

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER R5-2013-0019

WASTE DISCHARGE REQUIREMENTS
AND
MASTER RECYCLING PERMIT
FOR
CITY OF TULARE
WASTEWATER TREATMENT FACILITY
TULARE COUNTY

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

1. The City of Tulare (hereafter City or Discharger) owns and operates a wastewater collection, treatment, and disposal system that provides sewage service for industry and about 60,000 residents. The Wastewater Treatment Facility (WWTF) and associated discharge locations are about seven miles southwest of the center of the City within Sections 15, 16, 17, 20, 21, 22, 27, 28, 29, 32, 33, and 34, T20S, R24E, MDB&M, as shown on Attachment A, a part of this Order.
2. The WWTF includes two separate wastewater treatment plants (Plants): one for domestic wastes (hereafter Domestic Plant), the other for primarily industrial wastes (hereafter Industrial Plant). The Domestic and Industrial discharges are combined (hereafter commingled discharge) in an aerated mixing box and discharged to about 245 acres of ponds for disposal by evaporation and percolation. A portion of the effluent discharged to ponds is recycled on about 2,620 acres of nearby farmland (hereafter, Use Areas), of which the Discharger owns 530 acres.
3. The Discharger submitted a Report of Waste Discharge (RWD), dated 24 June 2009, in support of phased increases in discharge flow. The phases include an increase in discharge flow in the Domestic Plant to 6 mgd and then 8 mgd in the future, and in the Industrial Plant to 9 mgd and then 12 mgd. The RWD includes detailed water and nitrogen balance calculations for each phase of implementation of proposed changes. The most significant changes consist of increased flow, additional treatment (including nitrogen removal), expanded recycling areas, and improved biosolids management facilities.
4. Waste Discharge Requirements (WDRs) Order R5-2002-0185, adopted 18 October 2002 for the Discharger, prescribes requirements for a monthly average commingled discharge not to exceed 9.39 mgd (4.39 mgd industrial and 5.0 mgd domestic) and includes water recycling requirements. Cease and Desist Order (CDO) R5-2002-0186, also adopted 18 October 2002, addresses the City's failure to comply with previous WDRs Order 91-133.
5. Order R5-2002-0185 does not reflect the current WWTF. The purpose of this Order is to rescind the previous Order and update waste discharge requirements, in part, to ensure the discharge is consistent with water quality plans and policies, to prescribe requirements that are effective in protecting existing and potential beneficial uses of receiving waters, and to reflect the Discharger's proposed ongoing expansion. This Order also includes a Master Recycling Permit to regulate recycled water projects that beneficially reuse WWTF effluent.

Domestic Discharge

6. The expanded Domestic Plant is an activated sludge plant designed to treat 6.0 mgd. It includes headworks with mechanical screens and an aerated grit chamber, primary and secondary sedimentation, biofiltration, denitrification; and sludge thickening, digestion, and drying. Attachments B and C, a part of this Order, depict a partial plan view of the WWTF and a process flow diagram for the Domestic Plant, respectively.
7. The collection system for the Domestic Plant includes residential and commercial connections. The City completed an Industrial Waste Survey in February 2012. The survey identifies five significant industrial users (SIUs) connected to the Domestic Plant, one of which has since closed. Findings 50 through 61 provide details about the City's Industrial Pretreatment Program.
8. Cease and Desist Order R5-2002-0186 finds that excessive nitrogen in the discharge resulted in groundwater nitrate concentrations exceeding the Maximum Contaminant Level (MCL) of 10 mg/L as nitrogen. In 2006, the Discharger completed a project to upgrade the Domestic Plant with plug flow anoxic basins designed for nitrogen removal to 10 mg/L or less at a flow rate of 6 mgd. The 2009 RWD examines the potential for ongoing groundwater degradation/pollution with nitrogen compounds and compliance with the 2002 CDO, and proposes as a remedy, achieving sufficient nitrogen removal in each Plant for commingled effluent total nitrogen of 10 mg/L or less.
9. In its current configuration, nitrogen removal in the Domestic Plant has fluctuated. In cold weather, effluent total nitrogen concentrations have generally been above the average for the year. For example, from December 2011 through the end of February 2012, concentrations ranged from about 9 mg/L to 19 mg/L with an average of 12 mg/L, while total nitrogen concentrations from July 2011 through September 2011 ranged from 4.4 mg/L to 11 mg/L with an average of 7.8 mg/L. The design firm responsible for the existing 6-mgd design, Carollo Engineers, Inc., asserts that the nitrogen removal in the winter months is related to the mixed liquor suspended solids concentration (MLSS). The MLSS was 102% and 108% of the annual average MLSS. Data for December 2012 and January 2013 show the domestic effluent TN to be below 10 mg/L with the MLSS increased to 113% and 112% of the annual average to compensate for the colder weather. Therefore, an increase in the MLSS to above 112% of the annual average would keep the plant below 10 mg/L TN. Increasing the MLSS in cold months is a common practice at activated sludge plants.
10. A technical report entitled, *Preliminary Design Report for Domestic Wastewater Treatment Plant Upgrade & Expansion, June 2009* (Domestic Plant Design Report), prepared for the City by Parsons Corporation, characterizes the capacity of the Domestic Plant and recommends specific upgrades required to achieve the City's planned expansion. The Domestic Plant Design Report describes multiple factors that limit the capability of the Domestic Plant to reliably produce effluent with 10 mg/L nitrogen or less. The report indicates that the most limiting factors in the design are the blowers, secondary clarifiers, and aeration basins, which are significantly undersized (for as low as 3.5 mgd capacity) for a 6-mgd design.

11. The design firm responsible for the existing 6-mgd design, Carollo Engineers, Inc., asserts that a comprehensive review of the process biology was not possible during preparation of the Domestic Plant Design Report because the Domestic Plant was not operating in a full denitrification mode at the time of the assessment. The nitrogen removal treatment deficiencies noted in the Domestic Plant Design Report may be overstated, given that the average Domestic Plant effluent total nitrogen concentration was 7.6 mg/L in 2012 while the average flow was 4.9 mgd and the City reportedly used no more than two thirds of the available aeration capacity at any time.
12. The Domestic Plant Design Report recommends that the Discharger implement a Modified Ludzack-Ettinger activated sludge system. The Modified Ludzack-Ettinger would make use of the existing treatment units, though it would still require significant changes to the Plant at an estimated cost of \$31 million for the 6.0-mgd design or \$46.5 million for the 8-mgd design. The report also recommends upgraded headworks and removal of the biofiltration unit, which is potentially counterproductive in terms of nitrogen removal.
13. The City issued a request for proposals on the upgrade project, which was divided into three phases. The City approved funds for the first phase, which was for upgraded headworks. The new headworks at the Domestic Plant, implemented on 16 December 2011, includes mechanical screens and grit removal for up to 8 mgd, with a wastewater transfer system that allows metered diversion of Domestic Plant influent to the Industrial Plant. Contingent upon the results of the technical reports required by Provision I.14 and I.15 of this Order, the Domestic Plant may need to be upgraded to consistently achieve its design effluent total nitrogen concentrations. In the meantime, the City intends to postpone capital expenditures for Domestic Plant upgrades by using the available treatment capacity of the Industrial Plant to treat excess Domestic Plant influent.
14. The Discharger's self-monitoring reports characterize the annual average Domestic Plant effluent in recent years as follows:

Parameter	Units	2009	2010	2011	2012
Flows	mgd	4.26	4.24	4.26	4.89
Total dissolved solids (TDS)	mg/L	244	231	244	214
Electrical conductivity (EC)	umhos/cm	528	502	497	466
Biochemical Oxygen Demand (BOD)	mg/L	9.2	10.2	10.5	13
Nitrate (as N)	mg/L	4.9	4.0	4.4	2.4
Ammonia (as N)	mg/L	3.2	2.7	3.4	2.2
Total Kjeldahl Nitrogen	mg/L	5.7	5.9	6.0	4.9
Total Nitrogen	mg/L	10.6	9.7	10.6	7.6

15. Analytical results from influent samples collected in January and July 2012 had average sodium and chloride concentrations of 65 mg/L and 41 mg/L, respectively. In terms of

dissolved inorganic salts, effluent character is not expected to be significantly different than influent. The RWD estimates Domestic Plant effluent sodium to be about 65 mg/L.

16. Discharger self-monitoring reports from 2010 through 2012 indicate that winter flows to the Domestic Plant are not significantly higher than summer flows, indicating that inflow and infiltration in general are not a problem for the Domestic Plant. However, large changes in flow on the order of 0.5 mgd to 1.0 mgd over the course of three to six months have been occurring since about January 2010.

Industrial Discharge

17. The collection system for the Industrial Plant includes commercial and industrial connections. Findings 50 through 61 describe the City's Industrial Pretreatment Program and sources of industrial wastewater.
18. Two gravity sewer mains flow into the Industrial Plant. One extends north from Levin Avenue to Cross Avenue. The other gravity main extends southeast along 'K' Street, serving the area from Levin Avenue to Avenue 200 and flows to the WWTF along Paige Avenue. A force main from the Kraft Cheese Company connects to the newly-constructed South Tulare Industrial Sewer, which extends south from Paige Avenue along Pratt Street to Avenue 196, where it turns east and crosses State Highway 99.
19. Relative to the domestic influent stream, the industrial influent is high strength in terms of organic material and nitrogen, with BOD and total nitrogen concentrations typically in excess of 1,400 mg/L and 50 mg/L, respectively. In addition to discharges from the City's dairy processing plants (e.g., cooling water, clean-in-place wastewater, and wash-down wastewater), discharges to the Industrial Plant include storm water, some domestic wastewater, septage, and sludge supernatant.
20. The Industrial Plant consists of: headworks with screening and grit removal; fats, oils, and grease (FOG) removal by dissolved air flotation (DAF); anaerobic digestion in the bulk volume fermenter (Fermenter); about 26 million gallons of flow equalization in five aerated basins; six sequencing batch reactors (SBRs); six denitrifying filters; two DAF units for thickening solids generated in the SBRs; three anaerobic digesters; and approximately 25 acres of sludge drying beds. Attachments B and D, a part of this Order, depict a partial plan view of the WWTF and a process flow diagram for the Industrial Plant, respectively.
21. Consistent with the time schedule for compliance in the 2002 CDO, the Discharger completed improvements to the Industrial Plant in November 2009. Until that time, the Industrial Plant did not consistently remove sufficient BOD to comply with WDRs Order R5-2002-0185. Immediately following the improvements, average effluent BOD dropped to less than 10 mg/L and BOD removal has met the effluent limits.
22. The aerated ponds north of the new SBRs are no longer in service. In 2004, the pond bottoms were compacted, sand lenses removed, and clay materials added where directed by a geotechnical engineer to minimize percolation. Geotechnical analysis of samples taken from the compacted pond bottoms demonstrated permeability less than 10^{-6} cm/second. The ponds

still contain residual settled solids that have potential to degrade groundwater and a time schedule to remove the settled solids from the ponds is appropriate.

23. The Fermenter produces methane from organic material in the industrial wastewater stream. The City collects the methane to generate electricity for the WWTF in onsite fuel cells. The Fermenter has a rated 65 to 75 percent BOD₅ removal treatment capacity for average monthly flows of 4.39 mgd and peak hourly flows up to 7.0 mgd. According to design documents, the average Fermenter influent chemical oxygen demand (COD) loading rate is not to exceed 135,000 lbs/day, and pH, alkalinity, and temperature must be within optimal ranges for treatment to perform as designed.
24. The SBRs are designed for BOD removal to 40 mg/L or less and nitrogen removal to 10 mg/L or less on a 30-day average basis. Nitrogen removal in the SBRs and denitrifying filters requires sufficient carbon to support denitrification. In order to maintain an adequate carbon to nitrogen ratio, the City limits flow through the Fermenter, by-passes treatment in the DAF unit, and allows a portion of the industrial wastewater to by-pass the aeration ponds. In September 2010, the City began to reduce the flow through the Fermenter from about 4.3 mgd to an average of 2.2 mgd in December 2010. It has continued to reduce flows through the Fermenter. The average flow was 1.7 mgd in the first half of 2012.
25. The Discharger's self-monitoring reports characterize the average Industrial Plant effluent in recent years as follows:

Parameter	Units	2009	2010	2011	2012
Flows	mgd	6.80	6.96	7.05	7.12
Total dissolved solids (TDS)	mg/L	501	434	425	378
Electrical conductivity (EC)	umhos/cm	1,398	822	774	737
Biochemical Oxygen Demand (BOD)	mg/L	127	39	4.6	9.2
Nitrate (as N)	mg/L	9.2	16	5.0	4.6
Ammonia (as N)	mg/L	74	2.4	0.7	0.9
Total Kjeldahl Nitrogen	mg/L	107	14	4.2	4.3
Total Nitrogen	mg/L	115	30	9.7	9.3

26. Analytical results from Industrial Plant influent samples collected in January and July 2012 had average sodium and chloride concentrations of 99 mg/L and 59 mg/L, respectively. In terms of dissolved inorganic salts, effluent character is not expected to be significantly different than influent. However, based on recent commingled effluent and Domestic Plant sample results, weighted by flow, Industrial Plant effluent sodium concentrations have been estimated to average 140 mg/L.

Commingled Discharge

27. The commingled discharge is currently comprised of about 60 percent Industrial Plant effluent and 40 percent Domestic Plant effluent.
28. The Discharger’s self-monitoring reports characterize the average commingled effluent in recent years as follows:

Parameter	Units	2009	2010	2011	2012
Flows	mgd	11.1	11.2	11.3	12.0
Total dissolved solids (TDS)	mg/L	424	350	336	306
Electrical conductivity (EC)	umhos/cm	1,104	690	633	611
Biochemical Oxygen Demand (BOD)	mg/L	50	21	8.9	11.1
Nitrate (as N)	mg/L	7.8	13	4.7	3.5
Ammonia (as N)	mg/L	50	3.8	2.0	1.3
Total Kjeldahl Nitrogen	mg/L	65	9.6	5.4	4.0
Total Nitrogen	mg/L	73	21	10.5	8.1

29. WDRs Order R5-2002-0185 requires the City to perform regular commingled effluent monitoring and reporting. Analytical results from commingled effluent samples collected quarterly from 2011 through 2012 are generally consistent with previous sampling events. The results show average sodium and chloride concentrations of 110 mg/L and 68 mg/L, respectively.
30. The 2009 RWD indicates that, based on the design specifications for each Plant, commingled effluent total nitrogen will not exceed 10 mg/L.

Recycled Water

31. Recycled water is defined in Water Code section 13050 and in California Code of Regulations Title 22 section 60301.900. Based on the level of treatment at the WWTF, effluent delivered to recycled water users (Users) is “undisinfected secondary recycled water.” Recycled water will be stored in unlined ponds and applied to Use Areas cropped with animal feed and fodder crops. For the purpose of this Order, “Use Area” means an area with defined boundaries where recycled water is used or discharged (Cal. Code. Regs., title 22, § 60301.920.).
32. Undisinfected secondary recycled water (domestic wastewater) contains human pathogens that are typically measured using total or fecal coliform organism as indicator organisms. The California Department of Public Health (Department of Public Health), which has primary statewide responsibility for protecting public health, has established statewide criteria for the use of recycled water (Cal. Code. Regs., title 22, § 60301 et seq.).

33. The Discharger's projected water balance depends heavily on proposed recycled water projects for disposal of effluent, which is a limiting factor for expansion. To allow the Discharger flexibility in changing the size and use of land areas for recycled water storage or land application, this Order includes a Master Recycling Permit, as described in Water Code section 13523.1(b).
34. In accordance with the statute, this Order includes WDRs and requires the Discharger to: comply with uniform statewide recycling criteria; establish and enforce rules and regulations for Users in accordance with statewide recycling criteria; submit quarterly reports summarizing reclaimed water use; and conduct periodic inspections of the recycled water use sites. The City submitted a draft Recycled Water Ordinance with the June 2009 RWD, but has not adopted the Ordinance. Provision I.22 requires the City to establish and have the authority to enforce rules and/or regulations for recycled water, in accordance with statewide recycling criteria. Attachment E, attached hereto and made a part of this Order by reference, summarizes requirements of the uniform recycled water criteria. However, the City and Users will need to consult the California Code of Regulations, the Health and Safety Code, and the Water Code directly to ensure compliance with the statutes and regulations.
35. A 1996 Memorandum of Agreement (MOA) between the Department of Public Health and the State Water Board on the use of recycled water establishes basic principles relative to the agencies and the regional water boards. In addition, the MOA allocates primary areas of responsibility and authority between these agencies, and provides for methods and mechanisms necessary to assure ongoing, continuous future coordination of activities relative to the use of recycled water in California. This Order implements the applicable portions of the Title 22 water recycling regulation in accordance with the MOA.
36. On 8 January 2003, the Department of Public Health distributed a memorandum to all regional water quality control boards recommending that orchard and vineyard crops be irrigated with water that meets, at minimum, the requirements for disinfected secondary-2.2 recycled water, as defined in section 60302.220 of Title 22.
37. On 3 February 2009, the State Water Board adopted Resolution 2009-0011, *Adoption of a Policy for Water Quality Control for Recycled Water* (Recycled Water Policy). The Recycled Water Policy promotes the use of recycled water to achieve sustainable local water supplies and reduce greenhouse gas emissions.
38. On 23 April 2009, the Central Valley Water Board adopted Resolution R5-2009-0028, *In Support of Regionalization, Reclamation, Recycling and Conservation for Wastewater Treatment Plants* (the "Regionalization Resolution"). The Regionalization Resolution encourages water recycling, water conservation, and the regionalization of wastewater treatment facilities. It requires dischargers to document:
 - 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).

Recycling of effluent by the Discharger is consistent with the intent of the State Water Board's Recycled Water Policy and the Central Valley Water Board's Regionalization Resolution.

39. The City currently discharges commingled effluent from the WWTF to eight large ponds (2,640 acre-ft total) for disposal and storage. According to evaporation estimates and Use Area recycled water application rates from the City's Annual Land Management Report for 2011, an average of approximately 3.3 mgd (29 percent) percolates to groundwater, 0.8 mgd (6.9 percent) evaporates, and recycled water projects account for the remaining 7.2 mgd (64 percent).
40. At the time of adoption, WDRs Order R5-2002-0185 authorized the discharge of up to 9.39 mgd of commingled effluent to 200 acres of disposal and storage ponds, with approximately 1,330 acres of recycled water application areas (Use Areas) available. The Use Areas consisted of about 800 acres of City-owned land and 530 acres owned by Thomas and Ronald Clark (hereafter Clarklind Farms).
41. Water Reclamation Requirements Orders 90-058 and 90-059 regulate the Clarklind Farms Use Areas. Clarklind Farms has authorized the City to perform required monitoring and reporting tasks required by the Water Reclamation Requirements.
42. Since adoption of WDRs Order R5-2002-0185, the City has prepared additional Title 22 engineering reports and submitted supporting RWDs (or reports of water reclamation). The total land area of proposed recycled water projects for the City is about 4,000 gross acres. However, some of the Use Areas have been removed or otherwise taken out of service, including about 150 acres of Clarklind Farms land dedicated to pistachios, 160 acres of City land converted to percolation ponds, about 160 acres of land now used for application of dairy wastewater, and other properties that were not included in the 2009 RWD or subsequent documents. Attachment F, a part of this Order, is a map of the recycled water Use Areas.
43. For the purpose of water and nutrient balance calculations, the RWD assumes that 90 percent of each Use Area will be used for recycling on crops, with an irrigation efficiency of 70 percent. The RWD uses published reference evapotranspiration and crop coefficients to estimate irrigation water requirements.
44. The table below presents the Use Areas by owner, as described in the RWD and subsequent documents (updated in August 2012). For each Use Area, the table indicates the estimated acreage that will receive wastewater (typically 90 percent of gross parcel acreage). The Department of Public Health has approved a recycled water Title 22 engineering report for each of the listed recycled water projects. The gross land area of the proposed Use Area properties totals about 2,920 acres, of which about 2,620 acres is available for application of recycled water.

<u>Owner</u>	<u>Project Name</u>	<u>Acres</u>
City of Tulare	City Property	533
Clark, Thomas and Ronald	Clarklind Farms Property	313

<u>Owner</u>	<u>Project Name</u>	<u>Acres</u>
Colson, Patricia	Heitz Ranch Property	95
Walter Colson Admin. Trust	Colson Property	221
De Azevedo-Anker, Filomena	De Azevedo Property	45
Eddy, Jack and Mary	Eddy Property	417
Faria, Raymond and Letha	Faria Property	68
Heiskell Family Farms	Hillman Property	178
Martin, Mary	Mello-Martin Property	616
Wilbur Family Trust	Wilbur Property	138

45. Recycled water projects are limited to areas for which the Department of Public Health has approved a Title 22 engineering report and for which prerequisites to discharge listed in the Water Code (Wat. Code, § 13264, subd. (a).) have been met. The Department of Public Health issued a letter on 3 August 2012 approving the Title 22 engineering reports for all the recycled water projects listed in Finding 44.
46. The Discharger submitted a letter on 28 August 2012 updating the 2009 RWD with the current effluent disposal capacity. The letter includes water and nutrient balance calculations prepared by a civil engineer indicating that, with the existing effluent storage ponds and the Use Areas listed above, the Discharger has disposal capacity for a flow of up to 16.0 mgd. On 26 March 2013, the City's contract civil engineer informed the Central Valley Water Board that the disposal capacity for the WWTF is now limited to 16.0 mgd because the Lopes Property (a 148-acre Use Area) has changed ownership and will not receive effluent from the WWTF.
47. The Discharger submitted a draft Recycled Water Ordinance as part of the RWD. Once it has adopted a Recycled Water Ordinance, or otherwise establishes the authority to enforce rules and/or regulations for Users governing the design and construction of recycled water use facilities and the use of recycled water, the City may issue water recycling permits to Users of WWTF effluent. In the meantime, the proposed recycled water projects appear to meet the statutory prerequisites to discharge (Wat. Code, § 13264, subd. (a).).
48. Water balances in the 2009 RWD demonstrate the pond storage and Use Area acreage requirements to accommodate multiple discharge flow scenarios, including commingled effluent flows of 15 mgd, 18 mgd, and 20 mgd. From the RWD, the approximate effluent storage capacity and Use Area acreage required for each scenario is listed below.

	<u>Units</u>	<u>Scenario 1</u>	<u>Scenario 2</u>	<u>Scenario 3</u>
Commingled Effluent Flow	mgd	15	18	20
Farmland Required (gross)	acres	2,300	3,000	3,300
Effluent Storage Required	acre-ft	2,700	3,000	3,300

49. The immediately applicable commingled effluent flow limitation in this Order is based on the existing effluent disposal capacity. Under the conditions of the Master Recycling Permit, the

Discharger may expand the Use Areas. The commingled effluent flow limit may incrementally increase with Executive Officer approval, according to Provision I.17 and Provision I.18, up to the treatment capacity of the WWTF (20 mgd maximum).

