downstream uses be protected and states that in *no case shall a state adopt waste transport or waste assimilation as a beneficial use for any waters of the United States.*

This Order contains effluent limitations requiring tertiary level of treatment, or equivalent, which is necessary to protect the beneficial uses of the receiving water. The Central Valley Water Board has considered the factors listed in CWC section 13241 in establishing these requirements, as discussed in more detail in the Fact Sheet, Attachment F, IV.C.3.v.

2. **Antidegradation Policy.** 40 CFR 131.12 requires that the state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16. Resolution No. 68-16 incorporates the federal antidegradation policy where the federal policy applies under federal law. Resolution No. 68-16 requires that existing water quality be maintained unless degradation is justified based on specific findings. The Central Valley Water Board's Basin Plan implements, and incorporates by reference, both the State and federal antidegradation policies. As discussed in detail in the Fact Sheet (Attachment F, Section IV.D.4.) the discharge is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution 68-16.

3. **Anti-Backsliding Requirements.** Sections 402(o)(2) and 303(d)(4) of the CWA and federal regulations at 40 CFR 122.44(l) prohibit backsliding in NPDES permits. These anti-backsliding provisions require that effluent limitations in a reissued permit must be as stringent as those in the previous permit, with some exceptions in which limitations may be relaxed. Some effluent limitations in this Order are less stringent than those in the previous Order. As discussed in the Fact Sheet, this relaxation of effluent limitations is consistent with the anti-backsliding requirements of the CWA and federal regulations.

4. **Emergency Planning and Community Right to Know Act**. Section 13263.6(a), California Water Code, requires that "*the Regional Water Board shall prescribe effluent limitations as part of the waste discharge requirements of a POTW for all substances that the most recent toxic chemical release data reported to the state emergency response commission pursuant to Section 313 of the Emergency Planning and Community Right to Know Act of 1986 (42 U.S.C. Sec. 11023) (EPCRA) indicate as discharged into the POTW, for which the State Water Board or the Regional Water Board has established numeric water quality objectives, and has determined that the discharge is or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to, an excursion above any numeric water quality objective*".

   The most recent toxic chemical data report does not indicate any reportable off-site releases or discharges to the collection system for this Facility. Therefore, a reasonable potential analysis based on information from EPCRA cannot be conducted. Based on information from EPCRA, there is no reasonable potential to

cause or contribute to an excursion above any numeric water quality objectives included within the Basin Plan or in any State Water Board plan, so no effluent limitations are included in this permit pursuant to CWC section 13263.6(a).

However, as detailed elsewhere in this Order, available effluent data indicate that there are constituents present in the effluent that have a reasonable potential to cause or contribute to exceedances of water quality standards and require inclusion of effluent limitations based on federal and state laws and regulations.

5. **Storm Water Requirements.** 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 (< 1MGD) are not required to obtain an NPDES permit for storm water discharges. The design flow for Cottonwood Wastewater Treatment Plant is 0.43 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).

6. **Endangered Species Act.** This Order does not authorize any act that results in the taking of a threatened or endangered species or any act that is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish and Game Code sections 2050 to 2097) or the Federal Endangered Species Act (16 U.S.C.A. sections 1531 to 1544). This Order requires compliance with effluent limits, receiving water limits, and other requirements to protect the beneficial uses of waters of the state. The Discharger is responsible for meeting all requirements of the applicable Endangered Species Act.

7. **Water Reuse Policy.** The Basin Plan's Water Reuse Policy states, "*The Regional Water board encourages the reclamation and reuse of wastewater…and requires as part of a Report of Waste Discharge an evaluation of reuse and land disposal options as alternative disposal methods. Reuse options should include consideration of the following, where appropriate, based on the quality of the wastewater and the required quality for the specific reuses: industrial and municipal supply, crop irrigation, landscape irrigation, ground water recharge, and wetland restoration.*" The purpose of the Water Reuse Policy is to evaluate alternative methods of disposal to prevent unnecessary discharges to surface water.

   In December 2009 the Discharger submitted a complete antidegradation analysis to show that the proposed mixing zones/dilution credits satisfy requirements of State Water Board Resolution 68-16. As part of the antidegradation analysis, the Discharger evaluated a number of alternatives to directly discharging effluent to Cottonwood Creek. Some of the alternatives evaluated include: zero discharge, seasonal discharge, and flow restricted discharge. The antidegradation analysis alternatives assessment concludes that, at this time, it is not cost effective for the Discharger to expand its effluent storage capacity, and recommends continuance of the surface water discharge.

D. Impaired Water Bodies on CWA 303(d) List

1. Under Section 303(d) of the 1972 Clean Water Act, states, territories and authorized tribes are required to develop lists of water quality limited segments. The waters on these lists do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. On 30 November 2006 USEPA gave final approval to California's 2006 Section 303(d) List of Water Quality Limited Segments. The Basin Plan references this list of Water Quality Limited Segments (WQLSs), which are defined as "*...those sections of lakes, streams, rivers or other fresh water bodies where water quality does not meet (or is not expected to meet) water quality standards even after the application of appropriate limitations for point sources (40 CFR 130, et seq.)*." The Basin Plan also states, "*Additional treatment beyond minimum federal standards will be imposed on dischargers to [WQLSs]. Dischargers will be assigned or allocated a maximum allowable load of critical pollutants so that water quality objectives can be met in the segment.*" Cottonwood Creek is tributary to the Sacramento River. The 2006 CWA section 303(d) listing includes the Sacramento River from Keswick Dam to Cottonwood Creek (upstream of the confluence) and the Sacramento River from Cottonwood Creek to Red Bluff (downstream of the confluence). Both segments of the Sacramento River are listed for "unknown toxicity" due to an "unknown source". Proposed TMDL completion date for both segments is 2019.

2. **Total Maximum Daily Loads (TMDL).** USEPA requires the Central Valley Water Board to develop total maximum daily loads (TMDLs) for each 303(d) listed pollutant and water body combination. The listing for unknown toxicity has a proposed TMDL completion date of 2019. This Order contains a reopener provision to modify permit requirements, as necessary, to implement any changes to the TMDL.

E. Other Plans, Polices and Regulations

1. The discharge authorized herein and the treatment and storage facilities associated with the discharge of treated municipal wastewater, except for discharges of residual sludge and solid waste, are exempt from the requirements of Title 27, California Code of Regulations (CCR), section 20005 *et seq*. (hereafter Title 27). The exemption, pursuant to Title 27 CCR section 20090(a), is 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.

Sludge Settling Basins.
The Facility includes two, aerated sludge settling basins (SSBs). The SSBs are aerated ponds that provide biological and physical treatment to sludge produced during the primary and secondary treatment processes. The SSBs are underlain by engineered liner systems consisting of a combination of compacted clay, asphalt, and concrete. Furthermore, an underdrain system collects shallow groundwater from under the Facility to ensure groundwater is adequately separated from the bottoms of the treatment units. Therefore, it is reasonable to conclude that operation of the SSBs does not have the potential to cause an exceedance of applicable water quality objectives in groundwater. Thus, the discharges to the SSBs are in compliance with the applicable water quality control plan. Monitoring of the sludge and liquid contained in the SSBs indicates that the waste does not need to be managed as a hazardous waste. Based on these findings the SSBs are exempt from the requirements of Title 27 CCR, pursuant to either Title 27 CCR section 20090(a) or section (b).

Sludge Drying Beds.
The Facility includes sludge drying beds. The sludge drying beds are a sludge treatment process that dewaters the sludge prior to final disposal. The sludge drying beds are underlain by engineered liner systems consisting of concrete with a drain system and sump to collect and return percolating liquid to the headworks. The drain system and sump ensure that there is no hydraulic pressure on the concrete liner. Furthermore, an underdrain system collects shallow groundwater from under the Facility to ensure groundwater is adequately separated from the bottoms of the treatment units. Therefore, it is reasonable to conclude that operation of the sludge drying beds does not have the potential to cause an exceedance of applicable water quality objectives in groundwater. Thus, the discharges to the sludge drying beds are in compliance with the applicable water quality control plan. Monitoring of the sludge and liquid contained in the sludge drying beds indicates that the waste does not need to be managed as a hazardous waste. Based on these findings the sludge drying beds are exempt from the requirements of Title 27 CCR, pursuant to either Title 27 CCR section 20090(a) or section (b).

IV. RATIONALE FOR EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

Effluent limitations and toxic and pretreatment effluent standards established pursuant to Sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 304 (Information and Guidelines), and 307 (Toxic and Pretreatment Effluent Standards) of the Clean Water Act (CWA) and amendments thereto are applicable to the discharge.

The Federal CWA mandates the implementation of effluent limitations that are as stringent as necessary to meet water quality standards established pursuant to state or federal law [33 U.S.C., § 1311(b)(1)(C); 40 CFR 122.44(d)(1)]. NPDES permits must incorporate discharge limits necessary to ensure that water quality standards are met. This requirement applies to narrative criteria as well as to criteria specifying maximum amounts of particular pollutants. Pursuant to Federal Regulations, 40 CFR 122.44(d)(1)(i), NPDES permits must contain limits that control all pollutants that "*are or*

may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard, including state narrative criteria for water quality." Federal Regulations, 40 CFR 122.44(d)(1)(vi), further provide that "[w]*here a state has not established a water quality criterion for a specific chemical pollutant that is present in an effluent at a concentration that causes, has the reasonable potential to cause, or contributes to an excursion above a narrative criterion within an applicable State water quality standard, the permitting authority must establish effluent limits.*"

The CWA requires point source discharges to control the amount of conventional, non-conventional, and toxic pollutants that are discharged into the waters of the United States. The control of pollutants discharged is established through effluent limitations and other requirements in NPDES permits. There are two principal bases for effluent limitations: 40 CFR 122.44(a) requires that permits include applicable technology-based limitations and standards, and 40 CFR 122.44(d) requires that permits include water quality-based effluent limitations (WQBELs) to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of the receiving water where numeric water quality objectives have not been established. The Central Valley Water Board's Basin Plan at page IV-17.00, contains an implementation policy ("Policy for Application of Water Quality Objectives") that specifies that the Central Valley Water Board "*will, on a case-by-case basis, adopt numerical limitations in orders which will implement the narrative objectives.*" This Policy complies with 40 CFR 122.44(d)(1). With respect to narrative objectives, the Central Valley Water Board must establish effluent limitations using one or more of three specified sources, including (1) USEPA's published water quality criteria, (2) a proposed state criterion (*i.e.*, water quality objective) or an explicit state policy interpreting its narrative water quality criteria (*i.e.*, the Central Valley Water Board's "Policy for Application of Water Quality Objectives")(40 CFR 122.44(d)(1) (vi) (A), (B) or (C)), or (3) an indicator parameter. The Basin Plan contains a narrative objective requiring that: "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life*" (narrative toxicity objective). The Basin Plan requires the application of the most stringent objective necessary to ensure that surface water and groundwater do not contain chemical constituents, discoloration, toxic substances, radionuclides, or taste and odor producing substances that adversely affect beneficial uses. The Basin Plan states that material and relevant information, including numeric criteria, and recommendations from other agencies and scientific literature will be utilized in evaluating compliance with the narrative toxicity objective. The Basin Plan also limits chemical constituents in concentrations that adversely affect surface water beneficial uses. For waters designated as municipal, the Basin Plan specifies that, at a minimum, waters shall not contain concentrations of constituents that exceed Maximum Contaminant Levels (MCL) of CCR Title 22. The Basin Plan further states that, to protect all beneficial uses, the Central Valley Water Board may apply limits more stringent than MCLs.

A. Discharge Prohibitions

1. As stated in section I.G of Attachment D, Standard Provisions, this Order prohibits bypass from any portion of the treatment facility. Federal Regulations, 40 CFR 122.41 (m), define "bypass" as the intentional diversion of waste streams from any portion of a treatment facility. This section of the Federal Regulations, 40 CFR 122.41 (m)(4), prohibits bypass unless it is unavoidable to prevent loss of life, personal injury, or severe property damage. In considering the Central Valley Water Board's prohibition of bypasses, the State Water Board adopted a precedential decision, Order No. WQO 2002-0015, which cites the Federal Regulations, 40 CFR 122.41(m), as allowing bypass only for essential maintenance to assure efficient operation.

2. The discharge of effluent at a location or in a manner different from that described in the Findings, is prohibited.

3. Discharge of materials, other than storm water, that are not otherwise permitted by this Order to surface waters or surface water drainage courses, is prohibited.

4. Discharge of wastewater from sewage holding tanks into the treatment plant or collection system, without prior approval from the Executive Officer of the Central Valley Water Board, or his/her designee, is prohibited.

B. Technology-Based Effluent Limitations

1. Scope and Authority

Regulations promulgated in 40 CFR 125.3(a)(1) require technology-based effluent limitations for municipal dischargers to be placed in NPDES permits based on Secondary Treatment Standards or Equivalent to Secondary Treatment Standards.

The Federal Water Pollution Control Act Amendments of 1972 (PL 92-500) established the minimum performance requirements for POTWs [defined in section 304(d)(1)]. Section 301(b)(1)(B) of that Act requires that such treatment works must, as a minimum, meet effluent limitations based on secondary treatment as defined by the USEPA Administrator.

Based on this statutory requirement, USEPA developed secondary treatment regulations, which are specified in 40 CFR Part 133. These technology-based regulations apply to all municipal wastewater treatment plants and identify the minimum level of effluent quality attainable by secondary treatment in terms of biochemical oxygen demand (BOD_5), total suspended solids (TSS), and pH.

2. Applicable Technology-Based Effluent Limitations

a. **BOD_5 and TSS.** Federal Regulations, 40 CFR Part 133, establish the minimum weekly and monthly average level of effluent quality attainable by secondary treatment for BOD_5 and TSS. The Central Valley Water Board has determined that tertiary treatment (treatment beyond secondary) is necessary to protect the

beneficial uses of the receiving stream, and the final effluent limitations for BOD_5 and TSS are based on the technical capability of the tertiary process. BOD_5 is a measure of the amount of oxygen used in the biochemical oxidation of organic matter. The secondary and tertiary treatment standards for BOD_5 and TSS are indicators of the effectiveness of the treatment processes. The principal design parameter for wastewater treatment plants is the daily BOD_5 and TSS loading rates and the corresponding removal rate of the system. In applying 40 CFR Part 133 for weekly and monthly average BOD_5 and TSS limitations, the application of tertiary treatment processes results in the ability to achieve lower levels for BOD_5 and TSS than the secondary standards currently prescribed; therefore, consistent with Order No. 5-01-122, this Order includes 30-day average BOD_5 and TSS limitations of 10 mg/L, which are technically based on the capability of a tertiary system. In addition to the average weekly and average monthly effluent limitations, a daily maximum effluent limitation for BOD_5 and TSS is included in the Order to ensure that the treatment works are not organically overloaded and operate in accordance with design capabilities. See Table F-4 for final technology-based effluent limitations required by this Order. In addition, 40 CFR 133.102, in describing the minimum level of effluent quality attainable by secondary treatment, states that the 30-day average percent removal shall not be less than 85 percent. If 85 percent removal of BOD_5 and TSS must be achieved by a secondary treatment plant, it must also be achieved by a tertiary (i.e., treatment beyond secondary level) treatment plant. This Order contains a limitation requiring an average of 85 percent removal of BOD_5 and TSS over each calendar month.

b. **pH.** Federal Regulations, 40 CFR Part 133, also establish technology-based effluent limitations for pH. The secondary treatment standards require the pH of the effluent to be no lower than 6.0 and no greater than 9.0 standard units.

c. **Flow.** The Facility is designed to provide a tertiary level of treatment for up to a design average dry weather flow of 0.43 MGD. Therefore, this Order contains an average dry weather flow effluent limit of 0.43 MGD.

Summary of Technology-based Effluent Limitations
Discharge Point No. 001

Table F-4. Summary of Technology-based Effluent Limitations

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Biochemical Oxygen Demand (5-day @ 20°C)	mg/L	10	15	30	--	--
	lbs/day[1]	36	54	108	--	--
	% Removal	85	--	--	--	--

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Total Suspended Solids	mg/L	10	15	30	--	--
	lbs/day[1]	36	54	108	--	--
	% Removal	85	--	--	--	--
pH	standard units	--	--	--	6.0	9.0
Flow	MGD	0.43[2]	--	--	--	--

[1] Based on a design flow of 0.43 MGD.
[2] Average dry weather flow.

C. Water Quality-Based Effluent Limitations (WQBELs)

1. Scope and Authority

As specified in 40 CFR 122.44(d)(1)(i), permits are required to include WQBELs for pollutants (including toxicity) that are or may be discharged at levels that cause, have reasonable potential to cause, or contribute to an in-stream excursion above any state water quality standard. The process for determining reasonable potential and calculating WQBELs when necessary is intended to protect the designated uses of the receiving water as specified in the Basin Plan, and achieve applicable water quality objectives and criteria that are contained in other state plans and policies, or any applicable water quality criteria contained in the CTR and NTR.

2. Applicable Beneficial Uses and Water Quality Criteria and Objectives

a. **Receiving Water.** Currently, treated municipal and industrial wastewater is discharged from Discharge Point No. 001 to Cottonwood Creek, which is tributary to the Sacramento River approximately 4.5 miles downstream of the discharge point. The beneficial uses of Cottonwood Creek and the Sacramento River are described above in Section III.C.1 of this Fact Sheet.

b. **Hardness-Dependent Metals Criteria and Objectives.** The *California Toxics Rule* and the *National Toxics Rule* contain water quality criteria for seven metals that vary as a function of hardness. The Basin Plan also contains numeric objectives for several metals that vary as a function of hardness. The lower the hardness the lower the water quality criteria. The metals with hardness-dependent criteria or objectives include cadmium, copper, chromium III, lead, nickel, silver, and zinc.

This Order has established the criteria or objectives for hardness-dependent metals based on the reasonable worst-case ambient hardness as required by the

SIP[1], the CTR[2] and State Water Board Order No. WQO 2008-0008 (City of Davis). The SIP and the CTR require the use of "receiving water" or "actual ambient" hardness, respectively, to determine effluent limitations for these metals. (SIP, § 1.2; 40 CFR § 131.38(c)(4), Table 4, note 4.) The CTR does not define whether the term "ambient," as applied in the regulations, necessarily requires the consideration of upstream as opposed to downstream hardness conditions. In some cases, the hardness of effluent discharges changes the hardness of the ambient receiving water. Therefore, where reliable, representative data are available, the hardness value for calculating criteria can be the downstream receiving water hardness, after mixing with the effluent (Order WQO 2008-0008, p. 11). The Regional Water Board thus has considerable discretion in determining ambient hardness (*Id.*, p.10.).

The hardness values must also be protective under all flow conditions (*Id.*, pp. 10-11). As discussed below, in this Order, the lowest observed hardness in the effluent or upstream receiving water (whichever was lowest) was used to calculate the hardness-dependent criteria or objectives.

Reasonable Potential Analysis (RPA). The SIP in Section 1.3 states, "The RWQCB shall...determine whether a discharge may: (1) cause, (2) have a reasonable potential to cause, or (3) contribute to an excursion above any applicable priority pollutant criterion or objective." Section 1.3 provides a step-by-step procedure for conducting the RPA. The procedure requires the comparison of the Maximum Effluent Concentration (MEC) and Maximum Ambient Background Concentration to the applicable criterion or objective that has been properly adjusted for hardness.

- For comparing the MEC to the applicable criterion or objective, in accordance with the SIP, CTR, and Order WQO 2008-0008, the reasonable worst-case hardness was used to adjust the criterion or objective. In this Order, the lowest observed effluent or receiving water hardness (whichever was lower) was used as a conservative approach.

- For comparing the Maximum Ambient Background Concentration to the applicable criterion or objective, in accordance with the SIP, CTR, and Order WQO 2008-0008, the reasonable worst-case upstream hardness was used to adjust the criterion. In this evaluation the area outside the influence of the discharge is analyzed. For this situation, the discharge does not impact the upstream hardness. Therefore, the effect of the effluent hardness was not included in this evaluation.

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[1] The SIP does not address how to determine the hardness for application to the equations for the protection of aquatic life when using hardness-dependent metals criteria. It simply states, in Section 1.2, that the criteria shall be properly adjusted for hardness using the hardness of the receiving water.

[2] The CTR requires that, for waters with a hardness of 400 mg/L (as $CaCO_3$), or less, the actual ambient hardness of the surface water must be used. It further requires that the hardness values used must be consistent with the design discharge conditions for design flows and mixing zones.

Upstream receiving water hardness for Cottonwood Creek ranged from 55 mg/L to 135 mg/L (as $CaCO_3$), based on 40 samples collected between January 2006 to December 2009. The effluent hardness ranged from 64 mg/L to 113 mg/L (as $CaCO_3$), based on 41 samples from January 2006 to June 2009. Because Cottonwood Creek is not an effluent dominated stream, the lowest hardness of the receiving water (55 mg/L as $CaCO_3$) was used to represent a reasonable worst case receiving water hardness. Thus, for evaluating whether the MEC or Maximum Background Ambient Concentration exceeds the applicable criterion or objective, the criterion or objective was adjusted using a reasonable worst-case receiving water hardness of 55 mg/L (as $CaCO_3$).

Assimilative Capacity Determination for Hardness-Dependent Metals Criteria or Objectives. Hardness dependent metals determined to have reasonable potential include both copper and zinc. Analysis of ambient receiving water concentrations in Cottonwood Creek indicates large variation in total recoverable concentrations of copper and zinc. This variation is due to naturally occurring conditions, which include large flow variations and high sediment load. Ambient dissolved metals concentrations for the same metals exhibit far less variability and provide a more appropriate basis for determining how much assimilative capacity the receiving water has available for the dissolved metals present in the discharge. Assimilative capacity is typically determined using total recoverable concentrations, however the SIP, in section 1.4, step 2, allows for the determination of assimilative capacity using dissolved concentrations where appropriate (e.g., highly variable total recoverable concentrations with respect to corresponding dissolved concentrations). Furthermore, as stated in the CTR (Federal Register, Vol. 65, No. 97, Section F(2)(b) for 40 CFR, Part 131), "*It is now the Agency's [EPA's] policy that the use of dissolved metal to set and measure compliance with aquatic life water quality standards is the recommended approach, because dissolved metal more closely approximates the bioavailable fraction of the metal in the water column than does total recoverable metal*". Given the natural variation of total recoverable metals concentrations in the receiving water, SIP guidance, and EPA's policy, assimilative capacity for copper and zinc was determined using dissolved criteria and dissolved ambient background concentrations.

Effluent Concentration Allowance (ECA) Calculations. This Order followed SIP procedures to calculate an Effluent Concentration Allowance (ECA) for each of the hardness-dependent metals determined to have Reasonable Potential (copper and zinc, in this case). The SIP's ECA equation is presented below.

$ECA = C + D (C - B)$, when $C>B$, and
$ECA = C$, when $C<=B$,

where, C = the applicable priority pollutant criterion or objective,
D = the dilution credit, if granted, and
B = the ambient background pollutant concentration.

The factor, (C – B), is referred to as the assimilative capacity.

c. **Mixing Zones and Dilution Credits.** The CWA directs states to adopt water quality standards to protect the quality of its waters. USEPA's current water quality standards regulation authorizes states to adopt general policies, such as mixing zones, to implement state water quality standards (40 CFR 122.44 and 122.45). The USEPA allows states to have broad flexibility in designing its mixing zone policies. Primary policy and guidance on determining mixing zone and dilution credits is provided by the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays and Estuaries of California* (State Implementation Policy or SIP) and the Basin Plan. If no procedure applies in the SIP or the Basin Plan, then the Regional Water Board may use the USEPA Technical Support Document for Water Quality-Based Toxics Control (EPA/505/2-90-001)(TSD).

The allowance of mixing zones by the Central Valley Water Board is discussed in the Basin Plan, Policy for Application of Water Quality Objectives (Implementation page IV-16), which states in part, *"In conjunction with the issuance of NPDES and storm water permits, the Regional Board may designate mixing zones within which water quality objectives will not apply provided the discharger has demonstrated to the satisfaction of the Regional Board that the mixing zone will not adversely impact beneficial uses. If allowed, different mixing zones may be designated for different types of objectives, including, but not limited to, acute aquatic life objectives, chronic aquatic life objectives, human health objectives, and acute and chronic whole effluent toxicity objectives, depending in part on the averaging period over which the objectives apply. In determining the size of such mixing zones, the Regional Board will consider the applicable procedures and guidelines in the EPA's Water Quality Standards Handbook and the [TSD]. Pursuant to EPA guidelines, mixing zones designated for acute aquatic life objectives will generally be limited to a small zone of initial dilution in the immediate vicinity of the discharge."*

Section 1.4.2 of the SIP states, in part, *"…with the exception of effluent limitations derived from TMDLs, in establishing and determining compliance with effluent limitations for applicable human health, acute aquatic life, or chronic aquatic life priority pollutant criteria/objectives or the toxicity objective for aquatic life protection in a basin plan, the Regional Board may grant mixing zones and dilution credits to dischargers…The applicable priority pollutant criteria and objectives are to be met throughout a water body except within any mixing zone granted by a Regional Board. The allowance of mixing zones is discretionary and shall be determined on a discharge-by-discharge basis. The Regional Board*

may consider allowing mixing zones and dilution credits only for discharges with a physically identifiable point of discharge that is regulated through an NPDES permit issued by the Regional Board."

This Order only allows a mixing zone for aquatic life and human health criteria. For completely-mixed discharges, the Central Valley Water Board may grant a mixing zone and apply a dilution credit in accordance with Section 1.4.2.1 of the SIP. For incompletely-mixed discharges, the Discharger must perform a mixing zone study to demonstrate to the Central Valley Water Board that a dilution credit is appropriate. In granting a mixing zone, the SIP states that a mixing zone shall be as small as practicable, and as provided in Section 1.4.2.2, shall not:

(1) Compromise the integrity of the entire water body;
The downstream edge of the longest mixing zone being granted in this permit is 160 feet downstream of the diffuser. From the diffuser downstream to the confluence of the Sacramento River, is a distance of approximately 4.5 river miles. Mixing zones granted in this Order do not compromise the integrity of the entire water body. Based on the results of the biological assessment, the integrity of the water body is not impacted within the mixing zone, let alone outside of the mixing zone.

(2) Cause acutely toxic conditions to aquatic life passing through the mixing zone;
The Discharger is required to conduct quarterly whole effluent toxicity testing for acute toxicity. Based on these results and results of the biological assessment conducted to support the mixing zone application, acutely toxic conditions are not present within the mixing zone.

(3) Restrict the passage of aquatic life;
Based on results of the mixing zone study and biological assessment, mixing zones granted in this Order do not restrict the passage of aquatic life. A zone of passage is present in all cases.

(4) Adversely impact biologically sensitive or critical habitats, including, but not limited to, habitat of species listed under federal or State endangered species laws;
Results of the biological assessment suggest effects on the benthic macro invertebrate (BMI) community are insignificant just below and within the mixing zone. No biologically sensitive or critical habitats were observed during field surveys and BMI sampling. Results from acute and chronic whole effluent toxicity testing do not indicate that the discharge has adverse affects at 100% effluent, let alone diluted effluent. Discharger must continue to meet acute and chronic toxicity requirements as part of this Order.

(5) Produce undesirable or nuisance aquatic life;

Based on the observations of researchers who conducted the biological assessment for the mixing zone study, no significant differences in the density or species composition of algae were noted during surveys between the mixing and reference zones. No significant changes were observed in the benthic macro invertebrate (BMI) community, indicating that undesirable or nuisance conditions are not being created.

(6) Result in floating debris, oil, or scum;
The mixing zone request was for aquatic life and human health criteria and objectives. This Order implements stringent, pollutant-specific effluent limitations, and discharge prohibitions to prevent these conditions from occurring. Receiving water monitoring to detect any of these problems is also required. Historical monitoring of the effluent and receiving water has never indicated problems.

(7) Produce objectionable color, odor, taste, or turbidity;
The mixing zone request was for aquatic life and human health criteria and objectives. This Order implements stringent, pollutant-specific effluent limitations, and discharge prohibitions to prevent these conditions from occurring. Receiving water monitoring to detect any of these problems is also required. Historical monitoring of the effluent and receiving water has never indicated problems.

(8) Cause objectionable bottom deposits;
The mixing zone request was for aquatic life and human health criteria and objectives. This Order implements stringent, pollutant-specific effluent limitations, and discharge prohibitions to prevent these conditions from occurring. Receiving water monitoring to detect any of these problems is also required. Historical monitoring of the effluent and receiving water has never indicated problems.

(9) Cause nuisance;
The mixing zone request was for aquatic life and human health criteria and objectives. This Order implements stringent, pollutant-specific effluent limitations, and discharge prohibitions to prevent these conditions from occurring. Receiving water monitoring to detect any of these problems is also required. Historical monitoring of the effluent and receiving water has never indicated problems.

(10) Dominate the receiving water body or overlap a mixing zone from different outfalls; and
The subject diffuser is approximately 50 feet long and is positioned such that its reach (perpendicular to the width of Cottonwood Creek) is approximately 35 feet. Cottonwood Creek is approximately 110 feet wide in the vicinity of the diffuser. Mixing zones granted by this permit do not dominate the water body. There are no other permitted NPDES discharges to Cottonwood Creek.

(11) Be allowed at or near any drinking water intake.
The downstream edge of the longest mixing zone being granted in this permit is 160 feet downstream of the diffuser. There are no known drinking water intakes within the reach of this mixing zone. There are no known drinking water intakes from the diffuser downstream to the confluence of the Sacramento River, a distance of approximately 4.5 river miles.

