



California Regional Water Quality Control Board
Central Valley Region
Katherine Hart, Chair



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Edmund G. Brown Jr.
Governor

26 April 2011

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REVIEW OF 2010 ANNUAL MONITORING REPORT –CALIFORNIA RICE COMMISSION

Thank you for submitting the California Rice Commission (CRC) Annual Monitoring Report (AMR) on 23 December 2010. This report was submitted to meet the conditions of Monitoring and Reporting Program (MRP) Order R5-2010-0805 and the associated Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands adopted by the Central Valley Water Board on 1 July 2006 (Resolution R5-2006-0053). The submitted report also contained the monitoring and reporting required by the Rice Pesticides Program in Resolution R5-2010-9001. We appreciate the CRC submitting these reports before the required deadline.

At the request of Central Valley Water Board staff, the Rice Pesticides Program sections were revised to clarify questions from stakeholders. Central Valley Water Board staff review of the AMR submitted 14 March 2011 with the requested revisions is in the attached memorandum. The AMR stated that an addendum from the CRC's laboratories would be submitted. Please submit the addendum, and any revisions to the 2010 AMR by 16 May 2011.

If there are any questions regarding the review, please contact Margaret Wong at 916- 464-4857 or at mawong@waterboards.ca.gov.

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Enclosure: Review of 2010 Annual Monitoring Report

California Environmental Protection Agency



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TO: Susan Fregien
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Monitoring and Implementation Unit

FROM: Margaret Wong
Water Resources Control Engineer
Monitoring and Implementation Unit

DATE: 25 April 2011

SIGNATURE: Margaret Wong

REVIEW OF 2010 ANNUAL MONITORING REPORT -- CALIFORNIA RICE COMMISSION

On 23 December 2010, the California Rice Commission (CRC) submitted on a compact disc (CD) its 2010 Annual Monitoring Report as required by the CRC Monitoring and Reporting Program (MRP) Order R5-2010-0805 for the Irrigated Lands Regulatory Program (ILRP). The CRC included in its submission the status of the Propanil Management Plan (Propanil MP) and the Rice Pesticide Program (RPP) report required by Resolution No. R5-2010-9001. These reports were incorporated into the AMR.

On 23 February, staff requested clarifications to the RPP report to clarify questions from RPP stakeholders. The CRC submitted a revised AMR on 14 March 2011. The review is based upon that submitted report.

The sampling schedule for the ILRP, Propanil MP and RPP is show in Table 1 with an X indicating a sample was taken. Analytical results for each of these monitoring programs will be discussed in this review.

Table 1. 2010 Monitoring Schedule

Sampling date	ILRP	RPP	Propanil MP
5/11/2010 and 5/12/10	X	X	
5/18/10		X	
5/25/10		X	
5/27/10		X	
6/1/10		X	
6/3/10		X	
6/8/10		X	
6/10/10		X	
6/15/10 and 6/16/10	X	X	X
6/17/10		X	
6/22/10		X	X
6/24/10		X	
6/29/10		X	X
7/6/109		X	X
7/13/10			X
7/20/10	X		X
7/27/10			X
8/3/10			X
8/24/10	X		

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AMR REPORTING UNDER THE ILRP

The CRC AMR was submitted in electronic format and evaluated for the presence and completeness of the components described in the 2010 MRP Order. The required components of the AMR were completely and satisfactorily addressed by the CRC.

Sampling was performed at the seven sites, the four primary core sites (CBD5, BS1, CBD1 and SSB) and the three assessment sites (F, G, and H). Monitoring occurred monthly during the rice season from May to August. All sites were monitored for field parameters¹. General parameters² were monitored at the primary sites from May through August, and at assessment sites in May. June results for TDS were not reported by the lab due to an error in reading the chain of custody form. In addition, to complete the required monitoring for assessment sites, samples for hardness and dissolved copper were taken at all eight sites during the irrigation season in May and June when copper is expected to be released.

