CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

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364 Knollcrest Drive #205
Redding, CA 96002

Regional Board Website (https://www.waterboards.ca.gov/centralvalley)

WASTE DISCHARGE REQUIREMENTS
R5-2025-XXXX

ORDER INFORMATION

Order Type(s):	Waste Discharge Requirements (WDRs)
Status:	Tentative
Program:	Non-15 Discharge to Land
Region 5 Office:	Sacramento (Rancho Cordova)
Discharger:	City of Modesto
Facility:	City of Modesto Water Quality Control Facility
Addresses:	1221 Sutter Avenue, Modesto, CA 95351 7007 Jennings Road, Modesto, CA 95353
County:	Stanislaus
Parcel Nos.:	Presented on Table 1
CIWQS Place ID:	273037
Prior Order(s):	WDRs Order 94-030 WDRs Order 99-112

CERTIFICATION

I, PATRICK PULUPA, Executive Officer, hereby certify that the following is a full, true, and correct copy of the order adopted by the California Regional Water Quality Control Board, Central Valley Region, on DD Month 2025.

_____
PATRICK PULUPA, Executive Officer

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GLOSSARY

µg/L	microgram per liter
µmhos/cm	micromho per centimeter
AGR	agricultural supply (Basin Plan beneficial use designation)
AMSL	above mean sea level
Antidegradation Policy	Statement of Policy with Respect to Maintaining High Quality Waters in California, State Water Board Resolution 68-16
AOC	Area of Contribution
APN	assessor's parcel number
Basin Plan	Plan for the Sacramento River and San Joaquin River Basins
bgs	below ground surface
BNR	biological nutrient removal
BOD_5	five-day biochemical oxygen demand
Can Seg	food processing industries (that contribute wastewater to the WQCF)
Can Seg Line	cannery segregation pipeline
Central Valley Water Board	Central Valley Regional Water Quality Control Board
CEQA	California Environmental Quality Act, Public Resources Code section 21000 et seq.
C.F.R.	Code of Federal Regulations
CIWQS	California Integrated Water Quality System
CV-SALTS	Central Valley Salinity Alternatives for Long-Term Sustainability
DDW	State Water Resources Control Board, Division of Drinking Water
DEIR	Draft Environmental Impact Report

Discharger	City of Modesto
DO	dissolved oxygen
EC	electrical conductivity at 25 C°
EIR	Environmental Impact Report
Facility	City of Modesto's Water Quality Control Facility
FDS	fixed dissolved solids
FEMA	Federal Emergency Management Agency
FFR	Fixed Film Reactor
ft	feet
in/mo	inches per month
IS/MND	Initial Study/Mitigated Negative Declaration
Jennings Plant	Jennings Road Treatment Plant
LAA	land application area
lb/ac/day	pound per acre per day
MCL	maximum contaminant level
MDB&M	Mount Diablo Base and Meridian
mg/kg	milligram per kilogram
mg/L	milligram per liter
MG	million gallons
MGD	millions of gallons per day
MPN/100 ml	most probable number per 100 milliliters (wet sample)
MRP	Monitoring and Reporting Program
MUN	municipal and domestic supply (Basin Plan beneficial use designation)
MW	monitoring well
MZIP	Management Zone Implementation Plan

NA	not available or not applicable
NOV	Notice of Violation
NPDES	National Pollutant Discharge Elimination System
P&O Study	Prioritization and Optimization Study
PAN	Plant available nitrogen
Part 503	40 C.F.R/, title 40, part 503, Standards for the Use or Disposal of Sewage Sludge
Recycled Water Policy	Policy for Water Quality Control for Recycled Water, State Water Board Resolution 2009-0011, as amended per Resolutions 2013-0003 and 2018-0057
RWD	Report of Waste Discharge
SERC	State Emergency Response Commission
SOP	Standard Operating Procedures
SSO General Order	Statewide General Waste Discharge Requirements for Sanitary Sewer Systems, California State Water Resources Control Board Order No. 2006-0003-DWQ
State Water Board	California State Water Resources Control Board
s.u.	Standard Units
Sutter Plant	Sutter Avenue Treatment Plant
TDS	Total Dissolved Solids
Title 22	Title 22 of the California Code of Regulations
Title 22 Report	Title 22 Engineering Report
TKN	Total Kjeldahl Nitrogen
USC	United States Code
U.S. EPA	United States Environmental Protection Agency
UV	ultraviolet
WAS	Waste Activated Sludge
WDRs	Waste Discharge Requirements

WQCF	Water Quality Control Facility
WQO	Water Quality Objective

FINDINGS

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

Introduction

1. The City of Modesto Water Quality Control Facility (WQCF) (Facility), owned and operated by the City of Modesto (Discharger), is an existing wastewater treatment plant located in Stanislaus County. On 2 November 2015, the Discharger submitted a Report of Waste Discharge (RWD) that describes the WQCF's current operations, wastewater treatment processes, reuse of treated wastewater (recycled water), and biosolids management. biosolids management. The Discharger submitted revisions, additions, and updates to the RWD on 12 January 2018, 3 December 2019, and 2 March 2023.

2. The City of Modesto is responsible for compliance with these WDRs.

3. The WQCF consists of three separate physical locations. The headworks, primary treatment, and solids treatment are located at the Sutter Avenue Treatment Plant (Sutter Plant); secondary and tertiary treatment with disinfection occurs at the Jennings Road Treatment Plant (Jennings Plant); and land application of treated effluent, cannery process water (Can Seg process water), and biosolids application occur at Modesto Ranch, as shown on Attachments A, B, C, and D, respectively.

4. The WQCF occupies numerous parcels, as shown below.

Table 1. WQCF Assessor's Parcel Numbers (APNs)

Facility Name	Address	Mount Diablo Base & Meridian (MDB&M)	APNs
Sutter Plant	1221 Sutter Avenue	Sections: 5, 6, 7, 8 Township: 4 South Range: 9 East	370-370-01
Jennings Plant	7007 Jennings Road	Sections: 32, 33, 34 Township: 4 South Range: 8 East	017-061-018 017-061-022 017-061-010 017-062-020
		Sections: 3, 4, 5 Township: 5 South Range: 8 East	022-001-008 022-001-002 022-001-004 022-001-007 022-001-009

Facility Name	Address	Mount Diablo Base & Meridian (MDB&M)	APNs
Modesto Ranch	7007 Jennings Road	Sections: 9, 10, 11, 13, 14, 15, 16, 22, 23, 24 Township: 5 South Range: 8 East	022-001-005 022-003-002 022-004-001 022-004-002 022-004-003 058-010-001

5. This Order regulates the Facility's discharges of waste to land. Facility discharges to surface waters are regulated under separate waste discharge requirements (WDRs) orders. The Facility's discharge to the Delta-Mendota Canal is regulated under WDRs Order R5-2022-0034 / National Pollutant Discharge Elimination System (NPDES) No. CA0085316. The Facility's pretreatment program and discharge to the San Joaquin River is regulated under General WDRs Order R5-2017-0085 / NPDES Permit No. CAG585001, *WDRs for Municipal Wastewater Dischargers that Meet Objectives/Criteria at the Point of Discharge to Surface Water*, pursuant to Notice of Applicability R5-2017-0085-020. The pretreatment programs for individual industrial discharges are permitted by the Discharger, with reporting to the Central Valley Water Board per 40 Code of Federal Regulations (C.F.R.) part 403.12. This Order does not authorize or otherwise regulate wastewater discharges to surface water.

6. The Facility's discharges to land were previously regulated under WDRs Order 99-112, adopted 28 July 1999, and WDRs Order 94-030, adopted 28 January 1994, for biosolids. This Order rescinds and replaces Orders 99-112 and 94-030, combining the regulation of land-applied wastewater and biosolids and updating various aspects of the prior orders.

7. The following materials are attached and incorporated as part of this Order:

   Attachment A – Site Location Map

   Attachment B – Sutter Plant Site Features Map

   Attachment C – Jennings Plant Site Features Map

   Attachment D – Modesto Ranch Site Features Map

   Attachment E – Wastewater Flow Schematic

   Attachment F – Groundwater Monitoring Well Location Map

   Attachment G - Recycled Water Symbol

   Attachment H - Requirements for Monitoring Well Installation Workplans and Monitoring Well Installation Reports

   Information Sheet

   Standard Provisions and Reporting Requirements (SPRRs) dated 1 March 1991.

8. **Monitoring and Reporting Program Order (MRP) R5-2025-XXXX** is also attached. This MRP Order constitutes a separate, enforceable order, which requires monitoring and reporting for discharges regulated under these WDRs. The Discharger shall comply with the MRP and any subsequent revisions thereto.

Existing Facility and Discharge

9. The Facility serves residences, commercial businesses, and industries within Modesto city limits, the North Ceres Service Area, the Empire Sanitary District, and isolated unincorporated Stanislaus County lands that are surrounded by incorporated City parcels, as described in the RWD.

10. The WQCF receives municipal wastewater from three separate service areas, served by separate municipal collection systems. Each of the collection systems are regulated under State Water Resources Control Board (State Water Board) Order WQ 2022-0103-DWQ, *Statewide Waste Discharge Requirements General Order for Sanitary Sewer Systems* (SSO General Order).

11. The WQCF consists of three major components: the Sutter Plant, the Jennings Plant, and the Modesto Ranch. An overview of the WQCF treatment system is provided below. Additional details are provided in each of the site-specific sections.

    a. **Sutter Plant.** Influent to the WQCF enters the Sutter Plant (Attachment B) for screening and solids removal. The screened wastewater is then directed to the Jennings Plant for further treatment. Screened biosolids are dried in on-site drying beds and land applied at the Modesto Ranch.

    b. **Jennings Plant.** Wastewater at the Jennings Plant is treated by two treatment trains: (1) the Secondary Effluent Treatment System, which treats the wastewater to secondary undisinfected standards for land application, and (2) the Biological Nutrient Removal (BNR)/Tertiary Effluent Treatment System, which treats the wastewater to secondary and tertiary standards using ultraviolet (UV) disinfection under an NPDES permit for discharges to surface waters. Treated wastewater from the Secondary Effluent Treatment System is sent to a pond system for additional treatment and storage prior to use as irrigation water for the Modesto Ranch. The Jennings Plant also mechanically dries solids from pond dredging on-site prior to land application on the Modesto Ranch (Attachment C).

    c. **Modesto Ranch.** Treated wastewater from the pond system at the Jennings Plant is used for irrigation at the Modesto Ranch, which consists of 2,458 acres of cropped land application areas (LAAs). Modesto Ranch also receives biosolids from the Sutter and Jennings Plants, which are land applied for use as a soil amendment (Attachment D).

12. The WQCF also accepts wastewater from food processing industries, referred to as Can Seg wastewater. The Can Seg wastewater enters the Sutter Plant through the Can Seg line and is either commingled with the domestic wastewater and sent

through Sutter Plant and then to the Jennings Plant, or during periods of high Can Seg wastewater flows, Can Seg wastewater is sent directly to the Modesto Ranch, where it is blended with treated wastewater from the Jennings Plant Secondary Effluent Treatment System, and land applied at the Modesto Ranch (Attachment E).

Sutter Plant

13. The Sutter Plant has four separate influent trunks (the West trunk, Sutter trunk, River trunk, and Cannery Segregation [Can Seg] Line) that convey domestic and industrial wastewater to the plant. Preliminary treatment at the Sutter Plant includes influent screening, grit removal, primary clarification, and biosolids treatment and drying. Solids from the bar screens and grit tanks at the Sutter Plant are hauled offsite for disposal at a regulated facility.

14. Influent flow rates to the Sutter Plant are measured at monitoring point INF-001, downstream of screening and grit tanks (see Attachment E). These flows include influent from the Can Seg Line (location 2-015) during the non-canning season (for details on food processor wastewater during the canning season, see the findings beginning with Finding 32). Average daily flow rates range between 15 to 34 million gallons per day (MGD) depending on the time of year. Lower flow rates to the Sutter Plant occur when flows in the Can Seg Line are diverted from the Sutter Plant directly to the Modesto Ranch. Peak wet weather flowrate is 73 MGD with seasonal Can Seg process water flow accounting for approximately 1.8 MGD thereof. Influent annual flow volumes from all trunks are summarized below. (Note that the influent volumes of wastewater shown below are discharged to either surface water under NPDES permits or to land, regulated by this Order.)

Table 2. Influent Flow Volumes

Monitoring Year	Total Annual Volume Million Gallons (MG)
2019	6,700
2020	6,800
2021	6,900
2022	7,480
2023	7,654

15. The annual average inflow and infiltration to the Discharger's influent flows were estimated in the Discharger's 2016 Collection System Master Plan (Carollo, 2016) as being approximately two percent of the total flows. As such, inflow and infiltration do not have a significant impact on overall facility.

16. Influent wastewater quality samples are collected from sample location INF-001. As shown on Attachment E, samples from INF-001 represent the quality of influent which includes domestic wastewater and Can Seg wastewater when the Can Seg

wastewater is directed through the Sutter Plant and Jennings Plant (during periods of low flows from the Can Seg industries or off-season). Influent wastewater quality data for select constituents are summarized below. Average concentrations are shown on Table 3 for all data collected between monitoring years 2019 through 2023. Water Quality Objectives (WQOs) and goals are based on the following:

- Electrical conductivity (EC), Total Dissolved Solids (TDS), chloride, ammonia, iron, and manganese - Secondary Maximum Contaminant Level (MCL)
- Sodium - Agricultural Water Quality Goal
- Nitrate as Nitrogen – Primary MCL

Additional acronyms in the table and throughout the Order are defined as:

BOD_5 – five-day biochemical oxygen demand
mg/L – milligrams per liter
µg/L – micrograms per liter
µmhos/cm – micromhos/cm

Table 3. Influent Wastewater Quality (2019-2023)

Constituent	Units	Result	WQO
EC	µmhos/cm	1,388	900
TDS	mg/L	1,159	500
Sodium	mg/L	261	69
Chloride	mg/L	335	250
BOD_5	mg/L	423	NA
Nitrate+nitrite	mg/L	0.04 Note 1	10
TKN	mg/L	52	NA
Ammonia as N	mg/L	36	30
Iron	µg/L	960	300

Note 1: Average calculation is based on all available data (3 data points).

17. Primary treated effluent from the Sutter Plant is conveyed to the Jennings Plant via the Outfall Pump Station, which discharges to two existing outfall pipelines. Typically, all of the primary effluent flow is to one of these pipelines. The second pipeline is used to convey primary effluent during peak rainfall events when flows exceed the capacity of one outfall pipeline. This second pipeline is also used to convey Can Seg flows from the Sutter Plant to the Jennings Plant during the peak canning season (typically from July through October).

18. Biosolids are defined as sewage sludge, consisting of solid, semi-solid, or liquid residue generated during the treatment of domestic sewage. The sewage sludge, or biosolids, has been treated and tested and is beneficially and legally used as a soil amendment for agriculture, silviculture, horticulture, and land reclamation activities as specified under 40 C.F.R. part 503. The application of biosolids to land can be beneficial by enhancing soil structure, increasing water retention capability, promoting soil aggregation, and reducing the bulk density. Organic matter assists in maintaining soil pores which allow water and air to pass through the soil medium. Such pores can be lost at sites under continuous cultivation and they are critical in maintaining an aerobic environment within the plant root zone.

19. Production of the Class B biosolids occurs at the Sutter Plant for land application at the Modesto Ranch. Sludge from the primary clarifiers can be sent to a gravity belt thickener, but the Discharger does not typically use the thickener due to operational issues and because the thickening provided in the primary clarifiers is adequate. Sludge is therefore typically conveyed from the primary clarifiers to two of three mesophilic anaerobic digesters. The third digester is only used as an emergency unit. Two holdings tanks are used for sludge storage after digestion, but prior to discharge to drying beds. Digested sludge is then transferred to a series of unlined drying beds. Following this treatment and drying steps, the solids meet Class B standards. Supernatant flows from the holding tanks are routed to the headworks at the Sutter Plant for blending with influent wastewater.

20. The Sutter Plant has 23 unlined sludge drying beds. Fourteen of these beds, which cover approximately 18 acres, are used for dewatering digested sludge. A single 0.6-acre bed is used for storage and dewatering of spoils from storm water basins located within the City of Modesto. The remaining beds, which cover approximately three acres, are used for sludge storage during digester cleaning operations.

21. Dewatered Class B biosolids from the Sutter Plant drying beds contain 91 percent solids on average, having little or no free water, as stated in the RWD. Dewatered Class B biosolids from the treatment ponds are expected to contain 15 to 90 percent solids.

22. Biosolids quality is summarized below for dewatered Class B biosolids from the Sutter Plant drying beds.

Table 4. 2019-2024 Sutter Plant Biosolids Quality

Parameter	Units (dry)	Average Concentration (Note 1)	Minimum Concentration (Note 1)	Maximum Concentration (Note 1)	Ceiling Concentration (Note 2)
Arsenic	mg/kg	9.1	2.2	18	75
Cadmium	mg/kg	2.1	1.4	3.7	85
Chromium	mg/kg	68	49	110	3,000
Copper	mg/kg	588	310	940	4,300

Parameter	Units (dry)	Average Concentration (Note 1)	Minimum Concentration (Note 1)	Maximum Concentration (Note 1)	Ceiling Concentration (Note 2)
Lead	mg/kg	33	22	64	840
Molybdenum	mg/kg	21	10	35	75
Mercury	mg/kg	2.4	0.59	4.8	57
Nickel	mg/kg	33	20	53	420
Selenium	mg/kg	7.4	3.8	16	100
Zinc	mg/kg	1,701	990	2,900	7,500
Boron	mg/kg	21	10	41	--
Cyanide	mg/kg	3.4	0.49	8.7	--
Ammonia as N	mg/kg	784	123	1,727	--
TKN	mg/kg	28,182	460	46,000	--
Nitrate	mg/kg	699	1.7	5,200	--
Phosphorus	mg/kg	11,435	110	19,000	--
Potassium	mg/kg	1,942	980	3,700	--
Percent Moisture	%	8.7	2.1	38	--

Note 1: Average, minimum, and maximum values are based on one set of data for each of the years 2019 through 2024, with each year's data point an average of between 6 and 20 individual data points collected in different sludge drying beds over a few-day time period.
Note 2: Ceiling concentrations shown are based on 40 C.F.R. 503 and the Discharger's biosolids permit (WDRs 94-030).

23. Dewatered Class B biosolids are hauled from the Sutter Plant drying area to the Modesto Ranch for use as a soil amendment for the LAAs.

