

ENCLOSURE 2
HARDNESS OPTION
Proposed Waste Discharge Requirements
for the City of Davis

The following is an option for selection of hardness to determine reasonable potential and calculate effluent limitations. This option will be available for consideration by the Regional Water Board at the 25/26 October 2007 Regional Water Board meeting.

OPTION: EFFLUENT HARDNESS

This option uses 1) the lowest reported effluent hardness for the determination of reasonable potential and calculation of effluent limitations for metals with concave down criteria and 2) the combination of the effluent and receiving stream hardness for the determination of reasonable potential and calculation of effluent limitations for metals with concave up criteria. This option does not change any effluent limitations in the tentative permit.

Make the following changes to the tentative NPDES permit:

1. Fact Sheet, Rationale for Effluent Limitations and Discharge Specifications, modify IV.C.2 as follows:

While no effluent limitation for hardness is necessary in this Order, hardness is critical to the assessment of the need for, and the development of, effluent limitations for certain metals. The *California Toxics Rule*, at (c)(4), states the following:

“Application of metals criteria. (i) For purposes of calculating freshwater aquatic life criteria for metals from the equations in paragraph (b)(2) of this section, for waters with a hardness of 400 mg/L or less as calcium carbonate, the actual ambient hardness of the surface water shall be used in those equations.” [emphasis added]

The State Water Board, in footnote 19 to Water Quality Order No. 2004-0013, stated: *“We note that...the Regional Water Board...applied a variable hardness value whereby effluent limitations will vary depending on the actual, current hardness values in the receiving water. We recommend that the Regional Water Board establish either fixed or seasonal effluent limitations for metals, as provided in the SIP, rather than ‘floating’ effluent limitations.”*

Effluent limitations for the discharge must be set to protect the beneficial uses of the receiving water for all discharge conditions. In the absence of the option of including condition-dependent, “floating” effluent limitations that are reflective of actual conditions at the time of discharge, effluent limitations must be set using a reasonable worst-case condition in order to protect beneficial uses for all discharge conditions. For purposes of establishing water quality-based effluent limitations, for metals with concave down criteria (e.g., copper), a hardness value of ~~270~~190 mg/L as CaCO₃ was used for

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discharges from Discharge 001 and a hardness value of ~~320~~250 mg/L as CaCO₃ was used for discharges from Discharge 002. These were based on the lowest a-reported hardness of the effluent. For other metals with concave up criteria (e.g., silver), a combination of the receiving water hardness value of 179 mg/L as CaCO₃ and effluent hardness value of 279 mg/L as CaCO₃ was used for discharges from Discharge 001 and a combination receiving water hardness value of 138 mg/L as CaCO₃ and effluent hardness value of 320 mg/L as CaCO₃ was used for discharges from Discharge 002. ~~Willow Slough Bypass hardness of 190 mg/L as CaCO₃ on 3 August 2004 and a reported Conaway Ranch Toe Drain hardness of 250 mg/L as CaCO₃ on 16 July 2001, which were the lowest hardness values during low flow periods from May 2001 through May 2005 of samples that have not been centrifuged. A centrifuged sample does not include particulates and hardness results of a centrifuged sample may not be representative of the total hardness of the actual conditions in the receiving stream. The two lowest reported hardness values for the Willow Slough Bypass between May 2002 and May 2005 were 56 mg/L as CaCO₃ on 15 December 2002 and 58 mg/L as CaCO₃ on 19 December 2002. These values were not used because they were not taken during the low flow periods. Additionally, the Discharger certified by letter dated 1 February 2007 that these receiving stream samples had been centrifuged and therefore these samples were disregarded. Of samples that were not centrifuged, the lowest hardness in the Willow Slough Bypass and Conaway Ranch Toe Drain from May 2002 through May 2005 were 74 mg/L as CaCO₃ on 4 January 2005 and of 138 mg/L as CaCO₃ on 22 February 2005, respectively. However, these values were not used because they were not taken during low flow periods.~~