State of California
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD LOS ANGELES REGION

ORDER NO. R4-2007-0008
(File No. 70-117)

WASTE DISCHARGE REQUIREMENTS
FOR
TITLE 22 RECYCLED WATER

ISSUED TO

CITY OF LOS ANGELES

(Donald C. Tillman Water Reclamation Plant)

The California Regional Water Quality Control Board, Los Angeles Region, (Regional Board), finds:

BACKGROUND

1. Chloride concentrations in tertiary-treated and disinfected wastewater effluent used as recycled water produced at the Donald C. Tillman Water Reclamation Plant (Tillman WRP) have continued to rise over the years due to the following major reasons:

   A. During recent periods of drought, the City of Los Angeles (City), as well as other agencies, have augmented their source water with additional purchases from the Metropolitan Water District. This source water has significantly escalating chloride concentrations as a result of drought conditions.

   B. In addition, a significant amount of chloride loading may occur from the use of water softeners.

2. In order to encourage the use of recycled water in the Los Angeles Region and to allow the use of recycled water for irrigation, recreational, and industrial purposes from the Tillman WRP in lieu of scarce potable water resources, the City requested that the chloride limit should be raised from 100 mg/L in the current permit (Order No. 86-39, adopted on June 23, 1986) to 190 mg/L, which is presently contained in the Resolution No. 97-02, *Amendment to the Water Quality Control Plan to Incorporate a Policy for Addressing Levels of Chloride in Discharges of Wastewater* (see Finding No. 14), adopted on January 27, 1997, and in the National Pollutant Discharge Elimination System (NPDES) permit (No. CA0056227, Order No. 98-046, adopted on June 15, 1998). Under the NPDES Permit No. CA0056227, Order No. 98-046, the Tillman WRP's tertiary-treated and disinfected wastewater is discharged to the Los Angeles River. However, no similar chloride relief was provided for tertiary-treated and disinfected effluent as recycled water used for irrigation, recreation, or industrial purposes and the groundwater objective for the basin underlying this project is 100 mg/L.

PURPOSE OF ORDER

3. The City operates the Tillman WRP under Order No. 86-39 issued on June 23, 1986. Order No. 86-39 was readopted without changes under blanket Order No. 97-072 on May 12, 1997. Order No. 86-39 is a Master Waste Discharge Requirements (WDRs) and Water Recycling Requirements (WRRs). At the request of the City, these WDRs are being separated from the WRRs. This Order now becomes a stand alone Waste Discharge Requirements and is being reissued to the City pursuant to California Water Code section 13263. These WDRs are reissued to regulate the potential percolation of constituents that may be contained in recycled water to the underlying groundwater aquifer. Tillman WRP discharges tertiary treated water to the Los Angeles River that is currently regulated under a separate Waste Discharge requirements and National Pollutant Discharge Elimination system (NPDES) Permit No. CA0056227, Order No. R4-2006-0091, adopted by this Regional Board on December 14, 2006. The reuse of recycled water is regulated under a separate Water Recycling Requirements, Order No. R4-2007-0009.

DESCRIPTION OF FACILITY AND TREATMENT PROCESS

4. The City operates the Tillman WRP located at 6100 Woodley Avenue, Van Nuys, California, with a dry weather design capacity of 80 million gallons per day (mgd), and is treating an average flow of 58 mgd of municipal wastewater. All or a portion of the treated municipal wastewater may be beneficially reused.

5. Sewage enters the Tillman WRP via both the Additional Valley Outfall Relief Sewer (AVORS) and the East Valley Interceptor Sewer (EVIS) from the communities of Chatsworth, Canoga Park, West Hills, Woodland Hills, Northridge, Granada Hills, and Van Nuys, and from the City of San Fernando, the Las Virgenes Municipal Water District, and the Triunfo Canyon Sanitation District under contractual agreements.

6. Treatment consists of grit removal, bar screens, primary sedimentation, activated sludge biological treatment, nitrification and denitrification (NDN) treatment, secondary clarification, coagulation, dual media filtration (Hardinge Filters), chlorination and dechlorination. The sludge from the primary and secondary treatment processes is returned to the interceptor and transported for treatment at the Hyperion Treatment Plant.

   In order to achieve compliance with the ammonia Basin Plan objectives, the City began to test the different NDN treatments, including Modified Ludzack-Ettinger (MLE) Process, Enhanced Modified Ludzack-Ettinger (eMLE) Process, Step-Feed Process. The City expects to complete construction of the NDN treatment facility in September 2007, and anticipates taking 90 days to optimize operation of the NDN facilities.

