary of the updates to the FWQP to reduce waste discharge and prevent future exceedances consistent with the requirements of the Order.

9. Summary of the progress made towards meeting time schedules approved in any SWAPs and GWAPs.

10. Updates on pesticide use. This section shall list all pesticides used during the AMR reporting period and all planned pesticides for the next reporting period.

11. **Mitigation monitoring report.** Dischargers that implement mitigation measures specified in Attachment C to Order R5-2013-0100 shall submit a mitigation monitoring report as part of the AMR. The mitigation monitoring report shall include information on the implementation of CEQA mitigation measures, including the mitigation measure implemented, identified potential 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.

V. Pesticides (Surface Water)

The following are the pesticides that are subject to surface water monitoring in accordance with the provisions in section III.B of this MRP. This list will be reviewed and updated as necessary based on available information.

2,4-D	Dimethoate	Paraquat
Aldicarb	Disulfoton	Parathion-methyl
Atrazine	Diuron	Prometryn
Chlorpyrifos	Malathion	Propanil
Copper*	Oryzalin	Simazine
Diazinon	Oxyfluorfen	Thiobencarb
Dichlorvos		

* Water quality samples collected shall be analyzed for “dissolved” copper.

VI. Pesticides (Sediment Toxicity)

The following are the pesticides that would trigger the sediment toxicity analysis requirement in accordance with the provisions of section III.B of this MRP. This list will be reviewed and updated as necessary based on available information.

Bifenthrin	Cyhalothrin, lambda	Permethrin
Chlorpyrifos	Cypermethrin	
Cyfluthrin	Esfenvalerate/Fenvalerate	

VII. Water Quality Triggers

This Order requires that Dischargers 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 and the Water Quality Control Plan for the Tulare Lake Basin* (Basin Plans) contain numeric and narrative water quality objectives applicable to surface water and groundwater within the Order's coverage area (the Central Valley region). 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.

This Order establishes water quality triggers for developing SWAPs and GWAPs. Water quality triggers are based on Basin Plan water quality objectives, some of which are site specific; and therefore difficult to apply generally across the entire Order coverage area. Consequently, this Order establishes a process for providing Dischargers with water quality triggers for surface water and groundwater. This process is initiated when the Discharger files an NOI for coverage under this Order. The Executive Officer will review the NOI and may issue an NOA, approving the Discharger's coverage under this Order. The NOA will include surface and groundwater water quality triggers, groundwater vulnerability designation, and any additional monitoring requirements based on review of the NOI. Additional monitoring requirements will include monitoring for compliance with any applicable Basin Plan TMDLs and associated load limits.

VIII. Record-keeping Requirements

1. Records of on-site monitoring activities shall include the:

    a. Date the observations were recorded, measurements were made, or samples were collected;
    b. Name and signature of the individual(s) who made the observations, made and recorded the measurements, or conducted the sampling;
    c. Location of measurements or sample collection;
    d. Procedures used for measurements or sample collection;
    e. Unique identifying number assigned to each sample; and
    f. Method of sample preservation utilized.

2. Records of laboratory analyses shall include the:

    a. Results for the analyses performed on the samples that were submitted;
    b. Chain-of-custody forms used for sample transport and submission;
    c. Form that records the date that samples were received by the laboratory and specifies the analytical tests requested;
    d. Name, address, and phone number of the laboratory which performed the analysis;
    e. Analytical methods used;
    f. Date(s) analyses were performed;
    g. Identity of individual(s) who performed the analyses or the lab manager; and
    h. Results for the quality control/quality assurance (QA/QC) program for the analyses performed.

