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## Central Valley Regional Water Quality Control Board

25 March 2016

Mr. Tim Johnson  
California Rice Commission  
1231 I Street, Suite 205  
Sacramento, CA 95814-2933

### **APPROVAL OF RICE PESTICIDE PROGRAM MANAGEMENT PRACTICES FOR 2016**

Thank you for submitting the final 2015 Rice Pesticide Program (RPP) report on 28 January 2016. This report was submitted to meet the conditions of Resolution R5-2010-9001. The Central Valley Water Board staff review of the RPP report is in the attached memorandum.

The California Rice Commission's (CRC's) 3 February 2016 letter reported on the 2015 RPP monitoring results and provided recommendations for the 2016 season. Thiobencarb monitoring for the 2015 season showed results from five events at the Colusa Basin Drain 5 (CBD5) site and one event at the Colusa Basin Drain 1 (CBD1) site (downstream of CBD5) where the performance goal of 1.5 parts per billion (ppb) was not met. The thiobencarb water quality objective (secondary MCL) of 1 ppb was not exceeded at the municipal water intakes for the Cities of Sacramento and West Sacramento, nor at the CRC's Sacramento River monitoring site. In the 2014 season, CBD5 had three events not meeting the performance goal and no exceedances occurred at CBD1 or the cities' water intakes.

Following the exceedances detected at CBD5, the CRC immediately sent letters to growers in Colusa and Glenn Counties to notify them of the monitoring results. An industry-wide e-newsletter followed to alert growers and Pest Control Advisors to the exceedances and impacts on the use of thiobencarb. Seven sites that influence the CBD5 monitoring location were also sampled on two occasions, subsequent to the exceedances, to demonstrate the influence of Colusa and Glenn Counties on CBD5.

In your letter, the CRC indicated it considered alternatives in response to not meeting the performance goal. You initiated contact with the Department of Pesticide Regulation (DPR), with the understanding that some of the proposed alternatives cannot be directly implemented by the CRC. These alternatives include:

- 1) No action;
- 2) Increase educational outreach efforts;
- 3) Perform additional targeted water quality monitoring studies;
- 4) Increase inspection activities;
- 5) Use limitations resulting from non-compliance; and
- 6) Assessment of variances in thiobencarb use rates relative to surface water flow rates resulting from weather conditions and drought requirements.

The alternative of no action was considered inappropriate considering the number of events where the performance goal was not achieved, the reoccurrence of exceedances in recent seasons, and greater concentrations detected than in the previous year. Increased education outreach was part of the CRC's recommendations, but is considered insufficient by itself.

The last four alternatives were considered proactive and effective. You recommend continuing currently approved management practices and outreach efforts that were initiated in 2010 (approved by Resolution 2010-9001) as well as the following actions:

- if exceedances occur - perform targeted monitoring at two additional locations that influence the CBD5 monitoring site [this will help to determine the source of the exceedances and potentially inform additional follow-up actions described below];
- continue financial support for counties for increased off-hours surveillance inspections;
- support use limitations imposed by the County Agricultural Commissioners (CACs) on growers for repeated non-compliance with use restrictions and potential bans on the use of thiobencarb by growers in the year following a violation for misuse of this herbicide; and
- assess use-to-flow variances resulting from weather conditions and drought requirements to determine whether recommendations related to thiobencarb use are appropriate [e.g., consideration of additional practices that may be implemented in drought years]. The CRC is committed to working with staff during 2016 in the development of this assessment report.

In addition to the above, the CRC board of directors has committed to supporting CACs revoking thiobencarb permits for multiple intentional violations and supporting the Central Valley Water Board's authority to revoke coverage under the RPP prohibition of discharge. This support is key to ensuring thiobencarb use violations are enforced and ultimately the success of the RPP.

I approve the CRC's 2016 RPP recommendations. Also, I am requiring that the CRC notify Central Valley Water Board staff of plans for special monitoring, if triggered by exceedances, at the time that the CRC becomes aware of such exceedances and that the CRC provide an update on the effectiveness of the 2016 practices at the RPP October stakeholders' meeting, as well as in its annual monitoring report.

If these practices prove to be ineffective in meeting the performance goal, the industry needs to actively consider acreage, or other, limits for thiobencarb use. Should exceedances of the performance goal continue, the Board may also consider a new RPP resolution after coordinating with the CRC, DPR, and the CACs.

