# CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
# CENTRAL COAST REGION

## MONITORING AND REPORTING PROGRAM
## ORDER NO. R3-2012-0011-03

# TIER 3

## DISCHARGERS ENROLLED UNDER
## THE CONDITIONAL WAIVER OF WASTE DISCHARGE REQUIREMENTS FOR DISCHARGES FROM IRRIGATED LANDS

This Monitoring and Reporting Program Order No. R3-2012-0011-03 (MRP) is issued pursuant to California Water Code (Water Code) section 13267 and 13269, which authorize the California Regional Water Quality Control Board, Central Coast Region (hereafter Central Coast Water Board) to require preparation and submittal of technical and monitoring reports. Water Code section 13269 requires a waiver of waste discharge requirements to include as a condition, the performance of monitoring and the public availability of monitoring results. The Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands Order No. R3-2012-0011 (Order) includes criteria and requirements for three tiers. This MRP sets forth monitoring and reporting requirements for **Tier 3 Dischargers** enrolled under the Order. A summary of the requirements is shown below.

**SUMMARY OF MONITORING AND REPORTING REQUIREMENTS FOR TIER 3:**

Part 1: Surface Receiving Water Monitoring and Reporting *(cooperative or individual)*;
Part 2: Groundwater Monitoring and Reporting;
Nitrate Loading Risk Factor Determination and Total Nitrogen Reporting *(required for subset of Tier 3 Dischargers if farm/ranch has high nitrate loading risk to groundwater);*
Part 3: Annual Compliance Form;
Part 4: Photo Monitoring *(required for subset of Tier 3 Dischargers if farm/ranch contains or is adjacent to a waterbody impaired for temperature, turbidity or sediment);*
Part 5: Individual Surface Water Discharge Monitoring and Reporting;
Part 6: Irrigation and Nutrient Management Plan *(required for subset of Tier 3 Dischargers if farm/ranch has High Nitrate Loading Risk);*
Part 7: Water Quality Buffer Plan *(required for subset of Tier 3 Dischargers if farm/ranch contains or is adjacent to a waterbody impaired for temperature, turbidity or sediment);*

Pursuant to Water Code section 13269(a)(2), monitoring requirements must be designed to support the development and implementation of the waiver program, including, but not limited to, verifying the adequacy and effectiveness of the waiver's conditions. The monitoring and reports required by this MRP are to evaluate effects of

discharges of waste from irrigated agricultural operations and individual farms/ranches on waters of the state and to determine compliance with the Order.

## MONITORING AND REPORTING BASED ON TIERS

The Order and MRP includes criteria and requirements for three tiers, based upon those characteristics of the individual farms/ranches at the operation that present the highest level of waste discharge or greatest risk to water quality. Dischargers must meet conditions of the Order and MRP for the appropriate tier that applies to their land and/or the individual farm/ranch. Within a tier, Dischargers comply with requirements based on the specific level of discharge and threat to water quality from individual farms/ranches. The lowest tier, Tier 1, applies to dischargers who discharge the lowest level of waste (amount or concentration) or pose the lowest potential to cause or contribute to an exceedance of water quality standards in waters of the State or of the United States. The highest tier, Tier 3, applies to dischargers who discharge the highest level of waste or pose the greatest potential to cause or contribute to an exceedance of water quality standards in waters of the State or of the United States. Tier 2 applies to dischargers whose discharge has a moderate threat to water quality. Water quality is defined in terms of Regional, State, or Federal numeric or narrative water quality standards. Per the Order, Dischargers may submit a request to the Executive Officer to approve transfer to a lower tier.

## PART 1. SURFACE RECEIVING WATER MONITORING AND REPORTING REQUIREMENTS

Monitoring and reporting requirements for surface receiving water identified in Part 1.A. and Part 1.B. apply to Tier 3 Dischargers. Surface receiving water refers to water flowing in creeks and other surface waters of the State. Surface receiving water monitoring may be conducted through a **cooperative monitoring program**, or Dischargers may choose to conduct surface receiving water monitoring and reporting individually. Key monitoring and reporting requirements for surface receiving water are shown in Tables 1 and 2. Time schedules are shown in Table 6.

### A. Surface Receiving Water Quality Monitoring

1. Dischargers must elect a surface receiving water monitoring option (cooperative monitoring program or individual receiving water monitoring) to comply with surface receiving water quality monitoring requirements, and identify the option selected on the Notice of Intent (NOI).

2. Dischargers are encouraged to choose participation in a cooperative monitoring program (e.g., the existing Cooperative Monitoring Program or a similar program) to comply with receiving water quality monitoring

requirements. Dischargers not participating in a cooperative monitoring program must conduct surface receiving water quality monitoring individually that achieves the same purpose.

3. Dischargers (individually or as part of a cooperative monitoring program) must conduct surface receiving water quality monitoring to a) assess the impacts of their waste discharges from irrigated lands to receiving water, b) assess the status of receiving water quality and beneficial use protection in impaired waterbodies dominated by irrigated agricultural activity, c) evaluate status, short term patterns and long term trends (five to ten years or more) in receiving water quality, d) evaluate water quality impacts resulting from agricultural discharges (including but not limited to tile drain discharges), e) evaluate stormwater quality, f) evaluate condition of existing perennial, intermittent, or ephemeral streams or riparian or wetland area habitat, including degradation resulting from erosion or agricultural discharges of waste, and g) assist in the identification of specific sources of water quality problems.

<u>Surface Receiving Water Quality Sampling and Analysis Plan</u>

4. **Within three months** of adoption of the Order, Dischargers (individually or as part of a cooperative monitoring program) must submit a surface receiving water quality Sampling and Analysis Plan and Quality Assurance Project Plan (QAPP). Dischargers (or a third party cooperative monitoring program) must develop the Sampling and Analysis Plan to describe how the proposed monitoring will achieve the objectives of the MRP and evaluate compliance with the Order. The Sampling and Analysis Plan may propose alternative monitoring site locations, adjusted monitoring parameters, and other changes as necessary to assess the impacts of waste discharges from irrigated lands to receiving water. The Executive Officer must approve the Sampling and Analysis Plan and QAPP.

5. The Sampling and Analysis Plan must include the following minimum required components:
    a. Monitoring strategy to achieve objectives of the Order and MRP;
    b. Map of monitoring sites with GIS coordinates;
    c. Identification of known water quality impairments and impaired waterbodies per the 2010 Clean Water Act 303(d) List of Impaired Waterbodies (List of Impaired Waterbodies);
    d. Identification of beneficial uses and applicable water quality standards;
    e. Identification of applicable Total Maximum Daily Loads;
    f. Monitoring parameters;

g. Monitoring schedule, including description and frequencies of monitoring events;
h. Description of data analysis methods;

6. The QAPP must include receiving water and site-specific information, project organization and responsibilities, and quality assurance components of the MRP. The QAPP must also include the laboratory and field requirements to be used for analyses and data evaluation. The QAPP must contain adequate detail for project and Water Board staff to identify and assess the technical and quality objectives, measurement and data acquisition methods, and limitations of the data generated under the surface receiving water quality monitoring. All sampling and laboratory methodologies and QAPP content must be consistent with U.S. EPA methods, State Water Board's Surface Water Ambient Monitoring Program (SWAMP) protocols and the Central Coast Water Board's Central Coast Ambient Monitoring Program (CCAMP). Following U.S. EPA guidelines[1] and SWAMP templates[2], the receiving water quality monitoring QAPP must include the following minimum required components:
   a. Project Management. This component addresses basic project management, including the project history and objectives, roles and responsibilities of the participants, and other aspects.
   b. Data Generation and Acquisition. This component addresses all aspects of project design and implementation. Implementation of these elements ensures that appropriate methods for sampling, measurement and analysis, data collection or generation, data handling, and quality control activities are employed and are properly documented. Quality control requirements are applicable to all the constituents sampled as part of the MRP, as described in the appropriate method.
   c. Assessment and Oversight. This component addresses the activities for assessing the effectiveness of the implementation of the project and associated QA and QC activities. The purpose of the assessment is to provide project oversight that will ensure that the QA Project Plan is implemented as prescribed.
   d. Data Validation and Usability. This component addresses the quality assurance activities that occur after the data collection,

[1] USEPA. 2001 (2006) USEPA Requirements for Quality Assurance Project Plans (QA/R-5) Office of Environmental Information, Washington, D.C. USEPA QA/R-5
[2] http://waterboards.ca.gov/water_issues/programs/swamp/tools.shtml#qa

laboratory analysis and data generation phase of the project is completed. Implementation of these elements ensures that the data conform to the specified criteria, thus achieving the MRP objectives.