Pretreatment

50. Pursuant to California Code of Regulations, title 23, section 2233, the Discharger is required to establish a pretreatment program to protect the WWTF from upset as well as protect sludge quality and groundwater quality underlying the WWTF and Use Areas.
51. The 2002 WDRs found that the City's pretreatment program was inadequate. Most of the Significant Industrial Users (SIUs) in the City were not compliant with local limits, but the City had not performed any enforcement activity. The 2002 CDO required the City to implement an Industrial Pretreatment Program conforming to Title 40, Code of Federal Regulations (C.F.R.), part 403. The City modified its Sanitary Sewer Ordinance to implement significant changes to its Industrial Pretreatment Program. On 30 January 2004, the Central Valley Water Board adopted Resolution R5-2004-0019, approving the City's updated Industrial Pretreatment Program.
52. In January 2010, Central Valley Water Board staff and a contractor for the United States Environmental Protection Agency conducted a pretreatment compliance inspection. The Pretreatment Compliance Inspection Report, transmitted 26 August 2011, revealed numerous industrial pretreatment program-related violations of WDRs Order R5-2002-0185, including failure to implement a system of progressive enforcement against industrial users that violated pretreatment limits. Central Valley Water Board staff requested a written description of measures the City has or would implement to resolve the pretreatment program deficiencies identified in the report.
53. The City's historic lack of a proper pretreatment program and failure to enforce the program it had in place resulted in long-term discharge to the collection system of high strength wastewater. The high strength of the industrial influent appears to have caused (either directly or indirectly) violations of effluent and groundwater limits of WDRs Order R5-2002-0185. Violations have included exceedances of groundwater limits for EC, sodium, and nitrate, and effluent limits for EC and biochemical oxygen demand. Findings 93 through 95 summarize the City's past compliance issues.
54. The City stopped issuing penalties for EC violations in August 2009, to allow SIUs to adjust wastewater pH, which the City reportedly expected would aide in startup of the new Industrial Plant improvements in November 2009.
55. The dairy processing wastewater that dominates Industrial Plant influent flow has relatively low pH and high BOD and nitrogen concentrations. The City uses biological treatment processes to remove BOD and nitrogen, which requires a relatively narrow pH range. Fluctuations in pH, exacerbated by the failure of industrial sewer users to comply with local limits for pH, require the City to adjust influent wastewater pH to sustain the Plant microbes. The City's continuous influent pH monitoring data shows wide and rapid fluctuations in pH, including a three-hour period in August 2010 when the pH changed from 4.5 to 10.5. In the past, the City used

various inorganic chemical means to stabilize pH, including sodium hydroxide and magnesium oxide, which increased the salinity of the discharge. Since about 2006, the City has adjusted the pH of influent industrial wastewater with ammonia. Until the City made over \$85 million in Industrial Plant upgrades, primarily to improve treatment for removal of nitrogen, Industrial Plant effluent nitrogen often exceeded 100 mg/L. The City discharged commingled effluent with an average total nitrogen concentration of 85 mg/L as nitrogen as recently as 2008. Total nitrogen concentrations dropped significantly, to near 10 mg/L, once construction projects were completed and operational improvements were implemented.

56. On 6 March 2012, the City adopted a revised Sanitary Sewer Ordinance that includes significant changes to the Industrial Pretreatment Program. The changes, intended to address the deficiencies noted in the 26 August 2011 Pretreatment Compliance Inspection Report, include updates for consistency with streamlining regulations, clarification of violation definitions and enforcement protocols, and supporting technical justification for BOD/TSS limits and changes to salinity/pH limits. The work included preparation of an Enforcement Response Plan, which details how, and the circumstances under which, the City will pursue enforcement.
57. Changes to local limits for salinity and pH in the revised Industrial Pretreatment Program incorporate allowances for elevated EC when there is sufficient evidence to show that the excess EC is due to nitrate or ammonia in the wastewater. The Ordinance specifically credits the SIU 4.0 umhos/cm for each milligram per liter of nitrate or ammonia in the discharge to the sewer. The City reports that the theoretical relationships with EC are about 5.1 umhos/cm per mg/L nitrate and 5.3 umhos/cm per mg/L ammonia. The City expects the credit to encourage SIUs to comply with local limits for pH by addition of nitric acid and ammonia, rather than with inorganic acids and bases. Nitrogen removal treatment in the Industrial Plant can remove nitrate and ammonia, but inorganic acids and bases add salts that pass through the Plant, resulting in excessive discharge salinity.
58. The revised Industrial Pretreatment Program updates the local limits for discharges to the sewer collection system. The changes consist of a broader allowable pH range of 5 to 11 rather than 6 to 11, and the EC "credit" described in Finding 57. The local limits apply to all dischargers to the sewer collection system. Through its Industrial Pretreatment Program, the City also has the authority to set more stringent local limits for Categorical Industrial Users consistent with federal industrial pretreatment regulations (e.g. 40 C.F.R. § 405.).
59. On 15 March 2012, the City submitted an evaluation of the Industrial BOD and TSS limits certified by a licensed civil engineer. The evaluation includes calculated BOD and TSS loading rates for each significant industrial user permitted to discharge to the sewer. According to the evaluation, while the average Industrial Plant influent flow is about 59 percent of the hydraulic capacity, the average mass loading to the Industrial Plant of about 95,000 pounds of BOD per day is 43 percent of the design treatment capacity.
60. On 15 March 2012, the City submitted an updated Industrial User Survey it completed in February 2012. Eight SIUs discharge to the Industrial Plant. The majority of wastewater flow is from processors of cheese, butter and whey, and other dairy-based products, including Land O'Lakes, Kraft Cheese Company, Saputo Cheese Company, Morningstar Foods (formerly

Tulare Culture Specialists), and Dreyers Grand Ice Cream (formerly Ice Cream Partners and Haagen Dazs). The SIUs connected to the Industrial Plant that are not dairy processors include Ruiz Food Service (food processing) and a food transportation company with truck washout operations. Four SIUs discharge to the Domestic Plant, including food transportation companies with truck washout operations, and Corpak, Inc. (cardboard manufacturing).

61. Further technical and legal review is necessary to determine whether the revised Industrial Pretreatment Program meets all applicable State and federal requirements. Approval of the Industrial Pretreatment Program will occur by separate order once these reviews are complete.

Wastewater Collection System

62. On 2 May 2006, the State Water Resources Control Board (hereafter State Water Board) adopted a General Sanitary Sewer System Order (State Water Board Water Quality Order 2006-0003-DWQ, *Statewide General Waste Discharge Requirements for Sanitary Sewer Systems*) (the "General Order"). The General Order requires that all public agencies that own or operate sanitary sewers systems greater than one mile in length comply with the General Order. The Discharger's collection system is greater than one mile in length. The Discharger submitted a Notice of Intent (NOI) for coverage under the general permit to the State Water Resources Control Board in July 2006 and is covered under the General Order.
63. The Discharger has reported 9 sanitary sewer spills in 2011 and 2012. Most of the spills were reportedly caused by obstruction of wastewater flow by grease deposition in the sewer. Three spills were reported as violations of the General Order. No spills occurred to surface water, but were reportedly all confined to land. All the reported spills were cleaned up and disinfected within 24 hours. The spills do not appear to be recurring.

Biosolids

64. The 2002 CDO found that the Discharger's use of unlined sludge drying beds may have caused groundwater to exceed groundwater limitations in the 2002 WDRs, and threatened to violate Sludge Specifications. The 2002 CDO required improvements to sludge management that would comply with WDRs, specifically the requirement that treatment or storage of sludge, solid waste, and biosolids on the property of the WWTF must be temporary and controlled and contained in a manner that minimizes leachate formation and precludes infiltration of waste constituents into soils in a mass or concentration that will violate groundwater limitations.
65. When the City proposed to line the existing sludge drying beds with soil cement, Central Valley Water Board staff expressed concern about the long-term reliability and performance of soil cement as a liner material. In partnership with 13 other cities in the Tulare Lake Basin, the City hired a consultant to prepare a technical report supporting the technology. Central Valley Water Board staff reviewed a draft version of the report, entitled *Soil-Cement Lining of Sludge Drying Beds Best Practicable Treatment and Control for Solar Drying of Municipal Wastewater Sludge*. In a 24 July 2003 meeting with the City of Tulare, Central Valley Water Board staff provisionally accepted the report's premise that soil cement may be considered an acceptable technology to line remote sludge drying beds.

66. Key conditions of acceptance of soil cement lined sludge drying beds include: comprehensive design criteria, stringent construction quality assurance and quality control, periodic maintenance, and effective monitoring of containment integrity. Municipalities are expected to discontinue use of the soil cement lined beds, implement an alternative method of sludge drying, and implement groundwater remediation measures if they cannot demonstrate containment is sufficiently protective of groundwater.
67. The Discharger completed construction of approximately 12 acres of soil cement lined sludge drying beds for Domestic Plant sludge in 2005. The sludge drying beds include one demonstration bed that incorporates a leachate collection and recovery system. All the beds feature a 14-inch soil cement liner. The demonstration bed also includes a continuous 30-mil polyvinyl chloride (PVC) liner underlying the soil cement. A gravel bed between the liners drains to a sump. The City of Porterville submitted the results of a hydraulic conductivity study at the City of Tulare soil cement lined sludge drying beds in a technical report dated September 2006. The study concludes that, at less than 10^{-6} cm/s, the hydraulic conductivity of the soil cement liner will sufficiently limit percolation to minimize impacts to groundwater. The study does not present leachate water quality data or assess potential groundwater degradation. The City completed construction of 25 acres of soil cement lined sludge drying beds of the same design for Industrial Plant sludge in 2009.
68. Upon inspection in early 2010, both the Domestic Plant and Industrial Plant sludge drying beds appeared to be significantly weathered. At least the top 6 inches of liner material was friable in the sludge drying beds inspected at each Plant. The City's consulting engineers assert that even if the liner had lost several inches of material at the surface, the remaining liner thickness should allow continued operation for years with minimal seepage due to very low hydraulic conductivity. The state of the soil cement lined sludge drying beds has not been fully characterized; the ongoing performance of the soil cement lined drying beds needs to be reevaluated. Provision I.21 of this Order requires the Discharger to submit a Sludge Drying Bed Assessment Report to characterize the discharge to the sludge drying beds and assess the potential groundwater degradation associated with the beds based on estimated mass loading of waste constituents to groundwater.
69. After the sludge drying beds were constructed, the City used them only for a few days in 2006 and a few days in 2010 before initiating daily use of the beds beginning in 2012. In an attempt to maximize gas production and treatment performance, all the biosolids from both Plants were directed to the Fermenter at the Industrial Plant during that period. Sludge taken offsite is sent to a McCarthy Family Farms, Inc. facility in Corcoran. McCarthy Family Farms, Inc. is enrolled under WDRs Order 95-140, *Waste Discharge Requirements General Order for Reuse of Biosolids and Septage on Agricultural, Forest, and Reclamation Sites*.

Site-Specific Conditions

70. The WWTF and Use Area lie within the Tulare Lake Basin. The ground surface in the vicinity of the WWTF slopes gently (10 feet/mile) toward the southwest. Surface water drainage is to Deep Creek, a Valley Floor Water that drains to the Tulare Lake Bed. The Discharger is not required to obtain coverage under a National Pollutant Discharge Elimination System General

Industrial Storm Water Permit for the discharge because all storm water runoff from the WWTF property is diverted into existing storm water retention basins, kept separate from the wastewater stream, and does not discharge to a water of the United States.

71. The City's potable water supply originates from 28 groundwater wells and is of good mineral quality (i.e., its quality is better than necessary to meet established water quality objectives). The City's 2011 Annual Water Quality Report characterizes the source water concentration ranges for select constituents as follows:

<u>Constituent / Parameter</u>	<u>Units</u>	<u>Low</u>	<u>High</u>	<u>Average</u>
EC	umhos/cm	140	470	240
Total Dissolved Solids	mg/L	84	270	147
Sodium	mg/L	22	95	34
Chloride	mg/L	3.6	44	9.7
Nitrate (as N)	mg/L	nondetect	8.6	3.8
Arsenic	ug/L	nondetect	9.4	5.4

72. The discharge area is in an arid climate characterized by hot dry summers and mild winters. The rainy season generally extends from November through March. Occasional rains occur during the spring and fall months, but summer months are dry. According to information published by the California Department of Water Resources, average annual precipitation, pan evaporation, and reference evapotranspiration in the discharge area are about 10 inches, 61 inches, and 51 inches, respectively.
73. According to the United States Department of Agriculture Soil Conservation Service, Soil Survey of Tulare County, California, Western Part (draft), the soils of the Kaweah River alluvial fan near the WWTF consist of fine sandy loams and silty clay loams and are considered moderately permeable. The dominant sediments are silt, fine sands, and clay, according to logs of wells drilled in the area. A clay layer called the 'E' Clay of the Tulare Formation occurs at a depth of about 250 feet below ground surface (bgs). The 'E' Clay, which is reportedly 20 to 50 feet thick in the area, divides underlying groundwater into an upper unconfined and lower confined aquifers.
74. The WWTF is about seven miles southwest of the center of the City of Tulare. Land use in the area between the WWTF and the City is predominantly irrigated agriculture and rural residential. Land use to the north, west, and south of the WWTF primarily consists of irrigated agriculture, rural residential, and at least 10 dairies within a two-mile radius of the WWTF and Use Area. Crops grown within a five mile radius of the WWTF include, but are not limited to, alfalfa, corn, cotton, grapes, almonds, walnuts, sudan grass, dry beans, and pistachios, according to the California Department of Water Resources land use data published in 1999. This data generally agrees with pesticide use permit records for 2011 from the Tulare County Agricultural Commissioner's Office.

75. The Tulare Irrigation District Water Management Plan for 2010 estimates that it delivers water to about 76,000 acres of irrigated crops in the District, with about 71,000 acres of flood/furrow irrigation, about 3,800 acres of low-volume (e.g., drip) irrigation systems, and 825 acres of sprinkler irrigation. Discharge from the WWTF will also influence groundwater underlying areas outside the Tulare Irrigation District.
76. The Tulare Irrigation District supplies excellent quality (EC less than 50 umhos/cm) surface water from the Kaweah and Saint Johns Rivers, and from the Central Valley Project (Friant-Kern Canal). Water deliveries fluctuate widely from year to year according to precipitation. According to information published by the Tulare Irrigation District, for the period of 1949 through 2003, annual crop requirements in the area exceeded available surface water deliveries more than 40 percent of the time. During dry years, farmers supplement their water supply with groundwater wells, or as necessary, rely exclusively on groundwater wells for irrigation water supply. During wet years, the Tulare Irrigation District intentionally uses excess water to recharge groundwater. District data indicate that since 1949, groundwater elevations within the District have fallen about 30 feet. This continuing groundwater decline illustrates: (1) District farmers rely heavily on groundwater for crop irrigation; and (2) District surface water supplies are not sufficient to offset groundwater use.
77. Tulare Canal is an unlined irrigation canal that conveys surface water to farmland within the Tulare Irrigation District. It borders the WWTF's southern boundary, adjacent to the north side of the effluent ponds, traverses Use Areas along Paige Road, and terminates in the Lakeland Canal approximately 12 miles southwest of the WWTF. Attachment F, a part of this Order, depicts the Tulare Canal and other Tulare Irrigation District canals.

Groundwater Considerations

78. Groundwater flow in the unconfined aquifer of the Kaweah subbasin is generally to the southwest, toward the trough of the valley. According to *Lines of Equal Elevation of Water in Wells, Unconfined Aquifer*, published by the California Department of Water Resources for the Kaweah Groundwater Basin, pumping activity in and around the City appears to have induced a groundwater depression in the vicinity that gives groundwater at the City-wide scale a westerly gradient. At the scale of the WWTF, quarterly self-monitoring reports from the City show groundwater flow is generally away from the WWTF effluent ponds with a gradient of about 3 feet per 1000 feet. Groundwater in the unconfined aquifer is first encountered at depths of about 65 to 85 feet bgs in the vicinity of the WWTF and Use Areas. The area does not appear to include significant confining layers above the 'E' Clay.
79. Sources of groundwater recharge in the area include precipitation, land application of wastewater (including numerous dairies), and good quality water sourced from the Kaweah River. As noted above in Findings 75 through 77, the Tulare Irrigation District is responsible for a significant amount of recharge in the area, primarily through recharge basins and unlined canals in widespread use for irrigated agriculture. Elk Bayou, flowing southwest from Outside Creek, is within about a mile of the southernmost Use Areas and has been indicated by water level maps to be a significant source of recharge.

80. The City maintains a groundwater monitoring well network to monitor the groundwater. Attachment F presents approximate well locations. The City installed 13 additional groundwater monitoring wells since the 2002 WDRs, for a total of 29 wells. However, groundwater levels have dropped below the screened interval of 12 wells. Of the remaining 17, only seven of the wells are screened across the groundwater surface and monitor first-encountered groundwater. The other 10 were constructed 30 to 50 feet below the groundwater surface to monitor the vertical extent of groundwater degradation. No functional monitoring wells exist to monitor first-encountered groundwater downgradient from the Domestic or Industrial sludge drying beds, or downgradient from the majority of the recycled water Use Areas. The single upgradient well generally appears to represent upgradient groundwater quality, but is not screened across the groundwater surface and is not sufficient for the large discharge area. The City is limited in its ability to assess upgradient groundwater conditions and groundwater degradation because its groundwater monitoring well network is inadequate.
81. The 2002 WDRs note that groundwater monitoring wells MW-1, MW-2 and MW-12, designed to monitor groundwater upgradient of the discharge, are likely being influenced by seepage from a Tulare Irrigation District canal. The City installed two additional upgradient monitoring wells in 2006: MW-31 and MW-32. MW-32, installed with a screened interval between 65 and 90 feet below ground surface (bgs), was intended to monitor first-encountered groundwater, while MW-31 was screened from 125 to 150 feet bgs to monitor deeper groundwater. Groundwater has reportedly never risen to a level in MW-32 that would allow the City to collect a sample. The groundwater surface elevation during 2012 monitoring was about 15 feet above the well screen in MW-31.
82. The 2009 RWD characterizes background groundwater quality with the data below. This characterization is a summary of analytical results for samples from MW-31 for five quarterly sampling events from 2006 through 2007. The City characterizes MW-31 as a “deep” well, but suggests that since the aquifer is coarse-grained material with no significant confining layers, its character represents first-encountered groundwater.

<u>Constituent / Parameter</u>	<u>Units</u>	<u>Range</u>
Nitrate (as N)	mg/L	14 - 15
Total Dissolved Solids	mg/L	290 - 320
EC	umhos/cm	400 - 479
Sodium	mg/L	47.5 - 55
Manganese	ug/L	< 10

83. The California Department of Water Resources and the United States Geological Survey publish information about groundwater quality. Data that is pertinent to characterizing first-encountered groundwater is limited due to wide variability in the screened interval of wells, sampling dates, and constituents monitored. Samples from two upgradient wells and one downgradient well collected in the 1950s and 1960s (screened above 150 feet bgs) had nitrate as nitrogen less than 5 mg/L, EC of less than 400 umhos/cm, chloride of less than 20 mg/L, and sodium less than 65 mg/L. Naturally occurring groundwater is of good quality. Published

data generally agree with the characterization in the RWD, with the exception of nitrate concentrations, which appear to be higher in the City's upgradient well (Finding 82).

84. The Central Valley Water Board found in Waste Discharge Requirements Order R5-2002-0185 that the Discharger had caused a condition of groundwater pollution with nitrate, iron, and manganese, and caused excessive groundwater degradation with salts. Cease and Desist Order R5-2002-0186 requires the City to determine the vertical and horizontal distribution and extent of waste constituents in the soil profile and groundwater beneath and beyond the WWTF and Use Area to the extent influence by the discharge. It also requires the Discharger to prepare and implement a work plan for groundwater clean-up.
85. Central Valley Water Board staff approved a report from the Discharger characterizing onsite soils. The report summarizes the results of soil sampling, recommends that the City continue required annual soils monitoring, and notes that a groundwater assessment will be submitted under separate cover. The Discharger did not collect soil samples, as required by Monitoring and Reporting Program R5-2002-0186, until 2011. The Discharger has submitted multiple groundwater assessments, but the full vertical and horizontal distribution and extent of WWTF-related waste constituents in groundwater is still not defined.
86. As part of its RWD, the Discharger makes the case that implementing a groundwater clean-up project would not be cost effective. As an alternative, it proposes to cease discharge of high strength waste, which would lead to improved groundwater quality over time by dilution of degraded groundwater with better quality effluent and other sources of good quality recharge.
87. The table below presents average analytical results for the period of July 2011 through April 2012 for each groundwater monitoring well that contained enough water to collect a sample.

	Nitrate as <u>Nitrogen</u> mg/L	<u>EC</u> umhos/cm	<u>Sodium</u> mg/L	<u>Chloride</u> mg/L	<u>Iron</u> ug/L	<u>Manganese</u> ug/L	<u>Organic Carbon</u> mg/L
Upgradient							
MW-2	0.3	89	5.0	2.0	< 5	< 1	0.3
MW-31	19	551	53	34	< 5	1.7	0.4
Downgradient of Effluent Ponds							
MW-18	10	1,290	175	90	< 5	1.7	0.8
MW-19	2.1	928	177	81	32	< 1	1.4
MW-20	3.2	552	45	14	< 5	< 1	0.4
MW-25	0.2	900	130	80	< 5	96	2.1
MW-26	2.8	1,011	145	85	5.9	6.2	1.7
MW-27	0.9	840	101	84	4.3	13	1.0
Downgradient of Use Areas							
MW-11A	32	1,347	150	107	< 5	< 1	0.6
MW-15A	29	967	61	60	< 5	< 1	0.5

	<u>Nitrate</u> as <u>Nitrogen</u> mg/L	<u>EC</u> umhos/cm	<u>Sodium</u> mg/L	<u>Chloride</u> mg/L	<u>Iron</u> ug/L	<u>Manganese</u> ug/L	<u>Organic Carbon</u> mg/L
MW-16	14	549	22	32	4.4	< 1	0.6
MW-24	7	900	88	74	< 5	20	0.7
MW-28	30	1,140	107	102	< 5	10	0.6
MW-30	45	1,440	138	123	< 5	2.6	0.8
MW-34	32	1,225	98	93	< 5	1.6	0.5
MW-35	14	891	128	98	< 5	< 1	0.6
Downgradient or Cross-gradient from WWTF							
MW-23	9.0	979	80	68	6.1	1.3	0.4
Far Down Gradient							
MW-33	22	771	99	42	< 5	1.2	0.5

88. The groundwater surface elevation has dropped below the screened interval of some monitoring wells, limiting data available for groundwater assessment. However, wells near the effluent ponds (MW-18, MW-19, MW-25, MW-26, and MW-27) provide enough data to determine that groundwater influenced by percolating effluent has improved over conditions at the time of adoption of the 2002 WDRs. For example, EC has dropped in MW-19 from as high as 2,500 umhos/cm to less than 1,000 umhos/cm. MW-27 still shows the ongoing trend of degradation, likely because it is a deeper well at the edge of the ponds and does not yet represent groundwater influenced by better quality effluent.
89. Iron and manganese concentrations in MW-18, near the effluent ponds, went up (manganese up to 120 ug/L) during the period from about 2005 to 2007 as total nitrogen decreased to below detection limits; a sign of reducing conditions in the soil. As iron and manganese concentrations have decreased to near undetectable levels in recent years, total nitrogen has increased from less than 1.0 mg/L to around 10 mg/L, but much less than the highest groundwater total nitrogen concentration in MW-18 of 50 mg/L in 2002. Monitoring of shallow well MW-26 for 2011 and 2012 in the center of the pond area shows low concentrations of iron (7 ug/L), manganese (6 ug/L), and nitrate (2.6 mg/L as nitrogen). The four samples collected from deeper well MW-25, since 2008, show manganese concentrations are still above the secondary MCL of 50 ug/L, but the concentrations are dropping. The data show reducing conditions, and associated denitrification, continue to occur to a limited extent beneath the ponds, but the rate of mobilization of iron and manganese has significantly decreased.
90. Three groundwater monitoring wells (MW-15A, MW-16, and MW-30) provide water quality data for first-encountered groundwater underlying the Use Areas. The data generally shows groundwater quality has been degraded by past discharges of WWTF effluent (e.g., nitrate concentrations increased from roughly 20 mg/L to 30 mg/L as nitrogen in MW-15A from 1996 to 2008). Groundwater degradation with nitrate and salinity appears to be associated with the higher strength of effluent prior to recent WWTF improvements. Deeper wells in the Use Areas (MW-11A, MW-28, MW-34, and MW-35) generally show a similar trend of degradation.

91. The table below presents the reported maximum loading rate for a single parcel and average annual Use Area nitrogen loading rates by year. The table shows the effect of WWTF improvements on the nitrogen loading rate in the Use Areas. Future trends in groundwater quality underlying the Use Areas are expected to reflect the improved loading rates. Alfalfa crops in the Use Area have potential to remove up to 480 pounds of nitrogen per acre.