The Discharger has completed an instream mixing zone study, subsequent biological evaluation with DFG consultation, and a complete anti-degradation analysis per State Board Resolution 68-16. The mixing zone study was conducted in August 2008 using Rhodamine WT dye and transects positioned downstream of the diffuser. Maximum dye concentrations were measured along each transect. Instream dye concentration-based dilution ratios were calculated as the ratio of the maximum measured dye concentration at each transect to the effluent dye concentration. The dye concentration-based dilution ratios calculated from the field study conditions were proportionally adjusted to the critical receiving water and effluent flow conditions per the SIP section 1.4.2.1. The critical receiving water flows were determined using USGS Gauging Station 11376000 data and EPA's DFLOW model. The critical effluent flows were determined using the Discharger's effluent monitoring records. The resulting Concentration-based Critical Dilution Ratios are summarized below.

	Concentration-based Critical Dilution Ratios		
Distance Downstream from Diffuser (ft)	**Acute Aquatic Life**	**Chronic Aquatic Life**	**Human Health**
50	2.35	2.61	9.60
100	2.62	2.91	10.65
150	5.14	5.71	20.78
Flow-based Critical Dilution Ratios per SIP Section 1.4.2.1, Table 3.	36	42	298

Based on the results of the mixing zone study and per guidelines presented in the SIP, an incompletely mixed discharge occurs in the vicinity of the diffuser. An evaluation of the 11 mixing zone conditions outlined above was conducted. Information submitted by the Discharger in a report, *Biological Assessment of the Cottonwood Wastewater Treatment Plant Mixing Zone: Cottonwood Creek* was considered.

As suggested by the SIP, in determining the extent of, or whether to, allow a mixing zone and dilution credit, the Central Valley Water Board has considered the presence of any pollutants in the discharge that are carcinogenic, mutagenic, teratogenic, persistent, bioaccumulative, or attractive to aquatic organisms, and concluded that the allowance of the mixing zone and dilution credit does not adversely affect the beneficial uses of the receiving water.

The mixing zone therefore complies with the SIP, the Basin Plan, a d applicable guidance. In determining the size of the mixing zone, the Central Valley Water Board has considered the procedures, guidelines, and references in the SIP, EPA's Water Quality Standards Handbook, 2nd Edition (updated July 2007), and Section 5.1, and Section 2.2.2 of the TSD. A summary of granted dilution credits is presented in Table F-6. In no case was the Discharger granted a dilution credit or mixing zone that is larger than necessary for the Discharger to comply after implementing Best Practicable Treatment or Control for each pollutant.

In order to ensure that the granting of dilution credits does not allow the Discharger to relax treatment or control performance, this Order requires: an annual evaluation of removal efficiency trends; an annual review of BPTC implementation; and annual instream verification of pollutant concentrations at the edge of the respective mixing zones. Full, and optimal implementation of BPTC is required at all times.

Table F-6. Summary of Granted Dilution Credit

Constituent	Dilution Credit	Corresponding Length of Mixing Zone	Criterion
Ammonia	5.5	158 ft	EPA NAWQC, Aquatic Life
Copper, Total Recoverable	5.5	158 ft	CTR CCC, Aquatic Life
Chlorodibromomethane	5	27 ft	CTR W&O, Human Health
Cyanide	5.5	158 ft	CTR CCC, Aquatic Life
Dichlorobromomethane	20	160 ft	CTR W&O, Human Health
Bis-2-ethylhexylphthalate	1	4ft	CTR W&O, Human Health
Nitrate as N	9	58 ft	USEPA Primary MCL & NAWQC
Zinc, Total Recoverable	5.5	158 ft	BP Instantaneous Max, Aquatic Life

d. **Metal Translators.** Effluent limits applicable to this discharge were calculated using USEPA default metals translators.

3. Determining the Need for WQBELs

a. CWA section 301 (b)(1) requires NPDES permits to include effluent limitations that achieve technology-based standards and any more stringent limitations necessary to meet water quality standards. Water quality standards include Central Valley Water Board Basin Plan beneficial uses and narrative and numeric water quality objectives, State Water Board-adopted standards, and federal standards, including the CTR and NTR. The Basin Plan includes numeric site-specific water quality objectives and narrative objectives for toxicity, chemical constituents, and tastes and odors. The narrative toxicity objective states: "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.*" (Basin Plan at III-8.00.) With regards to the narrative chemical constituents objective, the Basin Plan states that waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses. At a

minimum, "*...water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs)*" in Title 22 of CCR. The narrative tastes and odors objective states: "*Water shall not contain taste- or odor-producing substances in concentrations that impart undesirable tastes or odors to domestic or municipal water supplies or to fish flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses.*"

b. Federal regulations require effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause, or contribute to an in-stream excursion above a narrative or numerical water quality standard. Based on information submitted as part of the application, in studies, and as directed by monitoring and reporting programs, the Central Valley Water Board finds that the discharge has a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard from Discharge Point No. 001 to Cottonwood Creek for ammonia, chlorodibromomethane, copper, cyanide, dichlorobromomethane, bis-2-ethylhexylphthalate, zinc, and nitrate. WQBELs for these constituents are included in this Order. A summary of the reasonable potential analysis (RPA) is provided in Attachment G, and a detailed discussion of the RPA for each constituent is provided below.

c. The Central Valley Water Board conducted the RPA in accordance with Section 1.3 of the SIP. Although the SIP applies directly to the control of CTR priority pollutants, the State Water Board has held that the Regional Water Board may use the SIP as guidance for water quality-based toxics control.[1] The SIP states in the introduction "*The goal of this Policy is to establish a standardized approach for permitting discharges of toxic pollutants to non-ocean surface waters in a manner that promotes statewide consistency.*" Therefore, in this Order the RPA procedures from the SIP were used to evaluate reasonable potential for both CTR and non-CTR constituents.

d. WQBELs were calculated in accordance with section 1.4 of the SIP, as described in Attachment F, Section IV.C.4.

e. **Ammonia.** Untreated domestic wastewater contains ammonia. Nitrification is a biological process that converts ammonia to nitrite and nitrite to nitrate. Denitrification is a process that converts nitrate to nitrite or nitric oxide and then to nitrous oxide or nitrogen gas, which is then released to the atmosphere. The Discharger currently uses nitrification to remove ammonia from the waste stream. Inadequate or incomplete nitrification may result in the discharge of ammonia to the receiving stream. Ammonia is known to cause toxicity to aquatic organisms in surface waters. Discharges of ammonia at toxic concentrations would violate the Basin Plan narrative toxicity objective. Applying 40 CFR 122.44(d)(1)(vi)(B), it is appropriate to use the NAWQC for the protection of freshwater aquatic life for ammonia.

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[1] See, Order WQO 2001-16 (Napa) and Order WQO 2004-0013 (Yuba City).

The NAWQC for the protection of freshwater aquatic life for total ammonia, recommends acute (1-hour average; criteria maximum concentration or CMC) standards based on pH and chronic (30-day average; criteria continuous concentration or CCC) standards based on pH and temperature. USEPA also recommends that no 4-day average concentration should exceed 2.5 times the 30-day CCC. USEPA found that as pH increased, both the acute and chronic toxicity of ammonia increased. Salmonids were more sensitive to acute toxicity effects than other species. However, while the acute toxicity of ammonia was not influenced by temperature, it was found that invertebrates and young fish experienced increasing chronic toxicity effects with increasing temperature. As discussed in section III.C.1 of this Fact Sheet, warm and cold SPWN beneficial uses have been applied to Cottonwood Creek. Fall-run Chinook, Late-fall-run Chinook, Spring-run Chinook, and Steelhead trout are present in Cottonwood Creek. Therefore, the recommended criteria for waters where salmonids and early life stages are present were used.

The maximum permitted effluent pH is 8.5, as the Basin Plan objective for pH in the receiving stream is the range of 6.5 to 8.5. In order to protect against the worst-case short-term exposure of an organism, a pH value of 8.5 was used to derive the acute criterion. The resulting acute criterion is 2.14 mg/L.

The Discharger collects downstream receiving water temperature and pH data monthly. This data obtained from the Discharger's monthly monitoring reports from January 2006 through June 2009 were used to develop the chronic criteria. Using downstream receiving water data, the 30-day CCC was calculated for each day when temperature and pH were measured. Based on the highest running average downstream receiving water pH of 7.6, and the highest running average downstream receiving water temperature of 27.5°C, the 30-day CCC is 1.72 mg/L (as N) for the discharge to Cottonwood Creek. The 4-day average concentration is derived in accordance with the USEPA criterion as 2.5 times the 30-day CCC. Based on the 30-day CCC of 1.72 mg/L (as N), the 4-day average concentration that should not be exceeded is 4.30 mg/L (as N).

The Central Valley Water Board calculates WQBELs in accordance with SIP procedures for non-CTR constituents, and ammonia is a non-CTR constituent. The SIP procedure assumes a 4-day averaging period for calculating the long-term average discharge condition (LTA). However, USEPA recommends modifying the procedure for calculating permit limits for ammonia using a 30-day averaging period for the calculation of the LTA corresponding to the 30-day CCC. Therefore, while the LTAs corresponding to the acute and 4-day chronic criteria were calculated according to SIP procedures, the LTA corresponding to the 30-day CCC was calculated assuming a 30-day averaging period. The lowest LTA representing the acute, 4-day average, and 30-day CCC is then selected for deriving the average monthly effluent limitation (AMEL) and the maximum daily effluent limitation (MDEL). The remainder of the WQBEL calculation for ammonia was performed according to the SIP procedures.

The Discharger has collected receiving water data to demonstrate assimilative capacity in Cottonwood Creek for ammonia. As described in Fact Sheet section IV.C.2.c, a dilution credit for ammonia of 5.5 can be granted, based on the available aquatic life dilution. Therefore, this Order includes an AMEL and MDEL for ammonia of 13.7 and 36.5 mg/L, respectively, based on the NAWQC for the protection of freshwater aquatic life, and a dilution credit of 5.5 for discharges to Cottonwood Creek (see Attachment F, Table F-8 for WQBEL calculations).

Based on the sample results for the effluent and the Facility's historical performance record, it appears the Discharger can immediately comply with these limitations.

f. **Bis-2-ethylhexylphthalate.** Bis-2-ethylhexylphthalate, in addition to several other phthalates, is used primarily as one of several plasticizers in polyvinyl chloride (PVC) resins for fabricating flexible vinyl products. According to the Consumer Product Safety Commission, USEPA, and the Food and Drug Administration, these PVC resins are used to manufacture many products, including soft squeeze toys, balls, raincoats, adhesives, polymeric coatings, components of paper and paperboard, defoaming agents, animal glue, surface lubricants, and other products that must stay flexible and non-injurious for the lifetime of their use. The State MCL for bis-2-ethylhexylphthalate is 4 µg/L and the USEPA MCL is 6 µg/L. The NTR criterion for human health protection for consumption of water and aquatic organisms is 1.8 µg/L and for consumption of aquatic organisms only is 5.9 µg/L.

Bis-2-ethylhexylphthalate was detected in 13 of 42 effluent samples collected between January 2006 and June 2009. The reported MEC is 3 µg/L. Six samples were reported at 2 µg/L, six samples were reported at 1 µg/L, and the remaining samples were reported non-detect. Per SIP section 1.4.3.2, ECA calculations for a priority pollutant criterion/objective that are intended to protect human health from carcinogenic effects are based on the ambient background concentration as an arithmetic mean. In this case, one sample has been collected upstream of the discharge in December 2005, with a resulting concentration of <0.7 µg/L. The arithmetic mean background concentration was calculated as one-half the detection limit of <0.7 µg/L or 0.35 µg/L. Cottonwood Creek has assimilative capacity for bis-2-ethylhexylphthalate. As described in section IV.C.2.c, a dilution credit of 1 can be granted, based on available human health dilution.

Using this value, the resulting AMEL and MDEL are 3.57 and 9.56, respectively (see Attachment F, Table F-13 for WQBEL calculations). It appears, based on the historic data set, that the Discharger can immediately comply with these new limits. Effluent limits for bis-2-ethylhexylphthalate are a new regulatory requirement within this permit.

g. **Carbon Tetrachloride.** Carbon tetrachloride is a clear heavy organic liquid with a sweet aromatic odor similar to chloroform. It is primarily used to make chlorofluorocarbon propellants and refrigerants, though its use has been declining steadily. It has also been used as dry cleaning agent and in fire extinguishers, in making nylon, as a solvent for rubber cement, soaps, insecticides, etc. The CTR criterion for human health protection for consumption of water and aquatic organisms for carbon tetrachloride is 0.25 ug/L.

   The MEC for carbon tetrachloride was estimated at 3 ug/L (J flag), based on 2 samples collected in 2006. Carbon tetrachloride was not detected in two upstream receiving water in Cottonwood Creek. Because only limited carbon tetrachloride data exists, only one of the two samples contained detectable concentrations (estimated concentration only), and no known sources of carbon tetrachloride contribute to the wastewater stream, insufficient information exists to determine reasonable potential. This Order requires quarterly monitoring for carbon tetrachloride. Should monitoring results indicate that the discharge has the reasonable potential to cause or contribute to an exceedance of a water quality criterion, this Order may be reopened and modified by adding an appropriate effluent limitation.

h. **Chlorodibromomethane.** The CTR includes a chlorodibromomethane criterion of 0.41 ug/L for the protection of human health and is based on a one-in-a-million cancer risk for waters from which both water and organisms are consumed. The MEC for chlorodibromomethane was 30.1 ug/L, based on 39 samples collected between February 2006 and June 2009. The next highest detectable concentration during this period was 1.8 ug/L with an average concentration (using one-half the MDL for non-detect values) of 1.09 ug/L. No sample data for chlorodibromomethane is available for the upstream receiving water during this period, however for the purposes of developing a protective effluent limit, two data points, one obtained in January 2002 (<0.5 ug/L) and one in December 2005 (0.1 ug/L "J Flagged") were utilized. Based on the effluent data, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criterion for chlorodibromomethane.

   Per SIP section 1.4.3.2, ECA calculations for a priority pollutant criterion/ objective that are intended to protect human health from carcinogenic effects are based on the ambient background concentration as an arithmetic mean. In this case ambient background concentration as an arithmetic mean was calculated using one-half the January 2002 concentration plus the full December 2005 "J-Flag" value divided by 2 to obtain an ambient background concentration of 0.175. Ambient monitoring demonstrates Cottonwood Creek has assimilative capacity for chlorodibromomethane. As described in section IV.C.2.c, a dilution credit for chlorodibromomethane of 5 can be granted, based on the available human health dilution. As shown in Table F-9, this results in an AMEL and MDEL of 1.53 ug/L and 3.80 ug/L, respectively.

As previously discussed the MEC for chlorodibromomethane was 30.1 ug/L. Using this value and the remaining 40 samples in the data set, the 99.9% upper confidence level was estimated at 2.93 ug/L. The average effluent concentration was 1.09 ug/L, therefore it appears, based on the facility's historic performance record, the Discharger can immediately comply with these limitations. As mentioned the Discharger is completing the installation of automated disinfection controls at the facility. This improvement is expected to reduce the concentration of chlorodibromomethane in the effluent. Effluent limitations for chlorodibromomethane are a new regulatory requirement within this permit, which becomes applicable to the waste discharge with the adoption of this Order.

i. **Copper.** The CTR and the Basin Plan include hardness-dependent criteria and objectives for the protection of freshwater aquatic life for copper. The criteria and objectives are presented in dissolved concentrations. USEPA recommends conversion factors to calculate total recoverable criteria. The USEPA default conversion factors for copper in freshwater are 0.96 for both the acute and the chronic criteria. Using the reasonable worst-case representative ambient hardness of 55 mg/L as $CaCO_3$, as described in section IV.C.2.b of this Fact Sheet, and the default conversion factors, the applicable chronic criterion (maximum 4-day average concentration) is 5.60 ug/L and the applicable acute criterion (maximum 1-hour average concentration) is 7.81 ug/L, as total recoverable concentrations.

The MEC for total copper was 39.9 ug/L, based on 42 samples collected between January 2006 and June 2009. The maximum observed upstream receiving water concentration was 168 ug/L based on 34 samples collected between January 2006 and June 2009. Because total copper in the effluent or upstream receiving water exceeds the criteria or objectives, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the criteria or objectives.

As described in section IV.C.2.b of the Fact Sheet, the ECA_{acute} and $ECA_{chronic}$ for discharges to Cottonwood Creek were determined using a hardness of 55 mg/L (as $CaCO_3$), which is protective under all discharge and mixing conditions. Using the procedures for calculating WQBELs in section 1.4 of the SIP, and as described in section IV.C.2.b of the Fact Sheet (including a dilution credit of 5.5), this results in an ECA_{acute} and an $ECA_{chronic}$ for copper of 41.5 ug/L and 26.1 ug/L, respectively. These ECAs are adjusted to long term averages, and then calculated as an AMEL and MDEL for total copper of 20.9 ug/L and 41.5 ug/L, respectively. These limits are included in this Order (see Attachment F, Table F-10 for WQBEL calculations).

As previously discussed, the MEC for total copper was 39.9 ug/L. Using this value and the remaining 41 samples in the data set, the 99.9% upper confidence level was estimated at 30.0 ug/L. With the exception of 39.9 ug/L all effluent concentrations in the data set fall below 30.0 ug/L. Also, after the 39.9 ug/L concentration, the next highest value was 19.8 ug/L. Therefore it appears, based

on the facility's historical performance record, the Discharger can immediately comply with the AMEL and MDEL.

j. **Cyanide.** The CTR includes maximum 1-hour average and 4-day average cyanide criteria concentrations of 22 ug/L and 5.2 ug/L, respectively for the protection of freshwater aquatic life. The Basin Plan also includes criteria for the protection of freshwater aquatic life for cyanide. The Basin Plan instantaneous maximum objective is 10 ug/L. The MEC for cyanide was 20 ug/L, based on 41 samples collected between January 2006 and June 2009, while the maximum observed upstream receiving water cyanide concentration was <2 ug/L, based on 2 samples collected in January 2002 and December 2005. Therefore, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR and Basin Plan criteria for cyanide. The ambient monitoring demonstrates the receiving water has assimilative capacity for cyanide. As described in section IV.C.2.c, a dilution credit for cyanide of 5.5 can be granted, based on the available dilution.

   Therefore, using the allowed aquatic life dilution credit of 5.5, an AMEL and MDEL for cyanide of 20.69 ug/L and 51.52 ug/L, respectively, are included in this Order based on the CTR criterion for the protection of aquatic life for discharges to Cottonwood Creek (see Attachment F, Table F-11 for WQBEL calculations).

k. **Dichlorobromomethane.** The CTR includes a dichlorobromomethane criterion of 0.56 ug/L for the protection of human health and is based on a one-in-a-million cancer risk for waters from which both water and organisms are consumed. The MEC for dichlorobromomethane was 22.5 ug/L, based on 41 samples collected between January 2006 and June 2009. No sample data for dichlorobromomethane is available for the upstream receiving water during this period, however for the purposes of developing a protective effluent limit, two data points, one obtained in January 2002 (<0.5 ug/L) and December 2005 (estimated concentration of 0.06 ug/L) were utilized. Based on the effluent data, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criterion for dichlorobromomethane.

   Per SIP section 1.4.3.2, ECA calculations for a priority pollutant criterion/ objective that are intended to protect human health from carcinogenic effects are based on the ambient background concentration as an arithmetic mean. In this case ambient background concentration as an arithmetic mean was calculated using one-half the January 2002 concentration plus the full December 2005 "J-Flag" value divided by 2 to obtain an ambient background concentration of 0.155. The ambient monitoring demonstrates Cottonwood Creek has assimilative capacity for dichlorobromomethane. As described in section IV.C.2.c, a dilution credit for dichlorobromomethane of 20 can be granted, based on the available human health dilution.

   Therefore, using the allowed human health dilution credit of 20, an AMEL and MDEL for dichlorobromomethane of 8.62 ug/L and 29.61 ug/L, respectively, are

included in this Order based on the CTR criterion for the protection of human health for discharges to Cottonwood Creek (see Attachment F, Table F-12 for WQBEL calculations).

As previously discussed the MEC for dichlorobromomethane was 22.5 ug/L. Using this value and the remaining 40 samples in the data set, the 99.9% upper confidence level was estimated at 5.14. With the exception of 22.5 ug/L, the next highest detectable effluent concentrations are 8.2 ug/L, therefore it appears, based on the facility's historical performance record, the Discharger can immediately comply with these limitations. As mentioned the Discharger is completing the installation of automated disinfection controls at the facility. This improvement is expected to reduce the concentration of dichlorobromomethane in the effluent. Effluent limitations for dichlorobromomethane are a new regulatory requirement within this permit, which becomes applicable to the waste discharge with the adoption of this Order.

l. **Dissolved Oxygen.** The Basin Plan contains a water quality objective for dissolved oxygen requiring that the dissolved oxygen concentrations of waters designated as COLD and SPWN shall not be reduced below 7.0 mg/L at any time. This Order contains receiving water limitations and monitoring to ensure that the Basin Plan objectives for Dissolved Oxygen are met. Historical monitoring results indicate that the discharge does not have reasonable potential to cause or contribute to an in-stream excursion below (non-compliant) the Basin Plan water quality objective for Dissolved Oxygen.

m. **Nitrate.** Untreated domestic wastewater contains ammonia. Nitrification is a biological process that converts ammonia to nitrite and nitrite to nitrate. Denitrification is a process that converts nitrate to nitrogen gas, which is then released to the atmosphere. Nitrate and nitrite are known to cause adverse health effects in humans. DPH has adopted a Primary MCL at Title 22 CCR, Table 64431-A, for the protection of human health for nitrate equal to 10 mg/L (measured as nitrogen). Title 22 CCR, Table 64431 A, also includes a primary MCL of 10,000 ug/L (10 mg/L) for the sum of nitrate and nitrite, measured as nitrogen.

For nitrate, USEPA has developed Drinking Water Standards (10,000 ug/L as Primary MCL) and NAWQC for protection of human health (10,000 ug/L for non-cancer health effects). Recent toxicity studies have indicated a possibility that nitrate is toxic to aquatic organisms.

Inadequate or incomplete denitrification may result in the discharge of nitrate and/or nitrite to the receiving stream. The conversion of ammonia to nitrites and the conversion of nitrites to nitrates present a reasonable potential for the discharge to cause or contribute to an in-stream excursion above the Primary MCLs for nitrate. The MEC for nitrate, based on 42 samples collected between January 2006 and June 2009, was reported as 88 mg/L with an average

concentration of 44.69 mg/L. Discharger has not collected nitrate data upstream of the discharge, however the California Department of Water Resources collects ambient data from Station A0352050 upstream of the discharge; of 16 samples collected between February 2003 and August 2009, a maximum concentration of 0.24 mg/L was detected. This value demonstrates Cottonwood Creek has assimilative capacity for nitrate. As described in section IV.C.2.c, a dilution credit for nitrate of 9 can be granted, based on the available human health dilution. Therefore, using the allowed human health dilution credit of 9, an AMEL for nitrate of 90 mg/L is included in this Order based on the Primary MCL and NAWQC criterion for the protection of human health for discharges to Cottonwood Creek (see Attachment F, Table F-13 for WQBEL calculations). Effluent monitoring data indicates that the Discharger can immediately comply with the new limit.

Effluent limitations for nitrate are a new regulatory requirement within this permit, which becomes applicable to the waste discharge with the adoption of this Order.

n. **Pathogens**. The beneficial uses of Cottonwood Creek include municipal and domestic supply, water contact recreation, and agricultural irrigation supply. To protect these beneficial uses, the Central Valley Water Board finds that the wastewater must be disinfected and adequately treated to prevent disease. Coliform limits are imposed to protect the beneficial uses of the receiving water, including public health through contact recreation and drinking water pathways. In a letter to the Central Valley Water Board data 8 April 1999, the California Department of Health Services (DHS, now California Department of Public Health) indicated that DHS would consider wastewater discharged to water bodies with identified beneficial uses of irrigation or contact recreation and where the wastewater receives dilution of more than 20:1 to be adequately disinfected if the effluent coliform concentration does not exceed 23 MPN/100 mL as a 7-day median and if the effluent coliform concentration does not exceed 240 MPN/100 mL more than once in any 30 day period. This Order contains a 500 MPN/100mL daily maximum effluent coliform limit, 23 MPN/100mL as a 7-day median effluent limitation, and 240 MPN/100mL as a shall not exceed more than once per month maximum effluent limitation.

n. **Pesticides.** Aldrin, Alpha Benzene Hexachloride (Alpha-BHC), and Gamma Hexachloro-cyclohexane (Gamma-BHC), constituents commonly found in pesticides have been detected in effluent during the most recent permit cycle. The Basin Plan contains water quality objectives applicable to pesticides for waters with the designated beneficial use of Municipal Supply (MUN). Cottonwood Creek is designated MUN, however specific MCLs for Aldrin, Alpha-BHC, and Gamma-BHC are not available. Applicable water quality objectives for each constituent are discussed below.

o. **Aldrin.** The CTR includes an Aldrin criterion of 0.00013 µg/L for the protection of human health and is based on a one-in-a-million cancer risk for water from which both water and organisms are consumed. The MEC for Aldrin was 0.043 µg/L

based on two samples collected in November 2006. Aldrin was not detected in two samples (January 2002 at <0.002, and December 2005 at <0.002) in upstream receiving water samples in Cottonwood Creek. The existing information is insufficient to determine if the discharge has reasonable potential to exceed water quality objectives. Therefore, this Order requires quarterly monitoring of Aldrin. In the event, monitoring results confirm reasonable potential exists, this Order may be reopened for the purposes of establishing an effluent limit for Aldrin.

p. **Alpha Benzene Hexachloride (Alpha-BHC, or a-BHC).** The CTR includes an Alpha-BHC criterion of 0.014 µg/L for the protection of human health and is based on a one-in-a-million cancer risk for water from which both water and organisms are consumed. The MEC for Alpha-BHC was 0.031 µg/L based on two samples collected in November 2006. Alpha-BHC was not detected in two samples (January 2002 at <0.005, and December 2005 at <0.005) in upstream receiving water samples in Cottonwood Creek. The existing information is insufficient to determine if the discharge has reasonable potential to exceed water quality objectives. Therefore, this Order requires quarterly monitoring of Alpha-BHC. In the event, monitoring results confirm reasonable potential exists, this Order may be reopened for the purposes of establishing an effluent limit for Alpha-BHC.

q. **Gamma Hexachloro-cyclohexane (Gamma-BHC, or g-BHC).** The CTR includes a Gamma-BHC criterion of 0.019 µg/L for the protection of human health and is based on a one-in-a-million cancer risk for water from which both water and organisms are consumed. The MEC for Gamma-BHC was 0.024 µg/L based on two samples collected in November 2006. Aldrin was not detected in two samples (January 2002 at <0.005 and December 2005 at <0.005) in upstream receiving water samples in Cottonwood Creek. The existing information is insufficient to determine if the discharge has reasonable potential to exceed water quality objectives. Therefore, this Order requires quarterly monitoring of Gamma-BHC. In the event, monitoring results confirm reasonable potential exists, this Order may be reopened for the purposes of establishing an effluent limit for Gamma-BHC.

r. **pH.** The Basin Plan includes a water quality objective for surface waters (except for Goose Lake) that the "*...pH shall not be depressed below 6.5 nor raised above 8.5.* Effluent Limitations for pH are included in this Order based on the Basin Plan objectives for pH.

s. **pH.** The Basin Plan includes a water quality objective for surface waters (except for Goose Lake) that the "*...pH shall not be depressed below 6.5 nor raised above 8.5.* Effluent Limitations for pH are included in this Order based on the Basin Plan objectives for pH.

t. **Salinity.** The discharge contains total dissolved solids (TDS) and electrical conductivity (EC). These are water quality parameters that are indicative of the salinity of the water. Their presence in water can be growth limiting to certain

agricultural crops and can affect the taste of water for human consumption. There are no USEPA water quality criteria for the protection of aquatic organisms for these constituents. The Basin Plan contains a chemical constituent objective that incorporates State MCLs, contains a narrative objective, and contains numeric water quality objectives for EC, TDS, sulfate, and chloride.

Table F-7. Salinity Water Quality Criteria/Objectives

Parameter	Agricultural WQ Goal[1]	Secondary MCL[3]	Effluent	
			Average	Maximum
EC (umhos/cm)	700[2]	900; 1,600; 2,200	495	702
TDS (mg/L)	Varies	500; 1,000; 1,500	361	467
Sulfate (mg/L)	Varies	250; 500; 600	Data Not Available	
Chloride (mg/L)	Varies	250; 500; 600	Data Not Available	

1 Agricultural water quality goals based on *Water Quality for Agriculture*, Food and Agriculture Organization of the United Nations—Irrigation and Drainage Paper No. 29, Rev. 1 (R.S. Ayers and D.W. Westcot, Rome, 1985)

2 The EC level in irrigation water that harms crop production depends on the crop type, soil type, irrigation methods, rainfall, and other factors. An EC level of 700 umhos/cm is generally considered to present no risk of salinity impacts to crops. However, many crops are grown successfully with higher salinities.

3 The secondary MCLs are stated as a recommended level, upper level, and a short-term maximum level.

i. **Chloride**. The previous order did not require Discharger to collect samples for chloride analysis. Therefore, insufficient information exists to conduct a reasonable potential analysis for chloride. This Order requires increased monitoring for chloride.

ii. **Electrical Conductivity**. The secondary MCL for electrical conductivity is 900 umhos/cm as a recommended level; 1,600 umhos/cm as an upper level; and 2,200 umhos/cm as a short-term maximum. The agricultural water quality goal for salt-sensitive crops is 700 umhos/cm as an annual average. It is unverified whether or not salt sensitive crops are or could be grown in the vicinity downstream of the discharge, therefore the conservative approach is to apply the agricultural goal of 700 umhos/cm.

