

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

ORDER R5-2018-0070-001

AMENDED WASTE DISCHARGE REQUIREMENTS  
FOR

CITY OF PATTERSON  
CITY OF PATTERSON WATER QUALITY CONTROL FACILITY  
STANISLAUS COUNTY

The California Regional Water Quality Control Board, Central Valley Region (Central Valley Water Board) finds that:

1. On 11 December 2017, the City of Patterson (Discharger or City) submitted a Report of Waste Discharge (RWD) for updating Waste Discharge Requirements (WDRs) Order R5-2007-0147 for its Water Quality Control Facility (WQCF or Facility). On 13 February 2018, the City submitted a revised RWD. The City submitted additional information on 17 April 2018 and 29 June 2018.
2. The City owns and operates the WQCF, and is therefore responsible for compliance with the WDRs prescribed as part of this Order.
3. The WQCF is located at 14901 Poplar Avenue in Stanislaus County (T5S, R8E, MDB&M), approximately three miles northeast of the Patterson city limits, and adjacent to the San Joaquin River floodplain. As depicted on Attachment A (incorporated herein), the WQCF is comprised of the Stanislaus County Assessor's Parcel Numbers (APNs): 047-027-003; 047-027-011; 047-027-012; 047-027-013; 047-027-014; 047-028-011; 047-028-012; 047-029-003; 047-037-017; and 047-037-018.
4. WDRs Order R5-2007-0147, adopted on 26 October 2007, currently prescribes requirements for the facility. The WDRs Order contains an influent flow limit of 2.45 million gallons per day (MGD) as a monthly average. However, treatment capacity was reduced from 2.45 to 2.25 MGD by the Discharger to comply with an effluent nitrogen limit in Order R5-2007-0147. To meet demands of future development, the Discharger proposes to increase treatment capacity from 2.25 MGD to 2.45 MGD and then to 3.7 MGD in two phases by modifying the WQCF. Therefore, the WDRs must be revised. This Order rescinds and replaces Order R5-2007-0147.

**Existing Facility**

5. The existing WQCF receives wastewater from the City as well as Diablo Grande, a residential and golf course resort community approximately eight miles southwest of Patterson. The City's current estimated population is 22,730, with 5,959 residential connections and 261 commercial/industrial connections. Wastewater treated at the WQCF is primarily from residential sources. The monthly average influent rate is approximately 1.5 MGD. The RWD indicates that industrial uses within the City are "light industrial" generated from large corporate distribution and shipping centers.

6. The City’s potable water is supplied by nine deep aquifer groundwater wells, seven of which are dedicated to potable water use. The remaining two are for non-potable irrigation of City parks and sports fields. Per the City’s 2016 Consumer Confidence Report, potable groundwater supply is characterized as follows:

**Groundwater Supply**

<b>Constituent</b>	<b>Total Dissolved Solids (TDS) (mg/L)</b>	<b>Electrical Conductivity (EC) (µmhos/cm)</b>	<b>Chloride (mg/L)</b>	<b>Sulfate (mg/L)</b>	<b>Nitrate as N (mg/L)</b>	<b>Total Hardness</b>
Concentration	813	1,279	131	276	5.2	376

7. The WQCF was originally constructed with an Imhoff tank treatment system in the 1950s, with a pond treatment system added in the late 1960s. Today, the WQCF is comprised of three treatment systems covering a total of approximately 240 acres:
- The North Activated Sludge Treatment System (NASTS), constructed in 1979;
  - The Advanced Integrated Pond System (AIPS), constructed in 2000; and
  - The South Activated Sludge Treatment System (SASTS), constructed in 2005.
- Undisinfected secondary effluent is discharged for disposal to a series of 15 percolation ponds covering approximately 100 acres. A general site plan and process flow diagram are depicted on Attachment B and Attachment C (both incorporated herein).
8. Influent flows enter a mechanical bar screen before being pumped from the influent pump station to the NASTS distribution structure and the SASTS flow splitter structure. A Supervisory Control and Data Acquisition (SCADA) System regulates distribution of raw wastewater from the influent pump station to the three treatment systems. A high-water level alarm for both NASTS and SASTS is also connected to the SCADA System.
9. The NASTS contains an aeration oxidation ditch and two clarifiers for solids separation. Waste sludge produced by this system is metered and pumped to SASTS Aerobic Digesters 1, 2 and 3 for stabilization and dewatering. The system has an initial design capacity of 1.0 MGD. However, the NASTS was de-rated by the Discharger from 1.0 MGD to 0.80 MGD to allow the system to operate as a Simultaneous Nitrification Denitrification process to meet an effluent nitrogen limit in WDRs Order R5-2007-0147. In 2022 the City constructed a 200,000-gallon concrete tank to add an anoxic zone to the existing oxidation ditch. This will improve the reliability and consistency of nitrogen removal from the wastewater and allows the capacity to be restored from 0.8 MGD to 1.0 MGD.
10. The AIPS consists of three sequentially-connected ponds, identified as primary, secondary, and tertiary. The primary and secondary ponds are constructed with a concrete apron and the pond bottoms are underlain with one foot of clay with a hydraulic conductivity of  $1 \times 10^{-6}$  cm/sec. The primary pond is separated into three cells

of varying depths which allow for the creation of aerobic and anaerobic zones in the pond. The first cell being the deepest functions as an anaerobic digester to breakdown solids. The primary pond contains three floating brush aerators. The secondary pond is divided into two cells with a deep first cell to stabilize solids similar to the primary pond. The secondary pond contains one floating brush aerator. The tertiary pond provides polishing and allows algae to be settled.

11. The SASTS consists of an oxidation ditch, a secondary clarifier, a return activated sludge/waste activated sludge pump station, three aerobic digesters, and six sludge drying beds. Two of the drying beds are covered. The drying beds are constructed on reinforced concrete underlain by a geotextile material and a double layer of 60-mil High Density Polyethylene (HDPE) liner. Waste activated sludge produced by the SASTS is metered and pumped to the aerobic digesters for stabilization and dewatering. Treated wastewater from this system enters the effluent pump station and is then transferred to the percolation ponds.
12. Bar screenings are disposed off-site at a permitted landfill site. Wasted sludge from the NASTS and SASTS is transported to three aerobic digesters located on the south side of SASTS. Supernatant is returned to the headworks for treatment. A centrifuge is used to dewater solids from the digesters. Centrate from the centrifuge is returned to the headworks for treatment.
13. There are 13 unlined sand drying beds located on the NASTS side. These beds contain an underdrain system connected to the headworks facility. Historically, sludge dryings beds were used for solids dewatering, but this practice was discontinued in 2010 when the centrifuge was installed. The drying beds are now only used in an emergency when the centrifuge must be shut down for extended maintenance.
14. Dewatered biosolids are currently stored onsite at in 0.25-acre area (adjacent to Pond 2) until disposed offsite by a licensed disposal contractor. The storage area is covered with asphalt and underlain by a double layer of 60-mil HDPE liner.
15. The WQCF treatment and percolation ponds are summarized as follows:

Pond Name <sup>1</sup>	Function	Built	Pond Bottom Area (acres)	Depth <sup>2</sup> (ft.)	Capacity <sup>2</sup> (MG)	Liner	Perc Rate (in/hr)	Avg. Depth to Groundwater (ft.)
AIPS Primary	Treatment	2000	1.1	12	5.0	Clay	N/A	9.1
AIPS Secondary	Treatment	2000	0.7	11.5	3.1	Clay	N/A	9.1
AIPS Tertiary	Clarification	2000	0.2	10	2.6	None	0.040	9.1

Pond Name <sup>1</sup>	Function	Built	Pond Bottom Area (acres)	Depth <sup>2</sup> (ft.)	Capacity <sup>2</sup> (MG)	Liner	Perc Rate (in/hr)	Avg. Depth to Groundwater (ft.)
Pond 1	Emergency Storage	1960s	5.1	1.5	2.5	None	0.040	16.1
Pond 2	Percolation	1960s	7.1	2.4	5.3	None	0.040	13.6
Pond 3	Percolation	1960s	13.6	2.3	9.8	None	0.040	15.0
Pond 5	Percolation	1960s	4.4	2.1	2.7	None	0.040	15.6
Pond 6	Percolation	1960s	4.7	2.5	3.5	None	0.040	14.9
Pond 7	Percolation	1960s	6.5	2.7	5.0	None	0.040	13.5
Pond 8	Emergency Percolation	1960s	1.2	N/A	N/A	None	0.040	18.3
Pond 10	Percolation	2000	6.1	4.0	7.1	None	0.016	14.3
Pond 11	Percolation	2000	7.1	2.0	4.2	None	0.071	15.4
Pond 12	Percolation	2000	3.3	4.2	3.8	None	0.171	14.2
Pond 13	Percolation	2000	6.1	4.2	7.4	None	0.016	14.2
Pond 14	Percolation	2000	6.4	4.5	8.5	None	0.016	14.4
Pond 15	Percolation	2005	8.1	3.5	8.6	None	0.100	12.5
Pond 16	Percolation	2005	8.1	4.0	9.9	None	0.100	12.6
Pond 17	Percolation	2005	8.1	4.0	9.9	None	0.100	11.4
Pond 18	Percolation	2005	8.1	3.5	8.6	None	0.100	12.2

1. Ponds 4 and 9 are abandoned, whereas Ponds 1 and 8 have been constructed but not used for storage.
2. Based on two feet of freeboard.

