

Central Valley Regional Water Quality Control Board

10 April 2015

Tim Johnson, CEO
California Rice Commission
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Sacramento, CA 95814-2933

**SUBJECT: REVIEW OF 2014 ANNUAL MONITORING REPORT – CALIFORNIA RICE
COMMISSION**

Thank you for submitting the California Rice Commission (CRC) Annual Monitoring Report (AMR) on 22 December 2014 as required by MRP R5-2010-0805. Staff also received an electronic submittal of the 2014 season laboratory results on 17 December. Staff review of the electronic data submittal with any comments or corrections will be emailed to the CRC at a later date.

The Central Valley Water Board staff review of the AMR is in the attached memo. The staff review indicates QC items noted in the 2013 AMR review were corrected. There were instances where water quality objectives for dissolved oxygen (DO) and electrical conductivity were not met. The water quality objective for dissolved oxygen were not met at CBD1 and BS1, triggering a management plan or special study. We request the CRC submit a special study for review and approval, per the MRP Order, Appendix MRP-1.

Please note that electronic data submittal under WDR R5-2014-0032, in effect starting with the 2015 season, should include field and calibration data.

If you have any questions or comments regarding the review, please contact Margaret Wong at 916-464-4857.



Sue McConnell, Chief
Irrigated Lands Regulatory Program



Susan Fregien
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cc: Roberta Firoved, California Rice Commission

Enclosure

Central Valley Regional Water Quality Control Board

TO: Susan Fregien
Sr. Environmental Scientist
Monitoring and Implementation Unit

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

DATE: 3 April 2015

SUBJECT: REVIEW OF 2014 ANNUAL MONITORING REPORT -- CALIFORNIA RICE COMMISSION

On 22 December 2014, the California Rice Commission (CRC) submitted its 2014 Annual Monitoring Report (AMR) as required by the CRC Monitoring and Reporting Program (MRP) Order R5-2010-0805 for the Irrigated Lands Regulatory Program (ILRP).

Under the MRP Order, the CRC performed core monitoring from May to September at the four primary sites: CBD5, BS1, CBD1, and SSB. Monitoring was delayed from the normal late April starting period due to weather conditions and other factors that affect planting and pesticide application. The sampling schedule and constituents monitored for the 2014 season are shown in Table 1.

Table 1. 2014 Monitoring Schedule

Month	Sample date	Field	TDS	TOC	Hardness
May	5/20/14	√	√	√	√
June	6/17/14	√	√	√	√
July	7/15/14	√	√	√	√
August	8/19/14	√	√	√	√
September	9/16/14	√	√	√	√

Monitoring for field parameters (flow, pH, electrical conductivity [EC], dissolved oxygen [DO], temperature, and turbidity) and general physical/chemical parameters (total dissolved solids [TDS], total organic carbon [TOC], and hardness) were required for each sampling event.

REVIEW OF THE ILRP AMR REPORT

The CRC AMR was submitted in electronic format and evaluated by staff for the presence and completeness of the components described in the 2010 MRP Order. An AMR checklist (attached) derived from the MRP Order was used to provide an itemized account of the compliance elements. Most of the required components of the AMR were addressed by the

CRC. This memo discusses omissions that should be addressed in future AMRs under MRP Order R5-2014-0032 that goes into effect for the 2015 season.

Monitoring results

Field parameters: The CRC submitted exceedance reports for every sampling event in which water quality triggers/objectives were exceeded. A dissolved oxygen exceedance report was submitted for each site that showed less than the cold water quality objective (7.0 mg/L). Electrical conductivity readings above the 700 μ mhos/cm were reported as exceedances. Tables 2 and 3 show the submitted exceedances for DO and EC, respectively.

