

STAFF REPORT

**CITY OF TRACY WASTEWATER TREATMENT PLANT
PROPOSED NPDES PERMIT RENEWAL, TIME SCHEDULE ORDER,
AND WASTE DISCHARGE REQUIREMENTS FOR LAND DISCHARGE
SAN JOAQUIN COUNTY**

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I. INTRODUCTION

Three items are being considered for adoption: 1) issuance of a renewed National Pollutant Discharge Elimination System (NPDES) permit to regulate the surface water discharge from the City of Tracy Wastewater Treatment Plant, 2) a Time Schedule Order (TSO) that accompanies the proposed NPDES permit, and 3) issuance of separate waste discharge requirements to regulate the land discharge units from the City of Tracy Wastewater Treatment Plant.

The City of Tracy (City) owns and operates the Tracy Wastewater Treatment Plant (Facility), which provides sewerage services to the City. The Facility discharges secondary treated wastewater to Old River, located within the Sacramento-San Joaquin Delta, a water of the United States. The discharge is currently regulated by Order No. 96-104, which was adopted on 3 May 1996 and expired on 3 May 2001. The terms of Order No. 96-104 have automatically continued in effect after the permit expiration date.

The Regional Water Board held a lengthy hearing on a proposed NPDES permit and TSO at the August 2006 Board meeting, with salinity issues being the major topic of testimony and Board discussion. The hearing was continued pending a better assessment of the impacts of the discharge on Delta salinity and development of alternative means of regulating salinity for Board consideration. The Regional Water Board directed staff to work with the City, the Department of Water Resources (DWR), and other stakeholders to model the affects of the discharge in the southern Delta. Since the hearing, Regional Water Board staff organized a stakeholder group that included representatives from the City, Mountain House Community Services District, South Delta Water Agency, California Sportfishing Protection Alliance, and DWR to develop appropriate scenarios for running DWR's Delta Simulation Model II (DSM2) to evaluate the salinity impacts of the discharge. The modeling effort is discussed in Section IV, below.

II. FACILITY DESCRIPTION

The Facility treats primarily domestic wastewater collected via the City's wastewater collection system. The wastewater treatment plant also accepts industrial food processing wastewater from Leprino Food Company (Leprino) through a segregated industrial wastewater pipeline. The Facility is composed of a main treatment facility and an industrial facility. The main treatment facility consists of raw influent bar screening, primary sedimentation, biofiltration, conventional activated sludge, and secondary sedimentation. Secondary effluent is disinfected by chlorination and dechlorinated prior to discharge. Biosolids are thickened by dissolved air flotation, anaerobically digested, and dewatered in unlined sand drying beds. The dried biosolids are hauled off-site for land application or disposed in a landfill.

The City's industrial facility consists of four unlined industrial ponds (approximately 52 acres). In addition, Leprino, a local cheese manufacturer, leases two lined aerated lagoons and one 8-acre unlined oxidation pond from the City for preliminary treatment of its industrial food processing wastewater and discharges to the Facility under an industrial pretreatment permit issued by the City. Leprino transports its industrial wastewater to the Facility via a segregated industrial waste line. Leprino employees operate and maintain the industrial wastewater pipeline and leased pretreatment units. Leprino's industrial pretreatment program permit allows for a discharge of up to 850,000 gallons per day of industrial food-processing wastewater. Leprino's industrial wastewater and process water from the main treatment plant are stored in the unlined industrial ponds and introduced into the primary sedimentation basins of the main treatment facility for treatment and disposal.

III. SALINITY ISSUES

The salinity of the Tracy discharge is the single most controversial aspect of this permit. The Delta is heavily used as a municipal, industrial and agricultural water supply. Increases in salinity reduce the value of Delta water. Multiple agencies are involved in controlling salinity in the Delta to protect in-Delta and export uses of Delta waters. Water in the vicinity of the discharge is used locally for agricultural irrigation. The Tracy discharge is only 10 miles upstream of the intake to the Delta Mendota Canal that serves water to the lower San Joaquin Valley (including providing a portion of the drinking water supply for Tracy), and the State Water Project intake is only a few miles further to the north. However, during reasonable worst-case flow conditions in the south Delta, the DSM2 modeling showed that very little of the Tracy effluent reaches the export pumps.

The State Water Board has adopted salinity standards at a number of compliance locations in the Delta to protect a variety of beneficial uses. The compliance locations near Tracy require a maximum 30-day running average of mean daily electrical conductivities of 700 umhos/cm during the irrigation season, and 1000 umhos/cm at other times, to protect agricultural use of Delta waters. The State Water Board has conditioned water right permits held by the Department of Water Resources (DWR) and Bureau of Reclamation (USBR), the agencies operating the major water supply export projects near Tracy, on meeting salinity standards at those locations. The DWR and USBR meet the salinity standards by changing water project operations, particularly water releases at New Melones Reservoir on the Stanislaus River. However, all dischargers should limit salinity in their discharges to protect Delta water quality. The 700 umhos/cm irrigation season standard is fully protective of all crops. Beyond Tracy's contribution to the salinity load of the Delta, the salinity of Tracy's discharge is particularly important because the discharge point is located near two Delta salinity compliance locations. The State Water Board

recently adopted a Cease and Desist Order against DWR and USBR for threatened violation of Delta salinity standards, and any salt in Tracy's discharge above Delta compliance standards makes compliance for DWR/USBR more difficult. Lawsuits over the State Water Board Cease and Desist Order have been filed. One focus of the recent modeling effort was to assess the relative impact at the D-1641 salinity compliance locations with increasing and decreasing salinity in Tracy's discharge.