If there are any questions regarding this approval or status of the Rice Pesticide Program, please contact Ashley Shaddy at 916-464-4857 or Susan Fregien at 916-464-4813.

*Original signed by*

Pamela C. Creedon  
Executive Officer

Enclosure

cc: Roberta Firoved, California Rice Commission, Sacramento  
RPP stakeholders (by email)

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**Central Valley Regional Water Quality Control Board**

**TO:** Susan Fregien  
Senior Environmental Scientist  
**IRRIGATED LANDS REGULATORY PROGRAM**

**FROM:** Ashley Shaddy  
Water Resource Control Engineer  
**IRRIGATED LANDS REGULATORY PROGRAM**

**DATE:** 23 March 2016

**SUBJECT: REVIEW OF 2015 ANNUAL RICE PESTICIDE PROGRAM REPORT AND  
MANAGEMENT PRACTICE RECOMMENDATIONS FOR 2016**

On 17 December 2015, the California Rice Commission (CRC) submitted a draft 2015 Rice Pesticide Program (RPP) report as required by Resolution No. R5-2010-9001 (Order). Staff emailed the RPP report to stakeholders on 21 December for review and comment as required by the Order. One set of comments were received by the 8 January 2016 deadline.

The City of Sacramento provided four comments on the RPP report. The main comment requested the use of California Department of Pesticide Regulation (DPR) preliminary use data for thiobencarb rather than estimated usage rates provided by the thiobencarb supplier. The other three comments requested minor revisions to the data presentation in tables and figures. The CRC agreed to use the preliminary DPR data in their use reporting and the values were updated in the final RPP report. The report was also revised to address the minor comments, as appropriate.

On 28 January 2016, the CRC submitted a CD with the final RPP report and supporting lab/field documentation for review. A letter to the Executive Officer recommending management practices for the use of thiobencarb for the 2016 season followed on 3 February 2016.

#### **RPP MONITORING RESULTS FOR 2015**

As required by the Order, the CRC monitored at four upstream sites (Figure 1):

- Colusa Basin Drain (CBD) above Knights Landing (CBD1)
- Colusa Basin Drain #5 in the Colusa National Wildlife Refuge (CBD5)
- Butte Slough at Lower Pass Road (BS1)
- Sacramento Slough Bridge near Karnak (SSB)

In addition, the CRC monitors Sacramento River at Village Marina/Crawdads Cantina (SR1), a site just upstream from the water supply intake for West Sacramento. The sampling, performed by Kleinfelder, occurred during a ten-week period from 22 April to 1 July. The Cities of Sacramento and West Sacramento monitored for thiobencarb at their water supply intakes, SRR and WSR, respectively, for the same time period.

RPP monitoring results for thiobencarb from all parties are shown in Table 1. The CRC uses two laboratories, Valent (the registrant) and California Laboratory Services (CLS), for analysis of thiobencarb. The performance goals are 1.5 parts per billion (ppb) at upstream sites and

1.0 ppb (secondary maximum contaminant level) at water supply intakes. There were five detections above the performance goal at CBD5: 1.89 ppb (19 May); 5.25 ppb (21 May); 2.41 ppb (26 May); 1.94 ppb (28 May); and 1.56 ppb (2 June). There was one detection above the performance goal at CBD1: 1.53 ppb (26 May). In addition, seven special monitoring sites contributing to CBD5 (see Figure 2) were sampled for thiobencarb on 3 June and 17 June 2015. These sites were selected based on the watershed drainage assessment completed for the Irrigated Lands Regulatory Program by the CRC in 2004. One exceedance was measured during special monitoring at Road 68 in Glenn County (2.8 ppb). There were no detections of thiobencarb above the secondary maximum contaminant level at the water intakes for the Cities of Sacramento and West Sacramento.

### **CRC RECOMMENDATIONS FOR 2016 SEASON**

The CRC prepared a memo for the RPP stakeholder meeting on 6 November 2015 that was attached to the Executive Officer letter. In the memo, the CRC identified different factors that may affect or explain the exceedances:

- Non-compliance with waterholding requirements;
- Aerial drift over the drains;
- Thiobencarb use in excess of the assimilative capacity of the water body during low flow periods resulting from drought; and
- Increased use of non-contact herbicides (e.g., thiobencarb) due to the no spill mandate.

