

STAFF REPORT

CITY OF TRACY WASTEWATER TREATMENT PLANT PROPOSED NPDES PERMIT RENEWAL AND TIME SCHEDULE ORDER SAN JOAQUIN COUNTY

Two items are being considered for adoption: (1) issuance of a renewed National Pollutant Discharge Elimination System (NPDES) permit for the City of Tracy Wastewater Treatment Plant, and (2) a Time Schedule Order (TSO) with a time schedule requiring full compliance with some final effluent limitations by 1 August 2011.

BACKGROUND

The City of Tracy (hereafter Discharger) owns and operates the Tracy Wastewater Treatment Plant (Facility), which provides sewerage services to the City of Tracy. 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 Discharger filed a report of waste discharge and submitted an application for renewal of its Waste Discharge Requirements (WDRs) and National Pollutant Discharge Elimination System (NPDES) permit on 1 November 2000. Subsequently, on 3 February 2003, the Discharger submitted a revised report of waste discharge, which included a request for expansion. Supplemental information was received on 25 September 2003, 30 September 2003, and 29 April 2004. A site visit was conducted on 9 November 2004, to observe Facility operations and conditions.

FACILITY DESCRIPTION

The Facility treats primarily domestic wastewater collected via the City of Tracy'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 Discharger'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 Discharger for preliminary treatment of its industrial food processing wastewater and discharges to the

Facility under an industrial pretreatment permit issued by the Discharger. 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.

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.

- Mixing Zones/Dilution
- Title 22 Disinfection Requirements
- Mass Effluent Limitations
- Facility Expansion
- New Effluent Limitations
- Study Requirements

1. **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.

2. **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.

- 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.

- 4. New Effluent Limitations.** The proposed Order contains new water quality-based effluent limitations for aluminum, ammonia, copper, chlorodibromomethane, dichlorobromomethane, dissolved oxygen, iron, manganese, methyl tert-butyl ether (MTBE), 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, iron, and manganese are based on Basin Plan site-specific water quality objectives; and the effluent limitations for MTBE, 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, which have been limited to representative, current levels pending TMDL development, per the SIP.

Based on the performance of the Facility, the Discharger is capable of meeting the effluent limitations for chlorodibromomethane, dichlorobromomethane, iron, manganese, and MTBE. 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, a compliance time schedule is included in the proposed Order for copper. Compliance time schedules for aluminum, dissolved oxygen, ammonia, 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.

- 5. 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).

6. **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.

a. **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.

- b. **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.
- c. **Electrical Conductivity (EC) Study (Special Provisions VI.C.2.c.).** The salinity of wastewater is determined by measuring electrical conductivity (EC), an important parameter in determining the suitability of wastewater for agricultural irrigation. With increasing salinity, crops expend more energy adjusting the salt

concentration in plant tissues to obtain needed water, and less energy is available for growth. The recommended agricultural water quality goal to protect the beneficial use of agricultural supply is 700 $\mu\text{mhos/cm}$ for EC. This agricultural water quality goal provides no restrictions on crop type or irrigation methods for maximum crop yield. Higher concentrations may require special irrigation methods to maintain crop yields or may restrict types of crops grown. Plants, such as beans, carrots and strawberries, have relatively low tolerance to salt and crop yield potential drops as the EC levels increase above 700 $\mu\text{mhos/cm}$. Beneficial uses of Old River include agricultural supply and salt sensitive crops are grown in the Delta.

The EC study requires the Discharger to evaluate the area irrigated by Old River in the vicinity of the discharge to determine a site-specific EC objective for Old River that is fully protective of the beneficial use of agricultural supply. The site-specific EC objective is necessary to adequately evaluate the best practicable treatment or control of salinity in the discharge to Old River because the method of treatment or control must assure that there is no pollution and the highest water quality is maintained.

