

CALIFORNIA REGIONAL WATER QUALITY CONTROL REGIONAL BOARD  
CENTRAL VALLEY REGION

ORDER R5-2012-0040

WASTE DISCHARGE REQUIREMENTS

FOR  
SHASTA-TEHAMA-TRINITY JOINT COMMUNITY COLLEGE DISTRICT  
SHASTA COLLEGE WASTEWATER TREATMENT FACILITY  
SHASTA COUNTY

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

1. On 7 June 2001, the Shasta-Tehama-Trinity Joint Community College District, Shasta College Wastewater Treatment Facility (hereafter "Discharger") submitted a Report of Waste Discharge ("ROWD") for the expansion of an existing wastewater treatment facility ("WWTF") that serves the Shasta Community College (the "College") in Redding, Shasta County. Additional information was received from the Discharger on 21 May 2007.
2. The Discharger owns and operates the WWTF and is responsible for compliance with these waste discharge requirements ("WDRs").
3. The WWTF is located approximately ½ mile northeast of the intersection of State Highway 299 East and Old Oregon Trail, in Section 15, T32N, R4W, MDB&M. The facility site location is shown on Attachment A, which is attached hereto and made part of this Order by reference. The facility occupies Assessor's Parcel No. 076-030-08.
4. WDRs Order 93-212, adopted by the Central Valley Water Board on 22 October 1993, prescribes requirements for the Discharger's WWTF and for the discharge of treated effluent to a single lined aeration pond, two evaporation/percolation ponds, one irrigation pond, and an approximately 10-acre agricultural field.
5. On 28 April 1995, the Central Valley Water Board issued Cease and Desist Order ("CDO") 95-084. This Order was issued in response to the unauthorized discharge or threatened unauthorized discharge of partially-treated wastewater resulting from an undersized WWTF. CDO 95-084 required the Discharger to cease and desist from discharging contrary to waste discharge requirements and to submit a report identifying how the Discharger intended to ensure compliance. CDO 95-084 also required the Discharger to provide a time schedule for implementing interim and long-term measures to achieve compliance.
6. On 24 October 1997, the Central Valley Water Board issued CDO 97-216, which amended CDO 95-084, incorporating a time schedule under which the Discharger would be required to make improvements and modifications to the existing WWTF. These improvements and/or modifications included the following:

- a. *By 1 November 1998, complete enlargement of existing waste stabilization ponds, construction of headworks bar screen/distribution box, and extension of 8 inch forced main to headworks.*
  - b. *By 1 November 1999, complete reconstruction of irrigation pond, construction of irrigation recapture and recycle system, outlet structure modifications, installation of pond pump station, and construction of control building.*
  - c. *By 1 November 2000, complete construction of aeration basin with aerators, resurfacing of dikes, installation of fencing, construction of berms, and electrical work.*
7. The activities described in Finding No. 6 have been completed and are adequate to address Central Valley Water Board concerns as stated in CDO 95-084.
  8. For the purposes of this Order, "WWTF" shall mean the collection system, main sewage lift station; the wastewater treatment, storage, and disposal ponds; and the land application area.

### **Existing Facility and Discharge**

9. Sewage from the College flows by gravity sewer to a single lift station at the lowest point of the campus. The lift station at this point contains two pumps; a primary submersible pump and secondary surface-mounted backup pump. The station contains an emergency system that consists of a single low-level and two high-level switches that trigger a warning light and start the backup pump should the primary pump fail. In the event of power failure, a portable emergency generator is used to supply power to the pumps.
10. The lift station pumps raw sewage to the head works bar screens and into a lined aeration basin. From the aeration basin, wastewater is gravity fed to one of two clay-lined facultative lagoons. Periodically, wastewater from the facultative lagoons is pumped to a single clay-lined irrigation pond. Wastewater stored in the irrigation pond is used to flood irrigate one of two fields used to grow hay crops for animals used in the College's Animal Science Program. These livestock do not produce milk for human consumption. Periodically, fresh water from the Bella Vista Water District is used to supplement the recycled water supply.
11. The aeration basin consists of two cells separated by a baffle curtain. Each cell is approximately 0.86 million gallons. BOD<sub>5</sub> loading estimates are 191 lbs/day in Cell 1, which contains two 5-horsepower aerators. BOD<sub>5</sub> loading estimates are 80 lbs/day in Cell 2, which contains one 5-horsepower aerator. Facultative lagoons and the Irrigation Pond contain a combined capacity of approximately 90 acre-feet.
12. The land application area consists of two 10-acre fields. Fields are bermed to prevent runoff and contain a tailwater pond with an automatic pump system, which returns flow to the headworks. Discharge to either field occurs between May and September. The facility site plan is shown on Attachment B, which is attached hereto and made part of this Order by reference.

13. Influent flow (at the headworks) is calculated using the lift station pump hour meter. Pump run time is multiplied by the pump rating (300 gallons per minute). Discharge from the irrigation pond to the application areas is calculated using the pond pump rating and hour meter located on a control panel in the control house. This Order contains provisions for Discharger to install flow meters and/or totalizers to monitor discharge more accurately.
14. Influent is assumed to be largely free of oils, grease, or chemicals. All chemicals generated from the college's science laboratories are disposed separately through the College's hazardous waste program. Sediment traps are used to contain liquid wastes (paints, plasters, clays) generated from the college art departments. Grease traps are used to control potential contaminants associated with the industrial sciences department. The College also operates and maintains two self-contained wash racks.
15. In addition, the College owns and operates a large swimming pool for collegiate sports. Swimming pool filters are backwashed three to four times per month based on pool use. Each flushing event produces approximately 5,000 gallons of filter backwash which is discharged to the WWTF.
16. WWTF wastewater is not disinfected at any point during the treatment process.
17. An operator is onsite between the hours of 8:00 a.m. and 4:00 p.m. Monday through Friday. An operator is on call 24 hours per day, 7 days a week should any problems arise.
18. The Discharger upgraded the lift station so the system will notify the oncall operator directly should a problem occur.

### Chemical Characteristics

19. Per WDRs Order 93-212, Discharger is required to analyze surface water from the North Facultative Lagoon, South Facultative Lagoon, and Irrigation Pond for dissolved oxygen weekly. The typical range of values from these treatment basins based on 2009/ 2010 self monitoring reports is summarized below. Electrical conductivity data is from a single sample set taken on 28 March 2012.

Pond	Parameter	Units	Range of Results
North Facultative Lagoon	Dissolved oxygen	mg/L	9.4 to 10.70
South Facultative Lagoon	Dissolved oxygen	mg/L	9.69 to 10.18
Irrigation Pond	Dissolved oxygen	mg/L	7.24 to 9.63
North Facultative Lagoon	Electrical Conductivity	umhos/cm	358 @ 25 C
South Facultative Lagoon	Electrical Conductivity	umhos/cm	444 @ 25 C

20. Discharger is required to analyze swimming pool filter backwash for chlorine residual and settleable solids during each backwash event. The typical range of values from these events based on 2009/ 2010 self monitoring reports is summarized below.

Constituent/Parameter	Analytical Results		
	Minimum	Maximum	Mean
Chlorine Residual (mg/L)	1.4	1.8	1.7
Settleable Solids (ml/L)	0.1	0.1	0.1

21. Based on the 2009/ 2010 filter backwash data it does not appear the swimming pool backwash discharges have a significant impact on the WWTF.

### Changes in Discharge

22. This Order is being revised to reflect Central Valley Water Board-approved modifications and/or additions to the existing facility since WDRs Order 93-212 was adopted on 22 October 1993. These changes are summarized in Finding No. 6.
23. First Stage Aeration Basin has a surface area of approximately 0.28 acres and a maximum volume of 0.86 million gallons at two feet of freeboard. The design detention time at ADWF is 11 days. The Second Stage Aeration Basin also has a surface area of approximately 0.28 acres, a maximum volume of 0.86 million gallons at two feet of freeboard, and a design detention time at ADWF of 11 days.
24. The North Facultative Lagoon now has an estimated volume of 33.5 acre feet, a surface area of approximately 2.6 acres, and is clay lined. The South Facultative Lagoon now has an estimated volume of 40 acre feet, a surface area of approximately 3.2 acres, and is clay lined. The Irrigation Pond now has an estimated volume of approximately 16.5 acre feet, a surface area of approximately 1.4 acres, and is clay lined.
25. The Discharger has completed a water balance for the updated facility to demonstrate that adequate treatment, storage and disposal capacity is available. The water balance was prepared based on reasonable estimates of site-specific influent flows, precipitation, evaporation, percolation, and groundwater infiltration into the sewer system. The water balance was used to model storage and disposal capacity during a 25-year annual precipitation event. The model indicates that the updated WWTF has sufficient capacity for 33,000 gpd as an average daily dry weather flow (from 1 August through 31 October each year) and 76,700 gpd during the rainy season including inflow and infiltration.
26. This Order requires the Discharger to install a flow meter/ totalizer at the headworks for a more accurate accounting of wastewater being discharged to the WWTF.
27. Since the 1996-1997 school year, Shasta College has experienced a general decrease in the number of on-campus students of approximately 2,800 students per year; an estimated reduction of flow to the WWTF.

### **Wastewater Collection System**

28. The sanitary sewer system collects wastewater and consists of sewer pipes, manholes, and/or other conveyance system elements that direct raw sewage to the treatment facility. A "sanitary sewer overflow" is defined as a discharge to ground or surface water from the sanitary sewer system at any point upstream of the treatment facility. Temporary storage and conveyance facilities (such as wet wells, regulated impoundments, tanks, highlines, etc.) may be part of a sanitary sewer system and discharges to these facilities are not considered sanitary sewer overflows, provided that the waste is fully contained within these temporary storage/conveyance facilities. Sanitary sewer overflow is also defined in State Water Resources Control Board (State Water Board) Order 2006-0003-DWQ, *Statewide General Waste Discharge Requirements for Sanitary Sewer Systems*. The Internet web location for State Water Board Order 2006-0003-DWQ is:

*[http://www.waterboards.ca.gov/resdec/wqorders/2006/wqo/wqo2006\\_0003.pdf](http://www.waterboards.ca.gov/resdec/wqorders/2006/wqo/wqo2006_0003.pdf)*

29. Sanitary sewer overflows consist of varying mixtures of domestic and commercial wastewater, depending on land uses in the sewage collection system. The chief causes of sanitary sewer overflows include grease blockages, root blockages, debris blockages, sewer line flood damage, manhole structure failures, vandalism, pump station mechanical failures, power outages, storm or groundwater inflow/infiltration, lack of capacity, and/or contractor caused blockages.
30. Sanitary sewer overflows often contain high levels of suspended solids, pathogenic organisms, toxic pollutants, nutrients, oxygen demanding organic compounds, oil and grease, and other pollutants. Sanitary sewer overflows can cause temporary exceedance of applicable water quality objectives, pose a threat to public health, adversely affect aquatic life, and impair the public recreational use and aesthetic enjoyment of surface waters in the area.
31. The Discharger is expected to take all necessary steps to adequately maintain, operate, and prevent discharges from its sanitary sewer collection system and comply with State Water Board Order 2006-0003-DWQ.

