



Sacramento Regional County Sanitation District Sacramento Regional Wastewater Treatment Plant

Progress Report Method of Compliance Work Plan and Schedule for Ammonia Effluent Limitations and Title 22 or Equivalent Disinfection Requirements

Submitted: July 1, 2019

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Sacramento Regional County Sanitation District Contact Information

For additional information on this work plan, please contact:

Vick A. Kyotani, Deputy Director of Operations
Sacramento Regional County Sanitation District
Email: kyotaniv@sacsewer.com
Phone: 916.875.9001

1.0 Introduction

On June 9, 2011, the Sacramento Regional County Sanitation District (Regional San) submitted a Method of Compliance Work Plan and Schedule for Ammonia Effluent Limitations and Title 22 or Equivalent Treatment Requirements (Work Plan). This submittal was required by the compliance schedule contained in the waste discharge requirements Order No. R5-2010-0114 (2010 NPDES Permit¹) adopted by the Central Valley Regional Water Quality Control Board (Regional Board) on December 9, 2010 for the Sacramento Regional Wastewater Treatment Plant (SRWTP). The 2010 NPDES Permit imposed new final effluent limitations for ammonia and nitrate (requiring nutrient reduction facilities) and new requirements for Title 22 or equivalent disinfection requirements (requiring tertiary treatment facilities). The 2010 NPDES Permit required the submittal of annual progress reports following approval of the Work Plan. The Regional Board approved the Work Plan on July 8, 2011.

As a component of a Partial Settlement Agreement, Regional San stated that it will post on its website a second progress report on or before February 1 of each year until completion of the nutrient reduction facilities. At Regional San’s discretion, these progress reports will also include an update on the tertiary treatment facilities in addition to the nutrient reduction facilities.

On April 21, 2016, Regional Board adopted Order R5-2016-0020 (2016 NPDES Permit) for the SRWTP which rescinds and replaces the 2010 NPDES Permit. The 2016 Permit also requires compliance with final effluent limitations for ammonia and nitrate and Title 22 or equivalent disinfection. The applicable requirements and schedules are reflected in the 2016 Permit and Tables 1 and 2 below.

2.0 Overall Compliance Schedule

The following compliance schedules for Ammonia Effluent Limitations and Title 22 or Equivalent treatment requirements are listed below in Table 1 and Table 2, respectively:

Table 1. Compliance Schedule for Ammonia Final Effluent Limitations

Task	Relevant Dates
i. Submit Method of Compliance Work Plan/Schedule	Due Date: 9 June 2011 Date Submitted: 9 June 2011 Date Approved: 8 July 2011 Status: Complete
ii. Submit and Implement Pollution Prevention Plan (PPP) for Ammonia ¹	Due Date: 9 December 2011 Date Submitted: 8 December 2011 Revised Plan Submitted: 15 November 2012 Date Approved: 17 May 2013 Status: Complete
iii. Progress Reports ²	Progress report required by permit due 9 July, annually ³
iv. Begin CEQA process for Compliance Project	Due Date: 19 May 2015 Process Initiated: 22 August 2012

¹ The 2010 NPDES Permit was amended several times. All the amendments were incorporated into Regional Board Order No. R5-2010-0114-04

Method of Compliance Work Plan For Ammonia

Task	Relevant Dates
	Date EIR Approved: 24 September 2014 Status: Complete
v. Begin Construction of Compliance Project	Due Date: 19 May 2018 Status: Complete; Biological Nutrient Removal Notice to Proceed-April 27, 2016
vi. Full Compliance	Due Date: 11 May 2021

¹The Discharger shall continue to implement the PPP.

²The progress reports shall detail the steps implemented towards achieving compliance with waste discharge requirements, including studies, construction progress, evaluation of measures implemented, and recommendations for additional measures as necessary to achieve full compliance by the final compliance date.

