STATE OF CALIFORNIA
REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION

STAFF REPORT FOR REGULAR MEETING OF MARCH 17- 18, 2016
Prepared on February 23, 2016

ITEM NUMBER: **19**

SUBJECT: **Irrigated Lands Regulatory Program – Groundwater Monitoring Data Summary and Recommended Monitoring and Reporting Program Update**

STAFF CONTACT: Angela Schroeter 805/542-4644, Angela.Schroeter@waterboards.ca.gov
Corey Walsh 805/542-4781, Corey.Walsh@waterboards.ca.gov

KEY INFORMATION:

Location:	Region-Wide
Type of Discharge:	Irrigated Lands Runoff / Leaching to Groundwater
Existing Orders:	Order No. RB3-2012-0011 and WQ 2013-0101

THIS ACTION: **Informational**

INTRODUCTION

This is an informational item to update the Central Coast Water Board regarding groundwater monitoring results submitted in compliance with the Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands (Agricultural Order R3-2012-0011) and associated Monitoring and Reporting Programs (MRPs), as part of the Irrigated Lands Regulatory Program (ILRP). The Agricultural Order and MRPs regulate both landowners and operators (collectively identified as Dischargers) of irrigated lands on or from which there are discharges of waste that could affect the quality of any surface water or groundwater. Since March 2012, Dischargers have submitted results for approximately 4000 groundwater wells in the Central Coast Region, in compliance with the Agricultural Order.

The results of the required groundwater monitoring support findings from previous groundwater data collection efforts and continue to document severe nitrate impacts to groundwater basins in agricultural areas, especially impacts to private domestic drinking water wells[1]. The data alerts us to the continued threats to public health resulting from agricultural discharges, as well as the significant increase in costs for nitrate treatment, certified operators, and regulatory oversight by the Water Board (Division of Drinking Water and Regional Water Boards) and local county environmental health. The groundwater results compel the Water Board to address the nitrate loading from agricultural discharges, and also underscore the importance of requiring and collecting groundwater monitoring data as part of the Agricultural Order. In addition, the results also highlight the need to routinely test private domestic drinking water wells beyond the

[1] The data presented here are exclusively from the ILRP and continue to document severe nitrate impairment in groundwater consistent with previous reports. At the July 31 – August 1, 2014 Central Coast Water Board Meeting, staff presented a comprehensive summary of historical groundwater nitrate data from multiple datasets as part of the Groundwater Assessment and Protection (GAP) Program. The GAP report is available at:
http://waterboards.ca.gov/centralcoast/board_info/agendas/2014/july/item11/item11_stfrpt.pdf

Agricultural Order to ensure public health and properly notify well users of unsafe drinking water, in this case for nitrate, but for other pollutants as appropriate in other scenarios. For example, local county environmental health agencies generally require only initial testing of private domestic drinking water wells for bacteria at the time of well installation. Testing for a broader suite of analytes (i.e. adding nitrate) and more frequent testing of these private domestic wells (i.e. at the time of well installation, as well as during septic system maintenance and property transfer) would better ensure individuals and communities are informed of their drinking water quality.

This staff report provides a summary of program accomplishments, an overview of the individual and cooperative groundwater monitoring requirements, information regarding grower compliance with the Agricultural Order and MRPs, and discussion of the groundwater monitoring results. Additionally, this staff report also discusses considerations for staff recommendations to the Executive Officer regarding updates to the groundwater monitoring requirements in the MRPs associated with the Agricultural Order.

SUMMARY OF ACCOMPLISHMENTS 2012 - 2015

- Adopted and implemented groundwater monitoring and reporting requirements for irrigated agriculture for the first time in California;
- Approved two cooperative groundwater monitoring programs: Central Coast Groundwater Coalition (CCGC) and Santa Rosa Creek Valley Cooperative Groundwater Monitoring Program;
- Received water quality data for approximately 4000 groundwater wells, all electronically uploaded to GeoTracker by certified laboratories; Data includes approximately 6800 nitrate results and 95,000 results for all parameters;
- Approved groundwater characterization reports for northern and southern counties from CCGC, documenting completion of cooperative groundwater monitoring program workplan requirements and summarizing nitrate data;
- Identified approximately 440 domestic drinking water wells that exceeded nitrate drinking water standard and sent more than 500 drinking water notification letters to require notification to well users of unsafe drinking water and associated public health risks;
- Required replacement water for community of San Lucas to address nitrate pollution of drinking water well;
- Made data available to the public, agricultural community, researchers, and other federal, state, and local water agencies, using GeoTracker;
- Improved coordination with staff from the Division of Drinking Water and county environmental health offices;