7. The Central Coast Water Board may conduct an audit of contracted laboratories at any time in order to evaluate compliance with the QAPP.

8. The Sampling and Analysis Plan and QAPP, and any proposed revisions are subject to approval by the Executive Officer. The Executive Officer may also revise the Sampling and Analysis Plan, including adding, removing, or changing monitoring site locations, changing monitoring parameters, and other changes as necessary to assess the impacts of waste discharges from irrigated lands to receiving water.

Surface Receiving Water Quality Monitoring Sites

9. The Sampling and Analysis Plan must, at a minimum, include monitoring sites to evaluate waterbodies identified in Table 1, unless otherwise approved by the Executive Officer. The Sampling and Analysis Plan must include sites to evaluate receiving water quality impacts most directly resulting from areas of agricultural discharge (including areas receiving tile drain discharges). Site selection must take into consideration the existence of any long term monitoring sites included in related monitoring programs (e.g. CCAMP and the existing CMP). Sites may be added or modified, subject to prior approval by the Executive Officer, to better assess the pollutant loading from individual sources or the impacts to receiving waters caused by individual discharges. Any modifications must consider sampling consistency for purposes of trend evaluation.

Surface Receiving Water Quality Monitoring Parameters

10. The Sampling and Analysis Plan must, at a minimum, include the following types of monitoring and evaluation parameters listed below and identified in Table 2:

    a. Flow Monitoring;
    b. Water Quality (physical parameters, metals, nutrients, pesticides);
    c. Toxicity (water and sediment);
    d. Assessment of Benthic Invertebrates;

11. All analyses must be conducted at a laboratory certified for such analyses by the State Department of Public Health (CDPH) or at laboratories approved by the Executive Officer. Unless otherwise noted, all sampling,

sample preservation, and analyses must be performed in accordance with the latest edition of *Test Methods for Evaluating Solid Waste*, SW-846, U.S. EPA, and analyzed as specified herein by the above analytical methods and reporting limits indicated. Certified laboratories can be found at the web link: http://www.cdph.ca.gov/certlic/labs/Documents/ELAPLablist.xls

12. Water quality and flow monitoring is used to assess the sources, concentrations, and loads of waste discharges from individual farms/ranches and groups of Dischargers to surface waters, to evaluate impacts to water quality and beneficial uses, and to evaluate the short term patterns and long term trends in receiving water quality. Monitoring data must be compared to existing numeric and narrative water quality objectives.

13. Toxicity testing is to evaluate water quality relative to the narrative toxicity objective. Water column toxicity analyses must be conducted on 100% (undiluted) sample. At sites where persistent unresolved toxicity is found, the Executive Officer may require concurrent toxicity and chemical analyses and a Toxicity Identification Evaluation (TIE) to identify the individual discharges causing the toxicity.

Surface Receiving Water Quality Monitoring Frequency and Schedule

14. The Sampling and Analysis Plan must include a schedule for sampling. Timing, duration, and frequency of monitoring must be based on the land use, complexity, hydrology, and size of the waterbody. Table 2 includes minimum monitoring frequency and parameter lists. Agricultural parameters that are less common may be monitored less frequently. Modifications to the receiving water quality monitoring parameters, frequency, and schedule may be submitted for Executive Officer consideration and approval. At a minimum, the Sampling and Analysis Plan schedule must consist of monthly monitoring of common agricultural parameters in major agricultural areas, including two major storm events during the wet season (October 1 – April 30).

15. Storm event monitoring must be conducted within 18 hours of storm events, preferably including the first flush run-off event that results in significant increase in stream flow. For purposes of this MRP, a storm event is defined as precipitation producing onsite runoff (surface water flow) capable of creating significant ponding, erosion or other water quality problem. A significant storm event will generally result in greater than 1-inch of rain within a 24-hour period.

16. **Within six months** of adoption of the Order, Dischargers (individually or as part of a cooperative monitoring program) must initiate receiving water

quality monitoring per the Sampling and Analysis Plan and QAPP approved by the Executive Officer.

**B. Surface Receiving Water Quality Reporting**

Surface Receiving Water Quality Data Submittal

1. **Within nine months** of adoption of this Order and quarterly thereafter (by January 1, April 1, July 1, and October 1), Dischargers (individually or as part of a cooperative monitoring program) must submit water quality monitoring data to the Central Coast Water Board electronically, in a format specified by the Executive Officer and compatible with SWAMP/CCAMP electronic submittal guidelines.

Surface Receiving Water Quality Monitoring Annual Report

2. **Within one year** of adoption of this Order and annually thereafter by January 1, Dischargers (individually or as part of a cooperative monitoring program) must submit an Annual Report, electronically, in a format specified by the Executive Officer including the following minimum elements:
    a. Signed Transmittal Letter;
    b. Title Page;
    c. Table of Contents;
    d. Executive Summary;
    e. Summary of Exceedance Reports submitted during the reporting period;
    f. Monitoring objectives and design;
    g. Monitoring site descriptions and rainfall records for the time period covered;
    h. Location of monitoring sites and map(s);
    i. Tabulated results of all analyses arranged in tabular form so that the required information is readily discernible;
    j. Summary of water quality data for any sites monitored as part of related monitoring programs, and used to evaluate receiving water as described in the Sampling and Analysis Plan.
    k. Discussion of data to clearly illustrate compliance with the Order and water quality standards;
    l. Discussion of short term patterns and long term trends in receiving water quality and beneficial use protection;
    m. Evaluation of pesticide and toxicity analyses results, and recommendation of candidate sites for Toxicity Identification Evaluations (TIEs);
    n. Identification of the location of any agricultural discharges observed discharging directly to surface receiving water;

o. Laboratory data submitted electronically in a SWAMP/CCAMP comparable format;
p. Sampling and analytical methods used;
q. Copy of chain-of-custody forms;
r. Field data sheets, signed laboratory reports, laboratory raw data;
s. Associated laboratory and field quality control samples results;
t. Summary of Quality Assurance Evaluation results;
u. Specify the method used to obtain flow at each monitoring site during each monitoring event;
v. Electronic or hard copies of photos obtained from all monitoring sites, clearly labeled with site ID and date;
w. Conclusions;

## PART 2. GROUNDWATER MONITORING AND REPORTING REQUIREMENTS

Monitoring and reporting requirements for groundwater identified in Part 2.A., Part 2.B., and Part 2.C. apply to Tier 3 Dischargers. Key monitoring and reporting requirements for groundwater are shown in Table 3. Time schedules are shown in Table 6.

### A. Individual Groundwater Monitoring

1. **Within one year** of adoption of the Order, Dischargers must sample private domestic drinking water and agricultural groundwater wells on their farm/ranch to evaluate groundwater conditions in agricultural areas, identify areas at greatest risk for nitrogen loading and exceedance of drinking water standards, and identify priority areas for follow up actions.

2. Dischargers must sample at least one groundwater well for each farm/ranch on their operation. For farms/ranches with multiple groundwater wells, Dischargers must sample the primary irrigation well and all wells that are used or may be used for drinking water purposes. Groundwater monitoring parameters must include depth to groundwater (required if well construction provides for groundwater depth measurement) and well screen interval depths (if available), general chemical parameters, and general cations and anions listed in Table 3.

3. Tier 3 Dischargers must initially conduct two rounds of monitoring of groundwater wells during the first year, one sample collected during spring (March/April) and one collected during fall (September/October), and once annually thereafter. The first round of monitoring must be completed by October 2012. The annual monitoring must be conducted during the quarter when nitrate concentration was at its maximum, based on quarterly groundwater monitoring.

