Policy No. X: Nitrate Permitting Strategy

1.0 Regulatory Basis for Nitrate Permitting Strategy for Discharges to Groundwater

The Salt and Nitrate Management Plan (SNMP) sets forth several different approaches for managing salts and nitrates throughout the Central Valley. For dischargers regulated by the Central Valley Water Board, these management efforts must ultimately be implemented in permits issued to dischargers. Permits issued by the Central Valley Water Board are referred to as waste discharge requirements (WDRs), or Conditional Waivers from waste discharge requirements (Conditional Waivers).[1] WDRs must implement relevant provisions in the Basin Plans, and Conditional Waivers must be consistent with the Basin Plans. As discussed previously in Section X, the Basin Plans identify beneficial uses for designated waterbodies, establish water quality objectives that *"will ensure reasonable protection of beneficial uses and the prevention of nuisance,* and specify a program of implementation."[2] Many Central Valley groundwater basins and sub-basins are designated with the municipal and domestic water supply (MUN) beneficial use, which is defined to mean *"uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply."*[3] The MUN designations for specified groundwater basins are identified in the Tulare Lake Basin Plan, and generally designated for all groundwater basins in the Sacramento River and San Joaquin River Basin Plan.

Along with the MUN beneficial use designation, the Basin Plans include the following water quality objective to protect drinking water:

> *"At a minimum, waters designated for domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in the following provisions of Title 22 of the California Code of Regulations which are incorporated by reference into this plan: Tables 64431-A (Inorganic Chemicals)..."*[4]

For waterbodies designated MUN, the Maximum Contaminant Level for nitrate is 10 mg/L as nitrogen.[5]

Thus, with respect to nitrate (under the Basin Plans as they currently exist), WDRs and Conditional Waivers must ensure that discharges authorized by the given WDR/Conditional Waiver meet the water quality objective in the discharge, or ensure that the receiving water will meet the water quality objective. In some areas of the Central Valley, and for some types of dischargers, the traditional permitting approach for nitrates may not be feasible, reasonable or practicable. The SNMP nitrate permitting strategy sets forth recommendations with respect to permitting nitrate discharges in WDRs and Conditional Waivers under the traditional permitting approach as well as providing for alternative permitting approaches.

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[1] CWC §13263 & 13269

[2] CWC §13241

[3] Basin Plan, pg. II-1

[4] Water Quality Control Plan (Basin Plan) for the Sacramento River Basin and the San Joaquin River Basin – 4th Ed., pg. III-10.0 and Water Quality Control Plan for the Tulare Lake Basin - 2nd Ed., pg. III-7.

[5] 22 CCR §64431(a); see Table 64431-A: Maximum Contaminant Levels for Inorganic Chemicals. Prior to January 1, 2016 the MCL was expressed as 45 mg/L (as NO_3) which is equivalent to 10 mg/L Nitrate as Nitrogen.

In either case, the Central Valley Water Board must adopt permits that implement and are consistent with the Basin Plans, which includes consideration of several recent statewide policies. There is also a need to consider the reality of existing water quality conditions. Relevant statewide policies are summarized below. Existing water quality conditions are described in detail in Sections XX.

1.1 Statewide Nitrate Policies

In 2013, the State Water Resources Control Board (State Water Board) reaffirmed the importance of developing appropriate WDRs to manage nitrate discharges:

> *"The Water Boards will evaluate all existing Waste Discharge Requirements to determine whether existing regulatory permitting is sufficiently protective of groundwater quality at these sites. The Water Boards will use the findings to improve permitting activities related to nitrate."*[6]

In 2012, the state legislature approved Assembly Bill 685 which amended the California Water Code to declare that:

> *"…every human being has the right to safe, clean, affordable and accessible water adequate for human consumption, cooking and sanitary purposes. All relevant state agencies, including the Department of Water Resources, the State Water Resources Control Board, and the State Department of Public Health, shall consider this state policy when revising, adopting or establishing policies, regulations, and grant criteria when these policies, regulations and criteria are pertinent to the uses of water described in this section."*[7]

To ensure statewide implementation and consideration of the Human Right to Water, the State Water Board in February of 2016 adopted the Human Right to Water as a Core Value and Directing Its Implementation in Water Board Programs and Activities (Resolution 2016-0010). Among other things, Resolution 2016-0010 finds that:

> *"When regulating discharges that could threaten human health by causing or contributing to pollution or contamination of drinking water sources, the Water Boards may consider all solutions for ensuring safe drinking water, including providing replacement water as an interim solution while long-term water quality solutions are developed."*

The Central Valley Water Board recently followed suit and adopted Resolution 2016-0018,[8] similarly directing implementation of the Human Right to Water in its programs and activities.

1.2 State's Antidegradation Policy & Allocation of Assimilative Capacity

When water quality in the groundwater basin is better than water quality objective specified in the Basin Plan, then the state's antidegradation policy[9] requires the Central Valley Water Board to regulate

[6] State Water Resources Control Board. Report to the Legislature: Recommendations for Addressing Nitrate in Groundwater (February, 2013). See recommendation #15 at page 43 of the report.
[7] Assembly Bill No. 685 added §106.3 to the California Water Code. Signed by Gov. Brown on September 25, 2012.
[8] Central Valley Water Board Resolution, adopted April 21, 2016
[9] State Board Resolution 68-16, Statement of Policy with Respect to Maintaining High Quality Waters of California

in a manner designed to maintain the highest quality water that is reasonable.[10] Therefore, when the nitrate concentration in the receiving water is less than 10 mg/L, the Central Valley Water Board's preferred permitting strategy will be to establish WDRs that preserve high quality water unless if finds that lowering water quality is consistent with the state's antidegradation policy.