3. All records described in this section will be submitted as part of the annual monitoring report.

APPENDIX MRP-1
Analytical and Sample Collection Requirements

Appendix MRP-1 Table 1. Analytical Requirements			
Constituent	**Analytical Method(s)**	**Maximum Reporting Limit**	**Reporting Unit**
General Parameters - Water			
Dissolved Oxygen	SM 4500-O	0.1	mg/L
Electrical [Specific] Conductivity at 25 ° C	USEPA 9050A or 120.1	100	µS/cm
E. coli	SM 9221 B/E (MUG) or 9223	2	MPN/100ml
Flow	field estimation	1	cfs
Hardness (as $CaCO_3$)	USEPA 200.7, 130.1, 130.2, SM 2340C	10	mg/L
pH	SM 4500 H+B, AS 3778 or USEPA 150.1	0.1	pH units
Temperature	SM 2550	0.1	° Celsius
Turbidity	SM 2130B or USEPA 180.1	1	NTUs
Nutrients - Water			
Ammonia (NH_3 as N)	USEPA 350 or SM4500	0.1	mg/L
Ammonium (NH_4^+ as N)	"	0.1	mg/L
Nitrate + Nitrite (as N)	USEPA 300, 300.1 351.3, 353.2, or SM 4500	0.05	mg/L
Pesticides - Surface Water			
2,4-D			
Aldicarb	USEPA 8321 or 632	0.4	µg/L
Atrazine	USEPA 619 or 507	0.5	µg/L
Chlorpyrifos	USEPA 8141A, 614, 8321, 625m, or 8270	0.015	µg/L
Copper (dissolved)	USEPA 200.7, 200.8, 213.2, 6020, SM 3113, 3113B, or Modified USGS	0.5	µg/L
Diazinon	USEPA 8141A, 614, 8321, 625m, or 8270	0.02	µg/L
Dichlorvos	"	0.1	µg/L
Dimethoate	"	0.1	µg/L
Disulfoton (Disyton)	"	0.05	µg/L
Diuron	USEPA 8321 or 632	0.4	µg/L
Malathion	USEPA 8141A, 614, 8321, 625M, or 8270	0.1	µg/L
Oryzalin	USEPA 632 or 632M	0.4	µg/L
Oxyfluorfen	USEPA 8081A or 8081 AM	0.05	µg/L
Paraquat	USEPA 549.1	0.4	µg/L
Parathion, Methyl	USEPA 8141A, 614, 8321, 625m, or 8270	0.1	µg/L
Prometryn	USEPA 507, 619M, 625M	0.1	µg/L
Propanil	USEPA 525.2, 532M, 619M	0.05	µg/L
Simazine	USEPA 619, 8141, 625, 8270C, or 507	0.5	µg/L
Thiobencarb	USEPA 619 or 507	0.5	µg/L
Parameters - Sediment			
Toxicity to test species *Hyalella azteca*	USEPA 600/R-99/064		
Total Organic Carbon (TOC)	USEPA 415.1, USEPA 9060, Wakley Black, SW-846	200	mg/kg
Grain Size	ASTM D-422, USEPA 1995, USACE 1981	1	% sand, silt, clay, gravel

Appendix MRP-1 Table 1. Analytical Requirements			
Constituent	**Analytical Method(s)**	**Maximum Reporting Limit**	**Reporting Unit**
Pesticides - Groundwater			
Atrazine	USEPA 619 or 507	0.5	µg/L
Bentazon	USEPA 615	0.5	µg/L
Bromacil	USEPA 8321A or 507	0.4	µg/L
Diuron	USEPA 8321A or 632M	0.4	µg/L
Norflurazon	USEPA 8081A or 619	0.05	µg/L
Prometon	USEPA 619 or 625M	0.02 / 0.01	µg/L
Simazine	USEPA 619, 8141, 625, 8270C, or 507	0.5	µg/L
General Minerals - Groundwater			
Bicarbonate	SM 2320 B	0.1	mg/L
Calcium, total	USEPA 200.7, SM 3111 B	0.05	mg/L
Carbonate	SM 2320 B	0.1	mg/L
Chloride	USEPA 300	0.25	mg/L
Magnesium, total	USEPA 200.7, SM 3111 B	0.02	mg/L
Potassium	USEPA 200.7, 6010B, SM 3111 B	0.1	mg/L
Sodium	USEPA 200.7, SM 3111 B	0.1	mg/L
Sulfate	USEPA 300	0.25	mg/L

Appendix MRP-1 Table 2. Sampling Container Volume, Initial Preservation and Holding Times for Water Samples

Parameters for Analysis in WATER Samples	Recommended Containers (all containers pre-cleaned)	Typical Sample Volume (ml)	Preservation	Maximum Holding Time (analysis must start by end of max)
Conventional Constituents in Water				
Alkalinity	Polyethylene bottles (see ***1*** below)	100 ml	Cool to 4°C and store in the dark	14 days at 4°C, dark
Chloride (Cl), Sulfate (SO_4), and Fluoride (F)	"	300 ml	"	28 days at 4°C, dark
Nitrate + Nitrite ($NO_3 + NO_2$) as N	"	150 ml	Cool to 4°C and store in the dark. Acidify with H_2SO_4 to pH<2	48 hours at 4°C, dark or 28 days if acidified
Total Dissolved Solids (TDS)	"	1000 ml	"	7 days at 4°C, dark
Ammonia (NH_3)	"	500 ml	Cool to 4°C and store in the dark. May acidify with H_2SO_4 to pH<2	48 hours at 4°C and in the dark or if acidified 28 days at 4°C and in the dark
Total Phosphorous (TPO_4)	"	300 ml	"	28 days at 4°C, dark
Total Organic Carbon (TOC), Dissolved Organic Carbon (DOC)	"	40 ml (one vial)	Cool to 4°C and store in the dark. TOC: If analysis is to occur more than two hours after sampling, acidify with HCl or H_2SO_4 to pH<2.	28 days at 4°C, dark
Total Suspended Solids (TSS)	"	1000 ml (two jars)	"	7 days at 4°C, dark
Hardness	200 ml polyethylene or glass bottle	200 ml (one bottle)	Cool to 4°C, dark OR filter and add 2 ml conc. H_2SO_4 or HNO_3 to pH<2; Cool to 4°C, dark	48 hours dark at 4°C, dark 6 months at 4°C, dark
Synthetic Organic Compounds in Water Samples				
PESTICIDES & HERBICIDES ***(2)*** □ Organophosphate Pesticides □ Organochlorine Pesticides □ Chlorinated Herbicides	1-liter amber glass bottle with Teflon lid-liner (per each sample type)	1000 ml (one container) * Each sample type requires 1000 ml in a separate container	Cool to 4° C, dark pH 5-9. If chlorine is present, add 0.1 g sodium thiosulfate	Keep at 4°C dark, up to 7 days. Extraction must be performed within the 7 days; analysis must be performed within 40 days of extraction
Pathogen Testing Water Samples				
E. coli	Factory-sealed, pre sterilized, disposable Whirl-pak® bags or 125 ml sterile plastic (high density polyethylene or polypropylene) container	100 ml volume	Sodium thiosulfate is pre-added to the containers in the laboratory (chlorine elimination). Cool to 4°C, dark.	STAT: 24 hours at 4°C, dark lab must be notified well in advance