4. Groundwater samples must be collected by a qualified third-party (e.g., consultant, technician, person conducting cooperative monitoring) using proper sampling methods, chain-of-custody, and quality assurance/quality control protocols. Groundwater samples must be collected at or near the well head before the pressure tank and prior to any well head treatment. In cases where this is not possible, the water sample must be collected from a sampling point as close to the pressure tank as possible, or from a cold-water spigot located before any filters or water treatment systems.

5. Laboratory analyses for groundwater samples must be conducted by a State certified laboratory according to U.S. EPA approved methods; unless otherwise noted, all monitoring, sample preservation, and analyses must be performed in accordance with the latest edition of *Test Methods for Evaluating Solid Waste*, SW-846, United States Environmental Protection Agency, and analyzed as specified herein by the above analytical methods and reporting limits indicated. Certified laboratories can be found at the web link below:
http://www.cdph.ca.gov/certlic/labs/Documents/ELAPLablist.xls

6. In lieu of conducting individual groundwater monitoring, Dischargers may participate in a cooperative groundwater monitoring effort to help minimize costs and to develop an effective groundwater monitoring program. Qualifying cooperative groundwater monitoring and reporting programs may include, but are not limited to, regional or subregional groundwater programs developed for other purposes as long as the proposed cooperative groundwater monitoring program meets the Central Coast Water Board's general purpose of characterizing groundwater quality and ensuring the protection of drinking water sources. Proposals for cooperative groundwater monitoring efforts, including the use of other regional or subregional groundwater monitoring programs, must be approved by the Executive Officer. At a minimum, the cooperative groundwater monitoring effort must include sufficient monitoring to adequately characterize the groundwater aquifer(s) in the local area of the participating Dischargers, characterize the groundwater quality of the uppermost aquifer, and identify and evaluate groundwater used for domestic drinking water purposes. Cooperative groundwater monitoring efforts must comply with the requirements for sampling protocols and laboratory analytical methods identified in this MRP, including parameters listed in Table 3, or propose a functional equivalent that meets the same objectives and purposes as individual groundwater monitoring. The cooperative groundwater monitoring program must report results consistent with individual groundwater reporting defined in Part 2.B., or report results in a manner that is consistent with that approved by the Executive Officer in his or her approval of the cooperative groundwater monitoring proposal.

Dischargers electing to participate in a cooperative groundwater monitoring effort must convey this election to the Central Coast Water Board **by August 1, 2012**, and the individual groundwater monitoring requirements shall not apply as long as a cooperative groundwater monitoring proposal for that Discharger's area is submitted within one (1) year of adoption of this Order. If no cooperative groundwater monitoring proposal for that Discharger's area is submitted within one (1) year, then the individual groundwater monitoring provisions shall apply and the Discharger shall have one (1) year to comply with the provisions identified in Part 2.

## B. Individual Groundwater Reporting

1. **By October 1, 2013 and annually thereafter by October 1**, Tier 3 Dischargers must submit groundwater monitoring results and information, electronically, in a format specified by the Executive Officer. Dischargers must include the following information:
    a. Signed transmittal letter;
    b. Number of groundwater wells present at each farm/ranch;
    c. Identification of any groundwater wells abandoned or destroyed (including method destroyed) in compliance with the Order;
    d. Owner-assigned well identification;
    e. State identification number, if available;
    f. Well location (latitude and longitude);
    g. Water-use category (e.g., domestic drinking water, agricultural);
    h. Identification of primary irrigation well;
    i. Well construction information (e.g., total depth, screened intervals, depth to water), as available;
    j. Use for fertigation or chemigation;
    k. Presence and type of back flow prevention devices;
    l. Photo-documentation of well condition and back flow prevention device;
    m. Identification of wells sampled to comply with the Order and MRP;
    n. Laboratory data must be compatible with the Water Board's Groundwater Ambient Monitoring and Assessment (GAMA) Program, and GeoTracker electronic deliverable format (EDF).

## C. Nitrate Loading Risk Factor Determination and Total Nitrogen Reporting

1. Tier 3 Dischargers must calculate the nitrate loading risk factor for each ranch/farm included in their operations. The nitrate loading risk factor is a measure of the relative risk of loading nitrate to groundwater. Tier 3 Dischargers must determine the nitrate loading risk factor for each ranch/farm, based on the highest risk activity existing at each ranch/farm.

For example, if a Discharger uses both sprinkler and drip irrigation on the same crop, they must use the irrigation type “sprinkler” in the nitrate loading risk calculation. To calculate nitrate loading risk, Tier 3 Dischargers must use the criteria and methodology described in Table 4 of this MRP, or use the Nitrate Groundwater Pollution Hazard Index developed by University of California Division of Agriculture and Natural Resources (UCANR).

2. Tier 3 Dischargers may choose to subdivide the ranch/farm into "nitrate loading risk units," based on the variability of ranch/farm conditions for the purposes of complying with this Order. A nitrate loading risk unit is a subdivided unit of the ranch/farm with different farming conditions (irrigation system type, crop type, nitrate concentration in the irrigation water, etc.). The nitrate loading risk unit may be the total ranch, a number of blocks, or an individual block. If a Discharger chooses to subdivide the ranch/farm into individual nitrate loading risk units, the Discharger must maintain individual record keeping, and conduct monitoring and reporting for each nitrate loading risk unit.

3. Tier 3 Dischargers who choose to evaluate nitrate loading risk using the Table 4 criteria and methodology must calculate the ranch/farm or nitrate loading risk unit’s nitrate loading risk level (low, moderate, or high), as described in Table 4. Dischargers must report Nitrate Loading Risk factors and level in the electronic Annual Compliance Form.
    a. LOW - Nitrate loading risk is less than 10;
    b. MODERATE – Nitrate loading risk is between 10 and 15;
    c. HIGH – Nitrate loading risk is more than 15;

4. Tier 3 Dischargers who choose to evaluate nitrate loading risk using the Nitrate Groundwater Pollution Hazard Index must characterize the soil type for the individual farm(s), including any variability in soil type, and utilize the index tool at the Internet link below. Soil types may vary across individual fields, and this variability must be accounted for when using the Nitrate Groundwater Pollution Hazard Index. If the soil type is unknown or if the soil type is not included in the UCANR Nitrate Groundwater Pollution Hazard Index tool, Dischargers must use the Table 4 criteria and methodology described above. Dischargers must provide documentation of input to the index for crop type, soil type, irrigation type, and deep rip. A resulting Nitrate Groundwater Pollution Hazard Index number greater than or equal to 20 indicates a High Nitrate Loading Risk.

   http://ucanr.org/sites/wrc/Programs/Water_Quality/Nitrate_Groundwater_Pollution_Hazard_Index/”

5. Tier 3 Dischargers with individual farms/ranches or nitrate loading risk units that have a HIGH nitrate loading risk must report total nitrogen applied per

crop, per acre, per year to each farm/ranch or nitrate loading risk unit in the electronic Annual Compliance Form. Total nitrogen must be reported in units of nitrogen, for any product, form or concentration including, but not limited to, organic and inorganic fertilizers, slow release products, compost, compost teas, manure, extracts, nitrogen present in the soil, and nitrate in irrigation water;

a. As an alternative to reporting total nitrogen, Tier 3 Dischargers with high nitrate loading risk may propose an individual discharge groundwater monitoring and reporting program (GMRP) plan for approval by the Executive Officer. The GMRP plan must evaluate waste discharge to groundwater from each ranch/farm or nitrate loading risk unit and assess if the waste discharge is of sufficient quality that it will not cause or contribute to exceedances of any nitrate water quality standards in groundwater.

## PART 3. ANNUAL COMPLIANCE FORM

Tier 3 Dischargers must submit annual compliance information, electronically, in a format specified by the Executive Officer. The purpose of the electronic Annual Compliance Form is to provide information to the Central Coast Water Board to assist in the evaluation of threat to water quality from individual agricultural discharges of waste and measure progress towards water quality improvement and verify compliance with the Order and MRP. Time schedules are shown in Table 6.