A review of the Discharger's monitoring reports from January 2006 through June 2009 shows an average effluent electrical conductivity of 495 umhos/cm, with a range from 222 umhos/cm to 702 umhos/cm for 40 samples. These levels do not exceed the applicable objective of 700 umhos/cm as an annual average. The background receiving water electrical conductivity concentration in Cottonwood Creek averaged 243 umhos/cm in 40 sampling events collected by the Discharger from January 2006 through June 2009. Therefore, there is no reasonable potential to exceed the applicable water quality objective. This Order requires effluent and receiving water monitoring for EC.

iii. **Sulfate**. The previous order did not require the Discharger to collect samples for sulfate analysis. Therefore, insufficient information exists to conduct a

reasonable potential analysis for sulfate. This Order requires increased monitoring for sulfate.

iv. **Total Dissolved Solids.** The secondary MCL for total dissolved solids is 500 mg/L as a recommended level; 1,000 mg/L as an upper level; and 1,500 mg/L as a short-term maximum. The recommended agricultural water quality goal for total dissolved solids, that would apply the narrative chemical constituent objective, is 450 mg/L as a long-term average based on *Water Quality for Agriculture, Food and Agriculture Organization of the United Nations—Irrigation and Drainage Paper No. 29, Rev. 1 (R.S. Ayers and D.W. Westcot, Rome, 1985)*. Water Quality for Agriculture evaluates the impacts of salinity levels on crop tolerance and yield reduction, and establishes water quality goals that are protective of the agricultural uses. The 450 mg/L water quality goal is intended to prevent reduction in crop yield, i.e., a restriction on use of water, for salt-sensitive crops. Only the most salt sensitive crops require irrigation water of 450 mg/L or less to prevent loss of yield. Most other crops can tolerate higher total dissolved solids concentrations without harm, however, as the salinity of the irrigation water increases, more crops are potentially harmed by the total dissolved solids, or extra measures must be taken by the farmer to minimize or eliminate any harmful impacts.

The average total dissolved solids effluent concentration was 361 mg/L; concentrations ranged from 268 mg/L to 467 mg/L for 42 samples collected by the Discharger from January 2006 through June 2009. The average concentration of 361 mg/L does not exceed the applicable water quality objectives. Background receiving water monitoring for total dissolved solids is not available for Cottonwood Creek. Therefore, there is no reasonable potential to exceed the applicable water quality objective. This Order requires effluent and receiving water monitoring for total dissolved solids.

v. **Salinity Effluent Limitations and Evaluation and Minimization Plan.** The average electrical conductivity in the discharge is 495 umhos/cm, which is less than the lowest applicable objective of 700 umhos/cm (agricultural water quality goal). The average total dissolved solids effluent concentration of 361 mg/L is less than the agricultural water quality objective of 450 mg/L. Insufficient information was available for sulfate and chloride. Based on the available information, no reasonable potential exists, therefore no effluent limitations are necessary. Nonetheless, in an effort to minimize salt loading to Cottonwood Creek and the Sacramento River, this Order requires the Discharger to prepare and submit a Salinity Evaluation and Minimization Plan to address sources of salinity from the Facility.

u. **Toxicity.** See Section IV.C.5 of the Fact Sheet regarding whole effluent toxicity.

v. **Zinc.** The CTR and Basin Plan include hardness-dependent criteria and objectives for the protection of freshwater aquatic life for zinc. The criteria and objectives are presented in dissolved concentrations. USEPA recommends

conversion factors to calculate total recoverable criteria. The USEPA default conversion factors for zinc in freshwater are 0.978 and 0.986 for acute and chronic criteria, respectively. Using the reasonable worst-case representative ambient hardness of 55 mg/L as $CaCO_3$, as described in section IV.C.2.b of this Fact Sheet, and the default conversion factors, the applicable chronic criterion (maximum 4-day average concentration) is 21.3 ug/L and the applicable acute criterion (maximum 1-hour average concentration) is 72.2 ug/L, as total recoverable concentrations.

The MEC for total zinc was 128 ug/L, based on 42 samples collected between January 2006 and June 2009. The maximum observed upstream receiving water concentration was 422 ug/L based on 34 samples collected between January 2006 and June 2009. Because total zinc in the effluent or upstream receiving water exceeds the criteria or objectives, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the criteria or objectives.

As described in section IV.C.2.b of the Fact Sheet, the ECA_{acute} and $ECA_{chronic}$ for discharges to Cottonwood Creek were determined using a hardness of 55 mg/L (as $CaCO_3$), which is protective under all discharge and mixing conditions. Using the procedures for calculating WQBELs in section 1.4 of the SIP, and as described in section IV.C.2.b of the Fact Sheet (including a dilution credit of 5.5), this results in an ECA_{acute} and an $ECA_{chronic}$ for zinc of 131.3 ug/L and 462.1 ug/L, respectively. These ECAs are adjusted to long term averages, and then calculated as an AMEL and MDEL for total zinc of 77.6 ug/L and 131.3 ug/L, respectively. These limits are included in this Order (see Attachment F, Table F-13 for WQBEL calculations).

As previously discussed the MEC for total zinc was 128 ug/L. Using this value and the remaining 41 samples in the data set, the 99.9% upper confidence level was estimated at 108. With the exception of the 128 ug/L and 113 ug/L sample data all effluent concentrations in the data set fall below 108 ug/L, therefore it appears, based on the facility's historical performance record, the Discharger can immediately comply with the AMEL and MDEL.

4. WQBEL Calculations

a. As discussed in section IV.C.3. above, WQBELs for chlorine residual and pH were based on Basin Plan objectives and applied directly as effluent limitations. WQBELs for pathogens were based on California DPH recommendations. The WQBEL for nitrate was based on the Primary MCL and established directly as an AMEL.

b. Effluent limitations for ammonia, chlorodibromomethane, copper, cyanide, dichlorobromomethane, bis-2-ethylhexylphthalate, and zinc were calculated in accordance with section 1.4 of the SIP. The following paragraphs describe the methodology used for calculating effluent limitations.

Effluent Limitation Calculations. In calculating maximum effluent limitations, the effluent concentration allowances were calculated as follows:

$ECA_{HH} = HH + D(HH - B)$, (as a human health example)

where:

ECA_{acute} = effluent concentration allowance for acute (1-hour average) toxicity criterion

$ECA_{chronic}$ = effluent concentration allowance for chronic (4-day average) toxicity criterion

ECA_{HH} = effluent concentration allowance for human health, agriculture, or other long-term criterion/objective

CMC = criteria maximum concentration (1-hour average)

CCC = criteria continuous concentration (4-day average, unless otherwise noted)

HH = human health, agriculture, or other long-term criterion/objective

D = dilution credit

B = maximum receiving water concentration

Acute and chronic toxicity ECAs were then converted to equivalent long-term averages (LTA) using statistical multipliers and the lowest is used. Additional statistical multipliers were then used to calculate the maximum daily effluent limitation (MDEL) and the average monthly effluent limitation (AMEL).

Human health ECAs are set equal to the AMEL and a statistical multiplier is used to calculate the MDEL.

$$AMEL = mult_{AMEL}\left[\overbrace{\min(M_A ECA_{acute}, M_C ECA_{chronic})}^{LTA_{acute}}\right]$$

$$MDEL = mult_{MDEL}\left[\underbrace{\min(M_A ECA_{acute}, M_C ECA_{chronic})}_{LTA_{chronic}}\right]$$

$$MDEL_{HH} = \left(\frac{mult_{MDEL}}{mult_{AMEL}}\right) AMEL_{HH}$$

where:
$mult_{AMEL}$ = statistical multiplier converting minimum LTA to AMEL
$mult_{MDEL}$ = statistical multiplier converting minimum LTA to MDEL
M_A = statistical multiplier converting CMC to LTA
M_C = statistical multiplier converting CCC to LTA

WQBELs were calculated for ammonia, chlorodibromomethane, copper, cyanide, dichlorobromomethane, bis-2-ethylhexylphthalate, and zinc as follows in Tables F-8 through F-14, below.

Table F-8. WQBEL Calculations for Ammonia

	Acute	Chronic (4-day)	Chronic (30-day)
Criteria (mg/L)[1]	5.62	4.3	1.72
Dilution Credit	5.5	5.5	5.5
ECA	36.48	27.90	11.13
ECA Multiplier	0.18	0.33	0.63
LTA[2]	6.52	9.22	6.99
AMEL Multiplier (95th%)	2.10	[3]	[3]
AMEL (mg/L)	**13.7**	[3]	[3]
MDEL Multiplier (99th%)	5.59	[3]	[3]
MDEL (mg/L)	**36.5**	[3]	[3]

1 USEPA Ambient Water Quality Criteria.
2 LTA developed based on Acute and Chronic ECA Multipliers calculated at 99th percentile level per sections 5.4.1 and 5.5.4 of TSD.
3 Limitations based on acute LTA ($LTA_{acute} < LTA_{chronic(4\text{-}day)}$ and $LTA_{acute} < LTA_{chronic(30\text{-}day)}$).

Table F-9. WQBEL Calculations for Chlorodibromomethane

	Human Health
Criteria (ug/L)	0.41
Dilution Credit	5
ECA	1.53
AMEL (ug/L)[1]	**1.53**
MDEL/AMEL Multiplier[2]	1.91
MDEL (ug/L)	**3.80**

1 AMEL = ECA per section 1.4.B, Step 6 of SIP
2 Assumes sampling frequency n=4. Uses MDEL/AMEL multiplier from Table 2 of SIP.

Table F-10. WQBEL Calculations for Copper

	Acute	Chronic
Criteria, total recoverable (ug/L) (1)	7.81	5.6
Dilution Credit	5.5	5.5
ECA, total recoverable (2)	41.5	26.1
ECA Multiplier (3)	0.33	0.53
LTA	13.53	13.90
AMEL Multiplier (95th%) (4)(5)	1.54	(7)
AMEL (ug/L)	**20.9**	(7)
MDEL Multiplier (99th%) (6)	3.07	(7)
MDEL (ug/L)	**41.5**	(7)

1 CTR aquatic life criteria, based on a hardness of 55 mg/L as $CaCO_3$. The criteria are based on USEPA default metals translator.
2 ECA calculated per section 1.4.B, Step 2 of SIP.
3 Acute and Chronic ECA Multiplier calculated at 99th percentile per section 1.4.B, Step 3 of SIP or per sections 5.4.1 and 5.5.4 of the TSD.
4 Assumes sampling frequency n<=4.
5 The probability basis for AMEL is 95th percentile per section 1.4.B, Step 5 of SIP or section 5.5.4 of the TSD.
6 The probability basis for MDEL is 99th percentile per section 1.4.B, Step 5 of SIP or section 5.5.4 of the TSD.
7 Limitations based on acute LTA (Acute LTA < Chronic LTA).

Table F-11. WQBEL Calculations for Cyanide

	Acute	Chronic
Criteria (ug/L) (1)	10	5.2
Dilution Credit	5.5	5.5
ECA (2)	59.50	28.30
ECA Multiplier (3)	0.21	0.38
LTA	12.47	10.80
AMEL Multiplier (95th%) (4)(5)	(7)	1.92
AMEL (ug/L)	(7)	**20.7**
MDEL Multiplier (99th%) (6)	(7)	4.77
MDEL (ug/L)	(7)	**51.5**

1 CTR aquatic life criteria, independent of hardness, no metals translator.
2 ECA calculated per section 1.4.B, Step 2 of SIP.
3 Acute and Chronic ECA Multiplier calculated at 99th percentile per section 1.4.B, Step 3 of SIP or per sections 5.4.1 and 5.5.4 of the TSD.
4 Assumes sampling frequency n<=4.
5 The probability basis for AMEL is 95th percentile per section 1.4.B, Step 5 of SIP or section 5.5.4 of the TSD.
6 The probability basis for MDEL is 99th percentile per section 1.4.B, Step 5 of SIP or section 5.5.4 of the TSD.
7 Limitations based on chronic LTA (Chronic LTA < Acute LTA).

Table F-12. WQBEL Calculations for Dichlorobromomethane

	Human Health
Criteria (ug/L)	0.56
Dilution Credit	20
ECA	8.66
AMEL (ug/L)[1]	**8.62**
MDEL/AMEL Multiplier[2]	3.69
MDEL (ug/L)	**29.6**

1 AMEL = ECA per section 1.4.B, Step 6 of SIP
2 Assumes sampling frequency n<=4. Uses MDEL/AMEL multiplier, Table 2 of SIP.

Table F-13. WQBEL Calculations for Bis-2-ethylhexylphthalate

	Human Health
Criteria (mg/L)	1.8
Dilution Credit	1
ECA	3.57
AMEL (ug/L)[1]	**3.57**
MDEL/AMEL Multiplier[2]	2.68
MDEL (ug/L)	**9.56**

1 AMEL = ECA per section 1.4.B, Step 6 of SIP
2 Assumes sampling frequency n<=4. Uses MDEL/AMEL multiplier, Table 2 of SIP.

Table F-14. WQBEL Calculations for Zinc

	Acute	Chronic
Criteria, total recoverable (ug/L) [1]	21.31	72.2
Dilution Credit	5.5	5.5
ECA, total recoverable [2]	131.25	462.11
ECA Multiplier [3]	0.43	0.64
LTA	56.71	294.26
AMEL Multiplier (95th%) [4][5]	1.37	[7]
AMEL (ug/L)	**77.6**	[7]
MDEL Multiplier (99th%) [6]	2.31	[7]
MDEL (ug/L)	**131.3**	[7]

1 CTR aquatic life criteria and Basin Plan numeric objectives, based on a hardness of 55 mg/L as $CaCO_3$. The criteria are based on USEPA default metals translator.
2 ECA calculated per section 1.4.B, Step 2 of SIP.
3 Acute and Chronic ECA Multiplier calculated at 99th percentile per section 1.4.B, Step 3 of SIP or per sections 5.4.1 and 5.5.4 of the TSD.
4 Assumes sampling frequency n<=4.
5 The probability basis for AMEL is 95th percentile per section 1.4.B, Step 5 of SIP or section 5.5.4 of the TSD.
6 The probability basis for MDEL is 99th percentile per section 1.4.B, Step 5 of SIP or section 5.5.4 of the TSD.
7 Limitations based on acute LTA (Acute LTA < Chronic LTA).

Summary of Water Quality-based Effluent Limitations Discharge Point No. 001

Table F-15. Summary of Water Quality-based Effluent Limitations for Discharge Point No. 001 (Cottonwood Creek)

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Conventional Pollutants						
pH	standard units	--	--	--	6.5	8.5
Priority Pollutants						
Copper, Total Recoverable	ug/L	20.9	--	41.5	--	--
Chlorodibromomethane	ug/L	1.53	--	3.80	--	--
Cyanide	ug/L	20.7	--	51.5	--	--
Dichlorobromomethane	ug/L	8.62	--	29.6	--	--
Bis-2-ethylhexylphthalate	ug/L	3.57	--	9.56	--	--
Zinc, Total Recoverable	ug/L	77.6	--	131.3	--	--
Non-Conventional Pollutants						
Ammonia Nitrogen, Total (as N)	mg/L	13.7	--	36.5	--	--
Chlorine, Total Residual	mg/L	--	0.011[1]	0.019[2]	--	--
Nitrate Nitrogen, Total (as N)	mg/L	90	--	--	--	--
Total Coliform Organisms	MPN/100 mL	--	23[3]	500	--	240[4]

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum

[1] Applied as a 4-day average effluent limitation.
[2] Applied as a 1-hour average effluent limitation.
[3] Applied as a 7-day median effluent limitation.
[4] Effluent total coliform organisms are not to exceed 240 MPN/100 mL more than once in any 30-day period.

5. Whole Effluent Toxicity (WET)

For compliance with the Basin Plan's narrative toxicity objective, this Order requires the Discharger to conduct whole effluent toxicity testing for acute and chronic toxicity, as specified in the Monitoring and Reporting Program (Attachment E, Section V.). This Order also contains effluent limitations for acute toxicity and requires the Discharger to implement best management practices to investigate the causes of, and identify corrective actions to reduce or eliminate any effluent toxicity.

a. **Acute Aquatic Toxicity.** The Basin Plan contains a narrative toxicity objective that states, "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.*" (Basin Plan at III-8.00) The Basin Plan also states that, "*...effluent limits based upon acute biotoxicity tests of effluents will be prescribed where appropriate...*". USEPA Region 9 provided guidance for the development of acute toxicity effluent limitations in the absence of numeric water quality objectives for toxicity in its document titled "Guidance for NPDES Permit Issuance", dated February 1994. In section B.2. "Toxicity Requirements" (pgs. 14-15) it states that, "*In the absence of specific numeric water quality objectives for acute and chronic toxicity, the narrative criterion 'no toxics in toxic amounts' applies. Achievement of the narrative criterion, as applied herein, means that ambient waters shall not demonstrate for acute toxicity: 1) less than 90% survival, 50% of the time, based on the monthly median, or 2) less than 70% survival, 10% of the time, based on any monthly median. For chronic toxicity, ambient waters shall not demonstrate a test result of greater than 1 TUc.*"

Acute toxicity is tested quarterly on Salmonids as percent survival after 96-hour exposure in 100% effluent. Order No. R5-2005-0037 establishes a limit of 70% survival for any single bioassay, and a median result of 90% survival for any three or more consecutive bioassays. Since August 2003, 24 acute toxicity tests have been performed. The acute toxicity results indicated 90%, or better, survival in 100% effluent for all tests. These data are summarized in Table F-30.

Table F-16. Acute Toxicity, 96 hr % Survival, Salmonids in 100% Effluent

Sample Date	Percent Survival
1/10/2006	100%
4/11/2006	100%
7/27/2006	100%
11/17/2006	100%
2/27/2007	100%
4/19/2007	100%
7/2/2007	95%
12/4/2007	100%
3/31/2008	95%
5/20/2008	100%
10/8/2008	100%
12/5/2008	100%
3/18/2009	100%
4/23/2009	100%
7/21/2009	100%
10/8/2009	100%
Number of Tests	**16**
Average Test Result	**99.37%**

In order to assure acute toxicity is not present within the mixing zone, effluent limitations for acute toxicity have been included in this Order as follows:

Acute Toxicity. Survival of aquatic organisms in 96-hour bioassays of undiluted waste shall be no less than:

Minimum for any one bioassay-- ---------- 70%
Median for any three or more consecutive bioassays --------- 90%

b. **Chronic Aquatic Toxicity.** The Basin Plan contains a narrative toxicity objective that states, "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.*" (Basin Plan at page III-8.00). Per Order No. R5-2005-0037, the Discharger was required to conduct annual chronic toxicity testing as follows: 7-day *Ceriodaphnia dubia (water flea)* survival and reproduction, 7-day fathead minnow (Pimephales promelas) survival and growth, and green algal (*Selenastrum capricornutum)* growth. Since the beginning of the permit cycle in 2005, only the *Ceriodaphnia dubia* reproduction test results in 2007, were significantly reduced from the control. In this case, the lab control water result indicates problems with the test results. Residual chlorine after the laboratory dechlorination process is believed to be the cause of this effect. All other test results for *Ceriodaphnia dubia, Pimephales promelas, and Selenastrum capricornutum* have been normal, demonstrating the discharge has no reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan's narrative toxicity objective. The following table summarizes whole effluent chronic toxicity testing performed by the Discharger from December 2006 through December 2008.

Table F-17. Chronic Toxicity, Whole Effluent Data Summary

Date	Parameter	Fathead Minnow Larval Survival and Growth Test		C. Dubia (Survival and Reproduction Test)		Selenastrum Capricornutum
		7 day % Survival	Avg. Dry Wt (mg)	6 day % Survival	Avg No. Young/Female	Growth
12/08	Effluent	100.0	0.41	100.0	25.9	2.91
	DMW Lab Control, dechlor	97.5	0.43	100.0	22.9	1.66
	DMW Lab Control	97.5	0.41	100.0	22.4	1.68
12/07	Effluent	96.6	0.41	100.0	0.5 [1]	0.97
	DMW Lab Control, dechlor	100.0	0.53	100.0	11.2 [1]	[2]
	DMW Lab Control	97.5	0.45	100.0	20.4	1.39
12/06	Effluent	96.8	0.57	100.0	30.0	3.81
	DMW Lab Control	97.5	0.57	100.0	30.5	1.99

[1] Significantly reduced from control, but apparent lab control problem.

[2] Data not available.

The discharge does not have reasonable potential to cause or contribute to an exceedance of the Basin Plan's narrative toxicity objective. Therefore, a narrative effluent limit for chronic whole effluent toxicity has not been established in this Order.

Numeric chronic WET effluent limitations have not been included in this Order. The SIP contains implementation gaps regarding the appropriate form and implementation of chronic toxicity limits. This has resulted in the petitioning of a NPDES permit in the Los Angeles Region[1] that contained numeric chronic toxicity effluent limitations. To address the petition, the State Water Board adopted WQO 2003-012 directing its staff to revise the toxicity control provisions in the SIP. The State Water Board states the following in WQO 2003-012, "*In reviewing this petition and receiving comments from numerous interested persons on the propriety of including numeric effluent limitations for chronic toxicity in NPDES permits for publicly-owned treatment works that discharge to inland waters, we have determined that this issue should be considered in a regulatory setting, in order to allow for full public discussion and deliberation. We intend to modify the SIP to specifically address the issue. We anticipate that review will occur within the next year. We therefore decline to make a determination here regarding the propriety of the final numeric effluent limitations for chronic toxicity contained in these permits.*" The process to revise the SIP is currently underway. Proposed changes include clarifying the appropriate form of effluent toxicity limits in NPDES permits and general expansion and standardization of toxicity control implementation related to the NPDES permitting process. Since the toxicity control provisions in the SIP are under

[1] In the Matter of the Review of Own Motion of Waste Discharge Requirements Order Nos. R4-2002-0121 [NPDES No. CA0054011] and R4-2002-0123 [NPDES NO. CA0055119] and Time Schedule Order Nos. R4-2002-0122 and R4-2002-0124 for Los Coyotes and Long Beach Wastewater Reclamation Plants Issued by the California Regional Water Quality Control Board, Los Angeles Region SWRCB/OCC FILES A-1496 AND 1496(a).

revision it is infeasible to develop numeric effluent limitations for chronic toxicity. However, the State Water Board found in WQO 2003-012 that, while it is not appropriate to include final numeric effluent limitations for chronic toxicity in NPDES permits for POTWs, permits must contain a narrative effluent limitation, numeric benchmarks for triggering accelerated monitoring, rigorous Toxicity Reduction Evaluation (TRE)/Toxicity Identification Evaluation (TIE) conditions, and a reopener to establish numeric effluent limitations for either chronic toxicity or the chemical(s) causing toxicity. This Order includes a reopener that allows the Central Valley Water Board to reopen the permit and include a numeric chronic toxicity limitation, a new acute toxicity limitation, and/or a limitation for a specific toxicant identified in the TRE.

To ensure compliance with the narrative effluent limitation and the Basin Plan's narrative toxicity objective, the Discharger is required to conduct chronic WET testing, as specified in the Monitoring and Reporting Program (Attachment E section V). Furthermore, the Special Provision contained at VI.C.2.a. of this Order requires the Discharger to investigate the causes of, and identify and implement corrective actions to reduce or eliminate effluent toxicity. If the discharge demonstrates a pattern of toxicity exceeding the numeric toxicity monitoring trigger, the Discharger is required to initiate a Toxicity Reduction Evaluation (TRE) in accordance with an approved TRE workplan. The numeric toxicity monitoring trigger is not an effluent limitation; it is the toxicity threshold at which the Discharger is required to perform accelerated chronic toxicity monitoring, as well as, the threshold to initiate a TRE if a pattern of effluent toxicity has been demonstrated.

D. Final Effluent Limitations

1. Mass-based Effluent Limitations.

Title 40 CFR 122.45(f)(1) requires effluent limitations be expressed in terms of mass, with some exceptions, and 40 CFR 122.45(f)(2) allows pollutants that are limited in terms of mass to additionally be limited in terms of other units of measurement. This Order includes effluent limitations expressed in terms of mass and concentration. In addition, pursuant to the exceptions to mass limitations provided in 40 CFR 122.45(f)(1), some effluent limitations are not expressed in terms of mass, such as pH and temperature, and when the applicable standards are expressed in terms of concentration (e.g., CTR criteria and MCLs) and mass limitations are not necessary to protect the beneficial uses of the receiving water.

Mass-based effluent limitations were calculated based upon the permitted average dry weather flow allowed in Sections IV.A.1.g and IV.B.1.g of the Limitations and Discharge Requirements.

Except for the pollutants listed above, for those pollutant parameters for which effluent limitations are based on water quality objectives and criteria that are concentration-based, mass-based effluent limitations are not included in this Order.

2. Averaging Periods for Effluent Limitations.

Title 40 CFR 122.45 (d) requires average weekly and average monthly discharge limitations for publicly owned treatment works (POTWs) unless impracticable. However, for toxic pollutants and pollutant parameters in water quality permitting, the USEPA recommends the use of a maximum daily effluent limitation in lieu of average weekly effluent limitations for two reasons. "*First, the basis for the 7-day average for POTWs derives from the secondary treatment requirements. This basis is not related to the need for assuring achievement of water quality standards. Second, a 7-day average, which could comprise up to seven or more daily samples, could average out peak toxic concentrations and therefore the discharge's potential for causing acute toxic effects would be missed.*" (TSD, pg. 96) This Order utilizes maximum daily effluent limitations in lieu of average weekly effluent limitations for ammonia, chlorodibromomethane, copper, cyanide, dichlorobromomethane, bis-2-ethylhexylphthalate, and zinc as recommended by the TSD for the achievement of water quality standards and for the protection of the beneficial uses of the receiving stream. Based on a conversation between the Central Valley Water Board and the California DPH, annual average limitations are more appropriate for some pollutants whose effluent limitations are based on primary and secondary MCLs. DPH also recommends that an AMEL is more appropriate for pollutants such as nitrate for which the MCL is designed to be protective of acute health effects. Therefore, an AMEL has been applied for nitrate. Furthermore, for chlorine residual, BOD_5, TSS, pH, and total coliform organisms, weekly average effluent limitations have been replaced or supplemented with effluent limitations utilizing shorter averaging periods. The rationale for using shorter averaging periods for these constituents is discussed in Attachment F, Section IV.C.3, above.

3. Satisfaction of Anti-Backsliding Requirements.

The Clean Water Act specifies that a revised permit may not include effluent limitations that are less stringent than the previous permit unless a less stringent limitation is justified based on exceptions to the anti-backsliding provisions contained in Clean Water Act sections 402(o) or 303(d)(4), or, where applicable, 40 CFR 122.44(l).

Some effluent limitations in this revised Order are less stringent than those in the originally adopted Order. As discussed below this relaxation of effluent limitations is consistent with the anti-backsliding requirements of the CWA and federal regulations.

In the previous permit, the water quality-based effluent limitations (WQBELs) for copper and zinc were established without a dilution credit. In this new Order, the effluent limitations for these constituents have been recalculated using allowable dilution credits as explained in Section IV.C.2.c of the Fact Sheet. In some cases this has resulted in less stringent effluent limitations. Anti-backsliding requirements are satisfied, however, pursuant to CWA section 402(o)(2)(B), where the documentation and consideration of available dilution credits since adoption of the

previous permit, qualifies as new information which was not available at the issuance of the previous permit.

The changes in effluent limits or copper and zinc in the revised permit are based on new information generated since adoption of the original permit, and are consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Resources Control Board Resolution 68-16, as described in Section IV.D.4, below.

4. Satisfaction of Antidegradation Policy

The Discharger submitted a report titled, *Antidegradation Analysis for the County Service Area No. 17, Cottonwood Wastewater Treatment Plant* (Report), dated December 2009 (PACE Engineering), that provides a complete antidegradation analysis following the guidance provided by State Water Board's APU 90-004, Resolution 68-16, and the 1987 Policy Memorandum, which take into account federal antidegradation policy and guidance. Pursuant to these guidelines, the Report evaluates whether adoption of a mixing zone and its potential impact on water quality are consistent with the maximum benefit to the people of the state, will not unreasonably affect beneficial uses, will not cause water quality to be less than water quality objectives, and that the discharge provides protection for existing in-stream uses and water quality necessary to protect those uses.

Alternative control measured evaluated as part of the study include:

1. Higher level of treatment to eliminate the need for a mixing zone,
2. Zero discharge (100% recycling),
3. Seasonal discharge,
4. Flow restricted discharge,
5. Pollutant source minimization,
6. Connecting to a nearby water system,
7. Discharge to the Sacramento River, and
8. Change in drinking water source.

Results of the alternative controls analysis are summarized in Table F-18 below.

Table F-18. Antidegradation Analysis, Alternative Controls Summary

Summary	Plan Elements	Total Construction Cost	Annual Rate Increase	%MHI
Obtaining Dilution Credits	Perform mixing zone and dilution study, bioassessment, and antidegradation analysis to obtain dilution credits.	$150,000	$0	1.2

Summary	Plan Elements	Total Construction Cost	Annual Rate Increase	%MHI
Higher Level of Treatment	PAC addition.	$500,000	$60	1.4
Zero Discharge	Inadequate existing pond size and the cost to develop another pond preclude zero discharge from being a feasible alternative.			
Seasonal Discharge	Pond storage with irrigation during summer months and creek discharge during winter months.	$1.65 million	$130	1.6
Flow-restricted Discharge	In order to mitigate the lowering of water quality, this alternative defaults to the zero discharge alternative.			
Pollutant Source Minimization	Quicklime or hydrated lime addition.	$100,000	$32	1.3
Regionalization	No wastewater systems exist in the reasonable immediate vicinity.			
Discharge to the Sacramento River	The costs associated with piping and environmental mitigation are not financially feasible given the negligible, positive environmental impact that might result.			
Change in Water Supply	Not economically feasible to find better quality water source than the existing source.			