OVERVIEW OF GROUNDWATER MONITORING AND REPORTING REQUIREMENTS

The Agricultural Order and MRPs require Dischargers to conduct groundwater monitoring of agricultural and domestic drinking water wells to achieve the following objectives:

1) Characterize groundwater quality in agricultural areas;
2) Identify and prioritize areas and individual farms that are at increased risk for waste discharge, pollutant loading, and exceedance of drinking water standards;
3) Identify priority areas for nutrient management;
4) Inform domestic drinking water well users who may be affected by unsafe drinking water quality.

To comply with the Agricultural Order and MRPs, Dischargers may choose from the following options described below:

1) Submit existing groundwater data that meets specific conditions;
2) Conduct individual groundwater monitoring and reporting:
3) Join an approved cooperative groundwater monitoring program;

Individual Groundwater Monitoring and Reporting Requirements –
Dischargers who choose to conduct individual groundwater monitoring must sample the primary irrigation well and all domestic drinking water wells on their property enrolled in the Agricultural Order. Farms/Ranches that are Tier 1 or Tier 2 must sample these wells twice in the first year of the Agricultural Order, or upon enrollment (spring and fall); Tier 3 Farms/Ranches must also conduct annual sampling. Analyses must be conducted by a State-certified laboratory according to U.S. EPA-approved methods for nitrate, general minerals, and basic field parameters. Data must be submitted electronically to the Water Board's GeoTracker data management system.

Cooperative Groundwater Monitoring and Reporting Requirements –
In lieu of conducting individual groundwater monitoring, Dischargers may participate in a cooperative groundwater monitoring effort to help minimize costs and develop an effective groundwater monitoring program. Qualifying cooperative groundwater monitoring and reporting programs must be approved by the Executive Officer and may include, but are not limited to, regional or subregional groundwater programs. In 2013, the Executive Officer approved two cooperative groundwater monitoring programs: Central Coast Groundwater Coalition (CCGC) and the Santa Rosa Creek Cooperative Groundwater Monitoring Program. The CCGC is available to Dischargers in Monterey, Santa Clara, Santa Cruz, San Benito, San Luis Obispo, Santa Barbara, and Ventura counties. The Santa Rosa Creek Cooperative Groundwater Monitoring Program is available to Dischargers in the Santa Rosa Creek Watershed (Cambria, CA) and relies primarily on recent existing water quality data that documents high quality groundwater for a relatively small groundwater basin. Requirements for analyses and electronic data submittal to GeoTracker are similar to individual requirements, except with generally less frequency (one time sample only). The CCGC workplan also requires that domestic drinking water wells within 80% of the drinking water standard must also have repeat annual sampling.

As of December 2015, Dischargers have sampled approximately 4000 groundwater wells in compliance with the Agricultural Order and MRPs (total for both the individual and cooperative groundwater monitoring requirements). Table 1 below summarizes the total number of groundwater wells sampled, including domestic drinking water and irrigation wells. The following Table 2 provides a summary comparison between the individual and the CCGC cooperative groundwater monitoring requirements.

Table 1.

Type of Groundwater Well	**No. of Wells Sampled**
Domestic Drinking Water Wells	1733
Irrigation Wells	2266
Total Number of Wells	**3999**

Table 2. Comparison of Individual and CCGC Well Statistics and Requirements

	INDIVIDUAL	CCGC
Statistics		
Total Number of Wells Sampled	2801	1198
Number of Domestic Wells Sampled	973	760
Number of Irrigation Wells Sampled	1828	438
Requirements		
Well Type	At least one well from each farm/ranch, including all drinking water wells and primary irrigation well	Minimum of all drinking water wells.
Frequency of Sampling	Twice for Tier 1 and 2 Annually for Tier 3	Once Annually for 80% MCL
Standard Analyses	Table 3 of MRP Field Parameters, Nitrate, General Minerals	Same
Additional Analyses (isotopes, age-dating)	None	Additional data collected, but not submitted: • Source of water: oxygen, hydrogen, and nitrogen isotopes; • Source of nitrogen: nitrogen and oxygen isotopes; • Groundwater Age: Tritium/H4, chlorofluorocarbons; • Potential for denitrification; • Oxidation-reduction potential; • Pharmaceuticals;
Sample Collection	Qualified Third Party	CCGC Consultants
Sample Analyses	Certified Laboratory	Same
Reporting and Submittals		
Well location	Uploaded to GeoTracker	Same
Analytical Data	Uploaded to GeoTracker	Same
Data Associated with Individual Ranch	Yes	No (Must use relational key)
Groundwater Characterization Reports	No	Yes
Nitrate Concentration Contour Maps	No	Not approved
Groundwater Data Analysis and Summary by Water Board	Yes	Yes
Drinking Water Notification		
Drinking Water Notification Letters Required for Exceedances	Yes	Yes (Not submitted)
Response to Drinking Water Notification Letter Required	Yes	Yes (Not submitted)