### A. Annual Compliance Form

1. **By October 1, 2012 and updated annually thereafter by October 1**, Tier 3 Dischargers must submit an Annual Compliance Form electronically, in a format specified by the Executive Officer. The electronic Annual Compliance Form includes, but is not limited to the following minimum requirements[3]:
    a. Signed transmittal letter;
    b. Verification that any change in general operation or farm/ranch information (e.g., crop type, irrigation type, discharge type) is reported on update to Notice of Intent (NOI);
    c. Verification of compliance with monitoring requirements, including any cooperative monitoring fees;
    d. Verification of completed Farm Plan and date of last update;
    e. Information regarding type and characteristics of discharge (e.g., number of discharge points, estimated flow/volume, number of tailwater days);

[3] Items reported in the Annual Compliance Form are due by October 1, 2012 and annually thereafter, unless otherwise specified.

f. Identification of any direct agricultural discharges to a stream, lake, estuary, bay, or ocean;
g. Identification of specific farm water quality management practices completed, in progress, and planned to address water quality impacts caused by discharges of waste including irrigation management, pesticide management, nutrient management, salinity management, stormwater management, and sediment and erosion control to achieve compliance with this Order;
h. Nitrate concentration of irrigation water;
i. Identification of the application of any fertilizers, pesticides, fumigants or other chemicals through an irrigation system (e.g. fertigation or chemigation) and proof of proper backflow prevention devices;
j. Description of method and location of chemical applications relative to surface water;
k. Nitrate Loading Risk factors in Table 4 or Nitrate Groundwater Pollution Hazard Index input and Nitrate Loading Risk level;
l. Proof of approved California Department of Fish and Game (CDFG) Streambed Alteration Agreement, as required by CDFG for any work proposed within the bed, bank or channel of a lake or stream, including riparian areas, that has the potential to result in erosion and discharges of waste to waters of the State;

*Tier 3 Dischargers with farms/ranches that contain or are adjacent to a waterbody impaired for temperature, turbidity or sediment:*

m. Photo monitoring to document condition of streams, riparian, and wetland area habitat and the presence of bare soil within the riparian habitat area that is vulnerable to erosion;
n. Water Quality Buffer Plan or alternative[4];

*Tier 3 Dischargers with farms/ranches that have High Nitrate Loading Risk:*

o. Total nitrogen applied per acre to each farm/ranch or nitrate loading risk unit (in units of nitrogen, in any product, form or concentration) including, but not limited to, organic and inorganic fertilizers, slow release products, compost, compost teas, manure, extracts, nitrogen present in the soil, and nitrate in irrigation water[5];
p. Specific elements of the INMP (e.g., Proof of certification, Crop Nitrogen Uptake Values, Nitrogen Balance Ratio, Estimate of

[4] Due by October 1, 2016
[5] Due by October 1, 2014 and annually thereafter by October 1.

Nitrate Loading to Groundwater, Estimate of Reduction in Nitrate Loading to Groundwater)[6];

q. INMP Effectiveness Report[7]

## PART 4. PHOTO MONITORING AND REPORTING REQUIREMENTS

Photo monitoring and reporting requirements identified in Part 4.A. apply to Tier 3 Dischargers that have farms/ranches that contain or are adjacent to a waterbody identified on the List of Impaired Waterbodies as impaired for temperature, turbidity or sediment (see Order Table 1). Time schedules are shown in Table 6.

### A. Photo Monitoring and Reporting

1. **By October 1, 2012**, Tier 3 Dischargers that have farms/ranches that contain or are adjacent to a waterbody *impaired for temperature, turbidity or sediment* must conduct photo monitoring to do the following:

    a. Document the existing condition of perennial, intermittent or ephemeral streams (wet or dry), riparian or wetland area habitat; Photo monitoring of existing conditions must be repeated every four years and submitted with the electronic Annual Compliance Form.

2. Tier 3 Dischargers must conduct photo monitoring consistent with protocol established by the Executive Officer. Dischargers must include date of photo, photo location and point of reference in the photo. Photos must be accompanied by explanations and descriptions of the management practices demonstrated in the photos to meet the Basin Plan requirements specified in Part 7.A. and must include estimated widths of riparian areas from top of bank.

## PART 5. INDIVIDUAL SURFACE WATER DISCHARGE MONITORING AND REPORTING REQUIREMENTS

Monitoring and reporting requirements for individual surface water discharge identified in Part 5.A. and Part 5.B. apply to all Tier 3 Dischargers. Key monitoring and reporting requirements for individual surface water discharge are shown in Tables 5A and 5B. Time schedules are shown in Table 6.

### A. Individual Surface Water Discharge Monitoring

[6] Due by October 1, 2015
[7] Due by October 1, 2016

2. Tier 3 Dischargers must conduct individual surface water discharge monitoring to a) evaluate the quality of individual waste discharges, including concentration and load of waste (in kilograms per day) for appropriate parameters, b) evaluate effects of waste discharge on water quality and beneficial uses, and c) evaluate progress towards compliance with water quality improvement milestones in the Order.

Individual Sampling and Analysis Plan

3. **By March 15, 2013**, Tier 3 Dischargers must submit an individual surface water discharge Sampling and Analysis Plan and QAPP to monitor individual discharges of waste from their farm/ranch, including irrigation run-off (including tailwater discharges and discharges from tile drains, tailwater ponds and other surface water containment features unless constructed with impermeable liner), and stormwater discharges. The Sampling and Analysis Plan and QAPP must be submitted to the Executive Officer.

4. The Sampling and Analysis Plan must include the following minimum required components to monitor irrigation run-off, including tailwater discharges and discharges from tile drains, tailwater ponds and other surface water containment features, and stormwater discharges:
    a. Number and location of discharge points (identified with latitude and longitude or on a scaled map);
    b. Number and location of monitoring points;
    c. Description of typical irrigation runoff patterns;
    d. Map of discharge and monitoring points;
    e. Sample collection methods;
    f. Monitoring parameters;
    g. Monitoring schedule and frequency of monitoring events;

5. The QAPP must include appropriate methods for sampling, measurement and analysis, data collection or generation, data handling, quality control activities, and documentation.

6. The Sampling and Analysis Plan and QAPP, and any proposed revisions are subject to approval by the Executive Officer. The Executive Officer may require modifications to the Sampling and Analysis Plan or Tier 3 Dischargers may propose Sampling and Analysis Plan modifications for Executive Officer approval, when modifications are justified to accomplish the objectives of the MRP.

Individual Surface Water Discharge Monitoring Points

7. Tier 3 Dischargers must select monitoring points to characterize at least 80% of the estimated irrigation run-off discharge volume from each farm/ranch at the point in time the sample is taken[8], including tailwater discharges and discharges from tile drains. Sample must be taken when irrigation activity is causing maximal run-off. Load estimates will be generated by multiplying flow volume of discharge by concentration of contaminants. Tier 3 Dischargers must include at least one monitoring point from each farm/ranch which drains areas where chlorpyrifos or diazinon are applied, and monitoring of runoff or tailwater must be conducted within one week of chemical application. If discharge is not routinely present, Discharger may characterize typical run-off patterns in the Annual Report. See Table 4a for additional details.

8. Tier 3 Dischargers must also monitor tailwater ponds and other surface water containment features. If multiple ponds are present, sampling must cover at least 80% by volume of the containment features. See Table 4b for additional details.

<u>Individual Surface Water Discharge Monitoring Parameters, Frequency, and Schedule</u>

9. Tier 3 Dischargers must conduct monitoring for parameters, laboratory analytical methods, frequency and schedule described in Tables 4A and 4B. Dischargers may utilize in-field water testing instruments/equipment as a substitute for laboratory analytical methods if the method is approved by U.S. EPA, meets reporting limits (RL) and practical quantitation limits (PQL) specifications in the MRP, and appropriate sampling methodology and quality assurance checks can be applied to ensure that QAPP standards are met to ensure accuracy of the test.

10. **By October 1, 2013** of the adoption of the Order, Tier 3 Dischargers must initiate individual surface water discharge monitoring per the Sampling and Analysis Plan and QAPP, unless otherwise directed by the Executive Officer.

