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California Regional Water Quality Control Board San Diego Region

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Edmund G. Brown Jr.
Governor

TENTATIVE ORDER NO. R9-2012-0027

AN ORDER MODIFYING ORDER NO. 2001-352, MASTER RECLAMATION PERMIT WITH WASTE DISCHARGE REQUIREMENTS FOR THE PRODUCTION AND PURVEYANCE OF RECYCLED WATER FOR CARLSBAD MUNICIPAL WATER DISTRICT, CARLSBAD WATER RECYCLING FACILITY SAN DIEGO COUNTY

The California Regional Water Quality Control Board San Diego Region (hereinafter San Diego Water Board), finds that:

1. Order No. 2001-352 currently prescribes waste discharge requirements to Carlsbad Municipal Water District (hereinafter Carlsbad MWD or Discharger) for the treatment of domestic wastewater and reuse of up to 4.0 million gallons per day (MGD) of tertiary treated recycled water from the Carlsbad Water Recycling Facility (WRF), San Diego County.
2. The Carlsbad MWD is also authorized to purchase and use up to 5.0 MGD of recycled water from the Vallecitos Water District Meadowlark Water Reclamation Plant (WRP) and up to 2.0 MGD of recycled water from the Leucadia Wastewater District Gafner WRF.
3. On June 20, 2011, Carlsbad MWD submitted a Report of Waste Discharge (ROWD) to the San Diego Water Board requesting revision of the discharge specifications for iron and manganese specified in Order No. 2001-352.
4. The table below shows discharge specifications for iron and manganese contained in Order No. 2001-352 and the average concentrations of iron and manganese in Carlsbad WRF effluent:

Table 1: Current Discharge Specifications and Water Quality Data

Constituent	Discharge Specification			Average Concentration in Carlsbad WRF Effluent ¹
	Daily Maximum (milligrams per liter, mg/L)	30-day Average (mg/L)	Annual Average (mg/L)	
Iron	0.4	0.3	0.3	0.18
Manganese	0.06	-	0.05	0.067

¹For samples collected between June 2007 and December 2010

5. Revision of the discharge specifications for iron and manganese is necessary to prevent any further violations of Order No. 2001-352. If the discharge specifications for iron and manganese are not revised, Carlsbad MWD would have to limit recycled water distribution and blend imported water supplies into its recycled water system or expand the Carlsbad WRF (at significant cost) to include supplemental treatment for iron and manganese removal to ensure continued compliance with the discharge specifications.
6. The existing discharge specifications in Order No. 2001-352 will be modified as specified in Table 2 below.

Table 2: Modified Discharge Specifications

Constituent	Modified Discharge Specifications		
	Daily Maximum(mg/L)	30-Day Average (mg/L)	Annual Average (mg/L)
Iron	None	None	0.3
Manganese	None	None	0.1

The above modified discharge specifications are appropriate for the following reasons:

- a. The average concentration of iron in effluent from the Carlsbad WRF is below the groundwater quality objective of 0.3 mg/L, while the average concentration of manganese in effluent from the Carlsbad WRF exceeds the groundwater water quality objective of 0.05 mg/L (see Table 1 of this Order). The average annual concentration of manganese in recycled water applied to reuse sites, however, is expected to be reduced to about 0.04 mg/L due to precipitation influences and recycled water blended in from the Gafner WRF and the Meadowlark WRF.¹
- b. Iron and manganese are essential nutrients for plant growth. Uptake of these nutrients by vegetation irrigated with recycled water will reduce the amount of these nutrients reaching groundwater and reduce the potential for iron and manganese to affect groundwater quality or impact beneficial uses. For example, the annual mass of manganese applied to irrigated areas from applied water containing manganese at a concentration of 0.1 mg/L is 0.65 pounds/acre (lbs/ac), while typical annual manganese demand of turf grass is estimated to be in the range of 0.5-1lb/ac. The concentration of manganese reaching the underlying groundwater is therefore reduced to a level that meets the water quality objective for manganese of 0.05 mg/L.
- c. Nutrient value within the recycled water purveyed within the Carlsbad MWD service area offers the opportunity for recycled water users to

¹ Recycled water from the Gafner WRF and Meadowlark WRF make up 66 percent of recycled water used within Carlsbad MWD service area, and the average concentration of manganese in effluent from these plants is about 0.05 mg/L. Precipitation recharge will further reduce the average manganese concentration in recycled water applied at the reuse sites to approximately 0.04 mg/L.

reduce fertilization application rates, thus reducing nitrate/iron/manganese loads to the local groundwater basins.