Based on the results of the alternative controls analysis, and a detailed assessment of potential impacts to Cottonwood Creek based on various dilution scenarios the study concludes, the tertiary treated wastewater is determined to comprise best practicable treatment or control and is consistent with federal and State antidegradation policies for the following reasons:

- The Discharger's tertiary treated effluent will be discharged through a diffuser to Cottonwood Creek. Discharge through the diffuser has occurred since the facility was constructed in 1986.
- Concentrations of constituents being discharged and identified as having reasonable potential will not change by granting dilution credits and associated mixing zones.
- Measurable effects in Cottonwood Creek water quality downstream of the discharge location will not be produced, as evaluated in the Discharger's biological assessment which incorporates DFG consultation and final concurrence.
- Existing or potential beneficial uses of the receiving water will not be adversely affected, nor will water quality fall below applicable water quality objectives outside the designated mixing zones.
- Any changes in water quality immediately surrounding the diffuser will be confined to the mixing zone.
- The mixing zones are as small as practicable.

The Central Valley Water Board concurs with the antidegradation analysis provided by the Discharger. No increased flows or pollutant concentrations/loadings will occur as a result of allowing a mixing zone or dilution credit. The discharge is

tertiary-level treated wastewater, which is a high level of treatment of sewage waste that is considered BPTC for most constituents in the wastewater and will result in attaining water quality standards applicable to the discharge. As part of this Order, the Discharger is required to evaluate BPTC performance on an annual basis to identify and improvements needed to maintain BPTC performance.

This Order grants mixing zones and dilution credits for several pollutants. As a condition for allowing the mixing zones and dilution credits, the Central Valley Water Board requires that Best Practicable Treatment or Control (BPTC) of these pollutants is implemented by the Discharger. The Central Valley Water Board finds, based on information in the record, including the Discharger's antidegradation analysis report, that:

BPTC for the control and removal of copper, zinc, and bis-2-ethylhexylphthalate is secondary treatment plus the use of the Facility's tertiary filters, effluent diffuser, and source control and minimization;

BPTC for the control and removal of cyanide, chlorodibromomethane, and dichlorobromomethane is secondary treatment plus the use of the Facility's tertiary filters, effluent diffuser, and automated flow/concentration-based chlorination/dechlorination system; and,

BPTC for the control and removal of ammonia and nitrate is secondary treatment plus the use of the Facility's nitrification and denitrification processes and capabilities, and effluent diffuser.

For the above reasons, the Central Valley Water Board finds that the permitted surface water discharge is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution No. 68-16.

Summary of Final Effluent Limitations Discharge Point No. 001

Table F-19. Summary of Final Effluent Limitations for Discharge Point No. 001

Parameter	Units	Effluent Limitations					Basis[1]
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	
Average Dry Weather Flow	MGD	0.43	--	--	--	--	DC
Conventional Pollutants							
Biochemical Oxygen Demand, 5-day @ 20°C	mg/L	10	15	30	--	--	TTC
	lbs/day[2]	36	54	108	--	--	
	% Removal	85	--	--	--	--	CFR
Total Suspended Solids	mg/L	10	15	30	--	--	TTC
	lbs/day[2]	36	54	108	--	--	
	% Removal	85	--	--	--	--	CFR
pH	standard units	--	--	--	6.5	8.5	BP

Parameter	Units	Effluent Limitations					Basis[1]
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	
Priority Pollutants							
Copper, Total Recoverable	ug/L	20.9	--	41.5	--	--	CTR
Cyanide	ug/L	20.7	--	51.5	--	--	CTR
Zinc, Total Recoverable	ug/L	77.6	--	131.3	--	--	CTR
Bis-2-ethylhexylphthalate	ug/L	3.57	--	9.56	--	--	CTR
Chlorodibromomethane	ug/L	1.53	--	3.80	--	--	CTR
Dichlorobromomethane	ug/L	8.62	--	29.6	--	--	CTR
Non-Conventional Pollutants							
Ammonia Nitrogen, Total (as N)	mg/L	13.7	--	36.5	--	--	NAWQC
Chlorine, Total Residual	mg/L	--	0.011[3]	0.019[4]	--	--	NAWQC
Nitrate Nitrogen, Total (as N)	mg/L	90	--	--	--	--	MCL
Total Coliform Organisms	MPN/100 mL	--	23[5]	500[5]	--	240[5]	Title 22

1 DC – Based on the design capacity of the Facility.
TTC – Based on tertiary treatment capability of a properly operated tertiary treatment plant.
CFR – Based on secondary treatment standards contained in 40 CFR Part 133.
BP – Based on water quality objectives contained in the Basin Plan.
CTR – Based on water quality criteria contained in the California Toxics Rule and applied as specified in the SIP.
NAWQC – Based on USEPA's National Ambient Water Quality Criteria for the protection of freshwater aquatic life.
MCL – Based on the Primary Maximum Contaminant Level.
Title 22 – Based on CA Department of Public Health recommendations.

2 Based on a design flow of 0.43 MGD.

3 Applied as a 4-day average effluent limitation.

4 Applied as a 1-hour average effluent limitation.

5 Effluent total coliform organisms are not to exceed 23 MPN/100mL as a 7-day median, 240 MPN/100 mL more than once in any 30-day period, and 500 MPN/100mL as a daily max.

a. **Acute Whole Effluent Toxicity.** Survival of aquatic organisms in 96-hour bioassays in undiluted waste shall not be less than:

   i. 70%, minimum for any one bioassay; and
   ii. 90%, median for any three consecutive bioassays.

E. Interim Effluent Limitations [NOT APPLICABLE]

F. Land Discharge Specifications [NOT APPLICABLE]

G. Reclamation Specifications [NOT APPLICABLE]

V. RATIONALE FOR RECEIVING WATER LIMITATIONS

Basin Plan water quality objectives to protect the beneficial uses of surface water and groundwater include numeric objectives and narrative objectives, including objectives for

chemical constituents, toxicity, and tastes and odors. The toxicity objective requires that surface water and groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in humans, plants, animals, or aquatic life. The chemical constituent objective requires that surface water and groundwater shall not contain chemical constituents in concentrations that adversely affect any beneficial use or that exceed the maximum contaminant levels (MCLs) in Title 22, CCR. The tastes and odors objective states that surface water and groundwater shall not contain taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses. The Basin Plan requires the application of the most stringent objective necessary to ensure that surface water and groundwater do not contain chemical constituents, toxic substances, radionuclides, or taste and odor producing substances in concentrations that adversely affect domestic drinking water supply, agricultural supply, or any other beneficial use.

A. Surface Water

1. CWA section 303(a-c), requires states to adopt water quality standards, including criteria where they are necessary to protect beneficial uses. The Central Valley Water Board adopted water quality criteria as water quality objectives in the Basin Plan. The Basin Plan states that "*[t]he numerical and narrative water quality objectives define the least stringent standards that the Regional Water Board will apply to regional waters in order to protect the beneficial uses.*" The Basin Plan includes numeric and narrative water quality objectives for various beneficial uses and water bodies. This Order contains receiving surface water limitations based on the Basin Plan numerical and narrative water quality objectives for bacteria, biostimulatory substances, chemical constituents, color, dissolved oxygen, floating material, oil and grease, pH, pesticides, radioactivity, sediment, settleable material, suspended material, taste and odors, temperature, toxicity, and turbidity.

    a. **Ammonia.** The Basin Plan states that, "[w]*aters shall not contain un-ionized ammonia in amounts which adversely affect beneficial uses.*

    b. **Bacteria.** Cottonwood Creek has been designated as having the beneficial use of contact recreation (REC-1). For water bodies designated as having REC-1 as a beneficial use, the Basin Plan includes a water quality objective limiting the "*...fecal coliform concentration based on a minimum of not less than five samples for any 30-day period...*" to a maximum geometric mean of 23 MPN/100ml." The objective also states that "...[no] *more than ten percent of the total number of samples taken during any 30-day period [shall] exceed 240/100 ml.*" This objective is included in the Order as a receiving water limitation.

    c. **Biostimulatory Substances.** The Basin Plan includes a water quality objective that "[W]*ater shall not contain biostimulatory substances which promote aquatic growths in concentrations that cause nuisance or adversely affect beneficial uses.*" Receiving Water Limitations for

biostimulatory substances are included in this Order and are based on the Basin Plan objective.

d. **Color.** The Basin Plan includes a water quality objective that "[W]*ater shall be free of discoloration that causes nuisance or adversely affects beneficial uses.*" Receiving Water Limitations for color are included in this Order and are based on the Basin Plan objective.

e. **Chemical Constituents.** The Basin Plan includes a water quality objective that "[W]*aters shall not contain chemical constituents in concentrations that adversely affect beneficial uses.*" Receiving Water Limitations for chemical constituents are included in this Order and are based on the Basin Plan objective.

f. **Dissolved Oxygen.** Cottonwood Creek has been designated as having the beneficial use of cold freshwater aquatic habitat (COLD). For water bodies designated as having COLD as a beneficial use, the Basin Plan includes a water quality objective of maintaining a minimum of 7.0 mg/L of dissolved oxygen. Since the beneficial use of COLD does apply to Cottonwood Creek, a receiving water limitation of 7.0 mg/L for dissolved oxygen was included in this Order.

   For surface water bodies outside of the Delta, the Basin Plan includes the water quality objective that "*...the monthly median of the mean daily dissolved oxygen (DO) concentration shall not fall below 85 percent of saturation in the main water mass, and the 95 percentile concentration shall not fall below 75 percent of saturation.*" This objective was included as a receiving water limitation in this Order.

g. **Floating Material.** The Basin Plan includes a water quality objective that "[W]ater shall not contain floating material in amounts that cause nuisance or adversely affect beneficial uses." Receiving Water Limitations for floating material are included in this Order and are based on the Basin Plan objective.

h. **Oil and Grease.** The Basin Plan includes a water quality objective that "[W]*aters shall not contain oils, greases, waxes, or other materials in concentrations that cause nuisance, result in a visible film or coating on the surface of the water or on objects in the water, or otherwise adversely affect beneficial uses.*" Receiving Water Limitations for oil and grease are included in this Order and are based on the Basin Plan objective.

i. **pH.** The Basin Plan includes water quality objective that, "[T]*he pH shall not be depressed below 6.5 nor raised above 8.5.* This Order includes receiving water limitations for pH range.

j. **Pesticides.** The Basin Plan includes a water quality objective for pesticides beginning on page III-6.00. Receiving Water Limitations for pesticides are included in this Order and are based on the Basin Plan objective.

k. **Radioactivity.** The Basin Plan includes a water quality objective that *"[R]adionuclides shall not be present in concentrations that are harmful to human, plant, animal or aquatic life nor that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal or aquatic life."* The Basin Plan states further that *"[A]t a minimum, waters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of radionuclides in excess of the maximum contaminant levels (MCLs) specified in Table 4 (MCL Radioactivity) of Section 64443 of Title 22 of the California Code of Regulations…"* Receiving Water Limitations for radioactivity are included in this Order and are based on the Basin Plan objective.

l. **Sediment.** The Basin Plan includes a water quality objective that *"[T]he suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses"* Receiving Water Limitations for suspended sediments are included in this Order and are based on the Basin Plan objective.

m. **Settleable Material.** The Basin Plan includes a water quality objective that *"[W]aters shall not contain substances in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses."* Receiving Water Limitations for settleable material are included in this Order and are based on the Basin Plan objective.

n. **Suspended Material.** The Basin Plan includes a water quality objective that *"[W]aters shall not contain suspended material in concentrations that cause nuisance or adversely affect beneficial uses."* Receiving Water Limitations for suspended material are included in this Order and are based on the Basin Plan objective.

o. **Taste and Odors**. The Basin Plan includes a water quality objective that *"[W]ater shall not contain taste- or odor-producing substances in concentrations that impart undesirable tastes or odors to domestic or municipal water supplies or to fish flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses."* Receiving Water Limitations for taste- or odor-producing substances are included in this Order and are based on the Basin Plan objective.

p. **Temperature.** The receiving water has the beneficial uses of both COLD and WARM. The Basin Plan includes the objective that "[a]*t no time or place shall the temperature of COLD or WARM intrastate waters be*

increased more than 5°F above natural receiving water temperature." This Order includes a receiving water limitation based on this objective.

q. **Toxicity**. The Basin Plan includes a water quality objective that *"[A]ll waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life."* Receiving Water Limitations for toxicity are included in this Order and are based on the Basin Plan objective.

r. **Turbidity.** The Basin Plan includes a water quality objective that "*[I]ncreases in turbidity attributable to controllable water quality factors shall not exceed the following limits:*

- *Where natural turbidity is less than 1 Nephelometric Turbidity Unit (NTU), controllable factors shall not cause downstream turbidity to exceed 2 NTU.*
- *Where natural turbidity is between 1 and 5 NTUs, increases shall not exceed 1 NTU.*
- *Where natural turbidity is between 5 and 50 NTUs, increases shall not exceed 20 percent.*
- *Where natural turbidity is between 50 and 100 NTUs, increases shall not exceed 10 NTUs.*
- *Where natural turbidity is greater than 100 NTUs, increases shall not exceed 10 percent.*"

A numeric Receiving Surface Water Limitation for turbidity is included in this Order and is based on the Basin Plan objective for turbidity.

B. Groundwater [NOT APPLICABLE]

VI. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

40 CFR 122.48 requires that all NPDES permits specify requirements for recording and reporting monitoring results. Water Code sections 13267 and 13383 authorizes the Central Valley Water Board to require technical and monitoring reports. The Monitoring and Reporting Program (MRP), Attachment E of this Order, establishes monitoring and reporting requirements to implement federal and state requirements. The following provides the rationale for the monitoring and reporting requirements contained in the MRP for this Facility.

A. Influent Monitoring

1. Influent monitoring is required to collect data on the characteristics of the wastewater and to assess compliance with effluent limitations (e.g., BOD_5 and TSS percent reduction requirements).

2. This Order retains continuous monitoring for flow and weekly monitoring for TSS and BOD_5. TDS, EC, and pH are added requirements to assess potential sources of salinity in the discharge to aid in the identification of salinity minimization measures.

B. Effluent Monitoring

1. Pursuant to the requirements of 40 CFR 122.44(i)(2) effluent monitoring is required for all constituents with effluent limitations. Effluent monitoring is necessary to assess compliance with effluent limitations, assess the effectiveness of the treatment process, and to assess the impacts of the discharge on the receiving stream and/or groundwater.

2. Effluent monitoring requirements for flow, chlorine residual, pH, temperature, EC, TDS, dissolved oxygen, BOD_5, TSS, turbidity, total coliform organisms, hardness, copper (total), zinc (total), cyanide, bis-2-ethylhexylphthalate, chloroform, bromoform, chlorodibromomethane, dichlorobromomethane, ammonia, aluminum, standard minerals, nitrate, acute and chronic toxicity, and priority pollutants have been retained from the previous order to characterize the effluent and determine compliance with applicable effluent limitations or conduct a reasonable potential analysis.

3. Monitoring data for oil and grease, and settleable solids did not demonstrate reasonable potential to exceed water quality criteria. Thus, specific monitoring requirements for these parameters have not been retained.

4. The previous order required quarterly monitoring for ammonia. Because the discharge demonstrates reasonable potential to cause an instream exceedance for ammonia, and untreated domestic wastewater contains ammonia and inadequate or incomplete nitrification may result in the discharge of ammonia to the receiving stream, effluent limitations for ammonia have been included in this Order and monitoring has been increased to monthly.

5. Effluent monitoring requirements for electrical conductivity and total dissolved solids have been increased to monthly to aid in preparation of the Salinity Evaluation and Minimization Plan required as part of this Order.

6. Results of priority pollutant effluent monitoring conducted by the Discharger indicated concentrations of aldrin, beta-BHC, and gamma-BHC may be present in effluent; however insufficient data exists to determine reasonable potential. This Order requires quarterly monitoring for aldrin, beta-BHC, and gamma-BHC to confirm the presence or absence of these constituents in effluent.

7. The previous order required effluent monitoring for total and dissolved copper and zinc. Because effluent limitations for metals, including copper and zinc, must be expressed as total recoverable, monitoring for total copper must be used to determine compliance with effluent limitations. Monitoring for dissolved copper and dissolved zinc is not necessary to determine compliance with effluent limitations. Therefore, this Order does not retain effluent monitoring requirements for dissolved copper or dissolved zinc, however the Discharger is advised that dissolved data may be useful for future studies and evaluations.

8. Priority pollutant data for the effluent has been provided by the Discharger during the permit cycle of Order No. R5-2005-0037, and was used to conduct a reasonable potential analysis. In accordance with Section 1.3 of the SIP, the Central Valley Water Board shall require periodic monitoring for priority pollutants for which criteria or objectives apply and for which no effluent limitations have been established. Periodic priority pollutant monitoring is also necessary to provide data that would account for changes in the wastewater characterization. Monitoring for priority pollutants is required once during the 3rd year and once during the 4th year of the permit term to provide the data necessary for determining the reasonable potential for those pollutants for which no WQBELs or specific monitoring were established.

C. Whole Effluent Toxicity Testing Requirements

1. **Acute Toxicity**. Quarterly acute toxicity testing as required in Order No. R5-2005-0037 in order to demonstrate compliance with the effluent limitation for acute toxicity. This monitoring requirement is retained in this Order to determine compliance with the numeric effluent limitations for acute toxicity and the Basin Plan's narrative toxicity objective.

2. **Chronic Toxicity.** Annual chronic whole effluent toxicity testing was required in Order No. R5-2005-0037 in order to demonstrate compliance with the Basin Plan's narrative toxicity objective. This monitoring requirement is retained in this Order to determine compliance with the narrative effluent limitations for chronic toxicity and the Basin Plan's narrative toxicity objective.

D. Receiving Water Monitoring

1. Surface Water

a. Receiving water monitoring is necessary to assess compliance with receiving water limitations and to assess the impacts of the discharge on the receiving stream.

b. Order No. R5-2005-0037 established two receiving water monitoring stations: R-1, located approximately 100 feet upstream of the discharge (RSW-001) and; R-2 located approximately 100 feet downstream of the discharge (RSW-002). An additional receiving water monitoring station was established approximately 3,000 feet downstream of the discharge (RSW-003) for the purposes of

evaluating potential site specific translators. This station may or may not be used for future analysis, as a site specific translator has not been adopted for this facility to date.

c. As discussed in section IV.C.2.c of this Fact Sheet, mixing zones have been granted for copper, cyanide, zinc, ammonia, nitrate, chlorodibromomethane, dichlorobromomethane, and bis-2-ethylhexylphthalate. In order to confirm that water quality criteria and objectives are met at the edge of the mixing zones, monitoring location RSW-004 through RSW-008 have been established.

d. Receiving water monitoring requirements for flow, pH, dissolved oxygen, coliform, turbidity, temperature, hardness, EC, copper and zinc at upstream Monitoring Location RSW-001 have been retained from Order No. R5-2005-0037. Flow measurements can be obtained from USGS Gauging Station 11376000 approximately 2 miles downstream of the discharge.

e. Receiving water monitoring requirements for cyanide, ammonia, aluminum, priority pollutants, and standard minerals have been added to upstream Monitoring Location RSW-001. Monitoring of these constituents is required to characterize the background water quality relative to the applicable water quality criteria and objectives. Priority pollutant monitoring will be used to evaluate reasonable potential, in the future.

f. Receiving water monitoring requirements for dissolved oxygen, pH, turbidity, temperature, electrical conductivity, fecal coliform organisms, and total residual chlorine at downstream monitoring location RSW-002 have been retained from the previous order.

g. Receiving water monitoring requirements for hardness has been added to receiving water monitoring location RSW-002 and will be used to evaluate determine the applicable water criteria for hardness-dependent metals criteria.

2. Groundwater [NOT REQUIRED]

E. Other Monitoring Requirements

1. **Biosolids Monitoring.**
Biosolids monitoring is required to ensure compliance with the biosolids disposal requirements (Special Provisions VI.C.5.b). Biosolids disposal requirements are imposed pursuant to 40 CFR Part 503 to protect public health and prevent groundwater degradation.

2. **Water Supply Monitoring.**
In order to evaluate the sources of salinity, copper, and zinc in the wastewater, this Order requires annual monitoring for electrical conductivity, total dissolved solids, dissolved copper, and dissolved zinc.

3. **Underdrain System Discharge Monitoring.**
Underdrain system monitoring of flow and total and fecal coliform is required when discharging to evaluate potential impacts to groundwater beneficial uses. This requirement has been retained from Order No. R5-2005-0037.

VII. RATIONALE FOR PROVISIONS

A. Standard Provisions

Standard Provisions, which apply to all NPDES permits in accordance with 40 CFR 122.41, and additional conditions applicable to specified categories of permits in accordance with 40 CFR 122.42, are provided in Attachment D. The Discharger must comply with all standard provisions and with those additional conditions that are applicable under 40 CFR 122.42.

40 CFR 122.41(a)(1) and (b) through (n) establish conditions that apply to all State-issued NPDES permits. These conditions must be incorporated into the permits either expressly or by reference. If incorporated by reference, a specific citation to the regulations must be included in the Order. 40 CFR 123.25(a)(12) allows the state to omit or modify conditions to impose more stringent requirements. In accordance with 40 CFR 123.25, this Order omits federal conditions that address enforcement authority specified in 40 CFR 122.41(j)(5) and (k)(2) because the enforcement authority under the Water Code is more stringent. In lieu of these conditions, this Order incorporates by reference Water Code section 13387(e).

B. Special Provisions

1. Reopener Provisions

a. **Whole Effluent Toxicity.** This Order requires the Discharger to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity through a Toxicity Reduction Evaluation (TRE). This Order may be reopened to include a numeric chronic toxicity limitation, a new acute toxicity limitation, and/or a limitation for a specific toxicant identified in the TRE. Additionally, if a numeric chronic toxicity water quality objective is adopted by the State Water Board, this Order may be reopened to include a numeric chronic toxicity limitation based on that objective.

b. **Total Maximum Daily Loads (TMDLs).** This Order may be reopened, and appropriate effluent limitations, or other controls, prescribed, in order to implement any TMDLs.

c. **Salinity Evaluation and Minimization Plan.** This Order requires the Discharger to prepare a Salinity Evaluation and Minimization Plan (SEMP). This reopener provision allows the Central Valley Water Board to reopen this Order for addition and/or modification of effluent limitations and requirements for salinity based on review and implementation of the SEMP.

d. **Reasonable Potential for Constituents with Insufficient Information.** This Order may be reopened, and appropriate effluent limitations added, if results from the Monitoring and Reporting Program indicate that carbon tetrachloride, aldrin, beta-BHC, or gamma-BHC is present at concentrations that have the reasonable potential to cause or contribute to an exceedance of applicable water quality criteria or objectives.

2. **Special Studies and Additional Monitoring Requirements**

a. **Annual Performance Evaluation.** As discussed in the Fact Sheet, dilution and corresponding mixing zones have been granted for copper, cyanide, zinc, nitrate, bis-2-ethylhexylphthalate, ammonia, chlorodibromomethane, and dichlorobromomethane. In order to assure, at a minimum, current facility performance is maintained for these constituents, the Discharger is required to conduct an Annual Performance Evaluation on the removal efficiency of these constituents. In conducting this evaluation, Discharger shall determine, using appropriate statistical methods and a 99% confidence level, whether pollutant concentrations are increasing, decreasing, or exhibits no change in concentration. Discharger shall submit a work plan outlining the proposed methodology and statistical analysis to the Central Valley Water Board for approval no later than **6 months after date of adoption of this Order**. The Annual Performance Evaluation Report shall be submitted to the Central Valley Water Board **by 1 January, each year**.

b. **Annual Best Practicable Treatment or Control (BPTC) Review.** As discussed in this Order, the Central Valley Water Board finds that:

BPTC for the control and removal of copper and zinc is the use of the Facility's tertiary filters, effluent diffuser, and source control and minimization;

BPTC for the control and removal of cyanide, chlorodibromomethane, and dichlorobromomethane is the use of the Facility's tertiary filters, automated flow/concentration-based chlorination/dechlorination system, and effluent diffuser; and,

BPTC for the control and removal of ammonia and nitrate is the use of the Facility's nitrification and denitrification processes and capabilities, and effluent diffuser.

In order to ensure that BPTC is fully, and optimally implemented, the Discharger shall conduct an annual review of the treatment and control measures used to implement BPTC, to determine if any modifications, maintenance, or improvements are required to maintain BPTC performance. Such modifications, maintenance, or improvements may include maintenance of filters, effluent diffuser, or other treatment processes, calibration or fine-tuning of the chlorination/dechlorination system or nitrification and denitrification processes, or modification of the source control program. A report that includes the findings of

the review, and any modifications, maintenance, or improvements that are required to fully implement BPTC shall be submitted to the Central Valley Water Board **by 1 January, each year**. The Discharger shall fully, and optimally implement BPTC at all times.

c. **Salinity Evaluation and Minimization Plan (SEMP).** The Discharger shall prepare a Salinity Evaluation and Minimization Plan (SEMP) to identify sources of salinity in effluent from the Facility, and measures available to minimize the concentration and mass loading of salinity. The plan, including a proposed schedule to implement the identified minimization measures, shall be completed and submitted to the Regional Water Board within **1 year of the effective date of this Order** for approval by the Executive Officer. Following SEMP approval, the Discharger shall implement the applicable minimization measures according to the approved schedule.

d. **Chronic Whole Effluent Toxicity Requirements.** The Basin Plan contains a narrative toxicity objective that states, "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.*" (Basin Plan at III-8.00.) Based on annual whole effluent chronic toxicity testing performed by the Discharger from December 2006 through December 2008, the discharge does not have reasonable potential to cause or contribute to an to an in-stream excursion above of the Basin Plan's narrative toxicity objective.

This provision requires the Discharger to develop a Toxicity Reduction Evaluation (TRE) Work Plan in accordance with USEPA guidance. In addition, the provision provides a numeric toxicity monitoring trigger and requirements for accelerated monitoring, as well as, requirements for TRE initiation if a pattern of toxicity has been demonstrated.

Monitoring Trigger. A numeric toxicity monitoring trigger of > 1 TUc (where TUc = 100/NOEC) is applied in the provision, because this Order does not allow any dilution for the chronic condition. Therefore, a TRE is triggered when the effluent exhibits a pattern of toxicity at 100% effluent.

Accelerated Monitoring. The provision requires accelerated WET testing when a regular WET test result exceeds the monitoring trigger. The purpose of accelerated monitoring is to determine, in an expedient manner, whether there is a pattern of toxicity before requiring the implementation of a TRE. Due to possible seasonality of the toxicity, the accelerated monitoring should be performed in a timely manner, preferably taking no more than 2 to 3 months to complete.

The provision requires accelerated monitoring consisting of four chronic toxicity tests spaced every 2 weeks using the species that exhibited toxicity. Guidance regarding accelerated monitoring and TRE initiation is provided in the *Technical Support Document for Water Quality-based Toxics Control, EPA/505/2-90-001,*

March 1991 (TSD). The TSD at page 118 states, "*EPA recommends if toxicity is repeatedly or periodically present at levels above effluent limits more than 20 percent of the time, a TRE should be required.*" Therefore, four accelerated monitoring tests are required in this provision. If no toxicity is demonstrated in the four accelerated tests, then it demonstrates that toxicity is not present at levels above the monitoring trigger more than 20 percent of the time (only 1 of 5 tests are toxic, including the initial test). However, notwithstanding the accelerated monitoring results, if there is adequate evidence of a pattern of effluent toxicity (i.e. toxicity present exceeding the monitoring trigger more than 20 percent of the time), the Executive Officer may require that the Discharger initiate a TRE.

See the WET Accelerated Monitoring Flow Chart (Figure F-1), below, for further clarification of the accelerated monitoring requirements and for the decision points for determining the need for TRE initiation.