Jennings Plant

24. Primary treated wastewater from the Sutter Plant is split between two separate treatment systems at the Jennings Plant – the BNR/Tertiary Effluent Treatment System and the Secondary Effluent Treatment System. The Secondary Effluent Treatment System treats the wastewater to secondary undisinfected standards and is used for irrigation at the Modesto Ranch.

25. The BNR/Tertiary Effluent Treatment System, which treats the wastewater to tertiary standards using a membrane bioreactor treatment facility followed by UV disinfection, is discharged to surface waters under an NPDES permit. The system consists of secondary biological reactors for BOD removal and nitrification/denitrification, membrane filtration and UV disinfection. The Discharger

may occasionally discharge flows from the BNR/Tertiary Effluent Treatment System when tertiary effluent quality does not meet the NPDES permit requirements for surface water discharge. In these situations, the wastewater would be directed to the Facility's storage pond system for eventual land application at the Modesto Ranch. The BNR/Tertiary Treatment System is not discussed further in this Order as the effluent from this system is regulated under separate WDRs Orders.

26. Flows that exceed the capacity of the BNR/Tertiary Effluent Treatment System are directed to the Secondary Effluent Treatment System, which consists of three fixed film reactors (FFRs), an unlined and aerated Recirculation Channel, and three unlined facultative ponds (approximately three acres). Typically, only one of the facultative ponds is in operation at a time. Effluent is pumped through the FFRs, from where it is typically directed to the aerated Recirculation Channel consisting of four, interconnected ponds (North, East, South, and West) that encircle the facultative ponds. Wastewater is then pumped from the Recirculation Channel into one of three facultative ponds, which are operated in parallel if more than one pond is in use. Treated effluent from the facultative ponds enters the Facultative Pond Effluent Collector, where it can be directed to the Irrigation Forebay to be applied to the Modesto Ranch or to the Storage Forebay to be pumped to the two storage ponds (Storage Ponds 1 and 2, as shown on Attachment C).

27. A composting facility owned and operated by the City of Modesto is located onsite but is regulated under separate WDRs. However, at this time, it is unclear if any of the composting-related wastewater is discharged into the Jennings Plant. The Discharger is currently investigating this potential discharge. This Order requires to the Discharger to provide updates to the Central Valley Water Board on the status and impacts of this discharge (see Provision M.2.g).

28. Solids from the FFR and waste activated sludge (WAS) from BNR/Tertiary facilities are discharged to the Recirculation Channel at the Jennings Plant, where they are treated and stored. This practice will be discontinued once the new sludge drying beds are constructed at the Jennings Plant.

29. Pond dimensions are presented in Table 5. The Recirculation Channel, all ponds, and the Irrigation Forebay have 14-foot berm crest widths. Ponds are unlined with packed earth bottoms of native clayey soils. The bottom elevation of the treatment ponds are approximately 40 feet above mean sea level (AMSL), with the deepest part of the ponds, the digestion pits in the facultative ponds, at approximately 33 feet AMSL. The bottom elevation of the Recirculation Channel is approximately 38 feet AMSL.

Table 5. Pond Dimensions

Pond name	Capacity (MG)	Max. Water Depth (feet) at Spillway	Berm Height (feet)	Surface Area (in acres) at Freeboard	Estimated Percolation Rate (in/mo)
Recirculation Channel	272	5.1	6.7	102 (2 feet of freeboard)	2.3
Facultative Pond 1	200	6.0	6.7 – 9	102 (2 feet of freeboard)	2.3
Facultative Pond 2	214	5.8	6.7 – 9	114 (2 feet of freeboard)	2.3
Facultative Pond 3	204	5.3	6.7 – 9	118 (2 feet of freeboard)	2.3
Storage Pond 1	720	16 at spillway	20	197 (4 feet of freeboard)	3.1
Storage Pond 2	1,430	16 at spillway	20	399 (4 feet of freeboard)	3.1
Irrigation Reservoir	10	14	17	2.4 (3 feet of freeboard)	3.1
Irrigation Forebay	40	6	10	30 (4 feet of freeboard)	NA

30. Effluent from the Secondary Effluent Treatment System is discharged to two storage ponds (Storage Ponds 1 and 2) before being used for irrigation at the Modesto Ranch. Effluent wastewater quality prior to use as irrigation is sampled at location EFF-003 (formerly referred to as IRR-FOR), as shown on Attachment E. This sample location captures all treated domestic wastewater, which can also contain treated Can Seg wastewater when Can Seg wastewater is directed through the Sutter and Jennings Plants. Wastewater quality presented here is considered representative of the wastewater quality discharged to land when Can Seg wastewater is not directed straight to the LAAs. Average annual concentrations are shown. Dissolved oxygen (DO) is presented as the number of detections less than 1 mg/L, and pH is shown as the minimum and maximum measurements.

Table 6. Effluent Quality at Sample Location IRR-FOR

Constituent	Units	2019	2020	2021	2022	2023
BOD_5	mg/L	15	16	24	29	18
EC	µmhos/cm	1,623	1,605	1,529	1,667	1,736
FDS	mg/L	NA	NA	808	NA	NA
TDS	mg/L	957	938	866	959	1,088
Chloride	mg/L	294	293	NA	NA	311
Nitrate+nitrite	mg/L	0.2	1.1	NA	ND	0.1
DO (detections <1 mg/L)	mg/L	0	1	1	3	0
pH (s.u.)	s.u.	7.7 – 9.2	3.1 – 9.9	7.7 – 9.9	7.4 – 9.99	7.7 – 9.6

31. Waste activated sludge (WAS) from the BNR/Tertiary Effluent Treatment System is discharged to the aerated Recirculation Channel, and three unlined facultative ponds in the Secondary Effluent Treatment System. WAS is automatically transferred to the treatment ponds for additional stabilization. Digested sludge is periodically removed from the ponds as needed to maintain pond treatment capacities. The solids are dewatered mechanically onsite at the Jennings Plant and stored in an approximately 24-acre unlined storage area, as shown on Attachment C. The Discharger controls potential runoff of biosolids from the processing area by keeping the area free of biosolids between October 31 and March 31. Dewatered Class B biosolids are hauled from the Jennings Plant storage areas to the Modesto Ranch for land application.

Cannery Process Wastewater

32. Can Seg wastewater is conveyed to the Sutter Plant via the Can Seg Line influent sewer, where the wastewater is screened and then directed to either:

    - The Sutter Plant headworks for treatment with domestic wastewater when Can Seg flows are less than 4 MGD. The combined wastewater is then directed to the Jennings Plant for further treatment.
    - The Modesto Ranch during peak canning season, typically from July through October (canning season), when Can Seg flows exceed 4 MGD. Prior to discharging to the LAAs, wastewater from the Can Seg Line is blended with undisinfected secondary treated wastewater from the Jennings Plant for irrigation of the LAAs. The percentage of Can Seg process water in blended effluent for irrigation varies seasonally.

33. When Can Seg Line flow is diverted around the Sutter and Jennings Plants, Can Seg Line water quality sampling occurs at sample point 3-015 (formerly called CAN-SEG), which is downstream of the screening facility. Influent Can Seg flow volumes that are diverted around the Sutter Plant and are directed to the Modesto Ranch are summarized below.

Table 7. Can Seg Wastewater Effluent Flows (CAN-SEG/3-015 Location)

Monitoring Year	Total Annual Volume (MG)
2019	1,050
2020	900
2021	1,020
2022	1,227
2023	1,163

34. When Can Seg Line flow is diverted around the Sutter and Jennings Plants, Can Seg Line influent water quality sampling occurs at sample point 3-015. Influent Can Seg wastewater quality is summarized below and presented as average concentrations from data collected between 2019 and 2023. NE indicates a WQO/goal has not been established for that specific constituent.

Table 8. Can Seg Wastewater Influent Quality (CAN-SEG/3-015) (2019-2023)

Constituent	Units	Result	WQO/Goal
BOD_5	mg/L	994	NE
EC	µmhos/cm	1,507	900
FDS	mg/L	774	NA
TDS	mg/L	1,263	500
Total Nitrogen	mg/L	38	Not established

Modesto Ranch

35. Modesto Ranch, located south of the Jennings Plant, consists of 31 bermed land application areas (Fields 2 and 4 through 33) ranging from 20 to 128 acres, operated in sections based on the major branches of an irrigation system. Table 9 lists the section designations, field numbering, and acreage of each field. Field numbers are shown in Attachment D. Tailwater is collected from the LAAs and recirculated back to the Irrigation Reservoir.

Table 9. Land Application Areas

Section	Field Number	Irrigation Area (acres)	Section	Field Number	Irrigation Area (acres)
A	2	47	D	18	20
A	4	55	D	19	80
B	5	45	D	20	20
B	6	25	D	21	80
B	7	123	D	22	80
B	8	55	E	23	93
B	9	55	E	24	107
B	10	110	E	25	120
B	11	110	E	26	90
B	12	27	E	27	62
C	13	120	E	28	64
C	14	67	F	29	115
C	15	128	F	30	100
C	16	60	F	31	100
C	17	100	F	32	100
			F	33	100
			Total, all fields		**2,458**

36. Treated wastewater is transferred from Storage Ponds 1 and 2 to the Irrigation Forebay and then to the Irrigation Reservoir when irrigation is needed. Stored recycled water can also be diverted from the Irrigation Forebay directly to the fields located west of Jennings Road and south of the ponds using Booster Pump Station (BPS-1), as shown on Attachment E. A detailed diagram of the irrigation system is included in the 2018 RWD.

37. During canning season, Can Seg process water is blended with recycled water at the Irrigation Reservoir outfall for irrigation use. Supplemental irrigation water can be supplied from the Westport Drain that is operated by the Turlock Irrigation District. This supplemental water is directed to the Recirculation Channel. In addition, stormwater runoff is captured for irrigation use via the onsite drainage system. Irrigation on the Modesto Ranch occurs via flood irrigation.

38. Each field has a tailwater containment system that delivers excess wastewater to tailwater pump stations. During the irrigation season, most of the tailwater pump

stations return tailwater to the distribution system directly, although a few pumps return flows to the storage pond system.

39. The Discharger historically monitored flows to the LAA at two sample points. During periods when Can Seg Line flows were not being diverted to the LAAs, samples were collected at sample point IRR-FOR, located at the pump station that conveys recycled water from the Irrigation Forebay to the Irrigation Reservoir. This sample point also represented flows discharged from BPS-1. During periods when Can Seg Line flow was diverted directly to the LAAs, samples were collected at sampling point CAN-SEG, downstream from the recycled water and Can Seg process water mixing point. This Order modifies the sampling locations to incorporate new sampling point EFF-003, which is downstream from the recycled water and Can Seg process water mixing point and represents the total flow to the LAAs. Because BPS-1 is only used outside of the canning season, there are no additional inputs of flows or loads between the BPS-1 discharge point and EFF-003. Therefore, water quality in the discharge from BPS-1 is the same water quality discharged at EFF-003 and a secondary water quality sampling location for BPS-1 discharges is not required. However, flows discharged from the BPS-1 will be monitored and reported.

40. The Modesto Ranch LAAs are used for fodder crops, including but not limited to mixed grasses, alfalfa, winter wheat, corn, and a mixture of winter wheat and summer corn. Crops are harvested by tenants that lease the land to grow crops for external sale. No animals are grazed on the LAAs.

41. The main biosolids disposal method is land application at Modesto Ranch. The Discharger has been applying Class B biosolids annually as a soil amendment on the Modesto Ranch since before 1993. Since 1994, the application of biosolids has been monitored according to the requirements of WDRs Order 94-030 and 40 C.F.R. part 503.

42. Class B biosolids are applied only to fields that are not currently growing crops. Historically, Class B biosolids were allowed to be applied to LAAs for use as fertilizer for fodder crop production only between 1 May through 1 October. This restriction was due to the Discharger's 1993 Initial Study/Mitigated Negative Declaration (IS/MND), which includes a mitigation measure preventing year-round application of biosolids to protect the Aleutian Canada goose. However, the Aleutian Canada goose was delisted as a special-status species in 2001. A California Environmental Quality Act (CEQA) evaluation is in progress through the lead agency to remove the application date restriction. For more details on the delisting of the Aleutian Canada goose, please see Attachment A of *Supplement No. 2 to the City of Modesto RWD*. Time restrictions on biosolids application related to the Aleutian Canada goose may not be required under this Order based on adoption of the CEQA evaluation. For more details, see Finding 130 and Provision M.2.h.

43. Modesto Ranch fields that receive biosolids are typically planted with a summer crop in May or June in anticipation of the canning season, which typically starts in

July and can extend into early October. These fields are typically harvested in late September or early October to allow for biosolids land application in October, where the preferred application period is late October to early November. These fields are then planted with a winter crop after the biosolids applications in November, which is subsequently harvested the following spring. The Discharger also may apply biosolids to the fields in the spring, prior to the May/June planting date.

44. The Discharger has historically calculated nitrogen loading to the LAAs on a calendar basis, January to December. With this approach, the Discharger has had to estimate what the future irrigation water nitrogen and fall biosolids application nitrogen needs would be to allow the farmers to make decisions about spring fertilizer/biosolids application rates. If the irrigation water nitrogen or fall biosolids nitrogen loadings were higher than expected, a theoretical over application could occur. If the irrigation water nitrogen or fall biosolids nitrogen loadings were lower than expected, then the crops would not have enough nitrogen for robust growth.

45. Because the farmers operate the fields around cropping cycles, the fall biosolids nitrogen applications are taken up by the winter crops that are planted after the application occurs. Therefore, from a crop nutrient management standpoint, it is more prudent to estimate crop demands and nitrogen application rates on a cropping cycle basis (October of previous year through September of current year). Therefore, the data collection and reporting process detailed in the MRP provides for this seasonal approach.

46. Class B Biosolids are used as a soil amendment at the Modesto Ranch. The biosolids meet the vector attraction and pollution concentration limits specified in 40 C.F.R. part 503 and pathogen reduction standards specified in 40 C.F.R. part 503.32(b). Class B biosolids have been treated sufficiently for the level of pathogens to be substantially reduced but not completely removed.

47. Biosolids application sites can be on any field within the LAAs and are typically rotated from year to year. The Discharger's annual biosolids loading rate is typically about 10 to 20 dry tons per acre.

48. Historically, roughly 200 acres annually receive biosolids. During years where significant amounts of solids are removed from the ponds, the application area may be up to 1,000 acres. The specific fields dedicated for biosolids application each year are identified in the annual monitoring reports.

49. Water balances were developed for an average annual rainfall amount and a 100-year 365-day total rainfall. Based on the water balances the maximum storage volume required is approximately 1,100 MG (less than half of the actual available storage capacity). Estimated percolation rates from the Recirculation Channel and treatment ponds are 8 to 11 inches per month, with the higher percolation rates occurring when the river water level is low, and lower percolation rates occurring with the river water level is higher. Estimated percolation rates from the Storage Ponds and the Irrigation Reservoir are also 8 to 11 inches per month. Evaporative

losses from the ponds on an annual basis are approximately 4.4 inches per month, calculated using evapotranspiration rates, which are more accurate than plant available nitrogen (PAN) evaporation rates for large pond systems.

50. Based on the water balances, treated wastewater is being land applied at agronomic rates. The total crop water demand is generally greater than the volume of treated wastewater, Can Seg process water, and biosolids applied; therefore, supplemental irrigation is sometimes needed to meet crop demand. During an average rainfall year, supplemental irrigation water volume of up to approximately 2,000 acre-feet (640 MG) per month during the summer may be required to maintain crops.

51. Supplemental irrigation water can be provided from the TID Westport Drain. The water is pumped to the Recirculation Channel, where it is blended with the domestic wastewater. Following treatment, the combined flows are then used for irrigation or stored for later use. In addition, stormwater runoff is captured for irrigation use via the onsite drainage system. In the future, supplemental irrigation water from other sources may be available and used in addition to, or instead of, TID water, including water from the San Joaquin River, which would be diverted under the Discharger's water right that allows for diversion of 2.5 cubic feet per second from March 1 to November 1, equivalent to 1,220 acre-feet per year over the period.

52. The agronomic rate for nitrogen is the maximum amount of nitrogen needed by the crop grown on the land and is intended to minimize the amount of nitrogen that passes below the root zone of the crop. Biosolids are applied at a rate that is less than or equal to the agronomic rate calculated based on the nitrogen uptake of the crop type grown and including other sources of nitrogen applied to the biosolids application area. Application rates are based on agronomic recommendations for proper fodder crop production, denitrification in the onsite soils, nitrogen from other sources included irrigation water and fertilizer applications, and residual nitrogen from previous application(s).

Planned Changes to Facility and Discharges

53. Expected increases in domestic flows (within the flow limit) will result in a corresponding increase in biosolids available for land application, so the annual areal extent required for biosolids land application will increase. However, the existing boundaries of Modesto Ranch are sufficient to accommodate this increase. The expected biosolids land application expansion will maintain the current nitrogen loading so that the total nitrogen loadings to a given field area remain within the range of the anticipated crop nitrogen uptake rates, per the Discharger's nutrient management planning system.

54. Modifications to secondary wastewater treatment facilities have been envisioned by the Discharger and included in the RWD and subsequent RWD Addendums and updates. These modifications may include but are not limited to the following upgrades and improvements in the WQCF's operations.

a. Solids drying activities at the Sutter Plant will be moved to the Jennings Plant to help minimize flood risk at the Sutter Plant. By relocating the drying beds to the Jennings, the risk of impacts to groundwater at the Sutter Plant will be significantly reduced. In addition, the drying beds at the Jennings Plant are scheduled to be lined beds.

b. WAS treatment and handling improvements may be implemented to eliminate discharge of WAS to the pond treatment system. This will result in improved biosolids control and reduced risks to groundwater.

c. Secondary effluent treatment system upgrades may be constructed to allow for additional BOD_5 removal from Can Seg Line discharges.

d. Construction of facilities to allow for Class A treatment and direct land application of biosolids generated at the Sutter Plant and/or Jennings Plant. Class A or Class B biosolids may also be received from outside facilities for land application at the Modesto Ranch.

55. There are several existing groundwater monitoring wells scheduled to be abandoned and/or replaced to improve operation efficiency, eliminate data redundancies, and improve representativeness of the monitoring. The proposed changes, as described in the Technical Memorandum dated 15 November 2019, are summarized in the Information Sheet.

Site-Specific Conditions

56. The Sutter Plant is located within a low- and medium-density residential area in the City of Modesto. The nearest agricultural land uses are about one mile to the west and south of the site. The Tuolumne River borders the Sutter Plant to the south of the facility.

57. The Jennings Plant and Modesto Ranch are bordered to the west by the San Joaquin River. Both Jennings Plant and Modesto Ranch are within an agricultural area that includes crop farming and livestock husbandry. The closest urban area to the Modesto Ranch is the City of Patterson, about three miles southwest across the San Joaquin River.

