

**State of California
Department of Fish and Game**

M e m o r a n d u m

Date: 7/15/09

To: Jim Marshall
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From: Carol Oz, Staff Environmental Scientist
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Subject: DFG Comments Regarding the Proposed Amendment of Waste Discharge Requirements Order No. R5-2007-0031 (NPDES Permit No. CA0085201) City of Angels Wastewater Treatment Plant, Calaveras County, CA I

The Department of Fish and Game (DFG) has the following concerns/questions regarding the proposed revised NPDES for the City of Angels (Discharger) Waste Water Treatment Plant (WWTP). The proposed amendment would allow dilution credits resulting in changes to the water quality-based effluent limitations for ammonia, bis(2-chloroethyl)ether, dichlorobromomethane, copper, lead, and zinc, and the numeric chronic whole effluent toxicity monitoring trigger. Other associated changes are made throughout the permit and fact sheet, due to the allowance of dilution credits. DFG is concerned that the mixing zone study and evaluations for the proposed amendment were not complete, potentially putting natural resources at risk. We are especially concerned that effluent chemical concentrations that would be allowed by this amendment would likely be deleterious to aquatic life. The mixing zone would dominate the creek up to 36 ft. downstream and not allow for safe fish passage.

1. The mixing zone would allow the following metals concentrations which would be deleterious to aquatic life.

Ammonia: Concentrations of ammonia up to 56 mg/l as a daily maximum and 23 mg/l as a monthly average would be allowed. Based on the Regional Board's calculations, Fact Sheet page F-22, ammonia is toxic to aquatic life at 5.2 mg/l (acute), 2.3 mg/l (chronic) and 5.71 mg/l (4-day average). For raw sewage Metcalf and Eddy *Wastewater Engineering Treatment and Reuse*, Table 3-15 rates a wastewater as "high strength" if it exceeds 45 mg/l. Other Engineering Texts state that it is unusual for ammonia concentration in raw sewage to exceed 60 mg/l. The proposed Permit, page F-42, states that the wastewater treatment plant nitrifies and denitrifies; converts ammonia to nitrite and nitrate and removes nitrate. With an allowance to discharge ammonia up to 56 mg/l, would any nitrification and denitrification be occurring?

Copper: Up to 18 ug/l as a daily maximum and 9.2 ug/l as a monthly average would be allowed. The CTR chronic criterion for copper is 2.8 ug/l and copper was measured in the receiving stream at 1.1 ug/l. The upstream lowest observed hardness (16 mg/l) was not used to calculate the presented CTR criteria, instead a hardness of 18.3 was used by the Regional Board. Acute toxicity of Cu is documented as low as 8.2 ug/L for amphipod, 2.8 for rainbow trout, and 4.83 in fathead minnow. Mean chronic Cu toxicity concentrations are documented as low as 3.0 for rotifer, 5.68 for cladoceran, and 6.67 for caddis fly (EPA Criteria).

Lead: Pb up to 4.9 ug/l as a daily maximum and Cu up to 18 ug/l as a daily maximum would be allowed in creek water. The additive toxicity of copper and zinc were not considered as required by the Basin Plan, page IV 18.00.

2. There does not appear to be a sound understanding or knowledge of the impacts and quality of the discharge as each constituent for which mixing is being granted contains the following statement: "There is currently insufficient effluent data to determine if the Facility can meet more stringent performance-based effluent limitations for ammonia. In future permit renewals, the effluent limitations may be reduced (i.e. made more stringent) based on Facility performance. This will ensure that an over allocation of the assimilative capacity is not allowed and ensures compliance with state and federal antidegradation requirements."

More thorough evaluation of effluent pollutant concentrations should be done up front before allowance of excessive concentrations of ammonia and metals that would be harmful to aquatic life. Ammonia and copper levels currently proposed would be deleterious. Bioassessment should be conducted above and below the discharge to make sure the discharger is held to improving the discharge or eliminating it if there is a documented problem. All NPDES permits should have bioassessment in them, especially in better quality waters. DFG strongly recommends that bioassessment be required as part of this proposed permit including up front and ongoing facility monitoring requirements.

3. Can the Regional Board reliably calculate a mixing zone without the knowledge of the capabilities of the wastewater treatment system? The mixing zone allowed is too large for the creek and would not allow safe fish passage. The stream width within the mixing zone varies from 18 feet to 8 feet; an 8-foot width creek cannot accommodate a mixing zone while allowing a zone of passage.

It is not clear that the zone of passage is evaluated (or designed) adequately for the proposed amendment. If the requirement is for a zone of passage around pollutants than the mixing zone must not run bank to bank in the creek. To determine the mixing zone length and width transects, DFG recommends that water quality data be collected and analyzed. The amount of flow at any given time of year would determine where the mixing would occur and how long it would take. Different flows could alter where the zone of passage is or could be at a certain place in time.

Fish tend to hang at the bottom of riffles waiting for food to be washed down. A fish is not going to realize pollutants are coming through the system and move. They will be exposed for the entire duration that the pollutant is passing over them. Fish also tend to hang out in refugia such as undercut banks, root wads, etc. where mixing is likely to take longer due to lack of flows.

4. Was evaluation conducted per the State's *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays and Estuaries of California* (SIP), Section 1.4.2.2?

5. Were the effluent limitations in the proposed Permit supported by scientific investigation as required by the SIP and the Basin Plan?

SIP Section 1.4.2.2 requires that a mixing zone shall not:

Compromise the integrity of the entire waterbody.

Cause acutely toxic conditions to aquatic life.

Restrict the passage of aquatic life.

Adversely impact biologically sensitive habitats.

Produce undesirable aquatic life.

Result in floating debris.

Produce objectionable color, odor, taste or turbidity.

Cause objectionable bottom deposits.

Cause Nuisance.

Dominate the receiving water body or overlap a different mixing zone.

Be allowed at or near any drinking water intake.

6. Will a diffuser be installed, and if so, will it cover the entire width of the creek?

7. It is not clear that adequate studies have been conducted to address exposure of aquatic organisms to acute and chronic toxicity of effluent, nor protection from nutrient loading and biostimulation. Release of effluent into this system will increase nutrient levels. Flows can help determine the distribution of those nutrients but some are likely to be locked up in the system until warmer summer and fall temperatures allow them to be utilized. Increased nutrients can alter food web dynamics, create different conditions for new or invasive species to colonize, and alter plant growth which can severely alter water temperatures.

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