A. Salinity Sources

Part of Tracy's salinity problem is a water supply problem. Until recently, much of the City's water supply has come from groundwater, which is relatively high in salt for a municipal water supply. Additional water supply is obtained from the Delta-Mendota Canal, which is Delta water. Starting in August 2005, the City started receiving low salinity water from the Sierras, replacing much of the higher salinity groundwater supply. Limited water supply data indicates that the average water supply TDS of the combined water sources is 460 mg/l (~700 umhos/cm EC) and a maximum of 520 mg/l (~800 umhos/cm). Using this water supply data and a common salinity increase of 500 umhos/cm for normal municipal usage, the effluent would be expected to have a salinity of 960 umhos/cm on average and 1320 umhos/cm on a maximum. Based solely on water supply salinity and a common increase in salinity for municipal use of water, Tracy's discharge would exceed both the irrigation and non-irrigation season standards. The actual effluent salinity of around 2000 umhos/cm is about double the non-irrigation season standard.

A substantial portion of the salt in Tracy's discharge is from a single industrial source, the Leprino Cheese Processing Plant that has a separate industrial waste line discharging wastewater into the pretreatment ponds at the wastewater treatment plant. Pretreated water from the ponds discharges into the main treatment plant where it commingles with domestic, commercial and industrial wastewater from the City. There is evidence that groundwater beneath the pretreatment ponds may be impacted by pond leakage, so the Leprino discharge is a salinity issue for the surface water discharge and a potential groundwater impact. The pretreatment ponds are not covered by the proposed NPDES Permit, but are regulated under separate Waste Discharge Requirements, because the water quality issues are different, there are different responsible parties for the pretreatment ponds (Tracy and Leprino), and the City has requested separate requirements for the ponds due to concerns that inclusion of the pretreatment ponds in the NPDES Permit will subject pond problems to Clean Water Act lawsuits. The proposed Waste Discharge Requirements are included in the agenda package for approval by the Board.

B. Methods for Reducing Salinity

What can be done to control the discharge salinity? There are at least three options:

1. Treat the wastewater to remove the salt.

There are a number of existing technologies that can do this, such as Reverse Osmosis, but they are very expensive, use a great deal of energy, and result in a brine that is hard to dispose of. Treatment would normally be the last option to implement, but is a possibility for the future if the salt cannot otherwise be controlled.

2. Source control

Tracy has brought in a new, lower salinity water supply. Additional low salinity water might be available in the future, but sources of low salinity wastewater are not unlimited, particularly during droughts. Salt sources within the community, such as cooling tower blowdown and water softeners, should be investigated and controlled to the extent feasible. Leprino is an obvious source of concentrated salt requiring source control. Treatment for salt removal by Leprino or any other concentrated source of salt should be considered, as it is much more feasible to treat for salt removal in a concentrated waste stream (either the entire Leprino flow or saltier waste sources within the processing plant) than it is to treat the entire, less saline Tracy discharge. Salt removal from a wastewater containing high concentrations of both salt and fats/oils is technically difficult.

A large part of Tracy's salt problem can be "solved" by eliminating the Leprino discharge to the sewer system. However, unless the Leprino facility is closed, impacting not only Leprino, but all the dairies and other businesses that support the facility, the Leprino discharge will still have to go somewhere. Tracy and Leprino must work together to reduce salt discharges, but it is not recommended that the Leprino discharge simply be prohibited, at least until all other measures are considered and implemented first.

3. Eliminate the discharge

Tracy cannot eliminate sewage production, and effluent salinity is also a concern for land disposal, but the City has investigated supplying wastewater to a power plant for cooling water, which would eliminate all or part of the City's discharge. Whether or not this will occur is unknown, and the City cannot rely solely on a private company for wastewater disposal at the risk of having nothing to do with its sewage in the event the power plant cannot accept the wastewater.

C. NPDES Permitting Options to Control Salinity

The Regional Water Board has a number of permitting options available for consideration. Three tentative NPDES Permits have been circulated for public review and comment. Furthermore, during this latest public review period, an additional document with several alternative salinity control options was distributed for public review. The Regional Water Board could adopt any of the alternatives that were circulated for public comment or any logical outgrowth of these options, although if the approach to salinity regulation is changed significantly from the noticed options, it may be appropriate to develop and circulate a new tentative Permit for future consideration and adoption.

1. December 2005 Tentative Permit

The tentative Permit dated 8 December 2005 concluded that there is no assimilative capacity for salt in the receiving water and prescribed a 700 umhos/cm monthly average effluent limit with a five-year time schedule (Under the Mandatory Minimum Penalty statutes five years is the maximum length for a compliance schedule. If schedules are longer than five years, the Regional Water Board must immediately begin assessing MMPs for effluent violations.) Salt source identification and reduction efforts were required. Tracy did not like this approach, but water supply agencies and environmental groups did.

2. May 2006 Tentative Permit

The tentative Permit dated 26 May 2006 concluded that there are no numeric salinity standards applicable at the point of discharge and no site-specific studies have been conducted by which the narrative chemical constituents objective could be interpreted; so final effluent limits could not be set at this time. Tracy is given the opportunity to conduct studies to develop site-specific salinity standards for Old River. An interim effluent limit caps the current effluent salt concentrations so it could not get worse, and a five-year "goal" was established of a 500 umhos/cm increment in electrical conductivity over water supply. (Goals are not enforceable, but they are a statement by the Regional Water Board on where the City should be trying to get in five years.) Although no final effluent limit was set, findings make it clear that the salinity of the effluent must be significantly reduced. Tracy liked this option much better, but water supply agencies and environmental groups disliked it.