QUALITY OF TERTIARY TREATED EFFLUENT

7. The treatment process at the Tillman WRP produces Title 22 tertiary treated and disinfected effluent used as recycled water, which can be used for irrigation, recreation, and industrial purposes.

8. Tillman WRP produces tertiary-treated and disinfected effluent used as recycled water containing chloride concentrations in the range of 120 mg/l to 160 mg/l.

9. The new chloride limit will accommodate fluctuations in chloride concentrations that may occur in the future and will still be below secondary drinking water standards (250 mg/l to 500 mg/l).

MASS BALANCE ANALYSIS

10. In a March 25, 2004 letter, the City provided the mass balance analysis results for chloride and total dissolved solids (TDS) to estimate impacts of chloride discharges to underlying groundwater basins. The mass balance analyses were conservative as they did not take into account the effect of using proper irrigation practices, or the areas underlain primarily by clay where percolation is limited, and the City assumed that tertiary treated and disinfected effluent used as recycled water will always have a chloride and TDS concentrations of 190 mg/L and 605 mg/L, respectively. Under average conditions, these calculations showed that replacement of 10,000 acre feet per year (AFY) of imported water with 10,000 AFY of tertiary treated and disinfected effluent used as recycled water would result in an increase* in chloride and TDS loadings in the San Fernando Basin which would result in concentrations increasing from approximately 31 mg/L to 45 mg/L and 225 mg/L to 257 mg/L, respectively. The mass balance analysis results indicate that long term affects of using tertiary treated and disinfected effluent used as recycled water will not result in groundwater chloride and TDS concentrations in excess of the Basin Plan's groundwater quality objectives, which is 800 mg/L and 100 mg/L for TDS and Chloride, respectively, for the San Fernando Basin during the term of this permit. In addition, the mass balance analysis results support the City's request that the chloride limit in the Waste Discharge Requirements for irrigation use of the Tillman WRP's effluent should be modified to 190 mg/L subject to further review of groundwater monitoring results. A reopener has been provided for the Board to consider revisions to this limit should the monitoring show an unacceptable increase in chloride levels in the groundwater basins.

    *: The increase reflected in the Mass Balance Analysis would eventually occur if the stated conservative assumptions were realized. The City's conservative analysis estimated an increase that might occur over many years (decades), and is reflective of long-term steady state conditions on a Basin-wide basis. However, there may be short-term, localized increases in chloride in the groundwater, and inasmuch, groundwater monitoring will be required under the actual conditions to evaluate the magnitude of, and temporal nature of impacts to groundwater and ensure that these localized increases do not impact any beneficial uses nor cause increasing concentrations that adversely impact the high quality of the groundwater. The City ultimately will need to perform an Antidegradation analysis which the Board will consider in evaluating longer term regulation of these discharges.

11. Due to the above-mentioned unique situation where the proposed discharge limitation (190 mg/L) for chloride is six times greater than background concentration (31 mg/L) and two times greater than the Basin Plan's Groundwater quality objective (100 mg/L), it is critical to confirm the assumed results of the mass balance calculation and accurately assess potential increases in overall chloride levels due to the long-term application of tertiary treated and disinfected effluent used as recycled water. Therefore, the City is

required to implement a groundwater monitoring program and continue to conduct the mass balance analysis to track chloride levels in strategically located groundwater wells (receiving water). The City has identified four wells (Well Nos. 1 and 2, Well EV-01 and Well EV-03) to monitor the impact of tertiary treated and disinfected effluent used as recycled water application in groundwater. Monitoring required by this Order will verify that there is no adverse impact to groundwater quality as a result of the applications of tertiary treated and disinfected effluent used as recycled water with a chloride concentration of 190 mg/L. In the event that the groundwater monitoring data show any degradation to groundwater quality, the City will be required to conduct an Antidegradation Analysis in accordance with the Antidegradation Policy.

HYDROLOGIC UNIT

12. The Regional Board adopted a revised Water Quality Control Plan for Los Angels River Basin on June 13, 1994. This Plan contains water quality objectives for the San Fernando Subunit, which is considered to be the receiving waters for tertiary treated and disinfected effluent used as recycled water applied to land. The requirements contained in the Order, as they are met, will be in conformance with the goals of the Water Quality Control Plan.

    The areas of reuse are located in Sections 7, 8, 17, and 18, TIN, R15W, SBB&M, within San Fernando Hydrologic Subunit.

