

**STAFF REPORT**

**CITY OF COLFAX  
WASTEWATER TREATMENT FACILITY  
PLACER COUNTY**

An NPDES permit renewal and Cease and Desist Order (CDO) for the City of Colfax Wastewater Treatment Facility are proposed for adoption.

**BACKGROUND**

The City of Colfax (Discharger) owns and operates a Wastewater Treatment Plant (Facility) that provides sewerage service for the community of the City of Colfax and serves a population of approximately 1,800. The Facility was initially designed to dispose of effluent on land, but was unable to operate without some degree of surface water discharge. Consequently, the Facility has been subject to regulation under an NPDES permit since 1974. The discharge from the Facility to an unnamed tributary to Smuthers Ravine is currently regulated by Order 5-01-180, adopted on 14 June 2001. At the same time, the Regional Water Board adopted CDO No. 5-01-181 that established time schedules for meeting the discharge prohibitions and effluent limitations based on tertiary treatment under Order No. 5-01-180. To comply with the CDO, the Facility replaced the old wastewater treatment system described in the existing Order No. 5-01-180 with an interim tertiary treatment system. The interim system provides for domestic wastewater, collected seepage from an on-site storage reservoir, and storm water to be treated in the interim tertiary treatment system and discharged to the unnamed tributary to Smuthers Ravine, a water of the United States. Smuthers Ravine is a tributary to the North Fork of the American River via Bunch Canyon, within the Sacramento River Watershed.

The Discharger has applied for reissuance of its waste discharge requirements (NPDES permit) for the discharge from the Facility to Smuthers Ravine.

**WASTEWATER TREATMENT FACILITY DESCRIPTION**

Previously, the wastewater was treated by a system consisting of headworks and two aerated facultative treatment ponds. Treated wastewater was then stored in an unlined storage reservoir prior to land application. To comply with the CDO, the Discharger upgraded the old wastewater treatment system with an interim tertiary treatment system. Subsequent to construction and operation of the interim tertiary treatment system, the Facility ceased discharging wastewater to land.

**A. Existing Wastewater Treatment Facility.**

Currently, domestic wastewater and collected seepage from the unlined storage reservoir are treated in the interim tertiary treatment system and discharged from Discharge Point No. 001 to an unnamed tributary of Smuthers Ravine. The interim tertiary treatment system became operational in July/August 2005. The purpose of the interim tertiary treatment system is to treat wastewater and to dewater the existing storage reservoir to allow for installation of a liner for the reservoir. The storage reservoir has not been dewatered for more than 20 years.

The interim tertiary treatment system design daily average flow capacity is 0.2 million gallons per day (mgd); the maximum design flow is 0.65 mgd. The interim tertiary treatment system consists of headworks with a parshall flume and manual bar screen, two mechanically aerated treatment ponds (Pond 1 and Pond 2) arranged in series, chlorination, coagulation, sedimentation, filtration, dechlorination, and a 69 million gallon storage reservoir. Wastewater flows through the parshall flume, Pond 1, Pond 2, chlorination/coagulation/sedimentation chamber, and the filters. The treated wastewater is then dechlorinated before discharge through Discharge Point No. 001 to the unnamed tributary to Smuthers Ravine. Solids that settle in the chlorine contact chamber are returned to Pond 2. In case of an operational problem, wastewater from the treatment system is diverted to the storage reservoir. The stored water is later pumped into Pond 2 and then through the tertiary treatment system.

The storage reservoir is used to store excess treated or partially treated effluent in order not to exceed the 0.5 mgd fully treated filtered discharge. The storage reservoir is unlined and has approximately 69,000,000 gallons of storage capacity and is approximately 70 feet high above the downstream toe. The stored wastewater is treated in the interim tertiary treatment system discussed above. Because the storage reservoir is unlined and constructed over bedrock in an area of several natural springs, seepage from the reservoir has occurred since its initial use in 1979. Seepage from the foot of the dam is collected and pumped to the interim tertiary treatment system discussed above prior to discharge through Discharge Point No. 001 to the unnamed tributary to Smuthers Ravine.

## **B. New Wastewater Treatment Facility.**

The Discharger is planning to replace the interim tertiary treatment system with a new biological nutrient removal (BNR) treatment plant designed to meet Title 22 equivalent requirements. The design average dry weather flow for the new system is 0.275 mgd; the design flow of the system is 0.5 mgd. The combined domestic wastewater, collected seepage, and runoff will be treated in the new treatment plant and discharged through Discharge Point No. 001 to the unnamed tributary to Smuthers Ravine. No discharge to land will occur.