The state antidegradation policy sets forth the specific conditions that must be met and demonstrations that must be made before the Central Valley Water Board can allow a discharge (or discharges) to lower existing water quality:

> *"1) Whenever the existing quality of water is better than the quality established in policies as of the date on which such policies become effective, such existing high quality will be maintained until it has been demonstrated to the State that any change will be consistent with maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial use of such water and will not result in water quality less than that prescribed in the policies.*
>
> *2) Any activity which produces or may produce a waste or increased volume or concentration of waste and which discharges or proposes to discharge to existing high quality waters will be required to meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained."*[11]

1.3 SNMP Recommended Guidance to Evaluate Consistency with Anti-degradation Requirements

When specific conditions noted above are met, the Central Valley Water Board can make an allocation of assimilative capacity and allow a discharge (or discharges) to lower existing water quality. The Central Valley Water Board is not required to allocate all of the estimated assimilative capacity available and, for this reason, the SNMP establishes triggers to maintain an appropriate safety factor to ensure that high quality receiving waters do not exceed the water quality objective for nitrate.

To determine that the allocation of assimilative capacity "will not result in water quality less than that prescribed in the policies," the Central Valley Water Board will generally require dischargers to demonstrate that the permitted discharge(s) will not cause the average nitrate concentration in the relevant groundwater basin or sub-basin to exceed 10 mg/L. The level of demonstration needed here will vary based on a number of different factors. For example, for a discharges from a single facility (often referred to as a point source discharger), the demonstration may be relatively simple if the discharger is seeking to use assimilative capacity available as determined from looking at first encountered groundwater and the discharger has the necessary data and information to show that the discharge will not cause first encountered groundwater to exceed the 10 mg/L-N over a 20 year planning

[10] SWRCB. Statement of Policy with Respect to Maintaining High Quality of Waters in California. Res. No. 68-16 (Oct. 28, 1968)
[11] State Water Board. Statement of Policy with Respect to Maintaining High Quality of Waters in California. Res. No. 68-16 (Oct. 28, 1968).

horizon. At the other end of the scale, multiple dischargers seeking to show assimilative capacity available in the production zone over a defined management zone area will likely need more extensive data and information, and/or modeling, to make the demonstration that 10 mg/L will not be exceeded within a defined time frame.

Further, the Central Valley Water Board will require dischargers to demonstrate that the permitted discharge(s) will not cause the average nitrate concentration at existing or planned wells to exceed 10 mg/L, or the expressed trigger value. For permitted discharges that are likely to lower water quality, the Central Valley Water Board will presume that present and probable future beneficial uses will not be unreasonably affected if the discharge(s) consumes less than 10% of the available assimilative capacity by itself and not more than 20% of the available assimilative capacity in combination with other authorized discharges. This approach is similar to the recommendations for certain groundwater recharge projects in the Recycled Water Policy.[12]

If an individual discharge is likely to consume more than 10% of the available assimilative capacity, or a combination of discharges to the same groundwater basin or sub-basin is likely to consume more than 20% of the available assimilative capacity, then the discharger(s) must demonstrate that allowing lower water quality will not unreasonably affect others. The identification of others will depend on the how the discharger(s) seek to determine available assimilative capacity. For example, if an individual discharger seeks to utilize available assimilative capacity in first encountered groundwater, then "others" would be those down-gradient in the relative immediate surrounding area. In comparison, if multiple dischargers seek to use available assimilative capacity over a Management Zone area, then others would be those users within the Management Zone, and down-gradient of the Management Zone.

Next, to permit the use of assimilative capacity, the Central Valley Water Board is required to find that the discharger, or dischargers, are implementing "best practicable treatment or control necessary to assure that a pollution or nuisance will not occur." To determine if BPTC is being implemented, the SNMP recommends that the Central Valley Water Board look at whether BPTC (at the discharge) can assure that nitrate concentrations at drinking water wells down-gradient of the discharge will remain below 10 mg/L for the defined planning horizon (i.e., 20 years). If not, then the SNMP recommends that the Central Valley Water Board next consider whether mitigation strategies applied at any other point between the discharge and all affected down-gradient water users (e.g., well-head treatment or alternative water supply, etc.) can better assure safe drinking water to those users. To evaluate if BPTC is being implemented, the SNMP recommends that the complete antidegradation analysis prepared by the discharger(s) include an evaluation of alternatives, which considers socioeconomic impacts of different control/treatment measures, and if different control/treatment measures are reasonable, practicable, and/or feasible.

After, and in conjunction with evaluating BPTC, the Central Valley Water Board must then determine whether allocating assimilative capacity to authorize a discharge that is expected to lower water quality is "consistent with maximum benefit to the people of the state." To make this finding for nitrate discharges, the SNMP recommends that the Central Valley Water Board consider the following factors:

[12] State Water Board. Policy for Water Quality Control for Recycled Water; Res. No. 2009-0011 (Feb. 3, 2009)

1) Economic and social costs, tangible and intangible, direct and indirect, of the proposed discharge compared to the benefits for both the discharger and all others that may be affected by the discharge. This includes an evaluation of the discharger's capacity to bear the cost of compliance (e.g. "affordability") and any potential adverse impacts to the surrounding community. This is not intended to be a formal Cost-Benefit Analysis.

2) Environmental effects of allowing or prohibiting the proposed discharge (especially the net effect on water quality in the region and the Central Valley Water Board's long-term restoration plans). In some cases, where the net effect on receiving water quality is shown to be spatially and/or temporally-limited, the Central Valley Water Board may conclude that the discharge does not result in significant degradation.

In general, the Central Valley Water Board is less likely to allocate assimilative capacity to discharges where there is a reasonably feasible and practicable means for achieving compliance with traditional waste discharge requirements. The Central Valley Water Board is also unlikely to prohibit discharges where no such means exist and considers this option only as a last resort.

Overall, the SNMP recommends that the Central Valley Water Board be predisposed to allocate assimilative capacity, and allow lower water quality, where doing so assures a significantly better outcome for the people of California than would requiring strict compliance with default waste discharge requirements. And, the Central Valley Water Board should prioritize allocations of assimilative capacity when and where it would provide a demonstrably more effective means of assuring safe drinking water than other available permitting alternatives. To this end, a more detailed regional guidance document describing what sorts of demonstrations might constitute "maximum benefit to people of the state"[13] will be developed. It is anticipated that this recommended guidance will be submitted for consideration by the Central Valley Water Board as part of the final Basin Plan Amendment package to implement the SNMP.