3. March 2007 Tentative Permit

The current tentative Permit dated 6 March 2007 includes an interim annual mass loading effluent limitation for TDS and requires the Discharger to implement measures to reduce the salinity in its discharge to Old River. The interim effluent limitation is based on current treatment plant performance and ensures that the mass loading of salinity does not increase as the effluent flow rate increases. The proposed Order also includes final water quality-

based effluent limitations (WQBELs) stating that the electrical conductivity in the discharge shall not exceed a monthly average of 700 $\mu\text{mhos/cm}$ (April 1 to August 31) and a monthly average of 1000 $\mu\text{mhos/cm}$ (September 1 to March 31), unless:

- a) The Discharger implements all reasonable steps as agreed to by the Executive Officer to obtain alternative, lower salinity water supply sources;
- b) The Discharger develops and implements a salinity source control program as approved by the Executive Officer that will identify and implement measures to reduce salinity in discharges from residential, commercial, industrial and infiltration sources in an effort to meet an interim salinity goal of a maximum 500 $\mu\text{mhos/cm}$ electrical conductivity increase over the weighted average conductivity of the City of Tracy's water supply; and
- c) When notified by the Executive Officer, the Discharger participates financially in the development of the Central Valley Salinity Management Plan.

Failure to meet conditions a) through c), above, would result in the final effluent limitation becoming effective. Furthermore, the proposed Order requires that the Discharger implement best practicable treatment or control (BPTC) of its discharge and requires the development and implementation of pollution prevention plan for salinity in accordance with CWC section 13263.3(d)(1)(D).

4. Salinity Control Options Document

Additional salinity control options were included with the March 2007 tentative permit and received public review and comment. The options included seasonal effluent limits equivalent to the State Water Board's salinity objectives (i.e. 700/1000 $\mu\text{mhos/cm}$) and an option to include a finding and no effluent limitations. The finding states that an effluent limitation is necessary, but it is impracticable to implement an effluent limitation in the proposed Order.

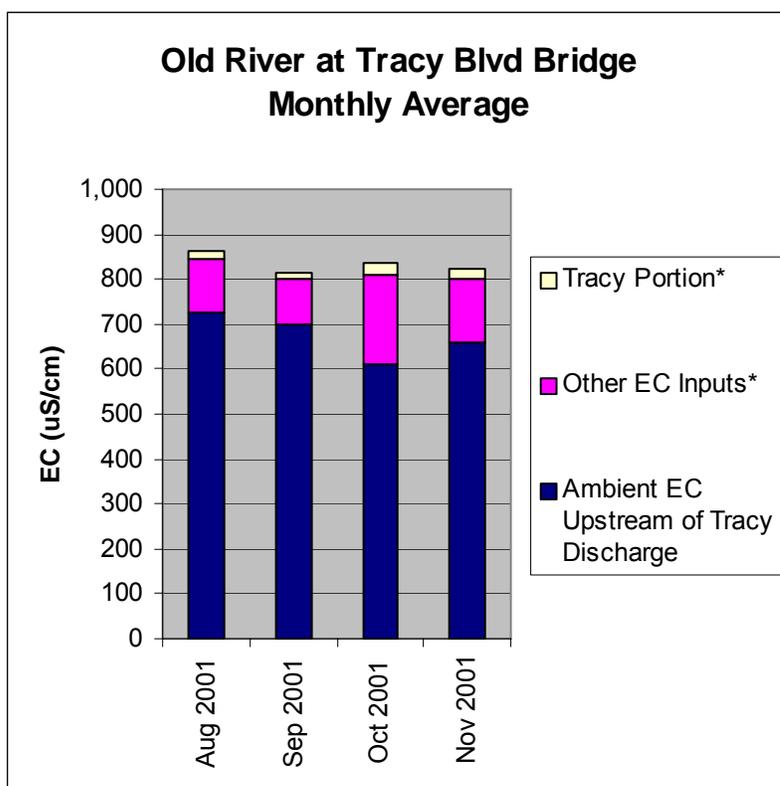
IV. DSM2 Modeling.

A stakeholder group that included representatives from the City of Tracy, Mountain House Community Services District, South Delta Water Agency, California Sportfishing Protection Alliance, the Department of Water Resources (DWR), and the Regional Water Board was formed to develop appropriate scenarios for running DWR's Delta Simulation Model II (DSM2) to evaluate the salinity impacts of the Tracy Wastewater Treatment Plant discharge in the south Delta. The model was run under reasonable worst-case conditions. A detailed summary of the DSM2

modeling effort is provided in the document titled, *DSM2 Modeling Evaluation, City of Tracy and Mountain House CSD* (29 March 2007).

An evaluation of the salinity impacts resulting from the Tracy discharge was made using actual measured ambient EC data and the DSM2 modeling output. Figure F-1 shows actual Old River EC data measured upstream of the Tracy discharge at Union Island and downstream at the Tracy Blvd Bridge, which is one of the D-1641 salinity compliance locations. DSM2 modeling output was used to predict a reasonable worst-case EC increment caused by the Tracy discharge at the Tracy Blvd Bridge. As shown in Figure 1, the reasonable worst-case Tracy impact is relatively small compared to other salinity sources in the area. The other sources of salinity are unknown, but likely include the ambient salinity entering from the San Joaquin River, agricultural activities in the area, and possibly groundwater accretions.