SUMMARY OF COMPLIANCE

To evaluate Discharger compliance with individual groundwater monitoring requirements, Water Board staff compared the number of drinking water and primary irrigation wells reported in the electronic-Notice of Intent (eNOI), with the number of drinking water and primary irrigation wells with at least one groundwater monitoring sample reported to GeoTracker. In 2014, the results of Water Board staff's initial compliance evaluation indicated that approximately 74% of the domestic drinking water wells and 75% of the primary irrigation wells reported in the eNOI had been sampled at least once. In 2015, Water Board staff conducted a similar analysis and found an increase in compliance, with approximately 91% of the drinking water wells and 76% of the primary irrigation wells reported in the eNOI sampled at least once. These results indicate a high level of Discharger compliance, despite challenges associated with implementing a new requirement.

To address noncompliance for the Dischargers conducting individual groundwater monitoring, Water Board staff issued approximately 380 Notice of Violation (NOV) letters involving 519 individual farms for failure to submit groundwater monitoring results. Staff worked closely with the Dischargers and laboratories to assist them in achieving compliance with the individual groundwater monitoring and reporting requirements. Since issuing the NOVs in 2015, many Dischargers have submitted groundwater monitoring results and come into compliance. Staff has determined that groundwater monitoring data is still outstanding for approximately 128 individual farms and will refer noncompliant Dischargers to the Enforcement Team for additional follow-up.

Staff also evaluated the level of compliance for Dischargers participating in the CCGC cooperative groundwater monitoring program. During the course of Water Board staff's review of the draft groundwater characterization reports submitted by CCGC, staff became aware of the possibility that CCGC did not sample all domestic drinking water wells for CCGC member properties enrolled in the Agricultural Order. In a letter dated June 25, 2015, the Central Coast Water Board required the CCGC to monitor and report results of an additional 116 domestic drinking water wells not previously identified on CCGC member properties. In response, CCGC sampled the additional wells and reported results via GeoTracker. In a January 26, 2016 letter, the Interim Executive Officer approved the final groundwater characterization reports and determined that CCGC has fully completed the monitoring and reporting as required in the MRPs and as described in the CCGC Workplans.

SUMMARY OF GROUNDWATER MONITORING RESULTS

This section contains a summary of the results, including statistical analyses[2] applied region-wide and by county, as well as nitrate concentration maps. Summary findings reported in the CCGC Groundwater Characterization Reports[3] are also included in this section. All groundwater data submitted in compliance with the Agricultural Order and MRPs is available in the Water Board's GeoTracker data management system at: https://geotracker.waterboards.ca.gov/gama/

As of December 2015, Dischargers have sampled approximately 4000 groundwater wells in compliance with the Agricultural Order and MRPs (total for both the individual and cooperative groundwater monitoring requirements). Of the 1733 domestic drinking water wells sampled

[2] For consistency, nitrate is reported as nitrogen (mg/L NO3-N) in comparison with the California maximum contaminant level (MCL, 10 mg/L NO3-N).

[3] The CCGC Groundwater Characterization Reports for the northern and southern counties are available in their entirety on the Water Board's website at: http://waterboards.ca.gov/centralcoast/water_issues/programs/ag_waivers/index.shtml

region-wide, 440 wells exceeded the drinking water standard (25%) and the mean nitrate concentration was 10.3 mg/L nitrate as N. For all groundwater wells sampled region-wide (including both domestic drinking water wells and irrigation wells), groundwater nitrate concentrations ranged from <0.1 to 870 mg/L nitrate as N, and approximately 26% of the wells exceeded the drinking water standard for nitrate. Figure 1 (Attachment 1) shows the distribution of nitrate concentrations by county for domestic drinking water wells and irrigation wells. In addition, Tables 3, 4 and 5 (Attachment 1) present the county-specific well statistics and nitrate concentration data for the Central Coast Region, for all groundwater wells, domestic drinking water wells, and irrigation wells respectively. Monterey County had the highest percentage of wells exceeding the drinking water standard (38%), followed by Santa Clara County (35%) and Santa Barbara County (28%). Groundwater nitrate concentration maps for each county are also included in Attachment 2.

