

Proposed Permitting Strategy for Nitrate Discharges to Groundwater

Regulatory Considerations

The California Water Code (CWC) requires each Regional Board to *"formulate and adopt water quality control plans for all areas within the region."*¹ Within these water quality control plans each Regional Board is required to establish water quality objectives that *"will ensure reasonable protection of beneficial uses and the prevention of nuisance."*²

To that end, the State Water Resources Control Board enacted a Sources of Drinking Water Policy. In that policy the Board declared that: *"all surface and ground waters of the State are considered to be suitable, or potentially suitable, for municipal or domestic water supply and should be so designated by the Regional Board"* unless certain exceptions apply.³

Consistent with statewide policy, the Central Valley Regional Water Quality Control Board adopted similar language in both of its Basin Plans.⁴ Any waterbodies that the Regional Board exempted from the MUN designation, in accordance with the Sources of Drinking Water Policy, are also identified in the Basin Plans.⁵

To protect drinking water supplies, the Central Valley Regional Board has adopted the following water quality objective:

*"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)..."*⁶

The Maximum Contaminant Level for nitrate is 45 mg/L (as NO₃).⁷ This concentration is equivalent to 10 mg/L as Nitrate-Nitrogen (NO₃-N). The latter value is more commonly used by the Regional Board when developing waste discharge requirements.

¹ CWC §13240

² CWC §13241

³ State Water Resources Control Board Resolution No. 88-63 (adopted May 19, 1988).

⁴ Water Quality Control Plan (Basin Plan) for the Sacramento River Basin and the San Joaquin River Basin – 4th Ed., pg. II-3.0 and Water Quality Control Plan for the Tulare Lake Basin - 2nd Ed., pg. II-2.

⁵ See, for example, Water Quality Control Plan for the Tulare Lake Basin - 2nd Ed., pg. II-7.

⁶ 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.

⁷ 22 CCR §64431(a); see Table 64431-A: Maximum Contaminant Levels for Inorganic Chemicals.

When prescribing waste discharge requirements, the Regional Board must implement any relevant water quality control plans that have been adopted.⁸ This long-standing general obligation was recently reaffirmed by the State Board with respect to nitrate:

"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."⁹

In addition, when the Recycled Water Policy was adopted in 2009, the State Board determined that:

"Some groundwater basins in the state contain salt and nutrients [nitrate] that exceed or threaten to exceed water quality objectives established in the applicable Water Quality Control Plans... It is the intent of this policy that salts and nutrients from all sources be managed on a basin-wide or watershed-wide basis in a manner that ensures attainment of water quality objectives and protection of beneficial uses. The State Water Board finds that the appropriate way to address salt and nitrate issues is through development of regional or sub-regional salt and nutrient management plans..."¹⁰

Recently, the state legislature amended the California Water Code by declaring 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..."¹¹

Therefore, this section of the Salt and Nutrient Management Plan (SNMP) sets forth CV-SALTS recommendations for regulating future discharges of nitrate to groundwater with special emphasis on the permitting options in groundwater basins or sub-basins that exceed or threaten to exceed the MCL as required by the Recycled Water Policy and in a manner consistent with AB-685.

⁸ CWC §13263(a)

⁹ 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.

¹⁰ Policy for Water Quality Control for Recycled Water. Res. No. 2009-0011 (Feb. 3, 2009); §6(a) @ pg. 5

¹¹ Assembly Bill No. 685 added §106.3 to the California Water Code. Signed by Gov. Brown on September 25, 2012.

Water Quality Conditions

Several independent studies have reported that nitrate concentrations exceed the established MCL at numerous well locations throughout the Central Valley.¹² The State Board recently reported that 90 public water supply systems reported violations of the MCL for nitrate in 2012.¹³ CV-SALTS comprehensive assessment of available water quality data is consistent with these previous studies but also indicates that nitrate concentrations vary considerably depending on depth (see Table 1) and location (see Fig. 1). The long-term trend also appears to vary by location (see Fig. 2).