16. Average flows and the quality of influent entering the WQCF, from January 2012 through December 2016, are summarized as follows:

Constituent or parameter	Units	Avg. Concentration
Average Flow	MGD	1.44
pH	Std Units	7.7

Constituent or parameter	Units	Avg. Concentration
Biochemical Oxygen Demand (BOD)	mg/L	467
Total Suspended Solids (TSS)	mg/L	514

17. Average flows and quality of effluent entering the percolation ponds from the three treatment systems, between January 2014 and December 2016, are summarized as follows:

**Effluent Quality and Flow Rates**

Constituent or parameter	SASTS	NASTS	AIPS
Average Flow (MGD)	0.9	0.5	0.17
BOD (mg/L)	3.3	4.8	58
TSS (mg/L)	3.2	2.2	58
TDS (mg/L)	1,152	1,227	1,394
EC (µmhos/cm)	1,776	1,935	2,176
Nitrate as N (mg/L)	0.1	1.0	3.5
Total Nitrogen (mg/L)	1.5	4.3	19
Total Kjeldahl Nitrogen (TKN) (mg/L)	1.4	3.3	16
Chloride (mg/L)	271	314	362
Sodium (mg/L)	242	258	289
pH	7.7	7.7	8.3

18. Based on a comparison of effluent quality from the three treatment systems, effluent from the AIPS contains higher concentrations of salinity due to evapotranspiration in the treatment ponds and higher concentrations of TKN indicating low efficiency for nitrogen removal. This Order requires the City submit a workplan to minimize use of the AIPS and maximize use of the NASTS and the SASTS after completion of the proposed expansion described in Finding 20.

**Proposed Changes**

19. Currently, each of NASTS, AIPS and SASTS has its own point of compliance and discharge limitations. This results in significant monitoring costs. The Discharger proposed to blend effluent from the three treatment systems prior to discharge to the disposal ponds, so that effluent can be regulated as a single point of compliance at the South Effluent Pump Station. Blending effluent will combine low quality effluent from the AIPS with high quality effluent from the NASTS and SASTS. Based on the effluent data collected from 2014 through 2016, the effluent from AIPS contributed about 11 percent of total flow from the three treatment systems. After completion of the

proposed expansion, the AIPS will only make up five percent of permitted capacity. The projected blended effluent quality is presented below:

**Projected Blended Effluent Quality**

Constituent	Concentrations
BOD (mg/L)	9.7 <sup>(2)</sup> (15 <sup>(1)</sup> )
TSS (mg/L)	8.8 <sup>(2)</sup> (7.3 <sup>(1)</sup> )
Total Nitrogen (mg/L)	4.5 <sup>(2)</sup> (7.2 <sup>(1)</sup> )
Nitrate as N (mg/L)	0.9 <sup>(2)</sup>
TKN (mg/L)	3.6 <sup>(2)</sup>
TDS (mg/L)	1,204 <sup>(2)</sup>
EC (µmhos/cm)	1,872 <sup>(2)</sup>
Chloride (mg/L)	295 <sup>(2)</sup>
Sodium (mg/L)	252 <sup>(2)</sup>
pH	7.8 <sup>(2)</sup>

1. Commingled effluent avg. of the trial basis samples from the NASTS, SASTS and AIPS from January 2014 through December 2015.
2. Effluent flow-weighted avg. from 3 treatment systems from January 2014 through December 2016.

20. The City proposes two projects to increase the WQCF's capacity:

- (a) **NASTS Upgrades**— Completed in 2022 as reported in the 20 July 2022 *NASTS Capacity Increase Report* submitted by the discharger on 5 August 2022.
- (b) **Phase III Expansion**—The Phase III expansion will increase the treatment capacity of SASTS from 1.25 MGD to 2.5 MGD. The expansion was originally described in WDRs Order R5-2007-0147, but had been put on hold following the downturn in the housing market. The City anticipates beginning the project in 2020 and will complete construction in 2021. Major improvements associated with the Phase III Expansion are listed below, and also depicted in **Attachment C**.

**Phase III—Major Improvements**

<b>SASTS Ditch 2</b>	Installation of a 1-MG oxidation ditch with two slow speed surface aerators for biological treatment
<b>SASTS Clarifier 2</b>	80-Foot diameter circular secondary clarifier

<b>Thickener</b>	Rotary drum thickener for dewatering clarifier solids prior to stabilization in Aerobic Digesters 4, 5 and 6
<b>Aerobic Digesters 4, 5 and 6</b>	Three 129,000-gallon aerobic digesters for stabilization and storage of waste sludge
<b>RAS/WAS Pump Station 2</b>	Return/Waste Sludge Pumping from SASTS Clarifier 2
<b>Vactor Truck Dewatering Beds</b>	Conversion of three NASTS Sand Drying Beds to receive dewatering vactor truck debris from water distribution system cleaning and sewer collection system cleaning
<b>Sludge Storage Area</b>	Installation of an additional 1.5-acre paved asphalt area for short term (less than 6 months) storage of dewatered solids The area will be underlined by double layer of 60-mil HDPE for groundwater protection. Drainage and runoff will be collected in the stormwater pond and returned to headworks.
<b>Storm Water Retention Pond</b>	Demolishing the existing Storm Water Retention Pond Installation of 3.1 acre-feet storm water retention pond The pond will be underlain by double layer of 60-mil HDPE for groundwater protection. Storm water will be returned to the headworks.

The RWD indicates that the upgraded NASTS and the additional oxidation ditch and clarifier in SASTS will produce effluent with both BOD and TSS less than 20 mg/L, and total nitrogen less than 10 mg/L. The RWD also projects that the blended effluent from SASTS, NASTS and AIPS is expected to have both BOD and TSS less than 23 mg/L.

21. The existing and proposed design capacities of each process (after completion of improvement and expansion) is as follows:

Process Treatment	Existing Design Capacity (MGD)	Proposed Design Capacity	
		After NASTS Upgrades (MGD)	After Phase III Expansion (MGD)
NASTS	0.8	1.0	1.0
SASTS	1.25	1.25	2.5
AIPS	0.2	0.2	0.2
Total	2.25	2.45	3.7

22. The water balance included in the RWD indicates that the percolation ponds will have adequate capacities to accommodate a monthly average wastewater inflow rate of 3.7 MGD. The water balance calculation is based on 100-year annual precipitation, and average pond percolation rates of 0.06 inches/hour.

### Site-Specific Conditions

23. Annual precipitation in the area is approximately 10.7 inches. The average evapotranspiration rate is approximately 54 inches annually.
24. The WQCF is immediately adjacent to the San Joaquin River floodplain, but surrounded by a levee (constructed in conjunction with the percolation ponds). Per the RWD, the levees and WQCF are at an elevation sufficient to withstand a 100-year flood.
25. In 1999, 16 soil test borings were drilled in area of the proposed southern ponds. Surface soils generally consisted of clay underlain by varying gradations of medium to dense sand. Clay varies in depth from approximately 2 to 20 feet. Ten percolation tests were conducted near four of the borings, revealing percolation rates between 0.01 and 0.03 inches per hour.
26. In 2003, 15 soil test borings were drilled in area of the proposed northern ponds. In general, surface soils consisted on clay, silt, and sand to an average thickness of approximately five feet underlain by high permeability sand and silty sand mixture to a boring depth of 16 to 21.5 feet. Twelve percolation tests near four of the boring locations revealed percolation rates between 0.2 and 134 inches/hour. In a silty clay layer at approximately 1.5 to 7.5 feet, percolation rates were 0.05 to 0.11 inches per hour.
27. Stormwater from the WQCF is captured through a series of drains connecting to a stormwater retention pond.

### Groundwater Considerations

28. The WQCF has 15 onsite groundwater monitoring wells. Five monitoring wells (MW-1 through MW-5) were constructed in March 2001 and five monitoring wells (MW-6 through MW-10) were constructed in July and August 2004. Additional six wells (MW-11 through MW-16) were constructed in July 2008. The location of MW-9 was disputed by neighbors, and was therefore removed in accordance with Stanislaus County requirements as of 10 May 2005. Monitoring wells MW-1 through MW-10 have total depths ranging from 28 to 32 feet below ground surface (bgs). The remaining six wells (MW-11 through MW-16) have total depths ranging from 41 to 45 feet bgs. The well locations are show on **Attachment B**. The depth to groundwater ranges from approximately 5 to 31 feet bgs, and varies depending on season, location and local influences (e.g., irrigation practices, groundwater extraction, the presence and stage of surface water bodies).
29. The WQCF is surrounded primarily by agricultural farmland and is immediately adjacent to the floodplain of the San Joaquin River. Based on the City's 21 August 2017 *Antidegradation Analysis*, generally the regional groundwater gradient relative to the site trends to the northwest; Groundwater also flows slightly downward going north-northeast and west away from the site with a slight gradient, but can be affected by which ponds are in use and water levels in the San Joaquin River. Based on the

groundwater elevation data, the water levels in several wells (e.g., MW-8 and MW-10) were observed to be higher than other wells, indicating mounding beneath percolation ponds.

30. In its *Antidegradation Analysis*, the City states as follows:

Previous studies of the specific site area have listed wells MW-1, MW-2, MW-6, MW-11, and MW-12, ... located on the western half of the site, as up-gradient wells, and the remainder of the wells on the eastern half as down-gradient wells. While the aforementioned wells may be up-gradient with respect to more westerly groundwater levels, they are in fact down-gradient with respect to the eastern site wells and the San Joaquin River, according to the most recent groundwater elevation data. It may be true that on a very local level, these wells are in fact up-gradient, but in light of regional groundwater gradients, they are down-gradient of the other wells and the ponds. Also, the onsite wells are either gaining or losing depending on the river, so the regional approach makes sense for a longer-term/bigger impact antidegradation review.