58. The WQCF discharges tertiary-treated disinfected effluent water into the Delta-Mendota Canal for reuse and into the San Joaquin River. Both discharges are authorized and regulated under separately issued NPDES permits.

59. Topography in the vicinity of the Sutter Plant, Jennings Plant, and the Modesto Ranch is relatively flat, sloping gradually towards the adjacent rivers. Within Sutter Plant, the elevation varies from 70 feet AMSL at the northeast portion of the site to 50 feet AMSL near the Tuolumne River south of the site. At the Jennings Plant, the highest ground elevation is approximately 56 feet AMSL near the northeast corner of the site, with gradual downward sloping to the southwest to a minimum of approximately 40 to 45 feet AMSL.

60. The Federal Emergency Management Agency (FEMA) has mapped the Sutter Plant site as being within a 100-year floodplain. The FEMA Flood Insurance Study of 2008 clarifies that the Sutter Plant site is specifically within a “Zone AE” floodplain, which corresponds to a one-percent annual chance of flood based on detailed analytical methods. The Discharger has created stormwater catchment areas at the Sutter Plant to handle on-site run-off and to help prevent flooding of the site. Prior to the start of the rainy season, the Discharger empties the drying beds as much as possible. During the rainy season, the Discharger preferentially uses the drying beds further from the river when available. Planned changes to the Sutter Plant include relocating the drying beds to the Jennings Plant and the decommissioning of the Sutter Plant drying beds, which will eliminate threats to groundwater at all discharges to land at the Sutter Plant will cease.

61. Most of the Jennings Plant treatment facilities are outside of the 100-year floodplain according to FEMA mapping. However, the storage and treatment ponds are within a “Zone A” floodplain, as is most of the Modesto Ranch area. “Zone A” is applied to areas determined to be subject to inundation by a 100-year flood based on approximate and not detailed flood analyses. The entire site is protected by levees located on the San Joaquin River, owned by Reclamation District 2091. The levees have been de-certified by the U.S. Army Corps of Engineers. Efforts to achieve reaccreditation of the levees or providing flood protection for site specific for this site are being evaluated as part of the master plan process.

62. The storage pond berms are regulated by the Department of Water Resource’s Division of Safety of Dams due to the berms’ heights exceeding six feet and the volume of water contained exceeding 50 acre-feet, which classifies them as dams.

63. If a failure of the San Joaquin River levees were to occur, the facultative ponds could be inundated during a 100-year flood event, but the storage pond berms are high enough to prevent inundation by a 100-year flood, according to an analysis in the Discharger’s 2016 Wastewater Treatment Master Plan. Inundated LAAs pose an acceptable risk to water quality, as managed land application of Facility wastes will limit the amount of waste discharged offsite by such flooding.

64. Annual average precipitation is approximately 13 inches, with the majority of rainfall typically occurring from November through April (National Climactic Data Center, Modesto County Airport weather station Number 045738). The 100-year maximum total annual precipitation is approximately 22 inches, and the reference annual evapotranspiration rate is approximately 53 inches per year according to the California Irrigation Management Information System (CIMIS) Modesto Station #71.

65. Based on information in the Natural Resources Conservation Service (NRCS) soil survey for Eastern Stanislaus County in 2014, the Sutter Plant area surficial soil is essentially fine sandy loam, specifically Hanford Fine Sandy Loam, with a small area at the northeast corner of the site being Tujunga, a loamy sand. These soil types are characterized as having moderately high permeability and being well-drained.

66. The Jennings Plant treatment and storage pond areas are underlain by slightly saline, sandy loam and loamy sand soils, characterized as being imperfectly drained. Therefore, runoff and percolation of water is relatively slow.

67. The LAAs of Modesto Ranch have surficial soils identified as saline or saline alkali with slow percolation rate similar to the Jennings Plant soils.

Groundwater Conditions

68. The groundwater monitoring network currently consists of 21 groundwater monitoring wells located at the Jennings Plant and Modesto Ranch to monitor potential impacts to groundwater from the ponds and from the land application of treated wastewater and biosolids, as shown on Attachment F. The groundwater wells have been monitored since at least the year 2000.

69. There are no groundwater monitoring wells at the Sutter Plant. In 2015, a shallow groundwater investigation was conducted and approximately 22 shallow groundwater samples were collected within and around the beds to evaluate potential impacts to groundwater. The groundwater samples were analyzed for nitrate as nitrogen. Concentrations of nitrate as nitrogen were less than 10 mg/L (nitrate as nitrogen MCL) in nine samples, two samples were greater than 10 mg/L but less than 25 mg/L, and 11 samples were greater than 25 mg/L. Ambient or current background nitrate as nitrogen concentrations in the area are greater than 10 mg/L and generally less than 25 mg/L (the Facility is located within a Priority 1 Basin under the Nitrate Control Program). Concentrations of nitrate greater than ambient conditions indicates the drying beds are likely contributing to nitrate groundwater pollution. This Order requires the Discharger to cease discharging solids to beds at the Sutter Plant by 2035. The proposed new drying beds will be located at the Jennings Plant and will be lined for the protection of groundwater (see Provision M.2.d).

70. The mean depth to groundwater across the entire Jennings Plant and Modesto Ranch facility is approximately 12 feet below ground surface (bgs), with ranges from 7 to 15 feet bgs across all monitoring wells. The groundwater elevation in the treatment ponds area ranges from 30 to 40 feet AMSL during dry periods and can be higher than 40 feet AMSL during very wet periods.

71. Historically, groundwater beneath the Jennings Plant and Modesto Ranch has high TDS concentrations attributed mainly to “migration of a deep, saline water body originating in regionally deposited, marine sedimentary rocks that underlie the San Joaquin Valley”, according to the Turlock Groundwater Basin Groundwater Management Plan, March 18, 2008. This Plan also notes that saline soils in the area potentially influence salinity concentrations in shallow groundwater.

72. The horizontal hydraulic shallow groundwater gradient across the Jennings Plant and Modesto Ranch is generally west-southwest toward the river except during the wet season. During the wet season, the shallow groundwater gradient is typically flat due to the elevated level of the San Joaquin River.

73. Groundwater monitoring well depths, screened intervals, and general locations are presented below in **Error! Reference source not found.** for Jennings Plant and in **Error! Reference source not found.** for Modesto Ranch. The letter "D" in the well name indicates a "deep" well, with a minimum well depth greater than 49 feet bgs. Wells without the D suffix have a maximum well depth of 43 feet bgs. Depths to groundwater are as reported in the Fourth Quarter 2023 Monitoring Report.

Table 10. Groundwater Monitoring Well Details

Well ID	Installation Date	Screen Interval (ft bgs)	Depth to GW (ft bgs)	GW Elevation (ft AMSL)	Location
MW-1	Pre-2000	16.0 – 25.8	15.4	36.0	Crossgradient, next to storage pond (Jennings Plant)
MW-2	Pre-2000	18 - 28	12.4	33.9	Downgradient of facultative ponds (Jenning Plant)
MW-2D	5/19/2000	68 - 87	12.4	34.0	Downgradient of facultative ponds (Jenning Plant)
MW-3	Pre-2000	17.5 – 27.5	10.4	35.2	Downgradient of facultative ponds
MW-4	Pre-2000	15 - 25	10.3	46.8	Upgradient (Jenning Plant)
MW-4D	5/18/2000	61.7 - 76	11.4	46.0	Upgradient (Jenning Plant)
MW-5	Pre-2000	21.2 – 30.0	5	42.5	Downgradient (interior of LAAs)
MW-5D	3/30/2000	72.2 – 86.8	7	41.5	Downgradient (interior of LAAs)
MW-6	Pre-2000	19.6 – 29.6	5.8	44.7	Upgradient (LAAs)
MW-7	Pre-2000	7.5 – 22.0	10.6	44.2	Upgradient (Jennings Plant)
MW-9	Pre-2000	15 – 29.5	11.4	41.8	Downgradient (Jennings Plant)
MW-10	Pre-2000	20.5 – 23.5	13	44.5	Upgradient (Jennings Plant)
MW-11D	3/29/2000	71.5 - 88	12.2	44.2	Upgradient (Jennings Plant)

Well ID	Installation Date	Screen Interval (ft bgs)	Depth to GW (ft bgs)	GW Elevation (ft AMSL)	Location
MW-12	3/16/2000	14.5 – 28.5	14	37.9	Downgradient (Jennings Plant)
MW-12D	4/18/2000	85 – 102.5	14.6	37.2	Downgradient (Jennings Plant)
MW-13	4/13/2000	36.9 – 42.9	6.8	40.7	Downgradient (LAAs)
MW-13D	4/12/2000	82.5 – 101.5	9.8	37.9	Downgradient (LAAs)
MW-14	3/20/2000	22.5 – 31.1	10.2	45.1	Upgradient (LAAs)
MW-14D	4/12/2000	49.6 – 67.1	10.7	44.2	Upgradient (LAAs)
MW-15	4/11/2000	21.5 – 30.2	12.2	37.9	Downgradient (LAAs)
MW-15D	4/11/2000	71.9 – 87.7	12.3	37.7	Downgradient (LAAs)

74. Groundwater quality up- and down-gradient of the ponds at the Jennings Plant is summarized below. Average concentrations for select constituents for monitoring years 2019 through 2023 are shown, along with the WQOs or goals associated with each constituent of concern. Iron (Fe), manganese (Mn), and arsenic (As) are dissolved concentrations.

Table 11. Groundwater Quality: Jennings Plant

Well ID	EC (µmhos/cm)	TDS (mg/L)	Nitrate + Nitrite (mg/L)	Total Coliform (MPN100/ mL)	Na (mg/L)	Cl (mg/L)	Fe (µg/L)	Mn (µg/L)	As (µg/L)
UPGRADIENT									
MW-7	822	510	21	2.4	812	42	188	15	2.9
MW-10	860	538	15	7.2	89	49	250	205	11.1
MW-11D	2,194	1,520	53	2.7	270	149	765	279	5.9
DOWNGRADIENT									
MW-1	794	471	5.1	9.5	106	122	207	907	2.6
MW-2	1,383	757	1.0	7.8	194	263	10,179	2,968	20.4
MW-2D	1,274	686	0.3	3.7	189	228	4,999	2,599	14.4

Well ID	EC (µmhos/cm)	TDS (mg/L)	Nitrate + Nitrite (mg/L)	Total Coliform (MPN100/ mL)	Na (mg/L)	Cl (mg/L)	Fe (µg/L)	Mn (µg/L)	As (µg/L)
MW-3	1,573	886	0.1	3.7	215	304	12,702	2,859	35.4
MW-12	1,716	882	0.1	2.5	185	206	19,762	2,369	70.8
MW-12D	1,633	930	0.2	3.0	270	275	5,018	503	5.4
WQO	**900**	**500**	**10**	**2.2**	**69**	**250**	**300**	**50**	**10**

75. Based on a comparison of the groundwater quality up and down-gradient of the ponds at the Jennings Plant, some impacts to groundwater have occurred as a result of seepage from the ponds at the WQCF. In upgradient wells, concentrations of EC, TDS, nitrate/nitrite, sodium, chloride, iron, manganese, and arsenic also exceed WQOs and the concentrations vary significantly between the upgradient wells.

76. Concentrations of constituents in monitoring wells located downgradient of the ponds exceed WQOs, with the exception of nitrate+nitrite. The concentrations of constituents between the downgradient wells vary significantly (i.e., average iron concentration in MW-1 is 207 µg/L while iron concentrations in the other downgradient wells are greater than 4,900 µg/L).

77. EC, TDS, and nitrate+nitrite concentration trends in all upgradient and downgradient monitoring wells associated with the Jennings Plant show stable concentration trends over the last five years.

78. Groundwater quality up- and down-gradient of the LAAs at Modesto Ranch is summarized below. Average concentrations for select constituents for monitoring years 2019 through 2023 are shown, along with the WQOs or goals associated with each constituent of concern.

Table 12. Groundwater Quality: Modesto Ranch

Well ID	EC (µmhos/cm)	TDS (mg/L)	Nitrate + Nitrite (mg/L)	Total Coliform (MPN100/ mL)	Na (mg/L)	Cl (mg/L)	Fe (µg/L)	Mn (µg/L)	As (µg/L)
UPGRADIENT									
MW-6	2124	1331	6.1	3.11	429	223	121	29	4.1
MW-7	822	510	20.7	2.41	82	42	188	15	3.3
MW-11D	2,194	1,520	53	2.7	270	149	765	279	5.7
MW-4	1757	1260	77.5	2.14	162	86	675	345	7.1
MW-4D	1172	789	38.5	0.68	145	77	404	346	5.4

Well ID	EC (µmhos/cm)	TDS (mg/L)	Nitrate + Nitrite (mg/L)	Total Coliform (MPN100/mL)	Na (mg/L)	Cl (mg/L)	Fe (µg/L)	Mn (µg/L)	As (µg/L)
MW-14	1441	903	22.4	12.38	235	109	304	336	5.0
MW-14D	1517	960	12.6	2.32	279	104	262	181	2.9
DOWNGRADIENT									
MW-9	2,773	1,695	40	5.3	360	484	420	779	9.5
MW-13D	1,118	760	0.1	2.4	234	323	466	319	2.9
MW-15	1,695	951	0.3	2.0	239	285	3,251	2,128	12.9
MW-15D	2,293	1,355	0.1	2.1	328	409	6,986	2,599	6.1
WQO	**900**	**500**	**10**	**2.2**	**69**	**250**	**300**	**50**	**10**

79. Average up-gradient groundwater concentrations for all constituents listed in the table exceed WQOs/goals (with the exception of arsenic), indicating the quality of groundwater is the area is not high-quality water with respect to EC, TDS, nitrate, total coliform, sodium, chloride iron, and manganese.

80. Concentration trends for EC, TDS, and nitrate+nitrite in all groundwater monitoring wells show stable concentration trends over the last five years, with the exception of MW-14, where nitrate+nitrite concentrations show a decreasing trend. The stable concentrations over time indicate the discharge is no longer impacting groundwater beyond current conditions.

Compliance History

81. The Discharger has received several Notice of Violations (NOVs) over the last 9 years (2016 through 2024). NOVs are summarized below.

Table 13. Notice of Violations

NOV Date	Violation
7/1/2016	pH violations and monitoring and reporting violations
6/26/2018	pH violations and monitoring and reporting violations
6/5/2019	Monitoring and reporting violations
10/23/2020	pH violations and monitoring and reporting violations
3/28/2022	Five discharges of partially treated wastewater (three staff errors; a leak in the Can Seg line; and a hose connection failure)
9/29/2023	pH violations and monitoring and reporting violations

NOV Date	Violation
5/24/2024	pH violations

82. In addition to the violations listed above, 30 odor complaints have been reported to the San Joaquin Valley Air Pollution Control District (APCD) and the Central Valley Water Board between 2016 and 2024. The complaints were mostly related to odors from the Sutter Plant.

83. On 25 February 2025, the Discharge submitted an *Odor, Corrosion, and UVT Evaluation*. As described in the evaluation, odors at the Sutter Plant can be attributed to the long hydraulic retention time of wastewater in the seven-mile pipeline between the Sutter Plant and Jennings Plant. The long retention time is also resulting in high concentrations of hydrogen sulfide (H2S), causing corrosion issues at the Jennings Plant. The primary objectives of the evaluation were to:

    - Quantify sulfide contributions from major sewer trunks.
    - Measure H2S levels at key locations, including lift station discharge manholes.
    - Determine the most effective chemical treatment alternatives to control H2S emissions and reduce corrosion in the sewer system which is likely contributing to metals in groundwater.
    - Identify potential pilot tests for chemical treatments to confirm their effectiveness and cost-efficiency.

    The evaluation included actions the Discharger can implement to address the odor and corrosion issues and a timeline for implementing these actions. **MRP R5-2025-XXXX** requires the Discharger to submit annual updates to the Central Valley Water Board on the steps it has taken to address the odors and corrosion and the status and effectiveness of the mitigation/prevention efforts (see Annual Reporting in the MRP).

Water Recycling Regulatory Considerations

84. Undisinfected domestic wastewater contains human pathogens that are typically measured using total or fecal coliform as indicator organisms.

85. The Discharger uses recycled water for irrigation purposes at the Modesto Ranch. The State Water Board's Division of Drinking Water (DDW), which has primary statewide responsibility for protecting water quality and public health, has established statewide criteria for the use of recycled water (Cal. Code Regs., tit. 22, § 60301 et seq.). This Order implements the applicable portions of the California Code of Regulations, title 22 (Title 22) water recycling regulations.

Title 22 section 60323 requires recyclers of treated municipal wastewater to submit an engineering report detailing the use of recycled water, contingency plans, and safeguards to DDW for approval. On 24 May 2018, the Discharger submitted to DDW a Title 22 Engineering Report (Title 22 Report) on the Production, Distribution, and Use of Recycled Water treated to undisinfected secondary standards for the discharge to land. On 22 June 2018, DDW issued comments on the Title 22 Report, including specific comments and requirements for inclusion in these WDRs. On 21 July 2020, the Discharger submitted an addendum to the Title 22 Report to address DDW comments. DDW formally approved the Title 22 Report on 22 July 2020..

86. Effluent from the Jennings Plant is treated to meet at least the requirements for undisinfected secondary recycled water (see Title 22, section 60301). This Order requires that effluent from the Jennings Plant be used for irrigation on crops at the Modesto Ranch in accordance with Title 22, section 60304.

87. State Water Board Resolution 2009-0011, Adoption of a Policy for Water Quality Control for Recycled Water (Recycled Water Policy), as amended by subsequent Resolutions 2013-0003 and 2018-0057, promotes the use of recycled water to achieve sustainable local water supplies and reduce greenhouse gas emissions.

88. Central Valley Water Board Resolution R5-2009-0028, In Support of Regionalization, Reclamation, Recycling and Conservation for Wastewater Treatment Plants, encourages water recycling, water conservation, and the regionalization of wastewater treatment facilities. Resolution R5-2009-0028 provides that the Central Valley Water Board may require any discharger that owns and/or operates a wastewater treatment plant to submit a report documenting:

    a. Efforts to promote new or expanded wastewater recycling opportunities and programs;

    b. Water conservation measures; and

    c. Regional wastewater management opportunities and solutions (e.g., regionalization).

89. Recycling of the Discharger’s effluent is consistent with the intent of the Recycled Water Policy and Resolution R5-2009-0028, as amended per Resolutions 2013-0003 and 2018-0057.