Table 1: Nitrate Concentrations in Shallow and Deep Groundwaters of the Central Valley¹⁴

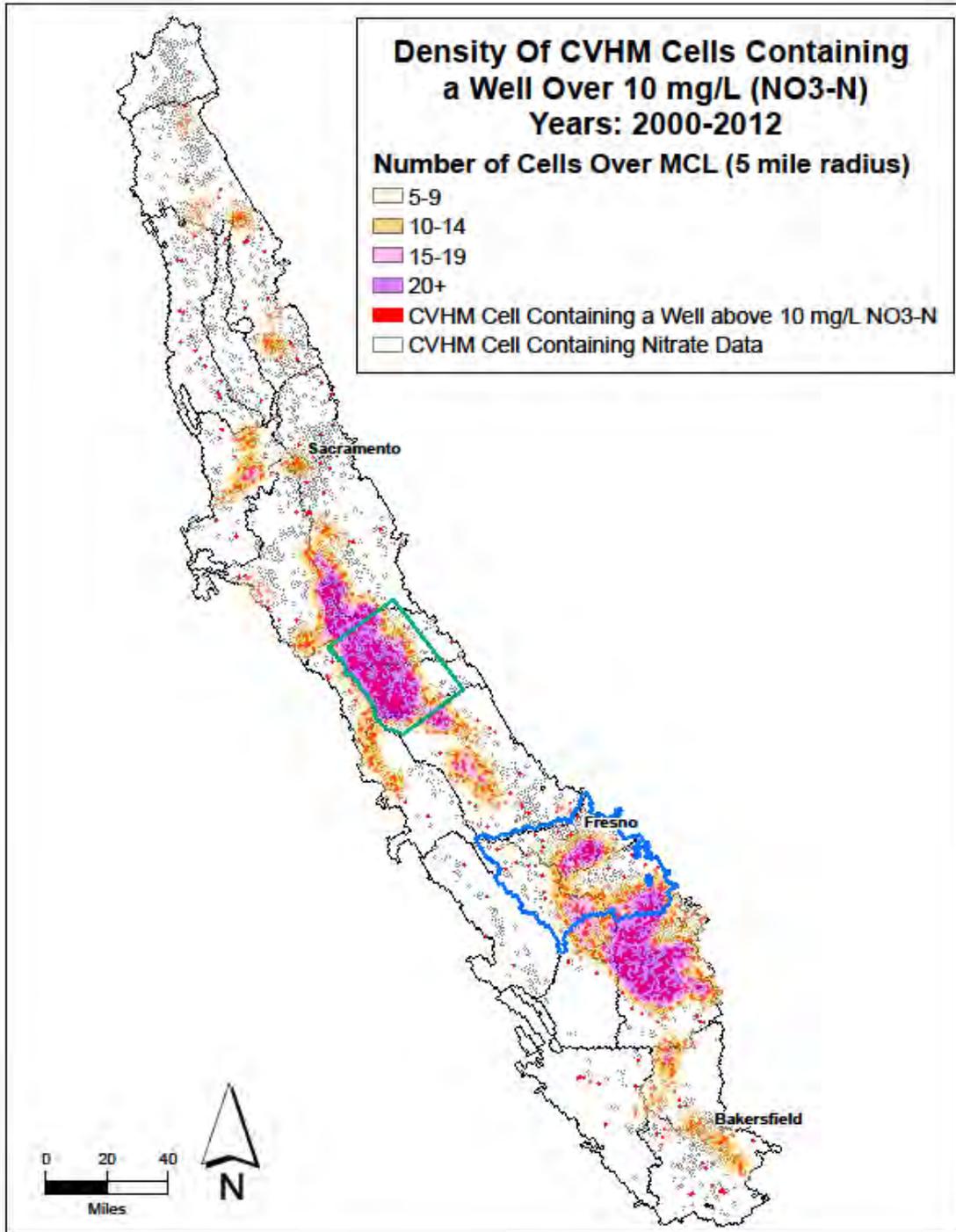
	IAZ	Shallow Median (2003-2012)	Estimated Deep (2003)
Northern Central Valley	1	0.1	0.8
	2	0.6	1.4
	3	0.9	1.5
	4	2.8	0.2
	5	0.4	0.9
	6	0.6	2.0
	7	0.7	1.1
Middle Central Valley	8	1.2	1.1
	9	0.4	0.5
	10	2.7	4.2
	11	4.9	3.2
	12	10.4	3.0
	13	6.1	2.2
Southern Central Valley	22	7.4	1.9
	14	0.4	1.0
	15	3.0	0.4
	16	11.1	3.1
	17	8.5	2.9
	18	10.7	3.0
	19	3.3	1.1
	20	3.4	2.0
21	0.2	1.5	

¹² See, for example, 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. See, also, Communities that Rely on Contaminated Groundwater. State Water Resources Control Board Report to the Legislature. January, 2013.