Exceedances of Water Quality Objectives

Table 2 shows the exceedances of water quality limits or objectives observed during for the 2010 monitoring season under the ILRP. Exceedances were found only for dissolved oxygen (DO), electrical conductivity (EC) and dissolved copper.

Table 2. 2010 Exceedances of water quality limits or objectives (ILRP)

Sampling date	Site	Constituent	Result	Objective	Unit	Comments
6/15/2010	H	DO	3.4	> 5	mg/L	Water temperature 72.2° F; flow 1.5 cfs
6/16/2010	CBD5	EC	768	≤ 700	μS/cm	Flow 82.2 cfs
6/16/2010	CBD1	EC	799	≤ 700	μS/cm	No flow
6/16/2010	F	Copper, dissolved	9.0		μg/L	Objective of 8.0 μg/L for freshwater aquatic life based on 4 day average, continuous concentration; dependent on hardness
7/20/2010	CBD1	DO	3.44	> 5	mg/L	Water temperature 82.8° F; flow 87.9 cfs

Dissolved oxygen (DO): Low DO, less than the warm water quality objective of 5 mg/L, was observed at two events in 2010: Site H at the June event and site CBD1 at the July event. Water temperatures at the June and July events were above 70° F. Low flow was observed at Site H (1.5 cfs) and the water temperature at CBD1 was above 80° F. Both factors would contribute to the low DO readings.

Electrical conductivity (EC): The agricultural water quality objective of 700 μS/cm was exceeded for the June events at CBD1 and CBD5. No total dissolved solids (TDS) data were available for the June events due to lab error. Flow at CBD1 was stagnant for the June event. These were the first EC exceedances reported at any site under the ILRP. In a UC Davis study at the edge-of-field³, maximum EC and associated TDS were observed during June and were dependent on rice straw management and winter flood practices.

Copper and hardness: All dissolved copper samples fell below the 1-hour California Toxics Rule (CTR)⁴ hardness-adjusted copper criterion for the measured hardness at the sample location and date. The 4-day CTR hardness-adjusted copper criterion was exceeded once at Site F

¹ Field parameters: pH, temperature, electrical conductivity (EC), dissolved oxygen (DO), and flow

² General parameters: total dissolved solids (TDS), total organic carbon (TOC).

³ UC Davis studies reported in 2009 AMR.

⁴ CTR is based on protection of freshwater aquatic life.

(Lurline Creek) for the June event. The sample had a concentration of 9 µg/L with a criterion level of 8 µg/L at the observed hardness level. This was the first exceedance for dissolved copper at any monitoring site.

The CRC has previously submitted a draft Management Plan for DO and pH⁵. Staff will review the draft to determine if the actions outlined in the plan should be modified.

Propanil Management Plan

The CRC voluntarily submitted a Propanil Management Plan (MP) that was approved by the Executive officer on 30 April 2010. As required under the approved PMP, propanil sampling occurred weekly at the primary core sites (CBD5, BS1, CBD1 and SSB) and Lurline Creek (F) during the peak application period. Due to the late start of the rice season, weekly monitoring started in mid-June and lasted until early August.

Highest detection observed was 10 µg/L at Lurline Creek on 29 June 2010. This contrasts with the high of 47 µg/L observed at the same location on 3 June 2009. All other results for propanil in the 2010 season were 5 µg/L or less. Although no water quality objective has been established for propanil, the lowest EC₅₀ is 16 µg/L for diatoms (5-day static test based on population abundance).

In accordance with the Propanil MP, the CRC worked with the registrants to provide outreach and communications to pesticide control advisors (PCAs) and county agricultural commissioners on the monitoring results. Aerial applicators were also contacted. Growers were informed of propanil use information by the CRC newsletter and a grower letter.