(1) The volume of water necessary to collect in order to analyze for the above mentioned constituents is typically combined in four 1-liter polyethylene bottles, which also allows enough volume for possible re-analysis and for conducting lab spike duplicates. This is possible if the same laboratory is conducting all the above analyses; otherwise, individual volumes apply.

(2) Each sample type requires 1000 ml in a separate container.

Appendix MRP-1 Table 3. Measurement Quality Objectives

Group	Parameter	Requirements			
		Accuracy	Precision	Recovery	Completeness
Field Testing	Dissolved Oxygen	± 0.2 mg/L	± 0.2 or 10%	NA	90%
	Temperature	± 0.1 °C	± 0.1 or 5%	NA	90%
	Electrical [Specific] Conductivity	± 5%	± 5%	NA	90%
	pH by Meter	± 0.2 units	± 0.2 or 5%	NA	90%
	Turbidity	± 1 NTU	± 10% or 0.1 %, whichever is greater	NA	90%
Laboratory Analyses	Conventional constituents in water	Standard Reference Materials (SRM, CRM, PT) within 95% CI stated by provider of material. If not available then with 80% to 120% of true value.	Laboratory duplicate, Blind Field duplicate, and MS/MSD ± 25% RPD if Result >10X the MDL. Laboratory duplicate minimum.	Matrix spike 80% - 120% recovery or control limits at ± 3 standard deviations based on actual lab data	90%
	Synthetic organic analytes (including pesticides)	Standard Reference Materials (SRM, CRM, PT) within 95% CI stated by provider of material. For LCS and LCSD50% to 150% of true value.	Laboratory duplicate, Field duplicate, and MS/MSD: RPD<25% (n/a if native concentration of either sample<RL)	Matrix spike 50% - 150% or control limits at ± 3 standard deviations based on actual lab data	90%
	Bacteria/ Pathogens	Laboratory positive and negative cultures- proper positive or negative response. Bacterial PT sample --within the stated acceptance criteria.	Rlog within 3.27*mean Rlog (reference is section 9020B of 18th,19th, or 20th editions of Standard Methods	NA	90%
	Toxicity testing	Meet all performance criteria in method relative to reference toxicant.	Meet all performance criteria in method relative to sample replication.	NA	90%
	Total organic carbon in sediment and sediment grain size	CRM within the 95% CI stated by the provider. Laboratory Control Material (LCM) ± 20% to 25% of stated value. No accuracy criteria for grain size.	Duplicate within ± 20% if Result >10X the MDL	± 25% recovery (75% - 125%)	90%

Form 1. Field Data Sheet for Surface Water Sampling

Surface Water Field Data Sheet
Irrigated Lands Regulatory Program

Discharger Name:_____

Page___**of**
Date _____

Site Name _____
Site Code _____
Sampling Crew
(first and last name) _____

Time First Sample taken _____
Monitoring Event _____

Comments _____

Photo numbers:_____

Safe for sample collection? YES / NO
Comments_____

Wadeability YES/NO

Section A

GPS Position	Lat. (dd.ddddd)	Long. (dd.ddddd)
Target		
Actual		
Datum		

FIELD OBSERVATION	**CIRCLE YOUR OBSERVATION** **Section B**
Dominant Substrate	Concrete, Cobble, Gravel, Sand, Mud, Silt, Hardpan Clay, Other_____
Site Odor	None, Sulfides, Sewage, Petroleum, Mixed, Other_____
Other Presence	Vascular plants, Nonvascular plants, Oily sheen, Foam, Trash, Other_____
Water Odor	None, Sulfides, Sewage, Petroleum, Mixed, Other_____
Water Clarity	Clear (see bottom), Cloudy (>4" vis.), Murky (<4" vis.)
Water Color	Clear, Brown, Green, Grey
Sky Code	Clear, Partly Cloudy, Overcast, Fog, Hazy
Precipitation	None, Foggy, Drizzle, Rain
Precipitation (last 24 hrs)	Unknown, <1", >1", None
Observed Flow	NA, Dry Waterbody Bed, No Observed Flow, Isolated Pool, 0.1-1 cfs, 1-5 cfs, 5-20 cfs, 20-50 cfs, 50-200 cfs, >200 cfs