Figure 1: Modeled Salinity Impacts

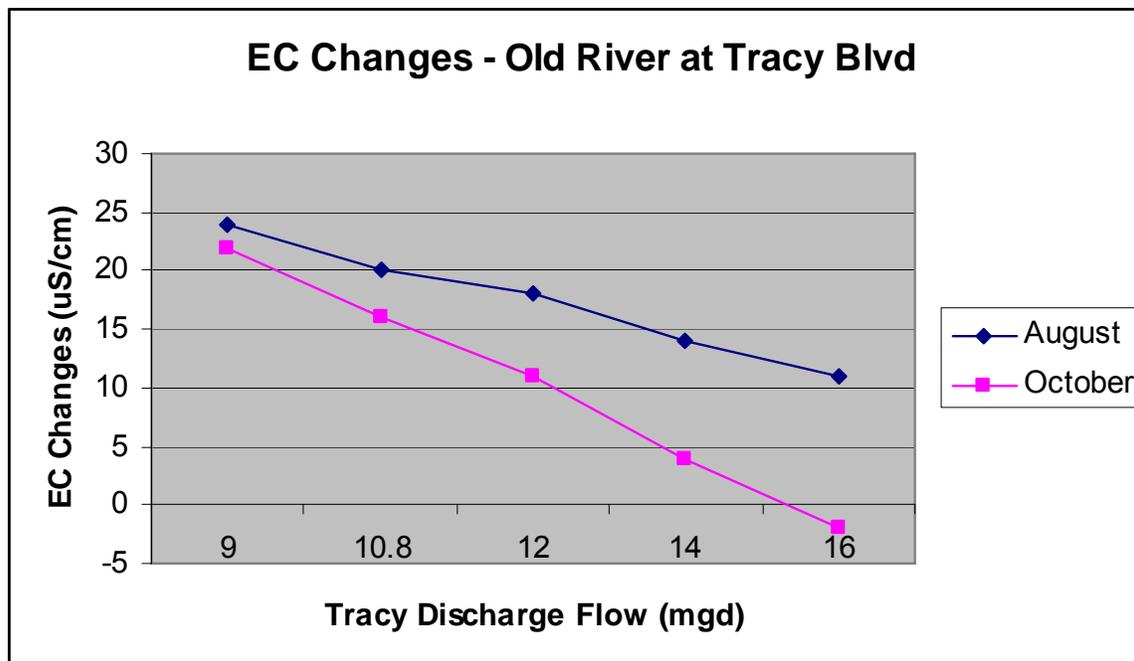


* The Tracy Portion is DSM2 model predictions using a reasonable worst-case scenario. The Other EC Inputs were calculated based on the measured EC at Tracy Blvd Bridge minus the Tracy Portion minus the measured ambient EC upstream of Tracy discharge. It should be noted that the Tracy discharge might contribute to a portion of the Other EC Inputs due to agricultural practices (e.g. farmers pump river water containing Tracy effluent, use the water, and return the salt to the river)

Tracy is a growing city and is in the process of design and construction of expanded wastewater treatment facilities to accommodate that growth. Neither the existing nor new treatment facilities are intended to remove salt. However, the City has been actively seeking lower salinity water sources and has predicted that as its discharge increases the salt loading will not increase, but would remain at its current levels. The proposed NPDES permit includes an interim effluent limit for total dissolved

solids (TDS) that holds the City to its current annual mass loading of TDS. This will result in lower concentrations of salt as the discharge increases. Figure 2, below, shows that the DSM2 modeling output predicts that the EC increases in the southern Delta caused by Tracy discharge will be reduced as the Tracy discharge rate increases.

Figure 2 - Predicted EC Changes as Tracy Discharge Rate Increases



Based on the relatively small impact of the Tracy discharge, the imposition of salinity effluent limits that require the construction and operation of reverse osmosis facilities to treat discharges prior to implementation of other measures to reduce the salt loading in the south Delta is not a reasonable approach. The Tracy discharge is one of many contributors to the salinity problems in the south Delta. Even if the Tracy discharge were removed it would not solve the salinity problems in the area. The proposed Order provides reasonable salinity controls that put the Discharger on the path to reducing its salt loading to the Delta.

V. SEPARATE WASTE DISCHARGE REQUIREMENTS

As part of its treatment train, the City utilizes unlined industrial ponds, unlined sludge drying beds, and unlined sludge storage basins. These treatment facilities likely discharge wastes to groundwater and are a significant issue for this facility. Typically, land discharge requirements are included in NPDES permits as a convenience to the permittee. However, the Discharger is concerned that land

discharge requirements are beyond the scope of an NPDES permit and will inadvertently federalize the requirements and make them subject to U.S. EPA enforcement and citizen suits. Therefore, the Discharger requested separate WDRs for regulation of discharges to land. While staff does not agree that this concern is valid, it is an appropriate way to regulate discharges at this facility. Separate WDRs have been developed and are proposed for Board adoption.

Due to the close proximity of the City of Tracy's and Leprino's waste units, it is difficult to distinguish between any infiltration to groundwater from the facilities operated by the City of Tracy and from those operated by Leprino. Therefore, the proposed WDRs refers to the City of Tracy and Leprino Foods Company individually and/or jointly as "Discharger." Leprino is solely responsible for discharges from its segregated industrial pipeline and the treatment units it operates at the Facility. The City of Tracy is the owner of the Facility and is responsible for all discharges from the Facility, including the discharges from the Leprino-operated treatment units.

