

**STATE OF CALIFORNIA
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION**

TIME SCHEDULE ORDER NO. R4-2012-XXXX

**REQUIRING CITY OF VENTURA
(VENTURA WATER RECLAMATION FACILITY)
TO COMPLY WITH REQUIREMENTS PRESCRIBED IN
ORDER NO. R4-2008-0011
(NPDES PERMIT NO. CA0053651)**

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

1. The City of Ventura (City) owns and operates the Ventura Water Reclamation Facility (Facility), a tertiary wastewater treatment plant located at 1400 Spinnaker Drive, Ventura, California.
2. The Facility discharges tertiary-treated wastewater under waste discharge requirements contained in Order No. R4-2008-0011, adopted by this Regional Water Board on March 6, 2008. Order No. R4-2008-0011 serves as a permit under the National Pollutant Discharge Elimination System (NPDES No. CA0053651) and regulates the discharge of treated wastewater to the Santa Clara River Estuary (Estuary), a water of the United States and the State of California, within the Santa Clara River Watershed.
3. The treatment system of the Facility consists of wastewater processing and biosolids processing. The Facility is also piloting a pasteurization project.
 - A. **Wastewater Processing.** The treatment system consists of screenings, grit removal, primary sedimentation, flow equalization, bio-augmentation re-aeration (BAR) with full nitrification and denitrification (NDN¹), aeration with additional nitrification, pressurized tertiary filtration, chlorination with ammonia addition², and dechlorination.

¹ The Facility did not have an NDN process (full nitrification and partial denitrification) with aeration tank when the Order No. R4-2008-0011 was adopted for this Facility. The effluent data between February 2003 and December 2006 did show the high effluent nitrate concentrations (10.1 – 18.6 mg/L, average: 14.6 mg/L) and very low effluent nitrite concentration (always less than 0.4 mg/L, which is the detection limit). The Discharger completed the full NDN bio-tank construction on October 3, 2011 and conveyed the effluent from the bio-tank to the aeration tank with nitrification only.

² Ammonia (NH₃) has been added into the chlorine contact basin since April 2004. Ammonia reacts with hypochlorous acid (HOCl) to form chloramine (NH₂Cl), according to the following reaction: NH₃ + HOCl → NH₂Cl + H₂O.

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- B. **Biosolids Processing.** The biosolids processing consists of primary sludge thickening, dissolved air flotation (DAF) secondary sludge thickening, anaerobic digestion, and dewatering (using plate and frame filter presses). All of the Class B anaerobically digested sludge is dewatered and composted as Class A sludge at Lost Hills, Kern County and then land applied to a cotton farm in Kings County. Screenings and grit are disposed of at the Toland Road Landfill.
- C. **Pasteurization Pilot Project.** This project uses heat generated by renewable energy, instead of the current chlorine-based disinfection process in use at the Facility, to kill harmful organisms. A small-scale evaluation unit was installed at the Facility to disinfect 500,000 gallons, about 5 percent of the average daily flow, of wastewater per day since December 2011. Design parameters to disinfect the full wastewater flow of 7 to 9 MGD are being analyzed to optimize energy efficiency and generation. A full analysis of all testing results will be reported to the Regional Water Board prior to replacing chlorine with pasteurization.
4. Order No. R4-2008-0011 prescribes the final effluent limitations for ammonia in Table 1 for the protection of aquatic life in the Estuary:

Table 1. Ammonia Effluent Limitations

Constituent	Units	Effluent Limitations	
		Monthly Average	Daily Maximum
Summer Ammonia Nitrogen (April to October)	mg/L	0.045	0.30
Winter Ammonia Nitrogen (November to March)	mg/L	0.079	0.53

The ammonia effluent limitations for monthly average and daily maximum are based on the lowest water quality objectives calculated from one-hour and 4-day Saltwater Ammonia Water Quality Objective (WQO) formulas specified in the Resolution No. 2004-022, *Amendment to the Water Quality Control Plan for the Los Angeles Region to Update the Ammonia Objectives for Inland Surface Waters Not Characteristic of Freshwater (Including Enclosed Bays, Estuaries and Wetlands) with Beneficial Use Designations for Protection of Aquatic Life*. These limitations represent the sum of unionized ammonia and ionized ammonia, as total ammonia, and have been in effect since March 6, 2008. The previous NPDES permit for the Facility, Order No. 00-143, did not contain any ammonia effluent limitations.