FIELD MEASUREMENTS **Section C**

	Flow (cfs)	pH	Electrical [Specific] Conductivity (µS/cm)	DO (mg/L)	Water Temp (°C)	Turbidity (NTU)	Photos (as needed)
Measurement							
Instrument							
Calibration Date							

SAMPLES COLLECTED FOR LAB ANALYSES (# of containers filled) **Section D**

	Physical Parameters (Inorganics)	Total Organic Carbon (TOC)	Nutrients (Inorganics)	Bacteria	Sediment Toxicity	Grain Size	Pesticides Collected (1 L amber bottles)			
Samples										
Duplicate										
Blank										
Matrix Spike		n/a			n/a	n/a				
Total # Containers										

Preserved Time and Conditions:

Form 2. Discharge Field Data Sheet for Obtaining Surface Flow Measurements

Discharge Field Sheet

Irrigated Lands Regulatory Program

Discharger name:_____

Date _____
Sampling Crew _____
Site Code _____
Site Name _____
Method (Circle one) wading/ other (specify) _____
Record units of the meter on sheet _____
Comments _____

Right Edge Water (REW) _____
Left Edge Water (LEW) _____
Total Width _____
Start Time (24 hr) _____
Ending Time (24 hr) _____
Spin Test (# Sec) _____

Number of Measurements	Angle (if taken from bridge)	Numbers on measuring tape (in meters/feet)	Observation depth from water surface (0.2, 0.6, 0.8)	Revolutions/ Velocity

Form 3. Field Data Sheet for Groundwater Sampling

Groundwater Sampling Event Field Data Sheet **Page_____ of_____**
Irrigated Lands Regulatory Program **Discharger name: _____** **Sample Date_____** **Sample Time_____**

Section A

Site Name:_____
Site Code:_____
Sampling Crew Names
(first and last):_____
_____

Well ID:_____
Well Type (circle one): Monitoring, Domestic, Ag Supply
Weather conditions (circle one or more): Sunny, Cloudy, Rainy, Windy

GPS Position	Lat. (dd.ddddd)	Long. (ddd.ddddd)
Actual		
Datum		

WELL, WATER LEVEL, AND PURGE INFORMATION

Section B

Well diameter (inside casing), inches:_____
Total casing length, ft:_____
Distance to top of casing (above ground), ft: _____
Screen interval, ft: _____
Depth measurement equipment (circle one): electric sounder, chalked tape, other:
Depth to water before purge (from top of casing), ft: _____
Depth to water at sample collection (from top of casing), ft: _____
Well recharge rate, gal/min: _____
Casing volume, gal: _____

Well pump active upon arrival (Y/N):_____
Purge equipment (circle one): Existing well pump, bailer, bladder pump, submersible pump, other
Purge port location:_____
Micropurge/Low-flow techniques used (Y/N):_____
Casing volumes purged: _____
Time period purged, min: _____
Purge rate, gal/min: _____
Storage/Pressure tank volume, gal: _____

Observations:

Water present in recharge sources near well? (e.g., dairy pond, unlined canal, etc.):

Condition of well (e.g., cracked pad, flooded, odor, etc.):

FIELD MEASUREMENTS

Section C

Time Start	Time Stop	Total Volume Purged	Water Level (feet)	Specific Conductance (µS/cm)	pH	DO (mg/L)	Water Temp (°C)	Turbidity (NTU)	ORP (mV)	Did well dry out?	Notes
Purge Events Data											
Post-purge Data (after readings stabilize)											

SAMPLE INFORMATION

Section D

Sample ID	Analyte(s)	Field Filtered (Y/N)	Preservative (Y/N)

NOTES

Section E

Form 4. REQUEST FOR ANALYSIS AND CHAIN OF CUSTODY RECORD

Page___ of_____

Name (Customer)	Send Results To	Batch ID
Address (Customer)		Lab Storage (Refrigerator or freezer number)
City	Phone Number	

Ice Chest Temperature at Log-In	Analysis Requested	Physical Parameters	Nutrients	Pathogens	Trace Elements	Hardness	Sediment Toxicity	TOC	Others (specify)	OCH Pesticides	OP Pesticides	Pyrethroids	Carbamates	Herbicides (specify)	Others (specify)	Number of Containers			
Sample Identification	Collection															Plastic	Glass	Vial	Whirlpak
	Date / Time																		

Comments/Special Instructions

Samples Relinquished By (signature)	Print Name	Date	Received By (signature)	Print Name	Date

Monitoring and Reporting Program R5-2013-0100

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 groundwater monitoring program are set forth in Attachments A (Information Sheet) and B (Monitoring and Reporting Program Order R5-2013-0100) to Order R5-2013-0100.

Some Dischargers may be required to 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 wells, the Discharger 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. Installation of monitoring wells shall not begin until the Executive Officer notifies the Discharger in writing that the MWISP is acceptable.

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 Discharger 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 Discharger 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 Discharger shall sample monitoring wells for the constituents and at the frequencies as specified in the approved management practices evaluation workplan. 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 MRP Order R5-2013-0100.

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 representative monitoring programs monitoring network 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 annual 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 R5-2013-0100.