### **Site-Specific Conditions**

32. The WWTF site is at an elevation ranging from approximately 580 to 600 feet above mean sea level (MSL), and the area is relatively flat with drainage toward Stillwater Creek. Stillwater Creek is tributary to the Sacramento River, the confluence of which is located near the City of Anderson.
33. The WWTF is located within the Enterprise Flat Hydrologic Area (508.10). The beneficial uses of Stillwater Creek and the Sacramento River, downstream of the discharge, are municipal, domestic, and agricultural supply; industrial power generation; water contact and non-contact recreation; esthetic enjoyment; cold freshwater habitat; cold water fish migration; warm and cold water fish spawning; wildlife habitat; and preservation and enhancement of fish, wildlife, and other aquatic resources.
34. Annual precipitation in the vicinity averages approximately 44 inches. The 100-year total annual precipitation is approximately 71 inches. The reference evapotranspiration rate is approximately 55 inches per year based on California Department of Water Resources, California Irrigation Management Information System (CIMIS) Gerber Station average monthly ETo report.
35. Based on the National Resource Conservation Service soil survey, the soils at the WWTF are classified as Churn Series, Loam. Gravel content is less than 15 percent, well drained and has moderately slow permeability, runoff is slow, and hazard of erosion is none to slight. Permeability is estimated at 15.12 to 48 inches per day.
36. The WWTF is surrounded by agricultural facilities and agricultural fields.

### **Groundwater Considerations**

37. Reportedly, there were four groundwater wells at the facility. Of these wells, two wells cannot be located, one is buried and one is available for inspection. It appears, based on visual observations, that the wells were constructed as groundwater monitoring wells, however the purpose of construction, date of construction, and construction details are unknown. On 3 November 2011, the well located between the two effluent-irrigated fields was measured to be seven feet deep. No water was present in the well. Thus, groundwater at that time was more than seven feet below the ground surface.
38. The North Facultative Lagoon is located approximately 200 feet from Stillwater Creek, a perennial stream. Based on construction drawings provided by the Discharger, the North Facultative Lagoon, South Facultative Lagoon, and Irrigation Basin are constructed to a base level elevation (bottom of lagoons) of approximately 590 feet above mean sea level (msl) and each contain a one-foot thick clay liner. This is approximately the same elevation as Stillwater Creek based on the USGS 7.5 minute Project City quadrangle.
39. As the facultative lagoons and irrigation pond provide a relatively consistent hydrologic head when in use, the anticipated shallow groundwater flow direction is radially outward

but with an overall flow direction toward Stillwater Creek. These inferences have yet to be confirmed.

40. Due to the fact that it appears that the existing groundwater monitoring well network cannot reliably confirm whether discharges from the WWTF are impacting beneficial uses, it is reasonable to require that the Discharger to evaluate the appropriateness of existing groundwater wells, or install additional monitoring wells. The groundwater wells must be able to consistently monitor groundwater upgradient and downgradient of the wastewater ponds, the irrigation pond, and the application fields.
41. Based on the proximity of the facultative lagoons to Stillwater Creek and on the anticipated depth of the water table and groundwater flow direction, WWTF facility operations have the potential to indirectly impact Stillwater Creek. This Order requires the Discharger to evaluate whether the existing monitoring well network is adequate to ensure that the discharges are not impacting any beneficial uses, and to propose installing additional wells if the existing monitoring well network is inadequate.

#### **Antidegradation Analysis**

42. State Water Board Resolution No. 68-16 (*The Statement of Policy with Respect to Maintaining High Quality Waters of the State*) (hereafter "Resolution 68-16") requires a regional water board, in regulating discharges of waste to high-quality waters of the state, prohibit degradation unless it can be shown that:
  - a. The degradation is consistent with the maximum benefit to the people of the State;
  - b. The degradation will not unreasonably affect present and anticipated future beneficial uses;
  - c. 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; and
  - d. The discharger employs best practicable treatment and control (BPTC) measures to minimize degradation.
43. The Discharger utilizes an aeration basin and has provided evidence that the basin is concrete-lined. The Discharger also utilizes two facultative lagoons and one irrigation pond and has provided evidence that each contains a one-foot thick clay liner.
44. The Discharger further utilizes reclaimed wastewater to supplement freshwater supply in irrigating 20 acres of pasture grasses for the Shasta College Animal Science Program. These practices are conducted in accordance with regulations contained in Title 22 of the California Code of Regulations ("Title 22"). The Discharger improved irrigation tail water control through the use of improved berms and irrigation procedures since the adoption of the existing WDRs.

45. The Discharger has conducted a thorough investigation of inflow and infiltration (I/I) affecting the sewer collection system. Many of the identified deficiencies have been repaired or replaced significantly reducing I/I and further reducing flow to the WWTF.
46. The facility treats wastewater to secondary standards through aeration and facultative bacterial treatment. The facility's aeration basin is concrete-lined, the two facultative lagoons and one irrigation basin are clay lined. Wastewater is not disinfected at any point in the treatment process. Recycled water from the facultative lagoons is pumped to and stored in the Irrigation Basin. Water from the Irrigation Basin is used to irrigate 20 acres of pasture grasses and crops for the Shasta College Animal Science Program in accordance with Title 22 regulations. The WWTF is located approximately 200 feet from Stillwater Creek, additionally because of the anticipated shallow water table, there is reduced potential for constituent attenuation in the vadose zone. Therefore, it is appropriate for this Order to establish groundwater limits and require monitoring of groundwater.
47. Limited degradation is expected to occur as a result of the operation of the WWTF. This degradation is consistent with Resolution 68-16 because:
  - a. The degradation is consistent with maximum benefit to the people of the state. The Discharger provides needed educational opportunities to the region and the WWTF is a vital part of the school's operations.
  - b. The groundwater limitations, coupled with the additional studies that are being required herein to determine reasonable protection of the AGR beneficial use, will ensure protection of all beneficial uses in groundwater and surface waters.
  - c. The limited degradation that will occur as a result of the operation of the WWTF will not result in water quality less than that prescribed in state and regional policies.
  - d. The Discharger has made the significant upgrades to the WWTF required in the CDOs as described in Finding No. 6, and has conducted an investigation into I/I issues affecting the sewer collection system and has repaired or replaced portions of the sewer collection system that were deficient. The Discharger will also be required to prepare and implement *Salinity Evaluation and Minimization Plan*. Therefore, current WWTF operations can reasonably be considered BPTC, after considering waste management technologies employed by similarly-situated dischargers.

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

48. The *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition*, (hereafter Basin Plan) designates beneficial uses, establishes water quality objectives, contains implementation plans and policies for protecting waters of the basin, and incorporates by reference plans and policies adopted by the State Water Board. Pursuant to Section 13263(a) of the Water Code, waste discharge requirements must implement the Basin Plan.



49. Surface water drainage is to Stillwater Creek, a tributary to the Sacramento River, the confluence of which is located near the City of Anderson. The beneficial uses of that reach of the Sacramento River are industrial, municipal and agricultural supply; water contact recreation; noncontact water recreation; warm and cold freshwater habitat; warm and cold migration; warm and cold spawning habitat; wildlife habitat; and navigation.
50. The beneficial uses of the underlying groundwater are municipal and domestic supply (MUN), agricultural supply (AGR), and industrial supply (IND and PRO).
51. The Basin Plan establishes numerical and narrative water quality objectives for surface water and groundwater within the basin. Numerical water quality objectives are maximum limits directly applicable to the protection of designated beneficial uses of the water. The Basin Plan requires that the Central Valley Water Board, on a case-by-case basis, follow specified procedures to determine maximum numerical limitations that apply the narrative objectives when it adopts waste discharge requirements.
52. The Basin Plan includes a water quality objective for Bacteria that require the most probable number (MPN) of coliform organisms over any seven-day period shall be less than 2.2 per 100 mL in MUN groundwater. The applicability of this objective to groundwater designated as MUN has been affirmed by State Water Board Order WQO-2003-0014 and by subsequent decisions of the Sacramento County Superior Court and California Court of Appeal, 3rd Appellate District (*County of Sacramento v. State Water Resources Control Bd.* (2007) 153 Cal.App.4th 1579.). The numerical value of this objective is equal to the limit of analytical detection for coliform organisms in water. Well-sited and operated facilities that discharge treated domestic wastewater to land should not cause detectable levels of coliform organisms in groundwater due to adequate filtration in the vadose zone. Therefore, a coliform limit of less than 2.2 MPN/100 mL is consistent with both the water quality objective for Bacteria.
53. 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 maximum contaminant levels (MCLs) specified in the following provisions of Title 22: Tables 64431-A (Inorganic Chemicals) and 64431-B (Fluoride) of Section 64431, Table 64444-A (Organic Chemicals) of Section 64444, Table 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) of Section 64449, and 64449-B (Secondary Maximum Contaminant Levels-Ranges) of Section 64449. The Basin Plan's incorporation of these provisions by reference is prospective, and includes future changes to the incorporated provisions as the changes take effect. 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.
54. The Basin Plan contains narrative water quality objectives for Chemical Constituents, Tastes 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. The Chemical Constituents objective requires that

groundwater "...shall not contain chemical constituents in concentrations that adversely affect beneficial uses." The Tastes and Odors objective requires that groundwater "...shall not contain taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses."

55. Chapter IV, Implementation, of the Basin Plan contains the "Policy for Application of Water Quality Objectives." This Policy specifies, in part, that "[w]here compliance with these narrative objectives is required (i.e., where the objectives are applicable to protect specified beneficial uses), the Regional Water Board will, on a case-by-case basis, adopt numerical limitations in orders which will implement the narrative objectives." The Policy also states:

*"[t]o evaluate compliance with the narrative water quality objectives, the Regional Water Board considers, on a case-by-case basis, direct evidence of beneficial use impacts, all material and relevant information submitted by the discharger and other interested parties, and relevant numerical criteria and guidelines developed and/or published by other agencies and organizations..."*

and

*"[i]n considering such criteria, the Board evaluates whether the specific numerical criteria, which are available through these sources and through other information supplied to the Board, are relevant and appropriate to the situation at hand and, therefore, should be used in determining compliance with the narrative objective. For example, compliance with the narrative objective for taste and odor may be evaluated by comparing concentrations of pollutants in water with numerical taste and odor thresholds that have been published by other agencies."*

56. To apply narrative water quality objectives, numerical limits in this order have been selected based on case-specific information, including applicable beneficial uses of groundwater beneath the facility and information provided by the Discharger. Based on the information available and consistent with Resolution 68-16, numerical limits have been selected to protect the beneficial uses and to minimize degradation while the Discharger studies the impacts that may be occurring as a result of WWTF operations. In the future, should the Discharger supply case-specific information justifying that alternate limits are more appropriate, these numerical limits may be reevaluated.
57. State Board Order WQO-2003-0014 upheld the Regional Board's use of numeric groundwater limits, and states that numeric groundwater limits must be restricted to those constituents present in the waste, breakdown products of constituents present in the waste, and those that might be leached from the soil beneath the wastewater disposal area. The Groundwater Limitations have been set as described below.
- a. The Discharger has not yet sampled its effluent for chloride. Chloride is known to be present in domestic wastewater, as it is one of the major components of total dissolved solids. Chloride is a major anion in natural water and wastewater, and is added to the waste stream because sodium chloride is present in the human diet and is excreted

unchanged from the human body<sup>1</sup>. Chloride concentrations at other facilities vary depending on the salinity of the source water and the activities resulting in wastewater discharge. Chloride has the potential to degrade groundwater quality at this site because there is little ability for attenuation in vadose zone. According to Ayers and Westcot, chloride can cause yield or vegetative growth reductions of sensitive crops if present in excess of 106 mg/L in irrigation water applied by sprinklers, thereby impairing agricultural use of the water resource. Strawberries are a salt-sensitive crop grown in the vicinity of the discharge using groundwater supply. In Order WQO-2004-0010, the State Water Resources Control Board addressed the direct application of the Ayers and Westcot values stating that the values given in the report cannot be interpreted as absolute values, and should include an evaluation of site-specific characteristics. The 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. One of the goals of CV-SALTS is to develop a methodology for determining the appropriate salinity objectives for the protection of agricultural beneficial uses. The applicable water quality objective to protect the municipal beneficial use from discharges of chloride is the secondary MCL of 250 mg/L, as a recommended level, 500 mg/L as an upper level, and 600 mg/L as a short-term maximum which is applied following the "Policy of Application of Water Quality Objectives" in the Basin Plan. Because groundwater is less transient than surface water, the numerical groundwater limitation of 250 mg/L for chloride is relevant and appropriate to apply the narrative Chemical Constituents objective to protect the municipal beneficial use of groundwater in the absence of information to support less protective limits.