Notably, if the Central Valley Water Board concludes that, even after implementing BPTC, a discharge will unreasonably affect present or anticipated beneficial uses of water, or result in water quality less than that prescribed in the Basin Plan, or cause an unmitigated pollution or nuisance to occur, or is inconsistent with maximum benefit to the people of the state, then lower water quality cannot be authorized by allocating a portion of the available assimilative capacity

1.4 Consideration of Water Quality Conditions

Understanding and being able to characterize current and projected water quality conditions is important because regulatory requirements differ when existing water quality is better than the applicable standard(s) (i.e., 10 mg/L-N for Nitrate).[14] Under such conditions, the range of permitting options also increases when the Central Valley Water Board finds that there is assimilative capacity available in the receiving water.[15] The SNMP implementation approach for permitting nitrate discharges

[13] NOTE: To be developed as part of the SNMP Basin Plan Amendment Package based on the concepts described in Attachment A (below).

[14] State Water Board. Resolution No. 68-16: Statement of Policy with Respect to Maintaining High Quality of Waters in California (October 28, 1968).

[15] The specific method CV-SALTS recommends for determining whether and how much assimilative capacity is available is described in Section XXX of this Salt and Nitrate Management Plan.

to groundwater is separated into two paths. The first path (Path A) describes the proposed approach when an individual discharger (or third party group subject to a general order wishing to proceed under Path A) decides to comply with the nitrate components of the SNMP as an Individual/Third Party. The second path (Path B) describes the proposed approach when an individual intends to participate in a Management Zone to comply with the nitrate components of the SNMP.

Prior to determining which Path to follow, dischargers (individually or collectively) should conduct an initial assessment of their discharge, and evaluate any available Preliminary Management Zone Proposals. With this information, the discharger can then provide the Central Valley Water Board with a Notice of Intent on if the discharger(s) intends to comply with the nitrate components of the SNMP as an individual/Third Party group, or as a participant in a Management Zone.

1.5 Initial Assessment of Receiving Water and/or Discharge Conditions & Evaluation of Preliminary Management Zone Proposals

Establishing appropriate WDRs,[16] and determining an appropriate pathway for compliance with the SNMP for nitrates requires consideration of a number of key factors including, but not limited to:[17]

1) The current nitrate concentration in the receiving water and any relevant trends.
2) The nitrate concentration in the discharge when it reaches the groundwater, if the information is available.
3) The nitrate concentration of other recharges to the same management zone, if permitting on a management zone basis.
4) Consideration of elements of a Preliminary Management Zone Proposal.

The permitting options available to the Central Valley Water Board, and the demonstrations required for various options, depends on these variables. An initial assessment is appropriate to determine how the regulated discharge is likely to affect nitrate concentrations in the receiving water. The level of effort to complete the initial assessment should be proportional to the relative risks involved. Low threat discharges in low vulnerability areas generally require considerably less detail. High threat discharges or high vulnerability areas may require more sophisticated analysis and modeling.

In the simplest case, groundwater quality currently complies with the primary MCL and nitrate concentrations in the discharge are even lower. No special consideration is necessary because the discharge complies with water quality standards and does not cause water quality degradation.

At the other end of the spectrum, where groundwater quality already exceeds the primary MCL for nitrate and there is no reasonably feasible or practical means for assuring that nitrate concentrations from the discharge will be less than 10 mg/L when the discharge reaches the groundwater, an alternative compliance option may be needed.

[16] The term WDRs as used in this section refers to both WDRs and Conditional Waivers, and the strategy applies equally to the Central Valley Water Board's adoption of WDRs under CWC §13263 or adoption of Conditional Waivers under CWC §13269.
[17] State Water Board. In the Matter of the Petition of the City of Lompoc for Review of Order No. 80-03 (NPDES Permit No. CA 00481827), California Regional Water Quality Control Board, Central Coast Region. Order No. WQ 81-5; (3/19/81).

Figure 1: Initial Antidegradation Review

NITRATE CONDITIONS	Receiving Water Nitrate < 10 mg/L *(assimilative capacity available)*	Receiving Water Nitrate > 10 mg/L *(no assimilative capacity)*
Nitrate Concentration in Discharge < Concentration in Receiving Water	Discharge meets WQO and will not degrade receiving water quality; Require traditional compliance thru WDRs and periodic monitoring.	1) If discharge quality <u>can meet</u> WQO, require traditional compliance with the WQO thru the WDR. 2) If discharge quality <u>cannot meet</u> WQO, authorize exception because discharge improves receiving water quality.*
Nitrate Concentration in Discharge > Concentration in Receiving Water	Derive appropriate WDRs, including any allocation of assimilative capacity, in accordance with Antidegradation Policy (68-16). ACPs may be used to avoid causing pollution or nuisance and to demonstrate BPTC consistent with Maximum Benefit.	1) Require functionally-equivalent compliance using ACPs and incorporate ACP compliance into WDR (or through a "bubble permit"). 2) Authorize a variance/exception for discharges. *
*An Alternative Compliance Project (ACP) may also be required as a condition for granting the exception.		

1.6 Permitting Pathways

The SNMP encourages dischargers to participate in Management Zones as the preferred method for complying with the nitrate components of the SNMP. However, participation in a Management Zone may not be appropriate for every discharger, or groups of dischargers, depending on water quality and various discharger related circumstances. Accordingly, the SNMP proposes two pathways for complying with the nitrate components of the SNMP. Path A is for those intending to comply with the SNMP as an individual discharger (or third party group subject to a general order), and follows more closely with the Central Valley Water Board's traditional permitting approach. Path B is for those intending to comply with the SNMP by participating in a Management Zone. Notably, for those dischargers intending to comply via Path A, assimilative capacity may be granted by the Central Valley Water Board subject to required findings but assimilative capacity must be available in shallow/first encountered groundwater. In comparison, for dischargers intending to comply by participating in a management zone (i.e., Path B), assimilative capacity may be granted by the Central Valley Water Board (again subject to required findings), and the Central Valley Water Board can evaluate the availability of assimilative capacity using a volume-weighted average. The level of information necessary, as well as WDR conditions/requirements, will vary based on the circumstances associated with each discharge.