Table 2. Dissolved Oxygen Exceedances reported during 2014

Sample Event	Sample date	Sites with Exceedance and DO Reading (mg/L)			
		BS1	CBD5	CBD1	SSB
May	5/20/2014	5.26/5.16	NR	3.41/3.32	6.60/6.63
June	6/17/2014	5.90	6.89	4.71	5.92
July	7/15/2014	6.05/6.00	NR	3.70/5.39	4.80/4.58
August	8/19/2014	5.03/ 4.79	NR	4.57/4.48	5.53/5.56
September	9/16/2014	3.06/3.13	NR	5.59/5.88	5.67/5.99

Notes: Two instruments were used for sampling; results shown as Instrument 1/Instrument 2.

NR = no reporting required; no exceedance

Gray indicates the cold water quality objective (>7.0 mg/L DO) was not met.

Bold indicates the warm water quality objective (>5.0 mg/L) was not met.

Table 3. Electrical Conductivity Exceedances reported during 2014

Sample Event	Sample date	Sites with Exceedance and EC Reading (μ mhos/cm)			
		BS1	CBD5	CBD1	SSB
May	5/20/2014	NR	NR	914/918	NR
June	6/17/2014	NR	NR	723/722	NR
July	7/15/2014	NR	NR	782/783	NR
August	8/19/2014	NR	NR	NR	NR
September	9/16/2014	NR	NR	NR	NR

Notes: Two instruments were used for sampling; results shown as Instrument 1/Instrument 2.

NR = no reporting required, no exceedance

The dissolved oxygen exceedances follow the same pattern as previous years in which the DO is strongly associated with high air/water temperatures. The CRC notes the 2014 season shows a trend of being lower than the warm water quality objective of 5.0 mg/L which may be due to the low flows measured for this year.¹

The May, June and July events for electrical conductivity at CBD1 were above the 700 μ S/cm agricultural guideline. There were no exceedances of the pH (acceptable range 6.5<pH<8.5) water quality objective, nor the turbidity objective during any sampling event.

¹ Flows measured in 2014 ranged from 0 to 485 cfs compared to the 2013 season range of 0 to 1424 cfs. Average flow across all sites was 342 cfs and 122 cfs, respectively, for seasons 2013 and 2014.

Total dissolved solids and total organic carbon: The highest TDS value was 540 mg/L at CBD1 in May. The highest TOC value was 11.0 mg/L at BS1 in September.

Hardness: The highest hardness as CaCO₃ value was 230 mg/L found during the May and July events at CBD1.

QUALITY ASSURANCE/QUALITY CONTROL (QA/QC) REQUIREMENTS

Field QA/QC results: Field blanks and field duplicates were acceptable for precision and accuracy. There were detections of total hardness in field blank for the May event, and total organic carbon in the field blank for the July event. These results were below the reporting limit (RL), but above the minimum detection level (MDL), and therefore flagged as estimates. The field blank for TDS for the June event had low QC percent recovery. Reanalysis of the samples showed results matching the original data. Field duplicates for total hardness, total organic carbon (TOC) and total dissolved solids (TDS) were within the acceptable relative percent difference (RPD) for the analysis.

Laboratory QA/QC results: The primary laboratory analyzing the physical/chemical parameters was California Laboratory Services (CLS). Laboratory QA/QC requirements for this season include method blanks, lab control spikes (LCS), matrix spikes (MS), and laboratory duplicates.

Method blanks for total hardness, TOC and TDS were all below the analyte method reporting level (RL).

Although the 2014 season was still under the Conditional Waiver, the CRC submitted data in a SWAMP comparable format for upload into CEDEN. Table 3 shows the summary QA/QC Lab Batch Comments completed by CLS based upon the electronic reporting of monitoring data required under R5-2014-0032.

Review of the lab QA/QC reports shows that blanks, LCS/LCSD and MS/MSD were analyzed for all parameters for every event as required by RB5-2014-0032.

CLS noted that analytes (hardness and TOC) were detected in field blanks for May and July at concentrations below the RL and reported the results as "DNQ" besides flagging the result as an estimate (J) and as being detected in a field or lab generated blank (IP).