On 1 March 2007, the Discharger submitted to the Regional Water Board, facility plans for a wastewater treatment plant upgrade and a construction documents project manual for city approval and authorization to bid. The Discharger stated in a Reasonable Potential and Anti-Degradation Analysis and Infeasibility Report, dated 21 February 2007, that, "The City currently is in the final stages of the new WWTP that will produce Title 22 equivalent discharge. Solicitation of bids is tentatively scheduled to begin after the City Council meeting of February 27, 2007 for the new WWTP. The City has applied for SRF grant and loan funds to finance the new WWTP."

On 11 May 2007, in a phone conversation with the Discharger, they reported that they were awaiting final state approval of a \$1.9 million grant and a \$9.3 million loan to secure funding for the construction of the new treatment plant. The State Water Board plans to hold a public hearing for approval of the grant and loan on 5 June 2007. The Discharger stated that assuming they secure the anticipated funding, they would begin construction of the new treatment plant in July or August of 2007. The Discharger expects the new treatment plant to be completed by early November 2008.

At the request of Regional Water Board staff, the Department of Health Services (DHS) evaluated the design of the proposed tertiary treatment facility for compliance with Title 22 requirements. By letter dated 16 May 2007, DHS stated: "The facility design meets the requirements for tertiary treated effluent specified in the California Code of Regulations, Title 22, Division 4, Chapter 3. It was noted however, that the specifications for both the filtration and ultraviolet radiation processes include equipment that has already been approved by the Department for use in recycled water systems, but allow a bidder the option to use "equivalent" equipment. Please be advised that any such "equivalent" equipment must also have prior approval by the Department." DHS also provided recommendations regarding a rapid mix process for coagulant and the operations manual.

## **ECONOMIC CONSIDERATIONS**

The current NPDES permit (Order No. 5-01-180) required a tertiary level of treatment or equivalent be provided or all discharges contained on land by 14 June 2006 and included effluent limitations commensurate with tertiary treatment. CDO No. 5-01-181 adopted by the Regional Water Board at the same time provided the time schedule for the City to evaluate alternatives and provide the required level of treatment if a surface water discharge was to continue. In adopting Order No. 5-01-180 and requiring a tertiary level of treatment, the Regional Water Board considered the costs of providing the additional treatment. At that time, the projected costs for adding tertiary treatment (coagulation, flocculation, and filtration or equivalent) were estimated at \$298,000.

Since January 2003, the City has expended approximately \$2.1 million for studies, reports and construction of the interim tertiary facility. Monthly sewer charges have increased from \$25.46/EDU in January 2003 to \$60.00/EDU in September 2006. The estimated capital cost for construction of the new tertiary treatment facility is \$9.4 million. Recent information from the Discharger indicates that monthly sewer charges may go up to \$80/month/EDU by 2014/2015. The new facility is being designed and is necessary to provide treatment for constituents other than those necessary to comply with Title 22 tertiary or equivalent. The costs cited above also include expenditures to address runoff controls and changing from seasonal to year around NPDES disposal. Consequently, the cost to only provide the Title 22 or equivalent treatment would be much less.

## **COMPLIANCE HISTORY**

The Colfax WWTP has experienced a variety and significant number of compliance problems since it began operation as a land disposal facility. These compliance problems have included spills from the treatment ponds and storage reservoir, effluent discharges from land application areas to surface waters, discharge of seepage from the base of the storage reservoir to surface waters, odors outside the treatment facility, violations of flow limitations and violations of various effluent limitations.

The current NPDES permit (Order No. 5-01-180) and CDO (No. 5-01-181) required the Discharge to increase plant capacity to accommodate current flow and future growth, and upgrade the facility to full tertiary treatment or complete land disposal, and established a compliance schedule for the Discharger to be in full compliance by 14 June 2006.

Administrative Civil Liability (ACL) Order No. R5-2003-0167 issued in 2003 assessed mandatory penalties for violations of Waste Discharge Requirements Order No. 5-01-180 in the amount of \$351,000. The ACL Order allowed the City to complete a project to achieve full compliance with the permit by 14 December 2006 in lieu of paying the penalty.

In response to the Orders, the Discharger constructed the interim tertiary treatment plant with the unusual configuration described above. The plant has generally achieved compliance with effluent limitations. Compliance with the permit, CDO and ACL Orders is being evaluated.