31. The City's *Antidegradation Analysis* further indicates that sulfate concentrations in groundwater were previously prevalent to the west of the City, and elevated TDS concentrations were previously noted in the groundwater of the semi-confined zone under the City. Groundwater quality has been characterized by quarterly sampling of groundwater monitoring wells on a basis. Selected quarterly groundwater quality data from 2014 through 2016 is summarized in the table below. Additionally, to determine regional background water quality constituent levels, the Discharger's analysis collected data from 10 up-gradient wells within a 7 to 8 miles radius of the site covering a time span from 2002 to 2016. The averages of the regional background groundwater quality are also listed below.

Constituent	TDS (mg/L)	Chloride (mg/L)	Sodium (mg/L)	Sulfate (mg/L)	Nitrate as N (mg/L)	TKN (mg/L)
Concentration Protective of Beneficial Uses/Wells	500 to 1,500 <sup>(2)</sup>	106 <sup>(1)</sup> to 600 <sup>(3)</sup>	69 <sup>(1)</sup>	250 to 600 <sup>(3)</sup>	10 <sup>(4)</sup>	NA
MW-1	1,475	302	289	361	8.8	0.2
MW-2	2,767	368	529	1,116	17.3	0.5
MW-3	1,408	369	278	321	3.5	0.2
MW-4	1,664	357	304	420	5.1	0.5
MW-5	1,900	456	358	469	20.2	0.7
MW-6	1,317	253	221	276	6.0	0.5
MW-7	1,517	358	295	333	7.7	0.2
MW-8	1,458	347	283	296	3.9	0.3

Constituent	TDS (mg/L)	Chloride (mg/L)	Sodium (mg/L)	Sulfate (mg/L)	Nitrate as N (mg/L)	TKN (mg/L)
MW-10	1,294	308	250	288	1.9	0.5
MW-11	1,400	265	235	274	6.8	0.2
MW-12	1,060	261	201	258	4.3	0.2
MW-13	1,533	294	286	388	5.2	0.4
MW-14	1,492	323	286	400	2.1	0.7
MW-15	1,633	392	339	349	5.8	0.3
MW-16	1,375	345	278	310	1.0	0.3
Onsite Well Avg.	1,553	333	295	391	6.6	0.4
Avg. Hist. Reg'l Background	1,087	128	152	356	7.0	NA

1. Lowest agricultural water quality goal.
2. TDS Secondary Maximum Contaminant Level, range: Recommended level = 500; Upper level = 1,000 mg/L; Short term level = 1,500 mg/L.
3. Secondary Maximum Contaminant Level, range: Recommended level = 250; Upper level = 500 mg/L; Short term level = 600 mg/L.
4. Primary Maximum Contaminant Level.

32. In general, onsite groundwater exceeds concentrations protective of beneficial uses for TDS, chloride, sodium, and sulfate. The results are as follows:

- a. TDS concentrations in all of the existing monitoring wells exceeded the Short-term Secondary Maximum Contaminant Level (MCL) of 1,000 mg/L. The lowest average TDS concentration was 1,060 mg/L in MW-12 and the highest average concentration was 2,767 mg/L in MW-2.
- b. Chloride concentrations in all of the existing monitoring wells exceeded the recommended Secondary MCL of 250 mg/L. The highest average concentration of 456 mg/L was reported in MW-5. The lowest average concentration was 253 mg/L in MW-6.
- c. Sodium concentrations in all the existing monitoring wells exceeded the lowest Agriculture Water Quality Goal (106 mg/L). Average concentrations range from 201 to 529 mg/L, with the highest concentration in MW-2.
- d. Sulfate concentrations in all the existing monitoring wells exceeded the recommended Secondary MCL (250 mg/L). The highest average concentration of 1,116 mg/L was reported in MW-2.
- e. Nitrate as nitrogen concentrations reported in MW-1, MW-2, MW-4, MW-5 and MW-7 exceeded the Primary MCL of 10 mg/L. The highest average concentration was 20.2 mg/L reported in MW-5.

33. A comparison of groundwater monitoring results shows that TDS, sodium, chloride, and sulfate concentrations in the onsite wells are higher than the regional background groundwater. The Discharger's *Antidegradation Analysis* states that "*Current effluent conditions and existing wastewater discharge to groundwater does appear to have degraded shallow groundwater quality to levels above the applicable water quality objectives for chloride and possibly, TDS and sodium*".

The Discharger's *Antidegradation Analysis* also states that despite elevated onsite groundwater sulfate concentrations, a comparison between groundwater and effluent concentrations in light of historical groundwater and geological data suggests that the existing wastewater discharge is not responsible for the elevated sulfate concentrations.

The Discharger states that onsite groundwater may also be degraded from upgradient agricultural sources, such as crop production and a cattle feed lot located less than a quarter of a mile from monitoring wells MW-2, MW-6, M-11 and MW-12.

#### **Basin Plan, Beneficial Uses, and Regulatory Considerations**

34. The Central Valley Water Board's *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins* (Basin Plan) designates beneficial uses; establishes water quality objectives (WQOs) to protect such uses; contains implementation plans and policies for protecting waters of the subject basins; and incorporates by reference plans and policies adopted by the State Water Resources Control Board (State Water Board). Pursuant to Water Code section 13263, subdivision (a), WDRs implement the Basin Plan.
35. Local drainage around the Facility is to the San Joaquin River. Per the operative Basin Plan (as of the date of this Order), the river's beneficial uses are: municipal and domestic supply (MUN); agricultural supply (AGR); stock watering; industrial process water supply (PRO); water contact recreation (REC-1); non-contact water recreation (REC-2); warm freshwater habitat (WARM); cold freshwater habitat (COLD); migration of aquatic organisms (MIGR); spawning, reproduction, and/or early development (SPAWN); and wildlife habitat (WILD).
36. Per the operative Basin Plan, designated beneficial uses of underlying groundwater: municipal and domestic supply (MUN); agricultural supply (AGR), industrial service supply (IND); and industrial process supply (PRO).
37. The Basin Plan establishes narrative WQOs for chemical constituents, tastes and odors, and toxicity in groundwater. It also sets forth a numeric WQO for total coliform organisms.
38. The Basin Plan's numeric WQO for bacteria requires that the most probable number (MPN) of coliform organisms over any seven-day period shall be less than 2.2 per 100 mL in MUN-designated groundwater.

39. The Basin Plan's narrative WQOs for chemical constituents, at a minimum, require waters designated for use as domestic or municipal supply to meet the maximum contaminant levels (MCLs) specified in California Code of Regulations, title 22 (Title 22). The Basin Plan recognizes that the Central Valley Water Board may apply limits more stringent than MCLs to ensure that waters do not contain chemical constituents in concentrations that adversely affect beneficial uses.
40. The narrative toxicity WQO requires that groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, animal, plant, or aquatic life associated with designated beneficial uses.
41. Quantifying a narrative WQO requires a site-specific evaluation of those constituents that have the potential to impact water quality and beneficial uses. The Basin Plan states that when compliance with a narrative objective is required to protect specific beneficial uses, the Central Valley Water Board will adopt numerical limitations to implement the narrative objective on a case-by-case basis.
42. In the absence of specific numerical water quality limits, the Basin Plan methodology is to consider any relevant published criteria. General salt tolerance guidelines, such as *Water Quality for Agriculture* by Ayers and Westcot and similar references indicate that yield reductions in nearly all crops are not evident when irrigation water has an EC less than 700  $\mu\text{mhos/cm}$ . There is, however, an eight- to ten-fold range in salt tolerance for agricultural crops and the appropriate salinity values to protect agriculture in the Central Valley are considered on a case-by-case basis. It is possible to achieve full yield potential with waters having EC up to 3,000  $\mu\text{mhos/cm}$  if the proper leaching fraction is provided to maintain soil salinity within the tolerance of the crop.
43. The Central Valley Water Board adopted Basin Plan amendments incorporating new programs for addressing ongoing salt and nitrate accumulation in the Central Valley at its 31 May 2018 Board Meeting. These programs, once effective, could change how the Central Valley Water Board permits discharges of salt and nitrate. For nitrate, dischargers that are unable to comply with stringent nitrate requirements will be required to take on alternate compliance approaches that involve providing replacement drinking water to persons whose drinking water is affected by nitrates. Dischargers could comply with the new nitrate program either individually or collectively with other dischargers. For salinity, dischargers that are unable to comply with stringent salinity requirements would instead need to meet performance-based requirements and participate in a basin-wide effort to develop a long-term salinity strategy for the Central Valley. This Order may be amended or modified to incorporate any newly-applicable requirements.
44. The stakeholder-led Central Valley Salinity Alternatives for Long-Term Sustainability (CV- SALTS) initiative has been coordinating efforts to implement the new salt and nitrate management strategies. On 31 May 2018, the Central Valley Water Board adopted Basin Plan amendments incorporating the Salt Control Program (SCP) and Nitrate Control Program (NCP). The Basin Plan amendments were conditionally approved by the State Water Board on 16 October 2019 (State Water Board

Resolution 2019-0057) and by the Office of Administrative Law (OAL) on 15 January 2020 (OAL Matter No. 2019-1203-03). For those components subject to United States Environmental Protection Agency (USEPA) approval, the effective date was 2 November 2020. On 10 December 2020, the Central Valley Water Board adopted revisions to the Basin Plan amendments (Resolution R5-2020-0057). The State Water Board conditionally approved these revisions on 1 June 2021 (State Water Board Resolution 2021-0019). The effective date of the revisions to the Basin Plan amendments was 10 November 2021, the Notice of Decision filing date following approval by the OAL (OAL Matter No. 2021-0929-05S).

