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July 17, 2013

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Central Valley Regional Water Quality Control Board
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Rancho Cordova, CA 95670-6114

The Sacramento Valley Water Quality Coalition (SVWQC) and Sacramento Amador Subwatershed respectfully request your determination that the sediment toxicity Management Plan for the Cosumnes River be deemed complete. The primary basis for this request is a finding that agriculture is not likely to be contributing to the observed toxicity. Additional factors supporting the request include other water column toxicity and pesticide monitoring results, and the fact that the Cosumnes River would be considered to meet Water Quality Objectives (WQOs) for toxicity in sediment under the State's proposed draft toxicity assessment policies.

BACKGROUND FOR MANAGEMENT PLAN REQUIREMENT

The Cosumnes River (CRTWN) monitoring location is a representative monitoring site in the Lower Cosumnes River drainage. In addition to the Lower Cosumnes River drainage, this site represents the Middle Cosumnes, North Fork Cosumnes, Elder Creek, Jackson Creek, Upper Deer Creek, and Omo Ranch drainages in the Sacramento Amador Subwatershed of the SVWQC. The management plan requirement for sediment toxicity was triggered by two statistical exceedances observed in June and September 2005.

DATA AND EXCEEDANCES

Relevant monitoring data for the sediment toxicity are provided in **Table 1**. Summaries of other relevant monitoring results for water column toxicity and pesticides are provided in **Table 2** and **Table 3**.

The monitoring results indicate the following:

- A total of 9 sample events have been conducted for sediment toxicity in Cosumnes River. Samples were not collected for two of these events because the site was dry (as typically happens at this location in late summer). Two (2) statistically significant exceedances were observed in 2005, and one (1) more was observed recently in April 2013. Survival for two of the three exceedances was greater than 92% of the laboratory control sample survival, and the survival for the August 2005 sample was greater than 84% of the laboratory control sample survival.
- No samples have exhibited reductions in *Hyalella* survival sufficient to trigger follow-up chemistry or sampling under the current MRP requirements.
- None of the five sediment samples tested since 2005 have exhibited survival less than 92% of the survival in laboratory controls.

- Only one of the samples tested would be considered “toxic” under the State’s proposed Policy for Toxicity Assessment and Control (Public Review Draft, June 2012, <http://bit.ly/11UvoEh>). Although the policy has not been adopted, if the State’s proposed toxicity assessment policy was in use by the ILRP (and this is not currently supported by the Coalition to do so), there would not be a management plan requirement for this site.
- No water samples have been significantly toxic at this site (38 total results for *Ceriodaphnia*, *Pimephales*, and *Selenastrum*).
- Out of a total of 1373 pesticide results collected for 27 events over 9 years (2005-2013), only two results were detected (simazine in two separate samples). Pesticides analyzed included carbamates, organophosphates, triazines, organochlorines, fungicides, and herbicides. The detected simazine did not approach concentrations expected to be toxic to sensitive aquatic invertebrate species (*Daphnia magna* 2d EC50 1000-3500 µg/l, USEPA ECOTOX DB). Simazine is moderately mobile in soils and does not partition strongly to organic particles or aquatic sediments, and was unlikely to have caused or contributed to the reduction in survival observed in sediment samples.
- Sediment toxicity has not been observed at levels that trigger follow-up chemical analyses for pyrethroids. However, the management practices that have resulted in virtually no detections of agricultural pesticides in water samples from this drainage are also expected to be effective in preventing discharges of pesticides that are most commonly associated with sediment toxicity (such as pyrethroids).

Overall, these monitoring data indicate that toxicity in sediment and water is not a chronic problem in the lower Cosumnes River, and that management practices in this drainage are adequate to prevent discharges of agricultural pesticides that could result in significant sediment toxicity.

SUMMARY OF EVALUATIONS SUPPORTING REQUEST

The following evaluations and factors support this request:

Assessment of Compliance with Water Quality Objectives	One exceedance of the ILRP trigger limit for sediment toxicity has occurred in five samples collected since 2005 (>3 years). The exceedance was based on survival that was >92% of control survival. There has been only one sample in which survival was less than 90% of control survival. No exceedances of the ILRP trigger limit for water column toxicity have occurred in any of the 38 tests for 19 events sampled at this site.
Lack of agricultural contribution to toxicity	Based on a lack of detected pesticides, monitoring results indicate that agricultural practices are not causing discharges of pesticides in concentrations likely to contribute to sediment toxicity. Agriculture was not identified as a likely source of the exceedances, at least in part due to the minimal response observed in sediment toxicity tests.
Implemented practices	The lack of toxicity and detected pesticides also support the finding that practices are adequate to control discharges of potentially toxic chemicals.

SOURCE EVALUATIONS

A source evaluation report was conducted for this management plan and submitted to the Water Board in 2011 (attached). Conclusions based on the evaluations in the report are as follows:

- The magnitude of sediment toxicity observed was very low and possibly due solely to statistical anomaly (i.e., false positive) as a result of low variability in both the sample and control treatments.
- Specific causes and sources of the initial toxicity exceedances could not be definitively identified based on the monitoring data.
- Rural residential runoff was identified as a potentially significant contributing source of the exceedances.
- Based on evaluations of land uses and reported pesticide applications, chlorpyrifos and three pyrethroid pesticides were identified as having the highest potential to cause or contribute to the observed exceedances. (*None of these pesticides have been detected in water.*)
- Agriculture cannot be definitively identified or ruled out as a potential source of the exceedances, at least in part due to the low level of toxicity observed.
- No additional pesticides were recommended for monitoring, based on the relative risks for pesticides applied in the drainage.