	<u>2009</u>	<u>2010</u>	<u>2011</u>
	lb/acre	lb/acre	lb/acre
Maximum Nitrogen Loading	2,390	437	223
Average Nitrogen Loading	1,200	215	122

92. In general, the discharge is now significantly better quality than existing groundwater quality. Groundwater quality data for wells influenced by effluent percolation from ponds appears to already reflect improvements in WWTF effluent quality. However, based on the analysis of lateral groundwater flow in the RWD, the Discharger estimates it would take about 4 years following changes in effluent quality to measurably influence groundwater quality a half mile from the ponds. The RWD states that it will theoretically take 9 years and 17 years to measure changes in groundwater 1 mile and 2 miles downgradient, respectively. The estimated times do not consider effluent application on the Use Areas, which the RWD says will mask the effects on groundwater of improved discharge quality.

Compliance and Enforcement Considerations

93. In 2002, the Central Valley Water Board adopted WDRs R5-2002-0185 and CDO R5-2002-0186. The Orders included provisions to address multiple ongoing issues with the discharge. The issues are summarized in the list below.
- a. The WWTF had inadequate capacity to treat the strength and flow of wastewater it was accepting. It was exceeding flow limits and effluent water quality limits for EC, BOD, and TSS.
 - b. The City's Industrial Pretreatment Program and its implementation were inadequate.
 - c. The City had insufficient land to dispose of its effluent and was applying effluent to reclamation areas in excess of agronomic rates. Effluent was over-applied to the point that it spilled over onto neighboring properties and into irrigation canals.
 - d. The City was discharging high strength wastes to unlined treatment ponds and unlined sludge drying beds.
 - e. The City's groundwater monitoring well network was inadequate.
 - f. Operators bypassed treatment units, resulting in discharge of partially treated waste.

- g. Storm events resulted in excessive volumes of pollutant-free wastewater entering the collection system.
 - h. The City caused groundwater degradation and pollution over a large area underlying its percolation ponds and use areas. Groundwater was degraded with numerous constituents including chloride, sulfate, boron, organic carbon, and increased alkalinity and hardness. Degradation exceeded water quality objectives (caused pollution) for nitrate, EC, TDS, sodium, iron, and manganese.
94. The Discharger has worked to address the issues presented above, generally as required by the 2002 Orders. The list below summarizes the efforts the City has made with respect to each issue listed above in Finding 93.
- a. In the Industrial Plant, the City installed a dissolved air flotation (DAF) unit to remove fats, oils, and grease (FOG) from wastewater that bypasses the Fermenter. The City constructed six sequencing batch reactors (SBRs), six denitrifying filters, two DAF units for thickening solids generated in the SBRs, and three anaerobic digesters.

In 2006, the City constructed a plug-flow anoxic basin in the Domestic Plant to improve nitrogen removal. On 18 November 2004, the City submitted a Salinity Control Plan, as required by the 2002 CDO.
 - b. The City made changes to its Industrial Pretreatment Program, implemented by changes to its Sewer Ordinance, at the end of 2003. The Central Valley Water Board adopted a resolution approving the Industrial Pretreatment Program in January 2004.
 - c. The City now owns 590 acres of the Use Area and has contracts for reclamation on over 2,000 acres of land owned by other parties. The Use Area lands total more than 1,500 additional acres since adoption of the 2002 WDRs. The City proposed that the WDRs should include a Master Recycling Permit to allow the City to authorize new recycled water users and reclamation areas.
 - d. At the Industrial Plant, the City lined the first pond of each aerated pond series with concrete (shotcrete) and compacted the remaining cell bottoms in 2004. When the City began using the SBRs at the end of 2009, it began phasing out use of the aerated ponds. It now uses only the initial concrete-lined ponds (aerated equalization basins) in the aerated pond series. The City also lined its domestic sludge drying beds with soil cement and constructed soil cement lined sludge drying beds of similar design for sludge from its Industrial Plant.
 - e. The City installed 13 additional groundwater monitoring wells in 2006. However, one of the key additional wells installed in 2006 (upgradient well MW-32) has never produced enough water to collect a sample, and others are also dry. Expanded Use Areas have no representative monitoring wells and upgradient groundwater data is limited. The monitoring well network is improved, but still inadequate.

- f. Operators use controlled bypass of certain treatment units to optimize carbon to nitrogen ratios and improve performance of the WWTF.
 - g. The City has been pursuing projects to remove direct storm water connections to the sewer system, including a project completed in 2010 that involved construction of a dedicated dairy processing wastewater line in place of a large storm drain that had been used to connect to the sewer.
 - h. In the 2009 RWD, the City proposes to rely on natural attenuation and dilution to address groundwater pollution from its previous discharges.
95. As noted above, improvements to the WWTF have generally resulted in ongoing compliance with the 2002 WDRs and satisfied the purpose of the 2002 CDO. CDO R5-2002-0186 will be rescinded by a separate order. However, another enforcement order (e.g. Cleanup and Abatement Order) may be appropriate to direct ongoing groundwater plume assessment and remediation.

Basin Plan, Beneficial Uses, and Water Quality Objectives

96. The *Water Quality Control Plan for the Tulare Lake Basin, Second Edition, revised January 2004* (the "Basin Plan") designates beneficial uses, establishes narrative and numerical water quality objectives, contains implementation plans and policies for protecting all waters of the Basin, and incorporates, by reference, plans and policies of the State Water Board. In accordance with Water Code section 13263(a), these waste discharge requirements implement the Basin Plan.
97. The Basin Plan specifies that municipal and domestic wastewater dischargers will be required to reclaim and reuse wastewater whenever reclamation is feasible.
98. The WWTF is in Detailed Analysis Unit (DAU) No. 242, within the Kaweah Basin hydrologic unit. The Basin Plan identifies the beneficial uses of groundwater in the DAU as municipal and domestic supply, agricultural supply, industrial service and industrial process supply, and water contact and non-contact water recreation.
99. The WWTF is in the Kaweah Delta Hydrologic Area (No. 558.10) of the South Valley Floor Hydrologic Unit, as depicted on hydrologic maps prepared by State Water Resources Control Board in August 1986.
100. The Basin Plan includes a water quality objective for chemical constituents that, at a minimum, requires waters designated as domestic or municipal supply to meet the MCLs specified in Title 22. The Basin Plan recognizes that the Central Valley Water Board may apply limits more stringent than MCLs to ensure that waters do not contain chemical constituents in concentrations that adversely affect beneficial uses.
101. The Basin Plan establishes narrative water quality objectives for Chemical Constituents, Taste and Odors, and Toxicity. The Toxicity objective, in summary, requires that groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological

responses in human, plant, animal, or aquatic life associated with designated beneficial uses. Quantifying a narrative water quality objective requires a site-specific evaluation of those constituents that have the potential to impact water quality and beneficial uses.

102. The Basin Plan identifies the greatest long-term problem facing the entire Tulare Lake Basin as the increase in salinity in groundwater, which has accelerated due to the intensive use of soil and water resources by irrigated agriculture. The Basin Plan recognizes that degradation is unavoidable until there is a long-term solution to the salt imbalance. Until then, the Basin Plan establishes several salt management requirements, including:
 - a. The incremental increase in salts from use and treatment must be controlled to the extent possible. The maximum EC of the effluent discharged to land shall not exceed the EC of the source water plus 500 umhos/cm. When the source water is from more than one source, the EC shall be a weighted average of all sources.
 - b. Discharges to areas that may recharge good quality groundwater shall not exceed an EC of 1,000 umhos/cm, a chloride content of 175 mg/L, or boron content of 1.0 mg/L.
103. The Basin Plan requires municipal WWTFs that discharge to land to comply with treatment performance standards for BOD₅ and TSS. WWTFs that preclude public access and are greater than 1 mgd must provide removal of 80 percent or reduction to 40 mg/L, whichever is more restrictive, for both BOD₅ and TSS.
104. The Basin Plan requires that all publicly owned treatment works (POTWs) with a design flow greater than 5.0 million gallons per day must comply with 40 CFR 403, the federal pretreatment program requirements. All industrial users that discharge to POTWs must comply with the National Pretreatment Standards (including 40 CFR 405 for dairy processing wastewater).

Antidegradation Analysis

105. State Water Board Resolution 68-16 (*"Policy with Respect to Maintaining High Quality Water of the State"*) (the "Antidegradation Policy") prohibits degradation of high-quality groundwater unless it has been shown that:
 - a. The degradation does not result in water quality less than that prescribed in state and regional policies, including violation of one or more water quality objectives;
 - b. The degradation will not unreasonably affect present and anticipated future beneficial uses;
 - c. The Discharger employs Best Practicable Treatment or Control (BPTC) to minimize degradation; and
 - d. The degradation is consistent with the maximum benefit to the people of the state.

106. Whether groundwater is considered “high-quality water” is based on a consideration of the best water quality achieved since the adoption of the Antidegradation Policy by the State Water Resources Control Board in 1968. The Central Valley Water Board analyzes the amount of degradation allowed by these WDRs after considering whether the groundwater is considered a high-quality water for a particular constituent, and after considering the amount of degradation that was previously allowed under prior permits. The Board had previously authorized degradation of groundwater pursuant to WDRs Order R5-2002-0185, which this Order will supersede. The discharges authorized by these WDRs will maintain the current level of water quality protection, and will not allow further degradation, except with respect to sodium. For sodium, this Order imposes a time schedule to ensure that any degradation is ultimately limited so that the discharges are fully protective of the agricultural supply beneficial use, regardless of whether the Basin Plan is amended to alter the way in which the Board ensures protection of this use. With respect to salts, nitrogen, total organic carbon, pathogens, and anthropogenic chemical constituents, these WDRs will limit degradation as described below:
- a. For salinity, the Basin Plan contains effluent limits of 500 umhos/cm plus the EC of source water, and 1,000 umhos/cm maximum for discharges to areas that may recharge to good quality groundwater. As the Tulare Lake Basin is a closed basin, these limits are designed to control the rate of groundwater degradation with respect to salinity. With a source water EC of about 200 umhos/cm, the average discharge EC of about 630 umhos/cm meets the Basin Plan limits of 1,000 umhos/cm or source water plus 500 umhos/cm (700 umhos/cm). Findings 82 and 83 characterize background groundwater as having EC less than 500 umhos/cm. Degradation of groundwater with saline waste constituents may occur as a result of the discharge. However, the discharge is not expected to increase groundwater salinity to the extent that it would adversely affect beneficial uses.
 - b. For sodium and chloride, there are currently no numeric standards in the Basin Plan for protecting groundwater designated as supporting the agricultural supply beneficial use. Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) is a collaborative basin planning effort aimed at developing and implementing a comprehensive salinity and nitrate management program. Until the program is developed, the Central Valley Water Board interprets narrative water quality objectives (e.g., the Toxicity Objective) on a case-by-case basis. WDRs Order R5-2002-0185 established groundwater limits at 69 mg/L for sodium and 106 mg/L for chloride. This Order carries over the same limits for groundwater, with a compliance date for the sodium limit of 11 April 2021. Until the 2021 date, the effective groundwater limit for sodium is 110 mg/L.

Concentrations of sodium and chloride in first encountered groundwater unaffected by the discharge are less than 65 mg/L and 20 mg/L, respectively. Because the discharge contains both sodium and chloride in concentrations over 65 mg/L (e.g., over 100 mg/L sodium), the discharge may cause degradation for these constituents. However, the discharge is not expected to cause groundwater chloride concentrations to exceed 106 mg/L. In terms of sodium, the discharge will generally improve groundwater quality in areas that have been affected by previous discharges.

- c. Both treatment Plants at the WWTF include nitrogen removal treatment, with a design effluent of 10 mg/L or less. The average commingled effluent total nitrogen concentration is near 10 mg/L. The crops grown in the Use Areas will take up nitrogen before it percolates to deeper groundwater. Samples from the groundwater underlying effluent ponds consistently shows that the crops uptake a significant amount of the nitrogen (more than 25 percent) in the discharge. This Order limits the discharge to no more than 13 mg/L total nitrogen. Degradation of groundwater with nitrate is not expected to exceed water quality objectives protective of the beneficial uses.
- d. For total organic carbon, WDRs Order R5-2002-0185 notes that the discharge had occasionally caused degradation, which likely caused the reducing conditions in groundwater responsible for mobilizing iron and manganese in concentrations above water quality objectives.

There is currently no established numerical water quality objective for total organic carbon in groundwater. The nitrogen removal processes the City has implemented in recent years consume large amounts of carbon. The average commingled effluent concentration of carbonaceous BOD was 5 mg/L for 2011 to 2012, compared to 33 mg/L for 2008 to 2009. Because the carbonaceous BOD is so low, degradation of groundwater with total organic carbon is not expected to adversely impact the beneficial uses of groundwater.

- e. Regarding pathogens, the WWTF does not include treatment units specifically designed to remove pathogens. Discharge from the WWTF is undisinfected secondary treated effluent. Pathogens will generally be removed by passage through the soil within inches of the surface upon land application and more than 60 feet of soil exists between application and groundwater. Land application is considered a treatment and control measure for pathogens. This Order limits coliform in groundwater to the Basin Plan water quality objective of less than 2.2 MPN/100 mL (essentially non-detect) over any 7-day period. This Order implements rules and regulations regarding use of recycled water consistent with California Code of Regulations, Title 22, and guidance from the California Department of Public Health. Degradation of groundwater with pathogens is not expected.
- f. Municipal wastewater contains anthropogenic chemical constituents related to commercial and industrial waste discharged to the sewer system. The Industrial Pretreatment Program prohibits discharges to the sewer system that could cause WWTF upset or pass-through that would result in violation of WDRs, including acids, metals, toxics, etc. In addition, the activated sludge processes in both treatment Plants of the WWTF rapidly remove volatile and biodegradable wastes. The discharge is not expected to cause significant groundwater degradation with industrial and commercial anthropogenic chemical waste constituents.
- g. Regarding other constituents, taste or odor-producing constituents, toxic substances, and other constituents are limited to concentrations such that they do not cause nuisance or adversely affect beneficial uses of groundwater.

107. The WWTF will provide treatment and control of the discharge that incorporates:
- a. Secondary treatment of wastewater with nitrogen removal;
 - b. Sludge hauled off-site;
 - c. Recycling of wastewater for crop irrigation;
 - d. An operation and maintenance manual;
 - e. Implementation of an Industrial Pretreatment Program;
 - f. Implementation of an updated Salinity Management Plan;
 - g. Implementation of a nutrient management plan;
 - h. Certified operators to ensure proper operation and maintenance; and
 - i. Source water, discharge, and groundwater monitoring.

The Board finds that the preceding treatment and control measures may be considered BPTC for this discharge.

108. Generally, limited degradation of groundwater by some of the typical waste constituents of concern (e.g., EC and nitrate) discharged from a municipal wastewater utility after effective source control, treatment, and control is consistent with maximum benefit to the people of the state. The technology, energy, 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 economic prosperity of valley communities and associated industry is of maximum benefit to the people of the State, and therefore provides sufficient reason to accommodate planned growth and allow for very limited groundwater degradation.
109. This Order requires extensive monitoring to evaluate any groundwater impacts from the discharge and to confirm that the treatment and control measures are sufficiently protective of groundwater.
110. This Order establishes terms and conditions to ensure that the discharge will not unreasonably affect present and anticipated beneficial uses of groundwater or result in groundwater quality less than that prescribed in state and regional policies. The treatment and control measures described above in Finding 107 are equivalent or better than those employed by similarly-situated dischargers, and are a significant improvement over measures employed by the Discharger in previous years, and therefore represent BPTC. The degradation authorized by this Order is also consistent with the maximum benefit of the people of the state, as explained in Finding 108. Therefore, the degradation authorized by this Order is consistent with the Antidegradation Policy.

CEQA

111. The City certified an Environmental Impact Report (EIR) on 7 August 2001 that analyzed the expansion of the Domestic Plant to 6 mgd and the Industrial Plant to 8 mgd. The project scope included additional Use Area lands for recycled water projects within about a 36-square-mile area bounded by Road 44 (California Avenue) to the west, Road 96 (Pratt Street) to the east, Avenue 176 to the south, and Avenue 224 (Bardsley Avenue) to the north.
112. On 20 July 2006, the City certified an Initial Study and Mitigated Negative Declaration for the expansion of the Domestic Plant and Industrial Plant to 8 mgd and 12 mgd, respectively. Mitigation measures were included to minimize air pollution, nesting birds impacts, light pollution, noise pollution, and impacts to cultural resources.
113. The City certified a Final EIR for an update to its General Plan on 18 March 2008 that discussed the fact that the City will be pursuing options for water reclamation and acquiring surface water rather than solely relying on groundwater for its water supply.
114. Following the General Plan Update, the City circulated a draft of another Mitigated Negative Declaration for the expansion of the Domestic Plant to 8 mgd. The Central Valley Water Board commented as a responsible agency that the CEQA analysis needed to include design details and assess resulting water quality impacts. The City responded by sending electronic copies of technical reports to the Central Valley Water Board, including an engineering assessment of required upgrades, the Domestic Plant Design Report (Findings 10 through 12). On 7 October 2010, the City certified the Mitigated Negative Declaration.
115. Consistent with the role of responsible agency, Central Valley Water Board staff reviewed and commented on the draft CEQA documents circulated by the lead agencies. The lead agencies ultimately approved the CEQA documents for the City WWTF's expansions. This Order imposes regulatory requirements on a project that has already undergone multiple environmental reviews pursuant to CEQA, and no additional CEQA analysis is required.

Other Regulatory Considerations

116. Based on the threat and complexity of the discharge, the WWTF is determined to be classified as 1A as defined below:
 - a. Category 1 threat to water quality: "Those discharges of waste that could cause the long-term loss of a designated beneficial use of the receiving water. Examples of long-term loss of a beneficial use include the loss of drinking water supply, the closure of an area used for water contact recreation, or the posting of an area used for spawning or growth of aquatic resources, including shellfish and migratory fish.
 - b. Category A complexity, defined as: "Any discharge of toxic wastes; any small volume discharge containing toxic waste; any facility having numerous discharge points and groundwater monitoring; or any Class 1 waste management unit."

117. Title 27 of the California Code of Regulations (hereafter Title 27) contains regulatory requirements for the treatment, storage, processing, and disposal of solid waste. However, Title 27 exempts certain activities from its provisions. Discharges regulated by this Order are exempt from Title 27 pursuant to provisions that exempt wastewater and reuse. Title 27, section 20090 states in part:

The following activities shall be exempt from the SWRCB-promulgated provisions of this subdivision, so long as the activity meets, and continues to meet, all preconditions listed:

...

(b) Wastewater – Discharges of wastewater to land, including but not limited to evaporation ponds, percolation ponds, or subsurface leachfields if the following conditions are met:

- (1) The applicable regional water quality control board has issued WDRs, recycling requirements, or waived such issuance;
- (2) The discharge is in compliance with applicable water quality control plan; and
- (3) The wastewater does not need to be managed according to Chapter 11, Division 4.5, Title 22 of this code as a hazardous waste.

118. The discharge authorized herein is exempt from the requirements of Title 27 in accordance with Title 27, section 20090(b) because:

- a. The Central Valley Water Board is issuing WDRs.
- b. The discharge is in compliance with the Basin Plan, and;
- c. The treated effluent discharged to the ponds and Use Areas does not need to be managed as hazardous waste.

119. Water Code section 13267(b) states:

In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of discharging, or who proposes to discharge within its region ... shall furnish, under penalty of perjury, technical or monitoring program reports which the board requires. The burden, including costs of these reports, shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports.

The technical reports required by this Order and the attached Monitoring and Reporting Program R5-2013-0019 are necessary to ensure compliance with these waste discharge requirements. The Discharger owns and operates the facility that discharges the waste subject to this Order.

120. The United States Environmental Protection Agency (EPA) has promulgated biosolids reuse regulations in 40 CFR 503, *Standard for the Use or Disposal of Sewage Sludge*, which establishes management criteria for protection of ground and surface waters, sets application rates for heavy metals, and establishes stabilization and disinfection criteria.
121. The Central Valley Water Board is using the Standards in 40 CFR 503 as guidelines in establishing this Order, but the Central Valley Water Board is not the implementing agency for 40 CFR 503 regulations. The Discharger may have separate and/or additional compliance, reporting, and permitting responsibilities to the EPA.
122. Pursuant to Water Code section 13263(g), discharge is a privilege, not a right, and adoption of this Order does not create a vested right to continue the discharge.
123. The California Department of Water Resources set standards for the construction and destruction of groundwater wells, 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.

Public Notice

124. All the above and the supplemental information and details in the attached Information Sheet, which is incorporated by reference herein, were considered in establishing the conditions of discharge of this Order.
125. The Discharger and interested agencies and persons have been notified of the intent to prescribe waste discharge requirements for this discharge, and they have been provided an opportunity for a public hearing and an opportunity to submit their written views and recommendations.
126. All comments pertaining to the discharge were heard and considered in a public meeting.

IT IS HEREBY ORDERED that Waste Discharge Requirements Order R5-2002-0185 is rescinded and that, pursuant to Water Code sections 13263, 13267, and 13523.1, the City of Tulare, its agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the Water Code and regulations adopted thereunder, shall comply with the following:

A. Prohibitions

1. Discharge of waste to wetlands, surface waters, or surface water drainage courses is prohibited.
2. Bypass or overflow of untreated wastes, except as allowed by Standard Provisions E.2 in *Standard Provisions and Reporting Requirements for Waste Discharge Requirements*, dated 1 March 1991, is prohibited.

3. Discharge of waste classified as “hazardous”, as defined in California Code of Regulations, title 23, section 2521(a), is prohibited. Discharge of waste classified as “designated”, as defined in Water Code section 13173, in a manner that causes violation of groundwater limitations, is prohibited.
4. Except as authorized by Recycling Specification F.11, discharges of recycled water, including windblown spray and runoff of recycled water applied to lands for irrigation for which valid recycling requirements are not in force, are prohibited.
5. Discharge of wastewater in a manner other than that described herein or in the Report of Waste Discharge is prohibited.

B. General Discharge Specifications

1. No waste constituent shall be released, discharged, or placed where it will be released or discharged, in a concentration or in a mass that causes violation of Groundwater Limitations of this Order.
2. Wastewater treatment, storage, and disposal shall not cause pollution or a nuisance as defined by Water Code section 13050.
3. The discharge shall remain within the permitted waste treatment/containment structures and land application areas at all times.
4. The Discharger shall operate all systems and equipment to optimize the quality of the discharge.
5. The Discharger shall maintain reliability features consistent with Title 22 sections 60335, 60337, 60343 through 60351, and 60355, including alarms and back-up power systems.
6. All conveyance, treatment, storage, and disposal units shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.
7. Public contact with effluent (treatment works, percolation ponds) shall be precluded through such means as fences, signs, or acceptable alternatives.
8. Objectionable odors shall not be perceivable beyond the limits of the WWTF property at an intensity that creates or threatens to create nuisance conditions.
9. The 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.

10. On or about **1 October** of each year, available capacity shall at least equal the volume necessary to comply with General Discharge Specification B.9.
11. All ponds shall be managed to prevent breeding of mosquitoes. In particular,
 - a. An erosion control plan should assure that coves and irregularities are not created around the perimeter of the water surface.
 - b. Weeds shall be minimized through control of water depth, harvesting, and herbicides.
 - c. Dead algae, vegetation and other 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. The Discharger shall monitor sludge accumulation in the wastewater treatment/storage units at least every five years beginning in 1 July 2013, and shall periodically remove sludge as necessary to maintain adequate treatment and storage capacity.

C. Domestic Discharge Specifications

1. The monthly average Domestic Plant effluent flow shall not exceed the following:
 - a. 5.0 mgd, until the requirements of Provision I.15 are satisfied;
 - b. 6.0 mgd after the requirements of Provision I.15 are satisfied, until the requirements of Provision I.16 are satisfied; and
 - c. 8.0 mgd after Provision I.16 is satisfied.
2. Domestic Plant effluent shall not exceed the following limitations:

<u>Constituent</u>	<u>Units</u>	<u>Monthly Average</u>	<u>Daily Maximum</u>
BOD ₅ ¹	mg/L	40	80
TSS ²	mg/L	40	80

¹ Five-day biochemical oxygen demand

² Total suspended solids

3. The arithmetic mean of BOD₅ and TSS in effluent samples collected over a monthly period shall not exceed 20 percent of the arithmetic mean of the values for influent samples collected at approximately the same times during the same period (80 percent removal).