In October 2006, representatives from the Department of Health Services (DHS) inspected the interim tertiary treatment facility at the request of Regional Water Board staff. By letter dated 11 December 2006 to the Regional Water Board, DHS reported that the configuration and operation of the facility does not provide adequate disinfection even though it may comply with bacterial standards. Also,

DHS stated the filtration system over time is likely to develop problems. DHS recommended that the City modify the facilities to (1) provide post-filtration disinfection and (2) replace the existing filtration equipment with a process proven to be effective for filtering sewage effluent. These issues appear to have been addressed in the design of the new tertiary treatment facility, the specifications of which have been reviewed by DHS as described above.

As a general measure of compliance at the Colfax WWTP, the approximate number effluent violations subject to mandatory minimum penalty violations since the year 2000 are tallied below:

<u>Year</u>	<u>MMPs</u>
2000	40
2001	58
2002	11
2003	59
2004	21
2005	7
2006	34 (31 from January through June)
2007	0 (January through April)

Based on this information, the Facility has had only 4 effluent violations since July of 2006, which is a significant improvement.

The Regional Water Board has received recent complaints about odors and turbidity in the receiving stream and Regional Water Board staff has inspected the facility to investigate these complaints.

## **MAJOR PERMIT CHANGES OR ADDITIONS**

The following is a summary of the major changes and additions to this NPDES Permit. It does not include a comprehensive discussion of the issues. It only provides general background and more detail is included in the tentative Order, administrative record, and case file.

### **A. Facility Upgrade.**

This Order requires the Discharger to treat wastewater to Title 22 specifications. In Order for the Discharger to initiate and complete construction of their new wastewater treatment plant, a compliance schedule has been included. Based on conversations with the Discharger and on information contained within the 21 February 2007 City of Colfax WWTP Reasonable Potential and Anti-Degradation Analysis & Infeasibility Report, the Regional Water Board is including a compliance schedule that allows the Discharger until 1 January 2009 to complete the construction of the new

wastewater treatment plant and have the plant fully operating and in compliance with Title 22 requirements.

The Discharger has already completed the design of the new wastewater treatment plant, and has requested bids for construction of the plant. As part of this compliance schedule, the Discharger will be required to provide interim status reports to the Regional Water Board regarding progress on the actual construction of the new wastewater treatment plant.

Due to the elevated concentrations of ammonia detected in the effluent from the interim tertiary treatment plant, the Discharger will be required to operate the treatment plant in a nitrification mode to the maximum extent practicable until completion of the new wastewater treatment plant on 1 January 2009.

#### **B. Title 22 Disinfection Requirements.**

The beneficial uses of the unnamed tributary of Smuthers Ravine include municipal and domestic supply, water contact recreation, and agricultural irrigation supply, and there is, at times, less than 20:1 dilution. To protect these beneficial uses, Order No. 5-01-180 required the Discharger to upgrade the facility to tertiary treatment or maintain the entire discharge on land. The discharger has evaluated alternatives and elected to upgrade to tertiary treatment.

The proposed Order also contains effluent limitations and a requirement for Title 22 tertiary level of treatment, or equivalent, necessary to protect the beneficial uses of the receiving water. The proposed Order includes a California Water Code Section 13241 analysis.

Mass limitations for BOD and TSS are included in the Order for the interim tertiary treatment system until 30 December 2008. Final mass limitations for BOD and TSS for the new wastewater treatment plant are effective 1 January 2009.

#### **C. New Effluent Limitations.**

The proposed Order contains new water quality-based effluent limitations for aluminum, ammonia, bis (2-ethylhexyl) phthalate, copper, cyanide, electrical conductivity, iron, manganese, nitrate, and persistent chlorinated hydrocarbon pesticides. New effluent limitations for cyanide and bis (2-ethylhexyl) phthalate were established based on water quality criteria contained in the California Toxics Rule (CTR). New effluent limitations for aluminum and ammonia were based on USEPA's National Ambient Water Quality Criteria for the protection of freshwater aquatic life. New effluent limitations for iron and manganese were developed based on Secondary Maximum Contaminant Levels (MCLs). A new effluent limitation for nitrate was based

on the USEPA Primary MCL. Additional effluent limitations for persistent chlorinated hydrocarbon pesticides were based water quality objectives in the Basin Plan. Finally, an interim performance-based effluent limitation was developed and included for electrical conductivity to control the discharge of salinity to water in the Central Valley.

Based on the performance of the current Facility, the Discharger is capable of meeting the effluent limitations for aluminum, bis (2-ethylhexyl) phthalate, cyanide, electrical conductivity, iron, manganese, and nitrate. However, the Discharger may not be capable of immediately complying with the effluent limitations for copper, ammonia, and 4,4-DDE. Pursuant to the SIP and the Basin Plan, compliance time schedules are included in the proposed Order for copper, ammonia, and 4,4-DDE. The Discharger must be in compliance with all final effluent limitations for dischargers from the new wastewater treatment plant beginning 1 January 2009.