³Regional San will prepare an additional report annually, to be posted on the Regional San's website on or before February 1 of each year, beginning in 2014. This additional report is not required by the 2016 NPDES Permit, but is a report the Partial Settlement Agreement states that Regional San will prepare. Both reports will be posted on Regional San's website, but only the report required by July 9 is required to be transmitted directly to the Regional Board.

Table 2. Compliance Schedule for Title 22 or Equivalent Treatment Requirements

Task	Relevant Dates
i. Submit Method of Compliance Work Plan/Schedule	Due Date: 9 June 2011 Date Submitted: 9 June 2011 Date Approved: 8 July 2011 Status: Complete
ii. Progress Reports ¹	Progress report required by permit due 9 July, annually
iii. Begin CEQA process for Compliance Project	Due Date: 16 May 2017 Process Initiated: 22 August 2012 Date EIR Approved: 24 September 2014 Status: Complete
iv. Begin Construction of Compliance Project	Due Date: 16 May 2020 Status: Complete; Tertiary Treatment Facility Notice to Proceed-April 11, 2018
v. Submit Seasonal Operations Plan ²	No later than 30 days prior to full compliance
vi. Full Compliance	Due Date: 9 May 2023

¹The progress reports shall detail the steps implemented towards achieving compliance with waste discharge requirements, including studies, construction progress, evaluation of measures implemented, and recommendations for additional measures as necessary to achieve full compliance by the final compliance date.

²The plan shall incorporate as a goal to reasonably limit the amount of unfiltered discharge and describe anticipated operations of the Facility when flows in excess of filter design capacity occur considering influent flows to the entire Facility, available storage, river flows, impending meteorological conditions, and any other relevant operational considerations. This plan will be periodically updated, as necessary, based on accumulated operating data experience.

Installation of advanced treatment technologies is needed to meet the new discharge permit requirements. To construct the required treatment facilities, Regional San identified other major activities needed to achieve compliance with the NPDES Permit requirements, including:

- Treatment Technology Identification - Completed
- Pilot Study Implementation
 - ❖ Phase 1 - Treatment Technology Selection - Completed
 - ❖ Phase 2 - Design Criteria Optimization - Completed
 - ❖ Phase 3 - Process optimization and additional operator training - In planning (but not required to operate nutrient reduction or tertiary treatment facilities)

- Establishment of the Program Management Office (PMO) - Completed
- Select treatment technologies for environmental review, design, and implementation - Completed
- Design full-scale treatment systems - Completed
- Environmental Analysis - Completed
- Construction Phase - In progress (for nutrient reduction, Title 22 or equivalent, and related facilities)
- Startup and Commissioning - In planning for nutrient reduction and related facilities. In progress for some related facilities and completed for some other related facilities.

3.0 Progress towards Compliance

The following is a summary of the various activities associated with complying with the Ammonia Effluent Limitations and Title 22 or Equivalent requirements. The summary provided here is the information required as part of the permit requirements.

3.1 Pilot Study Implementation

The Phase 2 Pilot System was completed in December 2014. A final report was completed in December 2015.

The goal of the Phase 3 Pilot Study is to further optimize the biological process and provide training to operators. This phase is not required to successfully commission the new facilities.

3.2 Design of Treatment Systems

Design consultants have been procured to provide pre-designs and final designs of various individual treatment systems and project features. Designs for all major projects have been completed. Table 3 lists the major projects required to meet nutrient-related (i.e., final ammonia and nitrate) limitations and Title 22 or Equivalent treatment requirements. Major design projects, as defined in the Partial Settlement Agreement, are those with a design contract in excess of \$1 million. Dates in bold are actual dates of accomplishment. Other dates are planned dates. Regional San has determined that construction completion will be designated as when nutrient reduction facilities and the Title 22 or Equivalent treatment facilities are commissioned respectively as systems. Additional project information is included in Appendix A.