The most significant groundwater issues at the Facility are due to the use of unlined holding ponds. The City's holding ponds cover approximately 52 acres and are high in salinity, ranging from 3,000 to 5,000 $\mu\text{mhos/cm}$ as EC. The ponds were originally constructed to provide storage of peak industrial wastewater flows during the summer canning season to prevent overloading of the main treatment facility. However, there are no longer canneries in the Tracy area that discharge to the Facility, so the industrial holding ponds are currently used primarily to store food processing wastewater from Leprino, prior to introduction to the main treatment facility at the primary sedimentation basins.

The record indicates that Regional Water Board staff have been concerned about possible groundwater degradation caused by the City's use of its unlined industrial ponds dating back to 1989. A discussion of several groundwater studies performed by the City since that time is provided in the proposed WDRs. Monitoring data provided by the City indicates that the unlined industrial ponds may be adversely affecting groundwater. However, the City has argued that the groundwater quality in the vicinity of the Facility is variable and naturally high in salinity, therefore, it is difficult to determine whether degradation has occurred, and if so, whether the ponds are the cause of the degradation. The proposed Order requires the City to adequately characterize groundwater quality upgradient and downgradient of every treatment, storage, and disposal unit that does or may release waste constituents to groundwater. In addition, the proposed Order requires the Discharger to submit a work plan and schedule for a technical evaluation of best practicable treatment or control (BPTC) for the sludge drying beds, biosolids storage area, Leprino pretreatment lagoons, and industrial holding ponds.

VI. 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.

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| A. Mixing Zones/Dilution | D. Facility Expansion |
| B. Title 22 Disinfection Requirements | E. New Effluent Limitations |
| C. Mass Effluent Limitations | F. Study Requirements |

A. Mixing Zones/Dilution.

Flow conditions in Old River in the vicinity of the discharge are affected by San Joaquin River flows, South Delta barrier operations, and state and federal pumping operations from the State Water Project and Central Valley Project. Additionally, the discharge is located in a tidal zone. River flow moves upstream during the incoming or flood tide, while downstream flows occur during the outgoing or ebb tide. Multiple dosing of the receiving water with effluent occurs as the tide moves the water column upstream and downstream past the point of discharge. The complex dynamics of the stream flow, the tidal flows, the barrier operations, and the state and federal pumping operations must be considered in an evaluation of the available dilution for the discharge.

The flow of diluting water at the point of discharge varies with the tidal cycle. Typically, as net river flow drops, at some point in the tidal cycle the incoming tide balances against the downstream river flow resulting in river flow stagnation and very little dilution of effluent. Below this net river flow, the direction of the river flow reverses with incoming tides resulting in short periods of time with zero net river flows. Additionally, with flow reversals, some volume of river water is multiple dosed with the effluent as the river flows downstream past the discharge, reverses, moves upstream past the discharge a second time, then again reverses direction and passes the discharge point a third time as it moves down the river. A particular volume of river water may move back and forth, past the discharge point many times due to tidal action, each time receiving an additional load of wastewater. This is exacerbated with the barriers installed in the South Delta. The barriers minimize inflow from the San Joaquin River and restrict downstream flows. Therefore, flows while the barriers are in place are primarily tidal, since the Head of Old River barrier directs the majority of San Joaquin River flows north towards Stockton. In addition, the agricultural barriers allow flood tides through but the ebb tides are restricted. This maintains water levels for irrigation, but reduces downstream flow in Old River.

During critically dry years, the diluting flow would likely be minimal in the vicinity of the discharge. Therefore, the discharge must meet end-of-pipe limits for most constituents. Dilution credits, however, have been allowed for long-term human health criteria, which are based on the long-term harmonic mean flow. Modeling was performed for a 16-year period, from 1975-1991, with reasonable worst-case assumptions for the operation of South Delta Improvement Program's operable gates. Using the estimated harmonic mean flow, excluding the wet years, and the future design flow of 16 mgd, a maximum allowable harmonic dilution credit of 20:1 was allowed in the proposed Order. This dilution credit was used in development of the effluent limitations for chlorodibromomethane and dichlorobromomethane.

B. Facility Expansion.

The Discharger is upgrading the Facility to improve treatment and expand capacity. The treatment system capacity will be expanded to 16 mgd through a four-phase expansion. The improvements will improve the effluent quality over the current secondary level treatment. Only Phase 1 of the proposed expansion is proposed to be completed during the term of this Order, which would increase the treatment capacity to 10.8 mgd. The Report of Waste Discharge describes the proposed changes as follows:

Phase 1 (10.8 mgd Design Capacity). Phase 1 improvements will increase treatment to include nitrification/denitrification and tertiary filtration. The proposed improvements include the construction of new headworks with mechanical screening, replacement of existing primary clarifiers, construction of a flow equalization basin, construction of three additional secondary aeration basins, installation of two tertiary treatment modules, construction of new chemical building, and paving of sludge drying beds (1/6 of capacity, approx.). The expected initiation of operation of Phase 1 improvements is 1 August 2008.

Phases 2 – 4 (16 mgd Design Capacity). Phases 2-4 improvements expand the treatment and discharge capacity to 16 mgd. The proposed Phase 2 improvements include construction of a second outfall near the existing outfall, and paving of additional sludge drying beds. The proposed Phase 3 improvements include construction of one aeration basin/secondary clarifier, installation of a new filter pump for tertiary treatment, and paving of sludge drying beds. The proposed Phase 4 improvements include construction of a new primary clarifier, replacement of two effluent pumps with larger capacity pumps, construction of a sludge digester, and paving the remaining sludge drying beds. The proposed initiation of operation of the Phase 2, 3 and 4 improvements are 1 October 2012, 1 September 2014, and 1 November 2016, respectively.