90. Title 22, section 60323, requires recyclers of treated municipal wastewater to submit an engineering report detailing the use of recycled water, contingency plans, and safeguards to the State Water Board’s Division of Drinking Water (DDW) for approval. On 24 May 2018, the Discharger submitted to the State Water Resources Control Board, Division of Drinking Water (DDW), a Title 22 Engineering Report (Title 22 Report) on the Production, Distribution, and Use of Recycled Water treated to undisinfected secondary standards for the discharge to land. On 22 June 2018, the DDW issued comments on the Title 22 Report,

including specific comments and requirements for inclusion in these WDRs. On 21 July 2020, the Discharger submitted an addendum to the Title 22 Report to address DDW comments. DDW formally approved the Title 22 Report on 22 July 2020.

91. Any proposed changes to the use of recycled water, quality of recycled water produced, or changes in recycled water users requires the Discharger to submit an updated Title 22 Engineering Report, as needed.

Legal Authorities

92. This Order is adopted pursuant to Water Code section 13263, subdivision (a), which provides in pertinent part as follows:

> *The regional board, after any necessary hearing, shall prescribe requirements as to the nature of any proposed discharge, existing discharge, or material change in an existing discharge…, with relation to the conditions existing in the disposal area or receiving waters upon, or into which, the discharge is made or proposed. The requirements shall implement any relevant water quality control plans that have been adopted, and shall take into consideration the beneficial uses to be protected, the water quality objectives reasonable required for that purpose, other waste discharges, the need to prevent nuisance, and the provisions of Section 13241.*

93. Compliance with section 13263, subdivision (a), including implementation of applicable water quality control plans, is discussed in the findings below.

94. The ability to discharge waste is a privilege, not a right, and adoption of this Order shall not be construed as creating a vested right to continue discharging waste. (Wat. Code, § 13263, subd. (g).)

95. This Order and its associated MRP are also adopted pursuant to Water Code section 13267, subdivision (b)(1), which provides as follows:

> *[T]he regional board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste … shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report 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.*

96. The reports required under this Order, as well as under the separately issued MRP, are necessary to verify and ensure compliance with these WDRs. The

burden associated with such reports is reasonable relative to the need for their submission.

Basin Plan Implementation

97. Pursuant to Water Code section 13263, subdivision (a), WDRs must "implement any relevant water quality control plans and shall take into consideration the beneficial uses to be protected, the water quality objectives reasonably required for that purpose, other waste discharges, the need to prevent nuisance, and the provisions of Section 13241."

Beneficial Uses of Water

98. This Order implements the Central Valley Water Board's Water Quality Control Plan for the Sacramento River and San Joaquin River Basins (Basin Plan), which designates beneficial uses for surface water and groundwater and establishes WQOs necessary to preserve such beneficial uses. (See Wat. Code, § 13241 et seq.).

99. Local drainage is to the Tuolumne and San Joaquin Rivers. The existing beneficial uses of these surface waters are: agricultural supply (AGR); industrial process supply (PRO); water contact recreation (REC-1); non-contact water recreation (REC-2); warm freshwater habitat (WARM); migration of aquatic organisms (MIGR); spawning, reproduction, and/or early development (SPAWN); and wildlife habitat (WILD). The Basin Plan also lists municipal and domestic water supply (MUN) as a potential beneficial use.

100. Beneficial uses of underlying groundwater are municipal and domestic supply (MUN); agricultural supply (AGR); industrial service supply (IND); and industrial process supply (PRO).

Water Quality Objectives

101. The Basin Plan establishes narrative WQOs for chemical constituents, taste and odors, and toxicity in groundwater. It also sets forth a numeric objective for total coliform organisms.

102. 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 groundwater.

103. The Basin Plan's narrative WQOs for chemical constituents require MUN designated water to at least meet the MCLs specified in Title 22. The Basin Plan provides 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.

104. 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, on a case-by-case basis, adopt numerical limitations to implement the narrative objective.

Salt and Nitrate Control Programs

105. 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 (Resolution R5-2018-0034). The Basin Plan amendments became effective on 17 January 2020 and were revised by the Central Valley Water Board in 2020 with Resolution R5-2020-0057 (https://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/resolutions/r5-2020-0057_res.pdf). The revisions to the Basin Plan amendments became effective on 10 November 2021.

106. Under the Salt Control Program, dischargers that are unable to comply with stringent salinity requirements may instead be subject to requirements, as determined appropriate by the Central Valley Water Board, and participate in a basin-wide effort known as the Prioritization and Optimization Study (P&O Study) to develop a long-term salinity strategy for the Central Valley. On 20 April 2021, the Discharger submitted a Notice of Intent to comply with the Salt Control Program. The Discharger elected to participate in the P&O Study and was issued an identification number (**CV-SALTS ID: 2653**). This Order sets a **Salinity Action Level of 2,000 mg/L for TDS**. The limit is based on potential impacts to groundwater, an evaluation of the Discharger's wastewater treatment system and effluent quality, and management practices.

107. The Nitrate Control Program is a prioritized program for addressing legacy and ongoing nitrate impacts to the region's waters. The Facility is within Groundwater Basin 5-022.03 (San Joaquin Valley, Turlock Sub-Basin), which is a Priority 1 Basin. The Board issued Notices to Comply to dischargers in Priority 1 Basins in May 2020. These notices provided dischargers with a choice to participate in an individual permitting approach (Pathway A) or in a collective permitting approach (Pathway B). Under the collective approach, dischargers jointly form "Management Zones" that fulfill the requirements of the Nitrate Control Program. In response to the Notice to Comply, the Discharger selected **Pathway B and joined the Modesto-Valley Water Collaborative Management Zone**. As stated in Resolution R5-2020-0057 (*Revisions to the Amendments to the Water Quality Control Plans for the Sacramento River and San Joaquin River Basins and the Tulare Lake Basin to Incorporate a Central Valley-Wide Salt and Nitrate Control Program*), if a permitted discharger would like to change the selected nitrate pathway that they have elected, the Central Valley Water Board will consider approval of this change on a case-by-case basis (see the Resolution for more details).

108. Under the Nitrate Control Program, dischargers that cause or contribute to nitrate pollution in groundwater must qualify for a limited term "exception" from meeting nitrate limits. Compliance time schedules must be as short as practicable and are

not to exceed 35 years. The Central Valley Water Board will only grant exceptions upon finding that all elements of the Board's Exceptions Policy are met. For nitrate, the Exceptions Policy dictates that exceptions will not be considered unless an adequate supply of clean, safe, reliable and affordable drinking water is available for those who have been adversely affected by the non-compliant discharge.

109. Management Zones in Priority 1 Basins were required to submit Management Zone Implementation Plans (MZIPs). The Valley Water Collaborative submitted MZIPs for the Turlock- and Modesto Subbasins on 5 September 2023. The MZIPs were deemed complete by the Central Valley Water Board's Executive Officer. The MZIPs contain a proposal for how dischargers within the Turlock and Modesto Subbasins will meet the requirements of the Nitrate Control Plan and the Exceptions Policy.

110. To meet the requirements of the Nitrate Control Plan, the Turlock- and Modesto MZIPs includes sector-based Nitrate Reduction Programs, including one for Non-15 Program dischargers (i.e., dischargers of nonhazardous, nondesignated waste to land (see Wat. Code, § 13173)), like the Discharger. The MZIPs propose that the Discharger prepare and submit a facility-specific Nitrate Reduction Work Plan that would characterize the facility's impact on groundwater, quantify the facility's nitrate loading to the Upper Zone of groundwater, estimate the necessary improvements to the facility's discharge to comply with the Management Zone's Groundwater Protection Target(s) and/or other developed compliance metrics, and provide an implementation schedule that will ensure that the facility complies with the Nitrate Control Program.

111. The Turlock- and Modesto Subbasin MZIPs propose to meet the requirements of the Exceptions Policy by, among other things, continuing an interim drinking water program that performs outreach to residents potentially affected by nitrate contamination, offers free well testing for nitrate, and provides free replacement water to households whose wells are found to exceed the nitrate drinking water standard.

112. The MZIPs will serve as the basis for permit amendments for all dischargers in the respective Management Zones. The Central Valley Water Board tentatively plans to consider a package of permit amendments for all dischargers in the Modesto Management Zone in a single permitting action, where the Central Valley Water Board would also make findings as to whether the requirements of the Exception Policy are met by the proposals in the MZIPs. In the interim, the Discharger is subject to a Conditional Prohibition that requires that the discharger continue to participate in funding and implementing the drinking water programs described in the MZIPs.

113. As these strategies are implemented, the Central Valley Water Board may find it necessary to modify the requirements of these WDRs. As such this Order may be amended or modified to incorporate any newly applicable requirements to ensure that the goals of the Salt and Nitrate Control Programs are met.

Compliance with Antidegradation Policy

114. State Water Board Resolution 68-16, *Statement of Policy with Respect to Maintaining High Quality Waters in California* (Antidegradation Policy) prohibits the Central Valley Water Board from authorizing degradation of “high quality water” unless it is shown that such degradation: (1) will be consistent with the maximum benefit to the people of California; (2) will not unreasonably affect beneficial uses, or otherwise result in water quality less than as prescribed in applicable policies; and (3) is minimized through WDRs requiring dischargers to implement the best practicable treatment or control (BPTC).

115. The Antidegradation Policy applies when an activity discharges to high quality waters and will result in some degradation of such high-quality waters. "High quality waters" are defined as those waters where water quality is more than sufficient to support beneficial uses designated in the Basin Plan. Whether a water is a high-quality water is established on a constituent-by-constituent basis, which means that an aquifer can be considered a high-quality water with respect to one constituent, but not for others (SWRCB Order No. WQ 91-10). If the activity will not result in the degradation of high-quality waters, the Antidegradation Policy does not apply, and the dischargers need only demonstrate that it will use "best efforts" to control the discharge of waste.

116. There are no groundwater monitoring wells located at the Sutter Plant. The only discharge to land that occurs at the Sutter Plant is the drying of solids in the unlined sludge drying beds. Based on the shallow groundwater data reported in groundwater samples collected via Geoprobe sampling at the sludge drying beds, discharges to these beds have likely contributed to the nitrate as nitrogen groundwater pollution. Groundwater in the area surrounding the Sutter Plant has not been identified as high-quality groundwater in regards to nitrate as nitrogen, and therefore, the Antidegradation Policy is not applicable. The Sutter Plant is located in a Priority 1 Basin under the Nitrate Control Program and the Discharger has joined a local management zone (for more information on the Nitrate Control Program, see the findings in the Salt and Nitrate Control Program section beginning with Finding 105).

    The drying beds are scheduled to be relocated to the Jennings Plant by 2035. The closure of the sludge drying beds will eliminate the threat to groundwater from discharges at the Sutter Plant (see Provision M.2.e).

117. The Discharger has monitored groundwater at the Jennings Plant and Modesto Ranch since 2000. Compliance with the Antidegradation Policy is therefore based on available groundwater data.

118. For the purposes of this Order, constituents in the effluent from this Facility with the potential to degrade groundwater and affect beneficial use includes salts (represented by EC and TDS), total nitrogen, iron, manganese, and arsenic.

119. Table 15 presents a comparison of annual average flow weighted effluent concentrations for select constituents to average concentrations in groundwater.

Upgradient wells used for averaging purposes include data from 2019 through 2023 for MW-4; MW-4D; MW-6; MW-7; MW-10; MW-11D; MW-14; and MW-14D. Downgradient wells include MW-1; MW-2; MW-2D; MW-3; MW-9; MW-12; MW-12D; MW-13D; MW-15; and MW-15D.

Flow weighted annual average concentrations were calculated for:

- Effluent data from sample location IRR-FOR, which represents domestic wastewater and includes Can Seg wastewater that is sent through the Sutter and Jennings Plants during the non-cannery season.
- Effluent data from sample location CAN-SEG, which represents Can Seg wastewater discharged directly to the LAAs following screening.

NA = not available

Table 14. Antidegradation Summary

Constituent	Year	Flow Weighted Average Effluent Concentrations		Upgradient Groundwater Quality	Downgradient Groundwater Quality	WQOs/ Goals
		IRR-FOR	CAN-SEG			
EC (µhmos/cm)	2022	1,565	1,515	1,490	1,625	900
	2023	1,579	1,539			
TDS (mg/L)	2022	918	1,627	984	937	500
	2023	1,050	1,342			
Total Nitrogen (mg/L)	2022	NA (note 1)	43	NA (note 1)	NA (note 1)	NE
	2023	NA (note 1)	40			
Nitrate +nitrite (mg/L)	2022	0.17	NA (note 1)	32	5	10
	2023	0.17	NA (note 1)			
Total Coliform (MPN 100/mL)	NA	NA	NA	4.1	4.2	2.2
Iron (µg/L)	NA	NA	NA	371	6,399	300
Manganese (µg/L)	NA	NA	NA	217	1,803	50
Arsenic (µg/L)	NA	NA	NA	5.3	18.4	10

Note 1: The Information Sheet provides a summary of the type of nitrogen data available for each sample location.

120. As shown in the table, groundwater beneath the Jennings Plant and Modesto Ranch is considered poor-quality with regard to salts (represented by EC and TDS), nitrate+nitrite, total coliform, iron, and manganese because concentrations in groundwater exceed actual and potential WQOs for these constituents in upgradient wells. Therefore, the Antidegradation Policy does not apply with respect to these constituents. A discussion of the characterization of these constituents is included in the Information Sheet.

121. **Arsenic**. Concentrations of dissolved arsenic in upgradient groundwater have been reported at concentrations less than the WQO; therefore, groundwater quality in the area is considered high-quality water with respect to arsenic and the Antidegradation Policy applies.

    Typical domestic wastewater is not expected to contain significant amounts of arsenic. Influent and effluent wastewater were not analyzed for dissolved arsenic.

    Concentrations of arsenic in upgradient groundwater are generally less than the WQO of 10 µg/L. Concentrations in downgradient groundwater are higher than upgradient and exceed the WQO. Arsenic can be present in groundwater as a result of anoxic conditions, which can occur in saturated soils where excessive organic material is present. An anoxic environment can solubilize naturally occurring metals in soil, such as arsenic. Excessive BOD_5 in the applied water can contribute to anoxic conditions. The Facility uses the FFRs and treatment ponds to reduce BOD_5 and minimize organic loads to the LAAs. Concentrations of BOD_5 in influent and effluent wastewater are summarized below.

Table 15. BOD_5 Concentration Comparison

Average Concentration (2019-2023	Influent (Sutter Plant)	Influent (Cannery Wastewater)	Effluent (IRR-FOR location)	Effluent (CAN-SEG location)
BOD_5 (mg/L)	423	2,260	20	994

Can Seg wastewater contains concentrations of BOD_5 that are significantly higher than concentrations in the domestic influent wastewater, indicating the majority of BOD_5 in the effluent is associated with the Can Seg wastewater. When not managed properly, high BOD_5 concentrations can result in odor issues and create anoxic environments where metals could mobilize and impact groundwater quality.

The presence of metals in groundwater may also be the result of corrosion of the sewer system (Finding 83).

In addition to the discharges to land and ponds, as reported in the RWD, elevated concentrations of metals have been reported in monitoring wells owned by others in the area, indicating that the Discharger's operations are not the only contributor to local metals in groundwater.

For the protection of groundwater, this Order sets a BOD_5 loading limit to avoid excessive anoxic soil conditions and impacts to groundwater. The MRP will require the Discharger to conduct effluent arsenic monitoring, and the Discharger will be required to continue to monitor groundwater for dissolved arsenic. If arsenic concentrations show increasing concentration trends in groundwater, the BOD_5 effluent limit may be re-evaluated at that time.

122. Although this Order authorizes limited degradation of receiving groundwater with respect to arsenic, such degradation will not unreasonably threaten present and anticipated beneficial uses or result in groundwater quality that exceeds applicable WQOs.

123. The Discharger implements, or will implement, as required by this Order the following measures, which the Central Valley Water Board has determined constitute BPTC. These measures will minimize the extent of water quality degradation resulting from the Facility's discharges:

    a. Influent screening and grit removal to remove as much of the inert influent solids as possible, minimizing non-biodegradable content in the biosolids effluent volume.

    b. Treatment of biosolids in anaerobic digesters and treatment ponds followed by drying and land application, minimizing pathogen density, and minimizing free water.

    c. Treatment of biosolids to meet the USEPA's Class A and/or Class B criteria for land application (40 C.F.R. §503).

    d. Rotation of fields receiving biosolids to allow recovery periods between applications.

    e. Use of end-of-pipe mixing to blend segregated Can Seg process water with recycled water to minimize the concentrations of non-nutritive compounds in irrigation water.

    f. Use of closed pipelines (as opposed to open ditches) for the irrigation water distribution system, minimizing losses to groundwater and improving irrigation water distribution for more even application.

    g. Harvests are timed in relation to the intensive hydraulic loading of the canning season.

    h. Grading and tilling the LAAs to ensure efficient irrigation infiltration and to maintain soil quality.

    i. Use of a specialist outside contractor to transport and land-apply biosolids over a period between cropping cycles.

    j. Use of best management practices for land application of effluent and biosolids and use of Can Seg process water based on the California League of Food Processors' *Manual of Good Practice for Land Application of Food Processing/Rinse Water* (*Manual of Good Practice*).

k. Nitrogen loading from effluent, blended effluent, and biosolids, as well as other fertilizers is done at a calculated rate, specific to the nitrogen uptake for the crop to be planted, determined based on agronomic recommendations for proper crop production and residual nutrients from previous applications.

l. Maintenance of setback distances for the Class B biosolids staging, short-term storage, and application areas, as defined in Section G, Biosolids Discharge Specifications, of this Order.

m. Maintenance of setback distances for irrigation operations as defined per the Land Application Area Specifications in Section J of this Order.

n. All LAAs include berms and tailwater collection to collect runoff from the LAAs.

o. Implementation of specific Discharger-developed management plans to improve effluent management and quality and minimize potential threats to groundwater, including:

   i. *Industrial Discharger Pretreatment Program*

   ii. *Ranch Management Plan*, incorporating an irrigation management plan

   iii. *Nutrient Management Plan* (NMP), which included a nitrogen management plan. The Discharger's lessees prepare NMPs each year to inform the Discharger of the crops that will be grown, which then allows the Discharger to determine the total nitrogen demand for the LAAs.

124. Degradation of groundwater by some typical waste constituents released with discharge from the Facility after effective source reduction, treatment and control, and considering the best efforts of the Discharger and magnitude of degradation. Generally, limited degradation of groundwater by some of the typical constituents of concern (e.g., EC and nitrate) released with the discharge from a municipal wastewater utility after effective source control and treatment, is consistent with 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 a community otherwise reliant on numerous concentrated individual wastewater systems, and the impacts on water quality will be substantially less. The degradation will not unreasonably affect present and anticipated beneficial uses of groundwater or result in water quality less than water quality objectives.