SIGNIFICANT PERMITTING ISSUES

For the proposed Order there are two significant permitting issues. One issue is the separation of land discharge requirements from the NPDES permit and the development of separate waste discharge requirements. The other issue is the salinity of the discharge, which is the single most controversial aspect of the proposed Order. There are numerous smaller issues that are addressed in the response to comments.

1. **Separate Waste Discharge Requirements (WDRs).** The proposed Order rescinds the surface water discharge requirements contained in Order No. 96-104, and includes requirements for the surface water discharge to Old River. As part of its treatment train, the Discharger utilizes unlined industrial ponds, unlined sludge drying beds, and unlined sludge storage basins. These treatment facilities 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 are currently under development and are expected to be out for public comment in August or September 2006. All requirements related to land discharge will remain in effect in Order 96-104 until adoption of the new WDRs.

2. **Salinity.** 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. Except during flood flows, when the effluent is carried to San Francisco Bay, the Delta Mendota Canal and State Water Project pumps capture most of Tracy's effluent for export to the San Joaquin Valley and southern California.

No numeric salinity standards have been adopted that apply throughout the Delta, but 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. Site-specific studies, considering crop patterns, soil types, precipitation, and other local factors, could be conducted to determine whether less stringent salinity standards are protective of local irrigated agriculture. 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. DWR and USBR release sufficient fresh water from upstream reservoirs to achieve compliance at these salinity compliance locations. Salinity in Tracy's discharge above the 700/1000 umhos/cm standards potentially causes additional fresh water to be released to provide dilution. 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. The proposed Order requires the City to investigate the effect the discharge has on salinity in Old River at two D-1641 salinity compliance locations that are in the vicinity of the discharge. The purpose of the study is to assess the relative impact at

the D-1641 salinity compliance locations with increasing and decreasing salinity in the discharge.

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 is 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 will be regulated under separate Waste Discharge Requirements currently being prepared 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.

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

- **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.
- **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.

- **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.

The Regional Water Board has a number of options available for consideration. Two tentative NPDES Permits have been circulated for public review and comment. The approaches for salinity regulation in these two tentative Permits are quite different. The Board could adopt either approach 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.

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.

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.

Besides the salinity regulation alternatives contained in these tentative Permits, the following alternatives exist.

- a. **Prescribe a final effluent limit for salinity.** The December 2005 tentative Permit proposed a 700 umhos/cm monthly average electrical conductivity effluent limit. This is the number used by the Regional Water Board in many past permits to prescribe a salinity concentration that is fully protective of the most sensitive agricultural uses of the receiving water. Longer averaging periods could be prescribed, such as an annual average. Seasonal average limits of 700 and 1000 umhos/cm could be prescribed to match the Salinity Compliance Point standards.

An effluent limit could also be based on protection of the municipal beneficial use of Old River. The following Secondary Drinking Water Standards (MCLs) are prescribed by the California Department of Health Services and incorporated into the Basin Plan:

- 900 umhos/cm recommended salinity for a long-term water supply
- 1600 umhos/cm recommended maximum for a long-term water supply
- 2200 umhos/cm for a short term water supply.

NPDES regulations clearly require that when a discharge has a reasonable potential to cause or contribute to exceedance of a water quality standard, then final effluent limits must be included in the Permit. California law, however, clearly requires collection of Mandatory Minimum Penalties for violations of final effluent limits unless compliance schedules are five years or less. Even if the Leprino discharge were eliminated, the City would not be able to comply immediately with irrigation season limits or the recommended long-term municipal water supply MCL due to a relatively saline water supply. Further improvement of the water supply or sufficient reduction in other salt sources to achieve compliance will probably require more than five years. The Board could

clearly state the final effluent limit in a finding and indicate that this final effluent limit would be included as an enforceable effluent limit in a later NPDES Permit.