Based on the order of priority notification, dischargers will need to notify the Central Valley Water Board of their intent to either comply with the components of the SNMP as an individual discharger, or as part of a Management Zone.[18] The SNMP recommends that the notification be made in the form of a Notice

[18] For purposes of this notification, individual dischargers that are subject to General Orders that cover a specified geographic area or are commodity based, and that are administered by a Third Party (e.g., Third Party Orders for

of Intent (NOI). Further, to make this election and submit a NOI, dischargers will need to evaluate Preliminary Management Zone Proposals that will be made available, as well as evaluate the circumstances of their own discharge. The NOI requirements will vary depending on the Path selected, and is described in relation to each Path below.

2.0 Path A - Permitting Strategy for Individual Discharger or Third Party Group Subject to General Order Wishing To Proceed Under Path A

2.1 Categorization of Discharges for Nitrates

The level of effort and the conditions/requirements imposed by the Central Valley Water Board in permitting nitrate discharges will vary depending on the impact to water quality. The SNMP recognizes that there are some discharges of nitrates to groundwater that would be considered low-threat, and are therefore relatively simple for the Central Valley Water Board to authorize in existing WDRs, or renewed/revised WDRs. For example, discharges that are better than receiving water quality and the receiving water is better than the water quality objective of 10 mg/L are considered to not lower water quality. In such circumstances, the discharge is not subject to the state's antidegradation policies and the Central Valley Water Board is not required to make the findings as specified in Resolution 68-16 to authorize the discharge. Others may be able to demonstrate that their discharge, or collective discharges, are low threat in nature because they have data and information that demonstrates that the discharges have not degraded groundwater over a specified time-period, and that the nature of the discharge has remained constant. For example, in some areas of the Central Valley where groundwater is better than the nitrate water quality objective, and cropping and cultural practices have remained constant, data and information may be used to demonstrate the low threat nature of the discharge.

However, at the other end of the spectrum, there may be discharges of nitrates that are above the drinking water standard, and there is no available assimilative capacity. In these circumstances, it may be appropriate for the Central Valley Water Board to grant an exception to meeting the water quality objective rather than prohibiting the discharge.

Because of the various levels of impacts, the SNMP establishes five categories for dischargers choosing to comply with the SNMP via Path A. The five categories are as follows:

- Category 1 - No Degradation Category: Discharge[19] is equal to or less than the water quality objective of 10 mg/L, and the discharge is better than receiving water quality as measured in First Encountered Groundwater.

- Category 2 - *De minimus* Category: Receiving water has assimilative capacity in First Encountered Groundwater (i.e., is better than the water quality objective). For this

Irrigated Agriculture), the Third Party may provide notice as required in this step on behalf of its members. For individual dischargers that are subject to a General Order that is not administered by a Third Party (e.g., Dairy General Order), the individual must provide the necessary notice as indicated in this step.

[19] Discharge as used here is intended to mean the quality of the discharge as it enters first encountered groundwater. Thus, the quality of the discharge itself may exceed the standard but due to transformation and other variables, it meets or is better than the objective as it enters first encountered groundwater.

category, the discharge may be above the water quality objective as it enters first encountered groundwater, but the discharge will use less than 10% of the available assimilative capacity, and is thus considered *de minimus*.

- Category 3 - Degradation Below 75% of the Water Quality Objective Category: Discharges will be considered as part of this category if they anticipate using available assimilative capacity in First Encountered Groundwater that is considered to be more than *de minimus* but will not cause First Encountered Groundwater to exceed a trigger of 75% of the water quality objective for nitrate over a 20 year planning horizon. To allow use of assimilative capacity in this circumstance, the Central Valley Water Board may find it necessary to include additional monitoring and trend evaluations as part of the WDRs in order to make appropriate findings consistent with Resolution 68-16 and the SNMP.

- Category 4 - Degradation Above 75% of the Water Quality Objective Category: Discharges will be considered as part of this category if they anticipate using available assimilative capacity in First Encountered Groundwater, and use of assimilative capacity will cause First Encountered Groundwater to exceed the trigger of 75% of the water quality objective for nitrate over a 20 year planning horizon. To allow use of assimilative capacity in this circumstance, the Central Valley Water Board may find it necessary to include additional conditions as part of the WDRs in order to make appropriate findings consistent with Resolution 68-16 and the SNMP.

- Category 5 - Discharge Above Objective And No Available Assimilative Capacity: Discharges that exceed the water quality objective for nitrate, and where First Encountered Groundwater has no available assimilative capacity, will be considered to be part of this category. Discharges in this category may need to seek an exception pursuant to the Exceptions Policy under the SNMP.

2.2 Submittal of Notice of Intent

For those dischargers that intend to comply via Path A, the NOI will need to include the following:

- An initial assessment of receiving water and/or discharge conditions.
- An initial assessment to determine if the discharge (or collective discharges) are impacting any nearby public water supply wells or domestic wells for nitrates.
- As applicable, an Early Action Plan, including specific actions and a schedule of implementation to address immediate needs of those drinking groundwater that exceeds the drinking water standard if there are public water supply or domestic wells impacted by nitrates within the area of influence of discharges covered by the NOI.
- Identification of Category of the Discharge (see section 2.1 above).
- Information necessary to support allocation of assimilative capacity, as applicable (see Section xx below).
- Application for Exception pursuant to the Exceptions Policy, as applicable.

2.3 Notice of Intent with Early Action Plan

When the Notice of Intent includes an Early Action Plan that includes a plan to address immediate drinking water needs, the Central Valley Water Board will notify the discharger within 30 days if the discharger may proceed forward with implementing the Early Action Plan.