125. The Facility contributes to the economic prosperity of the region by providing necessary services and employment for the local community; by providing incomes for numerous aligned businesses; and by providing a tax base for local and county governments.

126. Based on the foregoing, the adoption of this Order is consistent with the State Water Board's Antidegradation Policy.

California Environmental Quality Act

127. In accordance with the CEQA (Pub. Res. Code § 21000 et seq.), on 28 January 2020, the Discharger certified a final Environmental Impact Report (EIR) for the Modesto Wastewater Master Plan (MWMP), which encompasses the waste management and land application activities authorized under this Order. The Central Valley Water Board was consulted in the development of the EIR.

128. The EIR is conclusively presumed compliant with CEQA for use by the Central Valley Water Board, as a responsible agency, and no further review is required at this time (Cal. Code Regs., tit. 14, § 15162).

129. To the extent that this Order authorizes any physical changes to the environment that were not evaluated in the EIR, this Order is exempt from CEQA pursuant to California Code of Regulations, title 14, section 15301, because it authorizes negligible or no expansion of use at an existing facility.

130. The Discharger, as lead agency, is currently performing a CEQA evaluation of potential environmental impacts that could arise from its removal of the date restriction for land application of biosolids at the Modesto Ranch. A date restriction was included in Order 94-030 due to the presence of Aleutian Canadian geese, a special status species. Since the adoption of Order 94-030 in 1994, the Aleutian Canada goose is no longer identified as a special-status species. If CEQA is adopted that removes the date restriction of biosolids application, the time restriction is no longer applicable and the Discharger can land-apply biosolids during this time period, as permitted under these WDRs. (see Provision M.2.h).

Other Regulatory Considerations

131. These WDRs regulate a facility that may impact a disadvantaged community and/or tribal community and includes an alternative compliance path that allows the Discharger time to come into compliance with water quality objectives (i.e., salinity and nitrate). The Discharger has selected the Alternative Permitting Approaches for the Salt and Nitrate Control Programs, which provide performance-based approaches for achieving compliance with salinity and nitrate limits through implementation of specific requirements (i.e., support facilitation and completion of the Salinity P&O Study and Nitrate Management Zone Implementation Plans). The Central Valley Water Board has satisfied the outreach requirements set forth in Water Code section 189.7 by conducting outreach in disadvantaged and tribal communities that may be affected by the discharges authorized by this Order. Pursuant to Water Code section 13149.2, the Central Valley Water Board reviewed readily available information and information raised to the Board by interested persons concerning anticipated water quality impacts in disadvantaged or tribal communities resulting from adoption of these WDRs. The Board also considered

environmental justice concerns within the Board's authority and raised by interested persons with regard to those impacts.

132. The Central Valley Water Board anticipates that the issuance of these WDRs will result in water quality impacts within the scope of the Board's authority. Specifically, these WDRs authorize the continued discharge of wastewater with salinity concentrations above applicable water quality objectives. The Central Valley Water Board has identified the following measures available and within the scope of its authority to address the impacts of the Facility to the nearby disadvantaged communities in Stanislaus County: 1) active participation in the P&O Study and compliance with the Salt Control Program, 2) compliance with a salinity limitation, and 3) preparation and implementation of Salinity Evaluation and Minimization Plan to establish goals for potentially reducing salinity concentrations in the Facility's discharge.

133. 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 subject to Water Code section 106.3, as it does not revise, adopt or establish a policy, regulation or grant criterion, (see § 106.3, subd. (b)), it nevertheless promotes the policy by requiring discharges to meet MCLs for drinking water, which are designed to protect human health and ensure that water is safe for domestic use.

Threat-Complexity Rating

134. Based on the threat and complexity of the discharge, the facility is determined to be classified as 2B as defined below:

    a. 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.

    b. Complexity Category "B" includes any discharger not included in Category A with either (1) physical, chemical, or biological treatment systems (except for septic systems with subsurface disposal), or(2) any Class II or Class III waste management units.

Title 27 Exemption

135. This Order, which prescribes WDRs for discharges of undisinfected secondary treated wastewater and biosolids from a municipal treatment plant, along with industrial food-processing process water from cannery operations, is exempt from the prescriptive requirements of California Code of Regulations, title 27 (Title 27), section 20005 et seq. (See Cal. Code Regs., tit. 27, § 20090, subd. (b).)

Storm Water

136. Because the Discharger captures stormwater runoff from the Jennings Plant site for reuse as irrigation water, coverage under NPDES Order No. CAS000001, *General Permit for Storm Water Discharges Associated with Industrial Activities* (General Storm Water Permit) is not required at this time for the Jennings Plant. However, discharge of storm water runoff from the Sutter Plant is regulated under the General Storm Water Permit. LAAs are not subject to the requirements of the General Storm Water Permit.

Sanitary Sewer Overflows

137. Sanitary Sewer Overflows (SSOs), which typically consist of a mixture of domestic and commercial wastewater, often contains pathogenic organisms, toxic pollutants, nutrients, oxygen demanding compounds, oil and grease, suspended solids, and other pollutants. When an SSO results in a discharge to surface water, it can cause temporary exceedances of WQOs, pose a threat to public health, adversely affect aquatic life, and impair recreational use and aesthetic enjoyment of surface waters in the area. The most common causes for SSOs are grease blockages, root blockages, debris blockages, sewer line flood damage, manhole structure failures, vandalism, pump station mechanical failures, power outages, storm or groundwater inflow/infiltration, lack of capacity, and/or contractor-caused blockages.

138. On 6 May 2022, the State Water Board adopted the SSO General Order, under which all public agencies that own or operate a sanitary sewer system with a total system length of more than one mile must enroll. The Discharger is enrolled under the SSO General Order.

Groundwater Wells

139. The Department of Water Resources sets standards for the construction and destruction of groundwater wells (hereafter DWR Well Standards), as described in California Well Standards Bulletin 74-90 (June 1991) and Water Well Standards: State of California Bulletin 94-81 (December 1981). These standards, and any more stringent standards adopted by the state or county pursuant to Water Code section 13801, apply to all monitoring wells used to monitor the impacts of wastewater storage or disposal governed by this Order.

140. Statistical data analysis methods outlined in the USEPA's Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance (Unified Guidance) are appropriate for determining compliance with the Groundwater Limitations of this Order. Depending on the circumstances, other methods may also be appropriate.

Scope of Order

141. This Order is strictly limited in scope to those waste discharges, activities, and processes described and expressly authorized herein.

142. Pursuant to Water Code section 13264, subdivision (a), the Discharger is prohibited from initiating the discharge of new wastes (i.e., other than those described herein), or making material changes to the character, volume and timing of waste discharges authorized herein, without filing a new RWD per Water Code section 13260.

143. Failure to file a new RWD before initiating material changes to the character, volume or timing of discharges authorized herein, shall constitute an independent violation of these WDRs.

144. This Order is also strictly limited in applicability to those individuals and/or entities specifically designated herein as “Discharger,” subject only to the discretion to designate or substitute new parties in accordance with this Order.

Procedural Matters

145. All the above and the supplemental information and details in the attached Information Sheet (incorporated herein), were considered in establishing the following conditions of discharge.

146. The Discharger, interested agencies, and interested persons were notified of the Central Valley Water Board’s intent to prescribe the WDRs in this Order, and provided an opportunity to submit their written views and recommendations at a public hearing. (Wat. Code, §13167.5.)

147. At a public meeting, the Central Valley Water Board heard and considered all comments pertaining to the discharges regulated under this Order.

148. The Central Valley Water Board will review and revise the WDRs in this Order as necessary.

REQUIREMENTS

IT IS HEREBY ORDERED, pursuant to Water Code section 13263, that WDRs Orders 94-030 and 99-112 are rescinded (except for enforcement purposes, and pursuant to Water Code sections 13263 and 13267, the City of Modesto Water Quality Control Facility, its agents, employees, and successors shall comply with the following..

A. Standard Provisions

1. Except as specifically provided below, the Discharger shall comply with all applicable provisions of the attached *Standard Provisions and Reporting Requirements for Waste Discharge Requirements*, 1 March 1991 (SPRRs).

B. Discharge Prohibitions

1. During Phase I of the Salt Control Program, the Discharger is prohibited from discharging salts at concentrations exceeding the salinity numeric value of 700 µmhos/cm (as a monthly average) unless the Discharger is implementing the Phase I requirements of the Salt Control Program (i.e., fully participation in the P&O Study).

2. The Discharger is prohibited from discharging nitrate and other forms of nitrogen speciation (e.g., total inorganic nitrogen and total kjeldahl nitrogen) unless the Discharger is implementing the requirements of the Nitrate Control Program.

3. Except as expressly authorized under a separate permit, the discharge of wastes to surface waters or surface water drainage courses, including irrigation ditches outside of control of the Discharger, is prohibited.

4. Discharge of waste classified as “hazardous”, as defined in Title 22, section 66261.1 et seq., is prohibited.

5. Except as authorized pursuant to Section E.2 of the SPRRs, treatment system bypass of untreated or partially treated waste is prohibited. For the purposes of Standard Provision E.2, Can Seg Line diversion from treatment is not a “treatment bypass” because the segregated process water does not contain domestic waste. The discharge of composting wastewater into the Jennings Plant that may be bypassing a portion of the treatment system shall only be allowed under this Order if it can be demonstrated that the quality of the composting wastewater is not considered a material change in the discharge compared to the quality of the current land-applied wastewater and the quality of the current groundwater can be maintained (see Provision M.2.g).

6. Discharge of waste at a location or in a manner different from that described in the Findings is prohibited.

7. Discharge of toxic substances into any wastewater treatment system or LAA such that biological treatment mechanisms are disrupted is prohibited.

8. Application of solids from preliminary treatment at the Sutter Plant (e.g., influent screening) to the LAAs is prohibited.

9. Application of biosolids shall be confined to the designated use areas (Modesto Ranch LAAs).

10. The discharge of biosolids is prohibited, except as allowed for authorized storage, processing, and land application.

11. Irrigation water or wastewater shall not be applied to LAAs if standing water or saturated conditions are observed.

12. Application of biosolids at rates in excess of the nitrogen requirements of the crops/vegetation, or at rates that would cause the excess nitrogen or metals to leach to groundwater is prohibited.

13. Storm water and or irrigation water runoff shall not be allowed to flow from LAAs until at least 15 days after the last irrigation of recycled water or the last application of Class B biosolids, unless biosolids have been incorporated into the soil within 24 hours of application.

13. Recycled water not meeting the standards of undisinfected secondary recycled water as defined in Title 22, section 60301.900 shall not be land applied at the Modesto Ranch LAAs.

C. Flow Limitations

1. Effluent flows, measured at location EFF-003 shown on Attachment E, to the LAAs from the Jennings Plant and the Can Seg Line combined shall not exceed the limits in Table 16

Table 16. Effluent Flow Limitations

Flow Measurement	Flow Limit
Total Annual Flow (as determined by the total flow for the calendar year)	5,300 MG
Monthly Average Daily Irrigation Flow (including Can Seg flows diverted around the Jennings Plant to the Modesto Ranch)	25 MGD

D. Salinity Action Level

1. To comply with the Salt Control Program, the Dischargers selected the Alternative Salinity Permitting Approach (i.e., participation in the P&O Study). Therefore, these WDRs establish a **Salinity Action Level of 2,000 mg/L** at Monitoring Location EFF-003 as a flow-weighted annual average for TDS. The flow-weighted average TDS concentration is based on total flow and concentration for each source of water discharged, including recycled water from the Jennings Plant and the blended effluent from the Jennings Plant and Can Seg wastewater.

   As part of the Annual Monitoring report required per **MRP R5-2025-XXXX**, the Discharger shall evaluate the flow-weighted annual average effluent TDS

concentration (monitored at EFF-003) to the Salinity Action Level. If the Facility's discharge exceeds the Salinity Action Level, the Discharger shall submit a Salinity Action Level Report by 1 March of the year following the exceedance of the Salinity Action Level. The Salinity Action Level Report shall, at a minimum, include the following:

a. An evaluation of the Discharger's salinity effluent levels. This evaluation shall discuss any changes to the source water for the City, any increased water conservation efforts implemented within the WQCF or canneries, and any other changes to Discharger's operations that could have contributed to the increased salinity concentrations.

b. If additional time is needed to investigate the source(s) of the salinity in the Facility's discharge, the Salinity Action Level Report shall include a detailed work plan describing what actions the Dischargers will conduct (with completion dates) to investigate the source(s) of salinity and report its findings to the Central Valley Water Board. The findings from the investigations shall be submitted to the Central Valley Water Board no later than **October 1st** of the year following the exceedance of the Salinity Action Level.

c. The Salinity Action Level Report shall evaluate the potential impact the increased salinity concentrations could have on underlying groundwater and downgradient users. If additional time is needed for this evaluation, the Salinity Action Level Report shall propose a submittal date (**no later than October 1st** of the year following exceedance of the Salinity Action Level).

E. Mass Loading Limits

1. The total nitrogen loading from the discharge, including effluent, effluent blended with Can Seg wastewater, biosolids, and fertilizer, to the LAAs, as determined by the methods described in **MRP R5-2025-XXXX**, shall not exceed **crop demand.**

2. The maximum BOD_5 loading limit to the LAAs, as calculated as a cycle average as determined by the methods described in **MRP R5-2025-XXXX**, shall not exceed **200 lb/ac/day (monthly average)**.

3. Biosolids shall not be applied in amounts exceeding the Risk Assessment Acceptable Soil Concentration, as shown below.

Table 17. Cumulative Loading Rate Limits

Constituent	Cumulative Limit (lb/ac)
Arsenic	37
Cadmium	35

Constituent	Cumulative Limit (lb/ac)
Copper	1,338
Lead	268
Mercury	15
Nickel	375
Selenium	89
Zinc	2,498

F. Discharge Specifications

1. Domestic wastewater shall be treated to undisinfected secondary recycled water standards in accordance with Title 22 section 60301, prior to discharge to the LAAs.

2. No waste constituent shall be released, discharged, or placed where it will cause a violation of the Groundwater Limitations of this Order.

3. Wastewater treatment, storage, and disposal shall not cause conditions of pollution or nuisance (see Wat. Code § 13050).

4. The discharge shall remain within the permitted waste treatment and or containment structures and LAAs at all times.

5. The Discharger shall operate all systems and equipment to optimize the quality of the discharge.

6. The Discharger shall design, construct, 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 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.

7. 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.

8. Public contact with wastewater and Class B biosolids at the WQCF shall be prevented through use of fences, signs, or acceptable alternatives.

9. Objectionable odors shall not be perceivable beyond the limits of the property where the waste is generated, treated, and/or discharged at an intensity that creates or threatens to create nuisance conditions that affects an entire community or neighborhood, or any considerable number of persons.

10. As a means of discerning compliance with Discharge Specification 9, the dissolved oxygen (DO) content in the upper one foot of any of the facultative ponds in use shall not be less than 1.0 mg/L for three consecutive sampling events. If DO concentrations are less than 1.0 mg/L for three consecutive sampling events and objectionable odors are perceivable beyond the property limits, the Discharger shall report the findings to the Central Valley Water Board in writing within 10 days and shall include a specific plan to resolve the odors within 30 days.

11. 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.

12. 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.

13. The Discharger shall monitor solids accumulation in the facultative ponds at least every three (3) years, beginning in **2026**, and shall periodically remove biosolids as necessary to maintain adequate treatment capacity. The Discharger shall monitor solids accumulation in the recirculation ponds at least every three (3) years, beginning in **2029**, and shall periodically remove biosolids as necessary to maintain adequate treatment capacity. Specifically, if the pond is in service and the estimated volume of sludge in the digestion pit of a facultative pond exceeds 80 percent of the calculated digestion pit

capacity, the Discharger shall initiate a cleanout of the digestion pit within 18 months after the date of the estimate. If the estimated volume of solids in any Recirculation Channel exceeds 30 percent of the channel design volume based on the measured depth to the solids surface, the Discharger shall initiate cleanout of that Recirculation Channel within 18 months after the date of the estimate.

14. On or about **1 October** of each year, available capacity shall at least equal the volume necessary to comply with Discharge Specifications F.6 and F.7.

G. Biosolids Discharge Specifications

For the purposes of this Order, biosolids refers to sewage sludge that has been treated and tested and shown to be capable of being beneficially and legally used as a soil amendment for agriculture, silviculture, horticulture, and land reclamation activities specified under 40 C.F.R. part 503.

1. Biosolids shall comply with either Class A or Class B pathogen reduction standards as listed in 40 C.F.R. 503. Additionally, all biosolids meeting Class A standards either shall not have a maximum fecal coliform concentration greater than 1,000 MPN per gram of biosolids; or the density of salmonella, sp. shall not be greater than 3 MPN per 4 grams.

2. If Class B biosolids are applied to a site where the soil will be tilled, biosolids shall be incorporated within 24 hours after application.

3. Biosolids may not be applied between 1 October and 1 May each year due to the classification of the Aleutian Canada goose as a special-status species. If the CEQA determination regarding the biosolids application time restriction for the Aleutian Canada goose is no longer required, the time restriction shown in this requirement will no longer be applicable (see Provision M.2.h).

4. Class B biosolids with less than 75 percent moisture shall not be applied during periods when surface wind speed exceeds 25 miles per hour as determined by the nearest calibrated regional weather stations (e.g., airport, California Irrigation Management Information System or CIMIS).

5. Biosolids distinguished as Class B in 40 C.F.R. part 503 must comply with the following:

    a. The discharge of tail water or field runoff is prohibited within 30 days after application of biosolids for areas where biosolids have not been incorporated into the soil and where there is not a minimum of 33 feet of unmowed grass or similar vegetation bordering the application area and along the path of runoff to prevent movement of biosolids particles from the application site.

b. After an application of biosolids in any field, the Discharger shall ensure the following:

1. For at least 30 days

i. Public access to the application sites is restricted.

ii. Food, feed, and fiber crops are not harvested.

2. For at least 12 months

i. Public access to the site is restricted for sites with a high potential for public exposure.

3. For at least 14 months

i. Food crops with harvested parts that touch the biosolids/soil mixture and are totally above the land surface are not harvested.

4. For at least 20 months

i. Food crops with harvested parts below the land surface are not harvested when the biosolids remain exposed on the surface for four months or longer prior to incorporation.

5. For at least 38 months

i. Food crops with harvested parts below the land surface are not harvested when the biosolids remained exposed on the ground surface for less than four months prior to incorporation into the soil.

6. All biosolids subject to this Order shall comply with one of the applicable vector attraction reduction requirements specified in 40 C.F.R. part 503.33.