- d. To ensure that recycled water users are aware that fertilizer application rates can be reduced on recycled water sites, Carlsbad MWD proposes to educate recycled water use site supervisors on the fertilizer value of recycled water as part of the training program provided for recycled water users.
7. This Order eliminates the 30-day average and daily maximum discharge specifications for iron and manganese, and specifies only annual average discharge specifications for iron and manganese. In addition the Order changes annual average discharge specifications for all constituents from a running average to a calendar average. These changes are appropriate because groundwater quality will not be affected by short-term fluctuations in the quality of irrigation supplies. Instead, long-term changes in the quality of recharge water are required before groundwater quality is affected. Due to effects of groundwater recharge and storage, annual average discharge specifications are appropriate for tracking long-term water quality trends and assessing compliance with waste discharge requirements for recycled water irrigation operations.
 8. State Water Resources Control Board Board Resolution No. 68-16 (also known as the State Antidegradation Policy) requires that high quality waters of the State are maintained to the maximum extent possible, even when the quality is better than needed to protect beneficial uses, and that changes in water quality are only allowed if the change is consistent with maximum benefit to the people of the state, does not unreasonably affect present and anticipated beneficial uses, and does not result in water quality less than that prescribed in water quality control plans or policies.
 9. In addition to reasons listed in Finding No. 6 above, the discharge will be in compliance with the State Antidegradation Policy for the following reasons:
 - a. Iron and manganese concentrations in the net waters applied at Carlsbad MWD recycled water use sites (recycled irrigation water and precipitation) are projected to be consistent with existing Basin Plan groundwater quality objectives. Revision of the discharge specifications for iron and manganese limits will also not result in discernible impacts to groundwater quality or beneficial uses.
 - b. Iron and manganese Basin Plan objectives implement secondary (aesthetic) drinking water standards to prevent staining of fixtures, but the municipal supply beneficial use designation has been exempted from portions of the Carlsbad MWD service area. No existing municipal use of groundwater occurs within the service area, and existing high concentrations of TDS in groundwaters within the Carlsbad MWD area would require groundwater demineralization treatment in order to develop municipal supply.

- c. Revision of Carlsbad WRF iron and manganese discharge specifications will allow Carlsbad MWD to continue ongoing recycled water service at current flows and capacity, and will allow Carlsbad MWD ratepayers to avoid costs associated with implementing additional recycled water treatment at the Carlsbad WRF or increasing potable water production to make up for reduced recycled water supplies.
11. The Carlsbad WRF is an existing facility and as such is exempt from the Provisions of the California Environmental Quality Act (CEQA) (Public Resources Code section 21000, *et seq.*) pursuant to California Code of Regulations, Title 14, Chapter 3, Article 19, section 15301.
12. The San Diego Water Board has notified the Discharger and all known interested parties of the intent to modify Order No. 2001-352.
13. The San Diego Water Board in a public meeting has heard and considered all comments pertaining to the proposed modifications to Order No. 2001-352.

IT IS HEREBY ORDERED, that:

Except as modified or superseded by Order No. R9-2012-0027 set forth below, all of the findings, prohibitions, provisions, specifications, and other requirements of Order No. 2001-352 remain in full force and effect. The following modifications to Order No. 2001-352 are hereby incorporated and immediately effective:

Section B.5 (Discharge Specifications) of Order No. 2001-352 is modified as follows:

Table 3: Discharge Specifications

Constituent	Unit	Daily Maximum ¹	30-day Average ²	12-Month Annual Average³
TDS	mg/L	1,200	-	1,100
Chloride	mg/L	400	350	-
Sulfate	mg/L	400	-	350
Boron	mg/L	0.75	0.75	0.75
Iron	mg/L	0.4	0.3	0.3
Manganese	mg/L	0.06	-	0.05 0.1
Flouride	mg/L	-	-	1.0
Methylene blue activated substances	mg/L	-	-	0.5

¹ The daily maximum effluent limitation shall apply to the results of a single composite or grab sample.

² The 30-day average effluent limitation shall apply to the arithmetic mean of the results of all samples collected during any calendar month.

³ The **12-month annual** average effluent limitation shall apply to the arithmetic mean of the results of all samples collected during **any 12 consecutive calendar month period a calendar year.**

I, David W. Gibson, Executive Officer, do hereby certify that this Order is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Diego Region, on February 8, 2012.

Tentative

David W. Gibson
Executive Officer