- a. For the Nitrate Control Program, the WQCF falls within Groundwater Basin 5-022.07 (San Joaquin Valley – Delta-Mendota Sub-basin), a Priority 2 Basin. Notices to Comply for Priority 2 Basins will be issued to dischargers by 2025. No action with respect to the Nitrate Control Program is required of the Discharger at this time. Once the Notice to Comply letter is issued, dischargers that are unable to comply with conservative nitrate requirements will be required to take on alternate compliance approaches that involve providing replacement drinking water to persons whose drinking water is affected by nitrates. Dischargers may comply with the nitrate control program either individually or collectively with other dischargers.
- b. For the Salt Control Program, dischargers that are unable to comply with conservative salinity requirements will instead need to meet performance-based requirements and participate in a basin-wide effort to develop a long-term salinity strategy for the Central Valley. Dischargers received a Notice to Comply with instructions and obligations for the Salt Control Program within one year of 17 January 2020, the effective date of the amendments. The Discharger is participating in the Prioritization and Optimization (P&O) Study.
- c. The Discharger has been assigned CV-SALTS ID 2358.
- d. As these salt and nitrate control strategies are implemented, the Central Valley Water Board may find it necessary to modify the requirements of these WDRs to ensure the goals of the Salt and Nitrate Control Programs are met. This Order may be amended or modified to incorporate newly applicable requirements. More information regarding this regulatory planning process can be found on the [Central Valley Water Board's CV-SALTS website](https://www.waterboards.ca.gov/centralvalley/water_issues/salinity) ([https://www.waterboards.ca.gov/centralvalley/water\\_issues/salinity](https://www.waterboards.ca.gov/centralvalley/water_issues/salinity)).

### **Antidegradation Analysis**

45. The State Water Board Policy with Respect to Maintaining High Quality Waters of the State, Resolution No. 68-16 (Antidegradation Policy) prohibits degradation of groundwater unless it is demonstrated that:
  - a. The degradation will not unreasonably affect present and anticipated beneficial uses;

- b. The degradation does not result in water quality less than that prescribed in state and regional policies, including violation of one or more water quality objectives;
  - c. The discharger employs best practicable treatment or control (BPTC) to minimize degradation; and
  - d. The degradation is consistent with the maximum benefit to the people of the state.
46. The Discharger has been monitoring groundwater quality at the site since 2001. Existing information is insufficient to allow determination of pre-1968 groundwater quality with certainty. Compliance with the Antidegradation Policy must therefore be based on available local groundwater quality data since 2001.
47. The following constituents of concern (i.e., TDS, chloride, sodium, sulfate and nitrate) have the potential to degrade groundwater:

Constituent	TDS (mg/L)	Chloride (mg/L)	Sodium (mg/L)	Sulfate (mg/L)	Nitrate as N (mg/L)	TKN (mg/L)
Concentration Protective of Beneficial Uses/Wells	500 to 1,500 <sup>(2)</sup>	106 <sup>(1)</sup> to 600 <sup>(3)</sup>	69 <sup>(1)</sup>	250 to 600 <sup>(3)</sup>	10 <sup>(4)</sup>	NA
Avg. Hist. Reg'l Background <sup>5</sup>	1,087	128	152	356	7.0	NA
Onsite Well Avg. <sup>6</sup>	1,553	333	295	391	6.6	0.4
Blended Effluent Avg. <sup>7</sup>	1,204	295	252	276	0.9	3.6

1. Lowest agricultural water quality goal.
2. TDS Secondary Maximum Contaminant Level range: Recommended level = 500; Upper level = 1,000 mg/L; Short-term level = 1,500 mg/L.
3. Secondary Maximum Contaminant Level range: Recommended level = 250; Upper level = 500 mg/L; Short term level = 600 mg/L.
4. Primary Maximum Contaminant Level.
5. Average from 10 up-gradient wells within a 7 to 8 miles radius of the site covering a time span from 2002 to 2016 (City's *Antidegradation Analysis*).
6. Quarterly average for all onsite wells from 2014 through 2016.
7. Effluent flow-weighted average from three treatment systems between January 2014 and December 2016.

- a. **Salinity (TDS, chloride, and sodium).** The TDS concentration in the potable water was 813 mg/L based on the 2016 Consumer Confidence Report. Effluent TDS concentrations from SASTS, NASTS and AIPS averaged 1,152 to 1,394 mg/L between January 2014 and December 2016. The incremental increase of TDS concentration though water usage at the WQCF (about 420 mg/L for effluent from NASTS) is higher than the normal range for domestic use.

Local groundwater is highly variable with respect to salinity. However, onsite groundwater concentrations of TDS, chloride and sodium all exceed numeric limits protective of designated beneficial uses. Both effluent and groundwater average concentrations of TDS, chloride and sodium at the site exceed average regional background historical concentrations. The City's *Antidegradation Analysis* states that both effluent discharge and local conditions likely contribute to elevated levels of TDS, chloride and sodium in onsite groundwater.

The Discharger proposed to reduce wastewater salinity by the following approaches:

- 1) Community outreach to promote voluntary reduction of TDS and other problematic salt related constituents;
- 2) Source control of high salinity industrial and/or commercial dischargers, and
- 3) Alternative sources of supply (e.g., transitioning to higher quality groundwater wells or use of surface water)

After completion of the proposed changes, WQCF effluent is expected to maintain the existing quality and continue to degrade groundwater with respect to salinity. The Central Valley Water Board will require that the City to implement "best efforts" to reduce impacts to groundwater caused by the salinity in its discharges. Such efforts will include:

- i. Compliance with a performance-based effluent TDS limit of 1,250 mg/L as an annual average established by this Order.
- ii. Adoption of a Salinity Reduction and Prevention Ordinance.
- iii. Participation in long-term planning efforts currently underway under the CV-SALTS initiative to develop comprehensive valley-wide solutions to the problem of salinity accumulation in the valley's soils and groundwater.

This Order also requires the City to submit and implement a *Salinity Minimization Plan*.

- b. **Nitrate.** For nutrients such as nitrate, the potential for degradation depends not only on the quality of the treated effluent, but also the ability of the vadose zone below the effluent disposal ponds to provide an environment conducive to nitrification and denitrification to convert the effluent nitrogen to nitrate and the nitrate to nitrogen gas before it reaches the water table. Most of the nitrogen in the process wastewater is present as TKN, which can readily mineralize and convert to nitrate (with some loss via ammonia volatilization) during treatment and land disposal.

Nitrate as nitrogen concentrations reported in MW-1, MW-2, MW-4, MW-5 and MW-7 exceeded the Primary MCL for nitrate as nitrogen (10 mg/L). Except for Wells MW-2 and MW-5, the average nitrate as nitrogen concentrations in the

onsite monitoring wells are less than the Primary MCL for nitrate. The City proposed to blend effluent flows from the NASTS, AIPS and SASTS. Based on trial-basis sampling conducted from 2014 through 2015, the blended effluent had a total nitrogen concentration of 7.2 mg/L, which is less than the Primary MCL for nitrate as nitrogen. It is therefore appropriate to adopt a numerical effluent limitation of 10 mg/L for total nitrogen as an annual average after completion of all proposed changes in **Finding 20**.

- c. **Sulfate.** Average sulfate concentrations in the onsite monitoring wells exceed numeric limits protective of designated beneficial uses. Onsite groundwater concentrations of sulfate exceed the average regional background concentration. However, the groundwater supply has a sulfate concentration of 276 mg/L, exceeding the recommended secondary MCL for sulfate (250 mg/L). The current average blended effluent sulfate concentration (276 mg/L) is in the same level of groundwater supply. Therefore, the discharge is unlikely to cause further groundwater degradation for sulfate.
48. Degradation with respect to nitrate and salinity could occur as a result of the discharge. By establishing an effluent total nitrogen limit of 10 mg/L, the Central Valley Water Board is ensuring that any degradation will not unreasonably affect present and anticipated beneficial uses with respect to nitrate. By requiring the City to adopt a Salinity Reduction and Prevention Ordinance, and submit and implement a *Salinity Minimization Plan*, the Central Valley Water Board is ensuring that the degradation will not unreasonably affect present and anticipated beneficial uses with respect to salinity.
  49. The City will employ the following treatment and control measures with respect to its discharges:
    - a. An alarm and automatic flow diversion system to prevent system bypass or overflow;
    - b. Treatment to secondary standards;
    - c. Appropriate biosolids storage and disposal practices;
    - d. An Operation and Maintenance (O&M) manual; and
    - e. The employment of certified wastewater treatment operators.
  50. Implementation of above-listed measures is deemed BPTC for discharges of waste authorized under this Order, consistent with Antidegradation Policy.
  51. Degradation of groundwater by some of the typical waste constituents associated with discharges from a municipal wastewater utility, after effective source control, treatment, and control measures are implemented, is consistent with the maximum benefit to the people of the state. The technology, energy, water recycling, and waste management advantages of municipal utility service far exceed any benefits derived from reliance on numerous, concentrated individual wastewater systems, and the impact on water quality will be substantially less. The economic prosperity of valley

communities and associated industry is of maximum benefit to the people of the State, and provides sufficient justification for allowing the limited groundwater degradation that may occur pursuant to this Order.

52. This Order is consistent with Antidegradation Policy because it: authorizes discharges that will result in only limited degradation, and not result in water quality less than WQOs, or otherwise unreasonably affecting present and anticipated beneficial uses; requires the City to implement BPTC of the discharged wastes to minimize any resulting degradation; and authorizes limited degradation resulting in maximal benefit to the people of the State.

### Other Regulatory Considerations

53. Pursuant to Water Code section 106.3, subdivision (a), it is “the established policy of the state that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes.” Although this Order is not necessarily subject to Water Code section 106.3 because it does not revise, adopt or establish a policy, regulation or grant criterion (see § 106.3, subd. (b)), it nevertheless promotes that policy by requiring discharges to meet MCLs designed to protect human health and ensure that water is safe for domestic use.