- b. **Prescribe receiving water limitations for salinity.** Basically, the Permit would require that the Tracy discharge not cause or contribute to a salinity concentration in Old River exceeding the water quality standard. The prescribed water quality standard could be based on protection of agricultural and/or municipal uses. The prescribed water quality standard could either be a final standard, or an interim standard pending completion of site-specific studies. Protection of the receiving water is ultimately the purpose of the permit. However, if the discharge has the reasonable potential to cause or contribute to exceedance of a final water quality standard, NPDES regulations require that an effluent limit be prescribed. Compliance with receiving water standard can be more difficult to determine than compliance with an effluent limitation due to the possibility of other factors influencing receiving water concentrations.
- c. Prescribe final effluent limits contingent upon specific actions by the Discharger. The Santa Ana River Basin Region has prescribed final effluent limits in NPDES Permits that are in effect unless certain conditions occur. These conditions include a finding by the Executive Officer that salinity in excess of the effluent limits are due to the quality of water supply sources, or due solely to chemical additions in the treatment plant. The Permits allow the discharger to offset the excess salt additions by financially participating in area-wide salt studies, application of salt removal credits from groundwater desalinization projects, or implementation of alternative offset programs approved by the EO. Such offset alternatives may develop over the next few years, but are generally not available at this time.
- d. Any number of different interim effluent limits or goals can be established. At a minimum an interim limit to cap current salinity concentrations should be included. The proposed five-year goal of a 500 umhos/cm increment over the water supply electrical conductivity could instead be an interim effluent limit, which would more strongly require the City to address salt issues in the near term. The compliance schedule for any interim effluent limit can be shorter than five years, although if significant source control or treatment construction is needed, five years is not an excessive period of time for studies, design and construction.
- e. Both tentative NPDES Permits require identification and control of salt sources, with regular reporting to the Regional Water Board required. The intent is to attain salinity reduction as rapidly as possible, and have a complete understanding of salt issues and alternatives available for the next five-year renewal of the NPDES Permit. The timing of studies and reporting can be adjusted, and the Permit can be reopened in less than five years to make

adjustments in response to study findings.

Growth of the community and salinity compliance. 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. The interim salinity limit set to cap the salt concentrations at current levels should prevent increases in salinity concentrations, and Tracy is certainly aware of the salinity concerns and should be controlling new salt additions to the collection system. However, if current salinity concentrations are maintained, as wastewater flows increase, the mass loading of salt will increase, exacerbating Delta salinity problems, including making DWR/USBR compliance with salinity compliance points more difficult. This issue could be addressed by adding a mass limitation for Total Dissolved Solids to cap the total annual (or some other time period) salt loading from Tracy at its current discharge level, or a the level allowed by the current NPDES Permit. As Tracy's wastewater flow rate increases, there would need to be a corresponding decrease in effluent salinity concentration to maintain compliance with the mass cap. If a mass cap was set at current flow rates, a time schedule would be needed or Tracy would have a choice of either stopping increases in wastewater flow (possibly stopping growth) or taking immediate action to eliminate salt sources in the collection system to allow continued increase in wastewater flow. Immediate action to cut off salt sources may produce significant economic effects on industries and/or the community.

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. :

- **NPDES Permit, Section VI.C.2.d.** D-1641 Salinity Compliance Locations Study
- **NPDES Permit, Section VII.** New compliance determination language added for mass limitations;
- **NPDES Permit, Section VII.** New compliance determination language added for total residual chlorine;
- **Time Schedule Order.** Compliance time schedule for temperature receiving water limitations removed.

All changes are incorporated into the agenda copies of the Orders. Underline/Strikeout versions will be made available to the Discharger and interested parties on the Regional Water Board's website.