III. Monitoring Well Installation Completion Report (MWICR)

Within 60 days after completion of any monitoring well network, the Discharger 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 ± 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 R5-2013-0100
CEQA MITIGATION MEASURES

WASTE DISHARGE REQUIREMENTS GENERAL ORDER
FOR
DISCHARGES FROM IRRIGATED LANDS WITHIN THE CENTRAL VALLEY REGION
FOR DISCHARGERS NOT PARTICIPATING IN A 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 growers, or "Dischargers," choose the least impactful management practices that will meet the water quality improvement goals and objectives of Waste Discharge Requirements General Order for Discharges from Irrigated Lands within the Central Valley Region for Dischargers not participating in a Third-Party Group, Order R5-2013-0100 (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 growers 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).

[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

- 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, the grower's coverage under this Order is not authorized. The grower must then apply for its own individual waste discharge requirements. Issuance of individual waste discharge requirements would constitute a future discretionary action by the Board subject to additional CEQA review.

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.

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, growers 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 growers 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, the grower's coverage under this Order is not authorized. The grower must then apply for its own individual waste discharge requirements. Issuance of individual waste discharge requirements would constitute a future discretionary action by the Board subject to additional CEQA review.

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, to the

extent that a further discretionary approval by the Board would require additional CEQA review. 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, as needed, 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), growers 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 growers 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, the grower's coverage under this Order is not authorized. The grower must then apply for its own individual waste discharge requirements. Issuance of individual waste discharge requirements would constitute a future discretionary action by the Board subject to additional CEQA review.

2. Mitigation Measure FISH-MM-2: Educate Growers on the Use of Polyacrylamides (PAMs) for Sediment Control

The Central Valley Water Board will make information available to Dischargers 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 growers, encouraging the use of anionic PAMs. Application of anionic PAMs at prescribed rates will be emphasized in the

information provided to growers. 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 Growers to Keep Important Farmland in Production.**

The Central Valley Water Board 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 growers' 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 2012 Farm Bill (the Food, Conservation, and Energy Act of 2012, in effect through September 2013) 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

This act was placed on the ballot by the Legislature as SBX 7-2 and was originally scheduled for voter approval in November 2010. In August of 2010, the Legislature removed

this issue from the 2010 ballot with the intent to re-introduce it in November of 2012. In July 2012, the Legislature approved a bill to take the measure off the 2012 ballot and put it on the 2014 ballot. If approved by the public, the new water bond would provide grant and loan funding for a wide range of water-related activities, including improving agricultural water quality, conservation and watershed protection, and groundwater protection and water quality. The majority of public funds allocated by the bond would go through a rigorous competitive process to ensure dollars would go to a public benefit. Additionally, this water bond is expected to leverage more than $30 billion in additional investments in local, regional, and statewide infrastructure for water supply, water quality, and environmental restoration enhancements. 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 DISCHARGES FROM IRRIGATED LANDS WITHIN THE CENTRAL VALLEY REGION FOR DISCHARGERS NOT PARTICIPATING IN A THIRD-PARTY GROUP

FINDINGS OF FACT AND STATEMENT OF OVERRIDING CONSIDERATIONS

ORDER R5-2013-0100

July 2013

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)
FWQP	Farm Water Quality Plan
GHGs	greenhouse gasses
HAPs	hazardous air pollutants
ILRP	Irrigated Lands Regulatory Program
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

Chapter 1

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 Discharges from Irrigated Lands within the Central Valley Region for Dischargers not participating in a Third-Party Group, Order R5-2013-0100 (Order). The Order is described in California Regional Water Quality Control Board, Central Valley Region Order R5-2013-0100 and supporting attachments, and is being approved consistent with the requirements of CEQA.

The requirements of this Order have been developed from the alternatives presented in the PEIR, and include regulatory requirements 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 R5-2013-0100 (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.

This Order implements the long-term ILRP for Dischargers not participating in a third-party group. 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. The Order is not the primary mechanism for establishing regulations applicable to irrigated lands waste discharges. The Order will be utilized:

- In the unlikely event that third-party coverage is unavailable;
- Voluntarily for Dischargers that do not wish to participate in a third-party group; and
- To regulate Dischargers that cannot maintain enrollment in a third-party due to non-compliance or refuse to join a third-party.

Unless there is a loss of third-party coverage, most, if not all operations will have the option to enroll under third-party implemented waste discharge requirements instead of the Order. It must be noted, however, that a loss of third-party coverage is not likely to occur, as the water quality coalition third-party groups implementing the program have been successfully in place since 2003. In considering the potential enrollment under the Order, the board considered the previous individual waiver for growers not participating in a coalition group (Order R5-2006-0054). Enrollment under the individual waiver prior to its expiration was minimal. Approximately six operations enrolled under the individual waiver as compared with over 20,000 enrolled under the coalition group conditional waiver. Based on this information, enrollment under the Order is expected to be minimal.

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 the final ECR 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.

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.

[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.