54. For the purposes of this Order, the WQCF is classified as “**2B**,” which denotes as follows:

Threat to Water Quality— **Category 2** “Those discharges of waste that could impair the designated beneficial uses of the receiving water, cause short-term violations of water quality objectives, cause secondary drinking water standards to be violated, or cause a nuisance.”

Complexity— **Category B** “Any discharger not included [as Category A] that has physical, chemical, or biological treatment systems (except for septic systems with subsurface disposal) or any Class 2 or Class 3 waste management units.”

55. The discharges of waste authorized under this Order, and the associated operation of treatment ponds (as described herein), are exempt from the prescriptive requirements set forth in California Code of Regulations, title 27, section 20000 et seq. (See Cal. Code Regs., tit. 27, § 20090, subd. (a)-(b).)

56. Statistical data analysis methods outlined in the U.S. Environmental Protection Agency’s *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance* (Unified Guidance) are appropriate for determining compliance with Groundwater Limitations of this Order. Depending on the circumstances, other methods may also be appropriate.

57. Because all stormwater at the WQCF is collected and disposed onsite, the City will not be required to obtain coverage under the *Statewide General Permit for Storm Water*

*Discharges Associated with Industrial Activities*, State Water Board Order 2014-0057-DWQ, NPDES Permit No. CAS000001 (Industrial General Permit).

58. Because its sewer system exceeds one mile in length, the City has obtained coverage under the *Statewide Waste Discharge Requirements General Order for Sanitary Sewer Systems*, State Water Board Order 2006-0003-DWQ.
59. Water Code section 13267, subdivision (b)(1) provides as follows:

In conducting an investigation ... the regional board may require that any person who has discharged, discharges, or ... proposes to discharge ... shall furnish, under penalty of perjury, technical or monitoring program reports which the board requires. The burden, including costs of these reports, shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports.
60. Technical reports required under this Order (and per the separately-issued Monitoring and Reporting Program Order No. R5-2018-0070) are necessary to ensure compliance with the WDRs prescribed herein. Additionally, the burden of producing such reports, as estimated by Central Valley Water Board staff, is also reasonably related to the need for such reports.
61. Absent promulgation of stricter standards pursuant to Water Code section 13801, Department of Water Resources' standards for the construction and destruction of groundwater wells, per Bulletins 74-90 (June 1991) and 94-81 (Dec. 1981), shall apply to all wells installed or monitored in connection to this Order.
62. In accordance with the California Environment Quality Act (CEQA), the City adopted a Mitigated Negative Declaration (MND) for the Phase III Expansion project on 13 May 2010 (see Finding No. 20a), and adopted a Negative Declaration for its 2018 NASTS Upgrades on 12 April 2018 (see Finding No. 20b). On 17 April 2018, the City also adopted an addendum to Phase III Expansion MND. In each of these documents, the City determined that the associated project would not have a significant effect on the environment.
63. This Order does not authorize the disposal of biosolids generated by the WQCF. Separate regulatory requirements are set forth in 40 Code of Federal Regulations part 503. Disposal operations must obtain coverage under the *WDRs General Order for the Discharge of Biosolids to Land for Use as a Soil Amendment in Agricultural, Silvicultural, Horticultural and Land Reclamation Activities*, State Water Board Order No. 2004-0012-DWQ (Biosolids General Order).
64. The ability to discharge waste to the waters of the State of California is not a right but a privilege. (see Wat. Code, § 13263, subd. (g).) Accordingly, the adoption of this Order shall not be construed as creating a vested right to continue in any discharges otherwise authorized herein.

### Public Notice

65. The foregoing findings and incorporated attachments were considered in prescribing the WDRs set forth herein.
66. The City and interested agencies and persons were notified of the Central Valley Water Board's intent to prescribe WDRs for the discharges described herein; and were provided an opportunity to submit written comments, and an opportunity for a public hearing.
67. All comments pertaining to the discharge were heard and considered in a public hearing.

**IT IS HEREBY ORDERED** that Order R5-2007-0147 is rescinded; and that, pursuant to Water Code Sections 13263 and 13267, the City (Discharger), its agents, successors and assigns, shall comply with the following WDRs in accordance with Water Code Division 7 and regulations promulgated thereunder.

#### A. Discharge Prohibitions

1. Discharge of wastes to surface waters or surface water drainage courses is prohibited.
2. Discharge of waste classified as "hazardous," per Title 22, section 66261.1 et seq., is prohibited.
3. Except as authorized per Section E.2 of the Standard Provisions and Reporting Requirements for Waste Discharge Requirements, 1 March 1991 ed. (SPRRs), treatment system bypass of untreated or partially treated waste is prohibited.
4. Waste shall not be discharged at a location or in a manner other than as described in the Findings of this Order.
5. Toxic substances shall not be discharged into the wastewater treatment system in a manner that disrupts biological treatment mechanisms.

#### B. Flow Limitations

1. Monthly average influent flow to the wastewater treatment plant (WQCF) shall not exceed the following:

**Influent Flow Limits, in MGD**

Treatment System	NASTS	SASTS	AIPS	Total
Flow limits	1.0	1.25	0.2	2.45

2. Effective upon approval of each successive *Wastewater Treatment Facility Phase Completion Report* (per Provision G.1.a), monthly average influent flows

to the wastewater treatment plant (WQCF) systems shall not exceed the following:

**Influent Flow limits, in MGD**

Treatment System	NASTS	SASTS	AIPS	Total
After Completion of Phase III Expansion	1.0	2.5	0.2	3.7

**C. Effluent Limitations**

Blended effluent from NASTS, AIPS and SASTS discharged to WQCF percolation ponds shall not exceed the following limits:

Constituent	Units	Limit	Basis for Compliance Determination
BOD <sub>5</sub> <sup>1</sup>	mg/L	23	Monthly Avg.
Total Dissolved Solids	mg/L	1,250	Annual Avg.
Total nitrogen	mg/L	12 <sup>(2)</sup> / 10 <sup>(3)</sup>	Annual Avg.
Total Suspended Solids	mg/L	23	Monthly Avg.

1 5-day biochemical oxygen demand at 20°C.  
 2 Prior to completion of Phase III Expansion.  
 3 After completion of Phase III Expansion. Effective on the date of approval of flow limit increase.

**D. Discharge Specifications**

- No waste constituent shall be released, discharged, or placed where it will cause a violation of the Groundwater Limitations under this Order.
- Wastewater treatment, storage, and disposal shall not cause conditions of pollution or nuisance, per Water Code section 13050, subdivisions (l)-(m).
- At all times, discharges shall remain within the permitted wastewater conveyance structures and containment ponds.
- The Discharger shall operate all systems and equipment to optimize the quality of the discharge.
- All conveyance, treatment, storage, and disposal systems shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.

6. Public contact with WQCF wastewater shall be precluded through such means as fences, signs, or acceptable alternatives.
7. Objectionable odors shall not be perceivable beyond the limits of the WQCF property at an intensity that creates or threatens to create nuisance conditions.
8. Compliance with the above Discharge Specification 7 shall be determined based on the dissolved oxygen (DO) content in the upper one foot of each WQCF wastewater pond. Accordingly, DO in each pond shall not be less than 1.0 mg/L for three consecutive sampling events. In the event that the same pond's DO is below 1.0 mg/L for three consecutive sampling events, the Discharger shall, within 10 days, report the findings to the Central Valley Water Board (in writing), and include a specific plan to resolve low DO results within 30 days.
9. The Discharger shall operate and maintain all ponds sufficiently to protect the integrity of containment dams and berms and prevent overtopping and/or structural failure. Unless a California-registered civil engineer certifies (based on design, construction, and conditions of operation and maintenance) that less freeboard is adequate, the operating freeboard in any treatment pond shall never be less than two feet (measured vertically from the lowest possible point of overflow). As a means of management and to discern compliance with this requirement, the Discharger shall install and maintain in each pond a permanent staff gauge with calibration marks that clearly show the water level at design capacity and enable determination of available operational freeboard.
10. Wastewater treatment, storage, and disposal ponds or structures shall have sufficient capacity to accommodate allowable wastewater flow, design seasonal precipitation, and ancillary inflow and infiltration during the winter while ensuring continuous compliance with all requirements of this Order. Design seasonal precipitation shall be based on total annual precipitation using a return period of 100 years, distributed monthly in accordance with historical rainfall patterns.
11. On or about **1 October** of each year, available capacity shall at least equal the volume necessary to comply with Discharge Specifications 9 and 10.
12. All ponds and open containment structures shall be managed to prevent breeding of mosquitoes. Specifically:
  - a. An erosion control program shall be implemented to ensure that small coves and irregularities are not created around the perimeter of the water surface.
  - b. Weeds shall be minimized through control of water depth, harvesting, or herbicides.
  - c. Dead algae, vegetation, and debris shall not accumulate on the water surface.

- d. The Discharger shall consult and coordinate with the local Mosquito Abatement District to minimize the potential for mosquito breeding as needed to supplement the above measures.
- 13. Newly constructed or rehabilitated berms or levees (excluding internal berms that separate ponds or control the flow of water within a pond) shall be designed and constructed under the supervision of a California Registered Civil Engineer.
- 14. The annual average pH of wastewater in any unlined shall remain between 6 and 10.
- 15. Beginning January 2019, the Discharger shall monitor sludge accumulation in the wastewater treatment/storage ponds every five years (or less), and periodically remove sludge as necessary to maintain adequate storage capacity. If at any point the volume of sludge in a pond is estimated to exceed 10 percent of the volume listed in Finding 15, the Discharger shall complete a sludge cleanout within 12 months thereafter.

**E. Groundwater Limitations**

Release of waste constituents from any portion of the facility shall not cause groundwater to:

- 1. Contain any of the specified constituents in a concentration statistically greater than the maximum allowable concentration tabulated below.