2.4 Revision of WDRs/Compliance with SNMP

After receiving the Notice of Intent, the Central Valley Water Board should have the information necessary to determine if the discharger can comply with the SNMP with no further action, or if the discharger will be required to submit additional information and/or if additional WDR conditions are necessary for the discharger to comply with the SNMP for nitrates. In general, discharges that fall within Categories 1 and 2, (No Degradation and De Minimus respectfully), will be determined to comply with the SNMP for nitrates without the need for further conditions or requirements. For discharges that fall within Categories 3 and 4 (Allocation of Assimilative Capacity), the Central Valley Water Board must make findings that are consistent with the State's Antidegradation Policy (Resolution No. 68-16). Depending on the level of degradation, the Central Valley Water Board may require additional conditions in WDRs to implement the SNMP, and to allocate assimilative capacity. For Category 5, the Central Valley Water Board will need to find that the discharge complies with the provisions in the Exceptions Policy.

To make findings of compliance with the nitrate components of the SNMP, the Central Valley Water Board must make the following findings and/or impose the following conditions that are applicable to each individual category. The findings and/or conditions shall be included in a new/revised WDR.

2.4.1. Category 1 - No Degradation Category

- Discharge is equal to or better than the nitrate water quality objective of 10 mg/L-N (i.e., less than 10 mg/L-N); and, discharge is better than receiving water quality as measured in First Encountered Groundwater.
- Discharge is deemed to be in compliance with SNMP.

2.4.2. Category 2 - *De minimus* Category

- Receiving water quality has assimilative capacity in First Encountered Groundwater (i.e., is better than water quality objective of 10 mg/L-N).
- Discharge(s) will not use more than 10% of available assimilative capacity over a 20 year planning horizon.
- To determine amount of assimilative capacity consumed by the discharge, the Central Valley Water Board will consider the quality of the discharge as it enters First Encountered Groundwater, accounting for reductions in nitrate mass or concentration as the discharge percolates to groundwater through the soil.
- Discharge will not unreasonably affect present and anticipated beneficial uses.
- WDRs will ensure that discharges result in BPTC at a level that is necessary to assure that pollution and nuisance will not occur, and that the highest water

quality consistent with the maximum benefit to the people of the state will be maintained.

2.4.3. Category 3 - Degradation Below 75% of the Water Quality Objective Category

- Receiving water quality has assimilative capacity in First Encountered Groundwater (i.e., is better than water quality objective of 10 mg/L-N).
- Discharge(s) will use more than 10% of available assimilative capacity over a 20 year planning horizon.
- Discharge will not cause First Encountered Groundwater to exceed 75% of the water quality objective for nitrate over a 20 year planning horizon.
- To determine amount of assimilative capacity consumed by the discharge, the Central Valley Water Board will consider the quality of the discharge as it enters First Encountered Groundwater, accounting for reductions in nitrate mass or concentration as the discharge percolates to groundwater through the soil.
- Discharge will not unreasonably affect present and anticipated beneficial uses.
- WDRs will ensure that discharges result in BPTC at a level that is necessary to assure that pollution and nuisance will not occur, and that the highest water quality consistent with the maximum benefit to the people of the state will be maintained.
- Additional monitoring and periodic trend evaluation conditions are imposed to ensure compliance with SNMP

2.4.4. Category 4 - Degradation Above 75% of the Water Quality Objective

- Receiving water quality has assimilative capacity in First Encountered Groundwater (i.e., is better than water quality objective of 10 mg/L-N).
- Discharge(s) will use more than 10% of available assimilative capacity over a 20 year planning horizon.
- Discharge will cause First Encountered Groundwater to exceed 75% of the water quality objective for nitrate over a 20 year planning horizon but will not cause First Encountered Groundwater to exceed the water quality objective for nitrate over a 20 year planning horizon.
- To determine amount of assimilative capacity consumed by the discharge, the Central Valley Water Board will consider the quality of the discharge as it enters First Encountered Groundwater, accounting for reductions in nitrate mass or concentration as the discharge percolates to groundwater through the soil.
- Discharge will not unreasonably affect present and anticipated beneficial uses.
- WDRs will ensure that discharges result in BPTC at a level that is necessary to assure that pollution and nuisance will not occur, and that the highest water quality consistent with the maximum benefit to the people of the state will be maintained.
- Discharger required to develop and implement a SNMP Implementation Plan for the nitrate components of the SNMP, which shall include the following:

- Identification of nitrate related drinking water supply issues in the area of influence of the discharge;
- Time schedule with milestones for addressing newly-identified nitrate related drinking water supply issues in the area influenced by the discharge;
- Preliminary identification of the steps that will be taken to evaluate actions necessary to implement Management Goals 2 and 3, which may be phased in over time and will likely require further evaluation and assessment to identify proposed long-term actions.

2.4.5. Discharge Above Objective and No Available Assimilative Capacity

- Receiving water has no assimilative capacity for nitrates in First Encountered Groundwater.
- Discharge exceeds the water quality objective for nitrate.
- No reasonable, feasible or practicable means are available for discharger to comply with WDRs that would otherwise limit the discharge of nitrate to groundwater concentrations to less than 10 mg/L-N.
- It is infeasible, impracticable or unreasonable to prohibit the discharge.
- Discharger required to develop and implement a SNMP Implementation Plan for the nitrate components of the SNMP, which shall include the following:
  - Identification of nitrate related drinking water supply issues in the area of influence of the discharge;
  - Time schedule with milestones for addressing newly-identified nitrate related drinking water supply issues in the area influenced by the discharge;
  - Preliminary identification of the steps that will be taken to evaluate actions necessary to implement Management Goals 2 and 3, which may be phased in over time and will likely require further evaluation and assessment to identify proposed long-term actions.
- Discharger required to seek and obtain an exception in accordance with the Exceptions Policy.

3.0 Path B - Permitting Strategy for Participants of A Management Zone

3.1 Preparation of a Preliminary Management Zone Proposal

The SNMP encourages dischargers (and groups of dischargers) to work collectively to initiate development of a Preliminary Management Zone Proposal, the requirements of which are outlined in the Management Zone Policy. The purpose for preparing a Preliminary Management Zone Proposal is to provide all dischargers within the specified area for that management zone with enough information to make an election for complying with the nitrate components of the SNMP via Path A (as an individual discharger/third party group), or via Path B (participant in a Management Zone). After conducting their

own initial assessment of their discharge, and after evaluating any applicable Preliminary Management Zone Proposal, dischargers will then need to notify the Central Valley Water Board of their election.