C. Title 22 Disinfection Requirements.

The beneficial uses of Old River include municipal and domestic supply, water contact recreation, and agricultural supply, and there is, at times, less than 20:1 dilution. To protect these beneficial uses, the proposed Order requires that the wastewater must be disinfected and adequately treated to prevent disease. Tertiary treatment, consisting of chemical coagulation, sedimentation, and filtration, has been found to remove approximately 99.5% of viruses. Filtration is an effective means of reducing viruses and parasites from the waste stream. The wastewater must be treated to tertiary standards (filtered), or equivalent, to protect contact recreational and food crop irrigation uses.

The California Department of Health Services (DHS) has developed reclamation criteria, CCR, Division 4, Chapter 3 (Title 22), for the reuse of wastewater. Title 22 requires that for spray irrigation of food crops, parks, playgrounds, schoolyards, and other areas of similar public access, wastewater be adequately disinfected, oxidized, coagulated, clarified, and filtered, and that the effluent total coliform levels not exceed 2.2 MPN/100 ml as a 7-day median. Coliform organisms are intended as an indicator of the effectiveness of the entire treatment train and the effectiveness of removing other pathogens.

In addition to coliform testing, a turbidity effluent limitation has been included as a second indicator of the effectiveness of the treatment process and to assure compliance with the required level of treatment. The tertiary treatment process, or equivalent, is capable of reliably meeting a turbidity limitation of 2 nephelometric turbidity units (NTU) as a daily average. Failure of the filtration 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. Coliform testing, by comparison, is not conducted continuously and requires several hours, to days, to identify high coliform concentrations.

Title 22 is not directly applicable to surface waters; however, the Regional Water Board finds that it is appropriate to apply an equivalent level of treatment to that required by DHS's reclamation criteria because the undiluted effluent may be used for the irrigation of food crops and/or for body-contact water recreation. The method of treatment is not prescribed by the proposed Order; however, wastewater must be treated to a level equivalent to that recommended by DHS. The proposed Order contains effluent limitations and a tertiary level of treatment, or equivalent, necessary to protect the beneficial uses of the receiving water. These effluent limitations are more stringent than required by federal law. Therefore, the proposed Order includes a California Water Code Section 13241 analysis.

The establishment of tertiary limitations has not been previously required for this discharge; therefore, a schedule for compliance with the tertiary treatment requirements is included in the proposed Order and provides interim effluent limitations for BOD, TSS, and total coliform, which the Discharger is currently capable of meeting. Full compliance with the final effluent limitations for BOD, TSS, total coliform, and turbidity are not required by the proposed Order until **1 August 2008**. The Discharger is already in the process of upgrading the Facility to a tertiary treatment level. The Discharger began construction of its Phase 1 Improvements in August 2004, which includes construction of two tertiary treatment modules. The compliance schedule for tertiary treatment has been developed in accordance with the Discharger's implementation schedule.

D. New Effluent Limitations.

The proposed Order contains new water quality-based effluent limitations for aluminum, ammonia, copper, chlorodibromomethane, dichlorobromomethane, dissolved oxygen, iron, nitrate, and nitrite. In addition, the proposed Order contains more stringent effluent limitations for total chlorine residual. The effluent limitations for ammonia, total chlorine residual, and aluminum are based on the Basin Plan's narrative toxicity objective; the effluent limitations for chlorodibromomethane and dichlorobromomethane are based on the CTR; the effluent limitations for copper are based on both the CTR and the Basin Plan site-specific objective; the effluent limitations for dissolved oxygen and iron are based on Basin Plan site-specific water quality objectives; and the effluent limitations for nitrate and nitrite are based on implementation of the Basin Plan narrative chemical constituents objective. The proposed Order also contains new interim effluent limitations for mercury and TDS, which have been limited to current levels.

Based on the performance of the Facility, the Discharger is capable of meeting the effluent limitations for chlorodibromomethane, dichlorobromomethane, and iron. However, the Discharge may not be capable of immediately complying with the effluent limitations for copper, aluminum, dissolved oxygen, ammonia, nitrate, and nitrite. Pursuant to the SIP and the Basin Plan, compliance time schedules are included in the proposed Order for ammonia, aluminum, and copper. Compliance time schedules for dissolved oxygen, nitrate, and nitrite are included in a proposed time schedule order. The Discharger must be in compliance with all final effluent limitations prior to increasing the discharge flow to 10.8 mgd.

E. Effluent Mass Limitations.

Title 40 CFR 122.45(f)(1) requires effluent limitations for publicly owned treatment works (POTWs) 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. The proposed 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.

California Sportfishing Protection Alliances contends that mass limitations are required by Federal regulations and must be included in the permit for all constituents for which they can be calculated.

Federal regulations at 40 CFR 122.45(f)(1) and (2), states the following regarding effluent limitations for POTWs:

*“(1) All pollutants limited in permits shall have limitations, standards or prohibitions expressed in terms of mass **except:***

(i) For pH, temperature, radiation, or other pollutants which cannot appropriately be expressed by mass;

(ii) When applicable standards and limitations are expressed in terms of other units of measurement; or

(iii) If in establishing permit limitations on a case-by-case basis under § 125.3, limitations expressed in terms of mass are infeasible because the mass of the pollutant discharged cannot be related to a measure of operation (for example, discharges of TSS from certain mining operations), and permit conditions ensure that dilution will not be used as a substitute for treatment.