¹³ State Water Resources Control Board. Safe Drinking Water Plan for California: Report to the Legislature in Compliance with Health and Safety Code Section 116365. June, 2015 (see Table 4.13 on page 77)

¹⁴ Initial Conceptual Model (ICM) Technical Services Tasks 7 and 8 – Salt and Nitrate Analysis for the Central Valley Floor Final Report. December, 2013 (Table 10-5 @ pg. 10-20 in original).

Fig. 1: Nitrate Concentrations in Groundwaters of the Central Valley¹⁵



¹⁵ Initial Conceptual Model (ICM) Technical Services Tasks 7 and 8 – Salt and Nitrate Analysis for the Central Valley Floor Final Report. December, 2013 (Fig. 7-18 @ pg. 7-25 in original).

Fig. 2: Long-term Trends for Nitrate Concentrations in Groundwaters of the Central Valley¹⁶

	IAZ	1910-1964		1965-1970		1971-1979		1980-1989		1990-2002		2003-2012		Trend
		Median	Value Count											
Northern Central Valley	1					0.1	1					0.1	41	No apparent trend
	2	1.1	29	1.3	13	2.2	86	3.0	30	2.4	12	0.6	75	No apparent trend
	3	2.3	6	1.2	6	1.3	34	1.3	7	0.7	22	0.9	62	No apparent trend
	4			0.2	7	0.2	11	0.0	2	0.1	7	2.8	17	No apparent trend
	5	1.1	8	1.2	4	1.4	48	2.5	7	0.8	13	0.4	80	No apparent trend
	6			1.8	8	3.6	14	3.4	17	0.2	3	0.6	106	Slightly decreasing
	7	0.8	8	1.2	2	1.5	5	1.8	4	1.7	9	0.7	76	No apparent trend
Middle Central Valley	8	1.1	24	2.5	9	1.9	13	2.4	12	1.5	11	1.2	345	No apparent trend
	9	4.9	8	2.9	4	0.1	7	0.1	7	0.1	10	0.4	218	No apparent trend
	10	3.4	4					2.7	7	2.2	4	2.7	65	No apparent trend
	11			3.2	3	7.5	4	12.6	8	8.1	4	4.9	254	Increasing to decreasing?
	12							0.1	1	3.4	11	10.4	220	Increasing
	13			7.9	3			4.4	8	5.4	21	6.1	195	Slightly increasing
Southern Central Valley	22	3.4	1					13.1	18	17.5	17	7.4	83	Slightly decreasing
	14	3.4	1	2.5	1			23.0	75			0.4	14	No apparent trend
	15							1.2	67	11.3	26	3.0	192	Increasing to decreasing?
	16	5.7	1					8.2	6	7.9	19	11.1	36	Slightly increasing
	17	6.0	2			8.1	1	8.0	10	10.1	33	8.5	100	Slightly increasing
	18							14.5	8	15.0	21	10.7	362	No apparent trend
	19	3.6	3					4.9	40			3.3	42	No apparent trend
	20	0.6	6					1.6	1			3.4	14	Slightly increasing
21	0.7	8			8.6	1	8.6	23	0.3	5	0.2	45	Increasing to decreasing?	

*Value count refers to the number of values the calculated median concentration is based on.

Accurately characterizing current and projected water quality conditions is important because regulatory requirements differ when existing water quality is better than the applicable standard(s).¹⁷ Under such conditions, the range of permitting options also increases when the Regional Board determines that there is assimilative capacity available.¹⁸

Therefore, CV-SALTS recommended permitting strategy for nitrate discharges to groundwater is separated into two paths. The first path describes the proposed approach when existing groundwater quality exceeds or threatens to exceed the nitrate objective and there is no assimilative capacity available. The second path describes the proposed approach when current groundwater quality is better than the objective and there is assimilative capacity available for nitrate.

¹⁶ Initial Conceptual Model (ICM) Technical Services Tasks 7 and 8 – Salt and Nitrate Analysis for the Central Valley Floor Final Report. December, 2013 (Table 7-8 @ pg. 7-50 in original).