D. Industrial Discharge Specifications

1. The monthly average Industrial Plant effluent flow shall not exceed 12 mgd.
2. Industrial Plant effluent shall not exceed the following limitations:

<u>Constituent</u>	<u>Units</u>	<u>Monthly Average</u>	<u>Daily Maximum</u>
BOD ₅ ¹	mg/L	40	80
TSS ²	mg/L	40	80

³ Five-day biochemical oxygen demand
⁴ Total suspended solids

3. The arithmetic mean of BOD₅ and TSS in effluent samples collected over a monthly period shall not exceed 20 percent of the arithmetic mean of the values for influent samples collected at approximately the same times during the same period (80 percent removal).

E. Commingled Discharge Specifications

1. The monthly average commingled effluent flow shall not exceed the following:
 - a. 16.0 mgd until the requirements of Provision I.17 are satisfied;
 - b. 18 mgd after the requirements of Provision I.17 are satisfied, until the requirements of Provision I.18 are satisfied; and
 - c. 20 mgd after the requirements of Provision I.18 are satisfied.
2. Effluent shall not exceed the following limitations:

<u>Constituent</u>	<u>Units</u>	<u>Monthly Average</u>	<u>Daily Maximum</u>
BOD ₅ ¹	mg/L	40	80
TSS ²	mg/L	40	80
Total Nitrogen	mg/L	13	
Chloride	mg/L		175
Boron	mg/L		1.0

⁵ Five-day biochemical oxygen demand
⁶ Total suspended solids

3. The arithmetic mean of BOD₅ and TSS in effluent samples collected over a monthly period shall not exceed 20 percent of the arithmetic mean of the values for influent samples collected at approximately the same times during the same period (80 percent removal).

4. The 12-month rolling average EC of the discharge shall not exceed the 12-month rolling average EC of the source water plus 500 umhos/cm or a maximum of 1,000 umhos/cm, whichever is more stringent. Compliance with this effluent limitation shall be determined monthly. When source water is from more than one source, the EC shall be a weighted average of all sources.

F. Recycling Specifications

1. Application of recycled water shall be confined to the approved WWTF effluent storage pond sites and Use Areas as defined in this Order, or new recycled water projects under the conditions of Provisions I.22 and I.23.
2. Notwithstanding the following requirements, the production, distribution, and use of recycled water shall conform to an Engineering Report prepared pursuant to Title 22, section 60323 and approved by the California Department of Public Health.
3. The use of recycled water shall not cause pollution or nuisance, as defined by Water Code section 13050.
4. No person other than the City shall deliver recycled water to a Use Area.
5. The recycled water shall be at least undisinfected secondary recycled water as defined by Title 22, section 60301.
6. Recycled water shall be used in compliance with Title 22, section 60304. Regarding particular agricultural uses, recycled water shall be applied in compliance with the following:
 - a. Undisinfected recycled water shall not be discharged to orchard or vineyard crops;
 - b. No recycled water used for irrigation, or soil that has been irrigated with recycled water, shall come into contact with the edible portion of food crops that may be eaten raw by humans;
 - c. Non food-bearing trees, seed crops not eaten by humans, food crops that must undergo commercial pathogen-destroying processing before being consumed by humans, and ornamental nursery stock and sod farms (provided no irrigation with recycled water occurs for a period of 14 days prior to harvesting, retail sale, or allowing access by the general public) may be irrigated with recycled water; and
 - d. Grazing of milking animals within the Use Areas is prohibited.
7. Irrigation of the Use Areas shall occur only when appropriately trained personnel are on duty.

8. Irrigation with recycled water shall not be performed within 24 hours of a forecasted storm, during or within 24 hours after any precipitation event, nor when the ground is saturated.
9. The Use Area parcels shall be graded to prevent ponding along public roads or other public areas and prevent runoff onto adjacent properties.
10. The Use Areas shall be managed to prevent breeding of mosquitoes. In particular:
 - a. There shall be no standing water 48 hours after irrigation ceases;
 - b. Tailwater ditches shall be maintained essentially free of emergent, marginal, and floating vegetation; and
 - c. Low-pressure and unpressurized pipelines and ditches accessible to mosquitoes shall not be used to store recycled water.
11. Tailwater runoff and spray of recycled water shall not be discharged outside of the use areas except in minor, incidental amounts that cannot reasonably be eliminated by implementation and good maintenance of best management practices.
12. Recycled water spray, mist, or runoff shall not enter dwellings, designated outdoor eating areas, or food handling facilities. Drinking water fountains shall be protected against contact with recycled water spray, mist, or runoff.
13. Use Areas and recycled water impoundments shall be designed, maintained, and operated to comply with the following setback requirements:

<u>Setback Definition</u>	<u>Minimum Irrigation Setback (feet)</u>
Edge of Use Area to property boundary	25
Edge of Use Area to public road right of way	30
Edge of Use Area to manmade or natural surface water drainage course ¹	50
Edge of Use Area to domestic water supply well	150
Toe of recycled water impoundment berm to domestic water supply well	150

¹ Excluding ditches used exclusively for tailwater return from the land application area and land application areas separated by levees or other permanent physical barriers from surface waters or drainage courses.

14. There shall be at least a ten-foot horizontal and a one-foot vertical separation between all pipelines transporting recycled water and those transporting domestic supply, and the domestic supply pipeline shall be located above the recycled water pipeline.

15. A public water supply or auxiliary water supply shall not be used as backup or supplemental source of water for a recycled water system unless the connection between the two systems is protected by a backflow preventer (e.g., an air gap separation) which complies with the requirements of California Code of Regulations, title 17, sections 7601 through 7604.
16. Any backflow prevention device installed to protect a public water system shall be inspected and maintained in accordance with Title 17, section 7605. The recycled water system shall be tested for possible cross connections at least once every four years. The inspections and the testing shall be performed by a cross connection control specialist certified by the California-Nevada section of the American Water Works Association or an organization with equivalent certification requirements.
17. All recycling equipment, pumps, piping, valves, and outlets shall be marked to differentiate them from potable water facilities. All recycled water piping (above and below ground) and appurtenances in new installations and in retrofit installations shall be colored purple or distinctively wrapped with purple tape in accordance with California Health and Safety Code section 116815.
18. Recycled water controllers, valves, and similar appurtenances shall be affixed with recycled water warning signs, and shall be equipped with removable handles or locking mechanisms to prevent public access or tampering.
19. Quick couplers, if used, shall be different than those used in potable water systems.
20. Hose bibs and unlocked valves, if used, shall not be used in areas accessible to the public.
21. Public contact with recycled water shall be controlled using fences, signs, and/or other appropriate means. Signs of a size no less than four inches high by eight inches wide with proper wording (shown below) shall be placed at all areas of public access and around the perimeter of all areas used for effluent disposal or conveyance to alert the public of the use of recycled water. The size and content of these signs shall be as described in section 60310(g) of Title 22. All signs shall display an international symbol similar to that shown in Attachment G, which is attached hereto and a part of this Order, and present the following wording:

“RECYCLED WATER – DO NOT DRINK”
“AGUA DE DESPERDICIO RECLAMADA – NO TOME”

22. Workers shall be educated regarding proper hygienic procedures to ensure personal and public safety.
23. The annual nutrient loading of the Use Area, including the nutritive value of organic and chemical fertilizers and recycled water, shall not exceed crop demand.

24. Hydraulic and nutrient loading of recycled water and supplemental irrigation water shall be at reasonable agronomic rates designed to :
 - a. Maximize crop nutrient uptake;
 - b. Maximize breakdown of organic waste constituents in the root zone;
 - c. Minimize the percolation of waste constituents; and
 - d. Minimize erosion within the Use Areas.
25. Use Areas shall be inspected as frequently as necessary to ensure continuous compliance with the requirements of this Order.
26. A copy of the User Agreement and the Discharger's rules and regulations governing the distribution and use of recycled water shall be maintained at the User's facilities and be available at all times for inspection by Central Valley Water Board staff, the Discharger, and Department of Public Health staff.

G. Solids Disposal Specifications

1. Sludge in this document means the solid, semisolid, and liquid residues removed during primary, secondary, or advance wastewater treatment processes. Solid waste refers to grit and screening material generated during preliminary treatment. Residual sludge means sludge that will not be subject to further treatment at the WWTF. Biosolids refers to sludge that has been treated and tested and shown to be capable of being beneficially used as soil amendment for agriculture, silviculture, horticulture, and land reclamation activities pursuant to federal and state regulations.
2. Sludge and solid waste shall be removed from screens, sumps, aeration basins, ponds, clarifiers, etc., as needed to ensure optimal plant operation.
3. Any handling and storage of residual sludge, solid waste, and biosolids on property of the WWTF shall be temporary (i.e., no longer than two years) and controlled and contained in a manner that minimizes leachate formation and precludes infiltration of waste constituents into soils in a mass or concentration that will violate the groundwater limitations of this Order.
4. Residual sludge, solid waste, and biosolids shall be disposed of in a manner approved by the Executive Officer and consistent with Title 27. Removal for further treatment, disposal, or reuse at sites (i.e., landfill, composting sites, and soil amendment sites) operated in accordance with valid waste discharge requirements will satisfy this specification.
5. Use of biosolids as a soil amendment shall comply with valid waste discharge requirements issued by a regional water board or the State Water Board or a local (e.g., county) program authorized by a regional water board. In most cases, this

means the General Biosolids Order (State Water Board Water Quality Order 2004-12-DWQ, “*General Waste Discharge Requirements for the Discharge of Biosolids to Land for Use as a Soil Amendment in Agricultural, Silvicultural, Horticultural, and Land Reclamation Activities*”). For a biosolids use project to be authorized by the General Biosolids Order, the Discharger must file a complete Notice of Applicability for each project.

6. Use and disposal of biosolids shall comply with the self-implementing Federal biosolids regulations (40 C.F.R. § 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 Federal biosolids regulations, the Board may also initiate enforcement where appropriate.
7. Any proposed change in sludge use or disposal practice shall be reported in writing to the Executive Officer at least 90 days in advance of the change.

H. Groundwater Limitations

1. Release of waste constituents from any treatment, recycling or storage component associated with the discharge shall not cause or contribute to groundwater:
 - a. Containing constituent concentrations in excess of the concentrations specified below or natural background quality, whichever is greater:

<u>Parameter</u>	<u>Units</u>	<u>Limitation</u>
EC	umhos/cm	900
Total Dissolved Solids	mg/L	500
Nitrate (as Nitrogen)	mg/L	10
Boron	mg/L	0.7
Chloride	mg/L	106
Sodium	mg/L	69 ¹
Total Coliform Organisms	MPN/100 mL	2.2 ²

¹ Compliance shall be determined based on the conditions described in Provision I.26.

² Equal to or greater than 2.2 MPN/100mL over any 7-day period.

- b. For constituents identified in Title 22, the MCLs quantified therein.
 - c. Containing taste or odor-producing constituents, toxic substances, or any other constituents in concentrations that cause nuisance or adversely affect beneficial uses.

I. Provisions

1. The Discharger shall comply with the *Standard Provisions and Reporting Requirements for Waste Discharge Requirements*, dated 1 March 1991 (Standard Provisions), which are part of this Order.
2. The Discharger shall comply with MRP R5-2013-0019, which is part of this Order, and any revisions thereto as adopted by the Central Valley Water Board or approved by the Executive Officer.
3. 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.
4. The Discharger shall keep at the WWTF a copy of this Order, including its MRP, Information Sheet, attachments, and Standard Provisions, for reference by operating personnel. Key operating personnel shall be familiar with its contents.
5. The Discharger shall not allow pollutant-free wastewater to be discharged into the WWTF collection, treatment, and disposal systems in amounts that significantly diminish the system's capability to comply with this Order. Pollutant-free wastewater means storm water (i.e., inflow), groundwater (i.e., infiltration), cooling waters, and condensates that are essentially free of pollutants.
6. The Discharger must comply with all conditions of this Order, including timely submittal of technical and monitoring reports as directed by the Executive Officer. Accordingly, the Discharger shall submit to the Central Valley Water Board on or before each report due date the specified document or, if an action is specified, a written report detailing evidence of compliance with the date and task. If noncompliance is being reported, the reasons for such noncompliance shall be stated, plus an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Central Valley Water Board by letter when it returns to compliance with the time schedule. Violations may result in enforcement action, including Central Valley Water Board or court orders requiring corrective action or imposing civil monetary liability, or in revision or rescission of this Order.
7. The Discharger must 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 only when the operation is necessary to achieve compliance with the conditions of this Order.
8. The Discharger shall report to the Central Valley Water Board any toxic chemical release data it reports to the State Emergency Response Commission within 15 days

of reporting the data to the Commission pursuant to section 313 of the "Emergency Planning and Community Right to Know Act of 1986."

9. As a means of discerning compliance with General Discharge Specification B.8, the dissolved oxygen (DO) content in the upper one foot of any wastewater pond (other than those that require an anoxic or anaerobic environment for the design treatment) shall not be less than 1.0 mg/L for three consecutive weekly sampling events. If the DO in any single pond is below 1.0 mg/L for three consecutive sampling events, 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 low DO results within 30 days.
10. The Discharger shall maintain and operate surface impoundments in a manner that protects the integrity of containment levees and prevents overtopping or overflows. 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 shall never be less than two feet (measured vertically). As a means of management and to discern compliance with this Provision, the Discharger shall install and maintain a permanent marker with calibration that indicates the water level at the design capacity and enables determination of available operational freeboard.
11. The Discharger shall submit the technical reports and work plans required by this Order for Central Valley Water Board staff consideration and incorporate comments they may have in a timely manner, as appropriate. The Discharger shall proceed with all work required by the following provisions by the due dates specified.
12. All technical reports and work plans required herein that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code sections 6735, 7835, and 7835.1. As required by these laws, completed technical reports and work plans must bear the signature(s) and seal(s) of the registered professional(s) in a manner such that all work can be clearly attributed to the professional responsible for the work. All reports required herein are required pursuant to Water Code section 13267.
13. The Discharger shall continue to maintain coverage under, and comply with Statewide General Waste Discharge Requirements for Sanitary Sewer Systems, Water Quality Order 2006-0003-DWQ and any revisions thereto as adopted by the State Water Board.
14. **By 30 September 2013**, the Discharger shall submit for Executive Officer approval a technical report, prepared in accordance with Provision I.12, describing a proposed time schedule for upgrade of the Domestic Plant to at least 5.0 mgd. The technical report must detail how the Discharger intends to address the deficiencies described in the Domestic Plant Design Report and in Findings 9 through 13, including design parameters, funding sources, and an implementation schedule. The report must assess influent flow and provide an explanation for the fluctuations noted in Finding 16.

15. **Prior to increasing flow at the Domestic Plant to more than 5.0 mgd and no later than 30 June 2014**, the Discharger shall obtain written approval from the Executive Officer documenting that it has technically justified that it can treat and dispose of 6.0 mgd from the Domestic Plant and all authorized flow from the Industrial Plant in compliance with all applicable specifications, limitations, and provisions of this Order. The Discharger shall submit a technical report prepared in accordance with Provision I.12 at least 60 days prior to the expected approval.
16. **Prior to increasing flow at the Domestic Plant to more than 6.0 mgd**, the Discharger shall obtain written approval from the Executive Officer documenting that it has technically justified that it can treat and dispose of 8.0 mgd from the Domestic Plant and all authorized flow from the Industrial Plant in compliance with all applicable specifications, limitations, and provisions of this Order. The Discharger shall submit a technical report prepared in accordance with Provision I.12 at least 60 days prior to the expected approval.
17. **Prior to increasing commingled effluent flow at the WWTF to more than 16.0 mgd**, the Discharger shall obtain written approval from the Executive Officer documenting that it has technically justified that it can treat and dispose of 18 mgd in compliance with all applicable specifications, limitations, and provisions of this Order. The Discharger shall submit a technical report prepared in accordance with Provision I.12 at least 60 days prior to the expected approval. This Provision does not supersede or otherwise alter the limitations of Domestic Discharge Specification C.1.
18. **Prior to increasing commingled effluent flow at the WWTF to more than 18 mgd**, the Discharger shall obtain written approval from the Executive Officer documenting that it has technically justified that it can dispose of 20 mgd in compliance with all applicable specifications, limitations, and provisions of this Order. The Discharger shall submit a technical report prepared in accordance with Provision I.12 at least 60 days prior to the expected approval. This Provision does not supersede or otherwise alter the limitations of Domestic Discharge Specification C.1.
19. **By 30 September 2013**, the Discharger shall submit a Salinity Management Plan, with updated salinity source reduction goals and an implementation schedule for Executive Officer approval. The Salinity Management Plan shall assess the effectiveness of the existing Salinity Control Plan. The Salinity Management Plan must include an estimate of load reductions that may be attained through the methods identified, and provide a description of the tasks, cost, and time required to investigate and implement various elements in the plan. The Discharger shall implement the Salinity Management Plan in accordance with the approved schedule.
20. The Discharger shall establish and maintain a representative groundwater monitoring well network according to the following schedule:
 - a. **By 30 September 2013**, the Discharger shall submit a Groundwater Monitoring Well Work Plan. The work plan shall propose appropriate locations for new

background wells, and for new wells to monitor groundwater degradation downgradient of sludge drying beds and of Use Areas that are not represented by the existing well network. The work plan shall describe the criteria that will be used to determine whether a monitoring well can be considered to provide reliable groundwater quality data and describe how each well in the network compares with the criteria. The work plan shall include rationale for the construction and location of each monitoring well, and make appropriate conclusions and recommendations. The work proposed shall be consistent with applicable well standards described in Finding 123, and shall comply with *Standard Requirements for Monitoring Well Installation Work Plans and Monitoring Well Installation Reports*, a part of this Order.

- b. **By 29 October 2014**, the Discharger shall submit a Groundwater Monitoring Well Installation Report. The installation report shall describe well construction details for each new well, including the location, ground surface elevation, reference point elevation, water surface elevation, geologic logs, and other details, including filter pack and screened interval, surface completion, etc. The report shall include narrative description of well locations with respect to landmarks, as well as three-dimensional coordinates with respect to a known datum (prepared by a licensed land surveyor or civil engineer).
21. **By 29 October 2013**, the Discharger shall submit a Sludge Drying Bed Assessment Report. The assessment report shall characterize the discharge to the sludge drying beds and assess the potential groundwater degradation associated with the beds based on estimated mass loading of waste constituents to groundwater. The report shall characterize the biosolids and liners of the sludge drying beds serving the Domestic Plant and Industrial Plant independently, as appropriate. The report shall be based on analyses calibrated with site-specific, empirical data, including:
- a. An assessment of liner integrity that considers the results of empirical testing and field observations of representative liner areas. The liner integrity assessment shall include hydraulic conductivity, remaining liner thickness, moisture content, density, and extent of weathering (i.e., desiccation cracking depth and width).
 - b. A biosolids characterization that considers flow (influent wet biosolids, supernatant return, percolation, and evaporation) and characterization of waste constituent concentrations, including volatile suspended solids, total suspended solids, biochemical oxygen demand, chemical oxygen demand, total organic carbon, forms of nitrogen, total dissolved solids, Metals and General Minerals (as described in the Monitoring and Reporting Program).
 - c. Water quality data (total organic carbon, forms of nitrogen, total dissolved solids, Metals and General Minerals as described in the Monitoring and Reporting Program) for samples collected from nearby groundwater monitoring wells (if available) and from the witness sump of the leachate collection and recovery system installed in the Domestic Plant sludge drying beds.

22. **By 30 August 2013**, and prior to conveying recycled water to any User not identified in Finding 44 of this Order, the City shall complete the following:
- a. Establish and have the authority to enforce rules and/or regulations (a recycled water program) for Users governing the design and construction of recycled water use facilities and the use of recycled water in accordance with the water recycling criteria established in Title 22, California Code of Regulations and this Order;
 - b. Submit a copy of the rules and/or regulations and the adopted recycled water ordinance authorizing the rules and/or regulations to the Central Valley Water Board for Executive Officer approval;
 - c. Develop and submit the administrative procedures and User agreements requiring compliance with the Discharger's rules and/or regulations to the Central Valley Water Board for Executive Officer approval;
 - d. Provide the California Department of Public Health with copies of the items required by b. and c.

Upon Executive Officer approval of the Discharger's rules and/or regulations, recycled water ordinance, administrative procedures, and User agreement, the Discharger may authorize specific reclamation projects on a case-by-case basis in accordance with the approved water recycling program.

23. **At least 30 days prior** to conveying recycled water to any Use Area not described in this Order, the Discharger shall submit a User Report to the Central Valley Water Board and the California Department of Public Health. The User Report shall include the following:
- a. The site location including a map showing the specific boundaries of the use site and the County Assessor's Parcel Number(s) (if appropriate, if Parcel Number(s) are not appropriate to accurately describe the site location, the Discharger shall provide the Central Valley Water Board with enough information for the Central Valley Water Board to accurately determine the location of the proposed reclamation activities);
 - b. The name of the Use Area property owner and contact information;
 - c. The name of the User and contact information;
 - d. The specific use to be made of the recycled water, the Use Area acreage, the type of vegetation/crops to which the recycled water will be applied, and the anticipated volume of recycled water to be used;

- e. Identification of the on-site supervisor who is responsible for operation of the recycled water system;
- f. Description of the recycled water management facilities and operations plan;
- g. Plans and specifications that include the following:
 - i. Pipe locations of the recycled, potable, and auxiliary non-potable water systems;
 - ii. Type and location of the outlets and plumbing fixtures that will be accessible to the public;
 - iii. The methods and devices to be used to prevent backflow of recycled water into the public water system; and
 - iv. Plan notes relating to recycled water specific installation and use requirements.
- h. Certification that the new Use Area conforms to the Discharger's rules and regulations;
- i. A copy of the signed User agreement; and
- j. The results of the cross-connection control test performed in accordance with the American Water Works Association and California Department of Public Health guidelines (Cal. Code Regs., tit. 17, § 7605). The results shall include a certification that the California Department of Public Health was notified of the initial cross-connection control test and was provided an opportunity to be present.

A copy of the User agreement and the Discharger's rules and regulations governing the distribution and use of recycled water shall be maintained at the User's facilities and be available at all times for inspection by Regional Water Board staff, the Discharger, and DPH staff.

If, in the opinion of the Executive Officer, reclamation at a proposed new use site cannot be adequately regulated under the Master Recycling Permit, a Report of Waste Discharge may be requested and individual Water Recycling Requirements may be adopted.

24. **Prior to commencing irrigation with recycled water** on any Use Area not described in this Order, the City shall submit documentation that the California Department of Public Health has approved a Title 22 engineering report for the project and documentation of compliance with CEQA.

25. **By 29 October 2013**, the Discharger shall submit a Biosolids Removal Plan detailing the City's proposed plan for decommissioning the approximately 90-acre area previously operated as aeration ponds for the Industrial Plant. The Biosolids Removal Plan shall include residual solids removal, a demonstration of consistency with the Antidegradation Policy (including a characterization of liner integrity), and a time schedule for the work to be completed.
26. **Until 11 April 2021**, release of waste constituents from any treatment, recycling or storage component associated with the discharge shall not cause or contribute to groundwater sodium concentrations in excess of 110 mg/L or natural background quality, whichever is greater. On or before 11 April 2021, the Discharger shall either:
 - a. Modify wastewater treatment operations or effect control measures to ensure compliance with the groundwater limit for sodium listed in Groundwater Limitation H.1(a); or
 - b. Comply with a revised groundwater limit for sodium consistent with the recommendations of Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) and adopted by the Central Valley Water Board.