RICE PESTICIDE PROGRAM (RPP)

Table 3 shows the monitoring results for the RPP during 2010. The Basin Plan specifies a thiobencarb performance goal of 1.5 µg/L with a secondary MCL for sources of drinking water at 1 µg/L. Only one exceedance of the 1.5 µg/L performance goal was observed in the 2010 season; this was at CBD1 on 8 June this season. One sample at CBD5 on 10 June was detected at the performance goal. Monitoring by the City of Sacramento and West Sacramento at their drinking water intakes (SSR and WSR, respectively) showed no detection of thiobencarb at the detection limit of 0.1 µg/L. As a comparison, the 1.5 µg/L performance goal was exceeded three times at CBD1 in May 2009 and thiobencarb was detected in the water supply intakes varying from 0.22 to 0.68 µg/L during the same period.

Other water quality objectives exceeded during RPP monitoring and noted in the AMR included dissolved oxygen (DO) and electrical conductivity (EC) (Table 4). The RPP monitoring sites are part of the Management Plan submitted for pH and DO. The Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) program has been working on how to address salinity and associated parameters such as EC. The CRC has been an active participant of the program.

The RPP report contained the information required including monitoring data, pesticide use, management practices implemented and inspection reports. Management practices implemented for the 2010 season included additional outreach to growers and commercial applicators in the form of presentations, newsletter and letters. The monitoring results were presented at the annual thiobencarb meeting mandatory for all growers applying the pesticide.

⁵ Submitted 31 August 2007.

Table 3. Rice Pesticides Program 2010, Thiobencarb Monitoring Results ($\mu\text{g/L}$)

Sampling Date	RPP Event	Monitoring Sites							
		CBD5	BS1	CBD1	SSB	SR1	WSR	SRR	% Sac River at SSR Intake
4/29/2010							<0.1	<0.1	78.2
5/11/2010	W1	ND	ND	ND	ND	ND	<0.1	<0.1	71.1
5/18/2010	W2	ND	ND	ND	ND	ND	<0.1	<0.1	70.6
5/20/2010							<0.1	<0.1	49.5
5/25/2010	W3D1	0.14	ND	0.75	0.10	0.08			
5/26/2010							<0.1	<0.1	47.6
5/27/2010	W3D2	0.85	ND	0.50	ND	ND	<0.1	<0.1	48.6
5/29/2010							<0.1 ^a	<0.1	49.0
5/31/2010							<0.1 ^b	<0.1	60.5
6/1/2010	W4D1	0.61	0.10	0.35	ND	ND/ND V/M			
6/3/2010	W4D2	0.24	0.28/0.80 V/M	0.42	0.05	ND			
6/7/2010							<0.1	<0.1	58.4
6/8/2010	W5D1	0.80	0.22	1.58/1.8 V/M	0.10	ND			
6/9/2010							<0.1	<0.1	56.2
6/10/2010	W5D2	1.12/1.5 V/M	0.14	0.55	0.09	ND			
6/15/2010	W6D1	0.28	0.25	0.4	ND	ND			
6/16/2010							<0.1	<0.1	56.6
6/17/2010	W6D2	0.22	0.14	0.53	ND/ND V/CLS	ND			
6/21/2010							<0.1	<0.1	56.0
6/22/2010	W7D1	ND	ND	ND	ND	ND			
6/24/2010	W7D2	ND	ND	ND	ND	ND/ND V/CLS			
6/29/2010	W8	0.06	0.13	0.2	0.26	ND			
7/1/2010							<0.1	<0.1	80.8
7/6/2010	W9	0.11	ND	ND	ND	ND	<0.1	<0.1	74.2

^a Sample taken at Crawdad's^b Sample taken at Sand Cove Park

ND = Not detected above laboratory reporting limits. Detection limit for Valent (V) <0.5 $\mu\text{g/L}$, McCampbell (M) <0.5 $\mu\text{g/L}$, California Laboratory Services (CLS) <0.5 $\mu\text{g/L}$, City of Sacramento and West Sacramento < 0.1 $\mu\text{g/L}$.