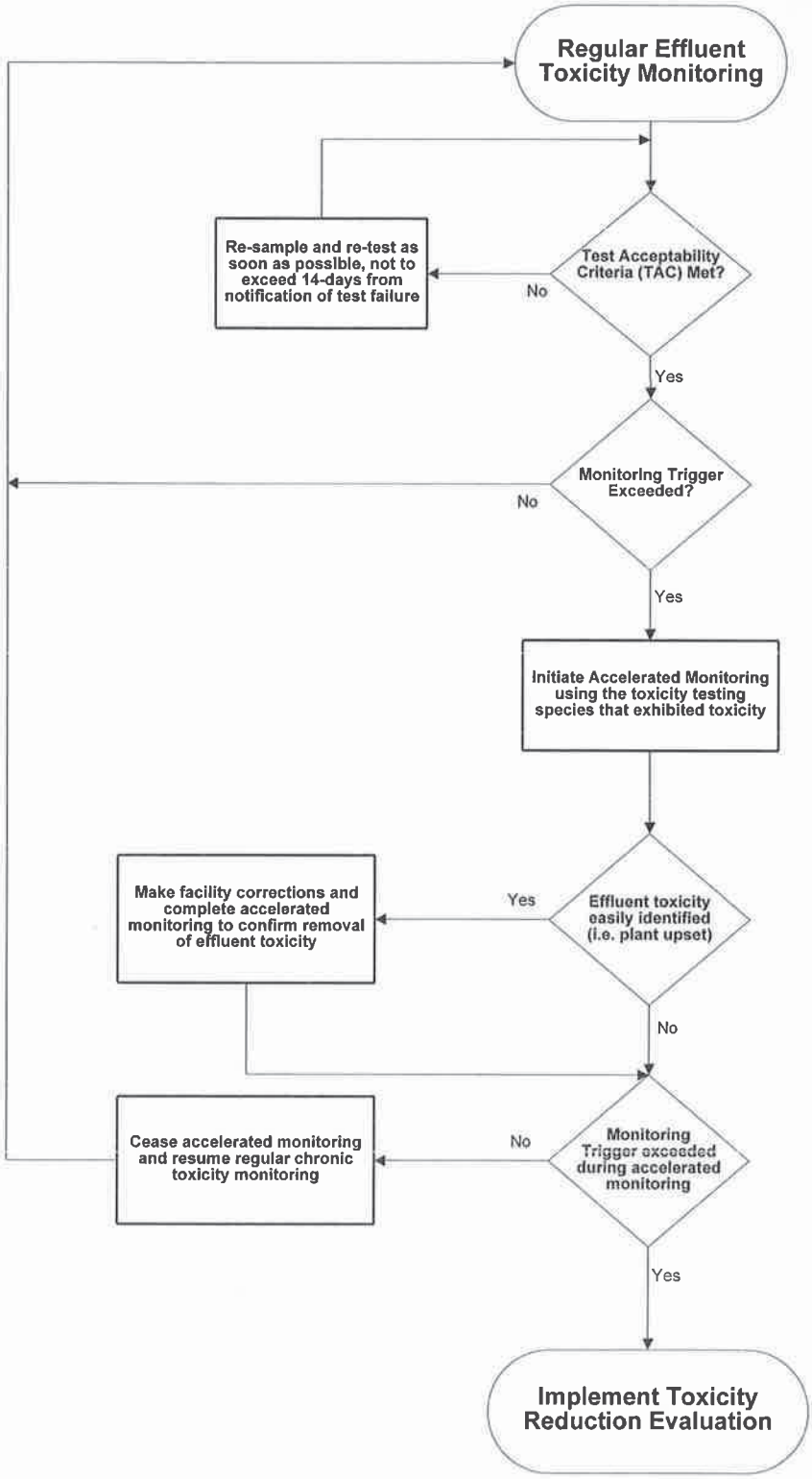
TRE Guidance. The Discharger is required to prepare a TRE Work Plan in accordance with USEPA guidance. Numerous guidance documents are available, as identified below:

- *Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants,* (EPA/833B-99/002), August 1999.
- Generalized Methodology for Conducting Industrial TREs, *(EPA/600/2-88/070), April 1989.*
- *Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures,* Second Edition, EPA 600/6-91/005F, February 1991.
- *Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents, Phase I*, EPA 600/6-91/005F, May 1992.
- *Methods for Aquatic Toxicity Identification Evaluations: Phase II Toxicity Identification Procedures for Samples Exhibiting acute and Chronic Toxicity,* Second Edition, EPA 600/R-92/080, September 1993.
- *Methods for Aquatic Toxicity Identification Evaluations: Phase III Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity*, Second Edition, EPA 600/R-92/081, September 1993.
- *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*, Fifth Edition, EPA-821-R-02-012, October 2002.

- *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*, Fourth Edition, EPA-821-R-02-013, October 2002.

- *Technical Support Document for Water Quality-based Toxics Control, EPA/505/2-90-001*, March 1991.

Figure F-1
WET Accelerated Monitoring Flow Chart



3. **Best Management Practices and Pollution Prevention – Not Applicable.**

4. **Construction, Operation, and Maintenance Specifications**

   a. **Turbidity.** Operations specifications for turbidity are included as an indicator of the effectiveness of the treatment process and to assure compliance with effluent limitations for total coliform organisms. The tertiary treatment process is capable of reliably meeting a turbidity limitation of 2 nephelometric turbidity units (NTU) as a daily average. Failure of the treatment system such that virus removal is impaired would normally result in increased particles in the effluent, which result in higher effluent turbidity. Turbidity has a major advantage for monitoring filter performance, allowing immediate detection of filter failure and rapid corrective action. The operational specification requires that turbidity shall not exceed 2 NTU as a daily average; 5 NTU, more than 5 percent of the time within a 24-hour period; and an instantaneous maximum of 10 NTU.

5. **Special Provisions for Municipal Facilities (POTWs Only)**

   a. **Pretreatment Requirements. <u>If Applicable.</u>**

      i. The Federal Clean Water Act, Section 307(b), and Federal Regulations, 40 CFR Part 403, require publicly owned treatment works to develop an acceptable industrial pretreatment program. A pretreatment program is required to prevent the introduction of pollutants, which will interfere with treatment plant operations or sludge disposal, and prevent pass through of pollutants that exceed water quality objectives, standards or permit limitations. Pretreatment requirements are imposed pursuant to 40 CFR Part 403.

      ii. The Discharger shall implement and enforce its approved pretreatment program and is an enforceable condition of this Order. If the Discharger fails to perform the pretreatment functions, the Central Valley Water Board, the State Water Board or USEPA may take enforcement actions against the Discharger as authorized by the CWA.

6. **Other Special Provisions**

   a. **Ownership Change.** To maintain the accountability of the operation of the Facility, the Discharger is required to notify any succeeding owner or operator of the existence of this Order by letter if, and when, there is any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger.

7. Compliance Schedules – Not Applicable.

VIII. PUBLIC PARTICIPATION

The California Regional Water Quality Control Board, Central Valley Region (Central Valley Water Board) is considering the issuance of waste discharge requirements (WDRs) that will serve as a National Pollutant Discharge Elimination System (NPDES) permit for the Facility. As a step in the WDR adoption process, the Central Valley Water Board staff has developed tentative WDRs. The Central Valley Water Board encourages public participation in the WDR adoption process.

A. Notification of Interested Parties

The Central Valley Water Board has notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for the discharge and has provided them with an opportunity to submit their written comments and recommendations. Notification was provided through direct mailing, internet posting, and physical posting at the Facility, county courthouse or city hall, and the local U.S. Post Office (if allowed).

B. Written Comments

Interested persons are invited to submit written comments concerning these tentative WDRs. Comments must be submitted either in person or by mail to the Executive Officer of the Central Valley Water Board at the address listed above on the cover page of this Order.

To be fully responded to by staff and considered by the Central Valley Water Board, written comments should be received at the Central Valley Water Board offices **by 5:00 p.m. on 25 April 2010**.

C. Public Hearing

The Central Valley Water Board will hold a public hearing on the tentative WDRs during its regular Board meeting on the following date and time and at the following location:

Date:	26/27/28 May 2010
Time:	8:30 am
Location:	Regional Water Quality Control Board, Central Valley Region 11020 Sun Center Dr., Suite #200 Rancho Cordova, CA 95670

Interested persons are invited to attend. At the public hearing, the Central Valley Water Board will hear testimony, if any, pertinent to the discharge, WDRs, and permit. Oral testimony will be heard; however, for accuracy of the record, important testimony should be in writing.

Please be aware that dates and venues may change. Our Web address is http://www.waterboards.ca.gov/rwqcb5/ where you can access the current agenda for changes in dates and locations.

D. Waste Discharge Requirements Petitions

Any aggrieved person may petition the State Water Resources Control Board to review the decision of the Central Valley Water Board regarding the final WDRs. The petition must be submitted within 30 days of the Central Valley Water Board's action to the following address:

State Water Resources Control Board
Office of Chief Counsel
P.O. Box 100, 1001 I Street
Sacramento, CA 95812-0100

E. Information and Copying

The Report of Waste Discharge (ROWD), related documents, tentative effluent limitations and special provisions, comments received, and other information are on file and may be inspected at the address above at any time between 8:30 a.m. and 4:45 p.m., Monday through Friday. Copying of documents may be arranged through the Central Valley Water Board by calling (530) 224-4845.

F. Register of Interested Persons

Any person interested in being placed on the mailing list for information regarding the WDRs and NPDES permit should contact the Central Valley Water Board, reference this facility, and provide a name, address, and phone number.

G. Additional Information

Requests for additional information or questions regarding this order should be directed to Bryan Smith at (530) 226-3425.

ATTACHMENT G – SUMMARY OF REASONABLE POTENTIAL ANALYSIS

Table G-1. Summary of Reasonable Potential Analysis for Discharge Point No. 001

Constituent	Units	MEC	B	C	CMC	CCC	Water & Org	Org. Only	Basin Plan	MCL	Reasonable Potential
Antimony, Total Recoverable	ug/L	0.419	0.2 J	14.0	--	--	14	4,300	--	6	No
Arsenic, Total Recoverable	ug/L	1.15	0.8	10.0	340	150	--	--	10	10	No
Beryllium	ug/L	<0.1	<0.1	--	--	--	--	--		4	No
Cadmium	ug/L	0.027	0.04	0.3	2.3	1.52	--	--	0.33		No
Chromium (III), Total Recoverable	ug/L	1.4	11.9	126.9	1,064.3	126.85	--	--	--	50	No
Chromium (VI), Total Recoverable	ug/L	2	4 J	11.0	16.00	11.00	--	--	--	50	No
Copper, Total Recoverable	ug/L	39.9	7.7	5.6	7.97	5.60	1300	--	--	1,000	Yes
Cyanide	ug/L	20	<2	5.2	22	5.2	700	220,000	10.00	200	Yes
Lead, Total Recoverable	ug/L	0.6	1.2	1.5	7.97	5.60	--	--	7.81	15	No
Mercury, Total Recoverable	ug/L	0.00334	0.0113	0.1	38.14	1.49	0.05	0.05	--	2	No
Nickel, Total Recoverable	ug/L	2.2	14.9	31.5	282.9	31.46	610	4,600	--	100	No
Selenium, Total Recoverable	ug/L	0.4	0.4 J	5.0	--	5.00	--	--	--	20	No
Silver, Total Recoverable	ug/L	0.036	0.12 J	1.5	1.45	--	--	--	11.76	100	No
Thallium	ug/L	0.004	<0.2	1.7	--	--	1.70	6.30	--	2	No
Zinc, Total Recoverable	ug/L	128	18	21.31	72.20	72.20	--	--	21.31	5,000	Yes
Bromoform	ug/L	15.1	<0.1	4.3	--	--	4.3	360	--	80	Yes
Carbon Tetrachloride	ug/L	0.3	<0.05	0.25	--	--	0.25	4.4	--	0.5	Yes
Chlorodibromomethane	ug/L	30.1	0.1 J	0.401	--	--	0.401	34	--	80	Yes
Chloroform	ug/L	58.3	<0.04	--	--	--	--	--	--	80	No
Dichlorobromomethane	ug/L	22.5	0.06 J	0.56	--	--	0.56	46	--	80	Yes
Bis (2-Ethylhexyl) Phthalate	ug/L	3	<0.7	1.8	--	--	1.8	5.9	--	4	Yes
Butylbenzyl Phthalate	ug/L	0.2	<0.4	3,000	--	--	3,000	5,200	--	--	No
Diethyl Phthalate	ug/L	0.2	<0.4	23,000	--	--	23,000	120,000	--	--	No

Constituent	Units	MEC	B	C	CMC	CCC	Water & Org	Org. Only	Basin Plan	MCL	Reasonable Potential
Aldrin	ug/L	0.043	<0.002	0.00013	--	3	0.00013	0.00014	--	--	Maybe
Beta-BHC	ug/L	0.031	<0.002	0.014	--	--	0.014	0.046	--	--	Maybe
Gamma-BHC	ug/L	0.024	<0.005	0.019	--	0.95	0.019	0.063	--	--	Maybe
Ammonia Nitrogen, Total (as N)	mg/L	NA	NA	1.72	2.14[1]	1.72[4]	--	--	--	--	Yes[5]
Electrical Conductivity @ 25°C	umhos/cm	495	243	700	--	--	--	--	700	900	No
Nitrate Nitrogen, Total (as N)	mg/L	88	0.24	10	--	--	--	--	--	10	Yes

General Note: All inorganic concentrations are given as a total recoverable.
MEC = Maximum Effluent Concentration
B = Maximum Receiving Water Concentration or lowest detection level, if non-detect
C = Criterion used for Reasonable Potential Analysis
CMC = Criterion Maximum Concentration (CTR or NTR)
CCC = Criterion Continuous Concentration (CTR or NTR)
Water & Org = Human Health Criterion for Consumption of Water & Organisms (CTR or NTR)
Org. Only = Human Health Criterion for Consumption of Organisms Only (CTR or NTR)
Basin Plan = Numeric Site-specific Basin Plan Water Quality Objective
MCL = Drinking Water Standards Maximum Contaminant Level
NA = Not Available
ND = Non-detect

Footnotes:
(1) USEPA National Recommended Ambient Water Quality Criteria, Freshwater Aquatic Life Protection, 1-hour Average
(2) USEPA National Recommended Ambient Water Quality Criteria, Freshwater Aquatic Life Protection, 4-day Average.
(3) The chronic criterion for the protection of freshwater aquatic life of 87 ug/L may not be applicable because receiving water conditions are not similar to those under which the criterion was developed. The discharge does exhibit reasonable potential to exceed the acute criterion for the protection of freshwater aquatic life and the secondary MCL for aluminum.
(4) USEPA National Recommended Ambient Water Quality Criteria, Freshwater Aquatic Life Protection, 30-day Average.
(5) Untreated domestic wastewater contains ammonia. The Discharger currently uses nitrification to remove ammonia from the waste stream. Inadequate or incomplete nitrification may result in the discharge of ammonia to the receiving stream. Therefore, ammonia in the discharge has a reasonable potential to exceed the freshwater aquatic life criteria for ammonia.
(6) Reserved.
(7) Water Quality for Agriculture.
(8) There is no reasonable potential for these parameters when evaluating data based on an annual average basis.
(9) Background concentration greater than criteria. Contaminant not detected in effluent.

APPENDIX C

CALIFORNIA
Water Boards

Edmund G. Brown Jr.
Governor

Matthew Rodriguez
Secretary for
Environmental Protection

Central Valley Regional Water Quality Control Board

NOTICE OF VIOLATION

8 April 2013

WDID 5A450001004
Inspection ID# 12046648

Mr. Randy Gillichbauer
Shasta County Department of Public Works
CSA No.17, Cottonwood WWTP
1855 Placer St.
Redding, CA 96001

CERTIFIED MAIL
7012 1640 0001 5028 6609

NOTICE OF VIOLATION, FACILITY COMPLIANCE EVALUATION INSPECTION REPORT TRANSMITTAL, WASTE DISCHARGE REQUIREMENTS ORDER NO. R5-2010-0044, NPDES PERMIT NO. CA0081507, SHASTA COUNTY SERVICE AREA NO.17, COTTONWOOD WASTEWATER TREATMENT PLANT, SHASTA COUNTY

Enclosed for your information is a copy of the NPDES Compliance Evaluation Inspection (CEI) Report for the Cottonwood Wastewater Treatment Plant (Facility), performed on 20 February 2013. The report presents thirteen (13) "Major Findings" related to required record keeping and reporting, calibration of flow meters, self-monitoring program requirements, laboratory operations, and procedures and processes for operations and maintenance. Central Valley Regional Water Quality Control Board (Central Valley Water Board) staff has determined that the "Major Findings", as discussed in the CEI report, are violations of the subject Waste Discharge Requirements (WDRs).

The discharge of treated wastewater from the Facility is regulated by the Central Valley Water Board pursuant to WDR Order R5-2010-0044, NPDES Permit No. CA0081507. Pursuant to California Water Code (CWC) section 13385(c)(1), violations of WDRs may be subject to administrative civil liability of up to ten thousand dollars ($10,000) for each day in which a violation occurs.

Please review the attached CEI report and submit to the Central Valley Water Board by **6 May 2013 (1)** any comments/corrections regarding the CEI report and **(2)** a response to <u>each</u> "Major Finding", detailing how compliance with the WDRs will be obtained. The

response must also include an implementation schedule, where applicable, to achieve compliance with the subject violations that is as short as practicable.
If you have any questions regarding the above information, please contact Scott Gilbreath of my staff at (530) 224-4851, sgilbreath@waterboards.ca.gov, or at the footer address.

Bryan J. Smith, P.E.
Supervising Water Resource Control Engineer

SMG: lmw

Encl: 20 February 2013 Compliance Evaluation Inspection Report

cc: U.S. Environmental Protection Agency, San Francisco
SWRCB, Sacramento
C. Troy Bartolomei, Deputy Director, Shasta County Public Works, Redding
Maxwell Kuker, PG Environmental LLC, 570 Herndon, VA

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EPA Region IX and California Water Resources Control Board

NPDES Compliance Evaluation Inspection (CEI) Report

Name and Location of Facility Inspected				Entry Date	Permit Effective Date
Shasta County Service Area No. 17 Cottonwood Wastewater Treatment Plant 3425 Live Oak Road Cottonwood CA 96022				2/20/2013 **Entry Time** 9:00 AM	7/16/2010
NPDES Permit Number	**Order Number**	☐ **Major**	**County**		**Permit Expiration Date**
CA0081507	R5-2010-0044	☒ **Minor**	Shasta County		5/1/2015
Name(s) & Title(s) of On-Site Representative(s)		**Contact Information**			**Notified of Inspection?**
Randy Gillichbauer (Utilities Superintendent)		Phone: (530) 347-0431 Fax: (530) 347-0430 E-mail: CSA@att.net			☒ **Yes** ☐ **No**
Name, Title & Address of Responsible Official		**Contact Information**			**Official Contacted?**
Pat Minturn (Director Public Works) 1855 Placer Street Redding CA, 96001		Phone: (530) 225-5661 Fax: (530) 225-5667			☐ **Yes** ☒ **No**
Inspector(s)					**Presented Credentials?**
Primary: Dennis Wilson (PG Environmental, LLC) **Other(s):** Scott Gilbreath (Central Valley Water Board - Redding)					☒ **Yes** ☐ **No**
Weather Conditions at the Time of the Inspection:		**Facility Receiving Water Name:**			
Sunny; light precipitation within the past 24 hours		Cottonwood Creek			

Overview of Areas Evaluated During Inspection

S = Satisfactory, M = Marginal, U = Unsatisfactory, N = Not Evaluated

Permit:	S	Flow Measurement:	U	Biosolids/Solid Waste Handling & Disposal:	S
Records/Reports:	U	Self-Monitoring Program:	U	Compliance Schedules:	N
Facility Site Review:	S	Laboratory:	U	Pretreatment (POTWs Only):	N
Effluent and Receiving Waters:	S	Operations & Maintenance:	U	Stormwater:	N

Prepared By: Dennis Wilson (PG Environmental, LLC) on 3/3/2013

Reviewed By: Max Kuker (PG Environmental, LLC) on 3/21/2013

Report Date: 3/21/2013

Facility Narrative

On February 20, 2013 a USEPA contractor inspected the Shasta County Service Area No. 17, Cottonwood Wastewater Treatment Plant in Cottonwood, CA. Discharges from the Facility are regulated by Central Valley Water Board Order No. R5-2010-0044 (NPDES Permit No. CA0081507). The primary purpose of the inspection was to determine the accuracy and reliability of the Discharger's self-monitoring and reporting program. The primary on-site Facility representative was Randy Gillichbauer (Utilities Superintendent). A representative from the Central Valley Water Board participated in the Facility inspection.

The Shasta County Service Area (CSA) No. 17 (Discharger) owns and operates the Cottonwood Wastewater Treatment Plant (Facility). The Shasta County Department of Public Works provides oversight and management of the CSA. The Facility provides sewage service to the community of Cottonwood, CA. The primary on-site Facility representative stated there are currently 1,113 residential and small business connections to the sewer system, with an additional 134 connections in standby that have paid the connection fee but are not ready to connect. There are no Industrial Users.

The Facility provides advanced secondary level treatment of wastewater. Treatment consists of preliminary influent screening, grinding, activated sludge aeration, secondary clarification, filtration, chlorination, and dechlorination. The treated effluent is directed to Cottonwood Creek through a diffuser at Discharge Point 001. Sludge processing consists of pond stabilization and drying in on-site drying beds. Biosolids are disposed at a local landfill.

The inspectors visually evaluated the treatment train (in order from headworks to the chlorine contact basin) and site conditions in the presence of the primary on-site Facility representative and determined that all mechanical treatment units were operating and functioning properly with the exception of some solids carryover in one of the two secondary clarifiers.

The Facility's design capacity (design dry weather flow) is 0.43 million gallons per day (mgd). Average dry weather flow for the period of June 2012 through August 2012 was 0.31 mgd. The primary on-site Facility representative stated the instantaneous influent flow rate is dependent on the cyclic inflow from the pump station feeding the headworks. The instantaneous influent flow at 1:00 PM was 0.503 mgd, with the influent pump operating. At 1:05 PM the instantaneous influent flow decreased to 0.131, with the influent pump not operating. At 1:30 PM the instantaneous effluent flow was 0.219 mgd.

The Facility's operations personnel conduct self-monitoring activities. Influent samples are collected at the headworks immediately after grinding and effluent samples for Discharge Point 001 are collected after dechlorination immediately after the chlorine contact chamber. Samples for an underdrain system discharge (Monitoring Location UND-001) are collected at the underdrain discharge pipe. Sample collection locations and methods appeared to provide representative samples. All samples are analyzed at an on-site laboratory or at a contract laboratory.

Electronic self monitoring reports (eSMRs) and the "California Integrated Water Quality System (CIWQS) Violation Report" for the period of October 2012 through December 2012 were reviewed as a component of this inspection. No permit limit exceedances were identified. The evaluation also included a comparison of data points reported in the eSMRs submitted to the Central Valley Water Board against the laboratory bench sheets or contract laboratory reports documenting the actual analytical results. Discrepancies were identified and are presented in the "Major Findings – Records/Reports" section of this report.

A review of the "CIWQS Inspection Report" for inspections conducted at the Facility indicated that no compliance inspections have been conducted for the Facility since adoption of Central Valley Water Board Order No. R5-2010-0044 on May 27, 2010.

Major Findings

Records/Reports

1. Central Valley Water Board Order No. R5-2010-0044, Attachment E – Monitoring and Reporting Program, Reporting Requirements, Section X.D.3 requires submittal of an Annual Operations Report by **30 January** of each year. Section X.D.3 also requires that the Annual Operations Report shall contain the names, certification grades and phone numbers of persons employed at the Facility; a statement certifying when flow meters and other monitoring instruments and devices were last calibrated; and a statement certifying whether the current operation and maintenance manual and contingency plan reflect current operation and the dates when these documents were last revised and reviewed for adequacy. The primary on-site Facility representative stated that he was unaware of this requirement and stated that no Annual Operations Reports had been prepared since adoption of Order No. R5-2010-0044. The primary on-site Facility representative further stated that an attachment was included in the February 14, 2013 upload to the eSMR that included the grades of the operators at the Facility; however, the names and phone numbers were not included. Lastly, he also stated that the flow meters were not calibrated in 2012 and that there is no documentation that the Operation and Maintenance (O&M) Manual has been revised since its development in 1986.

2. Central Valley Water Board Order No. R5-2010-0044, Attachment E – Monitoring and Reporting Program, Effluent Monitoring Requirements, Section IV.A.1, Table E-3 requires monthly effluent monitoring at Monitoring Location EFF-001 for total recoverable copper and total recoverable zinc. The Discharger's chain-of-custody (COC) form for October 31, 2012 documented that a sample of the effluent had been collected at Monitoring Location EFF-001 for analysis of total recoverable copper and total recoverable zinc. As observed on the Discharger's contract laboratory (Basic Laboratory) results sheet for these analyses, 5.9 ug/L for total recoverable copper and 32.4 ug/L for total recoverable zinc were recorded. The October 2012 eSMR submitted by the Discharger to the Central Valley Water Board was found to not contain these results or any results for total recoverable copper and total recoverable zinc. It should be noted that both the non-reported results were in compliance with the effluent limitations for total recoverable copper and total recoverable zinc. The primary on-site Facility representative checked the data upload for the October 2012 eSMR and concurred that the total recoverable copper and total recoverable zinc results for October 31, 2012 were not included in the eSMR submitted to the Central Valley Water Board.

3. Central Valley Water Board Order No. R5-2010-0044, Attachment E – Monitoring and Reporting Program, Receiving Water Monitoring Requirements - Surface Water and Groundwater, Section VIII.A.1, Table E-8 requires weekly monitoring for DO in Cottonwood Creek at Monitoring Location RSW-002. The Discharger reported on the November 2012 eSMR a DO result of "0" mg/L for RSW-002 for a sample collected on November 15, 2012 and a result of 6.0 mg/L for RSW-002 for a sample collected on November 29, 2012 (refer to Exhibit 1). A review of the on-site laboratory results sheet revealed that the Discharger noted that the DO meter was "Not Working" on November 15, 2012; however, an analytical value of "0" mg/L was entered in the eSMR rather than "'no data available" (refer to Exhibit 2). On November 29, 2012, a result of 9.1

mg/L was recorded on the on-site laboratory results sheet for DO at RSW-002; however, an incorrect result of 6.0 mg/L was entered in the eSMR for that date (refer to Exhibit 2). It should be noted that the reporting of the incorrect results of "0" mg/L and 6.0 mg/L resulted in a reported receiving water concentration in the eSMR less in the than the receiving water quality objective of 7.0 mg/L for Cottonwood Creek, as specified in Central Valley Water Board Order No. R5-2010-0044, Receiving Water Limitations, Section V.A.5.b for the period between September 1 and May 31 of each year.

4. Central Valley Water Board Order No. R5-2010-0044, Attachment E – Monitoring and Reporting Program, Receiving Water Monitoring Requirements - Surface Water and Groundwater, Section VIII.B.1, Table E-13 requires monitoring once/month for total and fecal coliform organisms from the underdrain system discharge at Monitoring Location UND-001. The Discharger's chain-of-custody form documented that a sample had been collected on November 8, 2012 for analysis of total and fecal coliform. Basic Laboratory reported the results as 7 MPN/100 mL for total coliform and less than 2 MPN/100mL for fecal coliform. The November 2012 eSMR submitted to the Central Valley Water Board did not contain the November 8, 2012 total and fecal coliform results for Monitoring Location UND-001. The primary on-site Facility representative concurred that he missed these results from the Basic Laboratory results sheet in the data upload to the eSMR.

5. Central Valley Water Board Order No. R5-2010-0044, Attachment E – Monitoring and Reporting Program, Reporting Requirements, Section X.A.5.c requires that results less than the laboratory's Method Detection Limit (MDL) shall be reported as "Not Detected" or ND. In reviewing the October 2012 through December 2012 eSMRs submitted by the Discharger to the Central Valley Water Board it was observed by the inspector that the Discharger occasionally reports a value of "0" rather than "Not Detected" when results from the contract laboratory for BOD and TSS are less than the laboratory's MDL. It was also observed that when the results from the contract laboratory are reported as "Not Detected," the Discharger uses a "0" mg/L in the calculations for loading, resulting in a reported "0" pounds per day for BOD and TSS. The Central Valley Water Board representative attending the inspection indicated the correct method for reporting the loading would be to use the MDL for the calculation and report the loading value as less than the value calculated. The primary on-site Facility representative stated he would correct the method for calculating loadings.

6. Central Valley Water Board Order No. R5-2010-0044, Attachment D - Standard Provisions, Standard Provisions – Records, Section IV.B requires that the Discharger's records of monitoring information shall include:

   - The date, exact place, and time of sampling or measurements (40 CFR § 122.41(j)(3)(i)).
   - The individual(s) who performed the sampling or measurements (40 CFR § 122.41(j)(3)(ii)).
   - The date(s) analyses were performed (40 CFR § 122.41(j)(3)(iii)).
   - The individual(s) who performed the analyses (40 CFR § 122.41(j)(3)(iv)).

   A review of the daily on-site laboratory analysis sheets found that the individual who performs the sample collection or analysis is not recorded and that the time that samples are analyzed at the on-site laboratory is not recorded (refer to Exhibit 2). Without laboratory records indicating analysis time, it was not possible for the inspector to verify if pH and total residual chlorine were being analyzed within 15 minutes of sample collection in accordance to test procedures

specified in 40 CFR Part 136. The primary on-site Facility representative stated the laboratory analysis sheet would be modified and the required sampling and analysis times would be recorded to verify holding times.

Flow Measurement

1. Central Water Board Order No. R5-2010-0044], Attachment E – Monitoring and Reporting Program, General Monitoring Provisions, Section I.D requires that "all flow measurement devices shall be calibrated at least once per year to ensure continued accuracy of the devices." The primary on-site Facility representative was unable to provide documentation that influent (Parshall flume and ultrasonic transducer), effluent (Magmeter), and underdrain system (impeller) flow meters had been calibrated within the past year. He further stated that he was not aware of this requirement for annual calibration of the flow meters and to his knowledge there are no records available at the Facility documenting that the flow meters have been calibrated since they were installed. The primary on-site Facility representative stated that a performance services agreement, which has not been created, would be required for calibration services. He further stated he would discuss the need for flow meter calibrations with the Public Works Director

Self-Monitoring Program

1. Central Valley Water Board Order No. R5-2010-0044, Attachment E – Monitoring and Reporting Program, Effluent Monitoring Requirements, Section IV.A.1, Table E-3 requires continuous monitoring at Monitoring Location EFF-001 for effluent pH, turbidity, and total residual chlorine. The primary on-site Facility representative stated that continuous analyzers to monitor effluent pH, turbidity, total residual chlorine were installed in October 2011 and have been in operation since (refer to Photo 2). These continuous analyzers monitor the effluent after dechlorination. At 1:50 PM the instantaneous effluent readings from the analyzers were 7.14 SU for pH, 1.68 NTU for turbidity, and 0.0 mg/L for total residual chlorine. The primary on-site Facility representative stated the minimum and maximum daily recorded values can be obtained from the continuous analyzers. However, the primary on-site Facility representative further stated that the results reported for pH, turbidity, and total residual chlorine in the eSMRs are from daily grab samples analyzed at the on-site laboratory rather than the results from the continuous analyzers. The primary on-site Facility representative stated he was not aware that daily minimum and maximum values could be entered into the eSMRs. He further stated that future eSMRs would contain the daily minimum and maximum recorded results from the analyzers for pH and total residual chlorine, and the daily maximum recorded result for turbidity.