¹⁷ State Water Resources Control Board. Resolution No. 68-16: Statement of Policy with Respect to Maintaining High Quality of Waters in California. (Oct 28, 1968)

¹⁸ 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.

Permitting Strategy for Discharges to Groundwaters with No Assimilative Capacity Available

The California Water Code requires Regional Boards to implement the Water Quality Control Plan (Basin Plan) when establishing waste discharge requirements (WDRs).¹⁹ Consequently, when existing nitrate-nitrogen concentrations already exceed or threaten to exceed 10 mg/L, and there is no assimilative capacity available in the underlying groundwater, the State Water Board has previously ruled that Regional Boards may not authorize waste discharge requirements (WDRs) greater than the applicable water quality objective.²⁰

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.²¹ *"Exceptions 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."*²²

The above approach describes the Regional Board's preferred permitting strategy for discharges of nitrate-nitrogen 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 Regional Board is authorized to establish an appropriate compliance schedule in the WDRs.²³

The state Legislature has declared that *"pollution prevention should be the first step in a hierarchy for reducing pollution and managing waste."*²⁴ Pollution prevention means any action that causes a net reduction in the use or generation of a hazardous substance or other pollutant that is discharged into water and includes changes in the raw materials or feedstocks, operational improvements and production process changes.

However, in some cases, there may be no feasible or practicable means for dischargers to comply with WDRs limiting nitrate-nitrogen concentrations to less than 10 mg/L despite their best effort to do so.²⁵ In such circumstances, the Regional Board may have no legal option but to prohibit the discharge.²⁶ This, in turn, may be tantamount to prohibiting any activity producing a discharge that is unable to comply with water quality objectives using reasonable best efforts. Such an outcome is inconsistent with the State Water Board's declaration that "Resolution 68-16 is not a 'zero-discharge' standard..."²⁷

¹⁹ CWC §13263(a)

²⁰ 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).

²¹ SWRCB Order No. WQ-88-12: In the Matter of the Petition of Carol Ann Close; San Diego County Milk Producers Council, et al. (pg. 14)

²² SWRCB 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).

²³ CWC §13263(c)

²⁴ CWC §13263.3 *et seq.*

²⁵ See, for example, a discussion of this problem for irrigated agriculture in the SWRCB Report entitled: "Conclusions of the Agricultural Expert Panel" (Sept. 9, 2014). [\[add full reference citation\]](#)

²⁶ 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, et al. (pg. 15).

²⁷ SWRCB Order No. 86-10; [\[add full reference citation\]](#) (pg. 440).

In some instances, prohibiting the discharge may also be infeasible or impracticable. Wastewater treatment plants, for example, cannot simply halt the flow of sewage into the facility. Prohibiting the discharge may also be unreasonable. This is especially true where a de facto ban on certain activities results in substantial and widespread adverse social and economic impacts on residents of the region while doing little to resolve the existing water quality impairments. 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."²⁸ To that end, the State Water Board has 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."²⁹

Requiring strict compliance, where a discharger is actually able to meet standards, does not address the legacy concerns.³⁰ Nor does prohibiting the discharge when compliance cannot be achieved.³¹

Cleanup and Abatement Orders (CAOs) can address the legacy issue but do not provide a mechanism for permitting the discharge to continue without meeting water quality objectives.³² A valid permit, with which the discharger can comply, is an essential prerequisite to assure the economic resources needed to implement the CAO.

Where existing groundwater quality already exceeds or threatens to exceed the MCL for nitrate, the Regional Board's foremost goal should be to encourage rapid implementation of safe drinking water alternatives. To achieve this goal, the Regional Board requires additional permitting options. Specifically, CV-SALTS recommends that the two Central Valley Basin Plans be amended to extend and expand the Regional Board's current authority to authorize temporary conditional exceptions under certain circumstances.³³ 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.

²⁸ State Water Resources Control 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).

²⁹ State Water Resources Control Board. Report to the Legislature: Recommendations for Addressing Nitrate in Groundwater. February, 2013; pg. 24.

³⁰ State Water Resources Control 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).

³¹ State Water Resources Control Board. Report to the Legislature: Communities that Rely on Contaminated Groundwater. Jan., 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 (Aug. 2, 2011); http://www2.ohchr.org/english/bodies/hrcouncil/docs/18session/A-HRC-18-33-Add4_en.pdf

³² CWC §13304 et seq.