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. Specifically, project-level review of the requirements in the Order has revealed that the requirements of the Order most closely resemble those described for Alternative 5 of the PEIR. The Order contains the individual Central Valley Water Board administration, individual farm planning, individual surface and groundwater quality monitoring, and installation of groundwater monitoring wells similar to Alternative 5. Therefore, actions taken by Dischargers to protect water quality in response to the Order's requirements are expected to be similar to those described for Alternative 5 of the PEIR; essentially leading to implementation of the above practices within Central Valley to a similar degree as is described for Alternative 5.

Impact Findings

Environmental impacts in the PEIR are largely described on a regional basis, as the locations of resulting management practice implementation are unknown. As discussed above, the board is uncertain what the actual enrollment under the Order will be and where the operations would be located within the Central Valley, although the enrollment is expected to be low. Accordingly, the environmental impacts that result from the operations that actually enroll under the Order may be significantly lower than the potential impacts estimated in the PEIR because those impacts were estimated assuming widespread enrollment under the Order.

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, growers enrolled in the Order (hereafter referred to as "growers" or "Dischargers") 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 growers 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 described 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 growers are not known at this time, and will not be defined until the need for additional management practices and monitoring wells is established and Dischargers develop monitoring well installation workplans, where necessary, under the provisions of the Order. 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 described 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, operational noise impacts would result from any pump motors associated with the groundwater or tailwater recovery system wells. In addition, trips made by operators to transport water samples to the laboratory for analysis may generate additional noise from vehicle use. As described in the Program EIR, increases in noise from vehicle travel are expected to be relatively minor. Similarly, noise generated from individual well pumps would be temporary and sporadic.

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 installation of individual groundwater monitoring wells and 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. Construction of individual groundwater wells most likely would require small earth-moving equipment, such as drills or bobcats.

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 growers to transport well samples to the laboratory, as well as new stationary sources associated with the groundwater wells (e.g., pumps powered by motors). Because watershed monitoring is required under the previous conditional waiver program (adopted by Central Valley Water Board Resolution No. R5-2001-0032), implementation of the Order will reduce emissions from this activity relative to the previous conditional waiver program. In addition, emissions benefits may be achieved by management practices that reduce irrigation and cover crops (see Table 5.5-8 of the PEIR). However, in the absence of a quantitative analysis, data are insufficient to determine whether this reduction would offset any increases in operational emissions associated with the Order.

Any new operational 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 operation 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 growers 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 described 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 Central Valley. 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 (Important Farmland).

The potential loss of Important Farmland resulting from the Order may be estimated using the analysis of Alternative 5 in the PEIR. However, the analysis of Alternative 5 was conducted assuming that Alternative 5 would be implemented Central Valley-wide. This is not the case for the Order, as it is not intended to be the primary mechanism for establishing regulations applicable to irrigated lands waste discharges. Unless there is a loss of third-party coverage, most, if not all operations will have the option to enroll under third-party administered waste discharge requirements instead of the Order. Therefore, the Central Valley-wide estimated costs and associated potential conversion of farmland estimated for Alternative 5, should be considered a worst-case scenario should the third-party implemented orders fail throughout the entire Central Valley.

The PEIR provides that under Alternative 5, hundreds of thousands of acres of Important Farmland within the Central Valley region potentially would be removed from production because of the increased costs. It is unlikely that all or even most of this acreage would be converted to a nonagricultural use, but it is reasonable to assume that the quantity estimated in the PEIR represents the upper bound of potential impacts, and that the actual quantity that would be impacted is significantly lower. It should also be noted that because the third-party irrigated lands program model has successfully been in place since 2003, it is not likely that the third-party model will fail throughout the Central Valley.

Because implementation of the Order, in the unlikely case that it would be utilized broadly, 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.

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 Order 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 Central Valley. 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 potential magnitude of important farmland conversion 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 growers 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 growers 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, the grower's coverage under this Order is not authorized. The grower must then apply for its own individual waste discharge requirements. Issuance of individual waste discharge requirements would constitute a future discretionary action by the Board subject to additional CEQA review.

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, growers 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, growers 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, growers 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 , the grower's coverage under this Order is not authorized. The grower must then apply for its own individual waste discharge requirements. Issuance of individual waste discharge requirements would constitute a future discretionary action by the Board subject to additional CEQA review.

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, to the extent that a further discretionary approval by the Board would require additional CEQA review. 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, as needed, 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), Growers 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, growers 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, the grower's coverage under this Order is not authorized. The grower must then apply for its own individual waste discharge requirements. Issuance of individual waste discharge requirements would constitute a future discretionary action by the Board subject to additional CEQA review.

Mitigation Measure FISH-MM-2: Educate Growers on the Use of Polyacrylamides (PAMs) for Sediment Control

The Central Valley Water Board will make information available to growers 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 growers, encouraging the use of anionic PAMs. Application of anionic PAMs at prescribed rates will be emphasized in the information provided to growers. 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 Central Valley Water Board 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 grower expenditures for compliance 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 2012 Farm Bill (the Food, Conservation, and Energy Act of 2012, in effect through September 2013) 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

This act was placed on the ballot by the Legislature as SBX 7-2 and was originally scheduled for voter approval in November 2010. In August of 2010, the Legislature removed this issue from the 2010 ballot with the intent to re-introduce it in November of 2012. In July 2012, the Legislature approved a bill to take the measure off the 2012 ballot and put it on the 2014 ballot. If approved by the public, the new water bond would provide grant and loan funding for a wide range of water-related activities, including improving agricultural water quality, conservation and watershed protection, and groundwater protection and water quality. The majority of public funds allocated by the bond would go through a rigorous competitive process to ensure dollars would go to a public benefit. Additionally, this water bond is expected to leverage more than $30 billion in additional investments in local, regional, and statewide infrastructure for water supply, water quality, and environmental restoration enhancements. 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 described.