- b. The Discharger has not yet sampled its effluent for iron. Iron is naturally occurring in all waters due to its presence in soils and rock, and is liberated from the soil under reducing conditions associated with the biodegradation of organic matter. Iron is known to be present in domestic wastewater, and at other domestic wastewater facilities has been found at concentrations ranging from 70 to 190 ug/L. It is also expected to be present in the effluent from this facility. Iron has the potential to degrade groundwater quality at this site because there is little ability for attenuation in the vadose zone. The Chemical Constituents objective prohibits concentrations of chemical constituents in excess of California MCLs in groundwater that is designated as municipal or domestic supply. The California secondary MCL for iron is 0.3 mg/L, and groundwater beneath the facility is designated as municipal or domestic supply. It is therefore appropriate to adopt a numerical groundwater limitation of 0.3 mg/L as an annual average for iron to implement the Chemical Constituents objective to protect the municipal and domestic use of groundwater.
- c. The Discharger has not yet sampled its effluent for manganese. Manganese occurs naturally in waters and is added to the waste stream through both domestic and industrial use. Manganese has been found at other domestic wastewater treatment

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<sup>1</sup> Metcalf and Eddy, 2003. Wastewater Engineering Treatment and Reuse, 4<sup>th</sup> Edition.

facilities at concentrations ranging from 2 to 21 ug/L, and is expected to be present at this facility. Manganese has the potential to degrade groundwater quality at this site because there is little ability for attenuation in the vadose zone. In addition, naturally occurring manganese can be solubilized from soil under reducing conditions caused by the land disposal of domestic wastewater, and is more prevalent in dissolved forms in groundwater. The Chemical Constituents objective prohibits concentrations of chemical constituents in excess of California MCLs in groundwater that is designated as municipal or domestic supply. The California secondary MCL for manganese is 0.05 mg/L, and groundwater beneath the facility is designated as municipal or domestic supply. It is therefore appropriate to adopt a numerical groundwater limitation of 0.05 mg/L (50 ug/L) for manganese as an annual average to implement the Chemical Constituents objective to protect the municipal and domestic use of groundwater.

- d. The Discharger has not yet sampled its effluent for total dissolved solids, which have the potential to degrade groundwater quality at this site because there is little ability for attenuation in the vadose zone. According to Ayers and Westcot, dissolved solids can cause yield or vegetative growth reductions of sensitive crops if present in excess of 450 mg/L (or 700 umhos/cm EC) in irrigation water, thereby impairing agricultural use of the water resource. Strawberries are a salt-sensitive crop grown in the vicinity of the discharge using groundwater supply. In Order WQO-2004-0010, the State Water Resources Control Board addressed the direct application of the Ayers and Westcot values stating that the values given in the report cannot be interpreted as absolute values. The 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. One of the goals of CV-SALTS is to develop a methodology for determining the appropriate salinity objectives for the protection of agricultural beneficial uses. The applicable water quality objective to protect the municipal beneficial use from discharges of total dissolved solids is the secondary MCL of 500 mg/L which is applied following the "Policy of Application of Water Quality Objectives" in the Basin Plan. A numerical groundwater limitation of 900 umhos/cm for EC as annual average, based on secondary MCLs is appropriate to protect the unrestricted municipal beneficial use of groundwater in the absence of information to support a less protective limit. Based on EC testing of the ponds in 2012, the Discharger should be able to meet this limitation. This permit regulates TDS by using EC as an indicator parameter.
- e. The Discharger has not yet sampled its effluent for nitrate. This constituent has the potential to degrade groundwater quality with nitrate because ammonia nitrogen in wastewater readily converts to nitrate and there is little ability for nitrate attenuation in the vadose zone at this site. The Chemical Constituents objective prohibits concentrations of chemical constituents in excess of California MCLs in groundwater that is designated as municipal or domestic supply. The California primary MCL for nitrate is equivalent to 10 mg/L as nitrogen, and groundwater beneath the facility is designated as municipal or domestic supply. It is therefore appropriate to adopt a numerical groundwater limitation of 10 mg/L for nitrate as nitrogen to implement the

Chemical Constituents objective to protect the municipal and domestic use of groundwater.

- f. The Discharger has not yet sampled its effluent for nitrite. This constituent has the potential to degrade groundwater quality with nitrite because ammonia nitrogen in wastewater readily converts to nitrate and nitrite and there is little ability for nitrite attenuation in the vadose zone at this site. The Chemical Constituents objective prohibits concentrations of chemical constituents in excess of California MCLs in groundwater that is designated as municipal or domestic supply. The California primary MCL for nitrite is 1 mg/L as nitrogen, and groundwater beneath the facility is designated as municipal or domestic supply. It is therefore appropriate to adopt a numerical groundwater limitation of 1 mg/L for nitrite as nitrogen to implement the Chemical Constituents objective to protect the municipal and domestic use of groundwater.
  - g. pH, which is typically 7.0 to 9.5 standard units in oxidation pond domestic wastewater treatment systems, has the ability to degrade groundwater quality at this site because there is little potential for buffering in the limited vadose zone. The Chemical Constituents objective prohibits concentrations of chemical constituents in excess of California MCLs in groundwater that is designated as municipal or domestic supply. The California secondary MCL for pH is 6.5 to 8.5, and groundwater beneath the facility is designated as municipal or domestic supply. It is therefore appropriate to adopt a numerical groundwater limitation of 6.5 to 8.5 SU for pH to implement the Chemical Constituents objective to protect the municipal and domestic use of groundwater.
58. The Central Valley Water Board, with cooperation of the State Water Board, began the process to develop a new policy for the regulation of salinity in the Central Valley. In a statement issued at the 16 March 2006, Central Valley Water Board meeting, Board Member Dr. Karl Longley recommended that the Central Valley Water Board continue to exercise its authority to regulate discharges of salt to minimize salinity increases within the Central Valley. Dr. Longley stated, *"The process of developing new salinity control policies does not, therefore, mean that we should stop regulating salt discharges until a salinity Policy is developed. In the meantime, the Board should consider all possible interim approaches to continue controlling and regulating salts in a reasonable manner, and encourage all stakeholder groups that may be affected by the Regional Board's policy to actively participate in policy development."*

In order to ensure that the Discharger will continue to control the discharge of salinity, this Order includes a requirement to develop and implement a salinity evaluation and minimization plan. The 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. One of the goals of CV-SALTS is to develop a methodology for determining the appropriate salinity objectives for the protection of agricultural beneficial uses. The Discharger should participate in the CV-

SALTS effort. Based on the outcome of the CV-SALTS effort, and other new information, the groundwater limits contained in the permit may be amended.

### **Use of Recycled Water**

59. The Sacramento/San Joaquin Basin Plan includes a wastewater reuse policy, *State Water Resources Control Board Resolution No. 77-1, Policy With Respect to Water Reclamation in California*, that encourages the reclamation and reuse of wastewater where practicable and requires as part of a Report of Waste Discharge an evaluation of reuse and land disposal options as alternative disposal methods.
60. Resolution 77-1 further states, *The State Board and Regional Boards shall encourage...water reclamation projects which meet any of the conditions below and which do not adversely impact vested water rights or unreasonably impair instream beneficial uses or place an unreasonable burden on present water supply systems;*
  - a. Beneficial use will be made of wastewaters that would otherwise be discharged to marine or brackish receiving waters or evaporation ponds,
  - b. Reclaimed water will replace or supplement the use of fresh water or better quality water,
  - c. Reclaimed water will be used to preserve, restore, or enhance instream beneficial uses which include, but are not limited to, fish wildlife, recreation and esthetics associated with any surface water or wetlands.

The Dischargers current practice of irrigating pasture grasses along Stillwater Creek with reclaimed water is consistent with provisions “a” and “b” above.

61. California Code of Regulations, title 22 (“Title 22”), Division 4, Chapter 3, Article 3 (Uses of Recycled Water) specifies appropriate uses of recycled water. Per Article 3, Section 60304(d), Recycled wastewater used for the surface irrigation of *fodder and fiber crops and pasture for animals not producing milk for human consumption* shall be at least undisinfected secondary recycled water. Current wastewater is characterized as undisinfected secondary recycled water and so complies with Title 22 use standards. Discharger shall notify the Central Valley Water Board of any proposed changes to the current practices.
62. Title 22, Division 4, Chapter 3, Article 4 specifies required setbacks and safeguards associated with the use of recycled wastewater. Discharger will be required to comply with CCR Title 22 standards when using reclaimed water for irrigation purposes.
63. Title 22, Division 4, Chapter 3, Article 7 further requires the preparation of an engineering report and other operational requirements such as qualified personnel, maintenance programs, record keeping and reporting. Discharger will be required to update the existing engineering report and comply with remaining Article 7 provisions.

64. The State Water Resources Control Board recently adopted Resolution 2009-0011, "Policy for Water Quality Control for Recycled Water" (Recycled Water Policy on 3 February 2009. Section 4 of the Recycled Water Policy, Mandate for the Use of Recycled Water, paragraph a(1) states, "The State Water Board hereby establishes a mandate to increase the use of recycled water in California by 200,000 acre-feet per year (afy) by 2020 and by an additional 30,000 afy by 2030. These mandates shall be achieved through the cooperation and collaboration of the State Water Board, the Regional Water Boards, the environmental community, water purveyor and the operators of publicly owned treatment works". The use of recycled water to supplement potable water use in irrigating crops for the Shasta College Animal Science Program supports this mandate.
65. The Strategic Plan Update 2008-2012 for the Water Boards includes a priority to "Increase sustainable local water supplies available for meeting existing and future beneficial uses by 1,725,000 acre-feet per year, in excess of 2002 levels, by 2015, and ensure adequate water flows for fish and wildlife habitat". The use of recycled water to supplement potable water use in irrigating crops for the Shasta College Animal Science Program supports this goal.