Table 3. Summary QA/QC Lab Batch Comments from CLS

Sampling Event	Analyte	Lab Submission Code*	Lab Batch Comment*
20 May	TDS	Acceptable	MS sample recovery outside of limits. LCS/LCSD results acceptable. Lab results accepted.
	TOC	Acceptable, Minor Deviation	QC samples run later than primary samples. Lab results accepted.
	Hardness	Acceptable, Minor Deviation	Analyte detected in field blank below RL.
17 June	TDS	Acceptable	MS/MSD recovery not within recovery limits. RPD acceptable. LCS/LCSD results acceptable. Lab results acceptable.
	TOC	Acceptable	Accepted.
	Hardness	Acceptable	Accepted.
15 July	TDS	Acceptable	Accepted.
	TOC	Acceptable, Minor Deviation	Analyte detected in field blank. Lab results accepted since field blank detection below RL.
	Hardness	Acceptable; Secondary dilution	Lab noted matrix effect requiring secondary dilution of sample prior to analysis.
19 August	TDS	Acceptable	Accepted.
	TOC	Acceptable	Accepted
	Hardness	Acceptable	MSD recovery not within limits. LCS/LCSD results acceptable. Lab results accepted
16 September	TDS	Acceptable	Accepted.
	TOC	Acceptable	Accepted. Analyte detected in field blank below RL.
	Hardness	Acceptable	MS recovery not within limits. LCS/LCSD results acceptable. Lab results accepted.

* The lab summary codes and comments are preliminary pending QA/QC review by database staff.

For TDS analyses, CLS noted two unacceptable/incomplete analyses in May and June. In May, the spike recovery for the MS was below the acceptable limit, although the RPD was acceptable. In June, both the MS and MSD had recoveries below the limit, again with acceptable RPD. In both cases, the sample analyses were accepted since the LCS/LCSD results were acceptable.

Quality control for TOC analyses was acceptable, although a minor deviation was noted for the May event. In that event, CLS noted the MS/MSD samples were run after the primary samples, but the LC/LCS samples were run with the primary samples and were acceptable.

In the 2013 AMR, it was noted for the total hardness (as calcium carbonate) analyses that CLS did not perform the required duplicate sample for the lab control spike. CLS corrected this item in the 2014 AMR. The August and September QC analyses were noted as being unacceptable. The August MSD sample for hardness was over the acceptable recovery limit (122%) and the September MS/MSD was noted as being outside of acceptable limits due to the analyte concentration being 4 times or greater than the spike concentration. However, the QC batch was accepted based on LCS/LCSD recoveries within the acceptable limits.

An *Analysis of Completeness* section in the AMR noted the problems with MS/MSD spike recoveries and RPD limits. Overall laboratory completeness was calculated at 94.7%. Field completeness was estimated at greater than 90% since all field activities and transport of samples were successful.

REVIEW OF SUBMITTED ELECTRONIC DATA

The CRC transmitted an electronic copy, in an Excel worksheet format, of the 2014 monitoring data that included sample results and laboratory QA/QC. Central Valley Water Board entered field data and associated QA/QC manually. Staff review and comments will be noted on the EDD Feedback package checklists and sent to the CRC by email. Items noted from the last year report were corrected.

It should be noted that MRP R5-2014-0032 requires the electronic submittal of field data and the associated QA/QC. The CRC and Ch2MHill, their consultant, have been informed of the template to be used for the 2015 season.

SUMMARY

The 2014 AMR contained the necessary components and supporting documentation required to determine completeness. The electronic data submittal was in the format required by the MRP. Staff will email its review of the electronic data submittal to CRC noting corrections that were made.

The lab QC items noted in the 2013 AMR were corrected by CLS. All QA/QC data from CLS were complete.

The CRC reported exceedances for DO and EC which may be related to water temperature and low flow velocity of the waterbody. Reports for these exceedances were submitted to the Regional Board as required by the MRP. The CRC previously submitted a draft DO and pH Management Plan that was not reviewed nor approved. Staff recommends the CRC update and submits the DO and pH Management Plan or a special study for review and approval as specified in MRP Order 2014-032, Appendix MRP-1.