2. Central Valley Water Board Order No. R5-2010-0044, Attachment E – Monitoring and Reporting Program, Other Monitoring Requirements, Section IX.B.1, Table E-14 requires annual monitoring of the municipal water supply at Monitoring Location SPL-001 for certain constituents. The primary on-site Facility representative stated that no monitoring of the municipal water supply has been conducted since adoption of Order No. R5-2010-0044. He further stated that he was aware of this requirement and was under the impression that samples collected by the Cottonwood Water District (Water District) would be sufficient to comply with this requirement. The primary on-site Facility representative produced a copy of the results from the Water District sampling in 2010 and it was observed that the analyses did not provide results for the constituents as required in Table E-14. The primary on-site Facility representative stated the annual water supply monitoring would need to be added to the contract for samples analyzed at the contract laboratory.

3. Central Valley Water Board Order No. R5-2010-0044, Attachment E – Monitoring and Reporting Program, Effluent Monitoring Requirements, Section IV.A.1, Table E-3 contains a footnote stating composite samples shall be flow proportional. The primary on-site Facility representative stated both the influent and effluent composite samplers were original equipment when the Facility was constructed in 1986 and are time based, with a 500 mL aliquot each hour. He further stated that he was aware of this requirement, but that new composite samplers with flow weighted capability cost approximately $4,000 and would need to be budgeted as part of future Facility upgrades.

4. Central Valley Water Board Order No. R5-2010-0044, Attachment D – Standard Provisions, Standard Provisions – Monitoring, Section III.B requires that monitoring must be conducted according to test procedures under 40 CFR Part 136. 40 CFR 136.3, Table II, Footnote 2 requires composite samples to be split into separate aliquots for preservation and/or analysis be maintained at less than or equal to six degrees Celsius, unless specified otherwise. It was found that influent and effluent composite samplers are refrigerated, but refrigeration was not turned on at the time of inspection since no samples were being collected. The primary on-site Facility representative did not know what the temperature setting was for the influent and effluent composite samplers. Further, it was found that the composite samplers were not equipped with a thermometer and there was no temperature log maintained; therefore, the inspector was not able to verify that collected composite samples were preserved in accordance with 40 CFR 136. The primary on-site Facility representative stated that he was not aware of this requirement, but would address this issue by placing a thermometer in the influent and effluent composite samplers and maintain a temperature log to record the temperatures during sample collection.

Laboratory

1. Central Valley Water Board Order No. R5-2010-0044, Attachment E – Monitoring and Reporting Program, General Monitoring Provisions, Provision I.B requires that "Chemical, bacteriological, and bioassay analyses of any material required by this Order shall be conducted at a laboratory certified for such analyses by the State Department of Public Health (DPH; formerly the Department of Health Services). In the event a certified laboratory is not available to the Discharger, analyses performed by a noncertified laboratory will be accepted provided a Quality Assurance-Quality Control Program is instituted by the laboratory. A manual containing the steps followed in this program must be kept in the laboratory and shall be available for inspection by Central Valley Water Board staff. The Quality Assurance-Quality Control Program must conform to USEPA guidelines or to procedures approved by the Central Valley Water Board." Furthermore, Central Valley Water Board Order No. R5-2010-0044, Attachment E – Monitoring and Reporting Program, General Monitoring Provisions, Provision I.C requires that the Discharger "institute a Quality Assurance-Quality Control program for any onsite field measurements such as pH, turbidity, temperature and residual chlorine." A manual containing the steps followed in this program must be kept onsite and shall be available for inspection by Central Valley Water Board staff. The Discharger must demonstrate sufficient capability (qualified and trained employees, properly calibrated and maintained field instruments, etc.) to adequately perform these field measurements." It was found that the Facility's on-site laboratory, which performs analyses for pH, DO, temperature, total residual chlorine, and turbidity, is not ELAP certified. Further, no approved Quality Assurance-Quality Control Program or Standard Operating Procedures (SOPs) have been developed and no equipment calibration records were available for review. The primary on-site Facility representative stated that he was unaware of this permit requirement and would request assistance from the contract laboratory for development of a Quality Assurance-Quality Control Program for the on-site laboratory.

Operations & Maintenance

1. Central Valley Water Board Order No. R5-2010-0044, Attachment D – Standard Provisions, Standard Provisions – Permit Compliance, Section I.D states that "The Discharger shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Discharger to achieve compliance with the conditions of this Order." It was found that the Discharger's procedures and processes to ensure that routine and preventive maintenance items are scheduled and performed on time did not appear to be adequate. The primary on-site Facility representative was unable to provide documentation showing a preventive maintenance activity schedule, or tracking sheets showing recent maintenance activities had been performed for equipment at the Facility. The primary on-site Facility representative stated that there is a record which tracks maintenance performed at the Facility; however, the only records produced during the inspection were ten years old. The primary on-site Facility representative also stated that due to the number of CSA facilities run by the operations team, maintenance activities are generally performed when other routine daily duties are completed; therefore, there is generally a backlog of needed maintenance. He further stated he would attempt to locate the more recent maintenance records for the Facility and work to improve the current maintenance management process.

Attachments:
CEI Photo Log
CEI Exhibit Log

PERMIT: **OVERALL RATING: S**

INSPECTED ITEM	EVAL
1. Current copy of Facility's NPDES permit available on site.	S
2. Correct name and mailing address of permittee identified on NPDES permit.	S
3. Facility is as described in permit.	S
4. a. Notification given to Regional Water Board of process/production modifications, collection system expansions, etc. that impacted quality/quantity of discharge or changes to the Facility or increased discharge. b. Permit modification received, if required, prior to changes.	N N
5. Recent permit modifications, amendments or compliance orders on file.	N
6. Number of discharge outfalls the same as listed in the permit.	S
7. Name of receiving waters listed correctly in the permit.	S
8. Permit status (i.e., Current, Expired, or Extended)	Current
9. Permit renewal application submitted to the Regional Water Board at least 180 days prior to the expiration date.	N
10. Other:	N
Notes: ***This section was rated "satisfactory" because all checklist items reviewed were rated satisfactory.***	

RECORDS/REPORTS: **OVERALL RATING: U**

INSPECTED ITEM	EVAL
1. NPDES records maintained for the time period required (5 years): The following records and reports were requested and observed: ***- Current permit, monitoring and reporting program, and standard provisions*** ***- Latest three months of eSMRs (October 2012 through December 2012)*** ***- Flow measurement records*** ***- O&M Manuals*** ***- Spill and bypass records*** ***- Operation log books*** ***- Auxiliary power check log records*** ***- Contract laboratory records and COCs***	Yes
2. a. Did the Facility document any spills or bypasses during the period reviewed?	No
b. Spills and bypasses reported and documented as required by the permit (i.e., as soon as possible, but no later than 24 hours from the time the permittee first became aware of the circumstances).	No
c. Follow-up written documentation given as required by the permit (within 5 days in most cases).	N
Central Valley Water Board Order No. R5-2010-0044 regulates the Facility and the associated collection system. No spills were documented to have occurred at the Facility. Collection system records were not reviewed.	

RECORDS/REPORTS: **OVERALL RATING: U**

INSPECTED ITEM	EVAL
3. Discharge monitoring report (DMR) and/or self monitoring report (SMR) evaluation:	
a. The responsible person or designee signs and certifies the DMRs and/or SMRs.	S
b. The Facility monitors more frequently than required by the permit.	Yes
c. All data collected are summarized on the DMRs and/or SMRs.	U
d. Data reported on DMRs and/or SMRs is consistent with analytical results.	U
e. Coliform concentrations calculated as required by the permit (e.g., median, geometric mean).	S
f. Numerical values for minimum detection limits are reported on DMRs and/or SMRs when laboratory reports "Not Detected" or "0" (for example, MDL= 3, Report: "<3" on DMR).	U
g. "Less than values" properly carried through loading calculations.	U
h. Flow measurement period used for loading calculations brackets the sampling period.	S
i. Influent and/or effluent loading rates properly calculated; if required.	S
j. Number Exceeding (N.E.) properly reported on all DMRs and annual reports.	N
eSMRs, not DMRs, were reviewed as a component of this inspection.	
3b. The permit requires effluent monitoring once per week for total coliform. The primary on-site Facility representative stated that three samples for effluent total coliform are collected and analyzed per week. He further stated that all the results are submitted to the Central Valley Water Board in the monthly eSMRs.	
3c. The Discharger sampled for total recoverable copper and total recoverable zinc on October 31, 2012 and the samples were analyzed at the contract laboratory; however, the Discharger did not report the monthly results in the October 2012 eSMR. Also, the Discharger failed to report the results for total and fecal coliform for Monitoring Location UND-001 on the November eSMR for samples collected on November 8, 2012. Refer to the "Major Findings - Records/Reports" section of this report for details.	
3d.The Discharger reported incorrect DO results from the laboratory analysis sheet for November 15 and 29, 2012 on the November eSMR. Refer to the "Major Findings - Records/Reports" section of this report for details.	
The Discharger reported a result for November 8, 2012 for pH at Monitoring Location RSW-001 as 73 SU on the November eSMR. The result recorded on the on-site laboratory analysis sheet was 7.3 SU. The primary on-site laboratory representative stated he would double check for decimal points on future eSMRs.	
3f. and 3g. The Discharger reports sample results for BOD and TSS less than the laboratory's MDL as "0" and carries the "0" value over to calculate loadings. Refer to the "Major Findings - Records/Reports" section of this report for details.	

RECORDS/REPORTS: **OVERALL RATING: U**

INSPECTED ITEM	EVAL
4. Reports completed in the timeframe and with the frequency required by the permit (not all reports required for all facilities):	
a. DMRs and/or SMRs	S
b. Biosolids Monitoring Reports	S
c. Biosolids Management Reports	N
d. CSO/ I&I Reports	N
e. Compliance Schedule Reports	N
f. Pretreatment Reports	N
g. Other:	N
4b. Central Valley Water Board Order No. R5-2010-0044 does not require submittal of an Annual Biosolids Report. The primary on-site Facility representative stated that the chemical analysis required for disposal of biosolids at the Anderson Landfill are conducted and manifests for disposal at the Anderson Landfill are maintained at the Facility.	
4d. The collection system and associated records were not reviewed during the inspection.	
5. Sampling and analytical records (for water and biosolids) include:	
a. Dates, times, and location of sampling	S
b. Names of individuals performing sampling	U
c. Analytical methods	S
d. Results of analyses	S
e. Dates of analyses	S
f. Times of analyses, as necessary to verify holding times	U
g. Analysts' names or initials	U
h. Instantaneous flow at grab sample stations, if required	N
5b. Review of the sampling records indicated the name of the individual collecting a sample is not recorded on the on-site laboratory analysis sheets. Refer to the "Major Findings - Records/Reports" section of this report for details.	
5f. Time of analysis is not recorded on the on-site laboratory analysis sheets to verify holding time. Refer to the "Major Findings - Records/Reports" section of this report for details.	
5g. Analysts' name(s) or initial(s) is not recorded on the on-site laboratory analysis sheets. Refer to the "Major Findings - Records/Reports" section of this report for details.	

RECORDS/REPORTS: **OVERALL RATING: U**

INSPECTED ITEM	EVAL
6. Plant records include:	
a. Daily plant operational records or log book	S
b. Equipment maintenance records and schedules	U
c. CSO/lift station check records or log book	N
d. Records of auxiliary power checks	S
e. Spill Prevention Control and Countermeasure (SPCC) plan	N
f. Pollution Prevention Plan (P3)	N
g. Stormwater Pollution Prevention Plan (SWPPP)	N
h. Influent and/or effluent flow measurement records maintained for the past three years	S
i. Other:	N
6b. The primary on-site Facility representative was unable to provide maintenance records and schedules for the past 10 years. This checklist item is accounted for in the "Operations and Maintenance" section of this report.	
7. All records and reports required by the permit appear to be organized and available for inspection. ***The following records were requested but were not available for review:*** ***- 2012 Annual Report. Refer to the "Major Findings - Records/Reports" section of this report for details*** ***- Flow meter calibration records. This checklist item is accounted for in the "Flow Measurement" section of this report.*** ***- Maintenance records. This checklist item is accounted for in the "Operation and Maintenance" section of this report.***	U
8. Other:	N

Notes:
This section was rated "unsatisfactory" due to checklist items 3c., 3d., 3f., 3g., 5b., 5f., 5g. and 7. Maintenance records were accounted for in the "Operations and Maintenance" section of this report. Flow meter calibration records were accounted for in the "Flow Measurement" section of this report.

FACILITY SITE REVIEW: **OVERALL RATING: S**

INSPECTED ITEM	EVAL
1. All treatment units and supporting equipment are in service and functioning properly mechanically. ***The Facility's treatment train consists of the following:*** ***- One manually cleaned bar screen (not in use). The primary on-site Facility representative stated the bar screen is not used unless the grinder is off line.*** ***- One grinder (in use) (refer to Photo 3). The primary on-site Facility representative stated the grinder runs continously. He further stated the grinder bearings were worn and in need of replacement and that the new bearings had been ordered.*** ***- Parshall flume for influent flow measurement is located after screening and grinding (refer to Photo 4).*** ***- Two oxidation ditches (both in use). The primary on-site Facility representative stated that the aerators are operated 24-hours per day.*** ***- Two secondary clarifiers (both in use). Solids carryover was observed in one of the clarifiers at the overflow weir (refer to Photo 5). The other clarifier appeared to be functioning properly (refer to Photo 6).*** ***- One traveling bridge sand filter (in use) (refer to Photo 7). The primary on-site Facility representative stated that the sand media in the traveling bridge filter was replaced in October 2011.*** ***- Chlorine contact chamber (gaseous chlorine is used for disinfection). The channels of the chlorine contact basin appeared to have a green coloration (refer to Photo 8). The primary on-site Facility representative stated that the chlorine residual is measured in each channel daily and the residual is maintained at 7 mg/L which should be sufficent to control algal growth. He further stated that compliance with the total coliform limitation is achieved in the last channel (refer to Photo 8 for coliform monitoring location).*** ***- Sulfur dioxide is used for dechlorination.*** ***The primary on-site Facility representative stated that the dosing control systems for chlorination and dechlorination had been replaced and upgraded in October 2011 (refer to Photos 9 and 10).*** ***The Facility's solids handling process consists of the following:*** ***- Two aerated sludge settling basins.*** ***- Three on-site concrete lined sludge drying beds (refer to Photo 11).***	M
2. Hydraulic and organic loadings are consistent with the fact sheet and plant design criteria. a. Are there signs of overloading to the Facility and collection system, including I&I and septage loading?	S S
3. Peak flows remain within the established plant capacity. a. If flows have exceeded capacity, has the Regional Water Board been notified?	S N
4. Lift stations are properly monitored, maintained, have a backup power source and are not subject to chronic spills and/or overflows. ***Lift stations in the collection system were not reviewed as a component of this inspection.***	S
5. Odors are adequately controlled, resulting in limited complaints.	S

S = Satisfactory, M = Marginal, U = Unsatisfactory, N = Not Evaluated/Not Applicable

FACILITY SITE REVIEW: **OVERALL RATING: S**

INSPECTED ITEM	EVAL
6. Residual chlorine monitoring is well documented and sampling/monitoring is representative of the discharge.	U
a. If a UV system is used, the dosage intensity, tubes, and alarms are adequate, maintained and documented.	N
The Discharger does not report results for total residual chlorine at Monitoring Location EFF-001 from the continuous analyzer as required in the permit. This checklist item is accounted for in the "Self-Monitoring Program" section of this report.	
7. Housekeeping procedures are adequate to prevent release of pollutants to the environment:	
a. Adequate dikes and secondary containment	S
b. Spill containment and clean-up	S
c. Signs of spillage to soil, groundwater, or surface water	S
d. Stormwater and leachate management from storage piles	N
e. Leaking pipes, pumps, etc.	S
f. Drum and chemical storage areas	M
g. Minimization of pollutants entering stormwater outfalls	S
h. Other open dumps or debris piles	N
i. Other:	N
7f. Spillage was noted at the soda ash storage location in the dechlorination room (refer to Photo 12). Soda ash is added to effluent for pH control.	
8. Signs of tank deterioration and/or settlement.	S
9. Safety concerns are present that may interfere with proper operation, maintenance, and/or monitoring.	S
10. Material Safety Data Sheets (MSDS) are available for stored chemicals.	S
11. Equipment available for spill cleanup and containment.	S
12. Other:	N

Notes:

This section was rated "satisfactory" because the inspector did not believe that checklist items 1. (solids carryover) and 7f. were significant enough to downgrade the overall rating to marginal. Checklist item 6. was accounted for in the "Major Findings - Self-Monitoring Program" section of this report.

EFFLUENT AND RECEIVING WATERS: **OVERALL RATING: S**

INSPECTED ITEM	EVAL
1. Recent DMR and/or SMR history (last ***3*** months) (outfall number(s) ***001***):	
a. Violations of discharge limits	S
b. Spills/bypasses	S
c. Fish kills or other receiving water impacts	S
d. WET testing results are in accordance with the permit	S
e. If effluent limit violations have been identified, what actions has the Facility taken to eliminate or reduce their recurrence?	N
2. DMR and/or SMR spot check ***October 2012 through December 2012*** conducted for the months of:	
a. Internal lab sheets and contract lab results properly transferred to DMRs	U
b. Monthly average, weekly, maximum, etc., values correctly calculated per the permit	S
c. Influent and effluent loadings reported	M
d. DMR and/or SMR accurate and complete for each outfall	U
2a. Transcription errors were identified and were accounted for in the "Records/Reports" section of this report.	
2c. Effluent loadings were accounted for in the "Records/Reports" section of this report.	
2d. Results of analyses not reported on the eSMR from the laboratory analysis sheets were accounted for in the "Records/Reports" section of this report.	
3. Appearance of effluent during inspection:	
a. The effluent(s) was viewed during the inspection	Yes
b. Excessive foam, scum, or sheens present	S
c. Cloudy and/or color	M
d. Excessive solids	S
e. Other:	N
The secondary effluent was viewed at the chlorine contact chamber (refer to Photo 8).	
3c. Effluent appeared to have a green coloration indicating possible algal growth (refer to Photo 8). However, results for effluent total coliform reported in the eSMRs reviewed indicated compliance with the total coliform effluent limitations.	

S = Satisfactory, M = Marginal, U = Unsatisfactory, N = Not Evaluated/Not Applicable

EFFLUENT AND RECEIVING WATERS: OVERALL RATING: S

INSPECTED ITEM	EVAL
4. Appearance of receiving water(s) during inspection:	
a. The receiving water(s) was viewed during the inspection	No
b. Distinctly visible foam or sheens on receiving water	N
c. Biosolids accumulation or deposits of solids below discharge point(s)	N
d. Distinctly visible plume from discharge(s) to receiving water	N
e. Discharge creates objectionable odor at or near receiving water(s)	N
f. Other:	N
The Facility discharges to Cottonwood Creek approximately 0.5 miles from the Facility and access to Discharge Point 001 is through private property by dirt road. Therefore, the receiving water was not able to be viewed due to poor dirt road condition from rainfall the previous day.	
5. Other:	N

Notes:

This section was rated "satisfactory" because checklist items 2a., 2c., and 2d. were accounted for in the "Records/Reports" section of this report. Checklist item 3c. (green coloration) was not considered signficant enough to downgrade the overall rating to marginal since the reported total coliform results are in compliance with the effluent limitations.

FLOW MEASUREMENT: **OVERALL RATING: U**

INSPECTED ITEM	EVAL
1. Flow measurement devices and methods:	
Influent Measurement:	
Primary Device: *Parshall flume*	S
Secondary Device: *Ultrasonic transducer*	S
Effluent Measurement:	
Primary Device: *Magmeter*	S
Secondary Device: *N/A*	N
Other method of estimating flow: *N/A*	N
The influent Parshall fume is part of the original construction of Facility in 1986 (refer to Photo 4). The primary on-site Facility representative stated that a new effluent flow meter (Magmeter) was installed in October 2011.	
Central Valley Water Board Order No. R5-2010-0044 also requires flow measurement of the underdrain system (Monitoring Location UND-001). The primary on-site Facility representative stated an Impeller Meter has been placed in the underdrain system outfall pipe and total flow is recorded weekly (refer to Photo 13).	
2. Flow measurement devices designed to meet permit requirements ("continuous measured," "continuous record," etc.).	S
3. Flow measurement location is representative of the actual discharge (considering return and bypass lines, etc.).	M
The primary on-site Facility representative stated that the return flows from the on-site restroom, filter backwash, return activated sludge, sludge drying beds, and chemical analyzers are returned to an on-site drainage pump station and pumped to the headworks downstream of the influent flow meter. None of the return flows are measured.	
4. Flumes:	
a. Approach channel straight for at least 10 times the maximum head height in flume	N
b. Flow enters flume evenly distributed across the channel and free of turbulence, boils, or other disturbances	M
c. The flume is clean and free of debris or deposits	S
d. All flume dimensions appear accurate, level, and plumb	N
e. Flume head is being measured properly	N
f. Flume is appropriately sized to measure the existing range of flows	N
g. No obstructions downstream causing inaccurate flow measurement due to excessive "submergence" in flume	N
h. Proper flow tables being used	N
4b. Influent flow through the flume is cyclic depending on whether the influent pump is on or off. Because of the on/off pumping cycle, the flow through the flume varies and did not appear to be evenly distributed due to turbulence.	

FLOW MEASUREMENT: **OVERALL RATING: U**

INSPECTED ITEM	EVAL
5. Weirs:	
a. Approach channel straight for at least 10 times the maximum head height	N
b. Flow in the approach channel is evenly distributed and free of turbulence, boils, or other disturbances	N
c. No solids accumulation in the bottom of the approach channel	N
d. Weir crest is located at least two times the maximum head height off the floor of the flow channel	N
e. The weir plate is level, plumb and without distortions	N
f. Weir is beveled on downstream side if plate is > 1/8 inch thick	N
g. No leakage around the weir plate	N
h. Measuring point located at least 3 times the maximum head height behind (upstream of) the weir	N
i. There is free-fall and access for air below the nappe of the weir (i.e., water doesn't cling to the weir plate)	N
j. Weir sized properly to measure the existing range of flows	N
k. Proper flow tables being used for weir type and size	N
6. Secondary flow device properly installed and maintained, and operating without interference from foam, turbulence, webs, etc. ***Influent flow is cyclic and it is possible interference due to turbulence may occur.***	M
7. Date of last flow meter calibrations: **Influent:** Performed by: *N/A* **Effluent:** Performed by: *N/A* ***The primary on-site Facility representative stated that there are no records that the influent, effluent, and underdrain flow meters have been calibrated since installation. Refer to the "Major Findings - Flow Measurement" section of this report for details.***	 U U
8. Calibration checks by plant personnel routinely performed.	N
9. Calibration records (external and internal checks) maintained.	N
10. Other:	N
Notes: ***This section was rated "unsatisfactory" due to checklist item 7.***	

SELF-MONITORING PROGRAM: **OVERALL RATING: U**

INSPECTED ITEM	EVAL
1. Sampling locations, type, methods, and frequencies conform to the NPDES permit for all required samples (including influent, effluent, biosolids, receiving stream, etc.). ***Sampling locations conform to the permit for all required samples; however, type and frequencies for pH, turbidity, and total residual chlorine do not conform. The permit requires continuous monitoring for pH, turbidity, and total residual chlorine. The Facility has continuous analyzers for pH, turbidity, and chlorine; however, the Discharger reports the results from daily grab samples analyzed in the on-site laboratory in the eSMRs, not minimum and maximum results from continuous measurements. Refer to the "Major Findings - Self-Monitoring Program" section of this report for details.*** ***The permit requires an annual sample for the municipal water supply at Monitoring Location SPL-001. No monitoring results were available for review for the water supply monitoring. Refer to the "Major Findings - Self-Monitoring Program" section of this report for details.***	U
2. Sampling locations and methods provide representative samples. a. Grab samples are collected during peak flow conditions rather than low-stress conditions b. Composite sampling procedures comply with the permit (time vs. flow weighted) c. Other: ***2b. The primary on-site Facility representative stated composite samples are time weighted composite samples; however, the permit requires flow proportional composite samples. Refer to the "Major Findings - Self-Monitoring Program" section of this report for details.***	 S U N
3. Automatic samplers and other sampling equipment are properly cleaned.	S
4. Samples are preserved using methods listed in 40 CFR, Part 136 (e.g., chilled, acidified). ***Composite samplers are refrigerated; however, there is no thermometer or temperature log to verify the internal temperature. Refer to the "Major Findings - Self-Monitoring Program" section of this report for details.***	U
5. Sample containers are as listed in 40 CFR, Part 136.	S
6. Chain of custody is maintained and documented.	S
7. Samples are collected using approved protocols: a. Coliform samples are collected directly into sterilized containers b. BOD samples are collected prior to disinfection or reseeded c. Oil and grease samples are collected directly into glass containers d. Other:	 S S N N
8. Other:	N
Notes: ***This section was rated "unsatisfactory" due to checklist items 1., 2b., and 4.***	

S = Satisfactory, M = Marginal, U = Unsatisfactory, N = Not Evaluated/Not Applicable

LABORATORY: **OVERALL RATING: U**

INSPECTED ITEM	EVAL
1. Onsite laboratory is ELAP-certified. a. List parameters analyzed at the onsite laboratory that are used for DMR reporting: ***pH, temperature, DO, turbidity, and total residual chlorine*** b. List additional parameters analyzed for internal monitoring and process control: ***N/A***	No
2. EPA-approved analytical methods are used by the onsite laboratory.	S
3. Adequate equipment and procedures used for on-site analyses: a. BOD and CBOD b. TSS c. pH d. Dissolved oxygen e. Residual chlorine f. Temperature g. Other: ***Turbidity***	 N N S S S S S
4. Onsite laboratory records include: a. Laboratory SOPs b. Calibration and maintenance of equipment c. Equipment operating instructions and manuals ***4a. The on-site laboratory is not certified and no QA\QC program was in place. Also, no laboratory SOPs were in place for the on-site laboratory analyses. Refer to the "Major Findings - Laboratory" section of this report for details.*** ***4b. The primary on-site Facility representative stated the pH, DO, chlorine, and turbidity meters are calibrated according to the equipment manual specifications; however, calibration records were not available for review. Refer to the "Major Findings - Laboratory" section of this report for details.***	 U U S
5. Adequate spare parts and supplies for onsite analyses.	S
6. Results of latest external DMR QA or WP study are available and are acceptable. Date of last report: / / ***The Facility does not participate in the DMR QA program.***	N
7. Satisfactory refrigeration in use.	S
8. Certified contract laboratory(s) being used:	S

LABORATORY: **OVERALL RATING: U**

INSPECTED ITEM		EVAL
Laboratory Name: ***Basic Laboratory, (ELAP No. 1677)*** Visited? ***No*** Address: ***2218 Railroad Ave.*** ***Redding, CA 96001*** Phone: ***(530) 243-7234*** Parameters: ***Acute toxicity, BOD, TSS, TDS, total coliform, ammonia, metals, hardness, organics, and priority pollutants***	Laboratory Name: ***Sierra Foothill*** Visited? ***No*** Address: ***255 Scottsville Blvd.*** ***Jackson, CA 95642*** Phone: ***(209) 223-2800*** Parameters: ***Chronic toxicity***	
9. EPA-approved analytical procedures are identified on contract lab report.		S
10. Holding times are being met by onsite and/or contract laboratory. a. pH measured in situ or within 15 minutes of sample collection. b. Residual chlorine measured in situ or within 15 minutes of sample collection. ***10a. The Discharger has been reporting effluent pH results from daily grab samples instead of from the continuous analyzer. This item was accounted for in the "Major Findings - Self-Monitoring Program" section of this report. Also, analysis time for pH is not recorded to determine if holding time is being met. This item was accounted for in the Records/Reports section of this report.*** ***10b. The Discharger has been reporting effluent total residual chlorine results from daily grab samples instead of from the continuous analyzer. This item was accounted for in the "Major Findings - Self-Monitoring Program" section of this report. Analysis time for total residual chlorine is not recorded to determine holding time. This item was accounted for in the "Major Findings - Records/Reports" section of this report.***		 U U
11. Other:		N

Notes:

This section was rated "unsatisfactory" due to checklist items 4a. and 4b. Checklist items 10a. and 10b were accounted for in the "Self-Monitoring Program" and "Records/Reports" sections of this report, respectively.

