7 January 2025

David Guy, President
Northern California Water Association
455 Capitol Mall, Suite 703
Sacramento, CA 95814

APPROVAL OF SACRAMENTO VALLEY WATER QUALITY COALITION'S SURFACE WATER QUALITY MANAGEMENT PLAN FOR NITRATE + NITRITE IN GRAND ISLAND DRAIN

Thank you for your 24 October 2024 submittal of the Sacramento Valley Water Quality Coalition's (Coalition) Surface Water Quality Management Plan for nitrate in Grand Island Drain (SQMP). Staff reviewed the SQMP to determine compliance with requirements pursuant to section VIII.I of Waste Discharge Requirements General Order R5-2014-0030-11 (Order) and Appendix MRP-1 of Attachment B (Monitoring and Reporting Program) to the Order. The SQMP was revised based on feedback from Central Valley Regional Water Quality Control Board staff and resubmitted on 13 December 2024. The SQMP is a site-specific management plan that will be included as an addendum to the Coalition's Comprehensive Surface Water Quality Management Plan.

The SQMP meets the requirements of the Order and should reduce nitrate in Grand Island Drain to below the water quality objective as quickly as possible within the timeframe permitted by the Order. Therefore, I am approving the SQMP for nitrate in Grand Island Drain.

If you have any questions, please contact Olivia Mathews by e-mail at Olivia.Mathews@waterboards.ca.gov.

Sincerely,

Adam Laputz Digitally signed by Adam Laputz
Date: 2025.01.09 08:55:25 -08'00'
Water Boards

Patrick Pulupa
Executive Officer

Enclosure: Staff Review Memorandum
Cc: Bruce Houdesheldt, Northern California Water Association

Central Valley Regional Water Quality Control Board

TO: Petra Lee
Senior Environmental Scientist
Irrigated Lands Regulatory Program

FROM: Olivia Mathews
Environmental Scientist
Irrigated Lands Regulatory Program

DATE: 18 December 2024

SUBJECT: **REVIEW OF THE SACRAMENTO VALLEY WATER QUALITY COALITION'S SURFACE WATER QUALITY MANAGEMENT PLAN FOR NITRATE + NITRITE IN GRAND ISLAND DRAIN**

On 24 October 2024, Central Valley Water Board staff received the Sacramento Valley Water Quality Coalition's (Coalition) Surface Water Quality Management Plan for Nitrate + Nitrite in Grand Island Drain (SQMP). The SQMP was reviewed to determine compliance with requirements pursuant to section VIII.I of Waste Discharge Requirements General Order R5-2014-0030-11 (Order), Appendix MRP-1 of Attachment B (Monitoring and Reporting Program) to the Order, and the Coalition's 2016 Comprehensive Surface Water Quality Management Plan (CSQMP). The SQMP was revised based on feedback from Central Valley Regional Water Quality Control Board staff and resubmitted on 13 December 2024. The site-specific SQMP is submitted as an addendum to the CSQMP.

A summary of the SQMP's approach is provided below, and a checklist that documents Order requirements is included as an attachment.

Introduction and Background

Nitrate + nitrite as nitrogen (nitrate) exceedances that led to the requirement for a surface water quality management plan in the Grand Island Drain and represented drainages were observed during October and December 2021 with a third exceedance subsequently occurring in December 2022. Grand Island Drain near Leary Road is a representative surface water monitoring site located in the Sacramento-San Joaquin Delta and is part of the Sacramento-Amador Subwatershed. Based on an investigation effort to identify the source of the exceedances completed by the Coalition in February 2023, it was concluded that irrigated agriculture was the probable source of nitrate exceedances observed at the Grand Island Drain near Leary Road monitoring site. The

SQMP covers the drainages represented by the Grand Island Drain near Leary Road monitoring site, including the Delta islands adjacent to and nearby Grand Island and a small portion of southwest Sacramento county east of the Sacramento River (Northeastern Delta Area).

Physical Setting and General Information

Over 45 crops are collectively grown in the SQMP area with the top 15 including wine grapes, grain corn, alfalfa, pears, silage corn, processing tomatoes, cherries, safflower, grain triticale, grain wheat, green beans, almonds, hay triticale, hay ryegrass, and sunflowers. The irrigation season extends from April through October.

The area has an average elevation of -3 to 0 feet above mean sea level and has a high water table; therefore, the surface and subsurface hydrology of the Delta islands are managed differently than the upland Northeastern Delta Area. Water is managed using tile drains and an island drainage system to move water off Grand Island to the Sacramento River and Sacramento-San Joaquin Delta waterbodies to avoid flooding, ponding, and further subsidence of the island. Because of the unique water management system used on the island, even prudent applications of nitrogen fertilizers (i.e. synthetic fertilizers, manure, etc.) may result in nitrates leaching through the soil to the tile drain system and ultimately discharging to the Sacramento River and Sacramento-San Joaquin Delta waterbodies. In addition, it is a possibility for nitrates to mobilize to surface water through irrigation and storm tailwater runoff. The nitrogen fertilizer applied to irrigated crops in the Grand Island Drain and surrounding drainages is the probable source of the nitrate exceedances observed at the Grand Island Drain near Leary Road monitoring site.