Attachment 1. Checklist for CRC AMR 2014 Review

Attachment 1. Checklist for CRC 2014 AMR Review

Item No.	AMR Component Name	Acceptable	Unacceptable	Incomplete/ Not included	Not Applicable	Page # (Section #)	Comments
1	Signed Transmittal Letter						
1.1	Penalty of Perjury Statement	x					
1.2	Signature of Authorized Coalition Representative	x					
1.3	Dated	x					
1.4	Discussion of exceedances, and corrective actions taken or planned (or reference to previous correspondence)	x					
1.5	Submitted on time	x					
2	Title Page						
2.1	Report title	x					
2.2	Date of the report	x					
2.3	Monitoring date range covered by the report	x					
2.4	Coalition Group name	x					
3	Table of Contents						
3.1	List of sections/chapters, tables, figures, appendices/attachments with page numbers	x				iii-vi	
4	Executive Summary						
4.1	Summary of key results and activities	x				6-1	
4.2	Brief summary of conclusions and recommendations	x				6-1, 6-2	
5	Description of the Coalition Group Geographical Area						
5.1	General description of relevant geographic features of the Coalition area, such as location and extent of area, major landforms, land uses, vegetation types, crop types, climate patterns, key waterways, and cities	x				1-2, Figure 1-1, Section 2	
6	Monitoring Objectives and Design						
6.1	Brief description of monitoring objectives (references to section and page numbers in MRP Plan or QAPP, as appropriate)	x				3-1	
6.2	Monitoring design aligns with MRP Plan, any deviations from MRP Plan or QAPP are described (references to section and page number in MRP Plan or QAPP, as appropriate)	x					

Item No.	AMR Component Name	Acceptable	Unacceptable	Incomplete/ Not included	Not Applicable	Page # (Section #)	Comments
	6.2.1	Assessment Monitoring: sites, parameters, schedule	x			3-1	Assessment monitoring schedule and parameters discussed, although not performed for CY2014.
	6.2.2	Core Monitoring: sites, parameters, schedule	x			3-2	
	6.2.3	Special monitoring (Management Plan, TMDL, source identification): sites, parameters, schedule			x		
7	Sampling Site Descriptions and Rainfall Records for the time period covered under the AMR						
	7.1	Sampling site name and description (e.g. geographic area, watershed, crop type and drainages that the site represents), or unique information about the site or surrounding area	x			3-3 to 3-10	
	7.2	Rainfall records in graphic or narrative form (in inches of precipitation)	x			Figure 2-2	
8	Location Maps(s) of sampling sites, crops, and land uses						
	8.1	Location maps show sampling sites, crops, and land use with informative level of detail	x			Figure 3-1; Appendix B	
	8.1.1	Datum identified on map (<u>must be</u> WGS 1984 or NAD 1983)	x			Table 3-1	
	8.1.2	Source and date of all data layers identified on map	x			various pgs.	All maps include required layer information.
	8.2	Accompanying list or table indicates: site name, ID number, ILRP station code number, and GPS coordinates (latitude and longitude in decimal degrees to at least five decimal places)	x			Table 3-1	
9	Tabulated Results						
	9.1	Data are in tabular form, clearly organized and readily discernible	x			Various tables in Section 4	
	9.2	Tabulated results agree with the electronically submitted data	x			Various tables in Section 4	
	9.3	Previously reported exceedances match exceedances identified in the AMR	x			Table 4-12	Previous exceedances in DO; draft management plan submitted. No action required by CRC.
	9.4	All required constituents for each site have reported results	x			Various table in Section 4	
	9.5	All necessary re-sampling completed and results reported			x		
10	Data Discussion to Illustrate Compliance						
	10.1	Results discussed in text agree with tabulated data	x			Section 4	