## B. Individual Surface Water Discharge Reporting

<u>Individual Surface Water Discharge Monitoring Data Submittal</u>

1. **By March 15, 2014,** October 1, 2014, and annually thereafter by October 1, Tier 3 Dischargers must submit individual surface water discharge monitoring data to the Central Coast Water Board electronically, in a format

[8] The requirement to select monitoring points to characterize at least 80% of the estimated irrigation run-off is for the purposes of collecting a sample that represents a majority of the volume of irrigation run-off discharged. The MRP does not specify the number or location of monitoring points to provide maximum flexibility for growers to determine how many sites are necessary and exact locations given site-specific conditions.

specified by the Executive Officer. The electronic data submittal must include the following minimum information:

a. Electronic laboratory data submitted;
b. Narrative description of typical irrigation runoff patterns;
c. Location of sampling sites and map(s);
d. Sampling and analytical methods used;
e. Specify the method used to obtain flow at each monitoring site during each monitoring event;
f. Photos obtained from all monitoring sites, clearly labeled with location and date;
g. Sample chain-of-custody forms do not need to be submitted but must be made available to Central Coast Water Board staff, upon request;

## PART 6. IRRIGATION AND NUTRIENT MANAGEMENT PLAN

Monitoring and reporting requirements related to the Irrigation and Nutrient Management Plan (INMP) identified in Part 6.A., 6.B., and 6.C. apply to Tier 3 Dischargers that have farms/ranches with high nitrate loading risk. Time schedules are shown in Table 6.

### A. Irrigation and Nutrient Management Plan Monitoring

1. Tier 3 Dischargers with High Nitrate Loading Risk must develop and initiate implementation of an Irrigation and Nutrient Management Plan (INMP) certified by a Professional Soil Scientist, Professional Agronomist, or Crop Advisor certified by the American Society of Agronomy, or similarly qualified professional.

2. The purpose of the INMP is to budget and manage the nutrients applied to each farm/ranch or nitrate loading risk unit considering all sources of nutrients, crop requirements, soil types, climate, and local conditions in order to minimize nitrate loading to surface water and groundwater in compliance with this Order.

3. The professional certification of the INMP must indicate that the relevant expert has reviewed all necessary documentation and testing results, evaluated nutrient balance calculations (total nitrogen applied relative to typical crop nitrogen uptake and nitrogen removed at harvest), evaluated estimated nitrate loading to groundwater, evaluated progress towards nutrient management targets, and conducted field verification to ensure accuracy of reporting.

4. Tier 3 Dischargers with High Nitrate Loading Risk must include the following elements in the INMP. The INMP is not submitted to the Central Coast Water Board, with the exception of key elements identified in Part 6B:
    a. Proof of INMP certification;
    b. Map locating each farm/ranch or nitrate loading risk unit;
    c. Identification of nitrate loading risk factors or input to the Groundwater Pollution Nitrate Hazard Index and overall Nitrate Loading Risk level calculation for each ranch/farm or nitrate loading risk unit;
    d. Identification of crop nitrogen uptake values for use in nutrient balance calculations;
    e. Record keeping of the total nitrogen applied per crop, per acre to each farm/ranch or nitrate loading risk unit (in units of nitrogen, in any product, form or concentration) including, but not limited to, organic and inorganic fertilizers, slow release products, compost, compost teas, manure, extracts, nitrogen present in the soil, and nitrate in irrigation water;
    f. Dischargers must take a nitrogen soil sample (e.g. laboratory analysis or nitrate quick test) or use an alternative method to evaluate nitrogen content in soil, prior to planting or seeding the field or prior to the time of pre-sidedressing. The amount of nitrogen remaining in the soil must be accounted for as a source of nitrogen when budgeting, and the soil sample or alternative method results must be maintained in the INMP.
    g. Annual balance of nitrogen applied compared to typical crop nitrogen uptake for each ranch/farm or nitrate loading risk unit (Nitrogen Balance ratio);
    h. Annual estimation of nitrogen loading to groundwater and surface water, including subsurface drainage (e.g., tile drains), from each ranch/farm or nitrate loading risk unit;
    i. Identification of irrigation and nutrient management practices in progress (identify start date), completed (identify completion date), and planned (identify anticipated start date) to reduce nitrate loading to groundwater to achieve compliance with this Order.
    j. Annual evaluation of reductions in nitrate loading to groundwater resulting from decreased fertilizer use and/or implementation of irrigation and nutrient management practices;
    k. Description of methods Discharger will use to verify overall effectiveness of the INMP.

5. Tier 3 Dischargers must evaluate the effectiveness of the INMP. Irrigation and Nutrient Management Plan effectiveness monitoring must be conducted or supervised by a registered professional engineer, professional geologist, Certified Crop Advisor, or similarly qualified professional. Monitoring must

evaluate measured progress towards protecting, preserving, and restoring groundwater quality in the upper-most aquifer (or perched aquifer, whichever is first encountered), resulting from reductions in loading based on reduced fertilizer use and improved irrigation and nutrient management practices. Monitoring methods used may include, but are not limited to lysimeter monitoring, shallow groundwater or soil monitoring, or groundwater well monitoring. If the physical monitoring by itself cannot demonstrate progress towards compliance with the Order, the Discharger may need to supplement physical monitoring with contaminant transport and flow modeling.

**B. Irrigation and Nutrient Management Plan Reporting**

1. **By October 1, 2015 and annually thereafter,** Tier 3 Dischargers with High Nitrate Loading Risk must report the following INMP elements in the electronic Annual Compliance Form:
    a. Identification of crop nitrogen uptake values for use in nutrient balance calculations;
    b. Annual balance of nitrogen applied per crop compared to typical crop nitrogen uptake for each ranch/farm or nitrate loading risk unit (Nitrogen Balance ratio);
    c. Annual estimation of nitrogen loading to groundwater and surface water, including subsurface drainage (e.g., tile drains), from each ranch/farm or nitrate loading risk unit;
    d. Annual evaluation of reductions in nitrate loading to groundwater resulting from decreased fertilizer use and/or implementation of nutrient management practices;

2. **By October 1, 2016**, Tier 3 Dischargers that have farms/ranches with high nitrate loading risk to groundwater must submit an INMP Effectiveness Report to evaluate measured progress towards protecting, preserving, and restoring groundwater quality in the upper-most aquifer, including reductions in loading based on the implementation of irrigation and nutrient management practices. The INMP Effectiveness Report must be prepared by a state registered professional engineer, professional geologist, Certified Crop Advisor, or similarly qualified professional. Dischargers in the same groundwater basin or subbasin may choose to comply with this requirement as a group by submitting a single report that evaluates the overall effectiveness of the broad scale implementation of irrigation and nutrient management practices identified in individual INMPs to protect groundwater and achieve water quality standards for nitrate. Group efforts must use data from each farm/ranch (e.g., individual groundwater wells, lysimeters, and/or soil samples) to adequately represent groundwater quality and progress towards groundwater protection for all farms/ranches in the group. The

INMP Effectiveness Report must include the following elements and submitted with the electronic Annual Compliance Form:

a. A description of the methodology used to evaluate and verify effectiveness of the INMP (e.g., lysimeter monitoring, shallow groundwater or soil monitoring, groundwater well monitoring, contaminant transport and flow modeling);
b. An evaluation of how discharges of waste and any associated reductions in nitrate loading will decrease the concentration of nitrate in the upper-most aquifer, commensurate with water quality standards, within a reasonable and foreseeable time frame, and compared to milestones identified in the Order;
c. Based on estimated nitrate loading reductions to the groundwater basin or subbasin, the estimated number of years to achieve water quality standards in receiving water;

## PART 7. WATER QUALITY BUFFER PLAN

Monitoring and reporting requirements related to the Water Quality Buffer Plan identified in Part 7.A. and Part 7.B. apply to Tier 3 Dischargers that have farms/ranches *that contain or are adjacent to waterbody identified on the List of Impaired Waterbodies as impaired for temperature, turbidity, or sediment).* Time schedules are shown in Table 6.