In addition to the results described above, the following are a few key findings presented in the CCGC Groundwater Characterization Reports:

Northern Counties (Monterey, San Benito, Santa Clara, Santa Cruz)

- Groundwater nitrate concentrations ranged from approximately <0.1 to 153.3 mg/L NO3-N.
- Within the Salinas Valley, 34% of the area was mapped as having nitrate concentrations above the MCL. For the domestic drinking water wells sampled on CCGC member properties in the Salinas Valley, 55% had concentrations above the MCL.
- Within the Pajaro Valley, 10% of the area was mapped as having nitrate concentrations above the MCL. For the domestic drinking water wells sampled on CCGC member properties in the Pajaro Valley, 34% had concentrations above the MCL.
- Within the Gilroy-Hollister Valley, 15% of the area was mapped as having nitrate concentrations above the MCL. In the Llagas groundwater subbasin, 27% of the area was mapped as having nitrate concentrations above the MCL.

Southern Counties (San Luis Obispo, Santa Barbara, Ventura)

- Groundwater nitrate concentrations ranged from approximately <0.1 to 870 mg/L NO3-N.
- Within the Santa Maria groundwater basin, 13% of the area was mapped as having nitrate concentrations above the MCL.
- Within the Paso Robles groundwater basin, 4% of the area was mapped as having nitrate concentrations above the MCL.

DRINKING WATER NOTIFICATIONS, PRIORITIZATION, AND FOLLOW-UP

In all cases where there is an exceedance of the nitrate drinking water standard, the Agricultural Order and MRPs require notification to well users. In total, more than 500 drinking water notification letters (pertaining to 440 domestic drinking water wells) were issued by the Water Board or CCGC since adoption of the Agricultural Order and MRPs in 2012. The drinking water notification letter requires that well users be notified of the drinking water exceedance and potential health impacts, and that the well and any accessible spigots or faucets be posted to indicate that the water is not safe to drink. The letter also provides information regarding resources available and nitrate treatment, as well as requires information to be submitted to the Water Board to document proper notification. As follow-up, Water Board staff conducted site visits on 13 ranches to confirm proper posting of public health warning signs; notification of domestic well users, farm operators, and property owners of the contaminated well(s); and the method for providing alternative drinking water supply to users. Staff has verified various levels of responses to the notification requirements that included: posting of health warning at well head, interior faucet and exterior spigot; written notification of well user, farm operator, and

property owner; and the treatment of drinking water or supply of bottled water to ensure safe drinking water is available.

In addition, the groundwater monitoring results help staff to identify and prioritize areas and individual farms that are at increased risk for waste discharge and pollutant loading, so that they can verify effective implementation of irrigation efficiency and nutrient management practices, in compliance with the Agricultural Order. In some priority cases, staff is also evaluating sources of pollution to impacted drinking water wells and conducting follow-up to require replacement water by responsible parties. Staff also routinely shares the groundwater monitoring data and coordinates closely with DDW and local county environmental health agencies to further identify additional drinking water systems and wells that may also be at risk for nitrate impacts and to inform drinking water well users and communities who may be affected by unsafe drinking water quality.

GROUNDWATER DATA LIMITATIONS AND IMPLEMENTATION CHALLENGES

The most significant technical limitation of the groundwater data received in compliance with the Agricultural Order and MRPs is the lack of well construction information. Many of the groundwater wells on agricultural operations were installed over 50+ years ago, do not have well logs, and well characteristics (e.g. well depth, screened intervals) are unknown by the current operator or landowner. Using dedicated monitoring wells with known well construction information avoids this problem but comes with additional cost. During the 2012 renewal of the Agricultural Order, the Water Board considered the use of dedicated monitoring wells but ultimately decided to conduct initial groundwater monitoring using only existing wells to avoid additional costs related to drilling new wells. Using some available hydrogeologic information, the CCGC attempted to focus on the shallow aquifer by restricting data for mapping to wells completed within 400 feet of land surface.

Another technical limitation is the fact that the groundwater data is not temporally continuous and only represents a snapshot in time and does not allow for direct comparisons or trend analysis over time. During the 2012 renewal of the Agricultural Order, the Water Board considered an increased frequency of groundwater monitoring but ultimately decided to conduct initial groundwater monitoring in the first year and to avoid additional costs related to more frequent sample collection.