The City shall not rely exclusively upon an expectation that the Board will amend the Basin Plan's water quality objectives relating to sodium by 2021, and shall take all reasonable and appropriate measures to ensure that the discharge will meet whatever water quality objectives relating to sodium are applicable to the discharge by 2021.

27. In the event of any change in control or ownership of land or waste treatment and storage facilities presently owned or controlled by the Discharger, the Discharger shall 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.
28. To assume operation 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 address and telephone number of the persons responsible for contact with the Central Valley Water Board and a statement. The statement shall comply with the signatory paragraph of Standard Provision B.3 and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the Water Code. If approved by the Executive Officer, the transfer request will be submitted to the Central Valley Water Board for its consideration of transferring the ownership of this Order at one of its regularly scheduled meetings.
29. If the Central Valley Water Board determines that waste constituents in the discharge have reasonable potential to cause or contribute to an exceedance of an objective for groundwater, this Order may be reopened for consideration of addition or revision of appropriate numerical effluent or groundwater limitations for potential constituents.

30. The Central Valley Water Board will review this Order periodically and will revise requirements when necessary.

If, in the opinion of the Executive Officer, the Discharger fails to comply with the provisions of this Order, the Executive Officer may refer this matter to the Attorney General for judicial enforcement, may issue a complaint for administrative civil liability, or may take other enforcement actions. Failure to comply with this Order may result in the assessment of Administrative Civil Liability of up to \$10,000 per violation, per day, depending on the violation, pursuant to the Water Code, including sections 13268, 13350 and 13385. The Central Valley Water Board reserves its right to take any enforcement actions authorized by law.

Any person aggrieved by this action of the Central Valley Water Board may petition the State Water Board to review the action in accordance with Water Code section 13320 and California Code of Regulations, title 23, section 2050 and following. The State Water Board must receive the petition by 5:00 p.m., 30 days after the date of this Order, except that if the thirtieth day following the date of this Order falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next business day. Copies of the law and regulations applicable to filling petitions may be found on the Internet at:

http://www.waterboards.ca.gov/public_notices/petitions/water_quality/

or will be provided upon request.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 11 April 2013.

Original signed by:

PAMELA C. CREEDON, Executive Officer

Order Attachments:

- A Vicinity Map
 - B Site Plan
 - C Process Flow Diagram, Domestic Plant
 - D Process Flow Diagram, Industrial Plant
 - E Recycled Water Statutes and Regulations
 - F Recycled Water Use Area Map
 - G Recycled Water Signage
- Monitoring and Reporting Program R5-2013-0019
Information Sheet
Standard Provisions (1 March 1991)
Standard Requirements for Monitoring Well Installation Work Plans
and Monitoring Well Installation Reports

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM R5-2013-0019
FOR
CITY OF TULARE
WASTEWATER TREATMENT FACILITY
TULARE COUNTY

This monitoring and Reporting Program (MRP) is required pursuant to Water Code section 13267.

The Discharger shall not implement any changes to this MRP unless and until the Central Valley Water Board adopts or the Executive Officer issues a revised MRP. Changes to sample location shall be established with concurrence of Central Valley Water Board staff, and a description of the revised stations shall be submitted for approval by the Executive Officer. All samples shall be representative of the volume and nature of the discharge or matrix of material sampled. All analyses shall be performed in accordance with ***Standard Provisions and Reporting Requirements for Waste Discharge Requirements***, dated 1 March 1991 (Standard Provisions).

Field test instruments (such as pH) may be used provided that the operator is trained in the proper use of the instrument and each instrument is serviced and/or calibrated at the recommended frequency by the manufacturer and in accordance with manufacturer instructions.

Analytical procedures shall comply with the methods and holding times specified in the following: *Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater* (EPA); *Test Methods for Evaluating Solid Waste* (EPA); *Methods for Chemical Analysis of Water and Wastes* (EPA); *Methods for Determination of Inorganic Substances in Environmental Samples* (EPA); *Standard Methods for the Examination of Water and Wastewater* (APHA/AWWA/WEF); and *Soil, Plant and Water Reference Methods for the Western Region* (WREP 125). Approved editions shall be those that are approved for use by the United States Environmental Protection Agency or the California Department of Public Health's Environmental Laboratory Accreditation Program. The Discharger may propose alternative methods for approval by the Executive Officer.

If monitoring consistently shows no significant variation in magnitude of a constituent concentration or parameter after at least 12 months of monitoring, the Discharger may request the MRP be revised to reduce monitoring frequency. The proposal must include adequate technical justification for the requested reduction in monitoring frequency.

A glossary of terms used within this MRP is included on page and a list of the constituents required for the monitoring of Priority Pollutants is included in Table 1, which is on page 14.

INDUSTRIAL PLANT INFLUENT MONITORING

Samples shall be collected of the waste stream immediately before it enters the headworks of the Industrial Plant. The samples must be representative of the volume and character of influent wastewater. Time of collection of a grab sample shall be recorded. Industrial Plant influent monitoring shall include the following:

<u>Frequency</u>	<u>Constituent/Parameter</u>	<u>Units</u>	<u>Sample Type</u>
Continuous	Flow	mgd	Meter
Continuous ¹	pH	pH Units	Grab
Daily	EC	umhos/cm	24-Hour Composite
Twice weekly	TSS	mg/L	24-Hour Composite
Twice weekly	BOD	mg/L	24-Hour Composite
Twice weekly	COD	mg/L	24-Hour Composite
Weekly	Oil and Grease	mg/L	24-Hour Composite
Weekly	Alkalinity	mg/L	24-Hour Composite
Weekly	Nitrate	mg/L (as N)	24-Hour Composite
Weekly	TKN	mg/L (as N)	24-Hour Composite
Weekly	Ammonia	mg/L (as N)	Grab
Weekly	Total Nitrogen	mg/L	Calculated

¹ The Discharger shall also collect a grab sample on a daily basis.

INDUSTRIAL PLANT FERMENTER EFFLUENT MONITORING

Samples shall be collected of the waste stream directly following the Fermenter but before discharge to the SBRs and before mixing with DAF effluent. Fermenter effluent samples must be representative of the wastewater following Fermenter treatment. Time of collection of a grab sample shall be recorded. Industrial Fermenter effluent monitoring shall include the following:

<u>Frequency</u>	<u>Constituent/Parameter</u>	<u>Units</u>	<u>Sample Type</u>
Continuous	Flow	mgd	Meter
Daily	pH	pH Units	Grab
Daily	EC	umhos/cm	24-Hour Composite
Daily	Ammonia Feed Rate ¹	lbs/day (as N)	Meter
Weekly ²	Alkalinity	mg/L	24-Hour Composite
Weekly ²	Nitrate	mg/L (as N)	24-Hour Composite
Weekly ²	TKN	mg/L (as N)	24-Hour Composite
Weekly ²	Ammonia	mg/L (as N)	Grab
Weekly ²	Total Nitrogen	mg/L	Calculated

¹ The average rate of ammonia addition to the Fermenter.

² With Executive Officer approval, the monitoring frequency may be reduced following one year of monitoring.

INDUSTRIAL PLANT EFFLUENT MONITORING

Samples shall be collected of the industrial wastewater stream following the final treatment unit, immediately before discharge to the commingled effluent mixing box. The samples must be representative of the volume and character of Industrial Plant effluent. Time of collection of a grab sample shall be recorded. Industrial Plant effluent monitoring shall include the following:

<u>Frequency</u>	<u>Constituent/Parameter</u>	<u>Units</u>	<u>Sample Type</u>
Daily	pH	pH Units	Grab
Daily	EC	umhos/cm	24-Hour Composite
Twice weekly	TSS	mg/L	24-Hour Composite
Twice weekly	BOD	mg/L	24-Hour Composite
Twice weekly	COD	mg/L	24-Hour Composite
Weekly	Oil and Grease	mg/L	24-Hour Composite
Weekly	Alkalinity	mg/L	24-Hour Composite
Weekly	Nitrate	mg/L (as N)	24-Hour Composite
Weekly	TKN	mg/L (as N)	24-Hour Composite
Weekly	Ammonia	mg/L (as N)	Grab
Weekly	Total Nitrogen	mg/L	Calculated
Weekly	Sodium	mg/L	24-Hour Composite
Annually	General Minerals	mg/L	24-Hour Composite

DOMESTIC PLANT INFLUENT MONITORING

Samples shall be collected of the waste stream immediately before it enters the headworks of the Domestic Plant. The samples must be representative of the volume and nature of the influent wastewater. Time of collection of a grab sample shall be recorded. Domestic Plant influent monitoring shall include the following:

<u>Frequency</u>	<u>Constituent/Parameter</u>	<u>Units</u>	<u>Sample Type</u>
Continuous	Flow	mgd	Meter
Daily	pH	pH Units	Grab
Daily	EC	umhos/cm	24-Hour Composite
Twice weekly	TSS	mg/L	24-Hour Composite
Twice weekly	BOD	mg/L	24-Hour Composite
Twice weekly	COD	mg/L	24-Hour Composite
Weekly	Oil and Grease	mg/L	24-Hour Composite
Weekly	Alkalinity	mg/L	24-Hour Composite
Weekly	Nitrate	mg/L (as N)	24-Hour Composite
Weekly	TKN	mg/L (as N)	24-Hour Composite

<u>Frequency</u>	<u>Constituent/Parameter</u>	<u>Units</u>	<u>Sample Type</u>
Weekly	Ammonia	mg/L (as N)	Grab
Weekly	Total Nitrogen	mg/L	Calculated

DOMESTIC PLANT EFFLUENT MONITORING

Samples shall be collected of the domestic wastewater stream following the final treatment unit, immediately before discharge to the commingled effluent mixing box. The samples must be representative of the volume and character of Domestic Plant effluent. Time of collection of a grab sample shall be recorded. Domestic Plant effluent monitoring shall include the following:

<u>Frequency</u>	<u>Constituent/Parameter</u>	<u>Units</u>	<u>Sample Type</u>
Daily	pH	pH Units	Grab
Daily	EC	umhos/cm	24-Hour Composite
Twice weekly	TSS	mg/L	24-Hour Composite
Twice weekly	BOD	mg/L	24-Hour Composite
Twice weekly	COD	mg/L	24-Hour Composite
Twice weekly	Oil and Grease	mg/L	24-Hour Composite
Weekly	Alkalinity	mg/L	24-Hour Composite
Weekly	Nitrate	mg/L (as N)	24-Hour Composite
Weekly	TKN	mg/L (as N)	24-Hour Composite
Weekly	Ammonia	mg/L (as N)	Grab
Weekly	Total Nitrogen	mg/L	Calculated
Annually	General Minerals	mg/L	24-Hour Composite

COMMINGLED EFFLUENT MONITORING

Effluent samples shall be collected at a point in the system following the last treatment unit, after the commingled effluent mixing box and before discharge to the effluent ponds. Time of collection of a grab sample shall be recorded. Commingled effluent monitoring shall include the following:

<u>Frequency</u>	<u>Constituent/Parameter</u>	<u>Units</u>	<u>Sample Type</u>
Continuous	Flow	mgd	Calculated
Daily	pH	pH Units	Grab
Daily	EC	umhos/cm	24-Hour Composite
Twice weekly	TSS	mg/L	24-Hour Composite
Twice weekly	BOD	mg/L	24-Hour Composite
Twice weekly	COD	mg/L	24-Hour Composite
Twice weekly	Oil and Grease	mg/L	24-Hour Composite
Weekly	Alkalinity	mg/L	24-Hour Composite

<u>Frequency</u>	<u>Constituent/Parameter</u>	<u>Units</u>	<u>Sample Type</u>
Weekly	Nitrate	mg/L (as N)	24-Hour Composite
Weekly	TKN	mg/L (as N)	24-Hour Composite
Weekly	Ammonia	mg/L (as N)	Grab
Weekly	Total Nitrogen	mg/L	Calculated
Monthly	General Minerals	mg/L	24-Hour Composite
Annually	Priority Pollutants ¹	mg/L	24-Hour Composite

¹ Monitoring shall include, at a minimum, the constituents listed in Table 1 on page 14. Reporting shall conform with *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California Reporting Requirements*, section 2.4 et seq.

POND MONITORING

Permanent markers (e.g., staff gages) shall be placed in all ponds. The markers shall have calibrations indicating water level at the design capacity and available operational freeboard. Wastewater pond monitoring shall include at least the following:

<u>Frequency</u>	<u>Constituent/Parameter</u>	<u>Units</u>	<u>Sample Type</u>
As required ¹	DO	mg/L	Grab
Weekly	Freeboard	feet ²	Grab

¹ If offensive odor is detected by or brought to the attention of WWTF personnel, the Discharger shall monitor the potential source pond(s) at least daily until dissolved oxygen > 1.0 mg/L, and weekly (between 8am and 9am) for a minimum of two weeks following, consistent with Provision I.9.

² To nearest tenth of a foot.

The Discharger shall inspect the condition of each wastewater pond weekly and record visual observations in a bound logbook. Notations shall include observations of whether weeds are developing in the water or along the bank, and their location; whether grease, dead algae, vegetation, scum, or debris are accumulating on the pond surface and their location; whether burrowing animals or insects are present; and the color of the reservoirs (e.g., dark green, dull green, yellow, gray, tan, brown, etc.). A summary of the entries made in the log shall be included in the subsequent monitoring report.

INDUSTRIAL PRETREATMENT PROGRAM MONITORING

The Discharger shall submit an annual report to the Regional Water Board, with copies to the EPA Regional Administrator and the State Water Resources Control Board, describing the Discharger's pretreatment activities over the previous 12 months. In the event that the Discharger is not in compliance with any conditions or requirements of this Order, the Discharger shall include the reasons for noncompliance and state how and when the Discharger shall comply with such conditions and requirements. This annual report shall be submitted by **28 February** and shall contain, but not be limited to items E.7.a through E.7.j of Standard Provisions dated 1 March 1991 (Standard Provisions).

In addition to the information required in the annual report, the Discharger shall report quarterly the information in E.7.d (1) through E.7.d (7) of Standard Provisions. Quarterly reports shall also describe

progress towards compliance with audit or pretreatment compliance inspection requirements. Quarterly reports shall be submitted by **1st day of the second month following the end of each quarter**. At a minimum, the Discharger must submit a letter certifying that all industries are in compliance and no violations or changes to the pretreatment program have occurred during the quarter. The fourth quarterly report may be included as part of the annual report.

USE AREA MONITORING

The Discharger shall perform routine monitoring and loading calculations for each discrete irrigation area within the Use Area. Data shall be collected and presented in tabular format in accordance with Table 2 on page 15 of this MRP.

In addition, the Discharger shall inspect the Use Areas receiving recycled water on a weekly basis and record visual observations in a bound logbook. Notations shall include evidence of erosion, field saturation, runoff, or the presence of nuisance conditions (i.e., flies, ponding, etc.). A summary of the entries made in the log shall be included in the subsequent quarterly monitoring report.

SOURCE WATER MONITORING

For each source (either well or surface water supply), the Discharger shall calculate the flow-weighted average concentrations for the specified constituents utilizing monthly flow data and the most recent chemical analysis conducted in accordance with Title 22 drinking water requirements.

<u>Frequency</u>	<u>Constituent/Parameter</u>	<u>Units</u>	<u>Sample Type</u>
Continuous	Flow	mgd	Meter
Monthly	EC	umhos/cm	Grab
Annually	General Minerals	mg/L	Grab

GROUNDWATER MONITORING

After measuring water levels and prior to collecting samples, each monitoring well shall be adequately purged to remove water that has been standing within the well screen and casing that may not be chemically representative of formation water. Depending on the hydraulic conductivity of the geologic setting, the volume removed during purging is typically from 3 to 5 volumes of standing water within the well casing and screen, or additionally the filter pack pore volume.

The Discharger shall monitor all wells in its Groundwater Monitoring Network, and any additional wells installed pursuant to this Order, for the following:

<u>Frequency</u>	<u>Constituent/Parameter</u>	<u>Units</u>	<u>Sample Type</u>
Semiannually ¹	Depth to groundwater	feet ²	Measured
Semiannually ¹	Groundwater Elevation	feet ³	Computed

<u>Frequency</u>	<u>Constituent/Parameter</u>	<u>Units</u>	<u>Sample Type</u>
Semiannually ¹	pH	pH Units	Grab
Semiannually ¹	EC	umhos/cm	Grab
Semiannually ¹	Nitrate	mg/L (as N)	Grab
Semiannually ¹	Ammonia	mg/L (as N)	Grab
Semiannually ¹	TKN	mg/L	Grab
Semiannually ¹	Total Nitrogen	mg/L	Calculated
Semiannually ¹	EC	mg/L	Grab
Semiannually ¹	TDS	mg/L	Grab
Semiannually ¹	SAR	mg/L	Calculated
Semiannually ¹	General Minerals	mg/L	Grab
Annually ⁴	Metals ⁵	mg/L	Grab

¹ Monitoring frequency for each well shall be quarterly for new wells until at least 12 quarterly sample results have been reported, at which time the Discharger may reduce the monitoring frequency to semiannually.

² To nearest tenth of a foot.

³ To nearest tenth of a foot above Mean Sea Level.

⁴ Starting July 2013.

⁵ Including uranium and the metals listed under "Inorganics" in Table 1 of this MRP.

BIOSOLIDS/SLUDGE MONITORING

Sludge shall be sampled for the following constituents:

Arsenic	Copper	Nickel
Cadmium	Lead	Selenium
Molybdenum	Mercury	Zinc

Monitoring shall be conducted: using the methods in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (SW-846) and updates thereto, as required in Title 40 of the Code of Federal Regulations (40 CFR), Part 503.8(b)(4). The constituents listed above shall be monitored at the following frequency, depending on volume generated:

<u>Volume Generated (dry metric tons/year)</u>	<u>Frequency</u>
0 to 290	Annually
290 to 1,500	Quarterly
1,500 to 15,000	Bimonthly (six samples per year)
Greater than 15,000	Monthly

The Discharger shall demonstrate that treated sludge (i.e., biosolids) meets Class A or Class B pathogens reduction levels by one of the methods listed in 40 CFR, Part 503.32. The Discharger shall track and keep records of the operational parameters used to achieve Vector Attraction Reduction requirements in 40 CFR, Part 503.33(b).

REPORTING

All monitoring results shall be reported in **Quarterly Monitoring Reports** which are due by the first day of the second month after the calendar quarter. Therefore, monitoring reports are due as follows:

First Quarter Monitoring Report:	1 May
Second Quarter Monitoring Report:	1 August
Third Quarter Monitoring Report:	1 November
Fourth Quarter Monitoring Report:	1 February

A transmittal letter shall accompany each monitoring report. The transmittal letter shall discuss any violations that occurred during the reporting period and all actions taken or planned for correcting violations, such as operation or facility modifications. If the Discharger has previously submitted a report describing corrective actions or a time schedule for implementing the corrective actions, reference to the previous correspondence is satisfactory.

The following information is to be included on all monitoring and annual reports, as well as report transmittal letters, submitted to the Central Valley Water Board:

City of Tulare
Tulare City Wastewater Treatment Facility
MRP R5-2013-0019
Contact Information (telephone number and email)

In reporting monitoring data, the Discharger shall arrange the data in tabular form so that the date, the constituents, and the concentrations are readily discernible. The data shall be summarized in such a manner that illustrates clearly, whether the Discharger complies with waste discharge requirements.

In addition to the details specified in Standard Provision C.3, monitoring information shall include the method detection limit (MDL) and the reporting limit (RL) or practical quantitation limit (PQL). If the regulatory limit for a given constituent is less than the RL (or PQL), then any analytical results for that constituent that are below the RL (or PQL) but above the MDL shall be reported and flagged as estimated.

Laboratory analysis reports do not need to be included in the monitoring reports; however, the laboratory reports must be retained for a minimum of three years in accordance with Standard Provision C.3.

All monitoring reports shall comply with the signatory requirements in Standard Provision B.3. Monitoring data or discussions submitted concerning WWTF performance must also be signed and certified by the chief plant operator. If the chief plant operator is not in direct line of supervision of the laboratory function for a Discharger conducting any of its own analyses, reports must also be signed and certified by the chief of the laboratory.

All monitoring reports that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code sections 6735, 7835, and 7835.1.

At any time henceforth, the State or Central Valley Regional Water Board may notify the Discharger to electronically submit monitoring reports using the State Water Board's California Integrated Water Quality System (CIWQS) Program Web site (<http://www.waterboards.ca.gov/ciwqs/index.html>) or similar system. Until such notification is given, the Discharger shall submit hard copy monitoring reports with tabulated electronic data on attached digital media (e.g., compact disc).

A. All Quarterly Monitoring Reports shall include the following:

Wastewater Reporting

1. The results of Industrial Plant and Domestic Plant Influent Monitoring, Industrial Plant Fermenter Monitoring, Industrial Plant and Domestic Plant Effluent Monitoring, Commingled Effluent Monitoring, Pond Monitoring, Industrial Pretreatment Program Monitoring, and Use Area Monitoring specified on pages 2 through 6.
2. For each month of the quarter, calculation of the maximum daily flow and the monthly average flow.
3. For each of the quarters, calculation of the 12-month rolling average EC of the discharge using the EC values for that month averaged with EC values for the previous 11 months.
4. For each month of the quarter and each Plant (Industrial and Domestic), calculation of the monthly average effluent BOD₅ and TSS concentrations, and calculation of the percent removal of BOD₅ and TSS compared to the influent.
5. A summary of the notations made in the Pond Monitoring Log and Use Area Monitoring Log during each quarter. Paper copies of log pages covering the quarterly reporting period shall not be submitted unless requested by Central Valley Water Board staff.

Groundwater Reporting

1. The results of Groundwater Monitoring specified on pages 6 and 7.
2. For each monitoring well, a table showing constituent concentrations for at least five previous years, if available, up through the current sampling period.
3. A groundwater contour map based on groundwater elevations for that sampling event. The map shall show the gradient and direction of groundwater flow under/around the facility and/or effluent disposal area(s). The map shall also include the locations of monitoring wells and wastewater discharge areas. The map shall be certified by a licensed professional engineer or geologist.

Source Water Reporting

1. The results of Source Water Monitoring specified on page 6.
2. For each month of the quarter, calculation of the flow-weighted 12-month rolling average EC of the source water using monthly flow data and the source water EC values for the most recent four quarters.

B. Fourth Quarter Monitoring Reports, in addition to the above, shall include the following:

Wastewater Treatment Facility Information

1. The names, certificate grades, and general responsibilities of all persons in charge of wastewater treatment and disposal.
2. The names and telephone numbers of persons to contact regarding the WWTF for emergency and routine situations.
3. A statement certifying when the flow meter and other monitoring instruments and devices were last calibrated, including identification of who performed the calibrations (Standard Provision C.4).
4. A statement whether the current operation and maintenance manual, sampling plan, and contingency plan, reflect the WWTF as currently constructed and operated, and the dates when these documents were last reviewed for adequacy.
5. The results of an annual evaluation conducted pursuant to Standard Provision E.4 and a figure depicting monthly average discharge flow for the previous five calendar years.
6. A summary and discussion of the compliance record for the reporting period. If violations have occurred, the report shall also discuss the corrective actions taken and planned to bring the discharge into full compliance with this Order.

Biosolids/Sludge Monitoring

1. Annual production totals in dry tons or cubic yards.
2. A description of disposal methods, including the following information related to the disposal methods used. If more than one method is used, include the percentage disposed of by each method.
 - a. For landfill disposal, include: the name and location of the landfill, and the Order number of WDRs that regulate it.

- b. For land application, include: the location of the site, and the Order number of any WDRs that regulate it.
- c. For incineration, include: the name and location of the site where incineration occurs, the Order number of WDRs that regulate the site, the disposal method of ash, and the name and location of the facility receiving ash (if applicable).
- d. For composting, include: the location of the site, and the Order number of any WDRs that regulate it.