3.2 Submittal of Notice of Intent

For those dischargers that intend to comply with Path B, the NOI shall include identification of the Management Zone in which the discharger intends to participate, and acknowledge that they have reviewed and understand the commitments associated with participation in the Management Zone based on the Preliminary Management Zone Proposal that applies for their area of discharge.

3.3 Implementation of Early Action Plan

As part of participating in a Management Zone, dischargers will need to collectively be responsible for implementing the Early Action Plan that is part of the Preliminary Management Zone Proposal. Although WDRs for dischargers participating in a Management Zone will not yet be revised at this step in the process, the SNMP recommends that the Central Valley Water Board find participating dischargers in compliance with nitrate components of the SNMP as long as the participant is timely, and in good faith, participating in the Management Zone. Participating in the Management Zone includes assisting in the implementation of the Early Action Plan, and assisting in developing the Revised Management Zone Proposal. For dischargers that are subject to a General Order as a member of a Third Party Group, Third Party Group participation on behalf of its members shall constitute discharger participation.

3.3 Revision of WDRs/Compliance with SNMP

Per the Management Zone Policy, the Central Valley Water Board will revise WDRs/Conditional Waivers for those dischargers participating in the Management Zone after receiving the Revised Management Zone Proposal. Requirements for a Revised Management Zone Proposal are identified in the Management Zone Policy. Revisions to relative WDRs/Conditional Waivers may occur individually, or through a resolution that amends all applicable WDRs/Conditional Waivers.

Generally, the Central Valley Water Board will require Management Zone participants in the WDRs/Conditional Waivers to implement the detailed workplan for development of the SNMP Implementation Plan, and upon Central Valley Water Board approval of the SNMP Implementation Plan, to immediately transition to implementation of the SNMP Implemenation Plan.

To comply with the SNMP, the Revised Management Zone Proposal will indicate if the Management Zone is seeking compliance through the allocation of assimilative capacity on volume-weighted basis, or through an exception to meeting the water quality objective for nitrate.

4.0 Allocating Assimilative Capacity

4.1 Path A - Individual Dischargers

As indicated previously, dischargers electing to comply with the nitrate components of the SNMP may use available assimilative capacity in First Encountered Groundwater. Realistically, the amount of analysis and information necessary for allocating available assimilative capacity will vary - depending on if the discharger, or group of dischargers, is seeking to use less than 10% of available assimilative

capacity, degrade water quality up to 75% of the water quality objective, or degrade water quality objective above 75% of the water quality objective. .[20]

The Central Valley Water Board will continue to account for reductions in nitrate mass or concentration as the discharge percolates to groundwater through the soil. The Central Valley Water Board will also continue to consider any dilution that may occur from other sources recharging to the same aquifer. [21]

When deriving appropriate WDRs for nitrate, the Central Valley Water Board will initially presume that the discharge can comply with such restrictions by implementing the Best Practicable Treatment or Control (BPTC) measures. In such cases, the Central Valley Water Board will likely allow the discharge and require appropriate monitoring to demonstrate on-going compliance. If dischargers require additional time to implement the necessary pollution control measures to meet what would be considered BPTC, the Central Valley Water Board is authorized to include a compliance schedule in the WDRs.

For dischargers electing Path A, assimilative capacity represents the amount of nitrate that a given local area of influence can absorb without exceeding the applicable water quality objective. Assimilative capacity is calculated by subtracting the current average nitrate concentration in the defined aquifer from the water quality objective (usually 10 mg/L). [22] In practice, the actual computation is a good deal more difficult because nitrate concentrations can vary dramatically based on depth, location and sampling date, even when evaluating available assimilative capacity in First Encountered Groundwater.[23] This introduces some uncertainty into the calculation and, as a result, the Central Valley Water Board may be reticent to allocate all of the assimilative capacity that is estimated to be available - especially when state law does not obligate them to do so.[24]

Dischargers electing to comply with the SNMP via Path A, will need to submit information necessary to support the allocation of assimilative capacity. This information is generally referred to as an antidegradation analysis. The level of analysis necessary will vary based on the Category in which the discharge falls within. For discharges that fall within Category 2, the demonstration for granting assimilative capacity can be made by preparing a "simple" antidegradation analysis. For discharges that fall within Categories 3 and 4, the demonstration for granting assimilative capacity can be made by preparing a "complete" antidegradation analysis. Elements for a simple and complete antidegradation analysis are identified in Appendix X.

4.2 Path B - Participants of a Management Zone

The requirements for allocating assimilative capacity for management zones is specified in the Management Zone Policy.

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[20] See Section 4.0 of the SNMP for definitions.

[21] SWRCB. In the Matter of the Petition of the City of Lompoc for Review of Order No. 80-03 (NPDES Permit No. CA 00481827), California Regional Water Quality Control Board, Central Coast Region. Order No. WQ 81-5; (3/19/81).

[22] State Water Board. Policy for Water Quality Control for Recycled Water; Res. No. 2009-0011 (Feb. 3, 2009)

[23] A detailed explanation of the procedure that CV-SALTS recommends for estimating available assimilative capacity is described in Section XXX of the SNMP.

[24] CWC §13263(c)

5.0 Granting an Exception to Meeting the Water Quality Objective for Nitrate

5.1 Overview

As indicated previously, the Central Valley Water Board is required to implement the Basin Plans when establishing WDRs.[25] When existing nitrate concentrations in the groundwater already exceed 10 mg/L, and there is no assimilative capacity available, the State Water Board has previously ruled that regional boards may not authorize WDRs that allow discharges to be greater than the applicable water quality objective.[26]

For discharges to groundwater, compliance with the objective is generally assessed at the point-of-discharge or immediately below the root zone of an irrigated field.[27] Exceptions to this approach *"may be granted where it can be shown that a higher discharge limitation is appropriate due to system mixing or removal of the constituent by the process of percolation through the ground to the aquifer."*[28] So, for example, the Central Valley Water Board may take into consideration crop uptake, mixing with stormwater recharge, and transformation through the soil when assessing whether a discharge will meet the water quality objective when it reaches the groundwater. The burden of providing adequate technical information to support such findings generally falls on dischargers.