While electronic upload of groundwater data by certified laboratories greatly increases the Water Board's ability to efficiently and effectively implement groundwater monitoring and reporting requirements for the large number of Dischargers regulated by the Agricultural Order and MRPs, some challenges to implementation still exist. One of the main challenges to implementation of all aspects of the Agricultural Order is the fact that agricultural operations in the Central Coast region are very transient in some areas and for some commodities (e.g. strawberries). For example, some growers farm less than one year on a particular farm/ranch and once Water Board staff identifies an issue of noncompliance, the grower may no longer be farming that particular farm/ranch. In these cases, staff goes directly to the landowner to address the issues of noncompliance.

Another significant challenge to implementation is the number of different ways a Discharger can comply with the groundwater monitoring and reporting requirements. For example, in certain cases, Dischargers were allowed to submit existing groundwater data that met specific conditions. Dischargers also had the option to comply on their own by completing individual groundwater monitoring and reporting requirements, or they could join a groundwater cooperative and complete different requirements. This causes a great deal of confusion for Dischargers and Water Board staff must spend a significant amount of time working with the

Dischargers to explain options and determine their compliance status. Some Dischargers find themselves out of compliance, when they thought they were in compliance. Other Dischargers find that they have unnecessarily complied in multiple ways at an increased cost. While multiple methods of compliance provide flexibility for Dischargers, it has also increased confusion and cost in some cases, and decreased efficiency in implementation.

Staff plans to address many of these data limitations and implementation challenges as potential updates to the MRP requirements, as described in the section below.

STAFF CONSIDERATIONS TO UPDATE GROUNDWATER MONITORING AND REPORTING REQUIREMENTS

At the time the Agricultural Order and MRPs were adopted by the Central Coast Water Board in March 2012, the intent was for groundwater monitoring and reporting to be repeated every five years. Thus, the next round of groundwater monitoring should take place starting in 2017. Since it is likely that the Agricultural Order itself may not be updated by March 2017, staff is taking the opportunity to evaluate the existing groundwater monitoring and reporting requirements to identify minor MRP modifications that can be made in the near term to improve implementation prior to the next round of groundwater monitoring. As for other permits and programs, any staff recommendations to update the MRP must be reviewed and approved by the Executive Officer. Staff recommends delaying consideration of any major modifications to groundwater monitoring requirements (e.g. adding new analytes to the required sampling) until the Central Coast Water Board considers renewal of the Agricultural Order in the future.

During the evaluation of the existing groundwater monitoring and reporting requirements, staff considered the following objectives to identify potential minor modifications that improve Agricultural Order implementation:

- Address data limitations and implementation challenges
- Simplify requirements
- Reduce grower confusion
- Streamline regulatory implementation
- Reduce overall unnecessary costs
- Improve and maintain data quality and comparability

The specific groundwater monitoring and reporting components are described in the MRP. In addition, requirements for the cooperative monitoring programs are documented in a workplan approved by the Executive Officer. The following list provides the primary components of the groundwater monitoring and reporting requirements in the MRP and the CCGC workplan that are currently under review/consideration, including a brief description of the potential update.

Well Type –
The current MRP requires Dischargers who comply with individual groundwater monitoring requirements to monitor at least one groundwater well for each farm/ranch. 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. Staff does not anticipate recommending any MRP changes regarding well type.

The CCGC workplan requires Dischargers to sample all drinking water wells on enrolled properties, as a minimum requirement but does not require sampling at each farm/ranch or for irrigation wells. In order to streamline requirements, increase efficiency of regulatory implementation, decrease grower confusion, and improve data comparability, staff is

considering requiring the CCGC workplan to include similar language as in the MRP to require at least one groundwater well for each farm/ranch, including any drinking water wells and the primary irrigation well. Testing irrigation water for nitrate is a critical component of effective nutrient budgeting in order for growers to avoid over-application of fertilizers. In addition, growers must also know the nitrate concentration of their irrigation water to properly report in the annual compliance form and total nitrogen applied reporting required by the Agricultural Order.

Frequency of Sampling –
The current MRP requirements require Tier 1 and Tier 2 Dischargers to conduct two rounds of monitoring groundwater wells, one sample collected during fall (September - December) and one collected during spring (March - June). The MRP also requires Tier 3 Dischargers to conduct annual monitoring, and also requires cooperative groundwater monitoring programs to conduct a repeat sample and annual sampling thereafter, for any drinking water wells that has a nitrate concentration between 8 and 10 mg/L nitrate as N (80% of the drinking water standard).