The CRC evaluated flow rates in the CBD and has established a correlation between the monitoring results and flow. Decreased water depth at monitoring sites, in particular CBD5, from an average water depth of 18 feet in 2007 (a year with no exceedances) to 3.6 feet in 2015, and an assessment of flow measurements in the Department of Water Resources CBD site demonstrate this correlation. Therefore, the CRC has concluded that decreased flows resulting from the multi-year drought likely contributed to the performance goal exceedances at CBD5. The CRC also detailed emergency drought requirements implemented by many water districts during the 2015 growing season; such as a “no spill” prohibition. A no spill prohibition, which disallows any intermediate field water releases, was implemented as a water saving measure in 2015 reducing the volume of water released for recirculation and re-use in the irrigation districts. The CRC believes a combination of these factors contributed to the exceedances.

In the letter to the Executive Officer, the CRC outlines six alternatives in response to the exceedances of the thiobencarb performance goal in agricultural drains. These actions include the following:

- 1) No action;
- 2) Increase educational outreach efforts;
- 3) Perform additional targeted water quality monitoring studies;
- 4) Increase inspection activities;
- 5) Use limitations resulting from non-compliance; and
- 6) Assessment of variances in thiobencarb use rates relative to surface water flow rates (use-to-flow) resulting from weather conditions and drought requirements.

The first alternative alone was deemed inappropriate based on the number of exceedances. The second alternative was not considered sufficiently effective, since growers are already required to attend mandatory grower education events as a condition of the thiobencarb use permit.

Alternatives 3 through 5 were considered viable and proactive. The CRC considers measures including water quality monitoring at two locations upstream of CBD5 to be warranted given the performance goal exceedances. In the letter to the Executive Officer, the CRC stated it would be working with the Department of Pesticide Regulations (DPR) Enforcement Branch to evaluate appropriate increased inspections and limiting pesticide applications for individuals

found to use thiobencarb in violation of pesticide use requirements. The County Agriculture Commissioners (CACs) are considering removal of thiobencarb from the restricted materials permit in the year following a violation for those that do not comply (i.e., prohibit use for previous year violators).

Alternative 6, an assessment of use-to-flow variances for thiobencarb, will provide a better understanding of the relationship between thiobencarb usage rates and flow rates in drought conditions. During drought years, where a no spill prohibition is in place, no water can be released from rice fields mid-season. As a result, less water is recirculated in the irrigation districts and flow in the drains is reduced. Thiobencarb is effective when applied to fully flooded fields and does not require the water level to be lowered exposing additional growth prior to application. This makes it preferable in drought periods when water is not available to re-flood fields after herbicide application. As a result, thiobencarb use rates may increase as flows decrease, potentially contributing to increased thiobencarb concentrations in the drains. A better understanding of this relationship will provide information necessary to determine if and what actions and practices should be taken to reduce the potential for future exceedances in drought conditions. The CRC has committed to working with staff in the development of this assessment and study.

The CRC recommended continuation of aggressive outreach and education to growers, pest control advisors (PCAs), applicators, dealers, and distributors during the 2016 season. Actions to be taken in 2016:

- Continuance of the mandatory thiobencarb stewardship meetings;
- Close coordination with the CACs in revoking permits of repeat violators;
- Outreach via letters and the CRC website with emphasis on the counties where violations occur;
- Maintain contact with applicators and PCAs;
- Continue funding counties for off-hours surveillance inspections;
- Additional monitoring at two targeted sites, not yet selected, if exceedances occur; and
- Assessment of use-to-flow variances related to weather conditions and drought requirements

### **STAFF CONCLUSIONS AND RECOMMENDATIONS**

The 1.5 ppb performance goal was exceeded six times during the 2015 monitoring season, five times at CDB5 and once at CBD1, out of 77 total samples collected from the five CRC RPP sampling locations. There were no thiobencarb detections at the municipal water supply intakes. Last year, exceedances of the performance goal were observed three times at CBD5. Exceedances were not observed at any other sampling locations in 2014.