Use Area Reporting

- 1. The type of crop(s) grown in the Use Areas, planting and harvest dates, and the quantified nitrogen and total dissolved solids uptakes (as estimated by technical references or, preferably, determined by representative plant tissue analysis).
- 2. The monthly and annual discharge volumes during the reporting year expressed as million gallons and inches.
- 3. A monthly water balance for the reporting year that includes:
 - a. Monthly average ETo (reference evapotranspiration) – Information sources include California Irrigation Management Information System (CIMIS)
<http://www.cimis.water.ca.gov/>
 - b. Monthly crop uptake
 - i. Crop water utilization rates are available from a variety of publications available from the local University of California Davis extension office.
 - ii. Irrigation efficiency – Frequently, engineers include a factor for irrigation efficiency such that the application rate is slightly greater than the crop utilization rate. A conservative design does not include this value.
 - c. Monthly average precipitation – this data is available at <http://www.cimis.water.ca.gov/> or at <http://www.ncdc.noaa.gov/oa/climate/online/ccd/nrmlprcp.html>.
 - d. Monthly average and annual average discharge flow rate.
 - e. Monthly estimates of the amount of wastewater percolating below the root zone (i.e., amount of wastewater applied in excess of crop requirements).
- 4. The total pounds of nitrogen applied to the Use Areas, as calculated from the sum of the monthly loadings, and the total annual nitrogen loading to the Use Areas in lbs/acre-year.

5. The total pounds of total dissolved solids (TDS) that have been applied to the Use Areas, as calculated from the sum of the monthly loadings, and the total annual TDS loading to the Use Areas in lbs/acre-year.
6. A summary of the notations made in the Use Area monitoring log during the year. The entire contents of the log do not need to be submitted.
7. A scaled map depicting all the Use Areas available to the Discharger for application of WWTF effluent. The map shall include the effluent distribution system with key features (air gap devices, major control valves, pumps, recycled water public notice signs, etc.) labeled. The map shall identify the owner of each Use Area.

The Discharger shall implement the above monitoring program on the first day of the month following adoption of this Order.

Original signed by:
Ordered by: _____
PAMELA C. CREEDON, Executive Officer

11 April 2013

(Date)

GLOSSARY

BOD ₅	Five-day biochemical oxygen demand		
CBOD	Carbonaceous BOD		
DO	Dissolved oxygen		
EC	Electrical conductivity at 25° C		
FDS	Fixed dissolved solids		
NTU	Nephelometric turbidity unit		
TKN	Total Kjeldahl nitrogen		
TDS	Total dissolved solids		
TSS	Total suspended solids		
Continuous	The specified parameter shall be measured by a meter continuously.		
24-Hour Composite	Samples shall be a flow-proportioned composite consisting of at least eight aliquots.		
Daily	Samples shall be collected at least every day.		
Twice Weekly	Samples shall be collected at least twice per week on non-consecutive days.		
Weekly	Samples shall be collected at least once per week.		
Twice Monthly	Samples shall be collected at least twice per month during non-consecutive weeks.		
Monthly	Samples shall be collected at least once per month.		
Bimonthly	Samples shall be collected at least once every two months (i.e., six times per year) during non-consecutive months.		
Quarterly	Samples shall be collected at least once per calendar quarter. Unless otherwise specified or approved, samples shall be collected in January, April, July, and October.		
Semiannually	Samples shall be collected at least once every six months (i.e., two times per year). Unless otherwise specified or approved, samples shall be collected in April and October.		
Annually	Samples shall be collected at least once per year. Unless otherwise specified or approved, samples shall be collected in October.		
mg/L	Milligrams per liter		
mL/L	milliliters [of solids] per liter		
ug/L	Micrograms per liter		
umhos/cm	Micromhos per centimeter		
mgd	Million gallons per day		
MPN/100 mL	Most probable number [of organisms] per 100 milliliters		
General Minerals	Analysis for General Minerals shall include at least the following:		
	Alkalinity	Chloride	Sodium
	Bicarbonate	Hardness	Sulfate
	Calcium	Magnesium	TDS
	Carbonate	Potassium	Nitrate
	General Minerals analyses shall be accompanied by documentation of cation/anion balance.		

Table 1. Priority Pollutant Scan

<u>Inorganics</u> ¹	<u>Organics</u>		
Antimony	Acrolein	3-Methyl-4-Chlorophenol	Hexachlorobenzene
Arsenic	Acrylonitrile	Pentachlorophenol	Hexachlorobutadiene
Beryllium	Benzene	Phenol	Hexachlorocyclopentadiene
Cadmium	Bromoform	2,4,6-Trichlorophenol	Hexachloroethane
Chromium (III)	Carbon tetrachloride	Acenaphthene	Indeno(1,2,3-c,d)pyrene
Chromium (VI)	Chlorobenzene	Acenaphthylene	Isophorone
Copper	Chlorodibromomethane	Anthracene	Naphthalene
Lead	Chloroethane	Benzidine	Nitrobenzene
Mercury	2-Chloroethylvinyl Ether	Benzo(a)Anthracene	N-Nitrosodimethylamine
Nickel	Chloroform	Benzo(a)pyrene	N-Nitrosodi-n-Propylamine
Selenium	Dichlorobromomethane	Benzo(b)fluoranthene	N-Nitrosodiphenylamine
Silver	1,1-Dichloroethane	Benzo(g,h,i)perylene	Phenanthrene
Thallium	1,2-Dichloroethane	Benzo(k)fluoranthene	Pyrene
Zinc	1,1-Dichloroethylene	Bis(2-chloroethoxy) methane	1,2,4-Trichlorobenzene
Cyanide	1,2-Dichloropropane	Bis(2-chloroethyl) ether	
Asbestos	1,3-Dichloropropylene	Bis(2-chloroisopropyl) ether	<u>Pesticides</u>
	Ethylbenzene	Bis(2-Ethylhexyl)phthalate	Aldrin
	Methyl Bromide	4-Bromophenyl phenyl ether	alpha-BHC
<u>Dioxin Congeners</u>	Methyl Chloride	Butylbenzyl Phthalate	beta-BHC
2,3,7,8-TCDD	Methylene Chloride	2-Chloronaphthalene	gamma-BHC (Lindane)
1,2,3,7,8-PentaCDD	1,1,2,2-Tetrachloroethane	4-Chlorophenyl Phenyl Ether	delta-BHC
1,2,3,4,7,8-HexaCDD	Tetrachloroethylene (PCE)	Chrysene	Chlordane
1,2,3,6,7,8-HexaCDD	Toluene	Dibenzo(a,h)Anthracene	4,4'-DDT
1,2,3,7,8,9-HexaCDD	1,2-Trans-Dichloroethylene	1,2-Dichlorobenzene	4,4'-DDE
1,2,3,4,6,7,8-HeptaCDD	1,1,1-Trichloroethane	1,3-Dichlorobenzene	4,4'-DDD
OctaCDD	1,1,2-Trichloroethane	1,4-Dichlorobenzene	Dieldrin
2,3,7,8-TetraCDF	Trichloroethylene (TCE)	3,3'-Dichlorobenzidine	alpha-Endosulfan
1,2,3,7,8-PentaCDF	Vinyl chloride	Diethyl phthalate	beta-Endosulfan
2,3,4,7,8-PentaCDF	2-Chlorophenol	Dimethyl phthalate	Endosulfan Sulfate
1,2,3,4,7,8-HexaCDF	2,4-Dichlorophenol	Di-n-Butyl Phthalate	Endrin
1,2,3,6,7,8-HexaCDF	2,4-Dimethylphenol	2,4-Dinitrotoluene	Endrin Aldehyde
1,2,3,7,8,9-HexaCDF	2-Methyl-4,6-Dinitrophenol	2,6-Dinitrotoluene	Heptachlor
2,3,4,6,7,8-HexaCDF	2,4-Dinitrophenol	Di-n-Octyl Phthalate	Heptachlor epoxide
1,2,3,4,6,7,8-HeptaCDF	2-Nitrophenol	1,2-Diphenylhydrazine	Polychlorinated biphenyls
1,2,3,4,7,8,9-HeptaCDF	4-Nitrophenol	Fluoranthene	Toxaphene
OctaCDF		Fluorene	

¹ With the exception of wastewater samples, samples for metals analysis must first be filtered. If filtering in the field is not feasible, samples shall be collected in unpreserved containers and submitted to the laboratory within 24 hours with a request (on the chain of custody form) to immediately filter then preserve the sample.

² Samples to be analyzed for volatile compounds and phthalate esters shall be grab samples; the remainder shall be 24-hour composite samples.

Table 2. Use Area Monitoring

Recycled Water Monitoring Data For Year: _____								
Parcel No. _____ of _____ acres								
		Water application				Nitrogen application		
		Water required	Effluent used	Other water used	Total irrigation water	As fertilizer	As effluent*	Total nitrogen applied
Month	Crop	(AF)	(AF)	(AF)	(AF)	(lbs/acre)	(lbs/acre)	(lbs/acre)
October								
November								
December								
Subtotal:								
January								
February								
March								
Subtotal:								
April								
May								
June								
Subtotal:								
July								
August								
September								
Subtotal:								
Annual Total:								
* calculated as (AF effluent/acre) x (2.72) x (X mg/l total nitrogen) = lbs nitrogen/acre								

INFORMATION SHEET

INFORMATION SHEET-ORDER R5-2013-0019
CITY OF TULARE
WASTEWATER TREATMENT FACILITY
TULARE COUNTY

Background

The City of Tulare Wastewater Treatment Facility (WWTF) consists of two wastewater treatment plants (Plants), the Domestic Plant and Industrial Plant. Waste Discharge Requirements (WDRs) Order R5-2002-0185 authorizes discharge of up to 9.39 mgd of commingled effluent from the two treatment plants, with provisions for conditional increase in the limit to as much as 14 mgd. The WWTF receives domestic wastewater (which includes commercial and some industrial wastewater) from the City's approximately 60,000 residents, and, in a segregated stream, industrial wastewater mainly from six large dairy processing plants, including from what is reportedly the nation's largest dairy processing complex, a Land O'Lakes facility. Each treatment plant provides secondary treatment before the effluent is mixed and discharged to unlined ponds for storage, percolation, and evaporation. The City delivers undisinfected effluent to nearby lands via subsurface purple pipe for recycled water projects. The designated recycled water application areas (Use Areas) consist of City-owned land and other farms growing feed crops not for human consumption. McCarthy Family Farms, Inc. discharges sludge from the WWTF at its facility in Corcoran as an enrollee under WDRs Order 95-140, *Waste Discharge Requirements General Order for Reuse of Biosolids and Septage on Agricultural, Forest, and Reclamation Sites*.

In 2002, the Central Valley Water Board found that the City had polluted groundwater with nitrate, iron, manganese, and salts. Concurrent with the WDRs, the Central Valley Water Board adopted Cease and Desist Order (CDO) R5-2002-0186 to address groundwater degradation and other compliance issues.

The 2002 WDRs set groundwater limits and include a time schedule for the City to demonstrate compliance with the State's Antidegradation Policy. To demonstrate consistency with the Antidegradation Policy, the WDRs require the City to:

1. Determine background groundwater quality;
2. Conduct a Best Practicable Treatment or Control (BPTC) analysis; and
3. Submit proposed specific numeric groundwater quality limitations reflecting implementation of BPTC and compliance with applicable water quality objectives, interpreted as described in the Tulare Lake Basin Plan section entitled "Application of Water Quality Objectives."

The 2002 CDO was adopted because the City had failed to comply with numerous items in its previous WDRs, including effluent and groundwater limits, and it would immediately violate the 2002 WDRs. The CDO requires the City to:

1. Prepare a facilities plan (assessing flow, disposal, pollutant free waste, sludge handling, etc.);
2. Revise its Industrial Pretreatment Program (IPP);
3. Implement salinity control;
4. Conduct groundwater and soils investigations; and

5. Cleanup groundwater.

The City installed additional groundwater monitoring wells, submitted a Facilities Plan, a Salinity Source Control Plan, groundwater assessments, and implemented changes to its Industrial Pretreatment Program. The City has completed significant modifications to the WWTF, including:

- In 2006, it added an anoxic basin to the 6.0-mgd Domestic Plant for nitrogen removal.
- In 2006, the City constructed soil cement-lined sludge drying beds for domestic sludge.
- In 2009, the City completed the improvements listed below to upgrade the Industrial Plant to a 12.0-mgd sequential batch reactor (SBR) plant:
 - a dissolved air flotation (DAF) unit to remove fats, oils, and grease (FOG) from wastewater that bypasses the bulk volume fermenter (Fermenter);
 - six sequencing batch reactors (SBRs);
 - six denitrifying filters;
 - two DAF units for thickening solids generated in the SBRs;
 - three anaerobic digesters; and
 - 25 acres of soil cement-lined sludge drying beds.
- In 2009, the City completed four additional unlined effluent storage and percolation ponds. The new ponds increased storage capacity approximately 915 acre-ft for a total of 2,700 acre-feet of commingled effluent storage.
- Since 2002, the City negotiated contracts and installed pipelines to deliver treated effluent to nearby farmland for reclamation on about 1,600 additional acres for a total of approximately 2,920 acres (estimated 2,620 acres to receive effluent) of Use Areas.

The City submitted a Report of Waste Discharge in June 2009 describing the changes the City has made and intends to make to the WWTF. The WWTF is designed to meet BOD limits and the anticipated effluent limit of 10 mg/L total nitrogen. The Report of Waste Discharge includes an Antidegradation Analysis, which is the culmination of multiple studies and reports required by the 2002 WDRs, including a BPTC evaluation for which the City conducted a thorough assessment of waste constituents in commingled effluent and compared the results to a similar assessment of waste constituents in select groundwater wells. The BPTC reports progressively narrow the list of constituents of concern (COCs) to sodium, TDS, EC, manganese, and nitrate, for each of which the RWD proposes treatment (for nitrate only) or control measures.

The current WDRs do not address changes the City has made to the WWTF and do not reflect updated information now available to Central Valley Water Board staff. The City has made significant progress in addressing issues raised in the 2002 WDRs and CDO. The WDRs need to be updated, and the CDO is no longer reflective of the current conditions of the WWTF and should be rescinded. Pending further Central Valley Water Board staff assessment, a separate enforcement order may be appropriate for groundwater degradation due to historic discharges from the WWTF.

Water Recycling Requirements

As part of its RWD, the City requested that the Central Valley Water Board adopt a Master Recycling Permit that authorizes the City to administer its own recycled water program as part of updated Waste Discharge Requirements. The City's projected water balance depends heavily on proposed recycled water projects for disposal of effluent. This Order includes a Master Recycling Permit, as described in Water Code section 13523.1(b).

The California Department of Public Health (formerly Department of Health Services) has established uniform statewide recycled water criteria in Title 22, California Code of Regulations, Section 60301 et seq., (hereafter Title 22) for the use of recycled water and has developed guidelines for specific uses. The most recent revisions to recycled water-related statutes were made effective 1 January 2011. Attachment E, a part of this Order, summarizes requirements of the uniform recycled water criteria. However, the City and Users will need to consult the California Code of Regulations, the Health and Safety Code, and the Water Code directly to ensure compliance with the statutes and regulations.

The City will treat the wastewater to the standards required in Title 22 for irrigation with secondary undisinfectated domestic effluent of animal feed crops not for human consumption. As the responsible party named in the Master Recycling Permit, the City is responsible for the operation and maintenance of transport facilities and associated appurtenances used to distribute the secondary undisinfectated recycled water. The City shall hold its Users responsible for the application and use of recycled water on the designated Use Areas and associated operations and maintenance in accordance with all applicable Title 22 requirements and this Order. The Order, as proposed, includes requirements for the City to establish and enforce rules and regulations for recycled water users in accordance with uniform statewide recycling criteria, and for its Users to conduct periodic inspections of the recycled water use sites.

The City will be responsible for administering User agreements and informing individual owners regarding the use and application of recycled water as well as obtaining recorded covenants for land dedicated for effluent disposal to ensure unrestricted availability of land for disposal of effluent.

This Order as proposed would require the City as the Distributor of recycled water to implement and enforce specific measures relating to the use of recycled water. These include: (a) posting of appropriate warning signs around Use Areas, (b) maintaining setback distances, (c) ensuring distribution and delivery systems are well maintained and operational, and (d) requiring that recycled water be applied at agronomic rates.

The proposed Order would require the City and/or User to monitor its application in accordance with the proposed Monitoring and Reporting Program. Specifically, the proposed Order would require the City and/or its User to report the amounts of recycled water applied to the Use Areas, calculate nitrogen and salt loading to individual Use Areas, inspect the Use Areas on at least a monthly basis to ensure that water recycling is in compliance with the proposed Order; and submit required annual monitoring reports to the Central Valley Water Board.

The Use Areas may contain topography that would promote runoff unless closely managed during irrigation. Runoff has potential to enter drainage channels or surface water. Such runoff cannot occur except under an NPDES permit, and the City and/or its Users are required to provide all runoff controls necessary to keep effluent irrigation runoff out of drainage channels or surface waters. However, minor amounts of incidental runoff or over-spray cannot be completely prevented. The proposed Order requires that incidental runoff or over-spray be minimized to the extent practicable through operational strategies.

Groundwater Conditions

Groundwater flow in the unconfined aquifer of the Kaweah subbasin is generally to the southwest, toward the trough of the valley. Localized variations due to pumping and recharge result in a more westerly gradient near the City of Tulare. The City's discharge of WWTF effluent results in some groundwater mounding in the vicinity of the effluent ponds. The mound alters groundwater flow direction near the WWTF, but lateral flow underlying the Use Areas appears to be to the west, consistent with outlying areas. Groundwater in the unconfined aquifer is first encountered at depths of about 65 to 85 feet bgs in the vicinity of the WWTF and Use Areas.

Sources of groundwater recharge in the area include precipitation, land application of wastewater (including numerous dairies), and excellent quality surface water. Recharge from surface water occurs through natural waterways (the Kaweah River and its distributaries), irrigation, and groundwater recharge projects. The Tulare Irrigation District delivers water from the Kaweah and Saint Johns Rivers and from the Friant-Kern Canal to area growers. The Tulare Irrigation District maintains multiple groundwater recharge basins and unlined canals designed to recharge groundwater for use during drought years. Recycled water users receive Tulare Irrigation District water deliveries and maintain irrigation supply wells for irrigation. Elk Bayou, flowing southwest from Outside Creek, is within about a mile of the southernmost Use Areas.

The City maintains a groundwater monitoring well network of 29 wells. Groundwater levels have dropped below the screened interval of 12 wells. Of the remaining 17, seven of the wells are screened across the groundwater surface. The other 10 were constructed 30 to 50 feet below the groundwater surface to monitor the vertical extent of groundwater degradation. No functional monitoring wells exist to monitor first-encountered groundwater downgradient from the Domestic or Industrial sludge drying beds, or downgradient from the majority of the recycled water Use Areas. The single upgradient well generally appears to represent upgradient groundwater quality, but is not screened across the groundwater surface and is not sufficient for the large discharge area. The City is limited in its ability to assess upgradient groundwater conditions and groundwater degradation because its groundwater monitoring well network is inadequate.

The 2009 RWD includes estimated background groundwater constituent concentrations based on MW-31. Two upgradient California Department of Water Resources wells of depth comparable to MW-31 had chloride concentrations from 5 mg/L to 12 mg/L and a nitrate concentration of 3.8 mg/L as nitrogen in 1956. A slightly deeper (136 feet) downgradient well in 1956 had similar results for chloride and 0.2 mg/L nitrate with an EC of about 290 umhos/cm. Groundwater unaffected by the discharge has an EC of less than 500 umhos/cm, chloride of less than 20 mg/L, and total nitrogen less than 10 mg/L as nitrogen. The published data generally agrees with the characterization in the RWD (MW-31), with the exception of nitrate, which the RWD reports to be about 15 mg/L as nitrogen.

The table below summarizes pertinent data for each well in the City's groundwater monitoring well network. The wells are listed according to the area the well is intended to represent.

	<u>Construction Date</u>	<u>Top of Casing Elevation ft AMSL</u>	<u>Ground Elevation ft AMSL</u>	<u>Well Diameter inches</u>	<u>Screened Interval ft bgs</u>	<u>Depth to Water ft bgs</u>
Upgradient						
MW-1	Jun 1990	267.58	267.88	2	55-75	Dry
MW-2	Aug 1989	270.53	269.20	2	60-80	Dry
MW-12	Jun 1990	272.73	273.18	2	65-85	Dry
MW-31	Mar 2006	277.47	-	6	125-150	112
MW-32	Mar 2006	277.37	-	6	65-90	Dry
Downgradient of Effluent Ponds						
MW-18	Mar 2001	263.50	264.70	4	50-75	68
MW-19	Mar 2001	261.50	262.40	4	60-85	66
MW-20	Mar 2001	264.06	264.00	4	60-85	76
MW-21	Mar 2001	263.63	264.13	4	55-80	Dry
MW-25	Mar 2006	270.86	271.10	6	120-140	73
MW-26	Mar 2006	270.99	271.39	6	70-95	69
MW-27	Mar 2006	262.27	262.67	6	135-150	67
Downgradient of Use Areas						
MW-3	Aug 1989	259.81	260.21	2	55-75	70
MW-10	Aug 1989	252.56	252.86	2	63-83	Dry
MW-11A	May 1991	252.77	251.67	2	100-140*	85
MW-15A	Jul 1990	256.28	254.84	2	55-75	66
MW-16	Aug 1990	254.99	254.24	2	56-76	66
MW-24	Mar 2006	264.57	264.97	6	102-127	86
MW-28	Mar 2006	252.03	252.43	6	140-155	83
MW-29	Mar 2006	251.99	252.39	6	60-90	Dry
MW-30	Mar 2006	251.46	251.86	6	80-110	85
MW-34	Apr 2006	253.25	253.65	6	130-155	82
MW-35	Apr 2006	260.00	260.30	6	130-155	70
Downgradient of Domestic Sludge Drying Beds						
MW-22	Mar 2001	262.11	262.81	4	65-90	Dry
Downgradient or Cross-gradient from WWTF						
MW-6	Sep 1989	263.94	262.51	2	60-80	Dry
MW-23	Mar 2006	264.32	263.37	6	128-148	90
Far Downgradient						
MW-14	Jul 1990	240.67	239.12	2	71-91	Dry
MW-15B	Aug 1990	246.61	244.66	2	59-79	Dry
MW-33	Mar 2006	241.62	242.02	6	130-155	103

Wells MW-1, MW-2, MW-12, MW-16, MW-20, and MW-24 appear to be strongly influenced by intermittent seepage of excellent quality surface water from the Tulare Irrigation District. Samples from MW-16 have been fluctuating from an EC of about 200 umhos/cm to about 1,200 umhos/cm. The City has recently questioned the value of monitoring wells MW-1, MW-2, and MW-12. MW-1 and MW-12 have not had water sufficient water to collect a sample for years. Well MW-2 reportedly only contains water when the adjacent canal contains water, suggesting the annular seal has failed and the well needs to be properly destroyed to prevent transport of waste to groundwater.

Basin Plan, Beneficial Uses, and Regulatory Considerations

The Basin Plan identifies the greatest long-term water quality problem facing the entire Tulare Lake Basin as increasing salinity in groundwater, a process accelerated by man's activities and particularly affected by intensive irrigated agriculture. The Basin Plan recognizes that degradation is unavoidable until there is a long-term solution to the salt imbalance. Until then, the Basin Plan establishes several salt management requirements, including the following limits:

- a. The incremental increase in salts from use and treatment must be controlled to the extent possible. The maximum EC of the effluent discharged to land shall not exceed the EC of the source water plus 500 umhos/cm. When the source water is from more than one source, the EC shall be a weighted average of all sources.
- b. Discharges to areas that may recharge good quality groundwater shall not exceed an EC of 1,000 umhos/cm, a chloride content of 175 mg/L, or boron content of 1.0 mg/L.

The Basin Plan establishes numeric and narrative water quality objectives for surface waters and groundwater within the basin. Numeric water quality objectives quantify the maximum degradation that will not adversely affect the beneficial use of the water. Narrative water quality objectives are an unquantified expression of the maximum degradation that will not adversely affect the beneficial use of the water. For example, the toxicity objective requires that groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in humans, plants, or animals. The chemical constituent objective states that groundwater shall not contain chemical constituents in concentrations that adversely affect any beneficial use.