### **Title 27 of the California Code of Regulations**

66. Title 27 of the California Code of Regulations ("Title 27") contains regulations that establish minimum standards governing the water quality aspects of waste discharges to land for treatment, storage, or disposal. These regulations classify wastes and contain siting, design, construction, monitoring, and closure requirements for waste management units.
67. Section 20090 of Title 27 exempts certain activities from its provisions. Certain exempted activities contain preconditions for which the specified activity must meet and continue to meet in order to maintain the specified exemption.
68. The treatment and storage facilities associated with the sewage treatment facility, except for discharges of residual sludge and solid waste, are exempt from the requirements of Title 27 pursuant to Section 20090(a) based on the following:
  - a. The waste consists primarily of domestic sewage and treated effluent;
  - b. The waste discharge requirements are consistent with water quality objectives; and
  - c. The treatment and storage facilities described herein are associated with a municipal wastewater treatment plant.
69. The reuse of the treated effluent for irrigation purposes is exempt from Title 27 pursuant to Section 20090(b) of Title 27 based on the following:
  - a. By this Order, Central Valley Water Board has issued WDRs for the discharge;

- b. By complying with the WDRs and by taking necessary steps to conduct a further evaluation of possible impacts to groundwater, the discharge is in compliance with the applicable water quality control plan; and
  - c. The discharge does not need to be managed according to Chapter 11, Division 4.5 of Title 22 as a hazardous waste.
70. State regulations that prescribe procedures for detecting and characterizing the impact of waste constituents from waste management units on groundwater are found in Title 27. While the wastewater treatment facility is exempt from Title 27, the data analysis methods of Title 27 are appropriate for determining whether the discharge complies with the terms for protection of groundwater specified in this Order.

### **Other Regulatory Considerations**

71. USEPA promulgated Federal Regulations for storm water on 16 November 1990 in 40 CFR Parts 122, 123, and 124. The NPDES Industrial Storm Water Program regulates certain storm water discharges from wastewater treatment facilities. However, wastewater treatment plants with design flows of less than one million gallons per day (<1 MGD) are not required to obtain an NPDES permit for storm water discharges. The design flow for the Shasta College Wastewater Treatment Plant is 0.033 MGD. Therefore, the Discharger is not required to obtain coverage under the State Water Board's Industrial Stormwater General Permit (Order No. 97-03-DWQ).
72. On 2 May 2006, the State Water Board adopted Statewide General Waste Discharge Requirements for Sanitary Sewer Systems General Order No. 2006-0003-DWQ (General Order). The General Order requires all public agencies that own or operate sanitary sewer systems greater than one mile in length to comply with the Order. The Discharger's collection system is greater than one mile in length, and therefore the General Order is applicable. The Discharger has filed a Notice of Intent (NOI) for coverage under the General Order with the State Water Resources Control Board.
73. Water Code section 13267(b) provides that:

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

The technical reports required by this Order and the attached Monitoring and Reporting Program R5-2012-0040 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.



74. The California Department of Water Resources sets standards for the construction and destruction of groundwater wells (hereafter DWR Well Standards), as described in *California Well Standards Bulletin 74-90* (June 1991) and *Water Well Standards: State of California Bulletin 94-81* (December 1981). These standards, and any more stringent standards adopted by the State or county pursuant to Water Code section 13801, apply to all monitoring wells constructed at the WWTF.
75. On 24 June 1998, in accordance with the California Environmental Quality Act (Pub. Resources Code, § 21000 et seq.) (“CEQA”), Shasta-Tehama-Trinity Joint Community College District certified a Negative Declaration and associated mitigation measures for expansion of the wastewater treatment facility to rectify inadequacies leading to the adoption of Cease and Desist Order 95-084 and Amended Cease and Desist Order 97-216.
76. All wastewater systems have already been installed and are currently in use. This Order imposes additional regulatory requirements for the continued use of these structures and facilities to ensure the protection of the environment. This action is therefore exempt from the provisions of CEQA in accordance with California Code of Regulations, title 14, section 15301, which exempts the “operation, repair, maintenance, [and] permitting ... of existing public or private structures, facilities, mechanical equipment, or topographical features” from environmental review. This action may also be considered exempt because it is an action by a regulatory agency for the protection of natural resources (Cal. Code Regs., tit. 14, § 15307.) and an action by a regulatory agency for the protection of the environment (Cal. Code Regs., tit. 14, § 15308.).
77. 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.
78. 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.
79. The State Water Resources Control Board adopted 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* (General Order). The General Order incorporates the minimum standards established by the Part 503 Rule and expands upon them to fulfill obligations to the California Water Code. The General Order does not replace the Part 503 Rule. In the event the Discharger wishes to land apply biosolids as an agricultural soil amendment, Discharger may be required to obtain coverage under the General Order.
80. 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.

### Public Notice

81. 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 following conditions of discharge.
82. 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.
83. In a public meeting, all comments pertaining to the discharge were heard and considered.

**IT IS HEREBY ORDERED** that, pursuant to Sections 13263 and 13267 of the California Water Code, WDRs Order 93-212 is rescinded and Shasta-Tehama-Trinity Joint Community College District, its agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, shall comply with the following:

*[Note: Other prohibitions, conditions, definitions, and some methods of determining compliance are contained in the attached "Standard Provisions and Reporting Requirements for Waste Discharge Requirements" dated 1 March 1991.]*

#### A. Discharge Prohibitions

1. Discharge of wastes to surface waters or surface water drainage courses is prohibited.
2. Discharge of waste classified as 'hazardous' under Title 22, section 66261.3 or 'designated', as defined in Section 13173 of the California Water Code is prohibited.
3. Bypass or overflow of untreated or partially treated waste is prohibited.
4. Discharge of treated wastewater other than described in the Findings is prohibited.
5. Discharge of hauled in or trucked in wastes (including chemical toilet wastes) is prohibited.
6. Any use of the wastewater treatment facility, including use of the designated irrigation fields, without prior approval of the wastewater treatment facility manager is prohibited.

#### B. Effluent Limitations

1. No stored wastewater or effluent shall have a pH less than 6.0 or greater than 9.0.

### C. Discharge Specifications

1. The average daily dry weather flow<sup>2</sup> shall not exceed 33,000 gallons per day (gpd).
2. No waste constituent shall be released or discharged, or placed where it will be released or discharged, in a concentration or in a mass that causes violation of the Groundwater Limitations.
3. Wastewater treatment, storage, and disposal shall not cause pollution or a nuisance as defined by Water Code section 13050.
4. The Discharger shall operate all systems and equipment to optimize the quality of the treated effluent.
5. Public contact with wastewater shall be precluded or controlled through such means as fences and signs, or acceptable alternatives.
6. Objectionable odors originating at the facility shall not be perceivable beyond the limits of the property owned by the Discharger.
7. As a means of discerning compliance with Discharge Specification No. 6, the dissolved oxygen (DO) content in the upper one foot of any wastewater storage pond 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.
8. Wastewater ponds shall be managed to prevent breeding of mosquitoes. In particular,
  - a. An erosion control program shall be implemented to ensure that small coves and irregularities are not created around the perimeter of the water surface.
  - b. Weeds shall be minimized through control of water depth, harvesting, or herbicides.
  - c. Dead algae, vegetation, and debris shall not accumulate on the water surface.
9. Effective as of the adoption date of this Order, all future treatment, storage, and disposal facilities shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.
10. The facility shall have sufficient treatment, storage, and disposal capacity to accommodate allowable wastewater flow and design seasonal precipitation and ancillary inflow and infiltration during the winter months. 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.

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<sup>2</sup> Dry weather is defined as the months of July through September, inclusive.

11. Freeboard in any pond shall never be less than two feet as measured from the water surface to the lowest point of overflow.
12. On or about **15 October** of each year, available pond storage capacity shall at least equal the volume necessary to comply with Discharge Specifications B.10.

**D. Recycling Specifications**

The following specification apply to the Use Area under the ownership or control of the Discharger.

1. Use of undisinfected secondary treated recycled water shall be limited to flood irrigation of fodder, fiber, and seed crops not eaten by humans or for grazing of non-milking livestock and shall comply with the provisions of Title 22.
2. The Discharger will maintain the following setback distances from application areas irrigated with recycled water:

Setback Distance (Feet)	To
25	Property Line
30	Public Roads
50	Drainage Courses
100	Irrigation Wells
150	Domestic Wells

3. No physical connection shall exist between recycled water piping and any domestic water supply or domestic well, or between recycled water piping and any irrigation well that does not have an air gap or reduce pressure principle device.
4. The perimeter of the Application Area shall be graded to prevent ponding along public roads or other public areas and prevent runoff onto adjacent properties not owned or controlled by the Discharger.
5. Application Areas shall be managed to prevent nuisance conditions or breeding of mosquitoes. More specifically:
  - a. All applied irrigation water must infiltrate completely within a 48-hour period,
  - b. Ditches not serving as wildlife habitat should be maintained 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.

6. Recycling of WWTF effluent shall be at reasonable agronomic rates considering the crop, soil, climate, and irrigation management plan. The annual nutrient loading of the Application Area, including the nutritive value of organic and chemical fertilizers and recycled water shall not exceed crop demand.
7. Public contact with recycled water shall be controlled using signs and/or other appropriate means. Signs of a size no less than four (4) 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. All signs shall display an international symbol similar to that shown in Attachment D, as part of this Order, and present the following wording:

**“RECYCLED WATER – DO NOT DRINK”**

#### **E. General Solids Disposal Specifications**

Sludge, as used in this document, means the solid, semisolid, and liquid residues removed during primary, secondary, or advanced wastewater treatment processes. Solid waste refers to grit and screenings generated during preliminary treatment. Residual sludge means sludge that will not be subject to further treatment at the WWTF. Biosolids refers to sludge that has been treated and tested and shown to be capable of being beneficially and legally used pursuant to federal and state regulations as a soil amendment for agriculture, silviculture, horticulture, and land reclamation activities.

1. Sludge and solid waste shall be removed from screens, sumps, ponds, and clarifiers as needed to ensure optimal plant operation.
2. Treatment and storage of sludge generated by the WWTF shall be confined to the WWTF property, and shall be conducted in a manner that precludes infiltration of waste constituents into soils in a mass or at concentrations that will violate the Groundwater Limitations of this Order.
3. Any storage of residual sludge, solid waste, and biosolids at the WWTF shall be temporary, and the waste shall be controlled and contained in a manner that minimizes leachate formation and precludes infiltration of waste constituents into soils in a mass or at concentrations that will violate the Groundwater Limitations of this Order.
4. Residual sludge, biosolids, and solid waste 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 disposal sites (i.e., landfills, WWTFs, composting sites, soil amendment sites) operated in accordance with valid waste discharge requirements issued by a Central Valley Water Board will satisfy this specification.
5. Use of biosolids as a soil amendment shall comply with valid waste discharge requirements issued by the Central Valley Water Board. In most cases, this will mean the General Biosolids Order (State Water Resources Control Board Water Quality

Order No. 2000-10-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 covered by the General Biosolids Order, the Discharger must file a complete Notice of Intent and receive a Notice of Applicability for each project.

6. Use and disposal of biosolids shall comply with the self-implementing federal regulations of Title 40, Code of Federal Regulations (CFR), Part 503, which are subject to enforcement by the U.S. EPA, not the Central Valley Water Board. If during the life of this Order, the State accepts primacy for implementation of 40 CFR 503, then the Central Valley Water Board may also initiate enforcement where appropriate.