#### **D. Effluent Mass 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.

Consistent with the existing Order, two sets of mass-based effluent limitations were calculated for conventional pollutant parameters (BOD<sub>5</sub> and TSS) to ensure proper operation of the treatment plant. The mass-based effluent limitations were based upon the permitted average daily discharge flow allowed in Sections IV.A.1 and IV.A.2 of the Limitations and Discharge Requirements (corresponding to the average dry weather design flows for the interim tertiary treatment system and the new wastewater treatment plant).

#### **E. Salinity**

A review of the Discharger's monitoring reports from January 2004 through August 2005 shows an average effluent electrical conductivity (EC) of 445 µmhos/cm, with a range from 203 µmhos/cm to 993 µmhos/cm for 284 samples. These data show that on average, the effluent does not exceed the most stringent criterion applied as a screening value. The background

receiving water EC averaged 285  $\mu\text{mhos/cm}$  in four sampling events collected by the Discharger from 12 February 2002 through 19 November 2002.

The Antidegradation Policy (Resolution No. 68-16) requires that the Discharger implement best practicable treatment or control (BPTC) of its discharge. For salinity, the Regional Water Board is considering limiting effluent salinity of municipal wastewater treatment plants to an increment of 500  $\mu\text{mhos/cm}$  over the salinity of the municipal water supply as representing BPTC. The Order includes an interim performance-based effluent limitation of 993  $\mu\text{mhos/cm}$  for EC to protect the receiving water from further salinity degradation, but no final effluent limitation because sufficient information does not exist for the water supply for the Discharger. Final effluent limitations for salinity based on BPTC will be established subsequent to the collection and analysis by the Discharger of EC in the Discharger's water supply. The Order requires quarterly monitoring of EC and TDS of the Discharger's water supply.

The Order also requires the Discharger to implement salinity reduction measures to reduce the salinity in its discharge to the unnamed tributary to Smuthers Ravine. The Order also requires the Discharger to submit annual reports demonstrating progress in reducing salinity discharges to the unnamed tributary to Smuthers Ravine. Implementation measures to reduce salt loading may include source control, mineralization reduction, chemical addition reductions, changing to water supplies with lower salinity, and limiting the salt load from domestic and industrial dischargers. Compliance with these requirements will result in a salinity reduction in the effluent discharged to the receiving water.

#### **F. Other Requirements.**

The proposed Order contains several study requirements, including chronic whole effluent toxicity requirements, best practicable treatment or control (BPTC) for groundwater study, and groundwater monitoring.

### **PROPOSED CEASE AND DESIST ORDER**

An ongoing issue with the Colfax WWTP is the seepage discharge from the base of dam creating the storage reservoir. At present the WWTP collects the seepage and pumps it back to the storage reservoir for treatment by the interim tertiary treatment facility before discharge to the receiving water. As part of the compliance project proposed by the Discharger, the storage pond is to be dewatered so a liner can be installed. One of the stated purposes of the interim tertiary treatment facility was to facilitate dewatering of the storage pond to allow inspection and then installation of a liner. To date, the storage pond has not been dewatered due in part to heavy rainfall in 2006.



The seepage of wastewater from the storage pond violates the discharge prohibitions and the proposed CDO provides a time schedule for the Discharger to eliminate the seepage of wastewater from the storage pond. The Discharger has recently submitted a revised schedule for completion of dewatering and lining the storage reservoir with a completion date of November 2009. The final compliance date for the CDO is being evaluated by staff.

## **COMMENTS**

The Tentative Order was distributed for public review on 16 May 2007 and the comment period ends 15 June 2007. The proposed CDO was issued for public review on 4 June 2007 and the comment period ends 15 June 2007. Consequently, comments were not available for agenda preparation.

## **SIGNIFICANT ISSUES**

Issues raised in public comments will be addressed in a response to comments document to be prepared after comments are received and at the hearing.

## **CHANGES TO TENTATIVE ORDER**

The tentative NPDES permit has been modified to provide clarification and/or correct minor factual errors. Also, there have been several additional changes to the agenda version. These include: (1) reducing the length of the time schedule to comply with CTR constituent and ammonia limitations, (2) an time schedule for construction of the new tertiary has been included, (3) the interim ammonia limitation has be recalculated to account for more recent data, (4) receiving water ammonia monitoring has been added, and (5) monitoring frequencies for several parameters have been adjusted to be consistent with other similar facilities. A strike-out/underline version of the proposed permit is available on the Regional Water Board's website.