In order to streamline requirements, increase efficiency of regulatory implementation, maintain data comparability and reduce costs, staff is considering modifying the MRP to require the same frequency of sampling for all Dischargers enrolled in the Agricultural Order. The required frequency in the MRP would be two rounds of monitoring (fall and spring) within a single year. Staff would require consistent changes in the next CCGC workplan. This requirement does not prevent the Central Coast Water Board from requiring more frequent groundwater monitoring using 13267 authority on a case by case basis.

Parameters / Analytical Methods –
The current MRP requires all Dischargers enrolled in the Agricultural Order to sample for the same constituents identified in Table 3 of the MRP (basic field parameters, major ions, and nitrate). Staff does not anticipate recommending any MRP changes regarding the list of constituents. However, currently, many different laboratory analytical methods are used for nitrate which results in the need to convert results to different units so that they can be compared. In order to streamline requirements, increase efficiency of regulatory implementation and reduce costs, staff is considering modifying the MRP to require specific laboratory methods for nitrate as well as require the reporting of nitrate as nitrogen, consistent with the Division of Drinking Water's recent change in reporting for the nitrate maximum contaminant level.

Data Reporting and Submittals –
The current MRP requires all data to be submitted electronically to GeoTracker. Staff does not anticipate recommending any MRP changes regarding the electronic submittal of data. The CCGC workplan does require the CCGC to submit Groundwater Characterization Reports on behalf of their members. Since CCGC has prepared baseline Groundwater Characterization Reports and CCGC data is displayed and available in GeoTracker, staff is considering removing the requirement in the next CCGC workplan to produce additional Groundwater Characterization Reports. This will help to reduce costs for CCGC.

Drinking Water Notifications -
The current MRP requires Dischargers to notify the Central Coast Water Board of any exceedances of the drinking water standard for nitrate in drinking water wells. In response, the Central Coast Water Board requires Dischargers to notify well users of the drinking water exceedance to ensure they are aware of the threat to public health. Staff does not anticipate recommending any MRP changes regarding drinking water notifications.

Options for Compliance –

The current MRP provides three options to comply with groundwater monitoring and reporting requirements (submittal of existing data, individual or cooperative monitoring and reporting). To minimize grower confusion, improve data quality and comparability, and increase efficiency in implementation, staff is considering removing the option to provide existing historical data and streamline the individual and cooperative monitoring and reporting requirements (i.e. similar well types that are sampled and monitoring frequency as described above).

Staff will continue their evaluation of these requirements, in discussion with CCGC and other stakeholders, and plans to provide recommended MRP updates to the Executive Officer by July 2016. This schedule will allow sufficient time for Dischargers to prepare for any changes to the groundwater monitoring and reporting requirements due in 2017, as well as providing some cost certainty for those selecting either the individual or CCGC monitoring option, enabling Dischargers to budget these costs. It will also provide time for the CCGC to communicate with their members and adjust implementation of their workplan, as appropriate.

CONCLUSION

Since adoption of the Agricultural Order and MRPs in March 2012, the Water Board has made significant progress implementing the groundwater monitoring and reporting requirements and Dischargers have demonstrated a high rate of compliance. The groundwater monitoring results continue to document severe nitrate impacts to groundwater basins in agricultural areas, especially impacts to private domestic drinking water wells. The groundwater monitoring results afforded by the MRP requirements are critical for characterizing groundwater quality in agricultural areas, identifying and prioritizing areas and individual farms that are at increased risk for waste discharge, pollutant loading, and exceedance of drinking water standards. In addition, the groundwater monitoring results assist the Water Board in identifying at-risk areas and obtaining replacement drinking water for affected individuals and communities. The results also underscore the importance of collecting groundwater monitoring data as part of the Agricultural Order, as well as the importance of the Water Board and local county environmental health agencies to coordinate and take action to inform individuals and communities of the current impacts to drinking water and threats to public health. Water Board staff will continue to adapt and improve implementation of the groundwater monitoring and reporting requirements required as part of the Agricultural Order and MRPs.

ATTACHMENTS

1. **Box Plot Distribution and Statistics for Nitrate Concentration in Groundwater By County**

2. **Groundwater Nitrate Concentration Maps (Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Clara, Santa Cruz, and Ventura Counties)**