Because the SQMP area is within the Delta boundary, the various waterbodies surrounding the represented drainages possess the beneficial uses assigned to the Sacramento-San Joaquin Delta as identified in the Basin Plan. Of the many beneficial uses assigned, municipal and domestic supply (MUN) is included. Because the waterbodies are assigned a MUN beneficial use, the exceedance trigger limit for nitrate is the California Primary Maximum Contaminant Level (MCL) for drinking water: 10 milligrams per liter as nitrogen (mg/L as N).

In approximately 17 years of monitoring at the Grand Island Drain near Leary Road monitoring site, five (5) exceedances of the nitrate trigger limit have been observed. Four (2008, 2014, and two 2021 exceedances) of the five (5) historical nitrate exceedances were preceded by significant rainfall. The Coalition suggests that nitrate exceedances may be likely to occur during significant precipitation events due to not only storm tailwater runoff, but also significant discharge from the engineered drainage system to avoid flooding on the island. During the significant precipitation events, nitrates that have leached from the crop fields to the tile drains are released from the drainage system in the discharge to the surrounding waterbodies as well. The most recent exceedance observed during 2022 was not preceded by rainfall, but the Coalition suggests that irrigation tailwater runoff originating from irrigated fields upstream of the

Grand Island Drain near Leary Road monitoring site may have been the source based on a study completed in February 2023. In both cases, irrigated agriculture is a probable source for nitrate exceedances observed in receiving waters due to nitrogen fertilizers applied to the fields.

Though significant precipitation events resulting in significant discharges to surrounding waterbodies are not a controllable factor as it relates to managing nitrate exceedances, there are many best management practices (BMPs) which the Members in the SQMP area already employ to reduce the risk of nitrate mobilization. The Coalition provides a baseline inventory of BMPs already employed by Members in the area. The data was obtained using the most recent Farm Evaluation collected in 2020 and the 2020-2022 irrigation and nitrogen management plan summary reports (INMP summary reports). The baseline will be used for comparison to future percentages of BMPs implemented under the SQMP. Future implementation data will be collected annually from Members within the SQMP area through the management practice implementation report (MPIR), described in later sections of this memo.

Management Plan Strategy

The management plan strategy includes tasks and measurable goals to achieve receiving water limitations within three (3) years of approval of the SQMP. This meets the Order requirement to address the water quality problem triggering the SQMP as soon as is practicable and not exceeding 10 years from the date the SQMP is submitted. The management plan strategy includes tasks to provide general and targeted outreach and education as well as to gather feedback on specific BMPs employed by growers applying nitrogen fertilizers for the duration of the SQMP. The Coalition will draw on information provided by the University of California Cooperative Extension specialists and experience gained from the efforts of other Coalitions to provide a robust education campaign. Effective BMPs for nitrogen management, irrigation management, and cultural practices for sediment and erosion control currently employed by growers will continue to be encouraged and implementation will be tracked annually.

Survey questions related to the BMPs to be implemented for this SQMP are already present in two existing Member surveys: the INMP summary report and the Farm Evaluation. The INMP summary report is collected annually whereas the Farm Evaluation is only collected once every five (5) years. To track annual implementation of BMPs in the SQMP area, the Coalition plans to use a combination of survey results as a surrogate for a traditional MPIR:

- results from the annual INMP summary reports already collected from all Members in the Coalition (Table 1) and
- results from an annual supplemental survey consisting of questions borrowed from the Farm Evaluation related to cultural practices to manage sediment and erosion to be collected from Members in the SQMP area (Table 2).

Table 1. INMP Summary Report: Irrigation Method, Nitrogen Management, and Irrigation Management Efficiency Practices Survey Questions

Management Practice	Acres
Irrigation Methods	
Primary Irrigation	
Border Strip	
Drip	
Floor	
Furrow	
Micro Sprinkler	
Sprinkler	
Sub-Irrigated	
Not Specified	
Secondary Irrigation	
Border Strip	
Drip	
Flood	
Furrow	
Micro Sprinkler	
Sprinkler	
Sub-Irrigation	
No Secondary Method	
Nitrogen Efficiency Practices	
Split Fertilizer Applications	
Irrigation Water N Testing	
Soil Testing	
Tissue/Petiole Testing	
Fertigation	
Foliar N Application	
Cover Crops	
Variable Rate Application w/ GPS	
Irrigation Efficiency Practices	
Laser Leveling	
Use of ET in Irrigation Scheduling	
Water Application Scheduled to Need	
Use of Moisture Probe	
Soil Moisture Neutron Probe	
Pressure Bomb	

Table 2. Supplemental Survey: Cultural Practices to Manage Sediment and Erosion Survey Questions Borrowed from the Farm Evaluation

Management Practice	Acres
Cultural Practices for Managing Sediment and Erosion	
Vegetated ditches are used to remove sediment as well as pesticides, phosphate fertilizers, and some forms of nitrogen.	
Cover crops or native vegetation are used to reduce erosion.	
Soil water penetration has been increased through the use of amendments, deep ripping, and/or aeration.	
Minimum tillage incorporated to minimize erosion.	
Crop rows are graded, directed, and at a length that will optimize the use of rain and irrigation water.	
Vegetative filter strips and buffers are used to capture flows.	
Storm water is captured using field borders.	
Creek banks and streams have been stabilized.	
Subsurface pipelines are used to channel runoff water.	
Hedgerows or trees are used to help stabilize soils and trap sediment movement.	
No storm drainage due to field or soil conditions.	
Berms are constructed at low ends to capture runoff and trap sediment.	
Field is lower than surrounding terrain.	
Sediment basins/holding ponds are used to settle out sediment and hydrophobic pesticides such as pyrethroids from irrigation and storm runoff.	
Other.	