Item No.	AMR Component Name	Acceptable	Unacceptable	Incomplete/ Not included	Not Applicable	Page # (Section #)	Comments
10.2	Discussion illustrates compliance with the Conditional Waiver, or if a required component was not met an explanation of missing data or a reason for non-compliance is included	x				Section 4	
10.3	Results are compared to ILRP requirements, water quality standards and trigger limits; toxicity results, TIE's and possible causes of toxicity are discussed	x				Section 4	Exceedances for DO and EC reported to staff.
11	Electronic data submitted in a SWAMP comparable format, <u>either</u> Option A or B						
11.1	<u>Option A. Spreadsheet format:</u> Lab data submitted electronically within the SWAMP comparable spreadsheets; Field data submitted electronically, or in paper copy on SWAMP comparable field sheets within AMR	x				Received by email 12/17/14	Data submitted electronically in SWAMP comparable format with required QC data.
	<u>Option B. SWAMP database format:</u> All field and lab data uploaded into a SWAMP comparable database (following the most current <i>Required Data Submission Format</i> document)				x		
11.2	Sample results and required QC results are included: field blanks, field duplicates, lab blanks, spikes (LCS, MS), duplicates (LCD, MSD, replicates), surrogates (for pesticide analyses)	x				Electronic submittal and Appendix C	
11.3	Toxicity analyses include: individual sample results, negative control summary results, replicate results, water quality measurements (pH, ammonia, temperature, SC, DO)				x		Core monitoring for CY 2014; no toxicity testing required
11.4	Data not meeting project QA acceptance guidelines are flagged and include brief notes detailing the problem in the <i>Comments</i> field	x				Section 5 and electronic submittal	
12	Description of sampling and analytical methods used						
12.1	Description of sampling methods used (e.g. type of collection, collection containers, sample preservation, transportation, handling, field measurements), with references to SOP's if appropriate	x				Table 3-2, 3-11 to 3-13	
12.2	Description of analytical methods used (references to SOP's and QAPP as appropriate); any deviations from the QAPP are described and explained	x				Table 3-2, Section 5	
13	Copies of chain-of-custody forms and sample receipt documentation						
13.1	Copies of all COCs are included, legible and completed accurately; any anomalies are noted/explained	x				Appendix C-1	Staff reviewed 20% of COCs.

Item No.		AMR Component Name	Acceptable	Unacceptable	Incomplete/ Not included	Not Applicable	Page # (Section #)	Comments
14	Field Data Sheets, Lab Reports, Lab Raw Data							
14.1		Copies of all field data sheets (attached/provided electronically on CD) are included, legible, contain the required elements in the ILRP template, and are completely filled out	x				Appendix C-1	
14.2		All analytical reports (attached/provided on CD) are included, complete, and signed by authorized laboratory representative	x				Appendices C-1 and C-2	
	14.2.1	Sample results with units, RLs and MDLs	x				Appendix C and electronic submittal	
	14.2.2	Sample preparation, extraction and analysis dates	x				Appendix C and electronic data	
	14.2.3	Results for all QC samples: field and laboratory blanks, lab control spikes, matrix spikes, field and laboratory duplicates, surrogate recoveries	x				Tables 5-1 to 5-6 and electronic submittal	
	14.2.4	Chemistry lab narrative describes all QC failures, analytical problems and anomalous occurrences.	x				Section 5, 5-10 to 5-11	
14.3		All toxicity lab reports (attached/provided on CD) are included, complete, and signed by authorized lab representative				x		No toxicity testing in CY 2014
	14.3.1	All toxicity sample results included				x		
	14.3.2	Results for all QC samples: field duplicate, negative control, narrative summary of reference toxicant results				x		
	14.3.3	All raw data (including failed tests) and original bench sheets showing individual replicates				x		
	14.3.4	Toxicity lab narrative describes all QC failures, analytical problems and anomalous occurrences				x		
15	Associated laboratory and field quality control samples results							
15.1		Chemical analyses include: field blank, field duplicate, lab blank, matrix spike and MSD, lab control spike and LCSD	x				Appendix C and electronic submittal	
15.2		Microbiological analyses include: field blank, field duplicate, negative control, positive control				x		No microbiological test in CY 2014