(2) Pollutants limited in terms of mass additionally may be limited in terms of other units of measurement, and the permit shall require the permittee to comply with both limitations.” (emphasis added)

Mass limitations are necessary for some constituents to ensure protection of the beneficial uses of the receiving water and/or to ensure the proper operations of the treatment facilities. Therefore, the proposed Order contains mass effluent limitations for oxygen-demanding substances and bioaccumulative constituents (i.e. BOD₅, TSS, ammonia, nitrate, nitrite, and mercury). However, for some constituents there is no water quality benefit for limiting the mass, thus, only limitations in terms of concentration were included in the proposed Order (i.e. aluminum, copper, iron, manganese, dichlorobromomethane, chlorodibromomethane, and MTBE).

F. Study Requirements.

The proposed Order contains several study requirements, including chronic whole effluent toxicity requirements, best practicable treatment or control (BPTC) of salinity study, and an electrical conductivity (EC) study.

1. **Chronic Whole Effluent Toxicity Requirements (Special Provisions VI.C.2.a.).** 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 quarterly whole effluent chronic toxicity testing performed by the Discharger from 2 March 2001 through 15 October 2004, the discharge has reasonable potential to cause or contribute 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 EPA guidance. In addition, the provision establishes a numeric toxicity monitoring trigger, requirements for accelerated monitoring, and a protocol for requiring the Discharger to initiate a TRE if a pattern of toxicity is demonstrated. A TRE is a site-specific study conducted in a stepwise process to identify the source(s) of toxicity and the effective control measures for effluent toxicity. TREs are designed to identify the causative agents and sources of whole effluent toxicity, evaluate the effectiveness of the toxicity control options, and confirm the reduction in effluent toxicity.

2. **Best Practicable Treatment or Control (BPTC) of Salinity (Special Provisions VI.C.2.b.).** The Discharger is required to meet BPTC of its discharge to assure compliance with the Antidegradation Policy (Resolution 68-16). Special Provisions VI.C.2.b. establishes schedules of tasks to evaluate the Facility’s BPTC of salinity in its discharge to Old River. Resolution 68 16 requires that, *“Any activity which produces or may produce waste or increase volume or concentration of waste and which discharges or proposes to discharge to existing high quality waters will be required to meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained.”* The Facility effluent contains salinity that may be adversely affecting water quality in Old River. The Discharger proposes to increase its discharge from a design capacity of 9 million gallons per day (mgd) to 16 mgd next permit term. The Discharger proposes an expansion of the Facility to be complete by 1 November 2016. Prior to increasing the discharge to 16 mgd, the Discharger must meet the requirements of Resolution 68-16, which requires the use of the best practicable treatment or control of the discharge to assure that pollution or nuisance will not occur and the highest water quality is maintained. This provision requires the Discharger to perform an evaluation of the BPTC of salinity and to develop and implement a plan to implement measures necessary to meet BPTC of salinity in its discharge to Old River.

VII. COMMENTS

Written comments on the proposed Orders were required to be received by the Regional Water Board by 16 March 2007 for the tentative WDRs and 6 April 2007 for the tentative NPDES permit in order to receive full consideration. Comments were received by the deadline from:

1. City of Tracy (City or Discharger)
2. California Sportfishing Protection Alliance (CSPA)
3. Central Valley Clean Water Association (CVCWA)
4. South Delta Water Agency (SDWA)
5. State Water Contractors (SWC)
6. Metropolitan Water District (MWD)
7. Environmental Law Foundation (ELF)

The major issues discussed in the public comments are summarized below. A complete response to comments will be provided at a later date.

A. City of Tracy Comments

Oil and Grease/Settleable Solids Effluent Limits. The Oil and Grease and Settleable Solids effluent limits were imposed with no valid justification or statistical reasonable potential analysis for either constituent. These limits are being maintained ostensibly because of antibacksliding concerns, without an RPA being performed.

The Regional Water Board staff agrees that the record does not include sufficient information to impose effluent limits for these constituents. Therefore, the effluent limits are being removed. The proposed Order contains receiving water limits and monitoring. If further information demonstrates the need for effluent limits, the Order may be reopened to add effluent limits for these constituents.

Aluminum Effluent Limits. The City disagrees with the reasonable potential analysis for aluminum and contends that the U.S. EPA chronic 304(a) guidance criteria for aluminum of 750 µg/L (CMC) and 87 µg/L (CCC) must be considered in light of site specific factors and issues related to indicator organisms, species diversity, population density, growth anomalies, or biotoxicity test results before a determination can be made as to whether or not an applicable water quality standard has been violated. If an effluent limit is retained, impose limits no more stringent than 1.0 mg/L as a monthly average and 0.2 mg/L as a weekly average, which represent the MCL values.

Staff are considering the City's comment and will address the issue in the Response to Comments document, which will be provided at a later date.

Dissolved Oxygen Effluent Limits. A dissolved oxygen (DO) limit has not been adequately justified, because the Regional Water Board has determined that effluent DO concentration data is not available. Moreover, the limit was justified based on historic receiving water data (1998 to 2003), which is too old to rely on. In addition, the Permit already includes restrictions on all of the constituents that cause an oxygen demand on the receiving water (e.g., BOD, TSS, ammonia, and nitrogen). Finally, the Permit contains a receiving water limitation requiring that the discharge not cause the concentrations of dissolved oxygen to fall below 5 mg/L in Old River. Therefore, a DO effluent limit is duplicative, unnecessary, and should be removed.

Staff are considering the City's comment and will address the issue in the Response to Comments document, which will be provided at a later date.