³³ Central Valley Regional Water Quality Control Board Resolution No. R5-2014-0074 (June 6, 2014); subsequently approved by the SWRCB in Res. No. 2015-0010 (March 17, 2015).

Temporary Conditional Exceptions

If authorized by the Basin Plan and approved by the Regional Board, an "exception" allows a discharge to occur even where doing so would otherwise violate applicable water quality standards in the receiving groundwater basin.³⁴ Exceptions are most commonly employed when there is no feasible, practicable or reasonable means for a discharger to comply with applicable WDRs 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. However, exceptions are not intended to be a permanent waiver from compliance obligations. They are both temporary and conditional.

Exceptions are temporary 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 must be periodically reviewed and re-justified. Second, compliance cannot be assured (even over the long-term), the State Water Board has stated that it may be necessary to reconsider whether the water quality standard is appropriate.³⁵

Exceptions are also conditional for two reasons. First, dischargers are still required to implement Best Efforts intended to come as close as possible to meeting the applicable waste discharge requirements when there exists a feasible, practicable and reasonable means for doing so. Second, in lieu of meeting the applicable water quality objective, dischargers will be expected to propose an Alternate Compliance Program (ACP) designed to mitigate the significant adverse effect(s) of their permitted discharge.³⁶ For nitrates, this will most likely take the form of providing well-head treatment or an alternate drinking water supply for groundwater users downgradient of the discharge.

The current exceptions policy is restricted to a limited number of salinity constituents (electrical conductivity, TDS, chloride, sulfate and sodium). The policy should be revised in order to provide the Regional Board additional authority to allow exceptions for nitrate-nitrogen.

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 Salt and Nitrate Management Plan. As such, the interim policy does not allow exceptions longer than 10 years and it prohibits the Regional board from approving any new exceptions after June 30, 2019. By this date, it was expected that the interim policy would be replaced by a more permanent and comprehensive exceptions policy – one that was developed through the CV-SALTS regional stakeholder process.

³⁴ 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.

³⁵ SWRCB 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).

³⁶ A more detailed description of the mandatory elements in an ACP is described in section XXX of this SNMP.

In this SNMP, CV-SALTS recommends that the expiration date specified in the interim policy be deleted so that that the Regional Board is authorized to approve exceptions after June 30, 2019. In addition, CV-SALTS recommends that the 10-year time limit specified in the interim policy be revised by allowing the Regional Board to authorize or reauthorize exceptions for longer periods where necessary to facilitate implementation of the long-term compliance strategy described in the SNMP.³⁷ Regardless, dischargers are expected to make best efforts 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.

In general, the Regional Board should consider granting a temporary conditional exception for discharges of nitrate- nitrogen under the following conditions:

- 1) Nitrate-nitrogen concentrations in the groundwater basin exceed or threaten to exceed the MCL and there is no assimilative capacity available in the receiving water, and...
- 2) There is no feasible, practicable or reasonable means to assure compliance with the relevant waste discharge requirements governing the maximum concentration or mass of nitrate-nitrogen in the discharge, and...
- 3) It is infeasible, impracticable or unreasonable to prohibit the discharge, and...
- 4) Authorizing the discharge is in the best interests of the people of the State, and...
- 5) The discharger requests an exception and proposes to implement an Alternate Compliance Program (ACP) in lieu of meeting the relevant waste discharge requirements for nitrate-nitrogen, and...
- 6) The ACP provides appropriate well-head treatment or an alternative drinking water supply to downgradient groundwater users that may be adversely affected by excess nitrate-nitrogen in the discharge, and...³⁸
- 7) The discharger continues to make reasonable Best Efforts, where feasible and practicable, to reduce nitrate-nitrogen concentrations in the discharge, and...
- 8) The discharger agrees to actively support implementation of the long-term nitrate compliance strategy (NIMS) described in the SNMP.

In order approve an exception, the Regional Board must conclude that the Alternative Compliance Program will result in a higher level of public health protection (e.g. risk reduction), sooner than is likely to otherwise occur if the discharge were prohibited. In other words, the ACP does a better job of achieving the real-world risk reduction originally sought by requiring strict compliance with WDRs to meet water quality standards.

³⁷ The long-term Nitrate Implementation Measures Strategy (NIMS) is described in Section XXX of the SNMP.