Table 4. RPP monitoring – water quality objective exceedances

Sampling date	Site	Constituent	Result	Objective	Unit	Comments
5/18/2010	CBD1	DO	4.71	> 5	mg/L	Water temperature 62.5° F
6/10/2010	CBD5	EC	704	≤ 700 ^a	$\mu\text{S/cm}$	
6/10/2010	CBD1	EC	723	≤ 700	$\mu\text{S/cm}$	
6/17/2010	CBD1	EC	845	≤ 700	$\mu\text{S/cm}$	
6/24/2010	CBD1	EC	717	≤ 700	$\mu\text{S/cm}$	
6/27/2010	CBD1	EC	719	≤ 700	$\mu\text{S/cm}$	
6/29/2010	SSB	DO	4.72	> 5	mg/L	Water temperature 80.6° F
7/6/2010	CBD1	DO	2.21	> 5	mg/L	Water temperature 77.0° F
7/6/2010	CBD1	EC	818	≤ 700	$\mu\text{S/cm}$	
7/20/2010	CBD1	DO	3.44	> 5	mg/L	Water temperature 82.8° F

^a Objective based on agricultural use (Westcott and Ayers)

QA/QC REQUIREMENTS

ILRP: All analyses required by the 2010 MRP Order were performed. Laboratory quality assurance (QA) and quality control (QC) requirements were evaluated in accordance with the 2010 MRP Order. Field QA/QC were acceptable for precision and accuracy.

Laboratory accuracy as determined by field blanks, method blanks, duplicate samples for matrix and lab control spikes, and surrogate standard samples were all within the acceptable limits. Overall, laboratory precision was acceptable with the relative percent difference (RPD) below the 25% limit. A misreading by lab personnel of the chain-of-custody form in June resulted in no analyses for TDS.

RPP: QC sampling events consisted of splitting samples and submitting one set to the analyte-specific (primary) lab at Valent and the other set to McCampbell Analytical (MAI) or California Laboratory Services (CLS). Valent is the registrant for thiobencarb.

Field QA/QC samples consisted of rinse blanks, field duplicates, and matrix spike and duplicates. Field duplicates generally yielded similar results although analyzed at different labs. Matrix spike and matrix spike duplicate (MS/MSD) recoveries were below the acceptable recovery range for MAI during the W4D2 event.

Laboratory QA/QC samples included method blanks, laboratory control spikes and duplicates, and surrogate standards. Valent spiked its LCS/LCSD with thiobencarb. The CLS LCS samples were spiked with thiobencarb, while MAI spiked their LCS samples with other compounds representative of the extraction efficiency of their method. Lab QA/QC from Valent were acceptable. Recovery limits for LCS/LCSD at both labs were outside of the QAPP acceptable range for some samples. The labs have been requested to report thiobencarb LCS/LCSD results as part of an addendum to the AMR. The addendum should also include an evaluation of any effects on the reported laboratory results.

Results for surrogate standards used by MAI and CLS were all within acceptable recovery limits.

GENERAL COMMENTS

Follow-up on the LCS/LCSD data for MAI and CLS is an outstanding item and will be addressed in an addendum.

A SWAMP-comparable database of monitoring and QA/QC data was received, but was incomplete lacking certain laboratory results from MAI. The missing information will be entered by Central Valley Water Board staff to complete the electronic database prior to submittal to the Surface Water Ambient Monitoring Program (SWAMP). Contracted laboratories should be reminded that monitoring data, including QA/QC data, should be submitted in SWAMP-comparable format. For the 2011 season, incomplete electronic data submittal will be rejected by the ILRP.

Staff requested additional information in the AMR Summary and Conclusions (Section 7) and clarifications on the performance goal and water quality objective for the RPP. When first submitted, Section 7 did not discuss the activities that were implemented in accordance with the RPP resolution, although those activities were cited in other parts of the AMR. The clarifications were requested to specify the performance goal at the municipal water intakes is also a water quality objective for drinking water. The CRC submitted a revised AMR on

14 March in response to these requests.

The 2010 propanil monitoring results were a vast improvement over last season. Concentrations were all below aquatic toxicity levels for the most sensitive species. Monitoring should continue to ensure the management practices implemented are on-going and continue to be effective.