21 May 2012

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REVIEW OF EAST SAN JOAQUIN WATER QUALITY COALITION 2012 ANNUAL MONITORING REPORT

Thank you for submitting the East San Joaquin Water Quality Coalition (Coalition) Annual Monitoring Report (AMR), which was received on 1 March 2012. Staff has completed a review (enclosed with this letter) of the AMR for compliance with Monitoring and Reporting Program (MRP) Order No. R5-2008-0005.

As noted in the attached memorandum and checklist, staff determined that the Coalition continues to comply with the majority of MRP Order monitoring and reporting requirements. Please review the attached memorandum for details on identified omissions and incomplete items that will need to be addressed in future AMR's. The Coalition will need to submit the next AMR in accordance with the MRP Order by 1 March 2013. Incomplete items that need to be addressed in an addendum to AMR to be submitted by **15 June 2012** include:

- Corrective actions for QA/QC results that do not meet acceptance criteria (item 16.3.2)
- Completeness summary without data from Lateral 3 along East Taylor Road, and overall Project completeness (item 16.4)
- Outstanding PUR data identified in Table 31 (item 19)

If you have any questions or comments regarding the review, or need any further information, please contact Jelena Hartman at jhartman@waterboards.ca.gov or by phone at 916-464-4628.

Sincerely,

Original signed by

Susan Fregien, Senior Environmental Scientist
Monitoring and Implementation Unit
Irrigated Lands Regulatory Program

Original signed by

Joe Karkoski, Chief
Irrigated Lands Regulatory Program

Enclosures: Staff Review of East San Joaquin Water Quality Coalition AMR
Annual Monitoring Report Review Checklist

TO: Susan Fregien
Senior Environmental Scientist
Monitoring and Implementation Unit
Irrigated Lands Regulatory Program

FROM: Jelena Hartman
Environmental Scientist
MONITORING AND IMPLEMENTATION UNIT
IRRIGATED LANDS REGULATORY PROGRAM

DATE: 18 May 2012

SUBJECT: 1 MARCH 2012 ANNUAL MONITORING REPORT REVIEW – EAST SAN JOAQUIN WATER QUALITY COALITION

On 1 March 2012, the California Regional Water Quality Control Board, Central Valley Region (Central Valley Water Board) received the East San Joaquin Water Quality Coalition (Coalition) 2012 Annual Monitoring Report (AMR). The AMR reports on the Coalition's monitoring program for the time period from 1 January through 31 December 2011, and covers monitoring, reporting, outreach, and education activities.

The 2012 AMR was reviewed to determine compliance with reporting and monitoring requirements pursuant to the Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands Order No. R5-2006-0053, Monitoring and Reporting Program (MRP) Order No. R5-2008-0005, and the Coalition's August 2008 MRP Plan. The 2011 AMR review was also consulted to verify that the Coalition considered previous comments and recommendations in the current AMR.

The AMR demonstrates that the Coalition complies with the terms and conditions of the Conditional Waiver. The Coalition effectively presents information and discusses compliance with the water quality standards, implemented practices to protect beneficial uses and prevent nuisance in order to verify the adequacy and effectiveness of the Conditional Waiver's conditions. The AMR describes conducted activities that are required by the MRP Order, implementation and evaluation of management practices to achieve compliance with applicable water quality standards, and how the water quality information addresses key program questions from the MRP Order.

An AMR Checklist derived directly from the MRP Order was used to provide an itemized account of the compliance elements. Components that fully met the requirements, and minor comments are indicated in the attached Checklist, while the memorandum provides details on items that warranted further discussion (memorandum section numbers correspond to item numbers in the attached AMR Checklist).

Item 6. Monitoring objectives and design
Monitoring design also includes special monitoring, and references to special monitoring other than MP (such as TMDL or source studies) should be included, e.g. MRPP p. 54-56.

Item 8. Location map(s) of sampling sites, crops and land uses
Datum should be identified on the map per directions in the MRP Order (page 19). Datum must be NAD1983 or WGS1984.

Item 12. Sampling and analytical methods used
Summary of sample volume, container, initial preservation, and holding time (Table 13) should be revised:

- *E.coli* samples should be collected into containers with pre-added $Na_2S_2O_3$ (MRP Attachment C, Appendix D, page 2);
- Sediment toxicity holding time is 14 days (QAPP, p. 36);
- Superscript 4 erroneously indicates that soluble orthophosphate and Total Kjeldahl Nitrogen (TKN) were dropped in July 2011.

Item 15. Associated laboratory and field quality control samples results
On page 69 of the AMR, it is reported that all required quality control samples for microbiological analyses were completed. Results of field blanks, field duplicates, laboratory blanks and replicates are included in AMR Appendix III and electronically within laboratory reports. Per the Coalition's approved QAPP, total coliforms and *E. coli* are detected using Colilert Media SM 9223 B. The positive total and fecal controls, as well as negative controls must be conducted with each batch of media, and the results included in the AMR (MRP Attachment C, page 18 and Appendix B; 2010 QAPP, pages 47, 248-252).