The above approach generally describes the Central Valley Water Board's current permitting strategy for discharges of nitrate to groundwater when there is no assimilative capacity available. If discharges are unable to immediately comply with such restrictions, and require additional time to implement the necessary pollution control measures, the Central Valley Water Board is authorized to establish an appropriate compliance schedule in the WDRs.[29] The SNMP recommends no changes to the Regional Board's existing authority in this area.

However, in some cases, there may be no reasonably feasible or practicable means for dischargers to comply with WDRs limiting the discharge of nitrate to groundwater to concentrations less than 10 mg/L, at least at the present time.[30] In such circumstances, under the current regulatory framework, the Central Valley Water Board may have no legal option but to prohibit the discharge.[31] This, in turn, may be tantamount to prohibiting any activity producing a discharge that is unable to comply with water quality objectives despite employing reasonable best efforts. Such an outcome is inconsistent with the

[25] CWC §13263(a) and § 13269(a) for Conditional Waivers.
[26] See, for example, SWRCB Order No. 73-4: In the Matter of the Petition of Orange County Water District for Review of Order No. 72-16 of the California Regional Water Quality Control Board, Santa Ana Region, Prescribing Waste Discharge Requirements for Rancho Caballero Mobile Home Park (Feb. 1, 1973).
[27] State Water Board Order No. WQ-88-12: In the Matter of the Petition of Carol Ann Close; San Diego County Milk Producers Council, el al. (pg. 14)
[28] State Water Board Order No. WQ-81-5: In the Matter of the Petition of the City of Lompoc for Review of Order No. 80-03 (NPDES Permit No. CA 0048127), California Regional Water Quality Control Board, Central Coast Region. (March 19, 1981).
[29] CWC §13263(c)
[30] See, for example, a more detailed discussion in: "Conclusions of the Agricultural Expert Panel: Recommendations to the State Water Resources Control Board pertaining to the Irrigated Lands Regulatory Program" September 9, 2014.
[31] CWC §13243 and CWC §13301; see also SWRCB Order No. 88-12: In the Matter of the Petition of Carol Ann Close; San Diego County Milk Producers Council, el al. (pg. 15).

State Water Board's declaration that *"Resolution 68-16 is not a 'zero-discharge' standard but rather a policy statement that existing quality be maintained when it is reasonable to do so."*[32]

In many instances, prohibiting the discharge may also be infeasible, impracticable or unreasonable. For example, municipal wastewater treatment plants cannot simply halt the flow of sewage into the facility without severe adverse consequences on public health and the environment. Similarly, prohibiting nitrate discharges from production agriculture may result in substantial and widespread adverse social and economic impacts on residents of the state while doing little to resolve the existing water quality impairments in the region. For this reason, the State Water Board had concluded that:

> *"Pollution prevention and cleanups … may not be feasible. Consequently, any practical solution to groundwater contamination must also focus on strategies to provide safe drinking water to consumers through treatment and alternative water supplies."*[33]

To that end, the State Water Board has also declared that:

> *"The single most important action that can be taken to help ensure safe drinking water for all Californians is to provide a stable, long-term source(s) of funding to assist those impacted by nitrate-contaminated groundwater."*[34]

Moreover, enforcing strict compliance with water quality objectives will do nothing to address prior nitrate discharges slowly moving through the vadose zone.[35] Nor does prohibiting the discharge determine when compliance cannot be achieved.[36] In either case, legacy loads are already programmed into the system even if the full affects have yet to manifest in groundwater quality.

Thus, with this background in mind, the SNMP recommends that where existing groundwater quality already exceeds the MCL for nitrate (i.e., > 10 mg/L), the Central Valley Water Board's foremost goal should be to encourage rapid implementation of safe drinking water alternatives. To achieve this goal, the Central Valley Water Board needs additional permitting options. Specifically, the SNMP recommends that the Basin Plans be amended to extend and expand the Central Valley Water Board's current authority to authorize exceptions under certain circumstances.[37] The following section describes how such exceptions authority should be applied with respect to permitting nitrate discharges to groundwater. A more detailed description of the specific basin plan revisions required to enact a broader exceptions policy and the rationale for such changes is provided in Section XXX of the SNMP.

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[32] State Water Board Order No. 86-8; In the Matter of the Petition of the County of Santa Clara, et al. May 5, 1986; pg. 29

[33] State Water Board. Report to the Legislature: Recommendations for Addressing Nitrate in Groundwater. February 2013; pg. 5 (citing Thomas Harter, et al., Addressing Nitrate in California's Drinking Water: Report to the California State Water Resources Control Board. U.C. Davis Center for Watershed Sciences. January 2012).

[34] State Water Board. Report to the Legislature: Recommendations for Addressing Nitrate in Groundwater. February 2013; pg. 24.

[35] State Water Board. Report to the Legislature: Recommendations for Addressing Nitrate in Groundwater. February 2013; pg. 5 (citing the UC-Davis Report identified in Footnote #3, above).

[36] State Water Board. Report to the Legislature: Communities that Rely on Contaminated Groundwater. January 2013. See discussion at pages 18-20 in the report. See also the United Nations Report of the Special Rapporteur on the Human Right to Safe Drinking Water and Sanitation. A/HRC/18/33/Add.4 (August 2, 2011). http://www2.ohchr.org/english/bodies/hrcouncil/docs/18session/A-HRC-18-33-Add4_en.pdf

[37] Central Valley Water Board Resolution No. R5-2014-0074 (June 6, 2014); subsequently approved by the SWRCB in Res. No. 2015-0010 (March 17, 2015).

5.2 Authorizing Exceptions

An "exception" allows the Central Valley Water Board to authorize a discharge to occur even where doing so may violate applicable water quality standards in the receiving groundwater basin.[38] Exceptions are most commonly employed when there is no feasible, practicable or reasonable means for a discharge to meet with water quality objectives and it is not feasible, practicable or reasonable to prohibit the discharge.