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.

The requirements of the Order are based on Alterative 5 of the PEIR. Under the Order, the Central Valley Water Board will work directly with irrigated agricultural operations. Of the range of alternatives considered in the PEIR, only Alternatives 3 and 5 would be implemented directly by the Central Valley Water Board; as opposed to the third-party or joint powers association implementation entities described in Alternatives 1, 2, 4, and 6.

In the PEIR, Central Valley Water Board staff recommends the third-party lead entity structure instead of direct board implementation of the long-term program.[2] The Central Valley Water Board does not have the authority to require formation or mandate the continuation of a third-party or joint powers association implementing entity. Third-party lead entities are currently in place and are willing to implement the long-term program (e.g., water quality coalition groups). Therefore, the board intends to develop a series of third-party lead entity geographic and commodity-based orders (or "waste discharge requirements") that will broadly implement the long-term ILRP

[2] Appendix A, PEIR.

throughout the Central Valley.[3] However, there are concerns that there may be some irrigated lands areas that may not be able to enroll under a third-party. This could be due to lack of third-party coverage, failure of the third-party group to fulfill program requirements, or inability of an individual grower to obtain enrollment in the third-party due to noncompliance. The Order will be applicable in rare occasions where operations cannot or choose not to enroll under third-party lead entity waste discharge requirements.

Implementation of the Order will ensure that the project's regulatory requirements are in place in the event that an individual cannot enroll under a third-party administered irrigated lands program order. Of the six alternatives evaluated in the PEIR, Alternatives 3 and 5 are the only alternatives that are intended to function without the support of a third-party lead entity. In consideration of significant adverse effects of the alternatives, both Alternatives 3 and 5 would have similar significant adverse effects (listed above). However, implementation of Alternative 3 would reduce the magnitude of the predicted significant adverse effect to agriculture resources (conversion of farmland to nonagricultural use) due to the substantially lower predicted overall cost when compared with Alternative 5.

While an order based on Alternative 3 would reduce the magnitude of the potential significant adverse effect to agriculture resources, it is not selected because the alternative is not fully consistent with required State policy and law given in the California Water Code, State Water Board Nonpoint Source Policy, and Resolution 68-16 –State Antidegradation Policy (see section IX, Appendix A, PEIR for a complete discussion and evaluation of program alternatives).

It must also be noted that Alternative 5 is not fully consistent with ILRP goals and objectives due to the substantial predicted cost and associated economic impacts to agriculture in the Central Valley (see section IX, Appendix A, PEIR). The analysis of Alternative 5 was conducted assuming that it would be implemented Central Valley-wide. This is not the case for the Order, as it is not intended to be the primary mechanism for establishing regulations applicable to irrigated lands waste discharges. Unless there is a loss of third-party coverage, most, if not all operations will have the option to enroll under third-party implemented waste discharge requirements instead of the Order.

Considering that the Order is intended to work in conjunction with third-party implemented waste discharge requirements, the board has selected Alternative 5 instead of Alternative 3 as the best alternative to meet State policy and law and ensure that there a regulations in place in case there are operations unable to enroll under third-party implemented waste discharge requirements.

[3] On 7 December 2012, the Central Valley Water Board adopted 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.

Statement of Overriding Considerations Supporting Approval of Waste Discharge Requirements General Order for Discharges from Irrigated Lands within the Central Valley Region for Dischargers not participating in a 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 Central Valley 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 R5-2013-0100.

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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ATTACHMENT E TO ORDER R5-2013-0100
DEFINITIONS, ACRONYMS & ABBREVIATIONS

WASTE DISHARGE REQUIREMENTS GENERAL ORDER
FOR
DISCHARGES FROM IRRIGATED LANDS WITHIN THE CENTRAL VALLEY REGION
FOR DISCHARGERS NOT PARTICIPATING IN A 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 the Basin Plans. The Central Valley Water Board must require that discharges to high quality waters be subject to 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 – Central Valley Regional Water Quality Control Plan for the Sacramento River and San Joaquin River Basins or the Water Quality Control Plan for the Tulare Lake Basin depending on the location of the parcel(s) enrolled under this Order. 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.

[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.

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 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. 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 Executive Officer may use its best professional judgment to determine an appropriate period.

8. 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.

9. 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.

10. Fertigation -– The process of applying fertilizer through an irrigation system by injecting the fertilizer into the irrigation water.

11. Groundwater – Water in the ground that is in the zone of saturation. The upper surface of the saturated zone is called the water table.