As a result of the source evaluation, it was concluded that toxicity to *Hyaella* does not appear to be a significant problem in this drainage. Although there is agricultural use of pesticides with known potential to contribute to sediment toxicity, there is also significant potential from rural residential runoff. Based on the low magnitude and uncertainty of the significance of the initially observed toxicity and the lack of toxicity in subsequent sediment testing, the absence of a specific cause of toxicity, and the low potential of a contributing role of agriculture, the source evaluation also concluded that implementation of additional management practices was not warranted. Based on the conclusions of the source evaluation, the next Management Plan step recommended was to complete the sediment toxicity testing scheduled in 2011 for the Coalition's ILRP Assessment monitoring in the Lower Cosumnes River, and if the results of sediment toxicity testing indicated no sediment toxicity, that the management plan should be considered completed based on the achievement of water quality objectives.

OUTREACH AND EDUCATION

Outreach and education efforts are not proposed as a basis for this request. Because no agricultural cause or contribution to the toxicity was found, no specific targeted outreach was conducted for the management plan beyond informing growers of the exceedances and management plan monitoring and other requirements.

MANAGEMENT PRACTICES

The irrigation, pesticide application, and other management practices in use for the predominant crops in the drainage appear to successfully prevent the runoff and transport of pesticides with significant potential to cause toxicity. Management practice implementation was not assessed directly because there was no cause of toxicity identified, and agriculture was not found to be a likely cause of the observed reductions in survival.

Additionally, the low magnitude of observable toxic effects in water and sediment and the lack of detected pesticides also support a conclusion that practices are already adequate to control discharges of potentially toxic pesticides and other toxicants. No implementation of additional management practices has been proposed as a result of this management plan.

SURVEYS

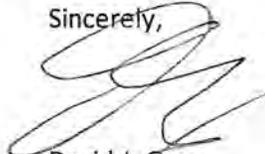
Surveys of management practices were not conducted because there was no specific cause of toxicity identified, and agriculture was not found to be a likely cause of the observed reductions in survival.

CONCLUSIONS

Based on the monitoring results through March 2013 with (1) no reductions in survival below 92% of controls since 2005, (2) no water column toxicity exceedances in any sample, and (3) virtually no detected pesticides in 27 events over 9 years, we conclude that agriculture is not contributing to observed statistical toxicity in sediment, and that agricultural practices have been and continue to be sufficient to prevent discharges of toxic pesticides and other chemicals to the Cosumnes River. Additionally, although Cosumnes River samples exceeded the narrowest statistical interpretation of the Central Valley Basin Plan's water quality objective for sediment toxicity, if the data were interpreted under the State's proposed draft TST policy *or* if the ILRP had set a reasonable effect threshold as the trigger limit (e.g., <90% or <80% of control survival), there would not be a management plan requirement for sediment toxicity for this water body. Based on the weight of evidence presented, we believe agriculture is not causing or contributing to significant sediment toxicity in the Cosumnes River.

As specified in the SVWQCs Criteria for Completion of a Management Plan, we respectfully request that you make a determination of the completeness of this management plan.

Sincerely,



David J. Guy
President

Northern California Water Association

Cc: Joe Karkoski
Susan Fregien
Mark Cady
Rebecca Waegel
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TABLES

Table 1. Monitoring results for *Hyalalella* Toxicity in sediment samples

Event	Sample Date	Sample Replicate	<i>Hyalalella</i> survival, % of control
4	2005-06-07	1	92 ^(1,2)
7	2005-09-06	1	85 ⁽¹⁾
38	2009-04-20	1	95
42	2009-08-18	0	Dry (not sampled)
62	2011-04-20	1	99
66	2011-08-17	1	101
74	2012-04-19	1	101
78	2012-08-23	0	Dry (not sampled)
86	2013-04-18	1	92 ^(1,2)

1 Statistically significant toxicity

2 Not toxic when assessed by State's June 2012 proposed Draft TST method.

Table 2. Summary of monitoring results for toxicity in water samples

Toxicity test species	Number of events	Number of toxicity exceedances
Ceriodaphnia survival	13	0
Pimephales survival	13	0
Selenastrum growth	12	0
Totals	38	0

Table 3. Summary of monitoring results for pesticides analyzed in water

Pesticide Category	Number of results	Detected results	Notes for detected pesticides	Sampled Period (Min and Max dates)
Carbamates	164	0		2005-06-07 2011-12-07
Fungicide	1	0		2011-01-18 2011-01-18
Herbicide	198	0		2005-01-26 2011-12-07
Organochlorines	303	0		2005-06-07 2011-04-20
Organophosphates	514	0		2005-01-26 2012-03-14
Pyrethroids	85	0		2005-06-07 2006-08-16
Triazine	106	2	Simazine, 0.05 µg/L; Simazine 0.04 µg/L	2005-06-07 2011-12-07
Totals	1373	2 (0.15%)		2005-01-26 2012-03-14