Table 3. Major EchoWater Projects

Major Project	Design Contract Award	Construction Contract Award	Construction Completion
Biological Nutrient Removal (BNR)	22 Feb 2013	27 Apr 2016	11 May 2021 ¹
Flow Equalization	28 Aug 2013	25 Feb 2015	31 Dec 2019
RAS Pumping System	13 Nov 2013	25 May 2016	03 Oct 2019
Building Relocations	25 Sep 2013	19 Mar 2015	29 Feb 2016
Site Preparation	11 Dec 2013	25 Feb 2015	11 Nov 2016
Main Electrical Substation Expansion	In House Design	01 Jan 2016	30 Dec 2016
Disinfection Chemical Storage	11 Dec 2013	22 Jul 2015	16 Nov 2017
Nitrifying Sidestream Treatment	26 Mar 2014	13 Jan 2016	30 Sep 2019
Tertiary Treatment Facilities (TTF)	27 May 2015	11 April 2018	01 Nov 2022
Channel Air Blowers	11 Nov 2016	23 May 2018	13 Apr 2020

¹ Scheduled date of compliance with final ammonia and nitrate effluent limitations. Anticipated final construction completion date is November 2021.

3.3 Environmental Analysis

The CEQA process was initiated on August 22, 2012 and the Final Environmental Impact Report (EIR) was certified by the Regional San Board of Directors on September 24, 2014.

3.4 Construction Phase

Construction of major projects supporting the key ammonia and nitrate and Title 22 or Equivalent treatment facilities was initiated in February 2015. Four major projects have been completed as of December 31, 2018. There are currently six major projects under construction. The key project needed to meet ammonia and nitrate treatment requirements is the Biological Nutrient Removal project and is under construction. The key project needed to meet the Title 22 or equivalent requirements is the Tertiary Treatment Facilities project is also under construction.

3.5 Startup and Commissioning

Startup and commissioning for each project will occur as major treatment processes are completed and existing processes are cut over as required. Additional time is required to start up and commission the new facilities together to ensure stable process operation. Regional San is defining full compliance as completion of this phase of the last project (the Tertiary Treatment Facilities). This phase is anticipated to be accomplished by May 2023.

3.6 Regional San Project Acceptance

This milestone of the project is a contractual step to formally close out the construction project and is subject to Regional San Board action. Treatment facilities will have already been commissioned and will be fully operational. This date is subject to the nearest Board meeting after all contractual issues have been resolved and is not the measure of full compliance.

3.7 Ammonia Pollution Prevention

As stated in the November 2012 revised Ammonia PPP, domestic waste contributes the majority of ammonia in the treatment plant influent. Most of the ammonia found in domestic waste is derived from urea, which breaks down rapidly to ammonia in the wastewater conveyance system. Therefore, the primary source of ammonia to the sewer system is considered uncontrollable.

From January 1 to May 31, 2019, the average daily influent ammonia concentration was 31 milligrams per liter (mg/L), and the average daily effluent ammonia concentration was 27 mg/L. Regional San is in compliance with the interim maximum daily, average weekly, and average monthly effluent limitations for ammonia.

Industrial point sources remain a relatively insignificant source of ammonia, contributing about 1% of the influent load. Potential influent ammonia concentration reduction from source control of industrial users will be negligible. Regional San will continue to identify and screen potential new significant ammonia point source dischargers.

Further, in May 2009, Regional San implemented interim operational changes, namely the cessation of solids storage basin (SSB) flushing, which resulted in reductions in effluent ammonia discharged to the river by approximately 10 percent. However, flushing resumed in March 2019, when Nitrifying Sidestream Treatment (NST) came on line. NST will reduce ammonia from SSB and biosolids recycling facility return flows prior to their discharge into the plant influent.