**F. Groundwater Limitations**

1. Release of waste constituents from any wastewater treatment or storage system component associated with the wastewater treatment facility shall not cause groundwater under and beyond that system component, as determined by an approved well monitoring network, to:

- a. Contain any of the following constituents in concentration greater than those listed below or greater than natural background quality, whichever is greater:

<u>Constituent</u>	<u>Units</u>	<u>Limitation</u>
Chloride	mg/L	250 <sup>2</sup>
Iron	mg/L	0.3 <sup>2</sup>
Manganese	mg/L	0.05 <sup>2</sup>
Total Coliform Organisms	MPN/100 mL	2.2
Electrical Conductivity <sup>1</sup>	umhos/cm	900 <sup>2</sup>
Nitrite (as N)	mg/L	1
Nitrate (as N)	mg/L	10

<sup>1</sup> A cumulative impact limit that accounts for several dissolved constituents in addition to those listed here separately [e.g., alkalinity (carbonate and bicarbonate), calcium, hardness, phosphate, and potassium].

<sup>2</sup> Applied as an annual average.

- b. Exhibit a pH of less than 6.5 or greater than 8.5 pH units.
- c. Impart taste, odor, chemical constituents, toxicity, or color that creates nuisance or impairs any beneficial use.

**G. Provisions**

1. The following reports shall be submitted pursuant to Section 13267 of the California Water Code and shall be prepared as described in Provision F.3:
  - a. **By the first day of the nineteenth month following the effective date of this permit**, the Discharger shall submit a *Groundwater Monitoring Well Installation Workplan* prepared in accordance with, and including the items listed in, the first

section of Attachment C: *“Requirements for Monitoring Well Installation Workplans and Monitoring Well Installation Reports.”* The workplan shall describe installation of at least three new groundwater monitoring wells designed to ensure that background water quality is adequately characterized and any potential water quality impacts from the discharge are detected. The system shall be designed to yield samples representative of the uppermost portion of the first aquifer underlying the WWTF. The workplan shall provide the name and contact information for the registered professional that will prepare the groundwater monitoring reports required by the Monitoring and Reporting Program (MRP).

- b. By **the first day of the thirty-first month following the effective date of this permit**, the Discharger shall submit a *Monitoring Well Installation Report* prepared in accordance with, and including the items listed in, the second section of Attachment C: *“Monitoring Well Workplan and Monitoring Well Installation Report Guidance.”* The report shall describe the installation or destruction of any wells, describe well development, and explain any deviation from the approved workplan.
- c. By **the first day of the thirty-second month following the effective date of this permit**, the Discharger shall submit a revised *Engineering Report*, if necessary, prepared in accordance with Title 22, section 60323 et seq. The report shall be prepared by a properly qualified engineer registered in California and experienced in the field of wastewater treatment, and shall contain a description of the design of the proposed reclamation system. The report shall clearly indicate the means for compliance with the regulations found in *California Health Laws Related to Recycled Water “The Purple Book”*.
- d. By **last day of the thirty-first month following the effective date of this permit**, if necessary, the Discharger shall submit an Updated *Operation and Maintenance Plan* (O&M Plan) for the WWTF. A copy of the O&M Plan shall be kept at the facility for reference by operating personnel and key personnel shall be familiar with its contents. The O&M Plan shall provide the following:
  - i. Operation and Control of Wastewater Treatment - A description of the wastewater treatment equipment; operational controls; treatment requirements/effluent limitations; flow diagrams including valve/gate locations; operation of the treatment systems during start-up, normal operation, by-pass, shut-down, and draining procedures; potential operational problems including a troubleshooting guide.
  - ii. Sludge Management - A description of the frequency of and procedure for evaluating sludge accumulations in the ponds, and determining when sludge removal is needed to ensure adequate capacity and optimal operation of the WWTF.
  - iii. Personnel - Recommended staffing requirements, staff qualifications, training requirements and schedule, and operator certification requirements.

- iv. Maintenance – Maintenance procedures, equipment record system, scheduling and use of the maintenance record system, inventory system, special tools, warranty provisions and expiration dates, maintenance cost and budgeting system, maintenance schedule of all equipment including lubricants, filters, UV bulbs, etc.
  - v. Emergency Response – A description of the vulnerability analysis including emergencies such as power outage, severe weather, or flooding. An equipment and telephone list for emergency personnel and equipment vendors. Coordination procedures with fire, police, and health department personnel, and an emergency operating plan.
  - vi. Safety – A general discussion of the hazards of collection systems, mechanical equipment, explosion, pathogens, oxygen deficiencies, chemical and electrical hazards, etc.
  - vii. Appendices – Shall include flow diagrams, valve/gate locations, copy of WDRs, miscellaneous form samples (including monitoring well sample collection forms), manufacturer’s manuals, and a list of reference materials.
- e. By **first day of the fifty-fifth month following the effective date of this permit**, the Discharger shall submit and implement a *Salinity Evaluation and Minimization Plan* to address sources of salinity to the wastewater treatment system. At a minimum, the plan shall meet the following requirements outlined in Water Code section 13263.3(d)(3), Pollution Prevention Plans:
- i. An estimate of all of the sources of a pollutant contributing, or potentially contributing, to the loadings of salinity in the treatment plant influent including water supply, water softeners, and other domestic, commercial and industrial salinity sources.
  - ii. An analysis of the methods that could be used to prevent the discharge of salinity into the facility, including application of local limits to industrial or commercial dischargers regarding pollution prevention techniques, public education and outreach, or other innovative and alternative approaches to reduce discharges of the pollutant to the facility. The analysis shall also identify sources, or potential sources, not within the ability or authority of the Discharger to control.
  - iii. An estimate of salinity load reductions that may be identified through the methods identified in subparagraph ii.
  - iv. A plan for monitoring the results of the salinity pollution prevention program.
  - v. A description of the tasks, costs, and time required to investigate and implement various elements in the salinity pollution prevention plan.
  - vi. A statement of the Discharger’s salinity pollution prevention goals and strategies, including priorities for short-term and long-term action, and a



description of the Dischargers intended pollution prevention activities for the immediate future.

- vii. A description of the Discharger's existing salinity pollution prevention programs.
- viii. An analysis, to the extent feasible, of any adverse environmental impacts, including cross-media impacts or substitute chemicals that may result from the implementation of the pollution prevention program.
- ix. An analysis, to the extent feasible, of the costs and benefits that may be incurred to implement the pollution prevention program.
- x. Progress to date in reducing the concentration and/or mass of salinity in the discharge.

Progress in implementation of the plan shall be reported each year in the Annual Monitoring Report required pursuant to Monitoring and Reporting Program No. R5-2012-0040.

- f. **At least 180 days prior** to any biosolids removal and disposal, the Discharger shall submit a *Biosolids Cleanout Plan*. The plan shall include a detailed plan for sludge removal, sludge drying, and disposal. The plan shall specifically describe the phasing of the project, measures to be used to control runoff or percolate from the sludge as it is drying, and a schedule that shows how all dried sludge will be removed from the site prior to the onset of the rainy season (1 October).
2. All technical reports 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. To demonstrate compliance with Sections 415 and 3065 of Title 16, CCR, all technical reports must contain a statement of the qualifications of the responsible registered professional(s). As required by these laws, completed technical reports 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.
  3. The Discharger shall comply with the Monitoring and Reporting Program No. R5-2012-0040, which is part of this Order, and any revisions thereto as ordered by the Executive Officer.
  4. The Discharger shall comply with the "Standard Provisions and Reporting Requirements for Waste Discharge Requirements", dated 1 March 1991, which are attached hereto and made part of this Order by reference. This attachment and its individual paragraphs are commonly referenced as "Standard Provision(s)."

5. Per the Standard Provisions, *A discharger whose waste flow has been increasing, or is projected to increase, shall estimate when flows will reach hydraulic and treatment capacities of its treatment, collection, and disposal facilities. The projections shall be made in January, based on the last three years' average dry weather flows, peak wet weather flows and total annual flows, as appropriate. When any projection shows that capacity of any part of the facilities may be exceeded in four years, the discharger shall notify the Board by **31 January**.*
6. The Discharger shall submit to the Central Valley Water Board on or before each compliance report due date, the specified document or, if appropriate, a written report detailing compliance or noncompliance with the specific schedule date and task. If noncompliance is being reported, then the Discharge shall state the reasons for such noncompliance and provide an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Central Valley Water Board in writing when it returns to compliance with the time schedule.
7. The Discharger shall use the best practicable cost-effective control technique(s) including proper operation and maintenance, to comply with this Order.
8. The Discharger shall provide certified wastewater treatment plant operators in accordance with Title 23 of the California Code of Regulations, Division 3, Chapter 26.
9. As described in the Standard Provisions, the Discharger shall report promptly to the Central Valley Water Board any material change or proposed change in the character, location, or volume of the discharge.
10. 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."
11. The Discharger shall comply with the requirements of the statewide General Waste Discharge Requirements (General WDRs) for Sanitary Sewer Systems (Water Quality Order 2006-0003), the Revised General WDRs Monitoring and Reporting Program (Water Quality Order 2008-002-EXEC), and any subsequent revisions thereto. Water Quality Order 2006-0003 and Order 2008-0002-EXED require the Discharger to notify the Central Valley Water Board and take remedial action upon the reduction, loss, or failure of the sanitary sewer system resulting in a sanitary sewer overflow.
12. The Discharger shall not allow pollutant-free wastewater to be discharged into the wastewater collection, treatment, and disposal system in amounts that significantly diminish the system's capability to comply with this Order. Pollutant-free wastewater means rainfall, groundwater, cooling waters, and condensates that are essentially free of pollutants.
13. In the event of any change in control or ownership of the WWTF, the Discharger must notify the succeeding owner or operator of the existence of this Order by letter, a copy

of which shall be immediately forwarded to this office. To assume operation as Discharger under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order. The request must contain the requesting entity's full legal name, the state of incorporation if a corporation, the name and address and telephone number of the persons responsible for contact with the Regional 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 California Water Code. Transfer shall be approved or disapproved by the Executive Officer.

14. The Discharger shall comply with all conditions of this Order, including timely submittal of technical and monitoring reports as directed by the Executive Officer. 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 recession of this Order.
15. A copy of this Order shall be kept at the discharge facility for reference by operating personnel. Key operating personnel shall be familiar with its contents.
16. 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, sections 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 filing petitions may be found on the Internet at:

[http://www.waterboards.ca.gov/public\\_notices/petitions/water\\_quality](http://www.waterboards.ca.gov/public_notices/petitions/water_quality)

or will be provided upon request.

I, 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 8 June 2012.

*Original signed by*

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PAMELA C. CREEDON, Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION  
MONITORING AND REPORTING PROGRAM R5-2012-0040  
FOR  
SHASTA-TEHAMA-TRINITY JOINT COMMUNITY COLLEGE DISTRICT  
SHASTA COLLEGE WASTEWATER TREATMENT FACILITY  
SHASTA COUNTY

This Monitoring and Reporting Program (MRP) describes requirements for monitoring the wastewater treatment facility (WWTF) influent, wastewater ponds, groundwater, and biosolids disposal. This MRP is issued 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.

Central Valley Water Board staff shall approve specific sampling locations prior to any sampling activities. All samples shall be representative of the volume and nature of the discharge or matrix of material sampled. The time, date, and location of each sample shall be recorded on the sample chain of custody form. Field test instruments (such as those used to test dissolved oxygen, pH, and electrical conductivity) may be used provided that:

1. The user is trained in proper use and maintenance of the instruments;
2. The instruments are field calibrated prior to monitoring events at the frequency recommended by the manufacturer;
3. Instruments are serviced and/or calibrated by the manufacturer at the recommended frequency; and
4. Field calibration reports are submitted as described in the "Reporting" section of this MRP.