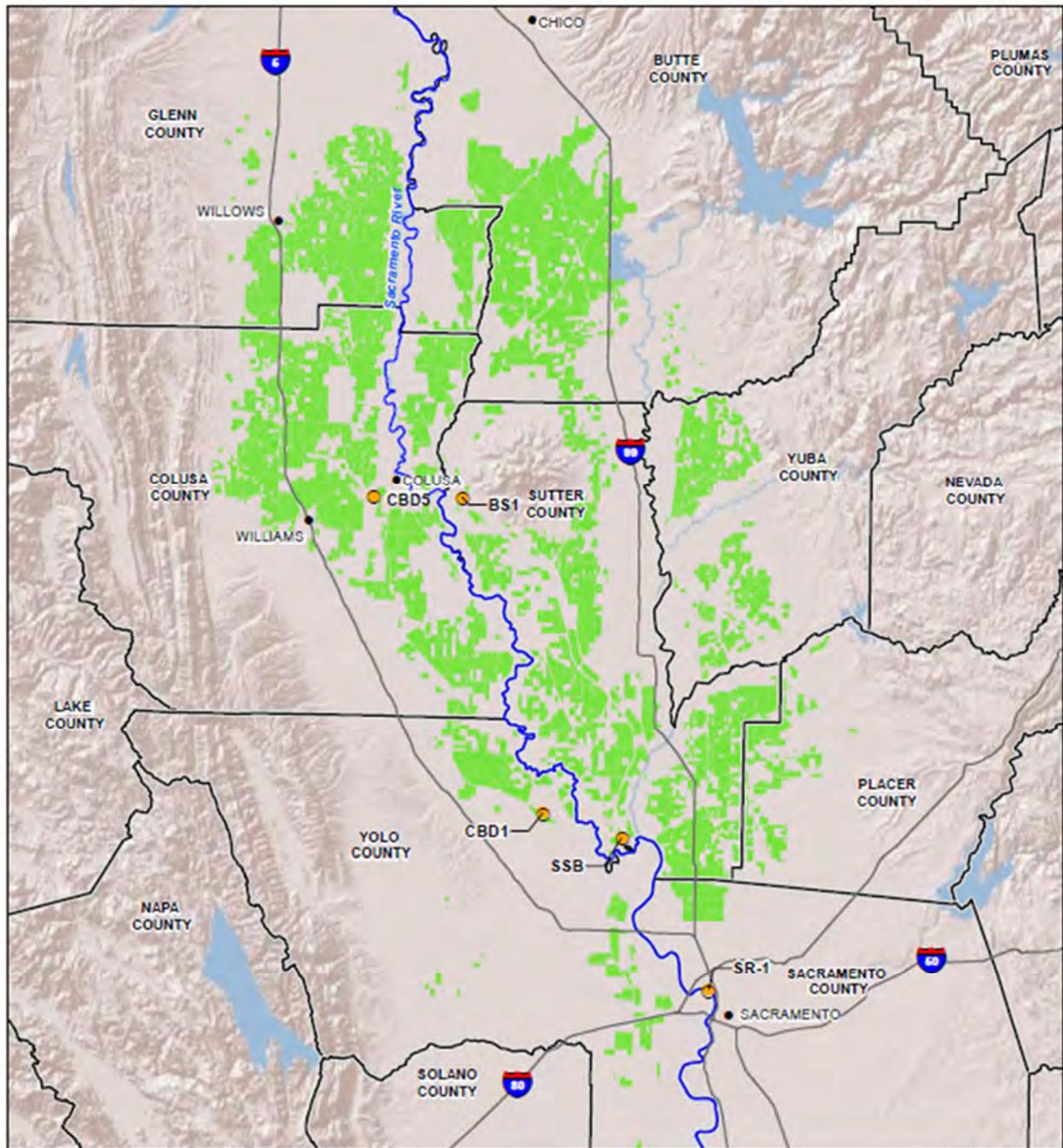
The RPP report contained the information necessary to review and evaluate the program. Staff agrees that the continued period of drought may have contributed to the performance goal exceedances. Although the performance goal of 1.5 ppb in the rice drainages was exceeded, the water quality objective at the cities' water intakes was met.

Staff agrees with CRC's proposed additional actions to be taken in response to the repeated exceedances of the performance goal at the CBD5 site. Of the actions recommended by the CRC – increased inspections for thiobencarb, monitoring upstream of CBD5, assessment of use-to-flow variances in thiobencarb application, and limiting pesticide applications for certain individuals – the latter action will require coordination and concurrence of DPR and the CACs. The increased inspections for thiobencarb are already approved as a practice. Whether thiobencarb inspections are increased due to DPR requirements or voluntarily by the CACs does not change the current approved practices. Staff also agrees that current outreach and education should be continued.

Staff feels that due to the exceedances observed in 2014 and 2015, a greater emphasis should be placed on additional monitoring of targeted sites to identify the source of ongoing exceedances. The Central Valley Water Board should be notified of additional monitoring that will take place when it is triggered, including site locations and dates for sampling. In addition, the use-to-flow study should be conducted to determine how drought conditions affect the potential for exceedances and whether there are additional practices that could be used to offset the impact.