Constituent	Maximum Allowable Concentration
TDS	Current groundwater quality <sup>1</sup>
Sodium	Current groundwater quality <sup>1</sup>
Chloride	Current groundwater quality <sup>1</sup>
Nitrate as Nitrogen	Current groundwater quality <sup>1</sup> or 10 mg/L, whichever is greater
<sup>1</sup> "Current groundwater quality" means the quality of groundwater as evidenced by monitoring completed as of the date of this Order for each well.	

- 2. Exceed a total coliform organism level of 2.2 MPN/100 mL over any seven-day period.
- 3. Contain constituents in concentrations that exceed either the Primary or Secondary MCLs established under Title 22.
- 4. Contain taste or odor-producing constituents, toxic substances, or any other constituents in concentrations that cause nuisance or adversely affect beneficial uses.

The above requirements apply to all onsite wells except Well MW-2. Compliance with these limitations shall be determined annually as specified in the Monitoring and Reporting Program using approved statistical methods defined in the approved *Groundwater Limitations Compliance Assessment Plan*.

#### F. Solids Disposal Specifications

For the purposes of this Order: “sludge” refers to solid, semisolid, and liquid residues removed during primary, secondary, or advanced wastewater treatment processes; “solid waste” refers to grit and screenings generated during preliminary treatment; “residual sludge” refers to sludge that will not be subject to further treatment at the wastewater treatment plant; and “biosolids” refers to sludge that has been treated and tested and shown to be capable of being beneficially used as a soil amendment for agriculture, silviculture, horticulture, and land reclamation activities (pursuant to applicable federal and state regulations).

1. Sludge and solid waste shall be removed from screens, sumps, ponds, and clarifiers as necessary to ensure optimal plant operation.
2. Any handling and storage of residual sludge, solid waste, and biosolids at the WQCF shall be temporary (6 mos. or less), and controlled and contained in a manner that minimizes leachate formation and precludes infiltration of waste constituents into soils in a mass or concentration that will violate the Groundwater Limitations of this Order.
3. Residual sludge, biosolids, and solid waste shall be disposed in a manner approved by the Executive Officer, and consistent with Title 27. Removal for further treatment, disposal, or reuse at disposal sites (i.e., landfills, WQCFs, composting sites, soil amendment sites) operated in accordance with valid waste discharge requirements issued by a Central Valley Water Board will satisfy this specification.
4. Any proposed change in sludge use or disposal practice shall be reported in writing to the Executive Officer at least 90 days in advance of the change.

#### G. Other Provisions

1. The following reports shall be submitted pursuant to Water Code section 13267, and prepared in accordance with section G.4 of this Order.
  - a. At least **60 days** prior to a planned flow limit increase, the Discharger shall submit a **Wastewater System Improvements and Expansion Report** documenting the construction of new treatment systems. The report shall certify that the structures are fully functional and ready to receive wastewater in compliance with the requirements of this Order. The report shall include as-built drawings and capacities of the new treatment systems.

The report shall be approved by the Central Valley Water Board before the Discharger increases the influent flow rate.

- b. By **1 September 2019**, the Discharger shall submit a **Groundwater Limitations Compliance Assessment Plan**, describing and justifying the statistical methods that are proposed to determine compliance with the Groundwater Limitations of this Order (which require that release of waste constituents from any portion of the facility shall not cause groundwater to exhibit a statistically significant increasing trend. The plan shall evaluate whether compliance should be based on an intra-well analysis on a per constituent basis for all the constituents listed in the Groundwater Monitoring section of the MRP. Compliance shall be determined annually based on methods prescribed in Title 27, section 20415(e) (7 and 8) and as described in the MRP.
- c. By **1 April 2020**, the Discharger shall submit a workplan to reduce use of the AIPS in the short term and long term after completion of the proposed expansion described in the Finding 20. AIPS shall be used as a backup treatment system in the long-term.
- d. By **1 July 2020**, the Discharger shall prepare and implement a **Salinity Minimization Plan** to address sources of salinity to the wastewater treatment system. At a minimum, the plan shall include following:
  - i. A description of the Discharger's existing salinity pollution prevention programs.
  - ii. An estimate of all pollutant sources contributing from commercial and industrial salinity sources by listing all existing and proposed commercial, food processing and other industrial facilities that are generating or plan to generate high-salinity wastewater to the City's sewer system (list salt names, doses, and loading rates contributed to wastewater salinity).
  - iii. An analysis of the methods that could be used to prevent the discharge of salinity into the facility, including application of local limits to industrial or commercial dischargers regarding pollution prevention techniques.
  - iv. A plan for monitoring the results of the salinity pollution prevention program.
  - v. Public education and outreach programs for salinity reduction and prevention (information shall be available in the City's official website).
  - vi. City's short and long term goals and plans from limiting use to ban installation of residential water softening or conditioning appliances that discharge sodium, chloride, or other saline substances to the community sewer system (self-regenerating water softeners).
  - vii. A statement of the Discharger's salinity pollution prevention goals and strategies, including priorities for short-term and long-term action, and a description of the Dischargers intended pollution prevention activities for the immediate future.
  - viii. Discussion of potential to change water supply with low salinity.

- e. ix. Progress in reducing salinity shall be reported each year in the annual report required as part of Monitoring and Reporting Program Order R5-2018-0070. By **1 July 2021**, the Discharger shall submit a copy of an adopted **Salinity Reduction and Prevention Ordinance** (the ordinance shall be available on the City's official website).
2. If groundwater monitoring results show that the discharge of waste is causing groundwater to contain waste constituents in concentrations statistically greater than the Groundwater Limitations of this Order, within **120 days** of the request of the Executive Officer, the Discharger shall submit an **Action Workplan** that sets forth the scope and schedule for a systematic and comprehensive technical evaluation of each component of the facility's waste treatment and disposal system to determine best practicable treatment and control for each waste constituent that exceeds a Groundwater Limitation. The workplan shall contain a preliminary evaluation of each component of the wastewater treatment facility and effluent disposal system and propose a time schedule for completing the comprehensive technical evaluation. The schedule to complete the evaluation shall be as short as practicable, and shall not exceed one year.
3. At least **180 days** prior to any sludge removal and disposal from the wastewater treatment ponds, the Discharger shall submit a **Sludge Monitoring and Cleanout Plan**. The plan shall include a detailed plan for sludge removal, drying, and disposal. The plan shall specifically describe the phasing of the project, measures to be used to control runoff or percolate from the sludge as it is drying, and a schedule that shows how all dried sludge will be land applied to the LAAs or removed from the site prior to the onset of the rainy season (1 October).
4. A discharger whose waste flow has been increasing, or is projected to increase, shall estimate when flows will reach hydraulic and treatment capacities of its treatment, collection, and disposal facilities. The projections shall be made in January, based on the last three years' average dry weather flows, peak wet weather flows and total annual flows, as appropriate. When any projection shows that capacity of any part of the facilities may be exceeded in four years, the discharger shall notify the Central Valley Water Board by **31 January**.
5. In accordance with Business and Professions Code sections 6735, 7835 and 7835.1, engineering and geologic evaluations and judgments shall be performed by or under the direction of registered professionals competent and proficient in the fields pertinent to the required activities. All technical reports specified herein that contain workplans for investigations and studies, that describe the conduct of investigations and studies, or that contain technical conclusions and recommendations concerning engineering and geology shall be prepared by or under the direction of appropriately qualified professional(s), even if not explicitly stated. Each technical report submitted by the Discharger shall bear the professional's signature and stamp.

6. The Discharger shall submit the technical reports and work plans required by this Order in a timely manner. Unless expressly stated otherwise in this Order, the Discharger shall proceed with all work required by the foregoing provisions by the due dates specified.
7. The Discharger shall comply with the separately-issued Monitoring and Reporting Program Order No. R5-2018-0070 (incorporated herein), and any Executive Officer revisions thereto. Self-monitoring reports shall be submitted no later than the applicable submittal date specified in the MRP.
8. Except as otherwise provided herein, the Discharger shall comply with the attached SPRRs (incorporated herein).
9. The Discharger shall comply with all conditions of this Order, including timely submittal of technical and monitoring reports. On or before each report due date, the Discharger shall submit the specified document to the Central Valley Water Board or, if appropriate, a written report detailing compliance or noncompliance with the specific schedule date and task. If noncompliance is being reported, then the Discharger shall state the reasons for such noncompliance and provide an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Central Valley Water Board in writing when it returns to compliance with the time schedule. Violations may result in enforcement action, including Central Valley Water Board or court orders requiring corrective action or imposing civil monetary liability, or in revision or rescission of this Order.
10. The Discharger shall always properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) that are installed or used by the Discharger to achieve compliance with the conditions of this Order. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems that are installed by the Discharger when the operation is necessary to achieve compliance with the conditions of this Order.
11. The Discharger shall use the best practicable cost-effective control technique(s) including proper operation and maintenance, to comply with this Order.
12. The Discharger shall employ certified wastewater treatment plant operators in accordance with Title 23, division 3, chapter 26.
13. Per the Standard Provisions, the Discharger shall report promptly to the Central Valley Water Board any material change or proposed change in the character, location, or volume of the discharge.
14. In the event that the Discharger reports toxic chemical release data to the State Emergency Response Commission (SERC) pursuant to section 313 of the Emergency Planning and Community Right to Know Act (42 U.S.C. § 11023),

the Discharger shall also report the same information to the Central Valley Water Board within 15 days of the report to the SERC.