APPLICABLE PLANS, POLICIES AND REGULATIONS

13. ***Basin Plan –*** The Regional Board adopted a revised *Water Quality Control Plan for the Los Angeles Region: Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties* (Basin Plan) on June 13, 1994, and amended by various Regional Board resolutions. This updated and consolidated plan represents the Board's master quality control planning document and regulations. The Basin Plan (i) designates beneficial uses for surface and groundwater, (ii) sets narrative and numerical objectives that must be attained or maintained to protect the designated (existing and potential) beneficial uses and conform to the State's antidegradation policy, and (iii) includes implementation provisions, programs, and policies to protect all waters in the Region. In addition, the Basin Plan incorporates (by reference) all applicable State and Regional Board plans and policies and other pertinent water quality policies and regulations. This Order implements the plans, policies, and provisions of the Board's Basin Plan.

    The Basin Plan (Chapter 3) incorporates Title 22 primary maximum contaminant levels (MCLs) by reference. This incorporation by reference is prospective including future changes to the incorporated provisions as the changes take effect. Also, the Basin Plan specifies that "Ground waters shall not contain taste or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses." Therefore the secondary MCLs, which are limits based on aesthetic, organoleptic standards, are also incorporated into this permit to.protect groundwater quality.

14. ***Resolution No. 97-02 –*** On January 27, 1997, the Regional Board adopted Resolution No. 97-02 in order to develop a long-term solution to the chloride compliance problems stemming from elevated levels of chloride, caused by the drought and the use of water softeners, in supply waters imported into the Los Angeles region. Water Quality Objectives

for chloride for the Los Angeles River between Sepulveda Flood Control Basin and Figueroa Street (including Burbank Western Channel only) has been raised from 100 mg/L to 190 mg/L.

15. ***Antidegradation Policy –*** On October 28, 1968, the State Water Resources Control Board (State Board) adopted Resolution No. 68-16*, Maintaining High Quality Water*, which established an Antidegradation Policy for State and Regional Boards. The State Board has, in State Board Order No. 86-17 and an October 7, 1987 guidance memorandum, interpreted Resolution No. 68-16 to be fully consistent with the federal antidegradation policy. As a result, the federal antidegradation policy provides some guidance in interpreting State Board Resolution No. 68-16.The State Policy is designed to ensure that a water body will not be degraded resulting from the permitted discharge, except under the conditions established in the State Antidegradation Policy. The provisions of this Order are consistent with the Antidegradation Policy.

16. ***Beneficial Uses –*** Table 2-2 on Page 2-17 of the Basin Plan, the beneficial uses of the San Fernando Valley Groundwater Basin are municipal and domestic supply, industrial service supply, industrial process supply, and agricultural supply.

17. A February 24, 2004 State Board memorandum from Celeste Cantú to the Regional Board Executive Officers entitled "Incidental Runoff of Recycled Water", provided recommendations regarding regulatory management of incidental runoff. The memorandum stated: To further the goal of maximizing the use of recycled water, the water quality laws should be interpreted in a manner that is consistent with the intent of the Legislature to promote recycled water use. Consequently, incidental runoff from recycled water projects should be handled as follows:

    A. Where reclamation requirements prohibit the discharge of waste to waters of the State and discharges are not expected to occur, occasional runoff should not trigger the need for either an individual NPDES permit or enforcement action.

    B. If discharges from reclamation project area occur routinely, such discharges can be regulated under municipal storm water NPDES permit in most cases.

    C. In limited cases, where necessary to address a water quality concern, discharges of recycled water to surface waters may be regulated under an individual NPDES permit. A NPDES permit, however, should not be issued unless necessary to achieve water quality objectives.

    The memorandum also describes the framework for regulating incidental runoff from irrigation systems and from storage ponds without issuing such a NPDES permit.

18. Section 13523.5 on water reclamation requirements in the Water Code states that a Regional Board may not deny issuance of water reclamation requirements to a project that violates only a salinity standard in a basin plan. In 1985, soon after this provision was added to the Water Code, the State Board Office of Chief Counsel issued a legal opinion concluding that this provision does not apply to waste discharge requirements. Hence, waste discharge requirements for projects that recycle water may contain effluent and

other limitations on discharges of salts as necessary to meet water quality objectives, comply with the Antidegradation Policy, or otherwise protect beneficial uses.

