



Proposed Rationale to Revise the Nitrate-Nitrogen Objective in the Chino-South Management Zone

- 1) Nitrate-nitrogen objective for Chino-South Management Zone (MZ) is 4.2 mg/L (SAR Basin Plan, 2008).
- 2) Current ambient nitrate-nitrogen concentration in Chino-South MZ (1987-2006) is 25.7 mg/L (WEI, 2008, Table 3-2).
- 3) Management zone is not meeting objective and no assimilative capacity is available; therefore, discharge limits must be written to assure compliance with the objective.
- 4) Assuming a 50% reduction in nitrate-nitrogen concentrations as reclaimed water percolates through the soil column, effluent limits cannot be greater than 8.4 mg/L to ensure compliance with the water quality objective for Chino-South MZ.
- 5) Current effluent limits are ≥ 10 mg/L Nitrate-nitrogen for all POTWs discharging to the Santa Ana River above the Chino-South Management Zone. Therefore, the current discharge conditions cannot continue without modifying the objectives and/or effluent limits.
- 6) The average measured TIN concentration for baseflows in Reach 3 adjacent to the Chino-South Management Zone during August/September, 2008 varied between 7.7 mg/L at MWD Crossing, 5.9 mg/L at Van Buren Ave., 7.3 mg/L at Etiwanda Ave. and 7.2 mg/L at Hamner Ave. (SAWPA, 2009, Table 3-7). Nitrate-nitrogen concentrations were slightly lower. Thus, current surface water quality is better than necessary to comply with the nitrate-nitrogen objective for the Chino-South MZ.
- 7) However, the estimated average TIN concentration percolating to the Chino-South MZ from Reach 3 of the Santa Ana River will likely range between 4.6-5.0 mg/L (WEI, 2009, Table 4-8). This estimate already accounts for the 50% nitrogen loss that is expected to occur as water percolates through the streambed.
- 8) If the nitrate-nitrogen objective for the Chino-South MZ was raised from 4.2 mg/L to 5.0 mg/L, then all current and projected effluent discharges would comply with the new water quality objective under a wide variety of alternative reclamation scenarios.

- 9) Setting the nitrate-nitrogen objective to 5.0 mg/L would continue to fully protect the designated MUN use in the Chino-South MZ (Order No. R8-2004-1 and related staff report).
- 10) Setting effluent limits to 10 mg/L would assure POTW discharges do not cause or contribute to an exceedance of nitrate-nitrogen objectives in the Chino-South MZ (provided that the Regional Board continue to apply a 50% reduction factor to account for nitrogen-loss as water percolates through the soil column).
- 11) Setting effluent limits to 10 mg/L would not allow water quality to degrade in the Chino-South MZ. Existing ambient quality in the CSMZ is already substantially higher than applicable objectives (25.7 mg/L vs. 4.2 mg/L) due to legacy contamination of the vadoze zone from historical agricultural practices. Effluent discharged at concentrations of 10 mg/L or less would improve the average nitrate-nitrogen concentration in the CSMZ even without applying the approved nitrogen-loss coefficient.
- 12) Setting effluent limits to 10 mg/L would not allow water quality to degrade in Reach 3 of the Santa Ana River. The TIN limits at all but one of the POTWs discharging to the river above the Chino-South MZ are already set to 10 mg/L and no permit change is proposed or allowed for these facilities. The TIN limits for the City of Riverside's discharge are presently set to 13 mg/L for all flows less than 38 mgd and to 10 mg/L for all flows greater than 38 mgd. The new permit limits would require Riverside to comply with 10 mg/L TIN for all discharge flows. Therefore, actual water quality in Reach-3 and percolating to the Chino-South MZ would be better than presently allowed.
- 13) Since water quality will not be lowered by Riverside's revised effluent limits, there is no need to demonstrate that the proposed change in groundwater objectives would provide maximum benefit to the people of California.
- 14) Nevertheless, increasing the Nitrate-Nitrogen objective in the Chino-South MZ does provide maximum benefit to the people of California by:
 - A) Improving existing water quality in Reach-3 of the Santa Ana River
 - B) Improving existing water quality in the Chino-South Management Zone.
 - B) Encouraging the maximum use of recycled water consistent with the new SWRCB policy (Resolution No. 2009-0011).
 - C) Preserving riparian habitat and recreational use opportunities in Reach 3 by reducing the incentive to bypass effluent discharges around the Chino-South MZ.
 - D) Reducing energy consumption otherwise needed to meet nitrate-nitrogen objectives that are presently more stringent than necessary to protect the designated beneficial uses.



Exploring Alternative Wasteload Allocations for TDS in Reach-3 of the Santa Ana River

1) TDS Objectives

A)	Reach-3 of the Santa Ana River	650 mg/L (annual average)
B)	Prado Dam	700 mg/L (August Only)
C)	Reach-2 of the Santa Ana River	650 mg/L (5-year rolling average)
D)	Chino-South Management Zone	680 mg/L (20 year average; '54-'73)
E)	Orange County Management Zone	580 mg/L (20 year average; '54-'73)

2) Average TDS Concentration

A)	Reach-3 of the Santa Ana River (@ MWD)	Approx. 600 mg/L (5-yr. avg.; '04-'08)
B)	Prado Dam	
	* Annual Average	584 mg/L (2008; not volume-weighted)
	* Baseflow Average	623 mg/L (2008; not volume-weighted)
C)	Top of Reach-2	
	* Volume-Weighted Average	458 mg/L (5-year avg.; 2004-2008)
	* Non-Weighted Average	575 mg/L (2004-2008; approximate)
D)	Chino-South Management Zone	940 mg/L (20 year average; '87-'06)
E)	Orange County Management Zone	590 mg/L (20 year average; '87-'06)

3) Projected TDS Concentration in Reach-3 (*under various reclamation scenarios*)

- A) Annual Average = 638-672 mg/L by 2020
- B) 5-year. Average = 618-651 mg/L by 2020

- 4) The current surface water wasteload allocation of 650 mg/L for TDS in Reach-3 was established to assure compliance with the surface water objective of 650 mg/L TDS (5 year rolling average) in Reach-2.
- 5) The Reach-2 surface water objective was set to protect the original TDS objective assigned to the Forebay Groundwater Basin in Orange County. That objective was established based on the estimated ambient TDS concentration at that time. The Forebay objective is now obsolete and was deleted from the Basin Plan when all of the individual groundwater basins in northern Orange County were combined into a single Management Zone in 2004.
- 6) It may be possible to increase the TDS effluent limits for dischargers above Prado Dam provided that average flows recharging Chino-South MZ remain below 680 mg/L and the five-year rolling average TDS concentration at Prado Dam remain below 650 mg/L and the average TDS concentration in baseflows at Prado (during August) remain below 700 mg/L.
- 7) Must be able to demonstrate that current surface water objective for Reach-2 will continue to protect TDS objective of 580 mg/L in the Orange County Management Zone. This requires extending the recharge model below Prado Dam.