15. The Discharger shall comply with the requirements of the Statewide General Waste Discharge Requirements (General WDRs) for Sanitary Sewer Systems (Water Quality Order 2006-0003), the Revised General WDRs Monitoring and Reporting Program (Water Quality Order 2008-0002-EXEC), and any subsequent revisions thereto. Water Quality Order 2006-0003 and Order 2008-0002-EXEC require the Discharger to notify the Central Valley Water Board and take remedial action upon the reduction, loss, or failure of the sanitary sewer system resulting in a sanitary sewer overflow.
16. At least **90 days** prior to termination or expiration of any lease, contract, or agreement involving disposal or recycling areas or off-site reuse of effluent, used to justify the capacity authorized herein and assure compliance with this Order, the Discharger shall notify the Central Valley Water Board in writing of the situation and of what measures have been taken or are being taken to assure full compliance with this Order.
17. In the event of any change in control or ownership of the facility, the Discharger must notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to the Central Valley Water Board.
18. To assume operation as Discharger under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order. The request must contain the requesting entity's full legal name, the state of incorporation if a corporation, the name and address and telephone number of the persons responsible for contact with the Central Valley Water Board, and a statement. The statement shall comply with the signatory paragraph of Standard Provision B.3 and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the Water Code. If approved by the Executive Officer, the transfer request will be submitted to the Central Valley Water Board for its consideration of transferring the ownership of this Order at one of its regularly scheduled meetings.
19. A copy of this Order (including Information Sheet, Attachments and SPRRs) and the MRP Order, shall be kept at the Facility for reference by operating personnel. Key operating personnel shall be familiar with their contents.
20. The Central Valley Water Board will review this Order periodically and will revise requirements when necessary.

If, in the opinion of the Executive Officer, the Discharger fails to comply with the provisions of this Order, the Executive Officer may refer this matter to the Attorney General for judicial enforcement, may issue a complaint for administrative civil liability, or may take other enforcement actions. Failure to comply with this Order may result in the assessment of

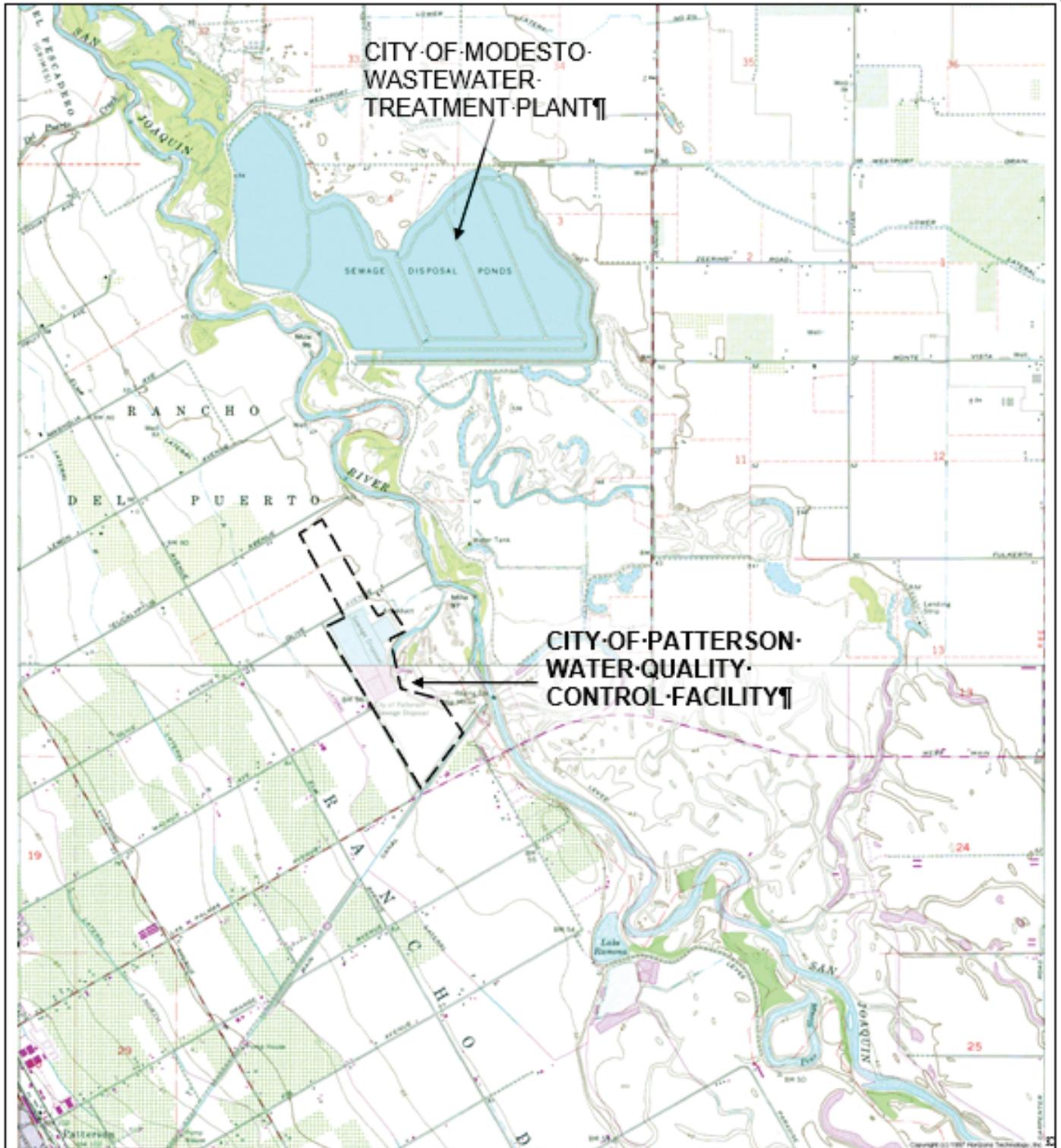
Administrative Civil Liability of up to \$10,000 per violation, per day, depending on the violation, pursuant to the Water Code, including sections 13268, 13350 and 13385. The Central Valley Water Board reserves its right to take any enforcement actions authorized by law.

Any person aggrieved by this action of the Central Valley Water Board may petition the State Water Board to review the action in accordance with Water Code section 13320 and Title 23, section 2050 et seq. The State Water Board must receive the petition by 5:00 p.m., 30 days after the date of this Order, except that if the thirtieth day following the date of this Order 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 on the [Petitions/Water Quality webpage](http://www.waterboards.ca.gov/public_notices/petitions/water_quality) ([http://www.waterboards.ca.gov/public\\_notices/petitions/water\\_quality](http://www.waterboards.ca.gov/public_notices/petitions/water_quality)), or will be provided upon request.

I, PATRICK PULUPA, Executive Officer, hereby certify that the foregoing is a full true, and correct copy of an Order adopted by the California Regional Water Quality Control Board on 5 October 2018, and amended on 22 June 2023.

  Date: 2023.07.11  
15:43:00 -07'00'  
Water Boards

PATRICK PULUPA, Executive Officer



Drawing Reference: U.S.G.S. Quad Name TOPOGRAPHIC MAP 7.5-MINUTE QUAD

**SITE-LOCATION-MAP**  
CITY-OF-PATTERSON  
WATER-QUALITY-CONTROL-FACILITY  
STANISLAUS-COUNTY

North arrow symbol  
approx. scale  
1 in. = 2,400 ft.



LEGEND:

- |                                      |                                      |   |
|--------------------------------------|--------------------------------------|---|
| ① INFLUENT PUMP STATION              | ⑨ NASTS OXIDATION DITCH              | ⑰ NASTS EFFLUENT PUMP STATION                         |
| ② SASTS OXIDATION DITCH 1            | ⑩ NASTS SECONDARY CLARIFIERS 1 AND 2 | ⑱ NASTS DISTRIBUTION STRUCTURE                        |
| ③ SASTS SECONDARY CLARIFIER 1        | ⑪ ADVANCED INTEGRATED POND SYSTEM    | Ⓐ PROPOSED 2020 PHASE II ADMINISTRATION BUILDING      |
| ④ SOUTH EFFLUENT PUMP STATION        | ⑫ STORMWATER DETENTION BASIN         | Ⓑ PROPOSED 2020 PHASE II SASTS OXIDATION DITCH 2      |
| ⑤ OPERATIONS TRAILER                 | ⑬ SLUDGE DRYING BEDS (SAND)          | Ⓒ PROPOSED 2020 PHASE II SASTS SECONDARY CLARIFIER 2  |
| ⑥ ELECTRICAL BUILDING                | ⑭ AEROBIC DIGESTERS 1, 2, 3          | Ⓓ PROPOSED 2020 PHASE II AEROBIC DIGESTERS 4,5,6      |
| ⑦ SLUDGE DRYING BEDS (PLASTIC MEDIA) | ⑮ CENTRIFUGE                         | Ⓔ PROPOSED 2020 PHASE II SOUTH BIOSOLIDS STORAGE AREA |
| ⑧ MAINTENANCE BUILDING               | ⑯ AIPS EFFLUENT PUMP STATION         | Ⓕ PROPOSED 2020 PHASE II STORMWATER RETENTION POND    |