1. **D-1641 Salinity Compliance Locations Study.** A new study has been added to the proposed Order that requires the Discharger to investigate the effect the discharge has on salinity in Old River at two of the D-1641 salinity compliance locations (C-8 and P-12), which are near the Discharger's outfall. The purpose of the study is to assess the relative impact at the D 1641 salinity compliance locations with increasing and decreasing salinity in the discharge. The study requires the Discharger to evaluate the effect of the discharge at critical conditions in Old River and with reasonable worst-case assumptions for the operation of the South Delta Improvements Program's operable gates. A study work plan is due on 1 January 2007 and the completed report due on 1 January 2008.
2. **New compliance determination language for mass limitations.** The following language has been added to Section VII.:

"K. Effluent Mass Limitations. The effluent mass limitations contained in Final Effluent Limitations IV.A.1.b., IV.A.1.c., IV.A.1.d., and Interim Effluent Limitations IV.A.2.a. are based on the permitted average daily discharge flow (Final Effluent Limitations IV.A.1.k.), and calculated as follows:

Mass (lbs/day) = Flow (mgd) x Concentration (mg/L) x 8.34 (conversion factor)

If the effluent flow exceeds the permitted average daily discharge flow due to wet-weather storm events or when groundwater is above normal and runoff is occurring, the effluent mass limitations contained in Final Effluent Limitations IV.A.1.b., IV.A.1.c., IV.A.1.d., and Interim Effluent Limitations IV.A.2.a. shall not apply. Under these specific circumstances the effluent mass limitations shall be recalculated based on the wet weather effluent flow rate rather than the permitted average daily discharge flow."

This language has been added in accordance with State Water Board WQO 2004-0013, *In the Matter of the Petition of Yuba City*, which states, "...mass limitations should be conditioned to allow the mass loading to increase in proportion to the discharge flow during wet weather discharge flows..."

3. **New compliance determination language for total residual chlorine limitations.** The following language has been added to Section VII.:

"L. Total Residual Chlorine (Section IV.A.1.h.). Continuous monitoring analyzers for chlorine residual or for dechlorination agent residual in the effluent are appropriate methods for compliance determination. A positive residual dechlorination agent in the effluent indicates that chlorine is not present in the discharge, which demonstrates compliance with the effluent limitations. This

type of monitoring can also be used to prove that some chlorine residual exceedances are false positives. Continuous monitoring data showing either a positive dechlorination agent residual or a chlorine residual at or below the prescribed limit are sufficient to show compliance with the total residual chlorine effluent limitations, as long as the instruments are maintained and calibrated in accordance with the manufacturer's recommendations.

Any excursion above the 1-hour average or 4-day average total residual chlorine effluent limitations is a violation. If the Discharger conducts continuous monitoring and the Discharger can demonstrate, through data collected from a back-up monitoring system, that a chlorine spike recorded by the continuous monitor was not actually due to chlorine, then any excursion resulting from the recorded spike will not be considered an exceedance, but rather reported as a false positive."

This language has been added to the Order to clarify how the Regional Water Board will determine compliance with the total residual chlorine effluent limitations. This approach is consistent with the State Water Board's draft Total Residual Chlorine and Chlorine-Produced Oxidants Policy.

4. Time Schedule for Thermal Plan Compliance Removed from TSO

The Discharger is capable of complying with the Thermal Plan requirements at the currently permitted discharge flow. Therefore, a time schedule for compliance is unnecessary. Modeling performed by the Discharger indicates that the 1 °F limitation of Objective 5.A.(1)b¹ of the Thermal Plan may be exceeded 3 months of the year at the expanded daily average discharge flow rate of 16 mgd. Prior to increasing the discharge, the proposed Order requires the Discharger to demonstrate compliance with all effluent and receiving water limitations, including those for temperature, prior to expanding its permitted average daily flow. The Discharger must either be in compliance with the Thermal Plan requirements or have obtained a Thermal Plan exception, which would necessitate modification of the temperature effluent and/or receiving water limitations in the Order.

¹ The Thermal Plan at 5.A.(1)b states, "Elevated temperature waste discharges either individually or combined with other discharges shall not create a zone, defined by water temperatures of more than 1°F above natural receiving water temperature, which exceeds 25 percent of the cross-sectional area of a main river channel at any point."