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 this MRP be revised to reduce monitoring frequency. The proposal must include adequate technical justification for reduction in monitoring frequency.

**WWTF POND MONITORING**

The Discharger shall monitor all ponds at the WWTF, in accordance with the following. Samples shall be collected from permanent monitoring locations that will provide samples representative of the wastewater in each pond. Freeboard shall be measured vertically from the water surface to the lowest elevation of the pond berm. Pond monitoring shall include:

<u>Constituent/Parameter</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>
Flow to ponds	gallons/day	Continuous	Daily
Freeboard	0.1 Feet	Staff Gauge	Weekly
Dissolved Oxygen <sup>1</sup>	mg/L	Grab	Weekly
pH	pH units	Grab	Weekly
Specific Conductance <sup>2</sup>	umhos/cm	Grab	Weekly
Precipitation	inches	Observation	Weekly
Pond berm condition	--	Observation	Weekly

<sup>1</sup> Samples shall be collected opposite each pond inlet at a depth of one foot between 0700 and 0900 hours.

<sup>2</sup> Samples shall be collected at a point approved by the Central Valley Water Board.

**WWTF DISPOSAL AREA MONITORING**

The Discharger shall keep a log of disposal field observations and include said log in the monthly monitoring report. The log shall include the following:

- a. Dates of wastewater application.
- b. Quantity of wastewater applied.
- c. Presence of any runoff from the disposal field.
- d. Crop being irrigated

**FACILITY INSPECTIONS**

The Discharger shall inspect the WWTF at least weekly. At a minimum, the inspection shall include the following elements:

- a. Condition of fences designed to prevent public access (monthly).
- b. Odors discernible at the property boundary (weekly).
- c. Integrity of all berms, dikes, and levees, including consideration of damage from erosion, wave action, and burrowing rodents (weekly).
- d. Excessive weed growth in ponds (weekly)

- e. Flow metering system function (weekly).
- f. Piping systems, including control valves and visible piping (weekly).

### GROUNDWATER MONITORING

This monitoring program applies to all groundwater monitoring wells to be validated or installed after issuance of this MRP. In the event new monitoring wells are installed, monitoring wells shall be constructed in accordance with DWR Well Standards outlined in Finding 63 of the WDRs. Prior to construction of any groundwater monitoring wells, the Discharger shall submit plans and specifications to the Central Valley Water Board for review and approval. Once installed, all monitoring wells shall be sampled and analyzed according to the schedule below.

Prior to well purging, groundwater elevations shall be measured. Depth to groundwater shall be measured to the nearest 0.01 feet. Water table elevations shall be calculated and used to determine groundwater gradient and direction of flow. The monitoring wells shall be purged of at least three well volumes or until temperature, pH, and electrical conductivity have stabilized to within 10 percent. Samples shall be collected and analyzed using approved EPA methods. Groundwater monitoring shall include, at a minimum, the following:

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>
Depth to Groundwater	0.01 feet	Measurement	Monthly
Groundwater Elevation <sup>1</sup>	0.01 feet	Calculated	Monthly
pH	pH units	Grab	Quarterly <sup>3</sup>
Total Coliform Organisms <sup>2</sup>	MPN/100 ml	Grab	Quarterly <sup>3</sup>
Electrical Conductivity	umhos/cm	Grab	Quarterly <sup>3</sup>
Total Dissolved Solids	mg/L	Grab	Quarterly <sup>3</sup>
Chloride	mg/L	Grab	Quarterly <sup>3</sup>
Iron	mg/L	Grab	Quarterly <sup>3</sup>
Manganese	mg/L	Grab	Quarterly <sup>3</sup>
Nitrate (as N)	mg/L	Grab	Quarterly <sup>3</sup>
Nitrite (as N)	mg/L	Grab	Quarterly <sup>3</sup>

<sup>1</sup> Groundwater elevations shall be determined based on depth-to-water measurements using a surveyed elevation reference point on the well casing.

<sup>2</sup> Using a minimum of 15 tubes or three dilutions

<sup>3</sup> Quarterly samples shall be collected in March, June, September, and December.

### BIOSOLIDS MONITORING

The Discharger shall keep records regarding biosolids generated by the treatment processes,

including any analytical test results; the quantity of biosolids removed for disposal; the quantity of biosolids removed from the ponds and temporarily stored on site; and steps taken to prevent nuisance conditions. Records shall be stored onsite a minimum of five years and be available for review during inspections.

If biosolids are transported off-site for disposal, then the Discharger shall submit records identifying the hauling company, the amount of biosolids transported, the date removed from the facility, the disposal facility name and address, and copies of all analytical data required by the entity accepting the waste. These records shall be submitted as part of the associated Monthly Monitoring Report.

The Central Valley Water Board may require Discharger to obtain coverage under *State Water Resources Control Board, Water Quality Order No. 2004-0012-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 onsite land applications.

## REPORTING

In reporting monitoring data, the Discharger shall arrange the data in tabular form so that the date, sample type (e.g., influent, pond, etc.), and reported analytical result for each sample are readily discernible. The data shall be summarized in such a manner to clearly illustrate compliance with waste discharge requirements and spatial or temporal trends, as applicable. The results of any monitoring done more frequently than required at the locations specified in the Monitoring and Reporting Program shall be reported to the Central Valley Water Board.

Monthly reports shall be submitted to the Central Valley Water Board on the **1<sup>st</sup> day of the second month following sampling** (i.e. the January Report is due by 1 March). Such reports shall bear the certification and signature of the Discharger's authorized representative. An example Monthly Monitoring Report is included as Attachment A.

At a minimum, the monthly monitoring reports shall include:

1. Results of the following monitoring:
  - a. WWTF pond monitoring;
  - b. WWTF disposal area monitoring;
  - c. Facility inspections;
  - d. Groundwater monitoring; and
  - e. Applicable biosolids monitoring;
2. A comparison of monitoring data to the discharge specifications, disclosure of any violations of the WDRs, and an explanation of any violation of those requirements. Data shall be presented in tabular format.



3. Copies of current calibration logs for all field test instruments.
4. Copies of laboratory analytical report(s).
5. A summary facility inspection and repair report. The following items shall be inspected at the specified frequency and specifically addressed in the report:
  - a. Integrity of all berms, dikes, and levees, including consideration of damage from erosion, wave action, and burrowing rodents (weekly).
  - b. Headworks damage and debris accumulation (weekly).
  - c. Flow metering system function (weekly).
  - d. Piping systems, including control valves and visible piping (weekly).

The facility inspection and repair report shall include the name of the person conducting the inspections, dates of inspection, problems identified, repairs recommended, repairs completed, and dates of completion.

Upon written request of the Central Valley Water Board, the Discharger shall submit an annual report by 1 February of each year. The report shall contain both tabular and graphical summaries of the monitoring data obtained during the previous year. In addition, the Discharger shall discuss the compliance record and the corrective actions taken or planned that may be needed to bring the discharge into full compliance with the waste discharge requirements.

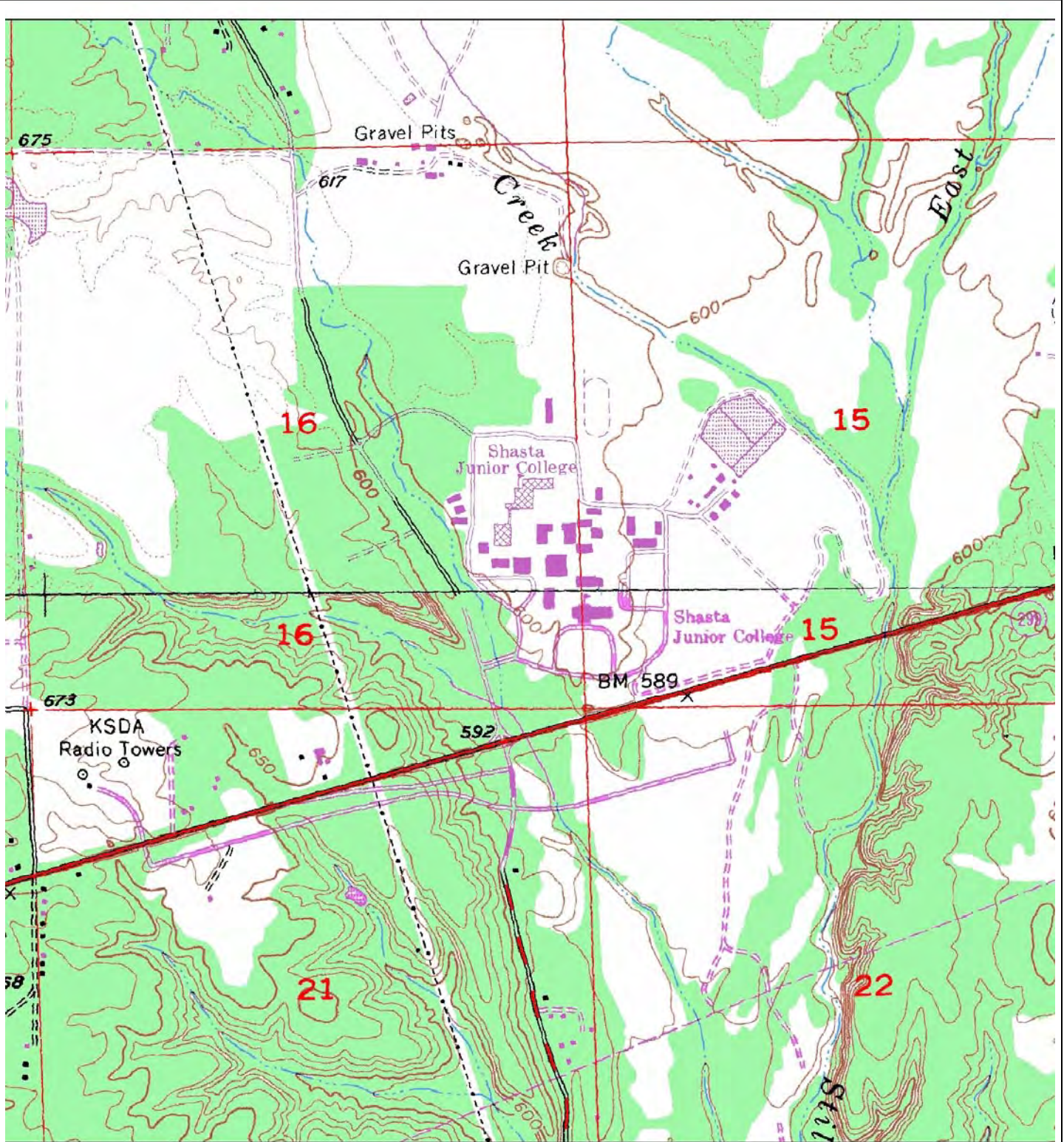
The Discharger shall implement the above monitoring program as of the date of this Order.

