

April 5, 2007

**DIGITAL COPY SUBMITTED TO ANAND MAMIDI 4/13/07
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SUBJECT: City of Angels, Recommendations for Tentative WDRs

The purpose of this letter is to recommend revisions to the City of Angels Tentative Order dated 06 March 2007. The City believes the requested revisions are protective of the environment, lawful, and minimize waste of City and State staff time and public money. The recommendations are few in number, but significant in nature, and are presented below in the order in which they occur in the Tentative Order.

II.B. states: “During wet years, wastewater flows exceeding the land disposal and storage capacity of the Facility are proposed to be discharged seasonally to Angels Creek”

The phrase “during wet years” needs to be eliminated from this sentence. This is because as shown in the City’s Report of Waste Discharge (RWD), seasonal discharges to Angels Creek will be needed in all years, even dry years, under design flow conditions. As an example, please review the first water balance in RWD Tab H, Attachment B “Water Balances.” This first water balance is for a dry year (D) with rainfall occurring early (E) in the winter months. In this D-E water balance, the forecast discharge to Angels Creek and the associated seasonal use of the effluent storage reservoir is as follows:

	Nov	Dec	Jan	Feb	Mar	Apr
▪ Effluent discharge to creek, MG	9.34	10.70	10.60	7.73	6.18	0.00
▪ Effluent stored during month, MG	6.5	13.0	11.7	3.3	-5.5	-13.2
▪ Total effluent in storage at end of month, MG	6.5	19.6	31.3	34.6	29.1	15.9

If effluent discharge to Angels Creek is not allowed in dry years, then the effluent forecast to be discharged to Angels Creek must be added to storage. The resulting effluent storage need is forecast to be as follows:

	Nov	Dec	Jan	Feb	Mar	Apr
▪ Effluent diverted from creek to storage, MG	9.34	10.70	10.60	7.73	6.18	0.00
▪ Effluent to storage already, MG	6.5	13.0	11.7	3.3	-5.5	-13.2
▪ Total effluent in storage at end of month, MG	15.84	39.54	61.84	72.87	73.55	60.35

The forecast effluent storage need is 73.55 MG. The maximum available storage is 66 MG. In dry years some effluent must be discharged to Angels Creek. The WDRs need to reflect this reality.

Even in dry years, the effluent discharge will still make up no more than 5 percent of the resulting creek flow. Therefore, there is no more risk to the environment in dry years than in other years because the minimum level of effluent dilution will still be met.

III.E. states: “The discharge . . . is prohibited except from November 15 to May 15, when Angels Creek flows provide a flow ratio greater than or equal to 20:1 (Angels Creek flow: effluent) as a daily average.”

This statement is contrary to the City’s RWD which states the discharge will be no more than 1 part effluent in 20 parts of downstream creek flow (e.g., RWD, Tab B, page 2, second bullet). In other words, the dilution is 19 parts upstream creek water to 1 part effluent, so that the resulting stream flow is no more than 5 percent effluent. The City’s RWD is in agreement with DHS guidance in this matter provided in Wastewater Disinfection for Health Protection. The critical table from this DHS guidance document is attached and highlighted for your ready reference.

This issue of dilution is an important matter because all of the RWD water balances and storage requirement calculations are based on the effluent discharge being up to 5 percent of the resulting downstream Angels Creek flow per DHS guidance. The recommended language for the Tentative Order is as follows:

“The discharge of tertiary treated wastewater at Discharge Point –001 is prohibited except from November 15 through May 15 and when Angels Creek flows provide a downstream flow ratio greater than or equal to 20:1 (Angels Creek flow:effluent) as a daily average.” (underlining added to show recommended changes.)

III.F. states: “The discharge . . . is prohibited when the storage reservoir has more than 20 MG [of unused] effluent storage capacity.”