³⁸ In special cases, the discharger may propose one or more payments to a regional nitrate mitigation fund approved by the Regional Board as an ACP when well-head treatment and alternative drinking water supplies are not needed locally.

Permitting Strategy for Discharges to Groundwaters with Assimilative Capacity Available

When water quality in the groundwater basin is better than water quality objective specified in the Basin Plan, then the state's antidegradation policy requires the Regional Board to regulate in a manner designed to maintain that higher quality water except under certain conditions.³⁹ Therefore, when the nitrate-nitrogen concentration in the receiving water is less than 10 mg/L, the Regional Board's preferred permitting strategy will be to establish WDRs that ensure discharges do not lower water quality.

By definition, this means that discharges to high quality groundwaters must comply with more stringent WDRs. However, the Regional Board will continue to consider reductions in nitrate mass or concentration as the discharge percolates to groundwater through the soil. The Regional Board will also continue to consider any dilution that may occur from other sources recharging to the same aquifer.

When deriving an appropriate WDR for nitrate, the Regional Board will initially presume that the discharge can comply with such restrictions by implementing the Best Practicable Treatment or Control (BPTC) measures. If dischargers may require additional time to implement the necessary pollution control measures, the Regional Board is authorized to include a compliance schedule in the WDRs.

In some cases, however, there may be no reasonably feasible means of achieving compliance with the default WDRs even after implementing Best Practicable Treatment or Controls. At such times, the Regional Board has two options available. It can prohibit the discharge or, under certain circumstances, it can authorize the discharge by allocating some of the available assimilative capacity provided that doing so complies with the requirements set for in state antidegradation policy.

Assimilative capacity represents the amount of nitrate that a given groundwater basin or sub-basin can absorb without exceeding the applicable water quality objective. Assimilative capacity is calculated by subtracting the current average nitrate-nitrogen concentration in the aquifer from the water quality objective (usually 10 mg/L).⁴⁰ In practice, the actual computation is a good deal more difficult because nitrate-nitrogen concentrations can vary dramatically based on depth, location and sampling date, even in the same groundwater basin.⁴¹ This introduces some uncertainty into the calculation and, as a result, the Regional Board is 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.⁴²

Because groundwater quality can vary so significantly, and assimilative capacity is calculated based on an the average concentration, it is possible for a basin or sub-basin to be considered a "high quality" aquifer despite the fact that nitrate-nitrogen concentrations at some individual well locations exceed the MCL. Under such circumstances, the Regional Board is still allowed to allocate some of the available assimilative capacity but must still develop waste discharge requirements designed to ensure that beneficial uses are not unreasonably affected if a permitted discharge is allowed to lower water quality.

³⁹ SWRCB. Statement of Policy with Respect to Maintaining High Quality of Waters in California. Res. No. 68-16 (Oct. 28, 1968)

⁴⁰ SWRCB. Policy for Water Quality Control for Recycled Water; Res. No. 2009-0011 (Feb. 3, 2009)

⁴¹ A detailed explanation of the procedure that CV-SALTS recommends for estimating available assimilative capacity is described in Section XXX of the SNMP.

⁴² CWC §13263(c)

Allocating Assimilative Capacity

The state antidegradation policy sets forth the specific conditions that must be met and demonstrations that must be made before the Regional Board can make an allocation of assimilative capacity and, thereby, allow a discharge 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."⁴³

To determine that the allocation of assimilative capacity "will not result in water quality less than that prescribed in the policies," the Regional Board will require dischargers to demonstrate that the permitted discharge will not cause the average nitrate-nitrogen concentration in the groundwater basin or sub-basin to exceed 10 mg/L.

To determine that the allocation of assimilative capacity "will not unreasonably affect present and anticipated beneficial use of water," the regional Board will require dischargers to demonstrate that the permitted discharge will not cause the average nitrate concentration at existing or planned wells to exceed 10 mg/L. For permitted discharges that are likely to lower water quality, the Regional Board will presume that present and anticipated beneficial uses will not be unreasonably affected if the discharge 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 to the same groundwater basin or sub-basin. This approach is consistent with the recommendations given by the State Water Board in the Recycled Water Policy.⁴⁴

If a 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 downgradient beneficial uses. In addition, the Regional Board may elect to apply a reasonable "buffer" to account for data uncertainties and other potential operational difficulties. The Regional Board is not required to allocate all of the estimated assimilative capacity available and, for this reason, is inclined to maintain an appropriate safety factor to ensure that high quality receiving waters do not exceed the water quality objective for nitrate-nitrogen.