A. **Water Quality Buffer Plan***;*

1. **By October 1, 2016**, Tier 3 Dischargers adjacent to or containing a waterbody identified on the List of Impaired Waterbodies as impaired for temperature, turbidity or sediment must submit a Water Quality Buffer Plan to the Executive Officer that protects the listed waterbody and its associated perennial and intermittent tributaries. The purpose of the Water Quality Buffer Plan is to prevent waste discharge, comply with water quality standards (e.g., temperature, turbidity, sediment), and protect beneficial uses in compliance with this Order and the following Basin Plan requirement:

   Basin Plan (Chapter 5, p. V-13, Section V.G.4 – Erosion and Sedimentation, *"A filter strip of appropriate width, and consisting of undisturbed soil and riparian vegetation or its equivalent, must be maintained, wherever possible, between significant land disturbance activities and watercourses, lakes, bays, estuaries, marshes, and other water bodies. For construction activities, minimum width of the filter strip must be thirty feet, wherever possible…."*

2. The Water Quality Buffer Plan must include the following or the functional equivalent, to address discharges of waste and associated water quality impairments:

    a. A minimum 30 foot buffer (as measured horizontally from the top of bank on either side of the waterway, or from the high water mark of a lake and mean high tide of an estuary);
    b. Any necessary increases in buffer width to adequately prevent the discharge of waste that may cause or contribute to any excursion above or outside the acceptable range for any Regional, State, or Federal numeric or narrative water quality standard (e.g., temperature, turbidity);
    c. Any buffer less than 30 feet must provide equivalent water quality protection and be justified based on an analysis of site-specific conditions and be approved by the Executive Officer;
    d. Identification of any alternatives implemented to comply with this requirement, that are functionally equivalent to described buffer;
    e. Schedule for implementation;
    f. Maintenance provisions to ensure water quality protection;
    g. Annual photo monitoring to be included in the Annual Compliance Form;

## PART 8. GENERAL MONITORING AND REPORTING REQUIREMENTS

### A. Submittal of Technical Reports

1. Dischargers must submit reports in a format specified by the Executive Officer (reports will be submitted electronically, unless otherwise specified by the Executive Officer). A transmittal letter must accompany each report, containing the following penalty of perjury statement signed by the Discharger or the Discharger's authorized agent:

    *"In compliance with Water Code §13267, I certify under penalty of perjury that this document and all attachments were prepared by me, or under my direction or supervision following a system designed to assure that qualified personnel properly gather and evaluate the information submitted. To the best of my knowledge and belief, this document and all attachments are true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment".*

2. If the Discharger asserts that all or a portion of a report submitted pursuant to this Order is subject to an exemption from public disclosure (e.g. trade secrets or secret processes), the Discharger must provide an explanation of how those portions of the reports are exempt from public disclosure. The

Discharger must clearly indicate on the cover of the report (typically an electronic submittal) that the Discharger asserts that all or a portion of the report is exempt from public disclosure, submit a complete report with those portions that are asserted to be exempt in redacted form, submit separately (in a separate electronic file) unredacted pages (to be maintained separately by staff). The Central Coast Water Board staff will determine whether any such report or portion of a report qualifies for an exemption from public disclosure. If the Central Coast Water Board staff disagrees with the asserted exemption from public disclosure, the Central Coast Water Board staff will notify the Discharger prior to making such report or portions of such report available for public inspection. In the interest of public health and safety, the Central Coast Water Board will not make available for public inspection, the precise location of any groundwater well monitored in compliance with this Order. Consistent with the reporting of groundwater wells on GeoTracker, groundwater well location and data will only be referenced within a one-half mile radius of the actual well location.

## B. Enforcement and Violations

**1.** Monitoring reports are required pursuant to Section 13267 of the California Water Code. Pursuant to Section 13268 of the Water Code, a violation of a request made pursuant to Section 13267 may subject you to civil liability assessment of up to $1000 per day.

## C. Executive Officer Authority

1. The Executive Officer may revise this MRP as necessary, and Dischargers must comply with the MRP as revised by the Executive Officer. Specifically, the Executive Officer may increase monitoring and reporting requirements where monitoring results, pesticide use patterns, or other indicators suggest that the increase is warranted due to an increased threat to water quality. Additionally, the Executive Officer can reduce monitoring and reporting requirements, including adjusting time schedules, where growers are coordinating efforts at watershed or subwatershed scales or where regional treatment facilities are implemented, or other indicators suggest that the reduction is warranted due to a reduced threat to water quality.

Roger W. Briggs, Executive Officer

***June 5, 2012***

Date

**Table 1. Major Waterbodies in Agricultural Areas[1]**

| Hydrologic SubArea | Waterbody Name | Hydrologic SubArea | Waterbody Name |
|---|---|---|---|
| 30510 | Pajaro River | 30920 | Quail Creek |
| 30510 | Salsipuedes Creek | 30920 | Salinas Reclamation Canal |
| 30510 | Watsonville Slough | 31022 | Chorro Creek |
| 30510 | Watsonville Creek[2] | 31023 | Los Osos Creek |
| 30510 | Beach Road Ditch[2] | 31023 | Warden Creek |
| 30530 | Carnadero Creek | 31024 | San Luis Obispo Creek |
| 30530 | Furlong Creek[2] | 31024 | Prefumo Creek |
| 30530 | Llagas Creek | 31031 | Arroyo Grande Creek |
| 30530 | Miller's Canal | 31031 | Los Berros Creek |
| 30530 | San Juan Creek | 31210 | Bradley Canyon Creek |
| 30530 | Tesquisquita Slough | 31210 | Bradley Channel |
| 30600 | Moro Cojo Slough | 31210 | Green Valley Creek |
| 30910 | Alisal Slough | 31210 | Main Street Canal |
| 30910 | Blanco Drain | 31210 | Orcutt Solomon Creek |
| 30910 | Old Salinas River | 31210 | Oso Flaco Creek |
| 30910 | Salinas River (below Gonzales Rd.) | 31210 | Little Oso Flaco Creek |
| 30920 | Salinas River (above Gonzales Rd. and below Nacimiento R.) | 31210 | Santa Maria River |
| 30910 | Santa Rita Creek[2] | 31310 | San Antonio Creek[2] |
| 30910 | Tembladero Slough | 31410 | Santa Ynez River |
| 30920 | Alisal Creek | 31531 | Bell Creek |
| 30920 | Chualar Creek | 31531 | Glenn Annie Creek |
| 30920 | Espinosa Slough | 31531 | Los Carneros Creek[2] |
| 30920 | Gabilan Creek | 31534 | Arroyo Paredon Creek |
| 30920 | Natividad Creek | 31534 | Franklin Creek |

[1] At a minimum, sites must be included for these waterbodies in agricultural areas, unless otherwise approved by the Executive Officer. Sites may be proposed for addition or modification to better assess the impacts of waste discharges from irrigated lands to surface water. Dischargers choosing to comply with surface receiving water quality monitoring, individually (not part of a cooperative monitoring program) must only monitor sites for waterbodies receiving the discharge.

[2] These creeks are included because they are newly listed waterbodies on the 2010 303(d) list of Impaired Waters that are associated with areas of agricultural discharge.

**Table 2. Surface Receiving Water Quality Monitoring Parameters**

| Parameters and Tests | RL[3] | Monitoring Frequency[1] |
|---|---|---|
| **Photo Monitoring** | | |
| Upstream and downstream photographs at monitoring location | | With every monitoring event |
| ***WATER COLUMN SAMPLING*** | | |
| **Physical Parameters and General Chemistry** | | |
| Flow (field measure) (CFS) following SWAMP field SOP[9] | .25 | Monthly, including 2 stormwater events |
| pH (field measure) | 0.1 | ” |
| Electrical Conductivity (field measure) (uS/cm) | 2.5 | ” |
| Dissolved Oxygen (field measure) (mg/L) | 0.1 | ” |
| Temperature (field measure) ($^{o}$C) | 0.1 | ” |
| Turbidity (NTU) | 0.5 | ” |
| Total Dissolved Solids (mg/L) | 10 | ” |
| Total Suspended Solids (mg/L) | 0.5 | ” |
| **Nutrients** | | |
| Total Nitrogen (mg/L) | 0.5 | Monthly, including 2 stormwater events |
| Nitrate + Nitrite (as N) (mg/L) | 0.1 | ” |
| Total Ammonia (mg/L) | 0.1 | ” |
| Unionized Ammonia (calculated value, mg/L)) | | ” |
| Total Phosphorus (as P) (mg/L) | - | ” |
| Soluble Orthophosphate (mg/L) | 0.01 | ” |
| Water column chlorophyll a (mg/L) | 0.002 | “ |
| Algae cover, Floating Mats, % coverage | - | “ |
| Algae cover, Attached, % coverage | - | “ |
| **Water Column Toxicity Test** | | |
| Algae -*Selenastrum capricornutum, 4 day* | - | Twice in dry season, twice in wet season |
| Water Flea – *Ceriodaphnia (7-day chronic)* | - | ” |
| Fathead Minnow - *Pimephales promelas (7-day chronic)* | - | ” |
| Toxicity Identification Evaluation (TIE) | - | As directed by Executive Officer |
| **Pesticides[2] (ug/L)** | | |
| **Carbamates** | | |
| Aldicarb | 0.05 | 4 times, concurrent with water toxicity monitoring, in second year of Order term |