While the City recognizes the intent of this requirement is to minimize effluent discharges to Angels Creek per the Basin Plan, the City also points out that this requirement wastes the inherent safety factor of having surplus storage available to handle unforeseen emergencies. It can also force effluent discharges to be concentrated at the end of the effluent discharge season rather than be 1) distributed more uniformly throughout it, or 2) correlated more to when creek flows (and effluent flows) are high because of rainfall. The City does not believe this requirement is in the best interest of the environment or City operations, and therefore recommends that it be deleted. However, with the allowance for effluent discharges through 15 May to cover unusually wet Mays, the City believes it can comply with this requirement. As more becomes factually known about the City’s new effluent reclamation operations, I/I, creek flows, etc., this issue of storage may need to be revisited.

If this requirement is to remain, it is recommended that the words “of unused” be added to the requirement for clarity.

IV.A.1.a. includes: effluent limitations for ammonia, bis (2-chloroethyl) ether, dichlorobromomethane, copper, lead, and zinc that do not reflect the 19 parts creek water to 1 part effluent minimum dilution requirement specified in the RWD. A minimum level of effluent dilution, and therefore a dilution ratio and credit under SIP, is an important part of the City’s compliance strategy. The City’s tertiary treatment facilities cannot comply reliably with all of the proposed effluent limitations, therefore the proposed Tentative Order is a “non-order” because it will have to be reopened to ever be used by the City.

The basis for reopening the Order will be the City’s mixing zone study which will demonstrate that the City’s diffuser creates a completely-mixed discharge condition in Angels Creek. To avoid the staff time and expense of reopening the Order, the Order should include effluent limitations based on the City demonstrating completely-mixed discharge conditions in the creek. This approach is not contrary to SIP because the proposed mixing zone will be completely-mixed, by design, not incompletely-mixed for which SIP has the following special restrictions:

“Dilution credits and mixing zones for incomplete-mixed discharges shall be considered by the RWQCB only after the discharger has completed an independent mixing zone study and demonstrated to the satisfaction of the RWQCB that a dilution credit is appropriate.”

There is no such requirement for completely-mixed discharges other than that the discharger has to 1) demonstrate that, in fact, the discharge is completely mixed into the receiving water within two receiving water widths downstream of the discharge point, and 2) provide the information required under SIP Section 1.4.2.2:

“The application for the permit shall include, to the extent feasible, the information needed by the RWQCB to make a determination on allowing a mixing zone, including the calculations for deriving the appropriate receiving water and effluent flows, and/or the results of a mixing zone study.”

The City proposed to design a transverse diffuser system that should be able to meet SIP completely-mixed discharge requirements. The City agrees that the field performance of diffusers can vary from theory; thus, the City’s RWD proposed a dye study to test the field performance of the diffuser. If the transverse diffuser does not result in a completely-mixed discharge, then the City’s planned mitigation measure is to install a recirculation system to control and stabilize hydraulics in the mixing zone to create completely-mixed discharge conditions.

The absence of dilution credits is not an option for the City, which is why the Tentative Order, as written, is a non-order until it is reopened to reflect dilution credits. The City believes it has submitted the information needed for the RWQCB to make a determination, now, on allowing a

mixing zone and dilution credit. That determination should be made, and the Order should require demonstration of completely-mixed discharge conditions via dye studies before any effluent discharge is allowed. This approach is protective, and avoids the staff time and expense of reopening the Order.

V.A.1. includes: a receiving water un-ionized ammonia limit of 0.025 mg/L (as N). Fact Sheet page F-36 states that this standard comes from the Basin Plan. An electronic keyword search of the revised Basin Plan did not reveal this standard. Please provide the source of this numeric receiving water limit, or remove it from the Tentative Order.

V.A.6.b. may need: a time element added to it. As written, the implication is that the limit is the 95th percentile of all available DO percent saturation data. This approach is satisfactory to the City, if that is the intent of the Basin Plan.

VI.C.1.f. may need: to be revised per the recommendations under IV.A.1.a.

VI.C.2.a.iii. needs revision. To require the expense of accelerated monitoring and possibly a TRE every time that any NOEC is less than 100 percent, appears to ignore the reality of the situation and other Regional Board policy:

- NOECs less than 100 percent occur randomly in effluent bioassays and control bioassays simply because of the natural variations in the biology used in the tests. When the control has a problem but the effluent test does not, no harm is done. But when the effluent test does and the control does not for the same natural variability reasons, the City engages in the expense of accelerated monitoring. A second statistically based “hit” during accelerated monitoring would trigger a TRE with the cause being the natural variability inherent to chronic bioassay tests.
- The acute bioassay standard allows a 70 percent minimum survival in one bioassay and a 90 percent median survival over three tests without triggering accelerated monitoring or TREs.
- The proposed effluent discharge will be completely mixed into the creek and make up no more than 5 percent of the resulting creek flow. For such a discharge, the appropriate trigger should be 20 TUC, not 1 TUC.