⁴³ SWRCB. Statement of Policy with Respect to Maintaining High Quality of Waters in California. Res. No. 68-16 (Oct. 28, 1968)

⁴⁴ SWRCB. Policy for Water Quality Control for Recycled Water; Res. No. 2009-0011 (Feb. 3, 2009)

To determine whether the discharger is implementing "best practicable treatment or control necessary to assure that a pollution or nuisance will not occur," the Regional Board will look at whether BPTC (at the discharge) can assure that the average nitrate-nitrogen concentrations at affected wells downgradient of the discharge will remain consistently below 10 mg/L. If not, then the Regional Board will next consider whether BPTC applied at any other point between the discharge and the actual use (e.g. well-head treatment or alternate water supply, etc.) can prevent pollution or nuisance through mitigation.

To 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," the Regional Board will consider the following factors:

- 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 ability to bear the cost of compliance and any potential adverse impacts to the surrounding community.
- 2) Environmental effects of allowing or prohibiting the proposed discharge (esp. the net on water quality in the region). In some cases, where the net effect on receiving water quality shown to be spatially and/or temporally-limited, the Regional Board may conclude that the discharge does not result in significant degradation.

In general, the Regional Board is strongly predisposed against allocating assimilative capacity to discharges where there is a reasonably feasible and practicable means for achieving compliance with traditional waste discharge requirements. The Regional Board is equally predisposed to avoid prohibiting discharges where no such means exist and considers this alternative something of a last resort. Nevertheless, assimilative capacity is a scarce and finite resource.

Therefore, the Regional Board is inclined to allocate assimilative capacity, and allow lower water quality, only if doing so would assure a significantly better outcome for the people of California than would requiring strict compliance with default waste discharge requirements. And, the Regional Board is particularly interested in allocating 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, the Regional Board has developed a more detailed guidance document describing what sorts of demonstrations might constitute "maximum benefit to people of the state."⁴⁵

If, however, the Regional Board concludes that, even after implementing BPTC, a discharge will lower water quality and 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 pollution or nuisance to occur, or is inconsistent with maximum benefit to the people of the state, then the discharge cannot be authorized solely by allocating a portion of the available assimilative capacity. Unless the Regional Board is willing to authorize an exception from meeting water quality standards, the discharge must be prohibited.