| Parameters and Tests | RL[3] | Monitoring Frequency[1] |
|---|---|---|
| Carbaryl | 0.05 | ” |
| Carbofuran | 0.05 | ” |
| Methiocarb | 0.05 | ” |
| Methomyl | 0.05 | ” |
| Oxamyl | 0.05 | ” |
| **Organophosphate Pesticides** | | |
| Azinphos-methyl | 0.02 | ” |
| Chlorpyrifos | 0.005 | ” |
| Diazinon | 0.005 | ” |
| Dichlorvos | 0.01 | ” |
| Dimethoate | 0.01 | ” |
| Dimeton-s | 0.005 | ” |
| Disulfoton (Disyton) | 0.005 | ” |
| Malathion | 0.005 | ” |
| Methamidophos | 0.02 | ” |
| Methidathion | 0.02 | “ |
| Parathion-methyl | 0.02 | “ |
| Phorate | 0.01 | “ |
| Phosmet | 0.02 | “ |
| **Herbicides** | | |
| Atrazine | 0.05 | “ |
| Cyanazine | 0.20 | “ |
| Diuron | 0.05 | “ |
| Glyphosate | 2.0 | “ |
| Linuron | 0.1 | “ |
| Paraquat dichloride | 4 | “ |
| Simazine | 0.05 | “ |
| Trifluralin | 0.05 | “ |
| **Metals (ug/L)** | | |
| Arsenic (total) [5,7] | 0.3 | 4 times, concurrent with water toxicity monitoring, in second year of Order term |
| Boron (total) [6,7] | 10 | “ |
| Cadmium (total & dissolved) [4.5,7] | 0.01 | “ |
| Copper (total and dissolved) [4,7] | 0.01 | “ |
| Lead (total and dissolved) [4,7] | 0.01 | “ |
| Nickel (total and dissolved) [4,7] | 0.02 | “ |
| Molybdenum (total) [7] | 1 | “ |
| Selenium (total)[7] | 0.30 | “ |
| Zinc (total and dissolved) [4.5,7] | 0.10 | “ |
| **Other (ug/L)** | | |
| Total Phenolic Compounds[8] | 10 | 4 times, concurrent with water toxicity monitoring, in second year of Order term |
| Hardness (mg/L as CaCO3) | 1 | “ |
| Total Organic Carbon (ug/L) | 0.6 | “ |

| Parameters and Tests | RL[3] | Monitoring Frequency[1] |
|---|---|---|
| ***SEDIMENT SAMPLING*** | | |
| Sediment Toxicity - Hyalella azteca 10-day | | Annually |
| Benthic Invertebrate and associated Physical Habitat Assessment | SWAMP SOP | Once during the second year of Order concurrent with sediment toxicity sampling |
| **Pyrethroid Pesticides in Sediment (ug/kg)** | | |
| Gamma-cyhalothrin | 2 | Once during second year of Order, concurrent with sediment toxicity sampling |
| Lambda-cyhalothrin | 2 | |
| Bifenthrin | 2 | " |
| Beta-cyfluthrin | 2 | " |
| Cyfluthrin | 2 | " |
| Esfenvalerate | 2 | " |
| Permethrin | 2 | " |
| Cypermethrin | 2 | " |
| Danitol | 2 | " |
| Fenvalerate | 2 | " |
| Fluvalinate | 2 | " |
| **Organochlorine Pesticides in Sediment** | | |
| DCPA | 10 | " |
| Dicofol | 2 | " |
| **Other Monitoring in Sediment** | | |
| Chlorpyrifos (ug/kg) | 2 | " |
| Total Organic Carbon | 0.01% | " |
| Sulfide | | " |
| Sediment Grain Size Analysis | 1% | " |

[1]Monitoring is ongoing through all five years of the Order, unless otherwise specified. Monitoring frequency may be used as a guide for developing alternative Sampling and Analysis Plan.
[2]Pesticide list may be modified based on specific pesticide use in Central Coast Region. Analytes on this list must be reported, at a minimum.
[3]Reporting Limit, taken from SWAMP where applicable.
[4] Holmgren, Meyer, Cheney and Daniels. 1993. Cadmium, Lead, Zinc, Copper and Nickel in Agricultural Soils of the United States. J. of Environ. Quality 22:335-348.
[5]Sax and Lewis, ed. 1987. Hawley's Condensed Chemical Dictionary. 11th ed. New York: Van Nostrand Reinhold Co., 1987. Zinc arsenate is an insecticide.
[6]Http://www.coastalagro.com/products/labels/9%25BORON.pdf; Boron is applied directly or as a component of fertilizers as a plant nutrient.
[7]Madramootoo, Johnston, Willardson, eds. 1997. Management of Agricultural Drainage Water Quality. International Commission on Irrigation and Drainage. U.N. FAO. SBN 92-6-104058.3.
[8]http://cat.inist.fr/?aModele=afficheN&cpsidt=14074525; Phenols are breakdown products of herbicides and pesticides. Phenols can be directly toxic and cause endocrine disruption.
[9]See SWAMP field measures SOP, p. 17
mg/L – milligrams per liter; ug/L – micrograms per liter; ug/kg – micrograms per kilogram;
NTU – Nephelometric Turbidity Units; CFS – cubic feet per second;

**Table 3. Groundwater Monitoring Parameters**

| Parameter | RL | Analytical Method[4] | Units |
|---|---|---|---|
| Depth to Groundwater[1] | - | Field Measurement | feet/bgs |
| pH | 0.1 | Field or Laboratory Measurement<br>EPA General Methods | pH Units |
| Specific Conductance | 2.5 | | µS/cm |
| Total Dissolved Solids | 10 | | mg/L |
| Total Alkalinity as $CaCO_3$ | 1 | EPA Method 310.1 or 310.2 | |
| Calcium | 0.05 | General Cations[2]<br>EPA 200.7, 200.8, 200.9 | |
| Magnesium | 0.02 | | |
| Sodium | 0.1 | | |
| Potassium | 0.1 | | |
| Sulfate ($SO_4$) | 1.0 | General Anions EPA Method 300 or EPA Method 353.2 | |
| Chloride | 0.1 | | |
| Nitrate + Nitrite (as N)[3]<br>*or*<br>Nitrate as $NO_3$ | 0.1 | | |

[1]Necessary to identify relevant water bearing zone; Required when well construction allows for groundwater depth measurement. [2]General chemistry parameters (major cations and anions) represent geochemistry of water bearing zone and assist in evaluating quality assurance/quality control of groundwater monitoring and laboratory analysis.
[3]The MRP allows analysis of "nitrate plus nitrite" to represent nitrate concentrations. The "nitrate plus nitrite" analysis allows for extended laboratory holding times and relieves the Discharger of meeting the short holding time required for nitrate. Dischargers may also analyze for Nitrate as $NO_3$.
[4]Dischargers may use alternative analytical methods approved by EPA.
bgs – below ground surface; RL – Reporting Limit; µS/cm – micro siemens per centimeter

**Table 4. Nitrate Loading Risk Factor Criteria and Risk Level Calculation**

**A. Crop Type Nitrate Hazard Index Rating**

1 - Bean, Grapes, Olive.

2 - Apple, Avocado, Barley, Blackberry, Blueberry, Carrot, Chicory, Citrus, Lemon Oat, Orange, Peach, Pear, Pistachio, Raspberry, Walnut, Wheat.