7. Class B biosolids staging, short-term storage, and application area setbacks shall be at least as tabulated in Table 18.

Table 18. Setback Requirements for Class B Biosolids Staging, Short-term Storage, and Application Areas

Setback Definition	Minimum Setback (ft)
Edge of area to property lines, except when property lines are adjacent to properties also using biosolids as a soil amendment	10
Edge of area to domestic water supply wells	500 (except were designated in note 1)

Setback Definition	Minimum Setback (ft)
Edge of area to non-domestic water supply wells	100 (except were designated in note 2)
Edge of area to public roads	20
Edge of area to surface waters, including wetlands, creeks, non-wastewater ponds, lakes, underground aqueducts, and marshes	33
Edge of area to occupied non-agricultural buildings and off-site residences	500 (except where designated in note 3)
Edge of area to domestic water supply reservoir	400
Edge of area to any domestic surface water supply intake	2,500

Note 1: The minimum required setback from domestic water supply wells is 500 feet, with the exception of the existing potable water well owned by and under the control of the Discharger at the Jennings Plant site. This well is at least 150 feet from the Jennings Plant biosolids drying and staging area and has a sanitary seal from ground surface to 375 feet bgs, with screen extending from 382 to 472 feet bgs.

Note 2: The minimum required setback from non-domestic water supply wells is 100 feet, with the exception of any existing non-potable water well owned by and under the control of the Discharger on the Jennings Plant site.

Note 3: The minimum required setback from non-agricultural buildings and off-site residences is 500 feet but, based on WDRs Order 94-030, the historical minimum setback distance of 100 feet from existing non-agricultural buildings and existing residences is allowed for existing biosolids activities on existing LAAs. New biosolids activities (e.g., new LAAs, new biosolids drying, or new biosolids staging areas) must meet the 500-foot setback requirement.

8. Class B biosolids shall be staged, stored, and applied in accordance with this Order, and in a manner that controls and minimizes windblown material and biosolids movement offsite.

9. Sites for the storage of Class B biosolids shall be located, designed, and maintained to restrict public access to the biosolids.

10. Any proposed change in biosolids use or disposal practice from a previously approved practice shall be reported to the Executive Officer and USEPA Regional Administrator at least 90 days in advance of the change.

H. Biosolids Storage and Transportation Specifications

1. All biosolids having a water content that is capable of leaching liquids shall be transported in leak proof vehicles.

2. Each biosolids transport driver shall be trained as to the nature of its load and the proper response to accidents or spill events and shall carry a copy of an approved spill response plan.

I. Recycled Water Specifications

For the purpose of this Order, “Use Area" means an area with defined boundaries where recycled water treated to meet Title 22 standards is used or discharged, and is synonymous in this Order with LAAs. The following recycled water specifications apply to the LAAs at Modesto Ranch.

1. No physical connection shall exist between recycled water piping and any domestic or irrigation water supply well that does not have an air gap or reduced pressure principle device.

2. Notwithstanding the following requirements, the production, distribution, and use of recycled water shall conform to a Title 22 Engineering Report prepared pursuant to Title 22 section 60323 and approved by DDW.

3. An engineering report must be submitted to DDW and the Central Valley Water Board for review and approval of any future use of recycled water or expansion of existing irrigation areas beyond those described in the approved Title 22 Engineering Report(s).

4. Recycled water shall be at least undisinfected secondary recycled water as defined in Title 22, section 60301.900.

5. Recycled water shall be used in compliance with Title 22, section 60304. All crops irrigated with undisinfected secondary recycled water shall be processed in accordance with Title 22, section 60304, subdivision (d)(6). DDW shall be informed of any changes to the irrigation or harvesting, of any crops irrigated with recycled water and/or changes to the pathogen-destroying treatment process to determine if an updated Title 22 Engineering Report is required.

6. The Discharger shall designate a use area supervisor responsible for the use and management of recycled water within the use area including but not limited to implementation of routine inspections, reporting, and distribution of harvested crops as well as training for all farmworkers on safe handling procedures for recycled water use.

7. No irrigation with, or impoundment of, undisinfected secondary recycled water shall take place within 150 feet of any domestic water supply well, with the exception of the Jennings Plant domestic supply well.

8. In accordance with Title 22 section 60310(d), the use of recycled water shall comply with the following:

    i. Any irrigation runoff shall be confined to the recycled water use area, unless the runoff does not pose a public health threat and is authorized by the regulatory agency.

    ii. Spray, mist, or runoff shall not enter dwellings, designated outdoor eating areas, or food handling facilities.

    iii. Drinking water fountains shall be protected against contact with recycled water spray, mist, or runoff.

9. The perimeter of the LAA shall be graded to prevent runoff onto adjacent properties not owned or controlled by the Discharger and to prevent ponding along public roads or other public areas.

10. Any discharge of untreated or partially treated wastewater to the use area shall be reported immediately to the Central Valley Water Board, DDW, and local health official, and operations shall cease until the issue is resolved.

11. All use areas where recycled water is used that are accessible to the public shall be posted with signs that are visible to the public, in a size no less than 4 inches high by 8 inches wide, that include the following wording:

"RECYCLED WATER - DO NOT DRINK"

Signs must be placed in conspicuous places, including at each entrance to the recycled water irrigated area. Alternative signage and wording or an educational program may be acceptable, upon DDW approval, provided the Discharger demonstrates to DDW that the alternative approach will assure an equivalent degree of public notification.

12. The installation of recycled water pipeline(s) at the use site area(s) must be in accordance with the separation criteria pursuant to the Title 22, section 64572.

13. In accordance with Title 22, section 60310, subdivision (i), the recycled water system in irrigated areas must not include hose bibs. Only quick couplers that differ from those used on potable water system can be used.

J. Land Application Area Specifications

For the purposes of this Order, LAAs refer to the discharge areas at Modesto Ranch, as described in the Findings.

1. The Discharger shall ensure that all irrigation water and biosolids are applied and distributed with reasonable uniformity across each LAA field, consistent with good agricultural irrigation and biosolids application practices. The Discharger shall implement changes to the irrigation system and/or

operational practices as needed to ensure compliance with this requirement. The Discharger shall maximize the use of available LAAs to minimize waste constituent loading.

2. Land application of recycled water and blended effluent shall be managed to minimize erosion.

3. The LAAs shall be inspected periodically to determine compliance with the requirements of this Order. If an inspection reveals noncompliance or threat of noncompliance, the Dischargers shall temporarily stop irrigation and implement corrective actions to ensure compliance with this Order.

4. Any runoff of tailwater shall be confined to the LAAs or ponds and shall not enter any surface water drainage course or storm water drainage system that leaves Modesto Ranch.

5. Vegetation, which may include fodder crops, pasture grasses, native grasses and trees, and/or ornamental landscaping, shall be grown in the LAAs. Crops shall be selected based on nutrient uptake, consumptive use of water, irrigation requirements to maximize crop uptake of water and nutrients, and acceptable crops to receive undisinfected secondary recycled water.

6. The Central Valley Water Board recognizes that some leaching of salts is necessary to manage salt in the root zone of the crops. Leaching shall be managed to minimize degradation of groundwater and prevent pollution.

7. Adequate measures shall be taken to prevent the breeding of mosquitoes and other vectors of health significance. Measures may include but are not limited to keeping tailwater (irrigation runoff) ditches essentially free of emergent, marginal, and floating vegetation.

K. Groundwater Limitations

Discharge of waste from any portion of the Facility shall not cause or contribute to groundwater containing constituent concentrations in excess of the concentrations specified below:

1. Contain constituents in concentrations that exceed either the Primary or Secondary MCLs established in Title 22, excluding saline constituents subject to the Salt Control Program.

2. Contain taste or odor-producing constituents, toxic substances, or any other constituents in concentrations that cause nuisance or adversely affect beneficial uses.

L. Solids Disposal Specifications

For the purposes of this Order “sludge” means the 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" means sludge that will not be subject to further treatment at the WQCF; 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 federal and state regulations.

1. Solid waste and residual sludge shall be removed from screens, sumps, ponds, and clarifiers as needed to ensure optimal plant operation, prevent nuisance conditions, and maintain adequate treatment and storage capacity.

2. Solids removed from the bar screens and grit tanks at the Sutter Plant shall be hauled offsite for disposal at a regulated facility.

3. Any handling and storage of residual sludge, solid waste, and biosolids at the WQCF shall be 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.

4. Residual sludge, biosolids and solid waste shall be disposed of in a manner consistent with Title 27 requirements. Removal for further treatment, disposal, or reuse at disposal sites (i.e., landfills, composting sites, soil amendment sites) operated in accordance with valid waste discharge requirements issued by a California Regional Water Quality Control Board will satisfy this specification.

5. Use of biosolids as a soil amendment shall comply with this Order.

6. Use and disposal of biosolids shall comply with the self-implementing federal regulations of 40 C.F.R. part 503, which are subject to enforcement by the USEPA, not the Central Valley Water Board. If during the life of this Order, the State accepts primacy for implementation of 40 C.F.R. part 503, the Central Valley Water Board may also initiate enforcement where appropriate.

7. Any proposed change in solids use or disposal practice shall be reported in writing to the Executive Officer at least 90 days in advance of the change.

M. Provisions

1. The Discharger shall comply with the separately issued **MRP R5-2025-XXXX** and any subsequent revisions thereto. The submittal dates of Discharger self-monitoring reports shall be no later than the submittal date specified in the MRP.

2. The following reports shall be submitted pursuant to Water Code section 13267 and shall be prepared as described in Provision M.4:

    a. At least **120 days** prior to monitoring well abandonment, replacement, or installation, the Discharger shall submit a *Groundwater Monitoring Well*

Installation and Abandonment Workplan. The workplan shall be prepared in accordance with and include the items listed in the first section of Attachment F, *Requirements for Monitoring Well Installation Workplans and Monitoring Well Installation Report*, which is attached hereto. Groundwater monitoring wells shall be designed to yield samples representative of the uppermost portion of the first aquifer underlying the Jennings Plant ponds and the Modesto Ranch LAAs. Any well installed or abandoned shall be so per applicable State of California and Stanislaus County standards.

b. Within **90 days** of completion of any monitoring well installation or abandonment, the Discharger shall submit a *Groundwater Monitoring Well Installation and Abandonment Completion Report*. The report shall be prepared in accordance with, and include the items listed in, the second section of Attachment F: *Requirements for Monitoring Well Installation Workplans and Monitoring Well Installation Report*, which is attached hereto. The report shall describe the installation and development of all new monitoring wells and explain any deviation from the proposed workplan. Upon completion of monitoring well replacement (i.e., abandonment and installation) activities, the Discharger shall submit appropriate documentation including maps, list of updated well names, and well locations justification independently from quarterly monitoring reporting. The Report must include copies of the well abandonment permits issued by the Stanislaus County Environmental Health Department.

c. At least **4 months prior** to acceptance of Class A or Class B biosolids from other facilities, the Discharger shall submit an Offsite Biosolids Management Plan. The plan shall describe the operational procedures regarding biosolids transport, acceptance, testing, land application and storage activities, including procedures for spill prevention and response plans and adverse weather plans (as appropriate). The Discharger shall not accept biosolids from any facility until the plan has been acknowledged by the Regional Board or a 6-month period has passed, whichever occurs first.

d. **By 31 December 2025**, the Discharger shall submit a *Groundwater Monitoring Well Installation Work Plan* that describes the location of proposed wells to be installed around the drying beds at the Sutter Plant. Alternatively, submit a report providing sufficient groundwater data to characterize groundwater conditions beneath the drying beds and surrounding area to justify why monitoring wells are not necessary at this time for further characterization of groundwater quality at the Sutter Plant.

e. **By 1 July 2035**, the Discharger shall no longer discharge sludge to the unlined sludge drying beds at the Sutter Plant.

i. **At least 1 year** prior to initiating construction for new lined sludge drying beds at the Jennings Plant, the Discharger shall submit a *Jennings Plant Sludge Drying Beds Work Plan* that describes the planned construction details for the new lined beds at the Jennings Plant and how the new beds will be considered protective of groundwater.

ii. **Within 60 days after completion of construction of any new sludge drying beds at the Jennings Plant,** the Discharger shall submit a *Sludge Drying Beds Installation Completion Report* that describes that final construction details of the beds.

iii. **At least 90 days** prior to ceasing use of the Sutter Plant sludge drying beds, the Discharger shall submit a *Sutter Plant Sludge Drying Beds Work Plan* that provides details on the planned decommissioning of the beds. The plan shall include a discussion of how residual sludge will be removed.

iv. **Within 60 days after decommissioning of the applicable drying beds at the** Sutter Plant, the Discharger shall submit a *Sutter Plant Sludge Drying Beds Decommissioning Report* that documents when the beds were decommissioned and how it was determined that residual sludge was sufficiently removed.

f. **By 1 July 2027**, the Discharger shall submit a plan to the Central Valley Water Board describing the status of the flood plan designation at the Jennings Plant and measures that will be implemented to address the berms and levees at the Jennings Plant due to their location within the flood plain. The Discharger shall provide annual status updates regarding the evaluation of the flood plain status of the Jennings Plant and any planned and completed measures taken to address the berms/levees for the Jennings Plant and the Modesto Ranch. Annual updates shall be included in the annual monitoring reports required under **MRP R5-2025-XXXX**.

i. **Within 90 days** of after completion of all activities to address the 100-year flood concerns, the Discharger shall submit a report describing the completed changes/upgrades implemented to address flood concerns and why these changes are considered sufficient to protect the WQCF from a 100-year flood event. Upon submittal of the completion report, the updates in the annual monitoring reports are no longer required.

g. **By 31 January 2026**, the Discharger shall submit a report that characterizes the discharge potentially originating from the composting facility and where the discharge enters the WQCF. The report shall contain information on potential impacts to recycled water, effluent, and receiving groundwater quality.

If it is found that the quality of discharge from the composting facility is considered a material change from the current quality of the recycled water/effluent being land applied, the Discharger shall include in the report how the discharge will be addressed, either by not accepting the wastewater from the composting facility, or, what will be implemented to address this discharge to ensure the composting wastewater is similar in quality to the discharge from the Jennings Plant and will not be considered a material change to the discharge.

h. If CEQA is adopted by the lead agency that removes the time restriction for the application of biosolids due to the presence of the Aleutian Canada goose, the Discharger shall submit the CEQA documentation to the Central Valley Water Board. Upon submittal, time restrictions regarding biosolids application due to the presence of the Aleutian Canada goose will no longer be required under this Order. If approval is not adopted, the time restriction for biosolids application will remain in effect in this Order.

3. The Discharger shall submit the technical reports and work plans required by this Order for consideration and shall incorporate comments from the Central Valley Water Board in a timely manner, as appropriate. Unless expressly stated otherwise in this Order, the Discharger shall proceed with all work required by the foregoing provisions by the due dates specified.

4. 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.

5. If the Discharger proposes to receive hauled-in anaerobically digestible material for injection into an anaerobic digester, the Discharger shall notify the Central Valley Water Board and develop and implement standard operating procedures (SOPs) prior to initiation of the hauling. The SOPs shall address material handling (including unloading, screening, and other processing) prior to anaerobic digestion, transportation, spill prevention, and spill response. In addition, the SOPs shall address avoidance of the introduction of materials that could cause interference, pass-through, or upset of the treatment processes, avoidance of prohibited material, vector control, odor control, operation and maintenance, and the disposition of any solid waste segregated from the material prior to its introduction to the digester. The Discharger shall provide training to its staff on the SOPs and shall maintain records for three years of each load received, describing the hauler, waste type, and quantity received. In addition, the Discharger shall maintain records

for a minimum of three years for the disposition of solid waste segregated from the digester feed material and hauled off-site, including the disposal site location and quantity of solids transferred to each location.

6. A discharger whose waste flows have been increasing, or are projected to increase, shall estimate when flows will reach the hydraulic and treatment capacity of its treatment, collection, and disposal facilities. The projections shall be made, based on the previous three year's average dry weather flows, peak flows, and total annual flows as appropriate and be included as part of the annual report. When a projection shows that the capacity of any part of the system may be exceeded within four years, the Dischargers shall notify the Central Valley Water Board.

7. The Discharger shall comply with **MRP R5-2025-XXXX**, which is part of this Order, as well as any subsequent revisions thereto as ordered by the Executive Officer. Submittal dates of Discharger self-monitoring reports shall be no later than the submittal date specified in the operative MRP.

8. The Discharger shall comply with the applicable provisions of the Salt and Nitrate Control Programs adopted in Resolution R5-2018-0034 (as revised per Resolution R5-2020-0057) to address ongoing salt and nitrate accumulation in the Central Valley developed as part of the Central Valley Salinity Alternatives for Long-Term Sustainability (CV SALTS) initiative.

9. The Discharger shall comply with the applicable requirements of the Modesto Valley Water Collaborative Management Zone Implementation Plan (MZIP). This includes collaborating with the Management Zone to collect the necessary monitoring data to refine the MZIP preliminary nitrogen load estimate and support development of the Management Zone Groundwater Protection Values and Groundwater Protection Targets.

10. Per the Turlock and Modesto MZIPs, the Discharger is identified as a Group 5 Discharger. Therefore, **by 1 April 2035**, the Discharger shall submit a *Nitrate Reduction Workplan*. The *Nitrate Reduction Workplan* shall include the following:

    a. Delineation of the Facility's Area of Contribution (AOC)

    b. Quantification of the nitrate loading to the Upper Zone of groundwater underlying the Facility's AOC

    c. Estimation of the Facility's required minimum nitrogen load reduction and improvement in Facility's discharge quality to comply with the Management Zone's Groundwater Protection Target(s) (or alternative individual groundwater protection target applicable to the Facility).

    d. A detailed time schedule to meet the interim deadlines and milestone to ensure compliance with the Nitrate Control Program. At a minimum the time schedule shall include the following:

1. Be as short as practicable and include interim milestones that align with the deadlines specified in the MZIP.
2. Provide completion dates for the following Deadlines, structured as short as practicable, with intervals no more than two to three years:
    i. Interim Deadline #1: Complete Facility Planning Process
    ii. Interim Deadline #2: Select Compliance Project and Initiate Project
    iii. Interim Deadline #3: Complete Compliance Project
    iv. Interim Deadline #4: Demonstrate Facility Compliance

e. Provide annual progress reports to the Central Valley Water Board and the Valley Water Collaborative. The annual progress reports shall assess compliance with the Facility's approved Nitrate Reduction Workplan and provide sufficient documentation to justify the Facility need for the Nitrate Exception (if applicable).

11. The Discharger shall at all times 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 include 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.

12. The Discharger shall provide certified wastewater treatment plant operators in accordance with California Code of Regulations, title 23, division 3, chapter 26 (§ 3670 et seq.).