OPERATIONS AND MAINTENANCE: OVERALL RATING: U

INSPECTED ITEM	EVAL
1. Preliminary treatment units (bar screens, comminuters, grit channels, etc.) properly maintained with wastes properly disposed. ***The primary on-site Facility representative stated that the bearings where in need of replacement on the headworks grinder. He further stated that the bearings have been ordered but could not state when the work would be performed.***	S
2. Adequate oxygen maintained in aerated treatment systems.	S
3. No operational problems caused by hydraulic "short-circuiting" in treatment units.	S
4. Biosolids wasting/return rates adequate to maintain system equilibrium.	S
5. Operation and Maintenance (O&M) Manuals and supporting information organized and maintained for use:	
a. Plant O&M Manual	M
b. Equipment manuals	N
c. Plant engineering drawings	N
d. Collection system drawings available or in development	N
e. Maintenance records/costs	U
5a. The primary on-site Facility representative stated the O&M Manual has not been updated since the Facility was constructed in 1986. ***5e. Records of maintenance performed were not available for review. Refer to the "Major Findings - Operations and Maintenance" section of this report for details.***	
6. Routine and preventive maintenance items are scheduled and performed on time. ***Refer to the "Major Findings - Operations and Maintenance" section of this report for details.***	U
7. The amount of maintenance activities and parts in backlog is acceptable. ***Refer to the "Major Findings - Operations and Maintenance" section of this report for details.***	U
8. Operational problems contributing to plant upset, excessive odors, effluent violations, etc.	S

OPERATIONS AND MAINTENANCE: **OVERALL RATING: U**

INSPECTED ITEM	EVAL
9. Level of operator certification as required by the permit and staffing level as specified in O&M Manual. ***The Facility is rated as a Class III facility. The Facility is typically staffed a minimum of two hours per day, seven days per week. Facility operations are controlled and monitored manually.*** ***The operations team consists of the following:*** ***- Three Grade III*** ***- One Grade II*** ***- One Grade I*** ***The primary on-site Facility representative stated that the operations team is also responsible for the operation and maintenance of the Palo Cedro Wastewater Treatment Plant (CSA#8), the Alpine Meadows Water and Wastewater system (CSA#13), six Shasta County CSA water treatment systems, and two County septage pond sites. He further stated that staffing at the Facility varies as needed each day; however, operators are at the Facility at least two hours per day.***	M
10. Auxiliary power available as required by the permit and operates the necessary treatment units. ***Power for the Facility is typically supplied by Pacific Gas and Electric (PG&E). In the event that power cannot be supplied by PG&E, one diesel powered emergency generator is available and has the capability to run all essential Facility processes. In addition, the main Facility pump station has its own diesel powered generator and one collection system pump station (Crowley Creek Pump Station) has its own diesel powered generator. The primary on-site Facility representative stated that the three generators are checked and tested weekly.***	S
11. Alarm systems for power and equipment failure. ***Cal Safety Alarm Company is immediately notified of alarms and calls the Facility operator on call in the event of power or equipment failure.***	S
12. Treatment control procedures are established for emergencies.	S
13. Hydraulic surges are handled without excessive solids wash-out or bypasses.	S
14. Spare pumps and parts readily available. ***Major parts are ordered as needed. The primary on-site Facility representative stated that the recording equipment for flow and residual chlorine located in the control room is out of date and parts are no longer available.***	M
15. Facility appears to be well operated and maintained. ***Due to the number of CSA facilities the operations team is responsible for, work schedules are priority based and as a result some maintenance activities are backlogged.***	M
16. Other:	N
Notes: ***This section was rated "unsatisfactory" due to checklist items 5e., 6. and 7.***	

S = Satisfactory, M = Marginal, U = Unsatisfactory, N = Not Evaluated/Not Applicable

BIOSOLIDS/SOLID WASTE HANDLING AND DISPOSAL: OVERALL RATING: S

INSPECTED ITEM	EVAL
1. Biosolids/solid waste disposal/reuse method(s) (e.g., land application, landfill, etc.): ***Grit and screenings are hauled to a local landfill and biosolids are processed on site and hauled to the same landfill for disposal.***	S
2. Biosolids/solid waste disposal/reuse location(s): ***Anderson Landfill, Anderson, CA.***	S
3. The above processes are in accordance with the permit.	S
4. Storage at Facility: a. Adequately sized for periods of inclement weather b. Controls leachate, runoff, and public access	 S S
5. Recent analytical results for metals (biosolids) are within permit limits.	S
6. Biosolids land application records include: a. Farm maps and land owner agreements b. Soil nutrient analyses done within the last year for active sites c. Records showing loading rate to each site d. Pathogen/Vector reduction records (pH or temperature logs, etc.)	 N N N N
7. Other:	N
Notes: ***This section was rated "satisfactory" because all checklist items reviewed were rated satisfactory.***	

S = Satisfactory, M = Marginal, U = Unsatisfactory, N = Not Evaluated/Not Applicable

Shasta County Service Area No. 17 – Cottonwood Wastewater Treatment Plant (NPDES No. CA0081507) Photo Log

Inspected by: Dennis Wilson (PG Environmental, LLC) and Scott Gilbreath (Central Valley Water Board - Redding)

Photo 1: Facility entrance.

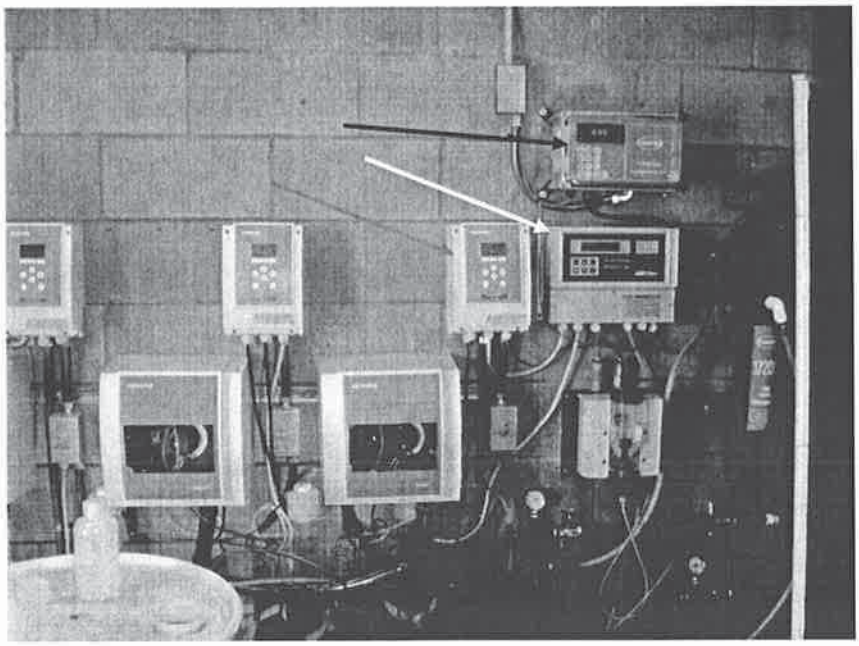


Photo 2: New effluent continuous analyzers installed in October 2011 for turbidity (black arrow), pH (yellow arrow), and total residual chlorine (red arrow).

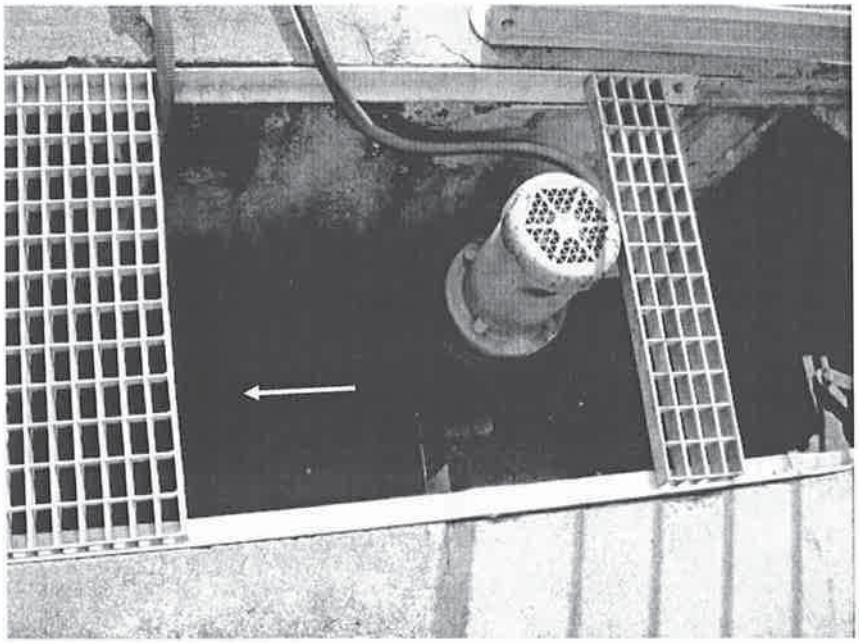


Photo 3: Grinder located at the Facility headworks. Direction of flow to the Parshall flume and oxidation ditches shown by yellow arrow.

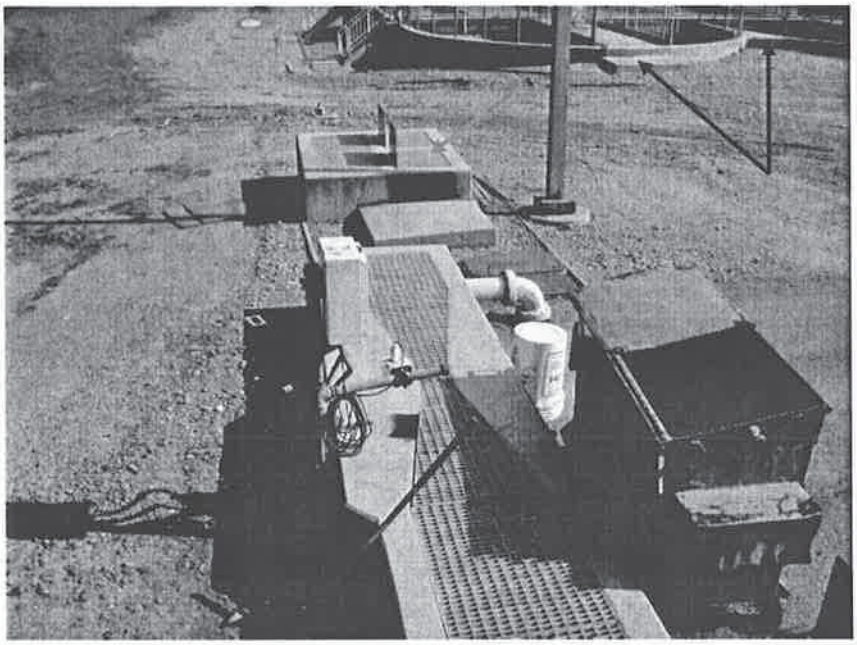


Photo 4: Influent Parshall fume. Splitter box for flow to oxidation ditches (red arrow). Two oxidation ditches (black arrows).

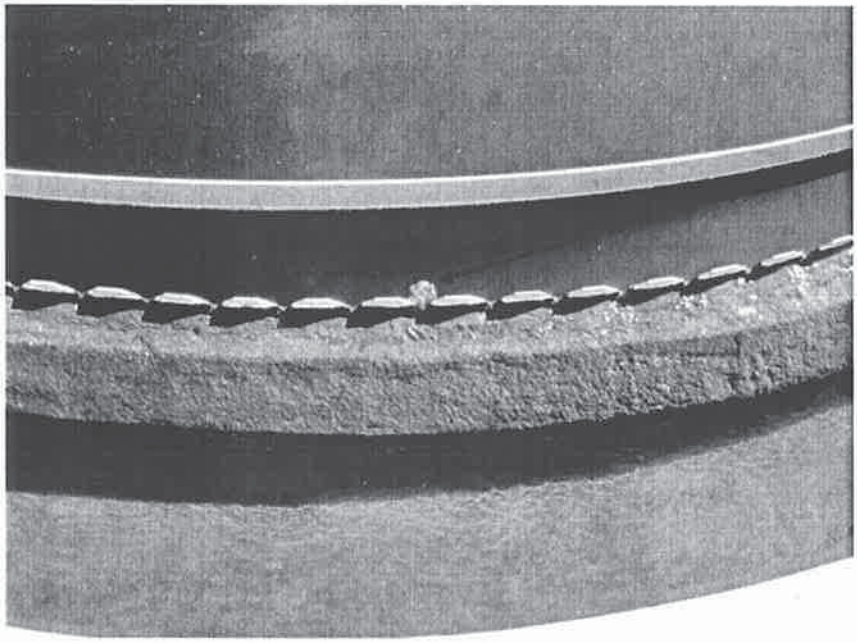


Photo 5: Solids carryover observed at the secondary clarifier weirs in one of the two clarifiers (black arrows).

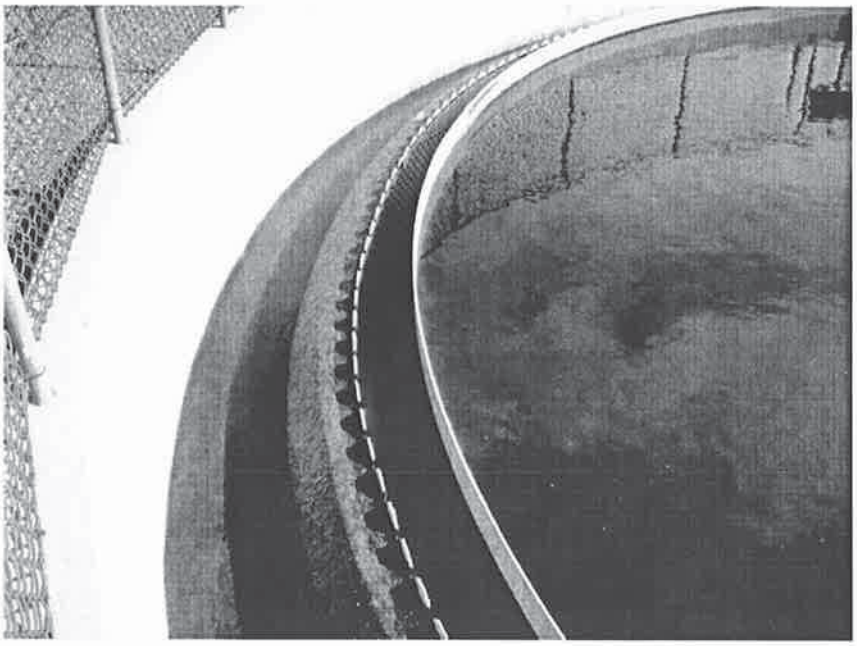


Photo 6: Second of two secondary clarifiers appeared to be functioning properly with no solids carryover.

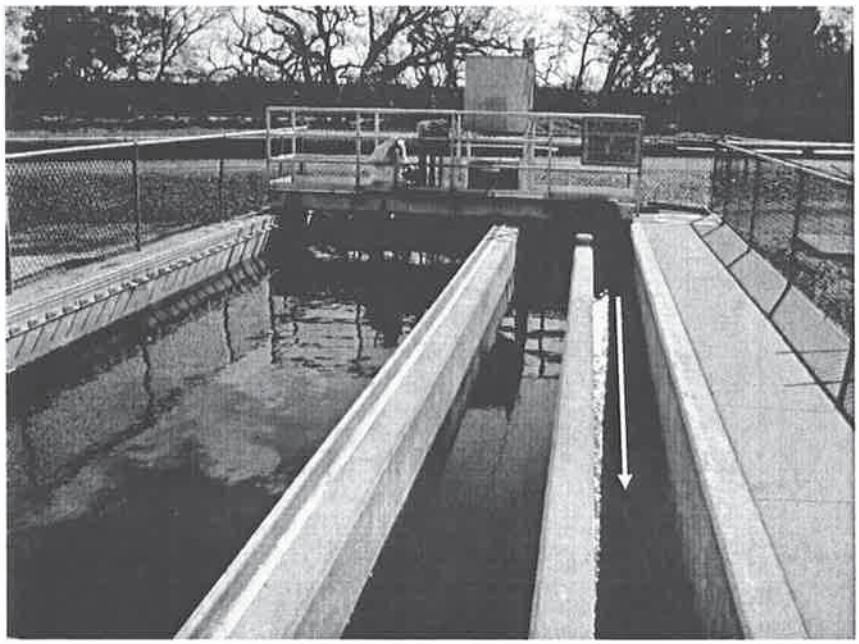


Photo 7: Traveling bridge sand filter. Sand filter was in a backwash cycle at the time of site review. Backwash flow is diverted to the on-site drainage pump station (yellow arrow).

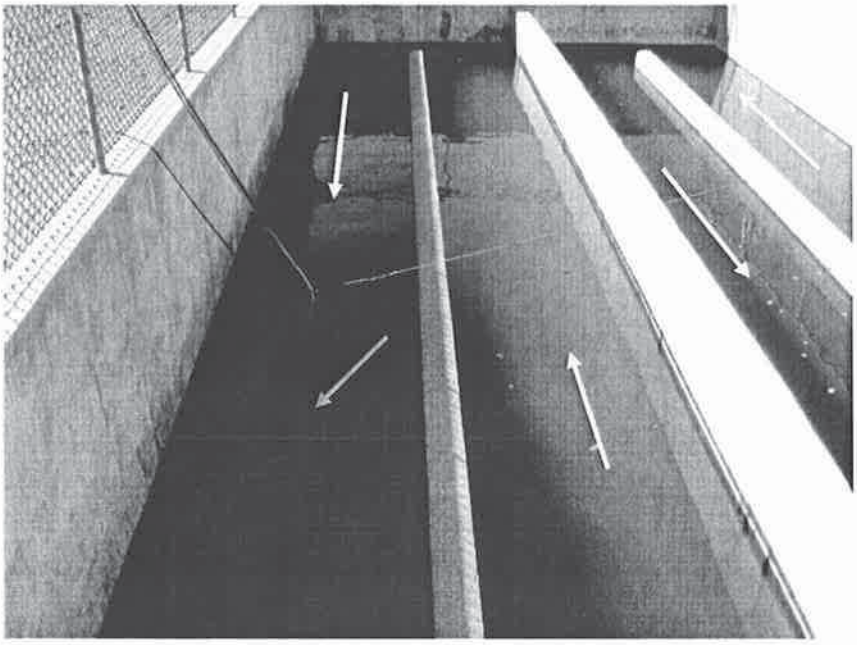


Photo 8: Chlorine contact chamber with direction of flow shown by yellow arrows. Note green coloration. Sampling location in final chlorine contact channel for total coliform organisms shown by red arrow.

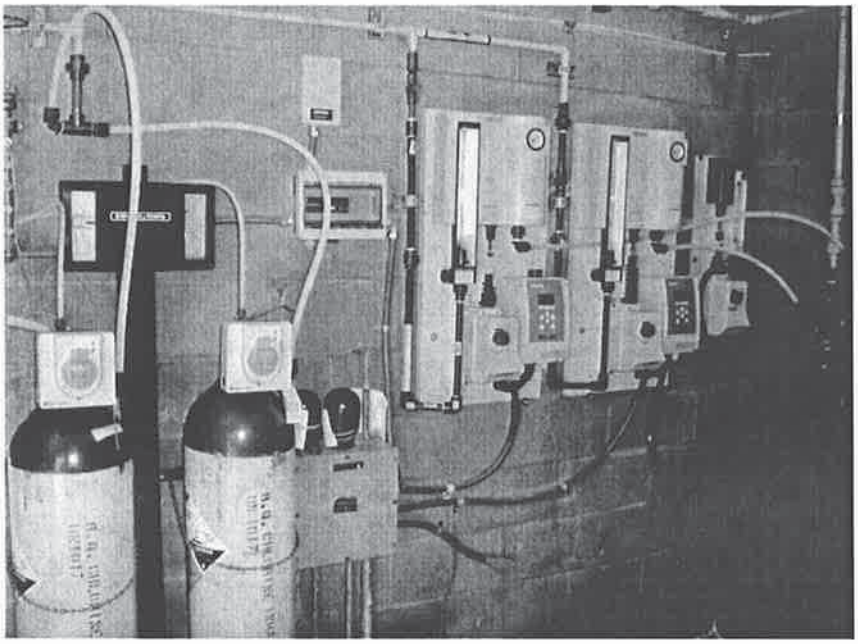


Photo 9: New chlorine gas dosing system controls installed in October 2011.

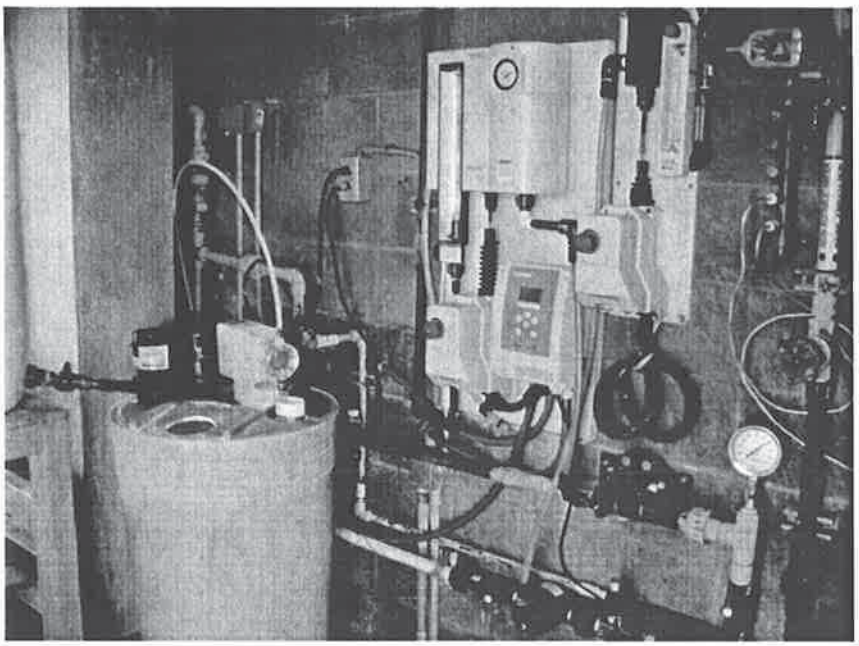


Photo 10: New sulfur dioxide dechlorination dosing system controls installed in October 2011. Yellow container contains soda ash solution which is added for effluent pH control.

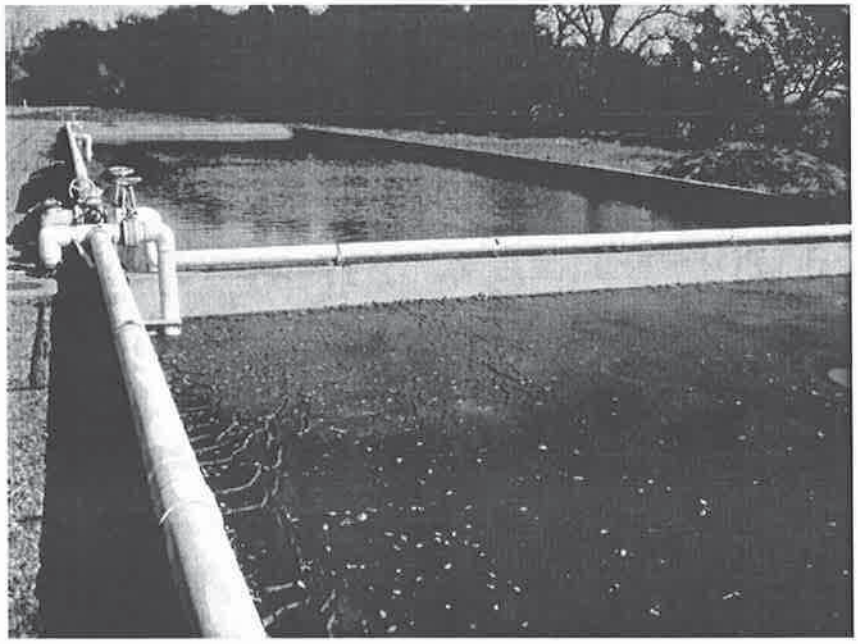


Photo 11: Two of the Facility's three concrete lined sludge drying beds.

Photo 12: Spillage of soda ash powder noted at the storage location in the dechlorination system dosing equipment room.

Photo 13: Impeller meter (yellow arrow) in the outfall pipe from the underdrain system. Monitoring Location UND-001 at the discharge point (red arrow) to an unnamed tributary to Cottonwood Creek.

Shasta County Service Area No. 17 – Cottonwood Wastewater Treatment Plant (NPDES No. CA0081507) Photo Log

Inspected by: Dennis Wilson (PG Environmental, LLC) and Scott Gilbreath (Central Valley Water Board - Redding)

Location	Parameter	Analytical Method / Calc Type	Record Type	Qualifier	Results	Units	MDL	ML	RL	Sample Date
RSW-002	Chlorine, Total	Chlorine, Total	Analytical result	=	0	mg/L	0	0	0	11/15/2012
RSW-002	Temperature	Data Unavailable	Analytical result	=	54	Degrees F	2	0	2	11/15/2012
RSW-002	pH	pH, Electrometric	Analytical result	=	7.1	SU	0	0	0	11/15/2012
RSW-002	Dissolved	Oxygen, Dissolved	Analytical result	=	0	mg/L	0	0	0	11/15/2012
RSW-002	Turbidity	Turbidity	Analytical result	=	0.6	NTU	0	0	0	11/15/2012
RSW-002	Fecal Coliform	Standard Method	Analytical result	=	130	MPN/100	0	0	2	11/15/2012
RSW-002	pH	pH, Electrometric	Analytical result	=	6.9	SU	0	0	0	11/21/2012
RSW-002	Temperature	Data Unavailable	Analytical result	=	57	Degrees F	2	0	2	11/21/2012
RSW-002	Turbidity	Turbidity	Analytical result	=	9.6	NTU	0	0	0	11/21/2012
RSW-002	Chlorine, Total	Chlorine, Total	Analytical result	=	0	mg/L	0	0	0	11/21/2012
RSW-002	Dissolved	Oxygen, Dissolved	Analytical result	=	9	mg/L	0	0	0	11/21/2012
RSW-002	Fecal Coliform	Standard Method	Analytical result	>=	1600	MPN/100	0	0	2	11/21/2012
RSW-002	Dissolved	Oxygen, Dissolved	Analytical result	=	6	mg/L	0	0	0	11/29/2012
RSW-002	pH	pH, Electrometric	Analytical result	=	7.4	SU	0	0	0	11/29/2012
RSW-002	Fecal Coliform	Standard Method	Analytical result	=	130	MPN/100	2	0	2	11/29/2012
RSW-002	Chlorine, Total	Chlorine, Total	Analytical result	=	0	mg/L	0	0	0	11/29/2012
RSW-002	Temperature	Data Unavailable	Analytical result	=	57	Degrees F	2	0	2	11/29/2012
RSW-002	Turbidity	Turbidity	Analytical result	=	1.4	NTU	0	0	0	11/29/2012

Exhibit 1: November eSMR submitted to the Central Valley Water Board for receiving water sample results at RSW-002 from November 15, 2012 to November 29, 2012. Discharger reported a result for DO for November 15, 2012 of "0" mg/L (red arrow). Discharger reported a result for DO for November 29, 2012 of "6" mg/L (blue arrow). The on-site laboratory result sheet for November 2012 receiving water sample results showed the DO meter was not working on November 15, 2012 and the result for November 29, 2012 on the result sheet was recorded as 9.1 mg/L (refer to Exhibit 2).

Shasta County Service Area No. 17 – Cottonwood Wastewater Treatment Plant (NPDES No. CA0081507) Photo Log

Inspected by: Dennis Wilson (PG Environmental, LLC) and Scott Gilbreath (Central Valley Water Board - Redding)

Cottonwood Creek Field Monitoring Samples

Date: 11-8-12	Weather	Creek Condition	Suspend Solids	Dish	PH	D.O	Temp	EC	Turb.	Cl2
Time: 0930	Lt. Rain	Clear	25.0014	R1						
RSW-001 Fecal & Coliform	yes (X) no ( )	100m/L	-25.0009		7.3	9.5	61	257	0.8	0
Copper & Zinc	yes ( ) no ( )		.0005							
Time: 0930			21.9883	R2						
RSW-002 Fecal & Coliform	yes (X) no ( )		-21.9878		7.4	9.6	61	258	0.5	0
			.0005							
Time:		Time:								
EFF-001 Monthly Chemicals	yes ( ) no ( )	INF-001 Monthly Chemicals			yes ( ) no ( )					
Time:		Flow								
UND-1 Fecal & Coliform	yes ( ) no ( )									

Date: 11-15-12	Weather	Creek Condition	Suspend Solids	Dish	PH	D.O	Temp	EC	Turb.	Cl2
Time: 9:00	Clear	Clear	25.0020	R-1			55			
RSW-001 Fecal & Coliform	yes (X) no ( )	100 m/L	-25.0021		7.7	Not Working	13	274	.4	0
	yes ( ) no ( )		.0001							
Time: 9:00			21.9894	R-2			54			
RSW-002 Fecal & Coliform	yes (X) no ( )		-21.9892		7.1	Not Working	12	266	.6	0
			.0002							
Time:		Time:								
EFF-001 Monthly Chemicals	yes ( ) no (X)	INF-001 Monthly Chemicals			yes ( ) no (X)					
Time: 11-15-12		Flow								
UND-1 Fecal & Coliform	yes ( ) no (X)	No Flow								

Date: 11-21-12	Weather	Creek Condition	Suspend Solids	Dish	PH	D.O	Temp	EC	Turb.	Cl2
Time: 1130		Cloudy	25.0034	R1						
RSW-001 Fecal & Coliform	yes ( ) no ( )	50 m/L	-25.0031		6.9	10.1	57	245	10.0	0
Copper & Zinc	yes ( ) no ( )		.0003							
Time: 1130			21.9896	R2						
RSW-002 Fecal & Coliform	yes ( ) no ( )		-21.9894		6.9	10.2	57	250	9.6	0
			.0002							
Time:		Flow								
UND-1 Fecal & Coliform	yes ( ) no ( )									

Date: 11-29-12	Weather	Creek Condition	Suspend Solids	Dish	PH	D.O	Temp	EC	Turb.	Cl2
Time:	Rain	Cloudy	25.0022	R1						
RSW-001 Fecal & Coliform	yes (X) no ( )	50 m/L	-25.0020		7.4	9.2	57	150	1.6	0
	yes ( ) no ( )		.0002							
Time:			21.9902	R2						
RSW-002 Fecal & Coliform	yes (X) no ( )		-21.9899		7.4	9.1	57	144	1.4	0
			.0002							

Exhibit 2: Cottonwood Wastewater Treatment Plant on-site laboratory result sheet for November 2012. Notation on the laboratory result sheet for November 15, 2012 indicated DO meter was "Not Working" (red arrow), but the result was reported as "0" mg/L on the November 2012 eSMR (refer to Exhibit 1). Sample result recorded for DO on November 29, 2012 was 9.1 mg/L (blue arrow), but was reported as 6 mg/L on the November 2012 eSMR (refer to Exhibit 1). It should be noted that the name or initial of the person performing sample collection or analysis is not on the analysis sheet. The time is missing on November 29, 2019, and based on the time information for the other dates, there is no way of determining if this is the collection time or analysis time. Therefore, holding times cannot be determined for pH and total residual chlorine from the information on the analysis sheet.