3 - Artichoke, Bean, Brussel Sprout, Corn, Cucumber, Daikon, Peas, Radish, Squash, Summer, Tomato, Turnip, Squash, Rutabaga, Pumpkin, Potato.

4 – Beet, Broccoli, Cabbage, Cauliflower, Celery, Chinese Cabbage (Napa),Collard, Endive, Kale, Leek, Lettuce, Mustard, Onion, Parsley, Pepper, Spinach, Strawberry.

(Based on UC Riverside Nitrate Hazard Index)

**B. Irrigation System Type Rating**

1 - Micro-irrigation year round (drip and micro-sprinklers) and no pre-irrigation;

2 - Sprinklers used for pre-irrigation only and then micro-irrigation;

3 - Sprinklers used for germination or at any time during growing season;

4 - Surface irrigation systems (furrow or flood) at any, and/or in combination with any other irrigation system type;

(Based on UC Riverside Nitrate Hazard Index, Adapted for the Central Coast Region)

**C. Irrigation Water Nitrate Concentration Rating**

1 – Nitrate concentration 0 to 45 mg/liter Nitrate NO3
2 - Nitrate concentration 46 to 60 mg/liter Nitrate NO3
3 - Nitrate concentration 61to 100 mg/liter Nitrate NO3
4 - Nitrate concentration > 100 mg/l Nitrate NO3

**D. Nitrate Loading Risk Level Calculation = A x B x C**

LOW - Nitrate loading risk is less than 10;
MODERATE – Nitrate loading risk is between 10 and 15;
HIGH – Nitrate loading risk is more than 15;

*Note: Dischargers must determine the nitrate loading risk factor for each ranch/farm, based on the criteria associated with the highest risk activity existing at each ranch/farm. For example, the ranch/farm is assigned the highest risk factor, based on the single highest risk crop in the rotation, on one block under furrow irrigation, or on one well with high nitrate concentration. As an alternative to the nitrate loading risk level calculation described in Table 4, Dischargers may use the Groundwater Pollution Nitrate Hazard Index developed by UCANR, where a resulting Nitrate Hazard Index score equal or greater or equal to 20 indicates a HIGH nitrate loading risk to groundwater.*

**Table 5A. Individual Discharge Monitoring for Tailwater, Tile drain, and Stormwater Discharges**

| Parameter | Analytical Method[1] | Maximum PQL | Units | Min Monitoring Frequency |
|---|---|---|---|---|
| Discharge Flow or Volume | Field Measure | --- | CFS | (a) (d) |
| Approximate Duration of Flow | Calculation | --- | hours/month | |
| Temperature (water) | Field Measure | 0.1 | $^{o}$ Celsius | |
| pH | Field Measure | 0.1 | pH units | |
| Electrical Conductivity | Field Measure | 100 | µS/cm | |
| Turbidity | SM 2130B, EPA 180.1 | 1 | NTUs | |
| Nitrate + Nitrite (as N) | EPA 300.1, EPA 353.2 | 0.1 | mg/L | |
| Ammonia | SM 4500 NH3, EPA 350.3 | 0.1 | mg/L | |
| Chlorpyrifos[2] | EPA 8141A, EPA 614 | 0.02 | ug/L | (b) (c) (d) |
| Diazinon[2] | | | | |
| Ceriodaphnia Toxicity (96-hr acute) | EPA-821-R-02-012 | NA | % Survival | |
| Hyalella Toxicity in Water (10-day) | EPA-821-R-02-013 | NA | % Survival | |

[1] In-field water testing instruments/equipment as a substitute for laboratory analysis if the method is approved by EPA, meets RL/PQL specifications in the MRP, and appropriate sampling methodology and quality assurance checks can be applied to ensure that QAPP standards are met to ensure accuracy of the test.
[2] If chlorpyrifos or diazinon is used at the farm/ranch, otherwise does not apply. The Executive Officer may require monitoring of other pesticides based on results of downstream receiving water monitoring.

(a) Two times per year during primary irrigation season for farms/ranches less than or equal to 500 acres, and four times per year during primary irrigation season for farms/ranches greater than 500 acres. Executive Officer may reduce sampling frequency based on water quality improvements.
(b) Once per year during primary irrigation season for farms/ranches less than or equal to 500 acres, and two times per year during primary irrigation season for farms/ranches greater than 500 acres.
(c) Sample must be collected within one week of chemical application, if chemical is applied on farm/ranch;
(d) Once per year during wet season (October – March) for farms/ranches less than or equal to 500 acres, and two times per year during wet season for farms/ranches greater than 500 acres, within 18 hours of major storm events;
CFS – Cubic feet per second; NTU – Nephelometric turbidity unit; PQL – Practical Quantitation Limit;
NA – Not applicable

**Table 5B. Individual Discharge Monitoring for Tailwater Ponds and other Surface Containment Features**

| Parameter | Analytical Method[1] | Maximum PQL | Units | Minimum Monitoring Frequency |
|---|---|---|---|---|
| Volume of Pond | Field Measure | 1 | Gallons | (a) (d) |
| Nitrate + Nitrite (as N) | EPA 300.1, EPA 353.2 | 50 | mg/L | |

[1] In-field water testing instruments/equipment as a substitute for laboratory analysis if the method is approved by EPA, meets RL/PQL specifications in the MRP, and appropriate sampling methodology and quality assurance checks can be applied to ensure that QAPP standards are met to ensure accuracy of the test.
(a) Four times per year during primary irrigation season; Executive Officer may reduce monitoring frequency based on water quality improvements.
(d) Two times per year during wet season (October – March, within 18 hours of major storm events)

**Table 6. Tier 3 - Time Schedule for Key Monitoring and Reporting Requirements**

| REQUIREMENT | TIME SCHEDULE[1] |
|---|---|
| Submit Quality Assurance Project Plan and Sampling And Analysis Plan for Surface Receiving Water Quality Monitoring (individually or through cooperative monitoring program) | Within three months |
| Initiate surface receiving water quality monitoring (individually or through cooperative monitoring program) | Within six months |
| Submit surface receiving water quality monitoring data (individually or through cooperative monitoring program) | Within nine months, quarterly thereafter (January 1, April 1, July 1, and October 1) |
| Submit surface receiving water quality Annual Monitoring Report (individually or through cooperative monitoring program) | Within one year, annually thereafter by January 1 |
| Initiate monitoring of groundwater wells | Within one year |
| Submit individual surface water discharge Sampling and Analysis Plan | March 15, 2013 |
| Initiate individual surface water discharge monitoring | October 1, 2013 |
| Submit individual surface water discharge monitoring data | March 15, 2014, October 1, 2014 and annually thereafter by October 1 |
| Submit electronic Annual Compliance Form | October 1, 2012, and updated annually thereafter by October 1 |
| Submit groundwater monitoring results | October 1, 2013 |

| | |
|---|---|
| ***Tier 3 Dischargers with farms/ranches that contain or are adjacent to a waterbody impaired for temperature, turbidity or sediment:*** | |
| Conduct photo monitoring of riparian or wetland area habitat | October 1, 2012, and every four years thereafter by October 1 |
| Submit Water Quality Buffer Plan or alternative | October 1, 2016 |
| ***Tier 3 Dischargers with farms/ranches that have High Nitrate Loading Risk:*** | |
| Report total nitrogen applied per acre to each farm/ranch or nitrate loading risk unit, in electronic Annual Compliance Form | October 1, 2014, and annually thereafter by October 1. |
| Determine Crop Nitrogen Uptake | October 1, 2013 |
| | |
| Submit INMP elements in electronic Annual Compliance Form | October 1, 2015, and annually thereafter by October 1 |
| Submit indication of progress towards Nitrogen Balance Ratio milestone equal to one (1) for crops in annual rotation (e.g. cool season vegetables) or alternative, | October 1, 2015 |
| Submit indication of progress towards Nitrogen Balance Ratio milestone equal to 1.2 for annual crops occupying the ground for the entire year (e.g. strawberries or raspberries) or alternative | |
| Submit INMP Effectiveness Report | October 1, 2016 |

[1] Dates are relative to adoption of this Order, unless otherwise specified.