13. As described in 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), the Discharger shall also report the same information to the Central Valley Water Board within 15 days of the report to the SERC, pursuant to section 313 of the "Emergency Planning and Community Right to Know Act" (42 USC § 11023).

15. The Discharger shall comply with the requirements of the operative SSO General Order (currently Order WQ 2022-0103-DWQ), the accompanying MRP (Order WQ 2008-0002-EXEC), and any subsequent revisions thereto. In accordance with these Orders, the Discharger shall notify the Central Valley Water Board, and take appropriate 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 that is 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 WQCF, 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, address, and telephone number of the person(s) responsible for contact with the Central Valley Water Board, and a statement complying with the signatory paragraph of Standard Provision B.3 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. In order to rescind WDRs that are no longer necessary because the discharge to land permitted under this Order has ceased, the Discharger must contact the Central Valley Water Board to discuss appropriate wastewater treatment system closure requirements.

20. A copy of this Order including the MRP, Information Sheet, Attachments, and SPRRs, shall be kept at the discharge facility for reference by operating personnel. Key operating personnel shall be familiar with its contents.

ENFORCEMENT

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 any other enforcement action(s). 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.

ADMINISTRATIVE REVIEW

Any person aggrieved by this action of the Central Valley Water Board may petition the State Water Board for administrative review in accordance with Water Code section 13320, and California Code of Regulations, title 23, section 2050 et seq. To be timely, the State Water Board must receive the petition by 5:00 pm on the 30th day after the date of this Order, except that if the 30th day falls on a Saturday, Sunday or State Holiday, the petition must be received by the State Water Board by 5:00 pm on the next business day. The law and regulations applicable to filing petitions are available on the internet at the State Water Boards' Public Notices Petitions for Water Quality webpage (http://www.waterboards.ca.gov/public_notices/petitions/water_quality). Copies will be provided upon request.

ATTACHMENT A - SITE LOCATION MAP

Source: Base map is comprised of images of United States Geological Survey paper topographic maps. (From RWD Figure 1, West Yost Associates)

LAAs = land application areas

N W E S

Approximate Scale
1 inch = 2 miles

SITE LOCATION MAP

City of Modesto WQCF

Stanislaus County

ATTACHMENT B - SUTTER PLANT SITE FEATURES MAP

Legend

(#) Sludge drying beds

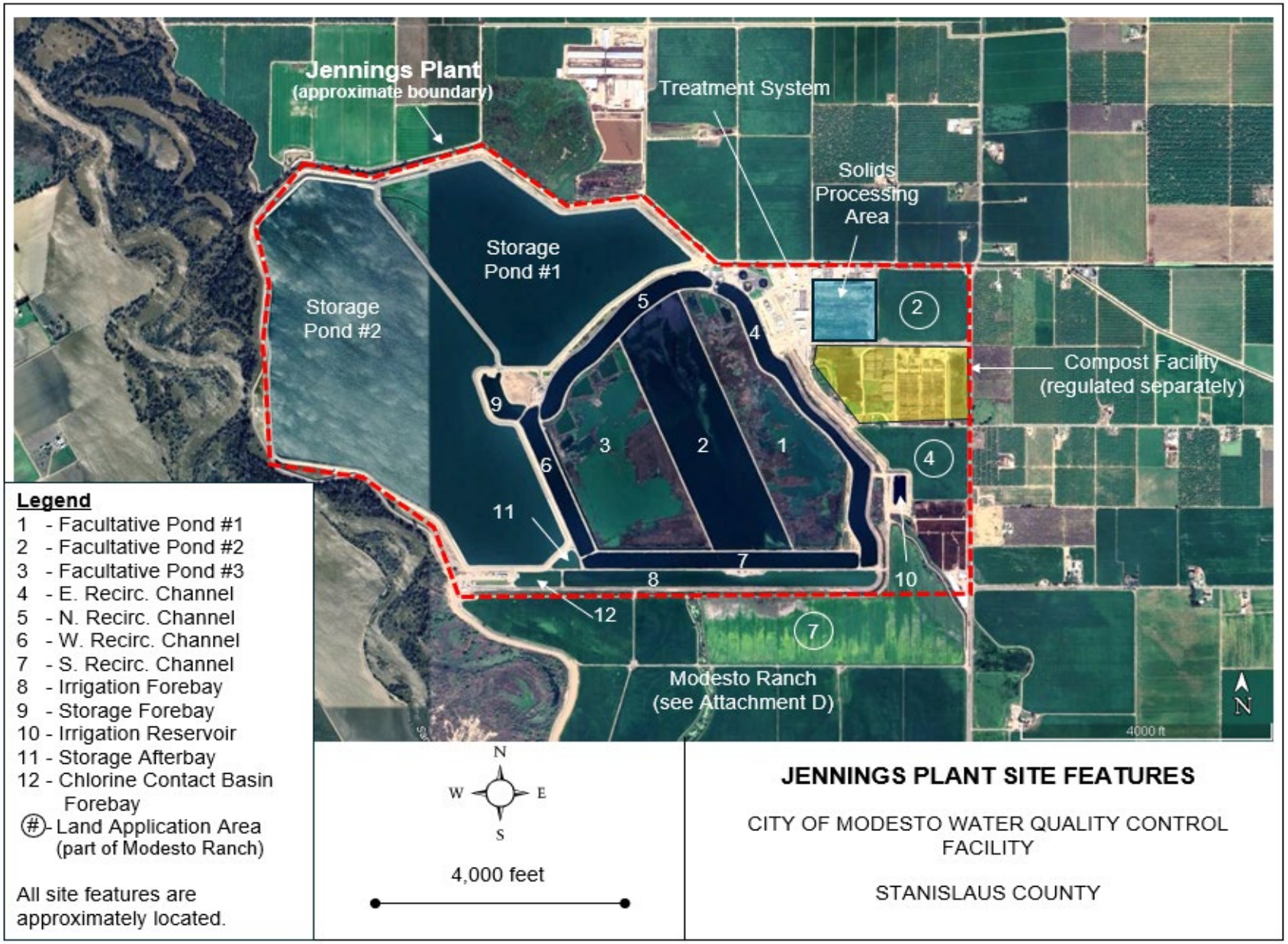
All site features are approximately located.

N
W E
S
~ 500 feet

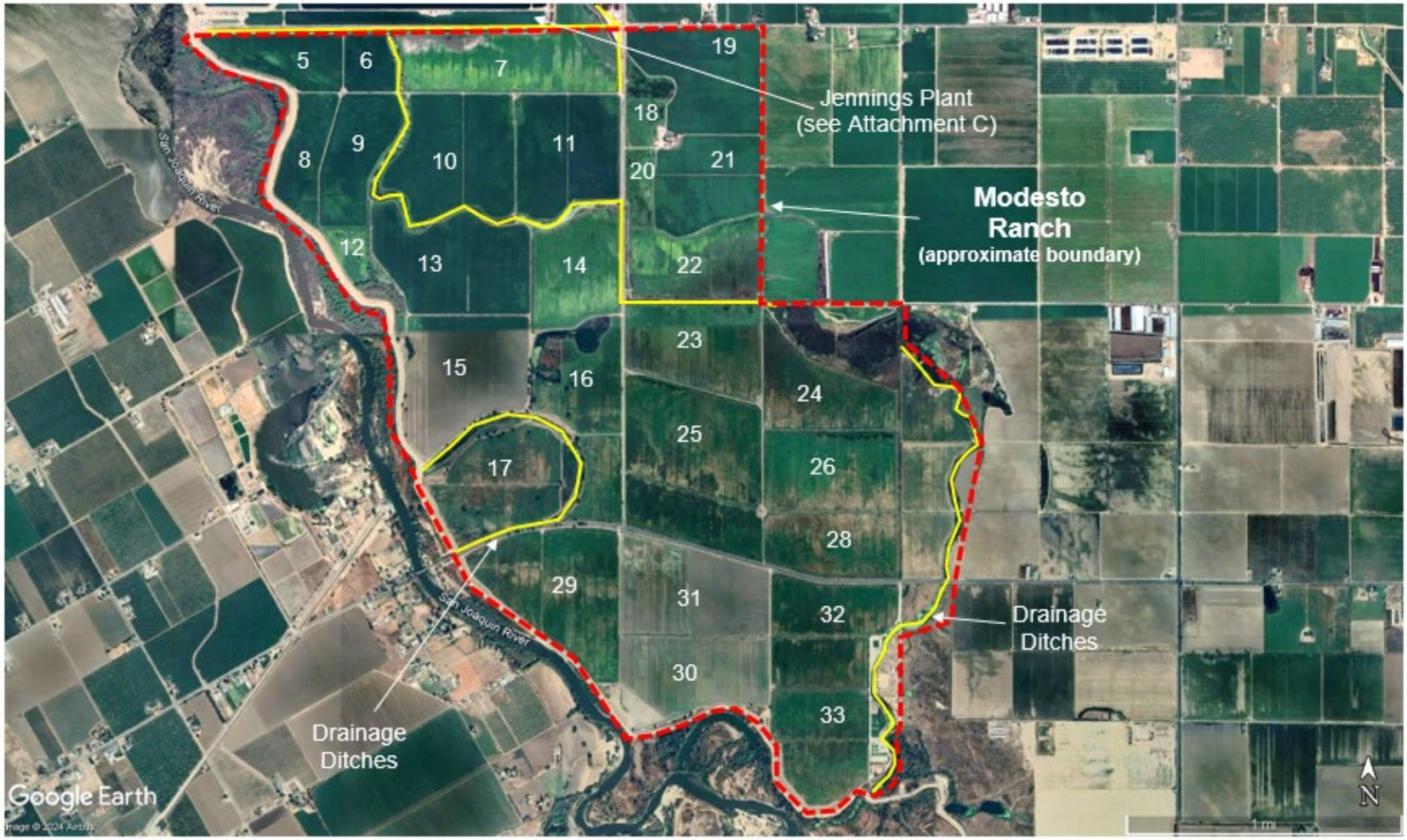
SUTTER PLANT SITE FEATURES MAP

CITY OF MODESTO WATER QUALITY CONTROL FACILITY
STANISLAUS COUNTY

ATTACHMENT C - JENNINGS PLANT SITE FEATURES MAP



ATTACHMENT D - MODESTO RANCH SITE FEATURES MAP



Legend

Land Application Area

All site features are approximately located.

N
W E
S

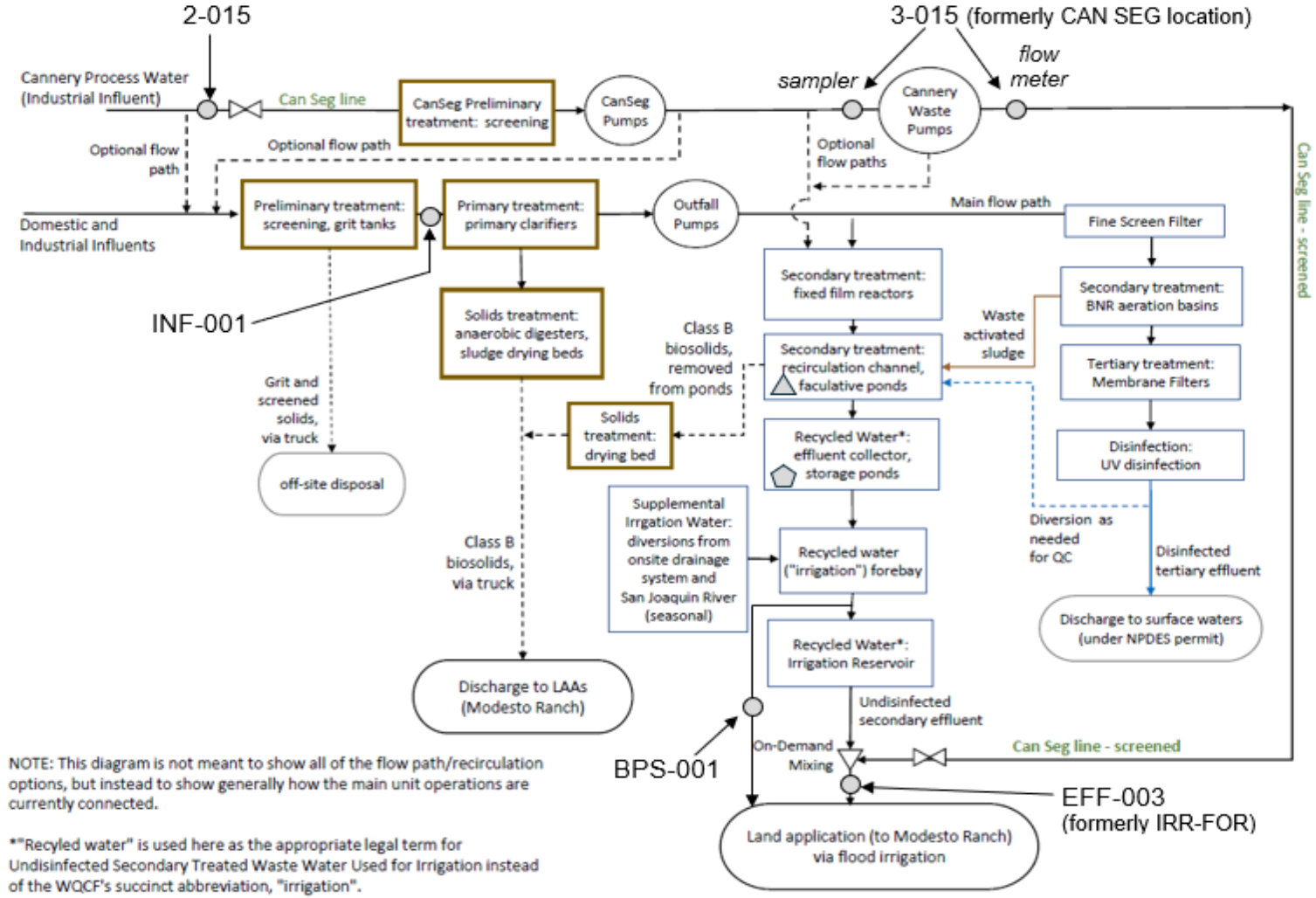
~ 0.5 miles

MODESTO RANCH SITE FEATURES

CITY OF MODESTO WATER QUALITY CONTROL FACILITY

STANISLAUS COUNTY

ATTACHMENT E - CITY OF MODESTO WQCF WASTEWATER FLOW SCHEMATIC



Legend
- ○ Sample/flow meter location
- △ Facultative and recirculation ponds sample locations
- ⬠ Storage ponds sample locations

WASTEWATER FLOW SCHEMATIC

CITY OF MODESTO WATER QUALITY CONTROL FACILITY

STANISLAUS COUNTY

ATTACHMENT F – GROUNDWATER MONITORING WELL LOCATIONS

ATTACHMENT G - RECYCLED WATER SYMBOL

ATTACHMENT H
REQUIREMENTS FOR MONITORING WELL INSTALLATION WORKPLANS AND MONITORING WELL INSTALLATION REPORTS

Prior to installation of groundwater monitoring wells, the Discharger shall submit a workplan containing, at a minimum, the information listed in Section 1 below. Wells may be installed after staff approves the workplan. Upon installation of the monitoring wells, the Discharger shall submit a well installation report that includes the information contained in Section 2 below. All workplans and reports must be prepared under the direction of, and signed by, a registered geologist or civil engineer licensed by the State of California.

SECTION 1 - Monitoring Well Installation Workplan and Groundwater Sampling and Analysis Plan

The monitoring well installation workplan shall contain the following minimum information:

A. General Information:

1. Purpose of the well installation project
2. Brief description of local geologic and hydrogeologic conditions
3. Proposed monitoring well locations and rationale for well locations
4. Topographic map showing facility location, roads, and surface water bodies
5. Large scaled site map showing all existing on-site wells, proposed wells, surface drainage courses, surface water bodies, buildings, waste handling facilities, utilities, and major physical and man-made features

B. Drilling Details:

1. On-site supervision of drilling and well installation activities
2. Description of drilling equipment and techniques
3. Equipment decontamination procedures
4. Soil sampling intervals (if appropriate) and logging methods

C. Monitoring Well Design (in narrative and/or graphic form):

1. Diagram of proposed well construction details:

2. Borehole diameter

3. Casing and screen material, diameter, and centralizer spacing (if needed)

4. Type of well caps (bottom cap either screw on or secured with stainless steel screws)

5. Anticipated depth of well, length of well casing, and length and position of perforated interval

6. Thickness, position and composition of surface seal, sanitary seal, and sand pack

7. Anticipated screen slot size and filter pack

D. Well Development (not to be performed until at least 48 hours after sanitary seal placement):

1. Method of development to be used (i.e., surge, bail, pump, etc.)

2. Parameters to be monitored during development and record keeping technique

3. Method of determining when development is complete

4. Disposal of development water

E. Well Survey (precision of vertical survey data shall be at least 0.01 foot):

1. Identify the Licensed Land Surveyor or Civil Engineer that will perform the survey

2. Datum for survey measurements

3. List well features to be surveyed (i.e., top of casing, horizontal and vertical coordinates, etc.)

F. Schedule for Completion of Work

G. Appendix: Groundwater Sampling and Analysis Plan (SAP)

The Groundwater SAP shall be included as an appendix to the workplan and shall be used as a guidance reference document for individuals responsible for conducting groundwater monitoring and sampling activities.

Provide a detailed written description of standard operating procedures for the following:

1. Equipment to be used during sampling
2. Equipment decontamination procedures
3. Water level measurement procedures
4. Well purging (include a discussion of procedures to follow if three casing volumes cannot be purged)
5. Monitoring and record keeping during water level measurement and well purging (include copies of record keeping logs to be used)
6. Purge water disposal
7. Analytical methods and required reporting limits
8. Sample containers and preservatives
9. Sampling
    - General sampling techniques
    - Record keeping during sampling (include copies of record keeping logs to be used)
    - QA/QC samples
10. Chain of Custody
11. Sample handling and transport

SECTION 2 - Monitoring Well Installation Report

The monitoring well installation report must provide the information listed below. In addition, the report must also clearly identify, describe, and justify any deviations from the approved workplan.

A. General information:

1. Purpose of the well installation project
2. Brief description of local geologic and hydrogeologic conditions encountered during installation of the wells
3. Number of monitoring wells installed and copies of County Well Construction Permits

4. Topographic map showing facility location, roads, surface water bodies

5. Scaled site map showing all previously existing wells, newly installed wells, surface water bodies, buildings, waste handling facilities, utilities, and other major physical and man-made features.