5. The effluent limits in R4-2008-0011 were calculated using the most conservative estimates. Because the Facility discharges into an estuary, Salt Water WQOs are applicable. However, the Facility does not benefit from dilution credits as ocean dischargers do.
6. TSO No. R4-2008-0012, issued concurrently with Order No. R4-2008-0011, included interim requirements that allowed the City three years to construct an ammonia removal process, such as a full NDN, at the Facility in order to comply with the ammonia effluent limitations included in Table 1. The City met these interim requirements and constructed treatment upgrades, including modification of internal piping, aeration, and additional of tankage and pumping systems to assure complete biological nitrification and partial denitrification of effluent, by October 3, 2011. The Executive Officer extended the TSO by 90 days on June 16, 2011, to allow the City to complete maintenance of the aeration basins.
7. In August, 2012, Regional Water Board staff discovered that the Facility has been in non-compliance with the final ammonia effluent limits in Order No. R4-2008-0011 (Table 1) since TSO No. R4-2008-0012 and the administrative extension expired on March 5, 2011 and on October 3, 2011, respectively. Regional Water Board staff contacted the City immediately to discuss the potential violations. The potential violations were not discovered until this date because of the way that the City was reporting information via the California Integrated Water Quality System (CIWQS). The City had been interpreting the final effluent limits for ammonia as applicable only to unionized ammonia instead of total ammonia, although the permit and Attachment F (Fact Sheet) of the permit indicate that the limit is for total ammonia. Because of this misunderstanding, the City did not indicate in their submittals that they were in non-compliance with their limits.
8. On September 17, 2012, the City emailed a letter to the Regional Water Board requesting another TSO with interim ammonia effluent limitations for the following reasons:
 - A. Ammonia Added After Chlorination to Control Coliform and Trihalomethanes

The NDN process, completed in 2011, effectively removes most ammonia from the effluent; however, ammonia must be added back into the effluent prior to the disinfection process to reduce total coliform and the formation of trihalomethanes.
 - B. Time Needed to Find a Long-Term Solution

The City needs time to pursue alternative control measures to ensure long-term, sustainable compliance with the ammonia effluent limitations. These alternatives could include modifications to the operations of the Facility, further evaluation of monitoring technology, or modifications to the disinfection process.
 - C. TSO Compliance Activities

Per section 13300 of the California Water Code and in compliance with the Facility's NPDES permit, the City has planned specific actions in order to achieve full and consistent compliance with ammonia WQOs. The City's staff plans the following compliance activities:

- a. To increase monitoring of wastewater to determine the controllability of ammonia;
- b. To develop an interim operations plan to attempt to further reduce the ammonia level in the secondary process and in the final effluent (through additional system upgrades, if necessary); and,
- c. To implement a design study to evaluate the efficacy of process control upgrades and possible construction of improvements to the Facility and its disinfection system to eliminate the use of ammonia for chloramination.

9. Section 13300 of the Water Code states:

"Whenever a regional board finds that a discharge of waste is taking place or threatening to take place that violates or will violate requirements prescribed by the regional board, or the state board, or that the waste collection, treatment, or disposal facilities of a discharger are approaching capacity, the board may require the discharger to submit for approval of the board, with such modifications as it may deem necessary, a detailed time schedule of specific actions the discharger shall take in order to correct or prevent a violation of requirements."

10. Table 2 summarizes an analysis of secondary and tertiary effluent data collected between September 2011 and August 2012. All data shows that the ammonia concentrations in the tertiary effluent were several times higher than the secondary effluent. The NDN process successfully removed most ammonia from the influent. However, because of the need to add ammonia back to better control disinfection and to prevent the formation of trihalomethanes, the ammonia concentrations in the tertiary effluent exceed the current ammonia effluent limitations contained in Table 1.