CEQA AND NOTIFICATION

19. The City prepared a "Final Supplemental Environmental Impact Statement/Environmental Impact Report (EIS/EIR) City of Los Angeles Wastewater Facilities Plan Update" that was reported on October 1990. No significant adverse impacts on ground water quality were identified in the EIS/EIR as a result of proposed irrigation projects.

20. These WDRs for Title 22 recycled water project for purposes of the California Environmental Quality Act, is the use of tertiary treated and disinfected effluent, produced at the Tillman WRP, used as recycled water in conformance with DHS regulations and the Regional Board's Basin Plan. The Regional Board is a CEQA responsible agency for the project and has reviewed the EIS/EIR and concludes that based on substantial evidence set forth in the EIS/EIR that there will be no adverse impact on the environment that can not be mitigated.

21. Pursuant to the California Water Code section 13320, any aggrieved party may seek review of this Order by filing a petition with the State Board. A petition must be sent to: State Water Resources Control Board, P.O. Box 100, Sacramento, CA 95812, within 30 days of adoption.

The Regional Board has notified the City of Los Angeles and interested agencies and persons of its intent to issue Waste Discharge Requirements Order No. R4-2007-0008 and a separate Water Recycling Requirements Order No. R4-2007-0009 for the production, distribution and use of tertiary treated and disinfected effluent used as recycled water, and has provided them with an opportunity to submit their written views and recommendations.

The Regional Board, in a public meeting, heard and considered all comments pertaining to these Waste Discharge and separate Water Recycling Requirements.

IT IS HEREBY ORDERED that the City of Los Angeles shall comply with the following:

I. TERTIARY-TREATED AND DISINFECTED EFFLUENT LIMITATIONS

1. The tertiary treated and disinfected effluent used as recycled water shall not contain constituents with concentrations exceeding those in Table P1.

Table P1 – Concentrations of Constituents in Tertiary-Treated and Disinfect Effluent

Constituents	Units	30-Day Average	7-Day Average	Daily Maximum
$BOD_5 20^oC$	mg/L	20[1]	30[1]	---
Oil and grease	mg/L	10[1]	---	15[1]
Suspended solids	mg/L	15[1]	45[1]	---
Settleable solids	mL/L	0.1[1]	---	0.3[1]
Total dissolved solids	mg/L	---	---	800[2]

Table P1 – Concentrations of Constituents in Tertiary-Treated and Disinfect Effluent				
Constituents	**Units**	**30-Day Average**	**7-Day Average**	**Daily Maximum**
Chloride	mg/L	---	---	190[3]
Sulfate	mg/L	---	---	300[2]
Boron	mg/L	---	---	1.5[2]
Nitrate-N + nitrite-N	mg/L	---	---	10[2]
Nitrate	mg/L	---	---	45[2]
Nitrate-N	mg/L	---	---	10[2]
Nitrite-N	mg/L	---	---	1[2]

Footnote:

[1]. The existing permit limit has been carried over because relaxing this limitation will have the effect of increasing the amount of allowed pollutant and therefore there is the potential of lowering water quality, inconsistent with the State's Antidegradation Policy.

[2]. This is a Ground Water Quality Objective in the Basin Plan.

[3]. This is based on the revised chloride Water Quality Objective for waterbody of Los Angeles River between Sepulveda Flood Control Basin and Figueroa Street in the Resolution No. 97-02. **However, the chloride concentrations in the aquifers located below the above areas shall not be greater than 100 mg/L, groundwater water quality objective for chloride in the Basin Plan, as a result of using tertiary treated and disinfected effluent used as recycled water.**

2. The pH of tertiary-treated and disinfected effluent used as recycled water shall at all times be within the range of 6.0 to 9.0 pH units.

3. Tertiary-treated and disinfected effluent used as recycled water, which could affect the receiving ground water, shall not contain any substances in concentrations toxic to human, animal, or plant life.

4. Tertiary-treated and disinfected effluent used as recycled water shall not contain taste or odor-producing substances in concentrations that cause nuisance or adversely affect the beneficial uses of the receiving groundwater.

5. Maximum Contaminant Levels (MCLs) and Notification Levels (NLs) Triggers (non-enforceable)

   A. Trigger Mechanism – The effluent will be monitored for all constituents with current applicable MCLs for drinking water established by the Department of Health Services (DHS) included in the Attachments A-1 to A-5, and NLs in Attachment A-6. If annual average of these constituents are exceeded (target chemicals), using the criteria established in Section V.2. of the Monitoring and

Reporting Program (MRP) No. 8371, the City will perform accelerated groundwater monitoring for these target chemicals.