The Basin Plan requires municipal WWTFs that discharge to land to comply with treatment performance standards for BOD₅ and TSS. WWTFs that preclude public access and are greater than 1 mgd must provide removal of 80 percent or reduction to 40 mg/L, whichever is more restrictive, for both BOD₅ and TSS.

Antidegradation

State Water Board Resolution 68-16 (*"Policy with Respect to Maintaining High Quality Water of the State"*) (the "Antidegradation Policy") prohibits degradation of groundwater unless it has been shown that: the degradation does not result in water quality less than that prescribed in state and regional policies, including violation of one or more water quality objectives; the degradation will not unreasonably affect present and anticipated future beneficial uses; the Discharger employs Best Practicable Treatment or Control (BPTC) to minimize degradation; and the degradation is consistent with the maximum benefit to the people of the state.

WDRs Order R5-2002-0185 was intended to be the first phase of a two-phased approach to ensure that the discharge will be fully consistent with water quality plans and policies. The 2002 WDRs established groundwater limitations consistent with water quality objectives determined from discharge-specific information available at the time. The 2002 WDRs suggest that, pending the completion of certain tasks to upgrade the WWTF and accumulate more site-specific information in accordance with a time schedule, the Board may adopt, in updated WDRs (Phase 2), revised groundwater limitations based on a more complete assessment of applicable water quality objectives.

The quality of the discharge has greatly improved since the 2002 WDRs, resulting in a reduction in anticipated groundwater degradation. The discharge is better quality in terms of essentially all constituents of concern, including salts, nitrogen, total organic carbon, and chemical constituents related to commercial and industrial waste discharged to the sewer system.

The City has reduced the overall salinity of the discharge through a combination of source reduction on the part of industrial sewer users and upgraded treatment at the WWTF. The City submitted a Salinity Control Plan in November 2004 characterizing sources of salinity. The Salinity Control Plan estimates that about 40 percent of discharge salinity at the time was from industrial sources and nearly 30 percent was added at the WWTF for pH stabilization with magnesium oxide. Particularly through strategic use of ammonia in place of inorganic compounds for added alkalinity, the City has been able to remove the majority of added salinity at the WWTF.

For sodium, chloride, and EC, there are currently no promulgated numeric standards to ensure the protection of waters designated as supporting the agricultural supply beneficial use. The average discharge EC of about 630 umhos/cm meets the Basin Plan limits of 1,000 umhos/cm and source water plus 500 umhos/cm (about 700 umhos/cm). Since groundwater unaffected by discharges has an EC less than 500 umhos/cm, limited degradation may occur, but the discharge is not expected to increase groundwater salinity to the extent that it would adversely affect beneficial uses.

As part of its 2009 RWD, the City submitted *Evaluation of interim groundwater quality limits (EC, TDS, B, Cl and Na) posed on POTWs for protection of irrigated agriculture in the Central/Southern San Joaquin Valley* by Dr. Stephen Grattan of UC Davis. Dr. Grattan prepared the report for 18 communities in the Tulare Lake Basin in 2004. The Grattan report proposes a methodology for setting numerical water quality goals for groundwater that would result in less stringent groundwater limits. For the City of Tulare, the Grattan report proposes groundwater limits for sodium of 115 mg/L, chloride of 175 mg/L, and EC of 1,000 umhos/cm.

Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) is a collaborative basin planning effort aimed at developing and implementing a comprehensive salinity and nitrate management program. Part of the CV-SALTS process involves assessing the far-reaching implications of various methodologies, like that proposed in the Grattan report, for establishing numeric water quality limits that would be protective of the agricultural supply beneficial use. Until the program is developed, the Central Valley Water Board establishes groundwater limits to implement narrative water quality objectives (e.g., the Toxicity Objective) on a case-by-case basis. WDRs Order R5-2002-0185 established groundwater limits at 69 mg/L for sodium and 106 mg/L for chloride. The justification for imposing these limits in WDRs Order R5-2002-0185 is consistent with the current implementation policies in the Basin Plan, and therefore this Order carries over the same groundwater limits. However, since CV-SALTS is expected to address some of the ambiguities regarding the

protection of beneficial uses in the next few years (e.g., 69 mg/L is considered to be a very conservative value under most conditions), this Order implements a performance-based groundwater limit of 110 mg/L for 8 years. In this timeframe, if the CV-SALTS process does not result in modifications to the Basin Plan's implementation provisions, then the City will have time to design treatment alternatives. The average commingled effluent sodium concentrations, based on four samples collected in 2012, is about 110 mg/L. Groundwater data for MW-26, the shallow well centrally located in the effluent pond area, shows sodium concentrations of 140 mg/L, 120 mg/L, 110 mg/L, and 110 mg/L in quarterly samples collected in January, April, July, and October 2012, respectively.

For nitrogen, the City adds large amounts of ammonia to stabilize the pH of influent industrial wastewater. Failure to remove the added nitrogen, in addition to relatively high influent nitrogen concentrations, could result in large amounts of nitrogen percolating to groundwater, potentially causing significant degradation that could lead to pollution with nitrate. However, both Plants at the WWTF include nitrogen removal treatment, with a design effluent of 10 mg/L or less. In a report entitled *Preliminary Design Report for City of Tulare Industrial Wastewater Treatment Plant Expansion*, Parsons Corporation established the design effluent total nitrogen concentration of 10 mg/L or less as a monthly average, apparently to achieve a groundwater nitrate concentration of no more than 10 mg/L as nitrogen.

The City has demonstrated, with water and nitrogen balance calculations, that discharges to the Use Areas, where crops will take up nitrogen, is not expected to result in significant groundwater degradation with nitrate. Regarding discharges from the effluent ponds, the City requested that Central Valley Water Board staff consider that the Water Quality Control Plan for the Santa Ana River Basin adjusts discharge limits up based on a minimum 25 percent removal of total inorganic nitrogen from effluent percolated from ponds. Water quality data from the City's groundwater monitoring well network suggest significant denitrification (more than 25 percent) occurs beneath the effluent ponds. A commingled effluent limit of 13 mg/L (the approximate effluent total nitrogen expected to result in groundwater nitrate of no more than 10 mg/L as nitrogen after 25 percent removal) is appropriate. The commingled effluent total nitrogen concentration is near 10 mg/L (8.1 mg/L on average for 2012). The monthly average commingled effluent total nitrogen exceeded 10 mg/L three times in 2012, but did not exceed 12 mg/L. The discharge, as authorized by this Order, is not expected to cause degradation of groundwater with nitrate that would exceed water quality objectives or adversely affect beneficial uses.

Regarding other constituents, groundwater degradation to the point of exceedance of water quality objectives or adverse impacts to beneficial uses are not expected. Particularly since the City has improved BOD removal at the WWTF, the anticipated degradation of groundwater with total organic carbon is less than from discharges from similar facilities authorized by the Central Valley Water Board and is not expected to adversely impact the beneficial use of groundwater. Land application is considered a form of treatment and control of treated domestic waste that contains pathogens. Regarding anthropogenic chemical constituents related to commercial and industrial waste discharged to the sewer system, the City implements a revised Industrial Pretreatment Program and activated sludge in the WWTF is expected to remove volatile and biodegradable wastes.

The WWTF will provide treatment and control of the discharge that incorporates: secondary treatment of wastewater with nitrogen removal; sludge hauled off-site; recycling of wastewater for crop irrigation;

an operation and maintenance manual; implementation of an Industrial Pretreatment Program; implementation of a Salinity Management Plan; implementation of a nutrient management plan; certified operators to ensure proper operation and maintenance; and source water, discharge, and groundwater monitoring.

Generally, limited degradation of groundwater by some of the typical waste constituents of concern (e.g., EC and nitrate) released with discharge from a municipal wastewater utility after effective source control, treatment, and control is consistent with maximum benefit to the people of the State. This Order establishes terms and conditions to ensure that the discharge will not unreasonably affect present and anticipated beneficial uses of groundwater or result in groundwater quality less than that prescribed in state and regional policies. The treatment and control measures are equivalent or better than those employed by similarly-situated dischargers, and are a significant improvement over measures employed by the Discharger in previous years, and therefore represent BPTC. Therefore, the degradation authorized by this Order is consistent with the Antidegradation Policy.

CEQA

The City has acted as lead agency for each expansion project associated with the WWTF pursuant to the California Environmental Quality Act (CEQA). The table below lists CEQA documents for projects that pertain to the discharge this Order regulates.

<u>Date</u>	<u>Document</u>	<u>Description</u>
7 Dec 1993	Program EIR for the General Plan	Includes mitigation measures to increase sewer connection fees to provide adequate funds for future WWTF projects.
16 Nov 1995	Resolution No. 95-480	Establishes that the City's plan to increase the Domestic Plant treatment capacity from 4.0 to 8.0 mgd was within the scope of the 1993 Program EIR.
7 Aug 2001	EIR for WWTF	For Domestic and Industrial Plant expansion to 6 mgd and 8 mgd, respectively. Identifies a large region available for potential Use Areas. Does not identify particular impacts to water quality resulting from the increased discharge. Notes that compliance with existing laws and regulations would mitigate adverse impacts from the WWTF expansion project.
18 Oct 2002	2002 WDRs	Describes 2001 EIR inadequacies. Cites some of its provisions as new mitigation measures.
20 Jul 2006	Mitigated Negative Declaration	For expansion of the Industrial Plant and Domestic Plant to 12 mgd and 8 mgd, respectively.
18 Mar 2008	EIR for General Plan Update	Final Environmental Impact Report for the City of Tulare General Plan Update.
7 Oct 2010	Mitigated Negative Declaration	Another mitigated negative declaration for expansion of the Domestic Plant to 8 mgd. The City submitted a

<u>Date</u>	<u>Document</u>	<u>Description</u>
		Domestic Plant Design Report by email in response to Central Valley Water Board staff comments.

Consistent with the role of responsible agency, Central Valley Water Board staff reviewed and commented on the draft CEQA documents circulated by City, which has acted as the lead agency for all of the above environmental approvals. The City ultimately approved the CEQA documents for the City WWTF's expansions. This Order imposes regulatory requirements on a project that has already undergone multiple environmental reviews pursuant to CEQA, and no additional CEQA analysis is required.

Title 27

Unless the Board finds that the discharge of designated waste is exempt from Title 27 of the California Code of Regulations, the release of designated waste is subject to full containment requirements. Here, the discharge is exempt from the requirements of Title 27 pursuant to the wastewater exemption found at Title 27, section 20090 (b).

Proposed Order Terms and Conditions

Discharge Prohibitions, Specifications and Provisions

The proposed Order prohibits the discharge of waste to surface waters and to surface water drainage courses, and prohibits the cross connection between potable water and well piping with recycled water piping.

The proposed Order restricts the Discharger to a monthly average Domestic Plant effluent flow limit of 5.0 mgd until the Discharger can demonstrate the Domestic Plant can treat a monthly average flow of 6.0 mgd, or 8.0 mgd. The proposed Order restricts the Discharger to a monthly average Industrial Plant effluent flow limit of 12.0 mgd. The proposed Order also restricts the Discharger to a monthly average commingled effluent flow limit of 16.0 mgd until the Discharger can demonstrate the disposal capacity to accommodate 18.0 mgd, or 20.0 mgd.

This Order sets effluent limits for BOD₅ and TSS of 40 mg/L as monthly average and 80 mg/L as daily maximum. These limitations are based on Basin Plan minimum performance standards for municipal facilities. This Order also limits commingled effluent total nitrogen to 13 mg/L or less.

The proposed Order's provisions regarding storage pond dissolved oxygen and freeboard are consistent with Central Valley Water Board policies for the prevention of nuisance conditions, and are applied to all similarly-situated facilities. Additional provisions include conditional increases in effluent flow limitations and requirements to submit multiple technical reports, including a Salinity Management Plan, Groundwater Monitoring Well Work Plan, Groundwater Monitoring Well Installation Report, and a Sludge Drying Bed Assessment Report.

The proposed Order is also a Master Recycling Permit with requirements consistent with Water Code section 13523.1, including the requirement to establish and have the authority to enforce rules and/or regulations for recycled water Users governing the design and construction of recycled water use facilities and the use of recycled water in accordance with water recycling criteria established in Title 22, California Code of Regulations and this Order.

The proposed Order prescribes groundwater limitations that ensure the discharge does not affect present and anticipated future beneficial uses of groundwater.

Monitoring Requirements

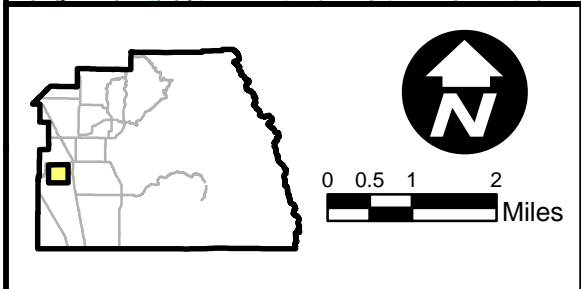
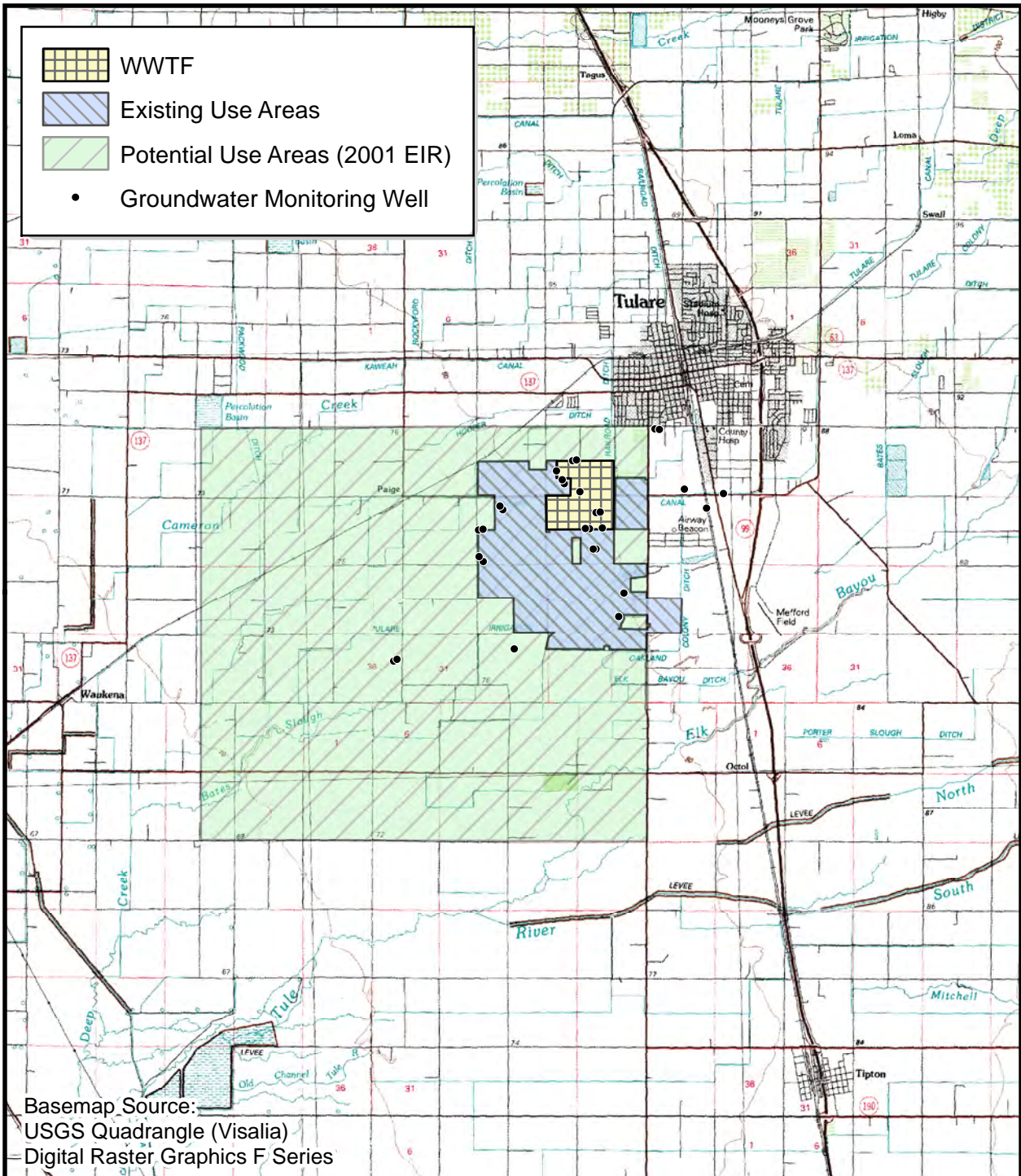
Section 13267 of the Water Code authorizes the Central Valley Water Board to require the Discharger to submit monitoring and technical reports as necessary to investigate the impact of a waste discharge on waters of the State. In recent years, there has been an increased emphasis on obtaining all necessary information, assuring the information is timely as well as representative and accurate, and thereby improving dischargers' accountability for meeting the conditions of discharge. Section 13268 of the Water Code authorizes assessment of administrative civil when appropriate.

The proposed Order includes influent and effluent monitoring requirements, Fermenter monitoring (primarily to document the source and effects of aqueous ammonia addition at the WWTF), pond monitoring, source water monitoring, sludge monitoring, Use Area monitoring, and groundwater monitoring. This monitoring is necessary to characterize the discharge, evaluate compliance with effluent limitations prescribed by the Order, and evaluate groundwater quality and the extent of degradation caused by the discharge.

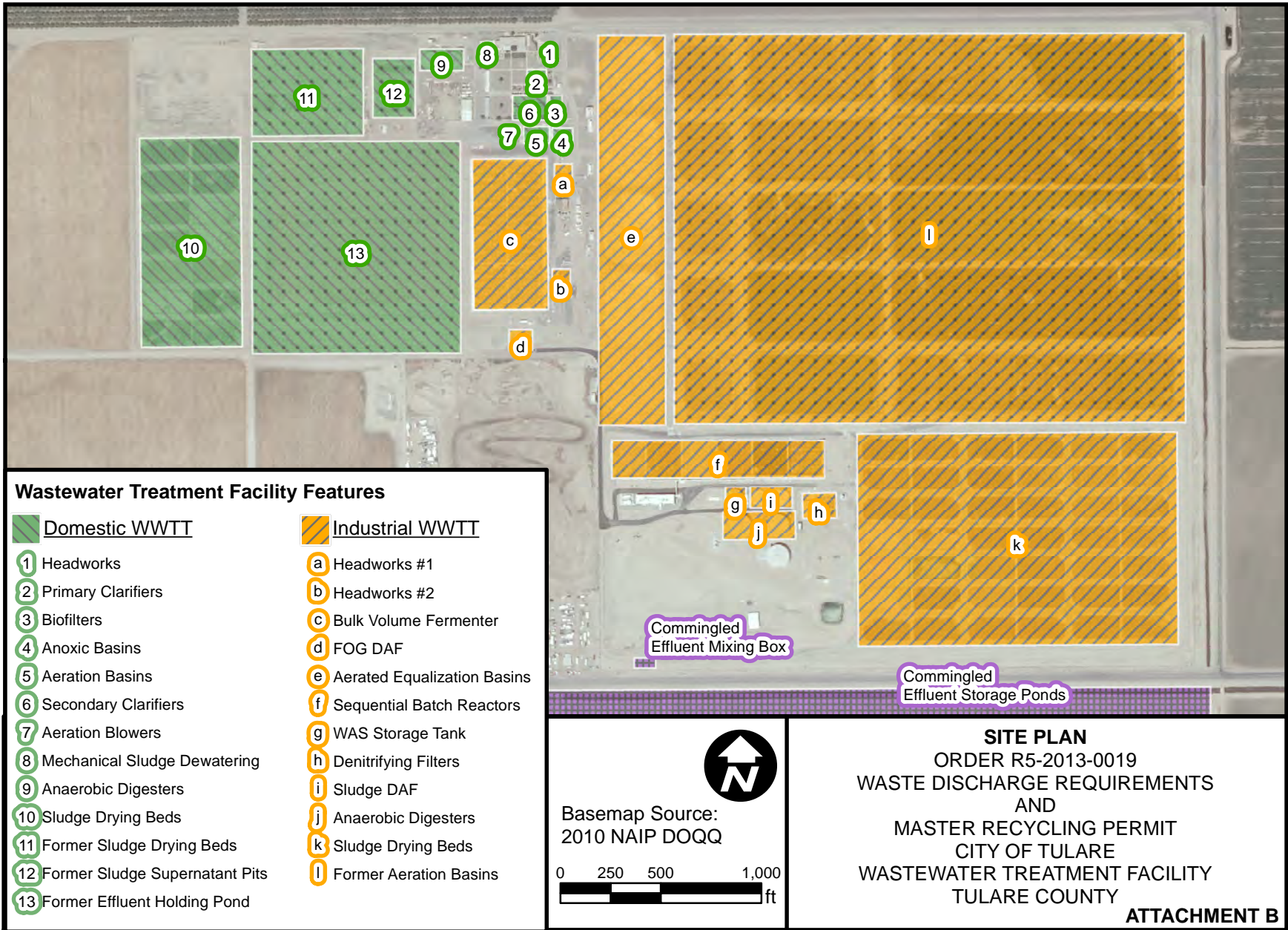
As described in the proposed Order and earlier in this Information Sheet, the existing groundwater monitoring well network is inadequate because no functional wells monitor first-encountered groundwater downgradient of sludge drying beds or most Use Areas, and the single upgradient well is insufficient for the large discharge area. Provision I.20, which requires the City to prepare and implement a work plan for construction of additional wells, is intended to provide data necessary to evaluate groundwater quality and the extent of degradation caused by the discharge. Central Valley Water Board staff will work with the City to identify groundwater monitoring needs to minimize costs, which will bear a reasonable relationship to the need for groundwater monitoring reports (Wat. Code, § 13267.).