12. High Vulnerability Groundwater Area – The High Vulnerability Groundwater Area is comprised of the Department of Pesticide Regulation's Groundwater Protection Areas; State Water Resources Control Board's Hydrogeologically Vulnerable Areas; or an approved Groundwater Assessment Report prepared pursuant to a Central Valley Water Board third-party administered ILRP order.

13. 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.

[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.

14. Irrigated lands – Land irrigated to produce crops or pasture for commercial purposes;[3] nurseries; and privately and publicly managed wetlands.

15. Irrigation return flow/runoff – Surface and subsurface water which leaves the field following application of irrigation water.

16. Management practices – 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.

17. 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 Discharger's compliance with the requirements of the Order.

18. Nonpoint source waste discharge– The Sacramento and San Joaquin River Basin Plan and the Tulare Lake Basin Plan state 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.

19. 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."

[3] 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. 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.

21. Nutrient consumption – A total quantity of a nutrient taken up by crop plants. Expressed as nutrient mass per land area, i.e., pounds/acre, nutrient consumption is typically described on an annual or crop cycle basis. Nutrients are contributed and lost from cropland through various human and natural processes.[4] Considering nitrogen as an example, sources of nitrogen available for plant consumption include applied fertilizers (including compost and animal manures), nitrogen fixed from the atmosphere in the roots of leguminous plants, nitrogen released through the decomposition of soil organic matter and crop residues, and nitrogen applied in irrigation water. Nitrogen can be removed from the field in harvested material, returned to the soil through crop residue incorporation, incorporated into permanent structures of perennial crops, leached beyond the root zone in irrigation or storm water, released to the atmosphere through denitrification, volatilization or crop residue burning.

22. 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.

23. Operation – see *Farming Operation.*

24. Operator – see *Farm Operator*.

25. Perched groundwater – Groundwater separated from an underlying body of groundwater by an unsaturated zone.

26. 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*."

27. Receiving waters – Surface water or groundwater that receives or has the potential to receive discharges of waste from irrigated lands.

28. 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.

29. Storm season (wet season) – The portion of the year in which the majority of precipitation falls. Within the Central Valley, the storm season is the period of time between 1 October and 30 April each year, with the peak storm season typically occurring February through March.

30. Stormwater runoff – The runoff of precipitation from irrigated lands.

[4] Descriptions of sources and losses of plant nutrients are available through UC Davis and UC Cooperative Extension. For example see Peacock, B. Pub. NG2-96, UCCE Tulare County http://cetulare.ucanr.edu/files/82026.pdf

31. 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.

32. 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.

33. Tailwater – The runoff of irrigation water from an irrigated field.

34. 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. …*".

35. Toxicity – Refers to the toxic effect to aquatic organisms from waste contained in an ambient water quality sample.

36. 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.

37. Vadose Zone – See unsaturated zone.

38. 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.

39. 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".

40. 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*."

41. 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 waters of California for a number of toxic pollutants.

42. 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.

43. 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 anti-degradation 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

2012 Farm Bill	Food, Conservation, and Energy Act of 2012
AMR	annual monitoring report
Basin Plan	*Water Quality Control Plan for the Sacramento and San Joaquin River Basins* (4th Ed.) and Water Quality Control Plan for the Tulare Lake Basin
BPTC	best practicable treatment or control
CAC	county agricultural commissioner
CCR	California Code of Regulations
CDFA	California Department of Food and Agriculture
CEDEN	California Environmental Data Exchange Network
Central Valley Water Board	California Regional Water Quality Control Board, Central Valley Region
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
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
EC	electrical conductivity
ECR	Existing Conditions Report
EDD	electronic data deliverable
EIR	environmental impact report
EPA	Environmental Protection Agency
EQIP	Environmental Quality Incentives Program
ESA	federal Endangered Species Act
ESI	Electronic Submittal of Information (Geotracker ESI)
FREP	Fertilizer Research and Education Program
FWQP	farm water quality plan
GeoTracker ESI	GeoTracker Electronic Submittal of Information Online System
GIS	Geographic Information System
GMAW	Groundwater Monitoring Advisory Workgroup
GPS	Global Positioning System
GWAP	groundwater action plan
GWPA	groundwater protection area
HAPs	hazardous air pollutants
ILRP	Long-Term Irrigated Lands Regulatory Program

MDL	method detection limit
mg/L	milligrams per liter
MLD	most likely descendant
MMRP	mitigation monitoring and reporting program
MPEP	Management Practices Evaluation Workplan
MPN	most probable number
MRP	monitoring and reporting program
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
NMP	Nitrogen Management Plan
NOA	Notice of Applicability
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
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places
NTR	National Toxics Rule
NTU	Nephelometric Turbidity Units
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
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)
SM	Standard Methods
State Water Board	State Water Resources Control Board
SWAMP	Surface Water Ambient Monitoring Program
SWAP	surface water action plan
TAC	toxic air contaminant
TDS	total dissolved solids
TMDL	total maximum daily load

TOC	total organic carbon
TST	Test of Significant Toxicity (USEPA method)
µS/cm	microsiemens per centimeter
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
WDRs	waste discharge requirements