3.8 Schedule

Regional San has been making good faith efforts to meet the compliance dates for ammonia and nitrate final effluent limitations, and Title 22 or equivalent treatment requirements. Construction for all of the projects required to provide the necessary treatment facilities to meet the permit requirements is in progress. The current contractor's schedule indicates the nutrient reduction facilities (Biological Nutrient Removal) is on schedule to comply with the final effluent limits for ammonia and nitrate by May 2021. This will be accomplished with a significant portion of the BNR facility completed and commissioned with sufficient capacity to process wastewater flows through the summer of 2021. The remaining portions of the BNR facility are on schedule to be completed and commissioned prior to the onset of wet weather flows in 2021. As previously noted, the contractor continues to fall behind in meeting intermediate milestones. Contributors to such slippage include factors outside of the contractor's control such as a one-month late start due to a bid protest, the extreme wet winter of 2017, and worker availability over the past two years due to the Oroville Dam emergency spillway work. Regional San staff continues to work closely with the contractor to identify and evaluate means by which compliance can be met without unacceptable risks or costs.

The construction contractor for the treatment facilities needed to meet the Title 22 or equivalent requirements (Tertiary Treatment Facilities) was issued a notice to proceed on April 30, 2018.

The contractor has been able to make good progress through the wet weather and construction has escalated with concrete placements.

A Program schedule (updated as of May 2019) is included in Appendix B showing the major projects as well as other projects and work efforts required to comply with the final effluent limitations for ammonia and nitrate limitations and for Title 22 or equivalent requirements. The high level schedule shown in Table 3 may reflect more recent updates to key project milestones.

Appendices

- A. Status of Ammonia and Nitrate Reduction and Title 22 or Equivalent Projects
- B. Work Plan Schedule for Compliance

Appendix A

Status of Ammonia and Nitrate Reduction and Title 22 or Equivalent Projects

Status of Ammonia and Nitrate Reduction and Title 22 or Equivalent Projects

Biological Nutrient Removal

A construction contract was awarded on April 27, 2016 and Notice to Proceed was issued on May 27, 2016. Construction continues to progress and a detailed commissioning schedule is in development. Although there is schedule slippage to intermediate milestones, the contractor's current schedule compliance with the final effluent limits for ammonia and nitrate by May 11, 2021.

Tertiary Treatment Facilities

The contract was awarded on April 11, 2018. Notice to Proceed was issued on April 30, 2018. Construction is ongoing and construction of deep structures is in progress. The contractor's baseline schedule was approved early June 2019 and shows the project completion by November 1, 2022. The project is on schedule to meet this date but due to the complex construction activities, there is very little to no float in the construction schedule.

Nitrifying Sidestream Treatment

The contract was awarded on January 13, 2016 and Notice to Proceed was issued on February 19, 2016. Commissioning is in progress but the contractor is experiencing difficulties with equipment and control systems reliability. However, the biological process has been established and is performing despite the equipment failures. Reliability testing of the entire system remains to be done. The project is expected to be completed by September 30, 2019.

Channel Air Blowers

The contract was awarded on May 23, 2018. Notice to proceed was issued on September 4, 2018. Construction is in progress. The project is expected to be completed by April 13, 2020. The project is on schedule to meet this date.

Flow Equalization

A construction contract was awarded on February 25, 2015 and Notice to Proceed was issued on March 4, 2015. The contractor is experiencing delays from the wash-down system vendor, but the basins can be used without the automated wash-down system. Construction is expected to be completed by December 31, 2019. The project is on schedule to meet this date.

RAS Pumping System

A construction contract was awarded on May 25, 2016 and Notice to Proceed was issued on June 15, 2016. Construction is underway and is expected to be completed by October 3, 2019. The project is on schedule to meet this date.

Building Relocations

Construction was completed on February 29, 2016 and final acceptance was issued on July 13, 2016.

Site Preparation

Construction was completed on November 11, 2016 and final acceptance issued on October 11, 2017.

Main Electrical Substation Expansion

Construction was completed on December 30, 2016 and final acceptance was issued on February 22, 2017.

Disinfection Chemical Storage

Construction was completed on November 16, 2017 and final acceptance was issued on September 12, 2018.

Appendix B

Work Plan Schedule for Compliance