Electrical Conductivity Effluent Limits. The City disagrees with the proposed effluent limitations for electrical conductivity because the final limits will likely become effective during the time while the Executive Officer must act. The City has proposed an additional Salinity Option #4, which removes the effluent limitation and adds a finding. The City's salinity option is included in its comment letter that is part of the agenda package.

Section III, above, provides a detailed analysis of the compliance and permitting issues with respect to salinity. The Regional Water Board has several options to consider.

Nitrate Effluent Limits. The Regional Board has failed to demonstrate that there is reasonable potential currently for nitrate. Review of the chart on page F-57 shows that both the effluent (MEC) and the receiving water (B) are lower than the translated number from the Chemical Constituents narrative objective of 10 mg/L.

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. Inadequate or incomplete denitrification may result in the discharge of nitrate and/or nitrite to the receiving stream. Therefore, 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 nitrite and nitrate.

Compliance Schedules for Aluminum and Copper. The Regional Board has not provided justification in the permit or Fact Sheet for tying compliance with the copper and aluminum limits to the date of the Phase I improvements since these

improvements are not designed specifically to address either copper or aluminum removal, only tertiary treatment and nitrification/denitrification, although the tertiary filters will likely provide some additional metals removal.

Staff are considering the City's comment and will address the issue in the Response to Comments document, which will be provided at a later date.

B. California Sportfishing Protection Alliance Comments

Antidegradation Policy. The Environmental Law Foundation (ELF) on behalf of CSPA commented that the proposed Order is not consistent with the antidegradation provisions of 40CFR section 131.2 and the State Board Resolution 68-16.

Staff are considering ELF's comment and will address the issue in the Response to Comments document, which will be provided at a later date.

EC Effluent Limitations. The proposed Order does not contain a protective or legal effluent limit for EC and is not in compliance with federal regulations.

Section III, above, provides a detailed analysis of the compliance and permitting issues with respect to salinity. The Regional Water Board has several options to consider.

Compliance Schedule for Aluminum. The proposed Permit contains a compliance schedule for aluminum based on "a new interpretation of the Basin Plan" as detailed in the Fact Sheet, page F-32 and Finding No. k. The Regional Board fails to provide any explanation or definition of the "new interpretation" of the Basin Plan.

Time schedules can be included in permits for effluent limitations based upon "new interpretations" of narrative water quality objectives. An August 2005 Second District California Appeals Court Ruling [CBE v. SWRCB regarding the Avon Refinery (aka, Tosco Refinery)] greatly expanded the scope of "new interpretation". Any effluent limit based upon a narrative water quality objective is a "new interpretation" that will allow a time schedule to be placed in an NPDES Permit when that effluent limit is first applied to that discharger.

Reasonable Potential Analysis: CSPA contends that the proposed permit contains an inadequate reasonable potential analysis (RPA) by using incorrect statistical multipliers in violation of federal regulations.

Staff 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 of both CTR and non-CTR constituents.

C. South Delta Water Agency Comments

EC Effluent Limitations. The SDWA argues that the tentative Order presented by Staff is insufficient to protect the agricultural beneficial uses of the receiving water into which the City of Tracy discharges its treated effluent, because the proposed Order does not include any real limitation on salinity. The tentative Order only requires studies regarding what might be done to decrease the salinity of the Tracy discharge. The SDWA claims that effluent limitations based on the south Delta salinity standards are necessary to protect the agricultural beneficial uses.

Section III, above, provides a detailed analysis of the compliance and permitting issues with respect to salinity. The Regional Water Board has several options to consider.

VIII. CHANGES TO PROPOSED ORDERS

The tentative NPDES permit and TSO have been modified in several areas based on comments received to provide clarification and/or correct minor factual errors. In addition to these corrections and clarifications, three changes have been made to the proposed Order that require some explanation. These changes are discussed in detail below.

Thermal Impacts Reopener. The Final EIR for the expansion of the Facility discusses mitigation measures that the Discharger proposed to implement to ensure that any thermal impacts will be less than significant. The Discharger proposes to conduct four years of intensive monitoring of thermal impacts in the vicinity of the outfall and develop an appropriate range of mitigation measures, if necessary. Furthermore, as required by other regulations, the Discharger is required to conduct consultations with the United States Fish and Wildlife Services, National Marine Fisheries Service, and California Department of Fish and Game to develop mitigation measures for the protection of aquatic species, including rare, threatened, and endangered species protected under the Endangered Species Act. A reopener provision has been added to the proposed Order should the thermal studies conducted by the Discharger and/or the consultations result in the need for new or revised temperature effluent limitations or requirements.

Annual Total Dissolved Solids (TDS) Effluent Limitation Compliance. The proposed Order has been modified to require annual compliance (1 January to 31 December) with the interim effluent limitation for TDS (Section IV.A.5.f.). The tentative Order proposed that compliance be evaluated monthly, based on the previous twelve months.

Receiving Water Monitoring Location R-1 Moved. The location of receiving water monitoring location R-1 has been moved from the confluence of the San Joaquin River to the confluence of Middle River. The purpose of the R-1 monitoring location is to provide ambient background data outside the influence of the discharge. Based on the modeling performed by the Department of Water Resources for the salinity evaluation, it was discovered that the City's effluent does not extend up to Middle River.

Table F-4: Statistics for Effluent Constituents with Detectable Results. Table F-4 was added back into the proposed Order per a request by CSPA. This table was in the May 2006 tentative Order and was removed because staff felt it was no longer necessary.