Table 2. Ammonia Effluent Concentrations

	Ammonia Concentration in Secondary Effluent	Ammonia Concentration in Tertiary Effluent after Ammonia Addition
Maximum	0.58	2.90
Minimum	0.05	0.30
Average	0.13	0.92
95 Percentile	0.24	1.25

	Ammonia Concentration in Secondary Effluent	Ammonia Concentration in Tertiary Effluent after Ammonia Addition
90 Percentile	0.19	1.20
50 Percentile	0.13	0.90
10 Percentile	0.06	0.61

The City is challenged to comply with the current ammonia monthly average (0.045 mg/L and 0.079 mg/L) and daily maximum (0.30 mg/L and 0.53 mg/L) effluent limitations. Other tertiary-treated publicly-owned treatment works within the Los Angeles Region have also been challenged to comply with ammonia limitations related to ammonia add-back.

Accordingly, pursuant to Water Code section 13300, a discharge of waste is taking place and/or threatens to take place that violates requirements prescribed by the Regional Water Board, based on a review of monitoring data.

11. Water Code section 13385, subdivisions (h) and (i), require the Regional Water Board to impose mandatory minimum penalties upon dischargers that violate certain effluent limitations. Section 13385(j)(3) exempts violations of an effluent limitation from mandatory minimum penalties "where the waste discharge is in compliance with ... a time schedule order issued pursuant to Section 13300, *if all of the [specified] requirements are met.*" (emphasis added).
12. In accordance with Water Code section 13385(j)(3)(B), mandatory minimum penalties do not apply to a violation of an effluent limitation where the waste discharge is in compliance with a time schedule order issued pursuant to Section 13300 or 13308; the effluent limitation is a new, more stringent limitation that became applicable after adoption of the prior permit; new or modified control measures are necessary in order to comply with the effluent limitation; and the new or modified control measures cannot be designed, installed, and put into operation within 30 calendar days.
13. It is necessary for the City to implement new or modified control measures to comply with the ammonia effluent limitation in the 2008 permit. These new or modified measures cannot be designed, installed, and put into operation within 30 calendar days.

Municipal wastewater treatment plants are complex systems, involving multiple biological and chemical processes. The control of ammonia, in particular, can have impacts on concentrations of other constituents in the effluent. The NDN process installed at the Facility has the capability to remove the majority of ammonia present in the influent to the Facility. However, ammonia must be added back into the effluent prior to the disinfection process to reduce the formation of

trihalomethanes. Technology is not currently available to allow sufficient real-time monitoring of ammonia to optimize the ammonia add-back process.

The City needs to pursue alternative control measures to ensure long-term, sustainable compliance with the ammonia effluent limits. These alternatives could include modifications to the operations of the Facility, further evaluation of technology for real-time ammonia monitoring, or modifications to the disinfection process. Because the City was not aware of the ammonia exceedances that occurred after expiration of TSO No. R4-2008-0012, the City was not pursuing additional controls to bring its discharges into compliance. In order to determine the best long-term solution to this complex issue, the City needs additional time to evaluate the available options and to implement alternative control measures to consistently comply with the effluent limitations for ammonia.

14. Pursuant to Water Code section 13385(j)(3), full compliance with the requirements of this TSO exempts the City from mandatory minimum penalties for violations of the final effluent limitations for ammonia in Order No. R4-2008-0011 that occur after the effective date of this TSO.
15. This TSO includes interim requirements and the dates for their achievement. The interim requirements include both interim effluent limitations for ammonia and actions/milestones intended to result in compliance with the final effluent limitation.
16. This TSO concerns the permitting of an existing facility and involves negligible or no expansion of use or other alterations to the facility; is issued to assure the maintenance, restoration, enhancement, and protection of the environment; and is an administrative order enforcing waste discharge requirements. Therefore, issuance of this TSO is exempt from the provisions of the California Environmental Quality Act (Public Resources Code, Section 21100, *et.seq.*) in accordance with sections 15301, 15308, and 15321(a)(2) of Title 14 of the California Code of Regulations.
17. The Regional Water Board has notified the City and interested agencies and persons of its intent to issue this TSO concerning compliance with waste discharge requirements. The Regional Water Board, during a public comment period, received and considered all comments to this matter.
19. Any person aggrieved by this action of the Regional Water Board may petition the State Water Board to review the action in accordance with CWC section 13320 and CCR, title 23, sections 2050 and following. The State Water Board must *receive* the petition by 5:00 p.m., 30 days after the Regional Water Board action, except that if the thirtieth day following the action falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next business day. Copies of the law and regulations applicable to filing petitions may be found on the Internet at http://www.waterboards.ca.gov/public_notices/petitions/water_quality or will be provided upon request.