B. Attenuation Study – An attenuation study will be conducted for the target chemicals where MCLs are exceeded in accordance with Section V.2.B of the MRP CI No. 8371. The study will be a minimum of two years or until sufficient data is established to calculate the appropriate attenuation factor, if warranted. The City is required to submit a workplan acceptable to the Executive Officer, which details the proposed attenuation study within 120 days after an average annual exceedance of the trigger.

C. Calculated Numeric Effluent Limits – The derivation of end-of-pipe numeric effluent limits for the target chemicals will be determined based upon the MCL multiplied by the attenuation factor (AF) and brought back to the Regional Board for consideration at a future board meeting.

II. GENERAL REQUIREMENTS

1. The City shall, at all times, properly operate and maintain all treatment facilities and control systems (and related appurtenances) which are installed or used by the City to achieve compliance with the conditions of this Order. Proper operation and maintenance includes: effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls (including appropriate quality assurance procedures).

2. Indirect potable uses and groundwater recharge are not covered by this Order.

3. A copy of these requirements shall be maintained at the water reclamation facility so as to be available at all times to operating personnel.

4. The use of recycled water shall not impart tastes, odors, color, foaming, or other objectionable characteristics to the receiving groundwater.

III. PROVISIONS

1. To assess potential increases in overall chloride and constituents of concern, in groundwater, the City is required to implement an effluent monitoring program and a groundwater monitoring program for those constituent as defined in the section III of the MRP CI No. 8371.

2. This Order does not alleviate the responsibility of the City to obtain other necessary local, state, and federal permits to construct facilities necessary for compliance with this Order; nor does this Order prevent imposition of additional standards, requirements, or conditions by any other regulatory agency. Expansion of the recycling facility shall be contingent upon issuance of all necessary requirements and permits, including a conditional use permit.

3. After notice and opportunity for a hearing, this Order may be modified, revoked and reissued, or terminated for cause, that include, but is not limited to: failure to comply with any condition in this Order; endangerment of human health or environment resulting from the permitted activities in this Order; obtaining this Order by misrepresentation or failure to disclose all relevant facts; acquisition of new information which could have justified the application of different conditions if known at the time of Order adoption.

   The filing of a request by the City for modification, revocation and reissuance, or termination of the Order; or a notification of planned changes or anticipated noncompliance does not stay any condition of this Order.

4. The City shall furnish, within a reasonable time, any information the Regional Board or the DHS may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Order. The City shall also furnish the Regional Board, upon request, with copies of records required to be kept under this Order for at least three years.

5. In an enforcement action, it shall not be a defense for the City that it would have been necessary to halt or to reduce the permitted activity in order to maintain compliance with this Order. Upon reduction, loss, or failure of the treatment facility, the City shall, to the extent necessary to maintain compliance with this Order, control production or all discharges, or both, until the facility is restored or an alternative method of treatment is provided. This provision applies, for example, when the primary source of power of the treatment facility fails, is reduced, or is lost.

6. This Order includes “Waste Discharge Requirements” in lieu of the "Standard Provisions Applicable to Waste Discharge Requirements" (1990).

7. This Order includes the attached Monitoring and Reporting Program CI No. 8371. If there is any conflict between provisions stated in the Monitoring and Reporting Program and the WDRs, those provisions stated in the Monitoring and Reporting Program prevail.

IV. REOPENER

1. This Order may be reopened to include the most scientifically relevant, and appropriate limitations or other requirements for this recycling project, including (1) a revised chloride limit based on monitoring results, antidegradation studies, or other Board Policy, or (2) the application of an attenuation factor based upon an approved site-specific attenuation study conducted by the City.

2. The City of Los Angeles, Heal the Bay, and Regional Board staff will convene a workgroup to determine the best approach to addressing the competing issues associated with promoting water recycling and protecting groundwater in Los Angeles County. This order and the related Monitoring and Reporting Program shall be reopened by June 15, 2008. In the interim: (1) the groundwater monitoring requirements shall be stayed; (2) the permittee will not be required to design or

construct additional wells to comply with the aforesaid monitoring requirements; and, (3) the trigger mechanisms, set forth in section I. paragraph 5., shall be stayed.

All other provisions and requirements of this order, the Monitoring and Reporting Program, and the Water Reclamation Requirements shall remain in effect.

V. EFFECTIVE DATE OF THE ORDER

This Order takes effect upon its adoption.

I, Jonathan S. Bishop, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Los Angeles Region on January 11, 2007.

Jonathan S. Bishop
Executive Officer

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