Item No.	AMR Component Name	Acceptable	Unacceptable	Incomplete/ Not included	Not Applicable	Page # (Section #)	Comments
15.3	Toxicity tests include: field duplicate, negative control, reference toxicant (narrative OK, raw data not required)				x		No toxicity testing in CY 2014

16	Summary of Quality Assurance Evaluation results						
16.1	Acceptance criteria for all field and laboratory QA/QC measurements identified and in agreement with ILRP requirements; any adjustments to acceptance criteria documented and discussed	x				Section 5 and electronic submittal	Section 5: Review of Quality Assurance/Quality Control
16.2	Summary of accuracy (lab control spike and matrix spike recovery) and precision (RPD for field duplicate, LCS/LCSD and MS/MSD pairs) included for all constituents and tests	x				Section 5	Tables 5-1 to 5-6.
16.3	QA/QC results that did not meet acceptance criteria identified in a table or narrative description that is prepared by the Coalition (not laboratories)	x				Section 5, 5-9, 5-10	Analysis of precision and accuracy discussed in narrative form.
	16.3.1 Discussion of how the failed QA/QC results affect the validity of the reported data	x				Section 5	QC MS/MSD results outside of recovery and/or RPD limits did not invalidate QC sample batch since LCS/LCSD recoveries were acceptable.
	16.3.2 Corrective actions for QA/QC results that did not meet acceptance criteria are described, laboratory exception reports are included when samples are reanalyzed due to exceedance of the linear range	x				Section 5; Appendix C-2	Lab reports contain corrective actions taken.
16.4	Both field and laboratory completeness are calculated and reported; overall Project completeness is determined	x				Table 5-7, 5-10	Completeness calculated in AMR.
17	Flow Monitoring Method(s)						
17.1	The method used to obtain flow measurement at each monitoring site during each monitoring event is listed	x				4-15	
18	Monitoring Site Photos						
18.1	Photos are included for each monitoring site, either electronically or in hard copy	x				3-7 to 3-8	
18.2	Each photo is clearly labeled with site ID and date	x				3-7 to 3-8	No changes to core sites since 2004
18.3	Photos are descriptive and useful	x				3-7 to 3-8	
19	Summary of Exceedance Reports submitted during the reporting period and related pesticide use information						

Item No.	AMR Component Name	Acceptable	Unacceptable	Incomplete/ Not included	Not Applicable	Page # (Section #)	Comments
19.1	Summary of all Exceedance Reports submitted during the AMR period is included	x				Table 4-12, Appendix D	
19.2	Pesticide use data for all pesticide and toxicity exceedances occurring during the AMR time period (unless under a Management Plan): all chemicals applied within the monitoring site subwatershed during the four weeks prior to the measured exceedance				x		No pesticide monitoring for CY 2014. Section 2, Tables 2-5 to 2-10 list pounds and acreage of pesticides (herbicides, insecticides, and fungicides) applied (estimated) for rice
20	Actions Taken to Address Water Quality Exceedances						
20.1	Discussion of actions taken to address water quality exceedances during the time frame of the AMR is included	x				Section 4, 4-7, Table 4-12	DO exceedances associated with high water temperature and/or low flows. EC exceedances showed flow less than 7.5 cfs.
20.2	Updates or additional management practices implemented (Attachment A of the MRP Order, p. 4)				x		
21	Status update on preparation and implementation of all management plans and other special projects						
21.1	Brief update on status of all Management Plans and special projects that are in preparation or being implemented				x		No active management plans at this time.
22	Conclusions and Recommendations						
22.1	Conclusions are supported by the data presented in the AMR	x				Section 6	
22.2	Recommendations are appropriate and adequately detailed	x				Section 6	