Exceptions are an appropriate option when state authorities determine that prohibiting a discharge would do more harm than good and allowing it to continue is in the best interests of the people of the state. Exceptions may also be an appropriate tool to authorize the time required to implement other regulatory solutions (e.g., developing site-specific objectives or reevaluating the applicable beneficial use) or to support a program of phased implementation and reasonable resource allocation including the planning and permitting activities required in such programs. However, exceptions are not intended to be a permanent waiver from compliance obligations. They are subject to specified conditions and reviewable periodically.

With respect to exceptions for nitrates, the SNMP recommends two overarching conditions. First, dischargers are still expected to make reasonable best efforts intended to comply with applicable WDRs when there exists a feasible and practicable means for doing so. Second, in lieu of meeting the applicable water quality objective for nitrate, dischargers will be expected to propose an Alternative Compliance Project (ACP) designed to mitigate the significant adverse effect(s) of their permitted discharge as it relates to nitrate for which an exception is granted.[39] Moreover, an ACP for nitrate will need to assure that groundwater users down-gradient of the discharge have drinking water that meets applicable state and federal standards. ACPs may include both interim actions (e.g., bottled water) in the short-term, permanent solutions (such as well-head treatment or alternative drinking water supplies) in the intermediate term, and efforts to re-attain the water quality objective (where feasible and practicable) over the long-term. In granting an exception, the Central Valley Water Board must also consider the three management goals, as discussed previously in Section XXXX.

The SNMP recommends that exceptions be reviewable for two reasons. First, although the means to assure compliance may not currently exist, new source control and treatment technologies may be developed in the future. Therefore, exceptions need to be periodically reassessed. Second, permanent exceptions would be tantamount to nullifying the designated use. Therefore, where compliance cannot be assured (even over the long-term), the State Water Board has stated that the regional boards should consider whether the water quality standard itself is appropriate.[40] Exceptions are intended to complement, not replace, the water quality standards review process.

In the Basin Plans, the current exceptions policy is restricted to a limited number of salinity constituents (electrical conductivity, TDS, chloride, sulfate and sodium).[41] As discussed separately in the Exceptions

[38] Exceptions from compliance with water quality standards in a groundwater basin is similar to the concept of a "variance" for surface waters. The key distinction is that exceptions are governed exclusively by state law and variances are subject to both state and federal authority. See, for example, Res. No. R5-2014-0074.

[39] A more detailed description of the mandatory elements in an ACP is described in Section XXX of this SNMP.

[40] State Water Board Order No. WQ-81-5: In the Matter of the Petition of the City of Lompoc for Review of Order No. 80-03 (NPDES Permit No. CA 0048127), California Regional Water Quality Control Board, Central Coast Region. (March 19, 1981).

[41] Res. No. R5-2014-0074

Policy document (see Section XX), this policy should be revised in order to provide the Central Valley Water Board additional authority to allow exceptions for nitrate in WDRs. In summary, the current exceptions policy was deliberately designed to provide interim relief from meeting salinity objectives while CV-SALTS was in the process of developing the long-term SNMP. As such, the interim policy does not allow exceptions longer than 10 years and it prohibits the Central Valley Water Board from approving any new exceptions after June 30, 2019. Before that date, it was expected that the interim policy would be replaced by a more permanent exceptions policy – one that was developed in conjunction with the SNMP.[42]

The SNMP recommends that the expiration date specified in the interim policy be deleted so that that the Central Valley Water Board is authorized to approve exceptions after June 30, 2019. In addition, the SNMP recommends that the 10-year time limit specified in the interim policy be revised by allowing the Central Valley Water Board to authorize or reauthorize exceptions for much longer periods where necessary to facilitate implementation of the long-term restoration strategies described in the SNMP.[43] Regardless, dischargers are expected to comply with water quality standards if and when a feasible and practicable means for doing so becomes available. The existing requirement to periodically assess and confirm discharger conformance with the terms and conditions of any exception would remain unchanged.

To grant an exception for discharges of nitrate, the SNMP recommends that the Central Valley Water Board consider the following factors:

1) Nitrate concentrations in the groundwater basin exceed or threaten to exceed the MCL.
2) There is no feasible, practicable or reasonable means to assure compliance with the relevant WDRs governing nitrate under traditional permitting approaches.
3) It is infeasible, impracticable or unreasonable to prohibit the discharge. The Central Valley Water Board will prepare guidelines for making such an assessment.
4) Authorizing the discharge is in the best interests of the people of the state.
5) The discharger, or group of dischargers, requests an exception and proposes to implement an ACP in lieu of meeting the relevant WDRs for nitrate.
6) The ACP provides appropriate well-head treatment or an alternative drinking water supply to down-gradient groundwater users where nitrate levels exceed or threaten to exceed the MCL.[44]
7) The discharger continues to make reasonable best efforts, where feasible and practicable, to further reduce nitrate concentrations in the discharge.
8) The discharger agrees to actively support implementation of the long-term nitrate compliance plan, as described in the SNMP.

Further, to approve an exception for nitrate, the SNMP recommends that the Central Valley Water Board consider whether the ACP will result in a higher level of public health protection (e.g., greater or faster risk reduction) than is likely to otherwise occur if the discharge were prohibited or is a key part of

[42] R5-2014-0074; Regional Board Staff Response to Public Comments, pg. 12 & 13.
[43] The long-term approach to nitrate management is described in Section XXX of the SNMP.
[44] The discharger may propose to participate in a regional project or make one or more payments to a regional nitrate mitigation fund approved as an ACP subject to Regional Water Board review and approval.

a long-term restoration strategy. In other words, will the ACP do a better job of achieving the real-world outcomes originally sought by requiring strict compliance with WDRs to meet water quality standards?

5.0 Proposed Modifications to the Basin Plans to Support Policy Implementation

The following subsections summarize the key changes anticipated for each Basin Plan to support adoption of this policy.

Existing and Potential Beneficial Uses

No modifications anticipated.

Water Quality Objectives

No modifications anticipated.

Implementation

Incorporate the relevant elements of this Policy into the Basin Plans to describe the permitting approach for nitrate in groundwater.