IT IS HEREBY ORDERED that, pursuant to Water Code sections 13300 and 13385(j)(3), the City of Ventura, as owner and operator of the Facility, shall comply with the requirements listed below to ensure compliance with the final effluent limitations for ammonia contained in Order No. R4-2008-0011:

1. Comply immediately with the interim effluent limits in Table 3, which shall be deemed effective from the date of this Order until March 5, 2013:

Table 3. Interim Ammonia Effluent Limitations

Constituent	Units	Monthly Average	Daily Maximum
Ammonia (April to October)	mg/L	1.6 ³	2.9 ⁴
Ammonia (November to March)	mg/L	1.3 ³	1.4 ⁵

2. Per the City's TSO request letter dated September 10, 2012, immediately initiate to following actions:
 1. Increase monitoring of wastewater to determine the controllability of ammonia;
 2. Develop an interim operations plan to attempt to further reduce the current ammonia level in the secondary process and final effluent discharge (through additional system upgrades, if necessary);
 3. Implement a design study to evaluate the efficacy of process control upgrades and possible construction of improvements to the Facility and its disinfection system to eliminate the use of ammonia for chlorination.
3. Achieve full compliance with the final effluent limitations as soon as possible, but no later than March 5, 2013.
4. Submit a progress report summarizing the efforts taken by the City towards achieving compliance with the final effluent limits for ammonia and, the progress to date and the activities conducted and planned. The progress report shall state whether or not the Facility was in compliance with the interim effluent limitations for ammonia. The report shall be received by the Regional Water Board by March 5, 2013.

The progress report shall detail any actions taken to support incorporation of the current Basin Plan ammonia limitations and/or revisions to the 303(d) list,

³ Based on the result of 95 percentile, using Minitab.

⁴ Based on the maximum effluent concentration (MEC). The result of 99 percentile calculation was lower than MEC.

⁵ Based on the result of 99 percentile, using Minitab.

studies, facility modifications, and recommendations for additional measures, if necessary, to achieve full compliance with applicable final effluent limits.

5. All technical and monitoring reports required under this TSO are required pursuant to Water Code sections 13267 and 13383. The Regional Water Board needs the required information in order to determine compliance with this TSO. The burdens, including costs, of the report bear a reasonable relationship to the need for the report and the benefits to be obtained from the report.
6. Any person signing a document submitted under this TSO shall make the following certification:

“I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.”
7. If the City fails to comply with any provision of this TSO, the Regional Water Board may take any further action authorized by law. The Executive Officer, or his/her delegee, is authorized to take appropriate enforcement action pursuant, but not limited to, Water Code sections 13350 and 13385. The Regional Water Board may also refer any violations to the Attorney General for judicial enforcement, including injunction and civil monetary remedies.
8. All other provisions of NPDES Order No. R4-2008-0011 not in conflict with this TSO are in full force and effect.
9. The Regional Water Board may reopen this TSO at its discretion or at the request of the City, if warranted. Lack of progress towards compliance with this TSO may be cause for the Regional Water Board to modify the conditions of this TSO.
10. This TSO becomes effective immediately upon adoption by the Regional Water Board. This TSO expires on March 5, 2013.

I, Samuel Unger, Executive Officer, do hereby certify that the foregoing is a full, true and correct copy of an order adopted by the Executive Officer pursuant to delegated authority by the California Regional Water Quality Control Board, Los Angeles Region, on December 6, 2012.

Samuel Unger, P.E.
Executive Officer

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