The results from the two surveys will be combined as surrogate MPIR results, reviewed by the Coalition, and shared with the growers.

In the event of a future nitrate exceedance, the Coalition will review relevant INMP summary report data and perform a field investigation to identify the potential source(s) and initiate appropriate follow-up actions as needed. Follow-up actions will include targeted outreach and education to growers in the area of an obvious agricultural discharge if one is identified. If an obvious agricultural discharge cannot be identified, a meeting with Members in the SQMP area will be held and an e-newsletter will be distributed.

The Coalition proposes three (3) performance goals to track the successful implementation of the SQMP. Each performance goal also identifies the mechanisms of achieving the goal, the quantitative measure of progress, and a schedule for achieving the goal. The three (3) performance goals include outreach and education, implementation of BMPs, and avoidance of nitrate exceedances at the Grand Island Drain near Leary Road monitoring site. The duties and responsibilities of the individuals and groups responsible for implementing each task associated with the SQMP are identified along with an organizational chart.

Monitoring Design

Management plan monitoring will be identical to the strategy employed during an assessment year. Management plan monitoring will focus on monitoring during months

with past nitrate exceedances: January, February, October, and December. The management plan monitoring schedule will be included in the annual Monitoring Plan Update submitted August 1 for the upcoming water year. The Monitoring Plan Update for 2025 has previously been submitted and approved and includes assessment and management plan monitoring required for Grand Island Drain near Leary Road.

Three (3) consecutive years of no exceedances must be demonstrated before an SQMP can be approved for completion. Because Grand Island Drain near Leary Road was not monitored for nitrate during the 2024 monitoring year, the earliest the SQMP could be completed with three (3) years of consecutive data is October 2027.

Data Evaluation

The effectiveness of the SQMP will be evaluated through:

1. review of progress made toward implementation of outreach and education activities;
2. assessment of agricultural management practices known to limit the transport of agriculturally-applied nitrogen fertilizer and manure to surface water; and
3. collection of nitrate water quality data to determine effectiveness of BMP implementation in reducing nitrate exceedances observed at the Grand Island Drain near Leary Road monitoring site.

Ultimately, continued lack of nitrate exceedances along with documentation of implemented BMPs in the SQMP area will link the observed water quality improvements to Member actions. Status and effectiveness will be reported annually through a tabular summary of annual outreach and education performed, a tabular summary of BMPs implemented under the SQMP compared to the baseline, and a time series plot of nitrate monitoring data at Grand Island Drain near Leary Road.

Records and Reporting

Management plan monitoring at Grand Island Drain near Leary Road will be identified in the annual Monitoring Plan Update submitted annually for the upcoming water year on August 1. Results of management plan monitoring at Grand Island Drain near Leary Road will be summarized in the Annual Monitoring Report submitted annually for the previous water year on May 1. Additionally, the Coalition will summarize progress made toward successful implementation and completion of the SQMP in the Management Plan Progress Report submitted annually for the previous water year on May 1.

Staff Recommendation

Staff recommends the SQMP for approval. The SQMP meets the requirements outlined in the Order and the CSQMP.

Staff recommends approval of the proposed MPIR approach. The survey questions relevant to BMPs to be implemented for this SQMP are partially present in the annual INMP summary reports already completed by all Members. The supplemental survey consisting of cultural practices to manage sediment and erosion borrowed from the

Farm Evaluation will cover the remaining survey questions relevant to the SQMP. The combination of the results from the INMP summary reports and the supplemental survey will appropriately and efficiently collect the implementation data required for the SQMP.

MPIR data collected from Members in an active SQMP area are required to be summarized in the Annual Management Practice Implementation and Nitrogen Management Report submitted annually for the previous water year on November 30. Because the surrogate MPIR data for this SQMP will be a combination of annual INMP summary report results and supplemental survey results, please ensure that the surrogate MPIR results are tabulated in such a way that the MPIR results for this SQMP are discernable. In other words, the INMP summary report results specific to this SQMP should be tabulated with the supplemental survey results so the overall surrogate MPIR results are reported together in one place for review.

Enclosure: Available Upon Request

Checklist

The **SQMP Completion Checklist for Nitrate + Nitrite in Grand Island Drain** that was enclosed with this letter is **AVAILABLE UPON REQUEST** by contacting the Central Valley Water Board's Irrigated Lands Regulatory Program at irrlands@waterboards.ca.gov or (916) 464-4611.