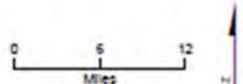
Staff recommends approval of the current management practices with the stipulation the CRC move forward on the following actions: 1) support CACs limitations on individual thiobencarb use for growers with a history of non-compliance; 2) investigate, through monitoring and assessment, potential upstream influences; and 3) investigate variations in thiobencarb usage related to weather conditions. The CRC should provide information regarding their plans for additional monitoring, as it is triggered. The CRC should also provide an update on the progress and status of these alternatives at the RPP October stakeholders meeting, as well as in its annual monitoring report.

Figure 1: CRC Monitoring Sites for RPP (taken from RPP report)



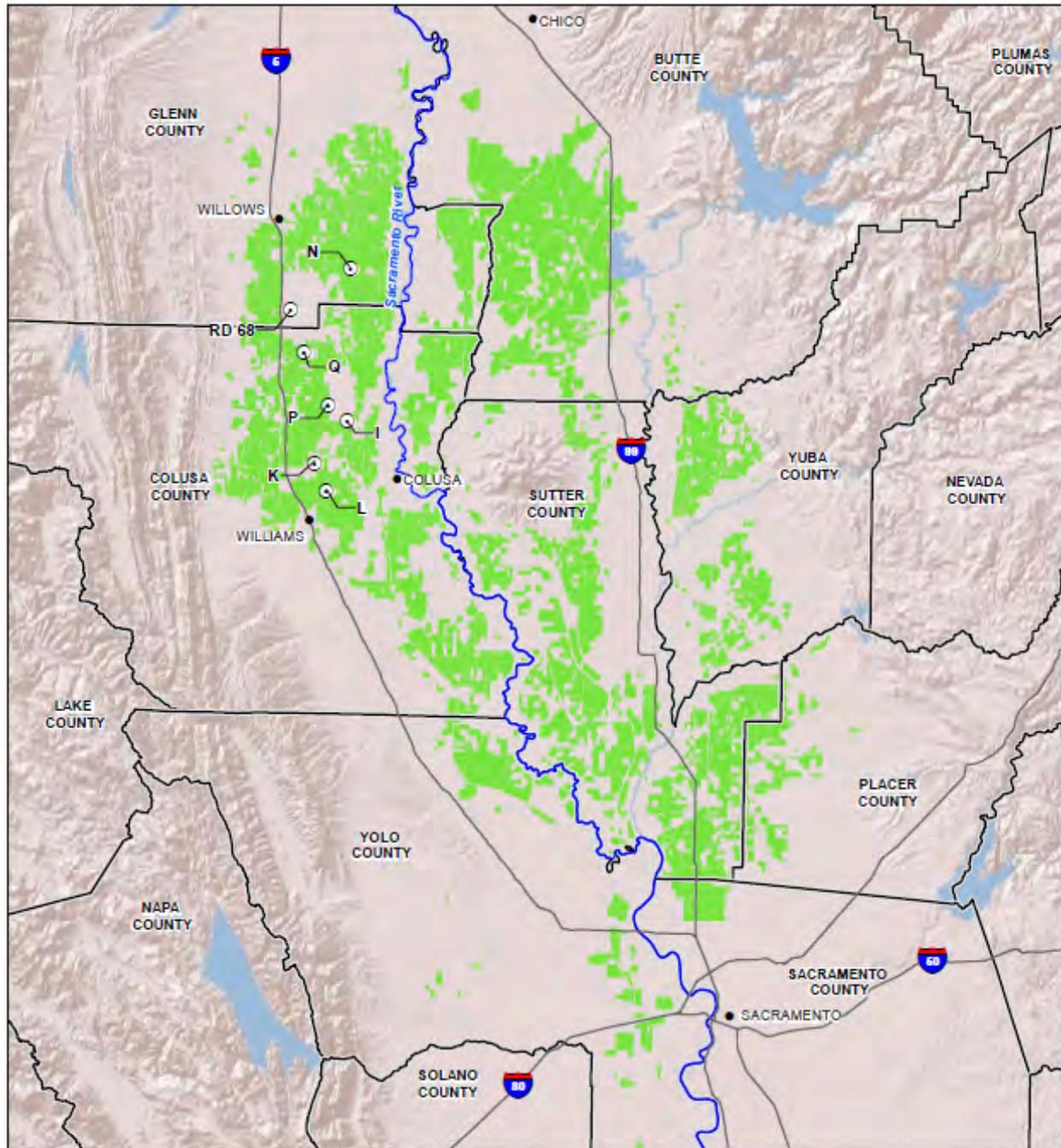
**LEGEND**  
● CITY  
● RPP MONITORING SITES  
□ COUNTY  
■ RICE LAND 2015 PERMIT AREA