*Original signed by*

Ordered by: \_\_\_\_\_  
PAMELA C. CREEDON, Executive Officer

\_\_\_\_\_  
8 June 2012  
(Date)

# ATTACHMENT A



*Drawing Reference:  
USGS 7.5 minute  
Project City and  
Enterprise quad  
maps.*

LOCATION MAP  
SHASTA-TEHAMA-TRINITY JOINT COMMUNITY  
COLLEGE DISTRICT  
SHASTA COLLEGE WWTF  
SHASTA COUNTY  
ORDER NO. R5-2012-0040

N



Approx. Scale:  
1" = 1,000'

ATTACHMENT B



**ATTACHMENT C  
ORDER R5-2012-0040  
REQUIREMENTS FOR  
MONITORING WELL INSTALLATION WORKPLANS AND  
MONITORING WELL INSTALLATION REPORTS**

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

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

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

A. General Information:

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

B. Drilling Details:

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

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

- Diagram of proposed well construction details
  - Borehole diameter
  - Casing and screen material, diameter, and centralizer spacing (if needed)
  - Type of well caps (bottom cap either screw on or secured with stainless steel screws)
  - Anticipated depth of well, length of well casing, and length and position of perforated interval
  - Thickness, position and composition of surface seal, sanitary seal, and sand pack
  - Anticipated screen slot size and filter pack

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

- Method of development to be used (i.e., surge, bail, pump, etc.)
- Parameters to be monitored during development and record keeping technique
- Method of determining when development is complete
- Disposal of development water

- E. Well Survey (precision of vertical survey data shall be at least 0.01 foot):  
Identify the Licensed Land Surveyor or Civil Engineer that will perform the survey  
Datum for survey measurements  
List well features to be surveyed (i.e. top of casing, horizontal and vertical coordinates, etc.)
- F. Schedule for Completion of Work
- G. Appendix: Groundwater Sampling and Analysis Plan (SAP)  
The Groundwater SAP shall be included as an appendix to the workplan, and shall be utilized as a guidance document that is referred to by individuals responsible for conducting groundwater monitoring and sampling activities.

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

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

## **SECTION 2 - Monitoring Well Installation Report**

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

- A. General Information:
- Purpose of the well installation project
  - Brief description of local geologic and hydrogeologic conditions encountered during installation of the wells
  - Number of monitoring wells installed and copies of County Well Construction Permits
  - Topographic map showing facility location, roads, surface water bodies

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

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

On-site supervision of drilling and well installation activities

Drilling contractor and driller's name

Description of drilling equipment and techniques

Equipment decontamination procedures

Soil sampling intervals and logging methods

Well boring log

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

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

Well construction diagram, including:

- Monitoring well number and date constructed
- Casing and screen material, diameter, and centralizer spacing (if needed)
- Length of well casing, and length and position of perforated interval
- Thickness, position and composition of surface seal, sanitary seal, and sand pack
- Type of well caps (bottom cap either screw on or secured with stainless steel screws)

E. Well Development:

Date(s) and method of development

How well development completion was determined

Volume of water purged from well and method of development water disposal

Field notes from well development should be included in report

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

Identify the coordinate system and datum for survey measurements

Describe the measuring points (i.e. ground surface, top of casing, etc.)

Present the well survey report data in a table

Include the Registered Engineer or Licensed Surveyor's report and field notes in appendix

**ATTACHMENT D**  
**ORDER R5-2012-0040**

*California Health Laws Related to Recycled Water*  
*Title 22*

*June 2001 Edition*



Water Recycling Criteria

FIGURE 60310-A

## INFORMATION SHEET

WASTE DISCHARGE REQUIREMENTS ORDER R5-2012-0040  
SHASTA-TEHAMA-TRINITY JOINT COMMUNITY COLLEGE DISTRICT  
SHASTA COLLEGE WASTEWATER TREATMENT FACILITY  
SHASTA COUNTY

### **Background**

The Shasta-Tehama-Trinity Joint Community College District owns and operates the Shasta College Wastewater Treatment Facility (WWTF), which is ½ mile northeast of the intersection of State Highway 299 East and Old Oregon Trail near the City of Redding, in Shasta County. The WWTF was originally constructed in 1965 and is located in Section 15, T32N, R4W, MDB&M and occupies Assessor's Parcel No. 076-030-08. The WWTF serves a faculty, staff, and student population of approximately 9,500 persons in 28 major buildings covering 337 acres.

In 1994, the Discharger began considering whether to participate in a proposed sewer assessment district for the northeastern Redding area. An engineering firm was retained by the Discharger to evaluate the existing system and compare the cost and benefits of maintaining the existing system versus participating in the assessment district. The consultants determined that "the ponds could easily overflow during a wet year" and recommended connection to the City sewer. If connection was not pursued, the report recommended significant improvements to the existing pond system.

Waste Discharge Requirements (WDR) Order 93-212 adopted by the Central Valley Water Board on 22 October 1993, prescribed requirements for the Discharger's WWTF and the discharge of treated effluent to a single lined aeration pond, two evaporation/percolation ponds (3.5 and 3.2 surface acres), one irrigation pond (1.5 surface acres), and an approximate 10 acre agricultural field. Crops grown on this field are pasture grasses used for non-milking livestock feed for the Shasta College Animal Science Program.

During January 1995, the Redding area received approximately 25 inches of rain. Inspection by staff in January 1995 indicated rapidly diminishing freeboard in the primary ponds. On 31 January 1995, the Discharger, after notifying the Central Valley Water Board and adding chlorine for disinfection began flood irrigating with partially treated wastewater. Within 4 hours the application area began to flood in the direction of Stillwater Creek and areas of public use.

On 28 April 1995, the Central Valley Water Board adopted Cease and Desist Order (CDO) 95-084. This Order was issued in response to unauthorized discharge or threatened unauthorized discharge of partially treated wastewater resulting from an undersized WWTF. This Order required the Discharger to cease and desist from discharging contrary to waste discharge requirements and to submit a report identifying how the Discharger intended to ensure compliance. The Order also required the Discharger to provide a time schedule for implementing interim and long-term measures to achieve compliance and confirm intent to connect to the City of Redding sewer system.

On 29 June 1995, the Discharger responded to CDO 95-084 with plans to conduct various feasibility studies, investigation of potential sources of inflow and infiltration (I/I), and identified



potential mitigation areas to reduce overall flow to the WWTF. The Discharger also expressed its intentions to connect to the City of Redding sewer system. This act however, would first require annexation and an election (Mello Roos District) as well as formation of a new assessment district. Approximately one year later, the Discharger notified the Central Valley Water Board that after extensive discussions with the City of Redding, it did not appear annexation would be a viable option in the near future. Additionally the Discharger had approved a sewer sealing project that would consist of cleaning, videoing, and air-testing of joints; sealing of joints; and retesting portions of approximately 8,000 feet of sewer lines at the facility.

On 31 January 1997, the Discharger provided a summary report of an extensive I/I investigation and repairs conducted during fall 1996 and a proposed schedule to complete additional repairs in subsequent years. In March 1997 the Discharger provided an additional report, prepared by the Discharger's consultant, which identified several alternatives to mitigate concerns identified in CDO 95-084.

On 17 July 1997, the Discharger submitted a written report indicating which improvements and modification of the existing treatment facility they intended to pursue (Alternative B1: increase the capacity of the existing ponds and add an aeration basin). In September 1997, Discharger submitted a detailed work plan and time schedule for implementing Alternative B1. Due to funding constraints, the Discharger proposed that the project be divided into three phases. The first phase included enlargement of both stabilization ponds, construction of a headworks bar screen, and extension of an 8 inch force main to the headworks. The second phase included reconstruction of the irrigation pond, construction of irrigation recapture and recycle system (tail water return system), outlet system modifications, installation of pond pump station, and construction of a control building. The third phase included construction of an aeration basin with three aerators, resurfacing dikes, installation of security fencing and berms, and electrical work. This work was to be completed over three years ending in the summer 2000.

On 24 October 1997, CDO 95-084 was amended with CDO 97-216 to incorporate activities included in the work plan along with the proposed time schedule. The Discharger has completed activities required under CDO 97-216. The Discharger's engineer provided a water balance as the basis for the facility upgrades which was included in the 2001 Report of Waste Discharge. Based on this water balance the WWTF can accommodate a design average daily flow (during school year) of 0.076 million gallons per day (mgd) and an average dry weather flow of 0.033 mgd.

The WWTF treats primarily domestic sewage. In addition, the College owns and operates a large swimming pool for collegiate sports. Swimming pool filters are backwashed three to four times per month based on pool use. Each flushing event produces approximately 5,000 gallons of filter backwash that is now discharged to the WWTF. Currently, sewage and filter backwash from the Community College flows by gravity sewer to a single lift station at the lowest point of the campus. The lift station has been upgraded and now notifies the on call operator directly should a problem occur.

The lift station pumps raw sewage to the head works bar screens and into a single concrete lined aeration basin, containing two cells separated by a baffle curtain. Each cell is approximately 0.86 million gallons. BOD<sub>5</sub> loading estimates are 191 lbs/day in Cell 1, which contains two 5-horsepower aerators. BOD<sub>5</sub> loading estimates are 80 lbs/day in Cell 2, which contains one 5-horsepower aerator. From the aeration basin, wastewater is gravity fed to one of two clay lined facultative lagoons. One sample from each of the clay liners reflect permeabilities of  $1.8 \times 10^{-6}$  and  $2.9 \times 10^{-7}$ .

Periodically wastewater from the facultative lagoons is pumped to a single clay lined irrigation pond. Wastewater stored in the irrigation pond is used to flood irrigate one of two 10-acre fields used to grow crops for the College's Animal Science Program. Fields are bermed to prevent runoff and contain tailwater ponds with automatic pump systems, which return flows to the headworks. Land application occurs between May and September to supplement fresh water supply provided by the Bella Vista Water District.

Reportedly, there were four groundwater wells at the facility. Of these wells, two wells cannot be located, one is buried and one is available for inspection. It appears, based on visual observations, that the wells were constructed as groundwater monitoring wells, however the purpose of construction, date of construction, and construction details are unknown. On 3 November 2011, the well located between the two effluent-irrigated fields was measured to be seven feet deep. No water was present in the well. Thus, groundwater at that time was more than seven feet below the ground surface.

The North Facultive Lagoon is located approximately 200 feet from Stillwater Creek, a perennial stream. Based on construction drawings provided by the Discharger, the North Facultive Lagoon, South Facultive Lagoon, and Irrigation Basins are constructed to base level elevation (bottom of lagoons) of approximately 590 feet above mean sea level (msl). This is approximately the same elevation as Stillwater Creek based on the USGS 7.5 minute Project City quadrangle. Based on this information it is likely the bottoms of the facultative ponds are in direct contact with groundwater at least seasonally. This inferred condition has yet to be verified.

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

Surface water drainage is to Stillwater Creek tributary to the Sacramento River the confluence of which is located near the City of Anderson, also in Shasta County. The *Water Quality Control Plan for the California Regional Water Quality Control Board Central Valley Region, Fourth Edition* (Basin Plan), designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for all waters of the Basin. Beneficial uses often determine the water quality objectives that apply to a water body. For example, waters designated as municipal and domestic supply must meet the maximum contaminant levels (MCLs) for drinking waters. The Basin Plan sets forth the applicable beneficial uses (industrial, agricultural, and municipal and domestic supply in this instance) of groundwater, procedure for application of water quality objectives, and the process for and factors to consider in allocating waste assimilation capacity.

### **Antidegradation**

The antidegradation directives of State Water Board Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality Waters in California," or "Antidegradation Policy" require that waters of the State that are better in quality than established water quality objectives be maintained "consistent with the maximum benefit to the people of the State." Waters can be of high quality for some constituents or beneficial uses and not others. Policies and procedures for complying with this directive are set forth in the Basin Plan.