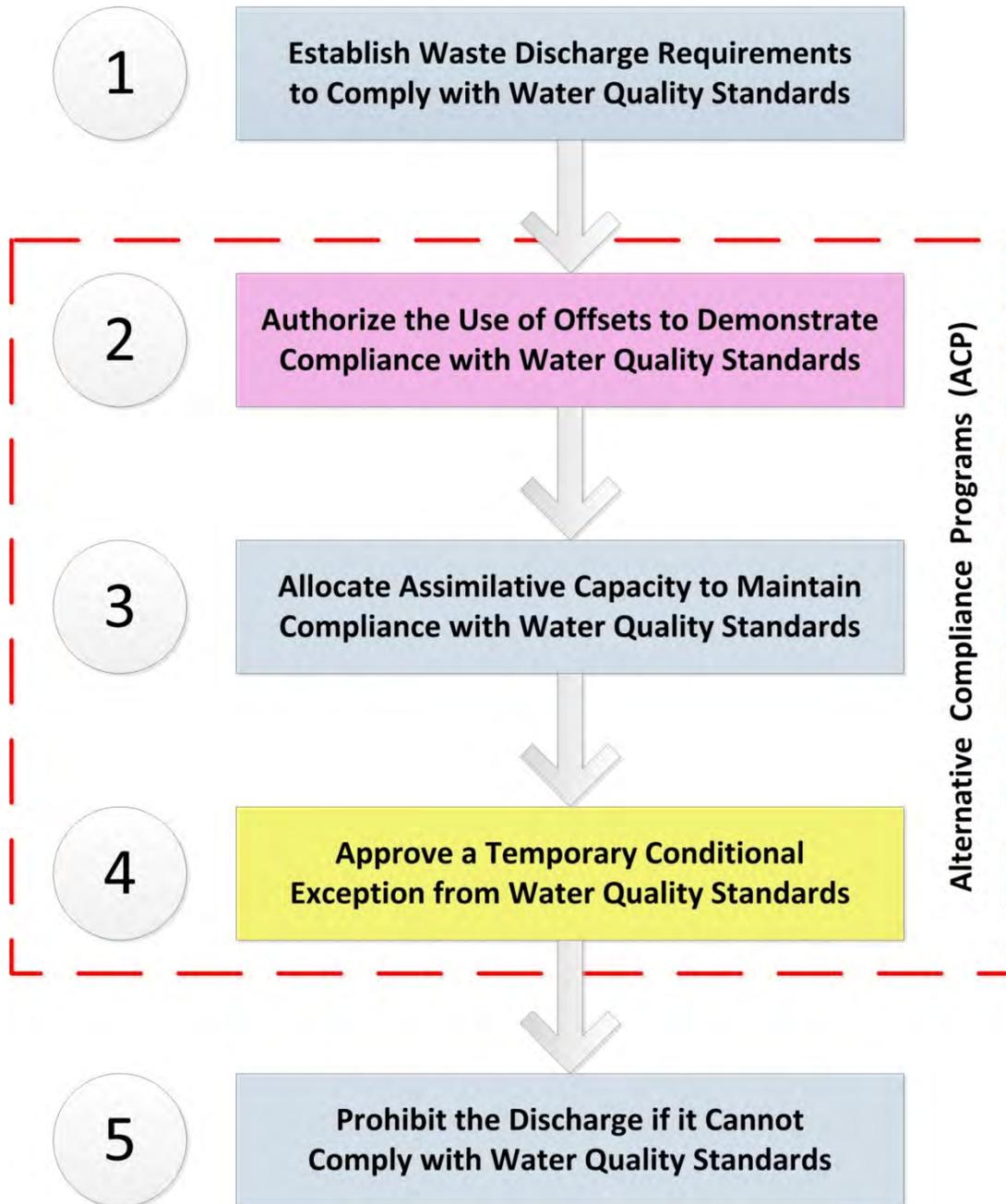
⁴⁵ NOTE: To be developed as part of the SNMP Basin Plan Amendment Package based on the concepts described in Attachment A (below).

Attachment A: "Maximum Benefit" concepts to be developed in regional Anti-Deg guidance.

- 1) Allowing lowering water quality will result in more effective protection of actual beneficial uses than would occur by imposing more stringent effluent limitations or prohibiting the discharge. Example: the discharge is coupled with a project to provide well-head treatment or alternate drinking water supplies in an area where the MUN use is already severely impaired.
- 2) Allowing lower water quality, in relation to the baseline condition, would actually improve existing water quality or would significantly reduce the rate at which water quality is already degrading (or is expected to degrade) in the receiving water. Example: creating barriers to groundwater migration or diluting contaminants in the vadose zone.
- 3) Lowering water quality at one location will result in higher water quality in the same or another location such that there is a net improvement in water quality and beneficial use protection in the receiving water, watershed, region or state as a whole. Example: a groundwater clean-up project removes TCE, but the air stripping process increases the concentration of TDS.
- 4) Lowering water quality would facilitate increased use of recycled water (particularly by displacing demand for potable water) and thereby increase the overall water supply in the watershed, region or state. Example: using recycled water for landscape or agricultural irrigation.
- 5) Lowering water quality would facilitate increased recharge and storage to groundwater basins and particularly where the underlying aquifer is in an overdraft condition.
- 6) Allowing lower water quality is necessary to protect infrastructure or industries deemed vital to national security, public safety, public health, or the environment.
- 7) Lowering water quality would produce significantly less adverse environmental impact than imposing more stringent effluent limitations or discharge prohibitions. Example: additional treatment results in significant cross-media waste streams (e.g. brines, greenhouse gases, etc.) or requires significant energy consumption without any corresponding reduction in risk to public health or the environment.
- 8) Lowering water quality is necessary to accommodate important social and economic growth in the region particularly where more stringent effluent limitations or discharge prohibitions would result in widespread and substantial adverse socioeconomic impacts in the area.

Note: the above examples are intended to illustrate some, but not all, possible approaches to making a Maximum Benefit demonstration.

Permitting Options for Nitrate Discharges to Groundwater (preferential hierarchy)



Note: Options 1, 3 & 5 require no change to Regional Board's existing authority. Option 4 requires modification to existing authority. Option 2 requires new authority in Basin Plan.