APPENDIX D

ORDINANCE NO. 664

ORDINANCE OF THE BOARD OF SUPERVISORS OF THE COUNTY OF SHASTA REPEALING ORDINANCE 639 AND SETTING FORTH THE CHARGES AND RATES FOR SEWER RELATED SERVICES FOR COUNTY SERVICE AREA NO. 17 - COTTONWOOD SEWER

The Board of Supervisors of the County of Shasta ordains as follows:

Section 1. Rate Schedules: The following rate schedules for sewer service shall be adopted for County Service Area No. 17 - Cottonwood Sewer.

Basic Bi-monthly Charge Effective January 1, 2008:

The basic bi-monthly charge per household equivalent shall be $60.00

Basic Bi-monthly Charge Effective January 1, 2009:

The basic bi-monthly charge per household equivalent shall be $64.00

Basic Bi-monthly Charge Effective January 1, 2010:

The basic bi-monthly charge per household equivalent shall be $68.00

Bi-Monthly Standby Charge (Unchanged):

For Parcels with 1-5 unused assessment units:	$10.00
For Parcels with 6-10 unused assessment units:	$20.00
For Parcels with more than 10 unused assessment units:	$30.00

The applicable standby charge shall be paid by the owner of each parcel in the service area for which delivery of sewer service is readily available but has not been initiated, whether structures are present on the property or not. The Director of Public Works may waive the monthly standby charge if the Director determines that service is not readily available to a particular parcel. This determination will include factors such as size of the property, the topography of the property, and the shape of the property.

Installation: Main line extension installations shall be at the sole expense of the person or entity applying. When main line extensions are required, extension of service shall be constructed at the sole expense of the person or entity applying for the extension, and shall meet or exceed minimum standards and requirements of the County. A deposit to cover the improvement plan check and construction inspection will be required. The minimum deposit shall be $400.00.

Capital Improvement Fee: For new land uses that will generate wastewater in excess of the household equivalents that were previously purchased for the affected property, the property owner shall pay a Capital Improvement Fee of $3,600.00 for each additional household equivalent based on the proposed zoning or use.

Commencing January 1, 2008, and annually thereafter, the amount of the Fee shall be automatically adjusted by a percentage equal to the percentage change in the Engineering News Records' construction cost index from the index for January of the preceding year to index for the January of the adjustment year.

The Capital Improvement Fees shall be deposited into the CSA No. 17 Capital Improvement Fund for future expansion of the system.

Collection System Improvement Fee: For new land uses that will generate wastewater in excess of the household equivalents that were previously purchased for the affected property, the property owner shall pay a Collection System Improvement Fee in accordance with the following schedule for each additional household equivalent based on the proposed zoning or use.

West Area:	$1,600.00
Central Area:	$ 800.00
East Area:	$ 0.00

Commencing January 1, 2008, and annually thereafter, the amount of the Fee shall be automatically adjusted by a percentage equal to the percentage change in the Engineering News Records' construction cost index from the index for January of the preceding year to index for the January of the adjustment year.

Area boundaries are as shown on the attached **Exhibit "A."**

The Collection System Improvement Fees shall be deposited into the CSA No. 17 Capital Improvement Fund for future improvements to the main collection system in the western and central portions of the CSA.

NOTE: For purposes of this Ordinance, one "Household Equivalent" will discharge an average wastewater flow of approximately 250 gallons per day into the sanitary sewer system.

Inspection Fees

A sewer inspection fee of $100.00 will be collected at building permit issuance where connection to the sewer system is a requirement of the building permit.

Section 2. For the purposes of this Ordinance, the term "bi-monthly" shall mean occurring once every two months.

Section 3. Effective January 1, 2008, this Ordinance supersedes any prior ordinance or resolution setting water and sewer rates, fees, and charges for County Service Area No. 17 (Cottonwood Sewer).

Section 4. Effective December 31, 2007, Ordinance Number 639 is repealed.

Section 5. This Ordinance shall be in full force and effect from and after 30 days after its passage. The Clerk shall cause this ordinance to be published as required by law.

PASSED AND ADOPTED this 11th day of December, 2007, by the Board of Supervisors of the County of Shasta, State of California by the following vote:

AYES: Supervisors Hartman, Baugh, Kehoe, Cibula, and Hawes

NOES: None

ABSENT: None

ABSTAIN: None

RECUSE: None

MARK CIBULA, CHAIRMAN
Board of Supervisors
County of Shasta, State of California

ATTEST:

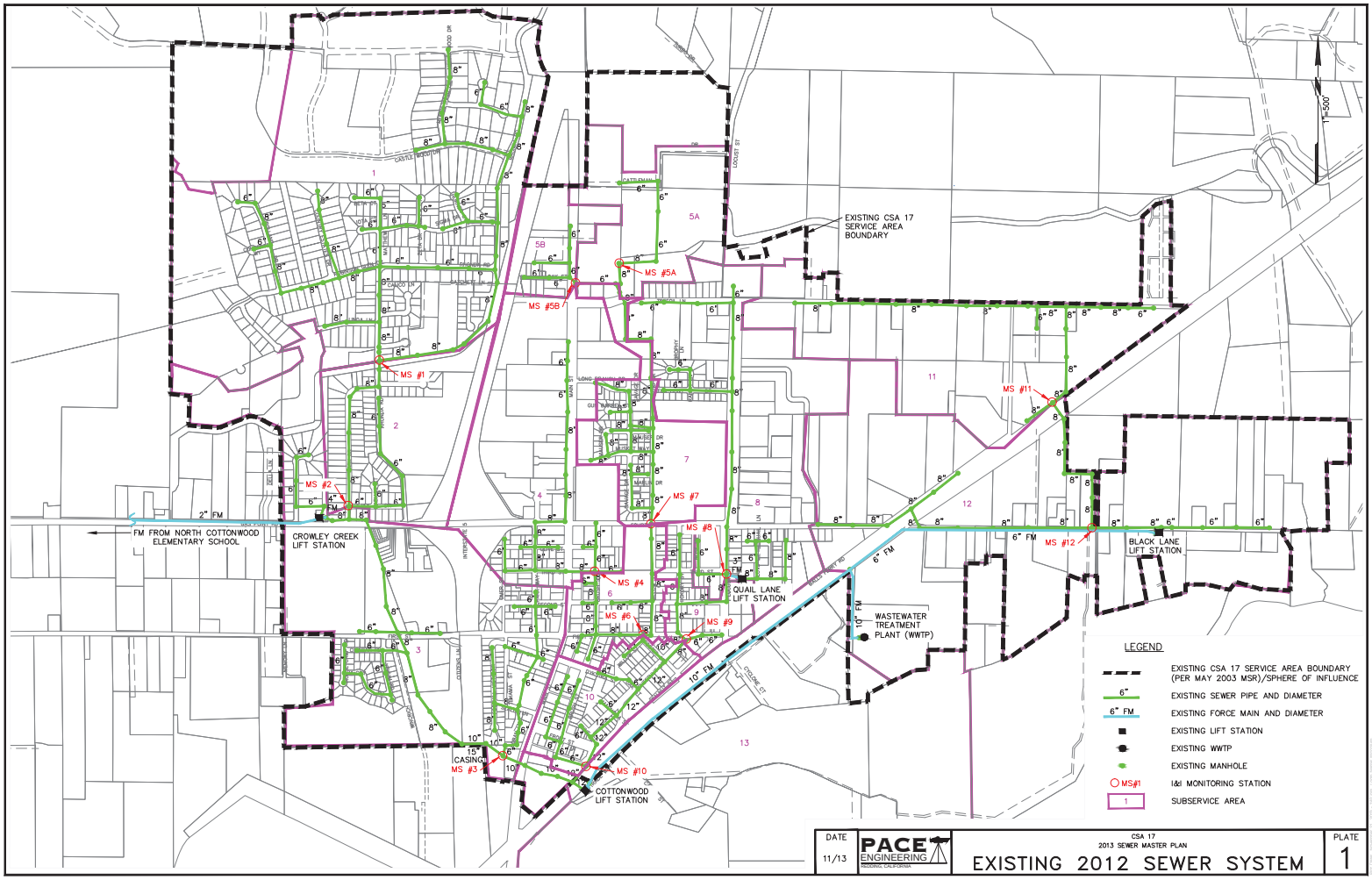
LAWRENCE G. LEES
Clerk of the Board of Supervisors

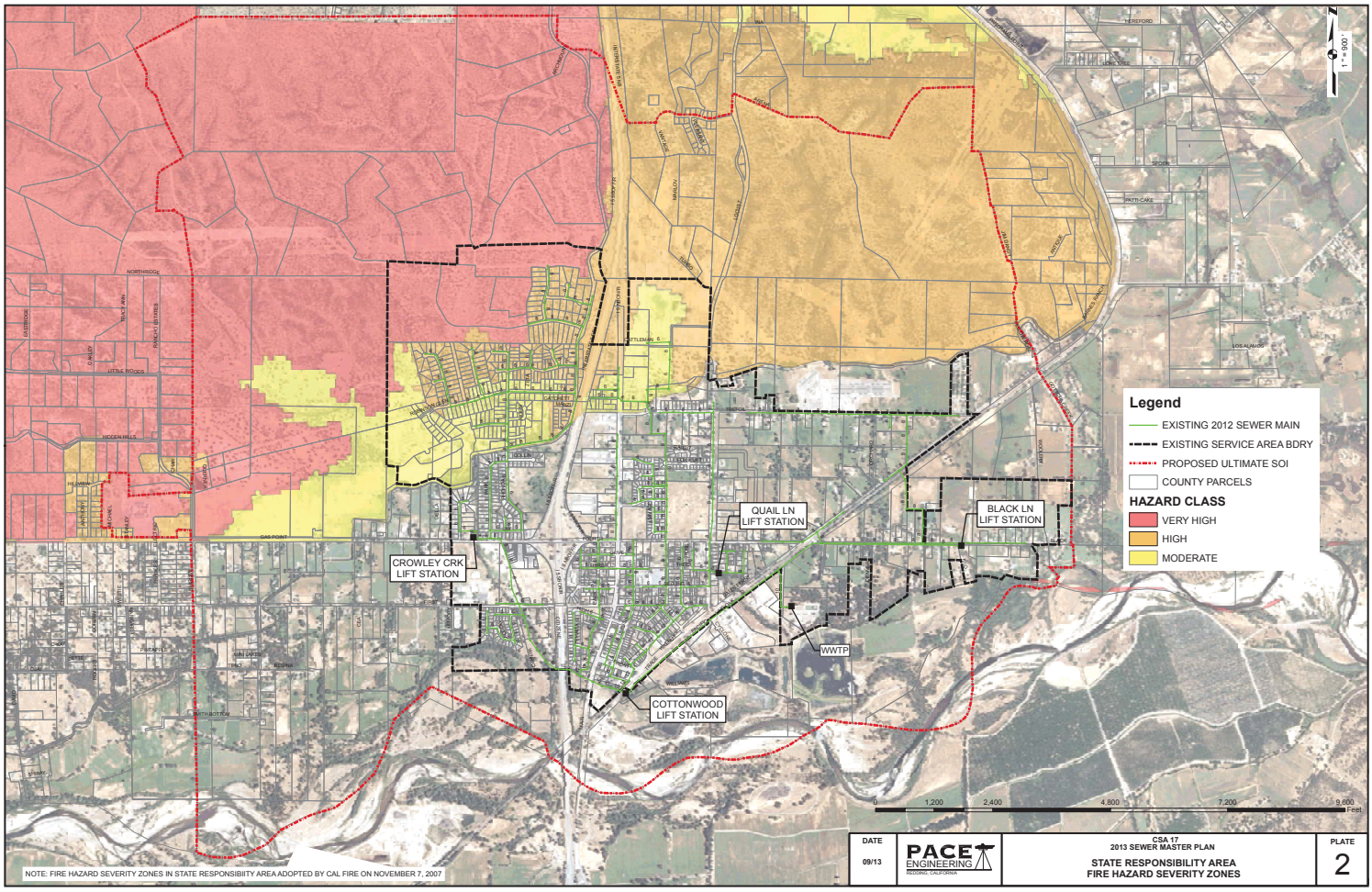
By Diane E Colson
Deputy

This instrument is a correct copy of the original on file in this office.

ATTEST: DEC 1 2007

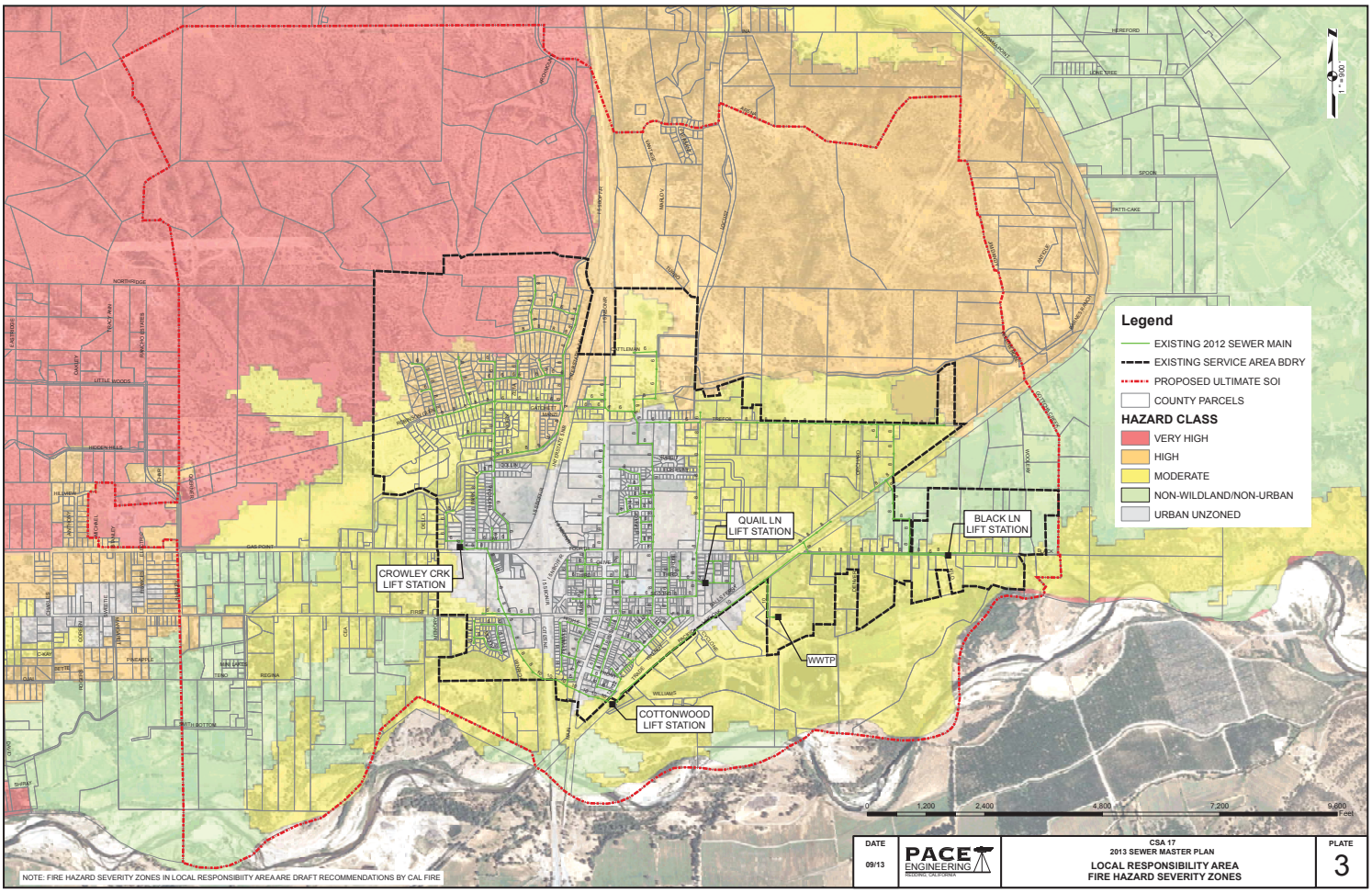
Clerk of the Board
Supervisors of the County of Shasta, State of California
BY Diane E Colson


EXISTING CSA 17 SERVICE AREA BOUNDARY
MS #1
MS #2
MS #3
MS #4
MS #5A
MS #5B
MS #6
MS #7
MS #8
MS #9
MS #10
MS #11
MS #12
CROWLEY CREEK LIFT STATION
FM FROM NORTH COTTONWOOD ELEMENTARY SCHOOL
2" FM
QUAIL LANE LIFT STATION
BLACK LANE LIFT STATION
COTTONWOOD LIFT STATION
WASTEWATER TREATMENT PLANT (WWTP)
6" FM
10" FM
15" CASING
1"=500'
LEGEND
EXISTING CSA 17 SERVICE AREA BOUNDARY (PER MAY 2003 MSR)/SPHERE OF INFLUENCE
EXISTING SEWER PIPE AND DIAMETER
EXISTING FORCE MAIN AND DIAMETER
EXISTING LIFT STATION
EXISTING WWTP
EXISTING MANHOLE
I&I MONITORING STATION
SUBSERVICE AREA
DATE 11/13
PACE ENGINEERING
REDDING, CALIFORNIA
CSA 17
2013 SEWER MASTER PLAN
EXISTING 2012 SEWER SYSTEM
PLATE 1



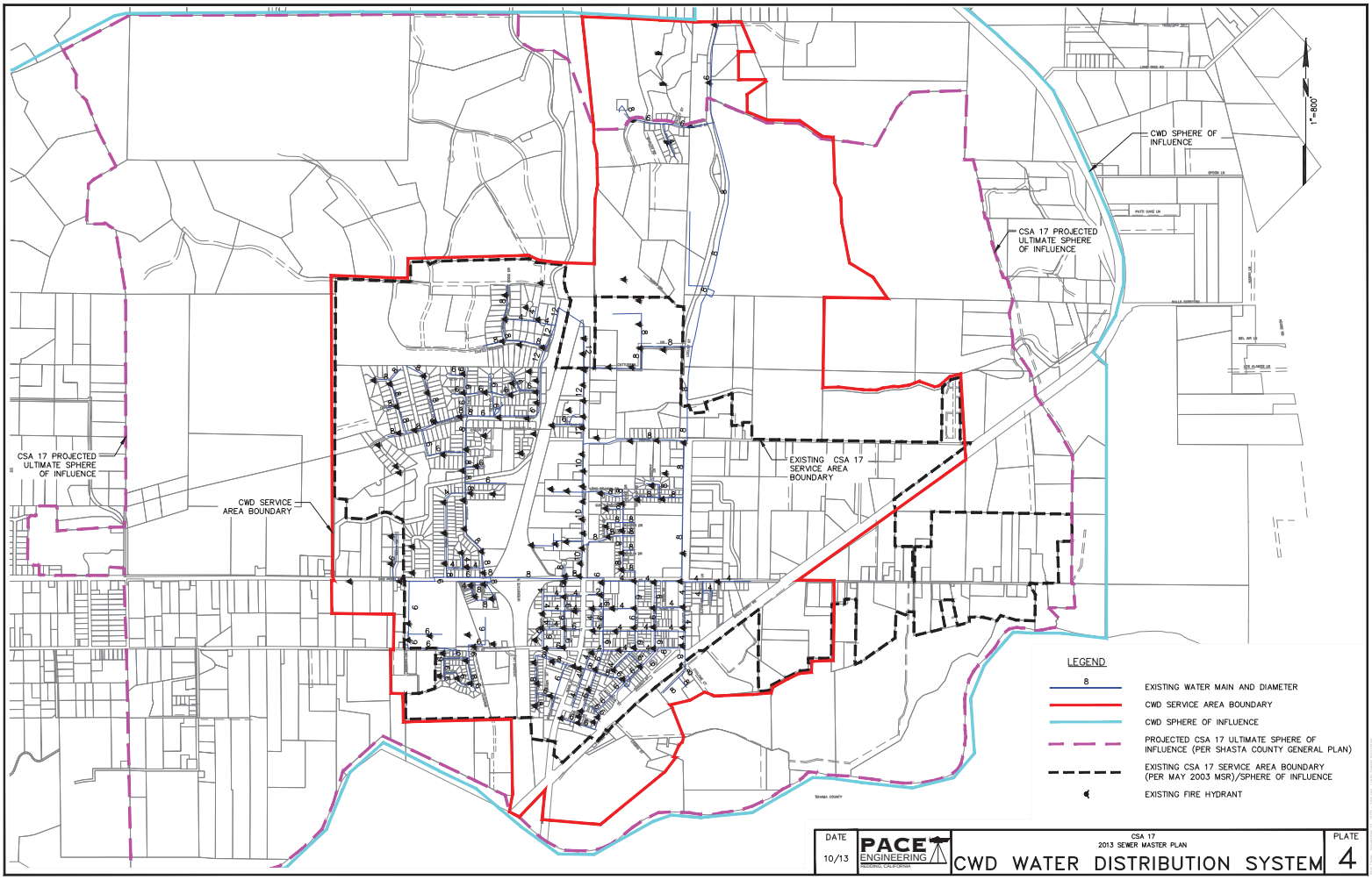
NOTE: FIRE HAZARD SEVERITY ZONES IN STATE RESPONSIBILITY AREA ADOPTED BY CAL FIRE ON NOVEMBER 7, 2007

DATE			PLATE
09/13	PACE ENGINEERING MODESTO, CALIFORNIA	CSA 17 2013 SEWER MASTER PLAN **STATE RESPONSIBILITY AREA FIRE HAZARD SEVERITY ZONES**	2

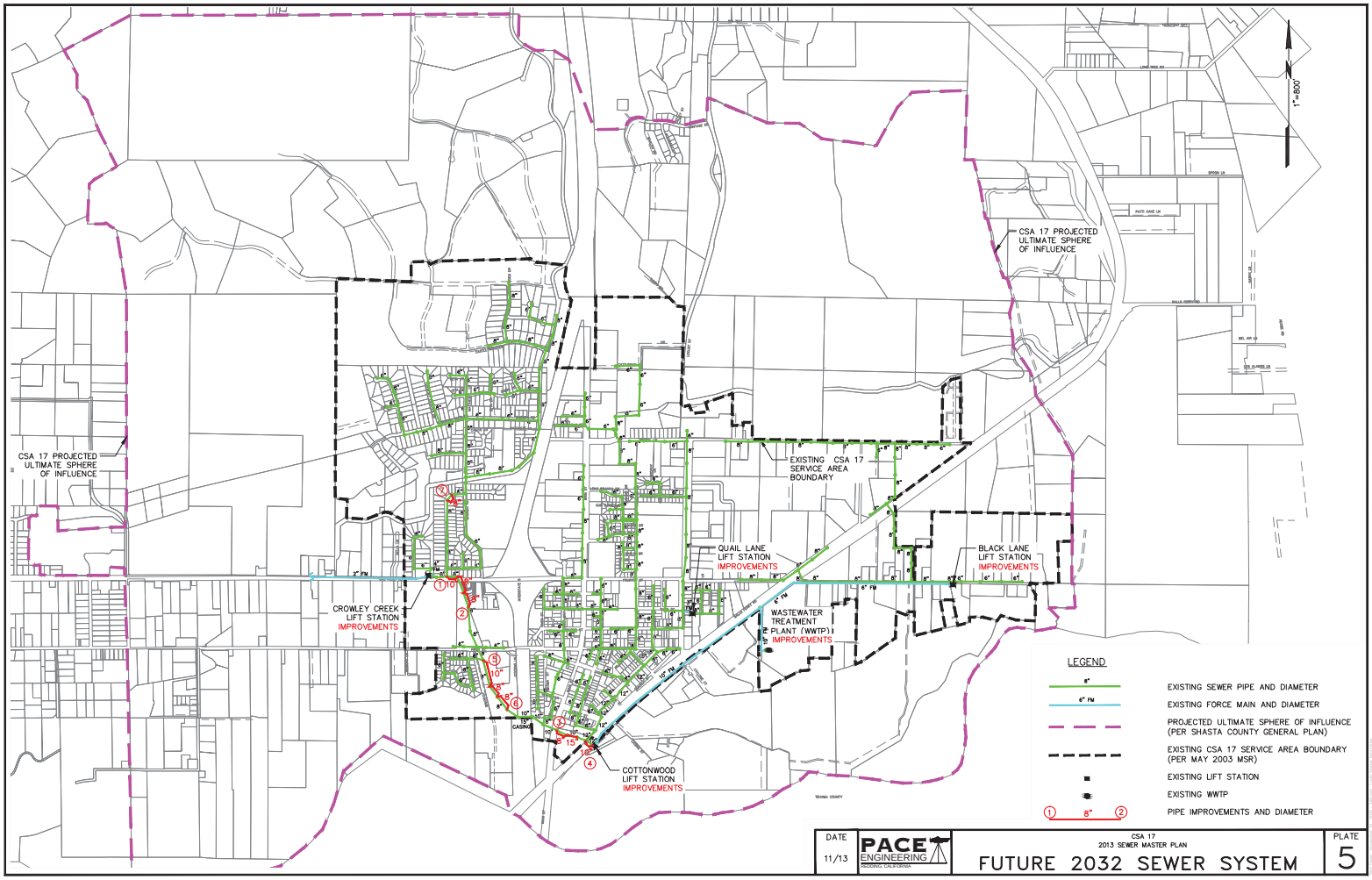


NOTE: FIRE HAZARD SEVERITY ZONES IN LOCAL RESPONSIBIITY AREA ARE DRAFT RECOMMENDATIONS BY CAL FIRE

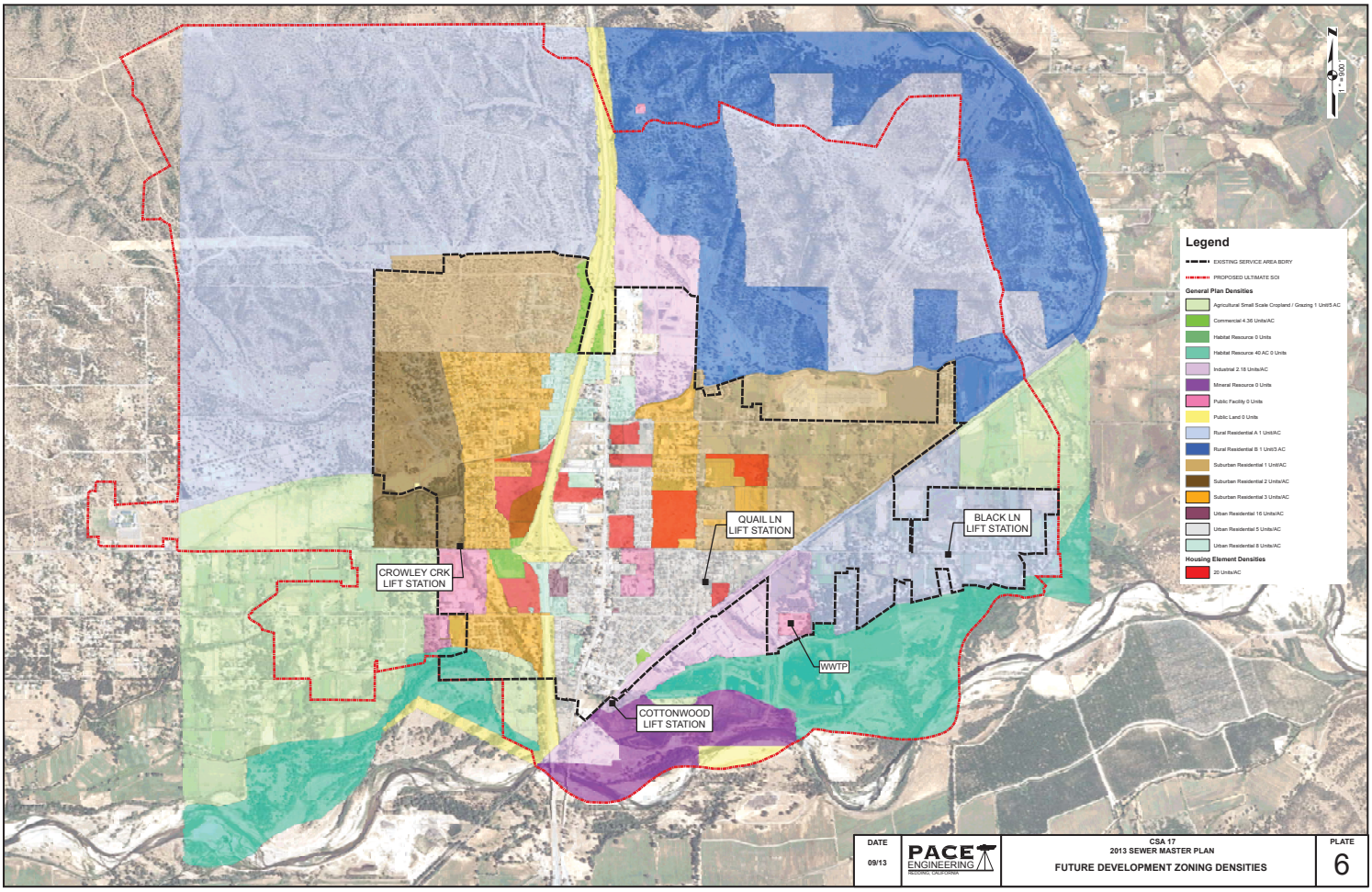
DATE			PLATE
09/13	PACE ENGINEERING REGIONAL SOLUTIONS	CSA 17 2013 SEWER MASTER PLAN LOCAL RESPONSIBILITY AREA FIRE HAZARD SEVERITY ZONES	3



DATE			PLATE
10/13	PACE ENGINEERING REDDING, CALIFORNIA	CSA 17 2013 SEWER MASTER PLAN CWD WATER DISTRIBUTION SYSTEM	4



DATE			PLATE
11/13	PACE ENGINEERING REDDING, CALIFORNIA	CSA 17 2013 SEWER MASTER PLAN FUTURE 2032 SEWER SYSTEM	5



DATE			PLATE
09/13	PACE ENGINEERING RIVERSIDE, CALIFORNIA	CSA 17 2013 SEWER MASTER PLAN FUTURE DEVELOPMENT ZONING DENSITIES	6