B. Drilling Details (in narrative and/or graphic form):

1. On-site supervision of drilling and well installation activities

2. Drilling contractor and driller's name

3. Description of drilling equipment and techniques

4. Equipment decontamination procedures

5. Soil sampling intervals and logging methods

6. Well boring log:

- Well boring number and date drilled
- Borehole diameter and total depth
- Total depth of open hole (same as total depth drilled if no caving or back-grouting occurs)
    - Depth to first encountered groundwater and stabilized groundwater depth
    - Detailed description of soils encountered, using the Unified Soil Classification System

C. Well Construction Details (in narrative and/or graphic form):

Well construction diagram, including:

- Monitoring well number and date constructed
- Casing and screen material, diameter, and centralizer spacing (if needed)
- Length of well casing, and length and position of perforated interval
- Thickness, position and composition of surface seal, sanitary seal, and sand pack

- Type of well caps (bottom cap either screw on or secured with stainless steel screws)

D. Well Development:

1. Date(s) and method of development
2. How well development completion was determined
3. Volume of water purged from well and method of development water disposal
4. Field notes from well development should be included in report

E. Well Survey (survey the top rim of the well casing with the cap removed):

1. Identify the coordinate system and datum for survey measurements
2. Describe the measuring points (i.e., ground surface, top of casing, etc.)
3. Present the well survey report data in a table
4. Include the Registered Engineer or Licensed Surveyor’s report and field notes in appendix

INFORMATION SHEET

Background

The City of Modesto (Discharger) owns and operates a wastewater collection, treatment, and disposal system, and provides sewerage service to the City of Modesto, the Empire Sanitary District, and a portion of the City of Ceres. The WQCF serves a population of over 224,000 people along with local industries including food processing industries, e.g., canneries.

The WQCF is regulated under four separate WDRs. The discharge of tertiary treated wastewater to surface waters of the San Joaquin River and Delta-Mendota Canal is regulated under two different National Pollutant Discharge Elimination System (NPDES) Permit Nos. CAG585001 (Notice of Applicability number R5-2017-0085-020) and CA0085316. Land applied biosolids are regulated by WDRs Order 94-030, adopted on 28 January 1994.. Discharges of secondary undisinfected recycled wastewater to land for use as irrigation is regulated by WDRs Order 99-112, adopted on 28 July 1999. **WDRs R5-2025-XXXX** replaces and rescinds Orders 94-030 (biosolids) and 99-112 (wastewater to land). This Order does not authorize or otherwise regulate wastewater discharges to surface water.

The WQCF is made up of three treatment facilities: Sutter Plant, Jennings Plant, and Modesto Ranch. The Sutter Plant receives and screens the influent of domestic and industrial wastewater, followed by sedimentation. Biosolids are removed in the sedimentation process and are treated to Class B standards in anaerobic digesters and then dried on-site at the Sutter Plant for eventual land application. Primary effluent from the Sutter Plant is discharged to the Jennings Plant. The Jennings Plant treatment includes two different treatment trains. One train treats the wastewater to tertiary recycled water standards that discharges to surface waters. The second treatment train treats the wastewater to secondary undisinfected standards, and is stored in over 1,000 acres of wastewater ponds for use as irrigation at the Modesto Ranch. Biosolids are further treated in digestion pits. The Modesto Ranch consists of approximately 2,458 acres of LAAs and receives the secondary undisinfected recycled water to irrigate fodder crops. The LAAs also received process water from several canneries and dried biosolids from the Sutter Plant and Jennings Plant for use as a soil amendment.

Influent and Effluent Conditions

Between 2019 and 2023, influent flow rates into the Sutter Plant ranged from 6,700 million gallons (MG) to 7,654 MG, which includes industrial wastewater from canneries from approximately mid-October to mid-July. During the cannery process season (approximately mid-July through mid-October), the cannery wastewater is screened and sent directly to the Modesto Ranch for use as irrigation. Class B biosolids generated at the Sutter Plant are dried on 23 unlined beds and then sent to the Modesto Ranch for use as a soil amendment. Solids from the bar screens and grit tanks at the Sutter Plant are hauled offsite for disposal at a regulated facility. Class B biosolids generated at the Jennings Plant are removed from the digestion pits and mechanically dried at the

Jennings Plant site before being sent to the Modesto Ranch for use as a soil amendment.

Influent flow volumes from the canneries when wastewater is directed to the Modesto Ranch between 2019 and 2023 were up to 1,227 MG per year.

Effluent wastewater samples are collected prior to discharging to the Modesto Ranch and are considered representative of the quality of wastewater discharged to land. This sample location captures all domestic wastewater and all wastewater from the Can Seg Line. Average concentrations of constituents reported between 2019 and 2023 are summarized below. On Table 21 below, Column 1 represents treated effluent quality from the Jennings Plant when Can Seg flows are not occurring. Column 2 represents effluent quality from canneries when wastewater is directed from the Sutter Plant to the Modesto Ranch and blended with wastewater from the Jennings Plant prior to discharge (see Attachment E). Units are mg/L unless noted otherwise.

Table 18. Average Effluent Concentrations

Constituent	Column 1	Column 2
	Average	Average
BOD_5	20	2,260
EC (µmhos/cm)	1,632	1,657
FDS	808	848
TDS	962	1,889
Chloride	299	NA
Nitrate+nitrite	0.7	NA
TKN	NA	390
Ammonia as N	NA	8.3

Groundwater Conditions

The groundwater monitoring network consists of 21 groundwater monitoring wells located at the Jennings Plant and Modesto Ranch to monitor potential impacts to groundwater from the land application of treated wastewater and biosolids. The groundwater wells have been monitored since at least the year 2000.

The mean depth to groundwater across the entire Jennings Plant and Modesto Ranch facility is approximately 12 feet below ground surface (bgs), and can range from 7 to 15 feet bgs across all monitoring wells. The groundwater elevation in the treatment ponds area ranges from 30 to 40 feet AMSL during dry periods and can be higher than 40 feet AMSL during very wet periods.

Groundwater data from the monitoring wells indicates that groundwater has been impacted from discharges from the WQCF. Concentration trend analyses show that the degradation has stabilized and the discharge is not impacting groundwater beyond current conditions.

In a Technical Memorandum dated 15 November 2019, the Discharger proposed several changes to the current groundwater monitoring network, as summarized in the table below.

Table 19. Proposed Changes to the Groundwater Monitoring Network

Monitoring Well	Action	Reason for Change
MW-1 MW-4 MW-7 MW-10	Abandon	The variability in monitoring results from these wells and location of these wells demonstrate that they do not provide accurate characterization of the potential impacts of discharges to the LAAs to onsite groundwater.
MW-2 MW-3 MW-5 MW-6 MW-9 MW-12 MW-13 MW-14 MW-15	Replace	These wells have 6-inch diameter casings and are scheduled to be replaced with 2-inch diameter casings to reduce purge volumes and reduce labor costs for sample collection. The replacement wells will be equipped with dedicated sample pumps. MW-5 will be relocated to an area that is considered more representative of current land and groundwater conditions.
MW-2D MW-4D MW-5D MW-11D MW-12D MW-13D MW-14D MW-15D	Abandon	Water quality from these deep groundwater monitoring wells compared to the paired shallow wells is similar. The data from the deep wells do not provide additional groundwater characterization information and is considered redundant sampling.

In discussions with the Discharger, the proposed changes to the groundwater monitoring network have not been implemented as of issuance of these WDRs. Prior to any changes, the Discharger is required to submit a *Groundwater Monitoring Well Installation and Abandonment Workplan* describing the proposed changes, including justifications for the changes, as required by Provision M.2.a. The Discharger shall work with Central Valley Water Board staff to ensure the proposed changes will meet the requirements of these WDRs for groundwater compliance.

Data Characterization

As discussed in the Compliance with the Antidegradation Policy Section, groundwater at the Jennings Plant and Modesto Ranch is not identified as high-quality waters for salts (represented by EC and TDS), nitrate+nitrite, total coliform, iron, and manganese. A detailed discussion of the characterization of these constituents is provided below.

Salinity (EC and TDS). Concentrations of EC and TDS in influent domestic wastewater are generally equivalent to treated effluent quality. As summarized on Table 14, EC and TDS average concentrations in influent are 1,388 µmhos/cm and 1,159 mg/L, respectively, while concentrations in effluent are 1,579 µmhos/cm and 1,050 mg/L, respectively.

Samples collected from the CAN-SEG/3-015 sample location, which includes Can Seg wastewater that has been sent directly to the LAAs that is blended with treated wastewater from the storage ponds prior to discharge, show slightly higher concentrations of EC and TDS when compared to influent quality. Influent and effluent concentrations for EC and TDS from both sample locations (IRR-FOR/EFF-003 and CAN-SEG/3-015) exceed their respective WQOs, indicating the discharge could degrade groundwater. Concentration trends in effluent for TDS and EC show stable trends, indicating the Discharger has maintained the quality of the effluent for at least the last five years (2019 through 2023) as required under the Salt Control Program for the P&O Study.

EC and TDS concentrations in groundwater in both up- and downgradient wells exceed WQOs. The discharge to land from the Modesto WQCF has contributed to groundwater degradation; however, groundwater quality in upgradient wells is not considered high-quality groundwater (concentrations exceed WQOs) in the surrounding area. The groundwater quality upgradient of the Jennings Plant and Modesto Ranch is likely the result of the long-term use of the area for agricultural purposes and is not solely the result of discharges to land from the Modesto WQCF. Comparisons of groundwater concentrations to treated wastewater effluent quality indicate that groundwater concentrations exceed that of the wastewater being applied to the land.

The Discharger has elected to participate in the P&O Study under CV-SALTS; therefore, the Order sets a TDS effluent limitation as a limit based on historical effluent data, groundwater quality, and treatment system performance. Review of the available groundwater data suggests that the discharge has not significantly impacted groundwater quality with respect to salinity, and concentration trends are stable in all groundwater monitoring wells for EC and TDS for monitoring years 2019 through 2023. The purpose of this limit is to ensure the Discharger is implementing appropriate performance-based measures at the Facility and is intended to prevent increases of TDS concentrations in groundwater beyond current conditions. Compliance with the effluent limit shall constitute compliance with the water quality control plan and ensures that the Discharger is maintaining current discharge concentrations and loading levels of salt. This Order sets a **Salinity Action Level for TDS of 2,000 mg/L** that includes an

approximate 23 percent safety factor to allow for operational flexibility and water conservation efforts, and requires continued monitoring of EC and TDS in effluent and groundwater.

Total Nitrogen. For nutrients such as nitrogen, the potential for groundwater degradation depends on wastewater quality, plant uptake, and the ability of the vadose zone below the land application areas to support nitrification and denitrification to convert the nitrogen to ammonia, nitrate, ammonia, or nitrogen gas before it reaches the water table. Effluent and groundwater were analyzed for the following:

Table 20. Nitrogen Analyses

Influent (Can Seg Wastewater)	Effluent		Groundwater
	IRR-FOR	CAN-SEG	
Ammonia TKN	Nitrate+nitrite	Total nitrogen	Nitrate+nitrite

Therefore, this evaluation is based on nitrate+nitrite, total nitrogen, and TKN data but uses the WQO for nitrate as nitrogen for comparison purposes.

Nitrate+nitrite concentrations in effluent are low (<1 mg/L) while the concentrations of total nitrogen exceed 10 mg/L (nitrate as nitrogen WQO). The majority of the total nitrogen in influent consists of ammonia and TKN, which is the organic fraction of total nitrogen. This indicates that the majority of nitrogen is readily available for plant uptake. Concentrations trends for total nitrogen at the CAN-SEG/3-015 sample location show relatively stable trends over time (2019 to 2023).

High nitrate+nitrite concentrations (greater than the WQO) in upgradient groundwater indicate the area is not identified as “high-quality waters” with respect to nitrogen. Downgradient nitrate+nitrite concentrations in on-site monitoring wells are lower than the upgradient concentrations. This could indicate anoxic conditions in groundwater. As groundwater migrates away from the Facility (off-site) and the environment becomes re-oxygenated, TKN and ammonia that was not removed by plant uptake or other vadose zone processes could convert to nitrate as nitrogen with concentrations potentially exceeding WQOs. It should be noted that the Facility is surrounded by land used for agricultural purposes which is also contributing to groundwater degradation. While discharges from the Facility has impacted groundwater, the discharge is not the sole contributor to the groundwater degradation.

For the continued protection of groundwater quality, this Order requires the effluent and groundwater to be monitored for TKN, ammonia, total nitrogen, and nitrate as nitrogen, sets a nitrogen loading limit to the LAAs, requires the Discharger to continue its efforts to control and manage nitrogen in its discharge, and participate and comply with the Nitrate Control Program. The Discharger has selected **Pathway B under the Nitrate**

Control Program and joined the Turlock-Valley Water Collaborative Management Zone.

Iron and Manganese. Typical domestic wastewater is not expected to contain significant iron or manganese concentrations. Influent wastewater was analyzed for dissolved iron and concentrations exceed the WQO (Table 14). Influent is not analyzed for dissolved manganese and effluent is not analyzed for either metal.

Concentrations of iron and manganese in up- and downgradient groundwater exceed their respective WQOs, but higher concentrations are present in all downgradient monitoring wells when compared to upgradient wells. Iron and manganese can be present in groundwater as a result of excessive BOD_5 loading rates, which can deplete oxygen resulting in anoxic conditions. An anoxic environment can solubilize naturally occurring metals in soil, such as iron and manganese. The Facility uses aerated basins to address BOD_5, TDS, and nitrification/dentification to minimize organic loads into the ponds and LAAs.

Concentrations of BOD_5 in influent and effluent wastewater are summarized below.

Table 21. BOD_5 Concentration Comparison

Average Concentration (2019-2023	Influent (Sutter Plant)	Influent (Cannery Wastewater)	Effluent (IRR-FOR location)	Effluent (CAN-SEG location)
BOD_5 (mg/L)	424	2,260	199	811

Can Seg wastewater contains concentrations of BOD_5 that are significantly higher than concentrations in the domestic influent wastewater, indicating the majority of BOD_5 in the effluent is associated with the Can Seg wastewater. When not managed properly, high BOD_5 concentrations could result in odor issues and create anoxic environments where metals could impact groundwater quality. To mitigate impacts, the City blends the Can Seg influent with treated municipal effluent to reduce BOD_5 concentrations in the water applied to the LAAs.

The corrosion of the collection system could also be contributing to the presence of metals.

In addition to the discharges to land and ponds, as reported in the RWD, elevated concentrations of iron and manganese have been reported in monitoring wells owned by others in the area, including elevated manganese in a well approximately three miles away from the WQCF, indicating that the Discharger's operations are not the only contributor to local anoxic conditions.

For the protection of groundwater, this Order sets a BOD_5 loading limit as an irrigation cycle average to allow flexibility in irrigation management (i.e., additional drying times) to avoid causing excessive anoxic soil times and impacts to groundwater. Groundwater

will continue to be monitored for dissolved iron and manganese. If manganese or iron concentrations show increasing concentration trends in groundwater, the BOD_5 effluent limit may be re-evaluated at that time

Based on an evaluation of effluent and groundwater data over the last 5 years, as required by the Salt Control Program and Nitrate Control Program, the concentration trends have been stable, indicating the Discharger is maintaining the quality of effluent and not impacting groundwater beyond current conditions. If concentration trends show increasing trends over at least a 5-year period, effluent and loading limits may be re-evaluated at that time.

Effluent and Loading Limits

Based on the water balance this Order sets a total annual flow limit of 5,300 MG and a monthly daily average flow limit of 25 MGD.

This Order also sets a Salinity Action Level limit as a flow-weighed annual average TDS concentration of 2,000 mg/L. This limit was based on historical effluent and groundwater data and includes an approximate 23 percent safety factor to allow flexibility for water conservation efforts. By choosing to participate in the Prioritization and Optimization (P&O) Study, the Discharger may continue implementing reasonable, feasible, and practicable efforts to control salinity through performance-based measures.

This Order sets a BOD_5 loading limit of 200 lb/ac/day and a nitrogen loading limit not to exceed crop demand.

Monitoring Requirements

Section 13267 of the California Water Code authorizes the Central Valley Water Board to require monitoring and technical reports as necessary to investigate the impact of waste discharges on waters of the State. Water Code Section 13268 authorizes assessment of civil administrative liability where appropriate. The Order includes treated domestic wastewater, commingled wastewater, pond, LAAs, solids, biosolids, and groundwater monitoring requirements. This monitoring is necessary to characterize the discharge and evaluate any impacts to groundwater and compliance with the requirements and specifications in the Order.

Salt and Nitrate Control Programs Regulatory Considerations

As part of the Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) initiative, the Central Valley Water Board adopted Basin Plan amendments (Resolution R5-2018-0034) incorporating new programs for addressing ongoing salt and nitrate accumulation in the waters and soils of the Central Valley at its 31 May 2018 Board Meeting. On 16 October 2019, the State Water Resources Control Board adopted Resolution No. 2019-0057 conditionally approving the Central Valley Water Board Basin Plan amendments and directing the Central Valley Water Board to make

targeted revisions to the Basin Plan amendments within one year from the approval of the Basin Plan amendments by the Office of Administrative Law. The Office of Administrative Law (OAL) approved the Basin Plan amendments on 15 January 2020 (OAL Matter No. 2019-1203-03).

Pursuant to the Basin Plan amendments, dischargers received a Notice to Comply with instructions and obligations for the Salt Control Program within one year of the effective date of the amendments (17 January 2020). Upon receipt of the Notice to Comply, the Discharger will have no more than six months to inform the Central Valley Water Board of their choice between Option 1 (Conservative Option for Salt Permitting) or Option 2 (Alternative Option for Salt Permitting). 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 Discharger (SALT ID: **2653**) has chosen to pursue Option 2 (Alternative Salinity Permitting Approach).

For the Nitrate Control Program, the Discharger falls within the Groundwater Basin 5-022.02 (San Joaquin Valley, Modesto Sub-Basin), a Priority 1 Basin. To comply with the Nitrate Control Program, Discharger is a participant of the Modesto-Valley Water Collaborative Management Zone. More information regarding the CV-SALTS regulatory planning process can be found at the following link: (https://www.waterboards.ca.gov/centralvalley/water_issues/salinity/).

The CV-SALTS initiative will result in regulatory changes that will be implemented through conditional prohibitions and modifications to many WDRs regionwide, including the WDRs that regulate discharges from the Facility. More information regarding the CV-SALTS regulatory planning process can be found at the following link: (https://www.waterboards.ca.gov/centralvalley/water_issues/salinity/).

Reopener

The conditions of discharge in the 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. The Order sets limitations based on the information provided thus far. If applicable laws and regulations change, or once new information is obtained that will change the overall discharge and its potential to impact groundwater, it may be appropriate to reopen the Order.

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

The Central Valley Water 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.