Reopener

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



VICINITY MAP
 ORDER R5-2013-0019
 WASTE DISCHARGE REQUIREMENTS
 AND
 MASTER RECYCLING PERMIT
 CITY OF TULARE
 WASTEWATER TREATMENT FACILITY
 TULARE COUNTY
ATTACHMENT A



Wastewater Treatment Facility Features

Domestic WWTT

- 1 Headworks
- 2 Primary Clarifiers
- 3 Biofilters
- 4 Anoxic Basins
- 5 Aeration Basins
- 6 Secondary Clarifiers
- 7 Aeration Blowers
- 8 Mechanical Sludge Dewatering
- 9 Anaerobic Digesters
- 10 Sludge Drying Beds
- 11 Former Sludge Drying Beds
- 12 Former Sludge Supernatant Pits
- 13 Former Effluent Holding Pond

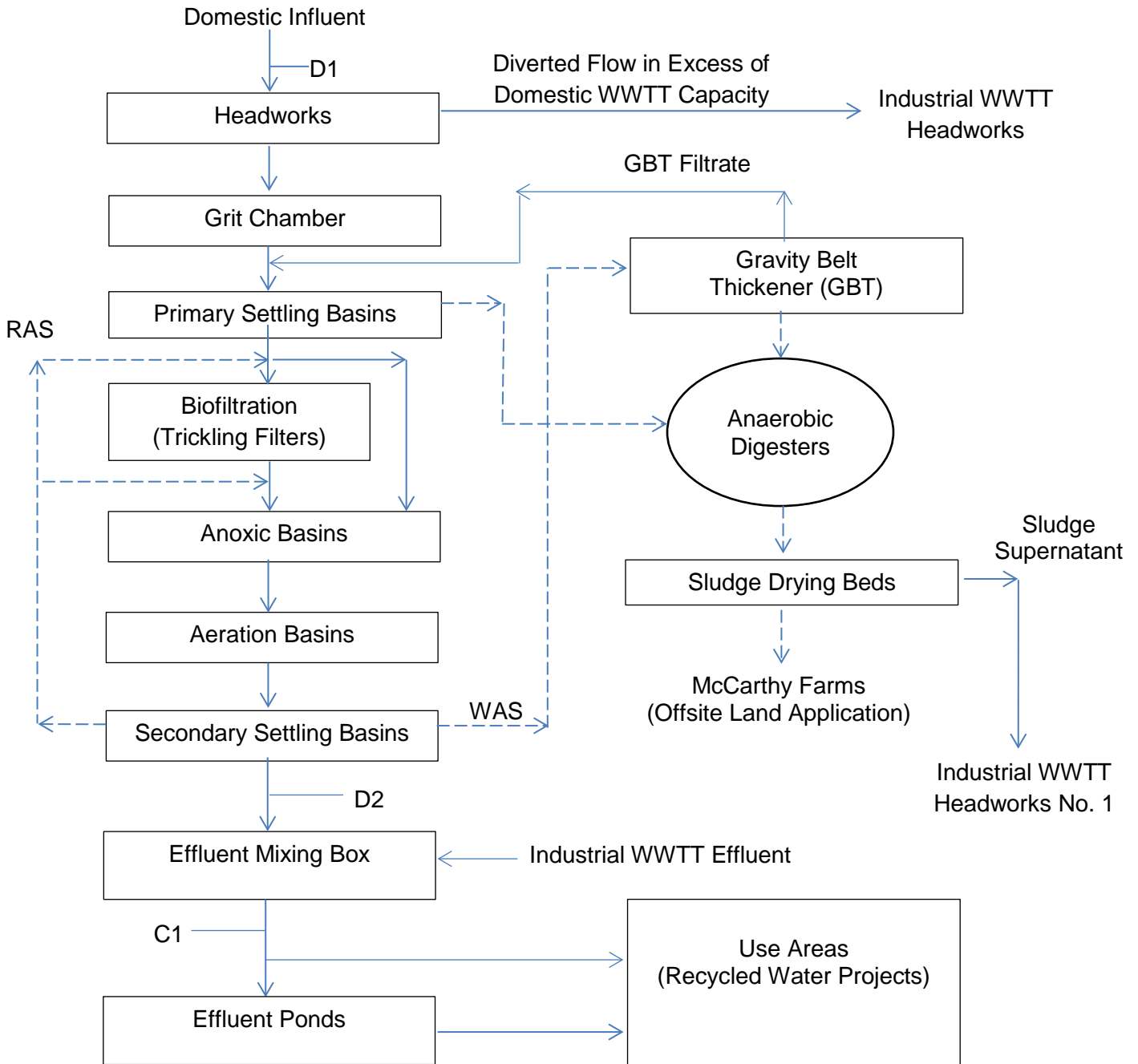
Industrial WWTT

- a Headworks #1
- b Headworks #2
- c Bulk Volume Fermenter
- d FOG DAF
- e Aerated Equalization Basins
- f Sequential Batch Reactors
- g WAS Storage Tank
- h Denitrifying Filters
- i Sludge DAF
- j Anaerobic Digesters
- k Sludge Drying Beds
- l Former Aeration Basins

Basemap Source:
2010 NAIP DOQQ

0 250 500 1,000
ft

SITE PLAN
ORDER R5-2013-0019
WASTE DISCHARGE REQUIREMENTS
AND
MASTER RECYCLING PERMIT
CITY OF TULARE
WASTEWATER TREATMENT FACILITY
TULARE COUNTY



NOT TO SCALE

Symbol



Description

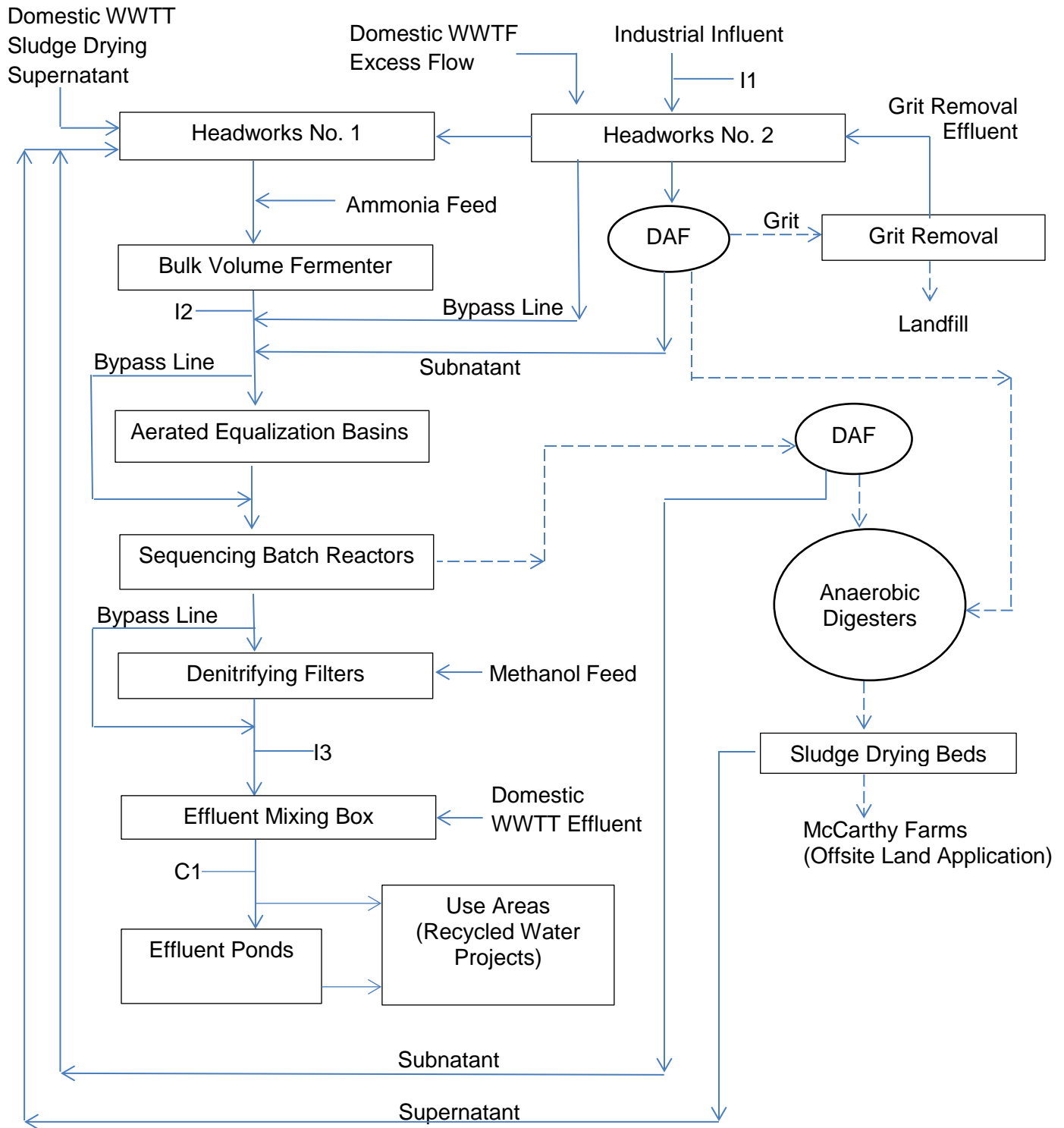
Wastewater
Sludge

Sampling Points

D1 Domestic Influent
D2 Domestic Effluent
C1 Commingled Effluent

**PROCESS FLOW DIAGRAM
DOMESTIC PLANT**

ORDER R5-2013-0019
WASTE DISCHARGE REQUIREMENTS
AND
MASTER RECYCLING PERMIT
FOR
CITY OF TULARE WWTF



NOT TO SCALE

<u>Symbol</u>	<u>Description</u>
	Wastewater
	Sludge
<u>Sampling Points</u>	
I1	Industrial Influent
I2	BVF Effluent
I3	Industrial Effluent
C1	Commingled Effluent

**PROCESS FLOW DIAGRAM
INDUSTRIAL PLANT**

 ORDER R5-2013-0019
 WASTE DISCHARGE REQUIREMENTS
 AND
 MASTER RECYCLING PERMIT
 FOR
 CITY OF TULARE WWTF

ATTACHMENT E

ORDER R5-2013-0019

**WASTE DISCHARGE REQUIREMENTS
AND
MASTER RECYCLING PERMIT
CITY OF TULARE
WASTEWATER TREATMENT FACILITY
TULARE COUNTY**

RULES AND REGULATIONS FOR RECYCLED WATER USE PROJECTS

Pursuant to California Water Code (Water Code) section 13523.1 (b)(3), this Order requires the City of Tulare to establish and to enforce rules and regulations governing the design, construction and use of recycled water distribution and disposal systems by its customers. The rules and regulations shall be consistent with the following criteria:

- Health and Safety Code, Division 6, Part 1, Chapter 4, Article 1;
- Health and Safety Code, Division 104, Part 12, Chapter 4, Article 7;
- Health and Safety Code, Division 104, Part 12, Chapter 5, Article 2;
- Water Code, Division 7, Chapter 7;
- California Code of Regulations, Title 22, Division 4, Chapter 3;
- California Code of Regulations, Title 17, Division 1, Chapter 5, Group 4, Articles 1 & 2;
and
- Any measures that are deemed necessary for protection of public health, such as guidelines from the California Department of Public Health and from agencies like the American Water Works Association.

At a minimum, the City shall implement rules and regulations requiring, and notify recycled water users that:

1. The use of recycled water shall not cause pollution, contamination, or nuisance, as defined by section 13050 of the Water Code.
2. **Prior to commencing irrigation with recycled water** on any Use Area not described in this Order, the City shall submit documentation that the California Department of Public Health has approved a Title 22 engineering report for the project and documentation of compliance with the California Environmental Quality Act (CEQA).
3. If, in the opinion of the Executive Officer, reclamation at a proposed new use site cannot be adequately regulated under the Master Recycling Permit, a Report of Waste Discharge may be requested and individual Water Recycling Requirements may be adopted.
4. **At least 30 days prior** to conveying recycled water to any Use Area not described in this Order, the Discharger shall submit a User Report to the Central Valley Water Board and the California Department of Public Health. The User Report shall include the following:
 - a. The site location including a map showing the specific boundaries of the use site and the County Assessor's Parcel Number(s) (if appropriate, if Parcel Number(s) are not appropriate to accurately describe the site location, the Discharger shall provide the

- Central Valley Water Board with enough information for the Central Valley Water Board to accurately determine the location of the proposed reclamation activities);
- b. The name of the Use Area property owner and contact information;
 - c. The name of the User and contact information;
 - d. The specific use to be made of the recycled water, the Use Area acreage, the type of vegetation/crops to which the recycled water will be applied, and the anticipated volume of recycled water to be used;
 - e. Identification of the on-site supervisor who is responsible for operation of the recycled water system;
 - f. Description of the recycled water management facilities and operations plan;
 - g. Plans and specifications that include the following:
 - i. Pipe locations of the recycled, potable, and auxiliary non-potable water systems;
 - ii. Type and location of the outlets and plumbing fixtures that will be accessible to the public;
 - iii. The methods and devices to be used to prevent backflow of recycled water into the public water system; and
 - iv. Plan notes relating to recycled water specific installation and use requirements.
 - h. Certification that the new Use Area conforms to the Discharger's rules and regulations;
 - i. A copy of the signed User Agreement; and
 - j. The results of the cross-connection control test performed in accordance with the American Water Works Association and California Department of Public Health guidelines (Cal. Code Regs., tit. 17, § 7605). The results shall include a certification that the California Department of Public Health was notified of the initial cross-connection control test and was provided an opportunity to be present.
5. **Prior to commencing irrigation with recycled water** on any Use Area not described in this Order, the City shall submit documentation that the California Department of Public Health has approved a Title 22 engineering report for the project and documentation of compliance with CEQA. The Title 22 engineering report shall be consistent with the Department of Public Health guidance document entitled, *Preparation of an Engineering Report for the Production, Distribution and Use of Recycled Water*.
6. In the event of any change in control or ownership of land or waste treatment and storage facilities presently owned or controlled by the Discharger, the Discharger shall 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.

7. No person other than the City shall deliver recycled water to a Use Area.
8. The City may terminate service to a User who uses, transports, or stores such water in violation of the City's rules and regulations.
9. The Central Valley Water Board may initiate enforcement action against any recycled water user, including but not limited to the termination of the recycled water supply, who:
 - a. Discharges recycled water in violation of any applicable discharge requirement prescribed by the Central Valley Water Board or in a manner which creates or threatens to create conditions of pollution, contamination, or nuisance, as defined in Water Code section 13050.
 - b. Uses, transports, or stores such water in violation of the rules and regulations governing the design, construction and use of recycled water distribution and disposal systems issued by the recycled water distribution and disposal systems issued by the City in accordance with this attachment; or in a manner which creates or threatens to create conditions of pollution, contamination, or nuisance, as defined in Water Code section 13050.
10. All recycled water storage facilities shall be protected against erosion, overland runoff, and other impacts resulting from a 100-year, 24-hour frequency storm to the extent practicable unless the Central Valley Water Board Executive Officer approves relaxed storm protection measures for the facility.
11. The recycled water shall be at least undisinfected secondary recycled water as defined by Title 22, section 60301.
12. Recycled water shall be used in compliance with Title 22, section 60304. Regarding particular agricultural uses, recycled water shall be applied in compliance with the following:
 - a. Undisinfected recycled water shall not be discharged to orchard or vineyard crops;
 - b. No recycled water used for irrigation, or soil that has been irrigated with recycled water, shall come into contact with the edible portion of food crops that may be eaten raw by humans;
 - c. Non food-bearing trees, seed crops not eaten by humans, food crops that must undergo commercial pathogen-destroying processing before being consumed by humans, and ornamental nursery stock and sod farms (provided no irrigation with recycled water occurs for a period of 14 days prior to harvesting, retail sale, or allowing access by the general public) may be irrigated with recycled water; and
 - d. Grazing of milking animals within the Use Areas is prohibited.

13. Irrigation of the Use Areas shall occur only when appropriately trained personnel are on duty.
14. Irrigation with recycled water shall not be performed within 24 hours of a forecasted storm, during or within 24 hours after any precipitation event, nor when the ground is saturated.
15. The Use Area parcels shall be graded to prevent ponding along public roads or other public areas and prevent runoff onto adjacent properties.
16. The Use Areas shall be managed to prevent breeding of mosquitoes. In particular:
17. There shall be no standing water 48 hours after irrigation ceases;
18. Tailwater ditches shall be maintained essentially free of emergent, marginal, and floating vegetation; and
19. Low-pressure and unpressurized pipelines and ditches accessible to mosquitoes shall not be used to store recycled water.
20. Tailwater runoff and spray of recycled water shall not be discharged outside of the use areas except in minor, incidental amounts that cannot reasonably be eliminated by implementation and good maintenance of best management practices.
21. Recycled water spray, mist, or runoff shall not enter dwellings, designated outdoor eating areas, or food handling facilities. Drinking water fountains shall be protected against contact with recycled water spray, mist, or runoff.
22. Use Areas and recycled water impoundments shall be designed, maintained, and operated to comply with the following setback requirements:

<u>Setback Definition</u>	<u>Minimum Irrigation Setback (feet)</u>
Edge of Use Area to property boundary	25
Edge of Use Area to public road right of way	30
Edge of Use Area to manmade or natural surface water drainage course ¹	50
Edge of Use Area to domestic water supply well	150
Toe of recycled water impoundment berm to domestic water supply well	150

¹ Excluding ditches used exclusively for tailwater return from the land application area and land application areas separated by levees or other permanent physical barriers from surface waters or drainage courses.

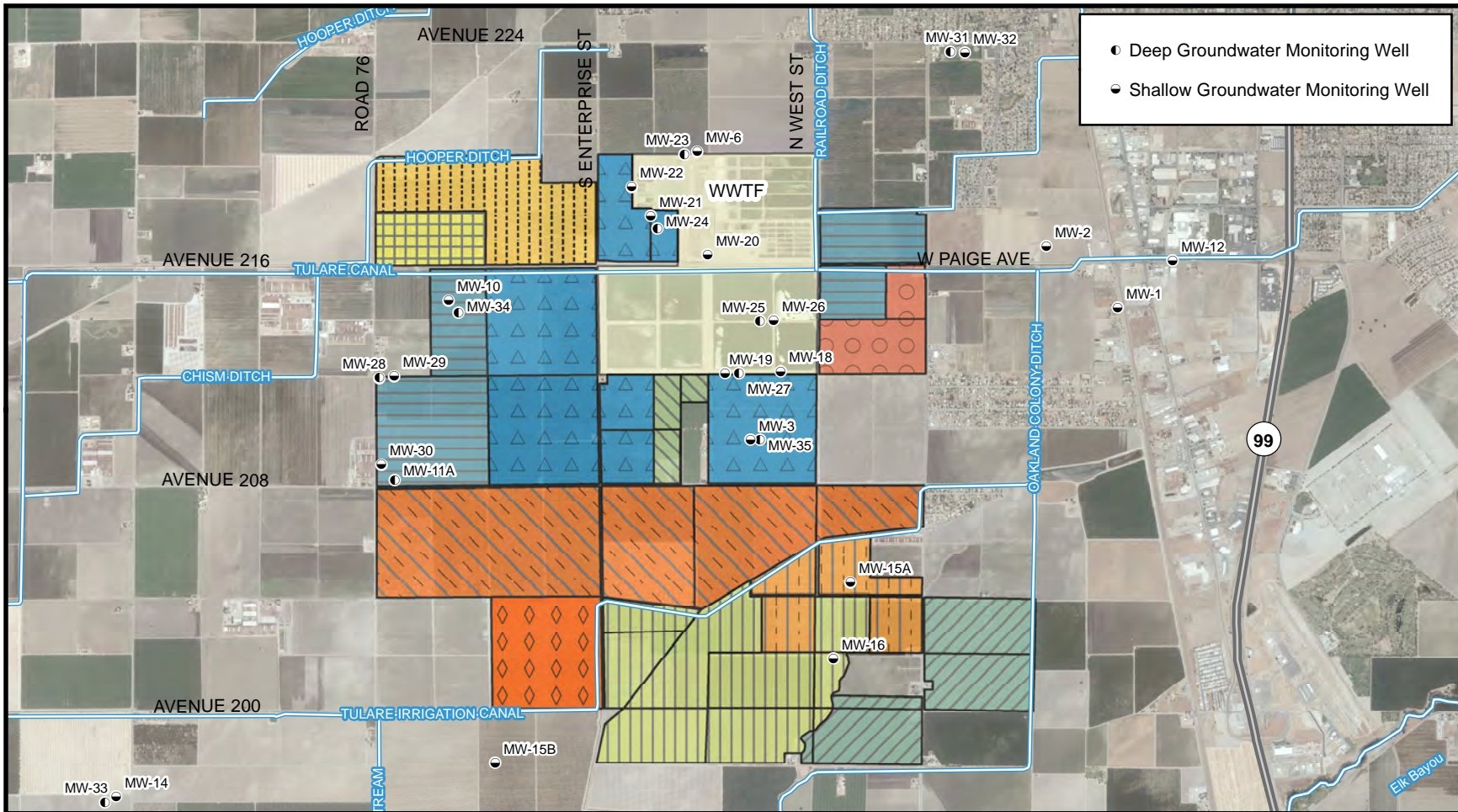
23. Tailwater runoff and spray of recycled water shall not be discharged outside of the use areas except in minor, incidental amounts that cannot reasonably be eliminated by implementation and good maintenance of best management practices.

24. There shall be at least a ten-foot horizontal and a one-foot vertical separation between all pipelines transporting recycled water and those transporting domestic supply, and the domestic supply pipeline shall be located above the recycled water pipeline.
25. A public water supply or auxiliary water supply shall not be used as backup or supplemental source of water for a recycled water system unless the connection between the two systems is protected by a backflow preventer (e.g., an air gap separation) which complies with the requirements of California Code of Regulations, title 17, sections 7601 through 7604.
26. Any backflow prevention device installed to protect a public water system shall be inspected and maintained in accordance with Title 17, section 7605. The recycled water system shall be tested for possible cross connections at least once every four years. The inspections and the testing shall be performed by a cross connection control specialist certified by the California-Nevada section of the American Water Works Association or an organization with equivalent certification requirements.
27. All recycling equipment, pumps, piping, valves, and outlets shall be marked to differentiate them from potable water facilities. All recycled water piping (above and below ground) and appurtenances in new installations and in retrofit installations shall be colored purple or distinctively wrapped with purple tape in accordance with California Health and Safety Code section 116815.
28. Recycled water controllers, valves, and similar appurtenances shall be affixed with recycled water warning signs, and shall be equipped with removable handles or locking mechanisms to prevent public access or tampering.
29. Quick couplers, if used, shall be different than those used in potable water systems.
30. Hose bibs and unlocked valves, if used, shall not be used in areas accessible to the public.
31. Public contact with recycled water shall be controlled using fences, signs, and/or other appropriate means. Signs of a size no less than four inches high by eight inches wide with proper wording (shown below) shall be placed at all areas of public access and around the perimeter of all areas used for effluent disposal or conveyance to alert the public of the use of recycled water. The size and content of these signs shall be as described in section 60310(g) of Title 22. All signs shall display an international symbol similar to that shown in Attachment G, which is attached hereto and a part of this Order, and present the following wording:

“RECYCLED WATER – DO NOT DRINK”
“AGUA DE DESPERDICIO RECLAMADA – NO TOME”

32. Public contact with recycled water shall be controlled using fences, signs, and/or other appropriate means. Signs of a size no less than four inches high by eight inches wide with proper wording (shown below) shall be placed at all areas of public access and around the perimeter of all areas used for effluent disposal or conveyance to alert the public of the use of recycled water. The size and content of these signs shall be as described in section 60310(g) of Title 22. All signs shall display an international symbol similar to that shown in Attachment G, which is attached hereto and a part of this Order, and present the following wording:

33. Workers shall be educated regarding proper hygienic procedures to ensure personal and public safety.
34. The annual nutrient loading of the Use Area, including the nutritive value of organic and chemical fertilizers and recycled water, shall not exceed crop demand.
35. Hydraulic and nutrient loading of recycled water and supplemental irrigation water shall be at reasonable agronomic rates designed to :
 - a. Maximize crop nutrient uptake;
 - b. Maximize breakdown of organic waste constituents in the root zone;
 - c. Minimize the percolation of waste constituents; and
 - d. Minimize erosion within the Use Areas.
36. The City of Tulare, the Central Valley Regional Water Quality Control Board (Central Valley Water Board), the California Department of Public Health, or an authorized representative of these parties, upon presentation of proper credentials, shall have the right to enter upon the recycled water use site during reasonable hours, to verify that the user of recycled water is complying with the City's rules and regulations.
37. Use Areas shall be inspected as frequently as necessary to ensure continuous compliance with the requirements of this Order.
38. A copy of the User Agreement and the Discharger's rules and regulations governing the distribution and use of recycled water shall be maintained at the User's facilities and be available at all times for inspection by Central Valley Water Board staff, the Discharger, and Department of Public Health staff.



● Deep Groundwater Monitoring Well
 ● Shallow Groundwater Monitoring Well

Existing Use Areas

City of Tulare	Eddy	Mello-Martin
Clarklind Farms	Faria	Patricia Colson
Colson	Hillman	Wilbur
De Azevedo	Lopes	

Basemap Source:
 2010 NAIP DOQQ

0 1,250 2,500 5,000
 ft

RECYCLED WATER USE AREA MAP
 ORDER R5-2013-0019
 WASTE DISCHARGE REQUIREMENTS
 AND
 MASTER RECYCLING PERMIT
 CITY OF TULARE
 WASTEWATER TREATMENT FACILITY
 TULARE COUNTY
ATTACHMENT F



INTERNATIONAL SYMBOL FOR NONPOTABLE WATER

ORDER R5-2013-0019
WASTE DISCHARGE REQUIREMENTS
AND
MASTER RECYCLING PERMIT
CITY OF TULARE
WASTEWATER TREATMENT FACILITY
TULARE COUNTY

ATTACHMENT G