VI.C.4.a.1. needs: to be revised to replace the word “precluded” with “discouraged”. The City cannot preclude people from making contact with effluent as it enters a water of the state in which the people have a right to recreate, navigate, etc. The effluent is treated to tertiary standards, so there is virtually no risk to public health even if contact occurs.

VI.C.4.b. needs: an additional requirement that a mixing zone study shall be completed demonstrating that the discharge is completely-mixed into the receiving water.

Attachment E.III.A.1.: Daily testing of influent BOD and TSS for a minor discharge of tertiary effluent that comprises no more than 5 percent of the receiving water flow seems excessive. This level of testing is not needed to assess the performance of the plant or compliance with the 85 percent removal criteria. Therefore, this level of testing appears to be a waste of public money. Weekly testing should be adequate for the foregoing uses until such time that effluent data suggest that re-evaluation of the plant design and its performance is warranted.

Attachment E.IV.A.1.: The extent of effluent monitoring for a minor discharge of tertiary effluent receiving substantial dilution seems excessive. The expense of meters and the associated software to continuously monitor temperature, dissolved oxygen, and pH seems excessive. Testing these parameters once a week with the receiving water monitoring is more appropriate. A daily BOD and TSS sample seems excessive when the continuously recording turbidimeter does an adequate job of assuring tertiary effluent quality based on Title 22 requirements. Twice weekly BOD and TSS monitoring is recommended. With the continuous recording of effluent turbidity, settleable solids testing is a complete waste of time and money. Settleable solids testing should be eliminated, but may need to be monitored monthly just to fill in a number on a table. Electrical conductivity sampling should be deleted because it is a poor indicator of effluent salinity. The TDS test should be specified to be the TDS (fixed) test so that the results are a more accurate measure of effluent salinity. Finally, effluent transmittance should be monitored on a continuous basis to provide assurance that the UV system can perform as designed.

Attachment E.V.B.7.: The reference should be to Table E-4.

Attachment E.VIII.A.1.: The opening sentence needs to specify that receiving water monitoring is required only when a discharge to Angels Creek is occurring. Additionally, electrical conductivity monitoring should be eliminated as being a poor indicator of salinity; and the TDS test should be specified to be the more accurate TDS (fixed) test for salinity.

Attachment E.IX.B.1.: Electrical conductivity monitoring should be eliminated; and TDS testing should be specified as TDS (fixed) testing.

Attachment F: Effluent limitations for metals with hardness-based water quality objectives should be calculated via the procedure developed by Dr. Robert W. Emerick and presented to both the State Board and Regional Boards if Ken Landau has agreed to implement the procedure under SIP.

If dilution credits are given at this time based on the information provided, D_{acute} and $D_{chronic}$ are each 19. $D_{human\ health}$ is the ratio of harmonic mean flow of the receiving water during the discharge period (15 Nov through 15 May), over the arithmetic mean of the effluent flow discharged to Angels Creek. An estimate of $D_{human\ health}$ can be developed from the Angels Creek flow estimates developed in the RWD. The City will complete this calculation if requested to do so.

The background concentration B to be used in calculating ECAs for carcinogens is the arithmetic mean of all available data per SIP, not the maximum concentration observed as implied on page F-26.

Attachment F also needs to be revised to reflect any of the foregoing recommendations that become part of the Order.

The foregoing are the recommendations of the City regarding the Tentative Order. City staff and its consultants are at your service to assist with your evaluation of these recommendations. The City and the State have a common goal in this matter: protective, cost-effective, wastewater service for the people. We will gladly meet with you and your staff to discuss these recommendations in greater detail.

Sincerely,

City of Angels

Attachment

Attachment

**Excerpt from Wastewater Disinfection for Health
Protection**