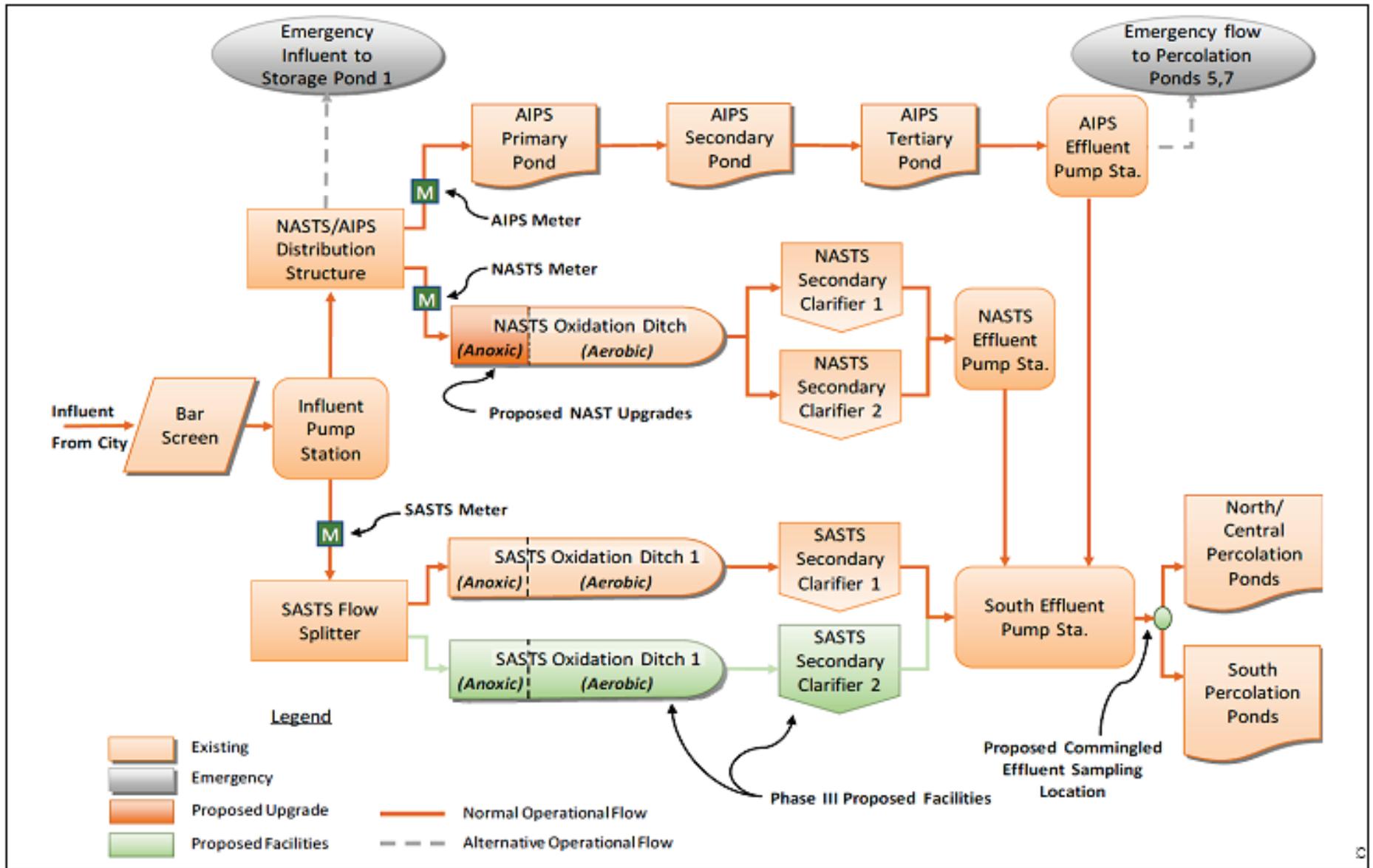
Drawing Reference: [ ]  
 Report of Waste Discharge, December 2017 [ ]  
 ☉

**SITE PLAN** [ ]  
**CITY OF PATTERSON** [ ]  
**WATER QUALITY CONTROL FACILITY** [ ]  
**STANISLAUS COUNTY** ☉



ORDER R5-2018-0070-001

ATTACHMENT C



Drawing Reference: [ ]  
 Report of Waste Discharge, December 2017 [ ]

**PROCESS SCHEMATIC**  
 CITY OF PATTERSON  
 WATER QUALITY CONTROL FACILITY  
 STANISLAUS COUNTY

## INFORMATION SHEET

ORDER R5-2018-0070  
CITY OF PATTERSON  
WATER QUALITY CONTROL FACILITY  
STANISLAUS COUNTY

### Background

The City of Patterson wastewater treatment facility is located approximately three miles northeast of Patterson, at 14901 Poplar Avenue in Stanislaus County. The facility is located along the west bank of the San Joaquin River and treats wastewater from the City of Patterson and Diablo Grande (a residential and golf course resort community).

The existing facility consists of three separate treatment systems including the north activated sludge treatment system (NASTS), an advanced integrated pond system (AIPS), and the south activated sludge treatment system (SASTS). Undisinfected secondary effluent from each of three treatment systems is discharged to a series of 15 percolation ponds for disposal.

Waste Discharge Requirements (WDRs) Order R5-2007-0147, adopted by the Board on 26 October 2007, currently prescribes requirements for the facility. The WDRs Order contains an influent flow limit of 2.45 million gallons per day (MGD) as a monthly average. However, treatment capacity was reduced from 2.45 to 2.25 MGD by the Discharger to comply with an effluent nitrogen limit in Order R5-2007-0147. In order to meet demands of future development, the Discharger proposes to increase treatment capacity from 2.25 MGD to 2.45 MGD and then to 3.7 MGD in two phases by modifying the WQCF. Therefore, the WDRs must be revised.

### Enforcement History

On 7 December 2010, Cleanup and Abatement (CAO) Order R5-2010-0703 was issued by the Executive Officer. The CAO Order was prepared to address total suspended solids, BOD, and total nitrogen effluent limit violations from the AIPS, and total nitrogen effluent limit violations from the NASTS.

The CAO Order requires the Discharger to submit the following technical reports, including a quarterly progress report; a performance evaluation technical report for the NASTS; a workplan that describes methods to be used to evaluate the volume and mass of sludge in the AIPS ponds and Ponds 12 and 13; a technical report that includes results of the sludge evaluation in the AIPS ponds and Ponds 12 and 13, and a technical report demonstrating that all modifications/improvements needed to ensure that the AIPS, SASTS, and NASTS consistently comply with the effluent limits in the WDRs Order R5-2007-0147.

The Discharger submitted all required reports and made the following improvements and modifications:

- (a) In June 2011, a centrifuge was installed dewatering all sludge produced by the treatment systems.
- (b) On November 1, 2011, the Discharger submitted a *Facility Wide Compliance Report*. The report described improvements completed at the NASTS which included adjustments to distribution of influent which eliminated hydraulic peak "slug" loads to the NASTS, adjustments to the clarifier distribution weir plates and elevation adjustments of the clarifier launders. The RWD states that since these improvements were completed the NASTS has consistently produced effluent that has met the WDRs limitations.
- (c) Approximately 2,000 tons of sludge was removed from the AIPS in 2011 and 2012.
- (d) The AIPS has difficulty fully nitrifying in primary and secondary ponds. The Dischargers adjusted aerator running time and added an additional aerator in the primary pond in October 2014.
- (e) In 2010, the Discharger completed piping modifications to allow for the comingling of effluent from the NASTS, SASTS and AIPS. During January 2014 through December 2015, the Discharger collected samples of the commingled effluent to evaluate the quality and the test results are included in Finding 23.

### **Changes in the Discharge**

The Discharger proposed two projects that will increase the capacity of the WQCF:

- (a) NASTS Upgrades

The City plans to construct a 200,000-gallon concrete tank to add an anoxic zone to the existing oxidation ditch. This will improve the reliability and consistency of nitrogen removal from the wastewater and will allow the capacity to be restored from 0.8 MGD to 1.0 MGD.

- (b) Phase III Expansion

The expansion will increase the treatment capacity of SASTS from 1.25 MGD to 2.5 MGD by adding an additional oxidation ditch, secondary clarifier, three more aerobic digesters, a solid thickening system and a storm water retention pond.

### **Legal Effect of Rescission of Prior WDRs or Orders on Existing Violations**

The Board's rescission of prior waste discharge requirements and/or monitoring and reporting orders does not extinguish any violations that may have occurred during the time those waste discharge requirements or orders were in effect. The Central Valley Water Board reserves the right to take enforcement actions to address violations of prior

prohibitions, limitations, specifications, requirements, or provisions of rescinded waste discharge requirements or orders as allowed by law.

### **CV-SALTS Regulatory Considerations**

The Central Valley Water Board adopted Basin Plan amendments incorporating new programs for addressing ongoing salt and nitrate accumulation in the Central Valley at its 31 May 2018 Board Meeting. These programs, once effective, could change how the Central Valley Water Board permits discharges of salt and nitrate. The Salinity Control Program currently being developed would subject dischargers that do not meet stringent salinity numeric values (700 umhos/cm EC as a monthly average to protect the AGR beneficial use and 900 umhos/cm as an annual average to protect the MUN beneficial use) to performance-based salinity requirements, and would require these dischargers to participate in a Basin-wide Prioritization and Optimization Study to develop a long-term strategy for addressing salinity accumulation in the Central Valley.

The level of participation required of dischargers whose discharges do not meet stringent salinity requirements will vary based on factors such as the amount of salinity in the discharge, local conditions, and type of discharge. The Central Valley Water Board anticipates that the CV-SALTS initiative will result in regulatory changes that will be implemented through conditional prohibitions and modifications to many WDRs region-wide, including the WDRs that regulate discharges from the Facility. More information regarding this regulatory planning process can be found at the following link:

[https://www.waterboards.ca.gov/centralvalley/water\\_issues/salinity/](https://www.waterboards.ca.gov/centralvalley/water_issues/salinity/)

### **Reopener**

The conditions of discharge in the proposed Order were developed based on currently available technical information and applicable water quality laws, regulations, policies, and plans and are intended to assure conformance with them. It may be appropriate to reopen the Order if new technical information is received or if applicable laws and regulations change.

### **Discharge Limitations and Provisions**

This Order contains flow limits to the wastewater treatment facility and a schedule to increase flow limits based on completing proposed work. This Order also establishes performance based effluent limitations for BOD, TSS, TDS and nitrate as nitrogen.

The Provisions section of this Order requires submittal of technical and monitoring reports by the specified dates.