**NOTES:**  
DATUM: NAD 1983.  
SOURCES: BASEMAP (COPYRIGHT© 2014 ESRI); RICE LANDS (CAL AG PERMIT, 2015); COUNTY (CAL FIRE 2007); HYDROLOGY (NHD ACCESSED MARCH 2014).



**FIGURE I-1**  
RPP Monitoring Sites  
RPP Annual Monitoring Report  
California Rice Commission

Figure 2: CRC 2015 Special Monitoring Sites (taken from RPP report)



NOTES:

DATUM: NAD 1983.

SOURCES: BASEMAP (COPYRIGHT© 2014 ESRI); RICE LANDS (CALAG PERMIT, 2015); COUNTY (CAL FIRE 2007); HYDROLOGY (NHD ACCESSED MARCH 2014).

LEGEND

- CITY
- SPECIAL MONITORING SITE
- COUNTY
- RICE LAND 2015 PERMIT AREA

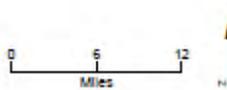


FIGURE I-2  
2015 Special Monitoring Sites  
RPP Annual Monitoring Report  
California Rice Commission

**Table 1:** RPP Thiobencarb monitoring results for 2015 season.

Sampling Dates	Rice Pesticides Program 2015, Thiobencarb (ppb)					Cities Monitoring, Thiobencarb (ppb)		
	CBD5	BS1	CBD1	SSB	SR1	WSR	SSR	Sacramento River at SSR Intake (percent)
4/22/15	-	-	-	-	-	<0.1	<0.1	100
4/28/15	ND	-	ND	-	ND	-	-	-
4/29/15	-	ND	-	ND	-	<0.1	<0.1	74
5/5/15	ND	ND	ND	ND	ND	-	-	-
5/6/15	-	-	-	-	-	<0.1	<0.1	70.0
5/12/15	1.01	-	ND	-	ND	-	-	-
5/13/15	-	ND	-	0.62	-	<0.1	<0.1	73.1
5/14/15	-	-	-	-	-	<0.1	<0.1	76.6
5/19/15	<b>1.89</b>	ND	ND	ND	ND	<0.1	NA	78.8
5/20/15	-	-	-	-	-	<0.1	<0.1	100
5/21/15	<b>5.25</b>	ND	0.65	ND	ND	<0.1	<0.1	88.6
5/25/15	-	-	-	-	-	<0.1	<0.1	84.7
5/26/15	<b>2.41</b>	-	<b>1.53</b>	-	ND	<0.1	<0.1	75.5
5/27/15	-	ND	-	ND	-	<0.1	<0.1	76.6
5/28/15	<b>1.94</b>	ND	1.39	ND	ND	<0.1	<0.1	77.9
6/2/15	<b>1.56</b>	ND	0.70	ND	ND	<0.1	<0.1	77.9
6/3/15	-	-	-	-	-	<0.1	<0.1	81.9
6/4/15	0.73	ND	0.36	ND	ND	<0.1	<0.1	86.3
6/9/15	0.48	-	ND	-	ND	-	-	-
6/10/15	-	ND	-	ND	-	<0.1	<0.1	67.8
6/11/15	0.45	ND	ND	0.62	ND	<0.1	<0.1	96.2
6/16/15	0.44	ND	ND	ND	ND	-	-	-
6/17/15	-	-	-	-	-	<0.1	<0.1	48.8
6/18/15	-	-	-	-	-	<0.1	<0.1	28.8
6/23/15	ND	-	ND	-	ND	-	-	-
6/24/15	-	ND	-	ND	-	<0.1	<0.1	79.1
6/30/15	ND	ND	ND	ND	ND	-	-	-
7/1/15	-	-	-	-	-	<0.1	<0.1	77.4

Notes:

- = not sampled

**BOLD** = exceedance of performance goal

ND = not detected above laboratory reporting limits

ppb = parts per billion

SSR = City of Sacramento River intake

WSR = City of West Sacramento River intake