Limited degradation is expected to occur as a result of the operation of the WWTF. This degradation is consistent with Resolution 68-16 because:

- The degradation is consistent with maximum benefit to the people of the state. The Discharger provides needed educational opportunities to the region and the WWTF is a vital part of the school's operations.
- The groundwater limitations, coupled with the additional studies that are being required herein to determine reasonable protection of the AGR beneficial use, will ensure protection of all beneficial uses in groundwater and surface waters.
- The limited degradation that will occur as a result of the operation of the WWTF will not result in water quality less than that prescribed in state and regional policies.
- The Discharger has made the significant upgrades to the WWTF required in the CDO, has conducted an investigation into I/I issues affecting the sewer collection system and has repaired or replaced portions of the sewer collection system that were deficient, and has improved irrigation tail water control through the use of improved berms and irrigation procedures since the adoption of the existing WDRs. The Discharger will also be required to prepare and implement *Salinity Evaluation and Minimization Plan*. Therefore, current WWTF operations can reasonably be considered BPTC, after considering waste management technologies employed by similarly-situated dischargers.

### **Groundwater Monitoring**

Groundwater monitoring is a new requirement in the proposed WDRs to confirm compliance with water quality objectives specified in the proposed WDRs.

Water quality objectives are used to define the least stringent limits that could apply as water quality limitations for groundwater at this location, except where natural background quality unaffected by the discharge of waste already exceeds the objective. The values below reflect water quality limitations that must be met to maintain specific beneficial uses of groundwater. Unless natural background for a constituent proves higher, the groundwater quality limit established in proposed Order is the most stringent of the values for the listed constituents.

Constituent	Limit	Beneficial Use	Water Quality Objective	Criteria or Justification
Ammonia (mg/l)	1.5	MUN <sup>1</sup>	Tastes and Odors	Odor Threshold <sup>2</sup>
Boron (mg/l)	1.0	MUN <sup>1</sup>	Toxicity	Calif. Drinking Water Notification Level based on toxicity <sup>1</sup>
Chloride (mg/l)	250 <sup>4</sup>	MUN <sup>1</sup>	Chemical Constituents	Recommended Secondary MCL <sup>3</sup>
	500 <sup>4</sup>	MUN <sup>1</sup>	Chemical Constituents	Upper Secondary MCL <sup>3</sup>
Electrical Conductivity at 25°C (umhos/cm)	900 <sup>4</sup>	MUN <sup>1</sup>	Chemical Constituents	Secondary MCL <sup>5</sup>
Iron (mg/l)	0.3 <sup>4</sup>	MUN <sup>1</sup>	Chemical Constituents	Secondary MCL <sup>5</sup>
Manganese (mg/l)	0.05 <sup>4</sup>	MUN <sup>1</sup>	Chemical Constituents	Secondary MCL <sup>5</sup>
Nitrate plus Nitrite as N (mg/l)	10	MUN <sup>1</sup>	Chemical Constituents	Primary MCL <sup>6</sup>
Nitrite as N (mg/l)	1	MUN <sup>1</sup>	Chemical Constituents	Primary MCL <sup>6</sup>
Total Coliform Organisms (MPN/100 ml)	<2.2	MUN <sup>1</sup>	Bacteria	Basin Plan numerical objective and non-detect
pH (units)	6.5 to 8.5	MUN <sup>1</sup>	Chemical Constituents	Secondary MCL <sup>8</sup>

<sup>1</sup> Municipal and domestic supply

<sup>2</sup> J.E. Amoores and E. Hautala, Odor as an Aid to Chemical Safety: Odor Thresholds Compared with Threshold Limit Values and Volatilities for 214 Industrial Chemicals in Air and Water Dilution, Journal of Applied Toxicology, Vol. 3, No. 6 (1983).

<sup>3</sup> Title 22, California Code of Regulations (CCR), Section 64449, Table 64449-B which is incorporated by reference into the Basin Plan.

<sup>4</sup> Applied as an annual average.

<sup>5</sup> Title 22, CCR, Section 64449, Table 64449-A which is incorporated by reference into the Basin Plan.

<sup>6</sup> Title 22, CCR, Section 64431, Table 64431-A which is incorporated by reference into the Basin Plan.

<sup>7</sup> Title 22, CCR, Section 64439, which applies the narrative objective to fully protect the cited beneficial use.

<sup>8</sup> Title 40, Code of Federal Regulations, Section 143.3, which applies the narrative objective to fully protect the cited beneficial use.

Domestic wastewater contains numerous dissolved organic and inorganic constituents that together comprise Total Dissolved Solids (TDS). Each component constituent is not individually critical to any beneficial use. Critical constituents are individually listed. The cumulative impact from the other constituents, along with the cumulative effect of the constituents that are individually listed can be effectively controlled using TDS as a generic indicator parameter.

Not all TDS constituents pass through the treatment process and soil profile in the same manner or rate. Chloride tends to pass through both rapidly to groundwater. However, groundwater chloride concentrations in the region are highly variable, which might limit the use of chloride as an indicator parameter of groundwater degradation. Boron is another TDS constituent that may occur in wastewater in concentrations greater than in groundwater because it is a common ingredient of detergents. Other indicator constituents for monitoring for groundwater degradation due to land application of wastewater include total coliform

bacteria, ammonia, and total nitrogen. Dissolved iron and manganese are useful indicators to determine whether components of the WWTP with high-strength wastewater constituents, such as sludge handling facilities, are ineffective in containing waste. Exceptionally high TDS and nitrogen also typifies this type of release.

### **Treatment Technology and Control**

Given the character of domestic wastewater, secondary treatment technology is generally sufficient to control degradation of groundwater from decomposable organic constituents.

Domestic wastewater typically contains nitrogen in concentrations greater than water quality objectives, which vary according to the form of nitrogen. Groundwater degradation by nitrogen can be controlled by an appropriate secondary treatment system (e.g., oxidation ditch), tertiary treatment with nitrogen reduction, and agronomic reuse crops that are harvested and removed from the land application area. The effectiveness varies, but generally best practicable treatment and control is able to control nitrogen degradation of groundwater at a concentration well below the water quality objectives.

Dissolved solids can pass through the treatment process and soil profile; effective control of such constituents relies primarily upon source control and pretreatment measures. Even in the best of circumstances, long-term land discharge of treated wastewater will degrade groundwater with dissolved solids (as measured by TDS or EC). The proposed Order sets groundwater limitations equivalent to water quality objectives.

A discharge of treated wastewater that overloads soils with nutrients and organics can result in anaerobic conditions in the soil profile, which in turn creates organic acids and decreases soil pH. Under conditions of low soil pH (below 5), iron and manganese compounds in the soil can solubilize and leach into groundwater. Overloading the land application areas is preventable. Though iron and manganese limits are set at their respective water quality objectives, groundwater pH is expected to remain the same as background.

### **Title 27**

Title 27 of the California Code of Regulations ("Title 27") contains regulations that establish minimum standards governing the water quality aspects of waste discharges to land for treatment, storage, or disposal. These regulations classify wastes and contain siting, design, construction, monitoring, and closure requirements for waste management units.

Section 20090 of Title 27 exempts certain activities from its provisions. Certain exempted activities contain preconditions for which the specified activity must meet and continue to meet in order to maintain the specified exemption.

The treatment and storage facilities associated with the sewage treatment facility, except for discharges of residual sludge and solid waste, are exempt from the requirements of Title 27 pursuant to Section 20090(a) based on the following:

- (a) The waste consists primarily of domestic sewage and treated effluent;
- (b) The waste discharge requirements are consistent with water quality objectives;  
and

- (c) The treatment and storage facilities described herein are associated with a municipal wastewater treatment plant.

The reuse of the treated effluent for irrigation purposes is exempt from Title 27 pursuant to Section 20090(b) of Title 27 based on the following:

- (a) By this Order, Central Valley Water Board has issued WDRs for the discharge;
- (b) By complying with the WDRs and by taking necessary steps to conduct a further evaluation of possible impacts to groundwater, the discharge is in compliance with the applicable water quality control plan; and
- (c) The discharge does not need to be managed according to Chapter 11, Division 4.5 of Title 22 as a hazardous waste.

State regulations that prescribe procedures for detecting and characterizing the impact of waste constituents from waste management units on groundwater are found in Title 27. While the wastewater treatment facility is exempt from Title 27, the data analysis methods of Title 27 are appropriate for determining whether the discharge complies with the terms for protection of groundwater specified in this Order.

### **Proposed Order Terms and Conditions**

#### **Discharge Prohibitions, Effluent Limitations, Discharge Specifications, and Provisions**

The proposed Order prohibits discharge to surface waters and water drainage courses.

The proposed Order allows a monthly average inflow rate to the WWTF of 33,000 gpd as an average daily dry weather flow based a water balance provided by the Discharger's engineer and associated facility improvements.

The proposed Order's effluent limitation for electrical conductivity was selected to protect groundwater beneficial uses.

The discharge specifications regarding dissolved oxygen and freeboard are consistent with Regional Board policy for the prevention of nuisance conditions and overtopping, and are applied to all such facilities.

In order to protect public health and safety, the proposed Order requires the Discharger to comply with the provision of Title 22 and to implement best management practices with respect to recycled water application (application at reasonable rates considering the crop, soil, and climate).

The proposed WDRs prescribe groundwater limitations that implement water quality objectives for groundwater from the Basin Plan. The limitations require that the discharge not cause or contribute to exceedance of these objectives or natural background water quality, whichever is greatest.

The Order requires the Discharger to submit the following technical reports:

- a. A Monitoring Well Evaluation and/or Installation Workplan;
- b. A Monitoring Well Installation Report (if required);
- c. A Salinity Evaluation and Minimization Plan;
- d. An Updated Operation and Maintenance Plan if needed; and
- e. Engineering Evaluation per Title 22 update, if needed.

### **Monitoring Requirements**

Water Code section 13267 authorizes the Central Valley Water Board to require 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 increased emphasis on obtaining all necessary information, assuring the information is timely as well as representative and accurate, and thereby improving accountability of any discharger for meeting the conditions of discharge. Water Code section 13268 authorizes assessment civil administrative liability where appropriate.

The proposed Order includes effluent monitoring, pond monitoring, groundwater monitoring, biosolids monitoring, and facility monitoring. This monitoring is necessary to evaluate the extent of the potential degradation from the discharge.

The Discharger must monitor groundwater for wastewater constituents expected to be present in the discharge, and capable of reaching groundwater, and violating groundwater limitations if its treatment, control, and environmental attenuation, proves inadequate. In the event existing groundwater wells are unsuitable for the purposes of evaluating compliance with Basin Plan objectives, the Discharger is required to install additional groundwater monitoring wells around the facility. For each constituent listed in the Groundwater Limitations section, the Discharger must, as part of each monitoring event, compare concentrations of constituents found in each monitoring well to the background concentration or to prescribed numerical limitations to determine compliance.

### **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. However, information is presently insufficient to develop final groundwater limitations, so the proposed Order contains interim limitations. Additional information must be developed and documented by the Discharger as required by schedules set forth in the proposed Order. As this additional information is obtained, decisions will be made concerning the best means of assuring the highest water quality at reasonable cost. It may be appropriate to reopen the Order if applicable laws and regulations change, but the mere possibility that such laws and regulations may change is not sufficient basis for reopening the Order. The Water Code requires that waste discharge requirements implement all applicable requirements.