Item 16. Summary of Quality Assurance Evaluation results
16.2. Summary of accuracy and precision. Summary tables 17-29 present counts of relevant results and completeness for each QC measure. It is recommended that the average percent recovery of spikes (accuracy) and RPD's (precision) for each analyte are calculated and a column added with average actual RPD results for each analyte in Tables 20, 23, 25 and 26, average actual spike recovery in Tables 22 and 24 (see examples below), and average surrogate recovery in Table 27.

Table 22. Summary of LCS quality control sample percent recovery (PR).

Analyte	Data Quality Objective (PR)	Percent Recovery Average ± SD	n	% Samples Acceptable
Aldicarb	PR 31-133	70% ± 16%	17	100%
Carbaryl	PR 44-133	78% ± 13%	17	100%
Carbofuran	PR 36-165	72% ± 12%	18	100%
Methiocarb	PR 35-142	83% ± 19%	17	100%
Methomyl	PR 23-152	70% ± 13%	17	100%
Oxamyl	PR 10-117	59% ± 9%	17	100%
Diuron	PR 52-136	81% ± 10%	17	100%
Linuron	PR 49-144	83% ± 12%	17	100%
Atrazine	PR 39-156	89% ± 13%	18	100%
Cyanazine	PR 22-172	93% ± 21%	18	100%
Simazine	PR 21-179	89% ± 14%	18	100%
Glyphosate	PR 84-113	93% ± 3%	16	100%
Paraquat dichloride	PR 70-130	78% ± 5%	16	94%

Table 24. Matrix spike quality control sample percent recovery (PR).

Analyte	Data Quality Objective (PR)	Percent Recovery Average ± SD	n	% Samples Acceptable
Aldicarb	PR 31-133	77% ± 16%	34	100%
Carbaryl	PR 44-133	77% ± 13%	34	97%
Carbofuran	PR 36-165	74% ± 9%	34	100%
Methiocarb	PR 35-142	82% ± 16%	34	100%
Methomyl	PR 23-152	74% ± 15%	34	100%
Oxamyl	PR 10-117	58% ± 11%	34	100%
Diuron	PR 52-136	85% ± 9%	34	100%
Linuron	PR 49-144	83% ± 12%	34	100%
Atrazine	PR 39-156	85% ± 19%	34	97%
Cyanazine	PR 22-172	86% ± 26%	34	100%
Simazine	PR 21-179	86% ± 18%	34	100%
Glyphosate	PR 84-113	97% ± 3%	18	100%
Paraquat dichloride	PR 70-130	57% ± 23%	18	44%

Summary of quality control sample results would offer more specific information about the performance of analytical methods used than a count of results that are within acceptable control limits. For example, the control limits for percent recovery for laboratory control (LCS) and matrix spike (MS) for carbofuran are 36-165%. The actual recovery of carbofuran LCS and MS of 72±12% (n=18) and 74±9% (n=34), respectively, indicates that the accuracy of carbofuran analyses is consistent, and that there is a slight negative bias (although much better than the lower control limit of 36%).

16.3.1. Failed QA/QC results. Overall, the proportion of data that are affected by failed QA/QC results was low for the reporting period, and data were appropriately flagged. The Coalition could add a more substantive interpretation of effects of failed QA/QC on the data validity in the next report. For example, explain how inadequate spike recovery translates into sample results – how many sample result records are affected, and what is the usability of data (e.g. 32 out of 64 paraquat results were acceptable, while 32 data points are flagged A,MD (acceptable, with minor deviations) and data are usable with caution.

16.3.2. Corrective actions. It was previously recommended that the Coalition should outline what corrective actions had taken place or would take place to prevent future failures (2011 AMR review). Corrective actions for QA/QC results that did not meet acceptance criteria, and samples that were lost were not addressed in the 2012 AMR. The Coalition and laboratories already have checks and corrective mechanisms in place to ensure good data quality (e.g. page 68), and information that clearly lays out corrective actions for failures should be included in an addendum to the current AMR, and in future reports. For example, what corrective actions will be taken to notice, and potentially remedy by re-sampling instances of samples lost by a courier; or what other actions could be taken besides flagging data if samples are outside holding times, field duplicate RPD or spike recoveries are not acceptable.

16.4. Completeness. Project Completeness combines Field & Transport Completeness, and Laboratory Completeness, and is calculated as a proportion of valid data obtained, compared to the planned or expected amount (MRP Attachment B, page 2; MRP Attachment C, page 9). In general, it is apparent from the information in the AMR that the overall Project Completeness goal of 90% is met for the majority of analytes (only a few instances where field completeness, or where laboratory completeness are below 90%), and that Project Completeness is often 100% (page 66, 100).

The Coalition has responded to previous Staff comments and Field & Transport Completeness are reported in the AMR (Table 17). The Field Completeness in 2011 was 100% for all samples except a batch lost by courier (nine samples for glyphosate and paraquat). Please note that if a site is inaccessible or dry, the adequate documentation of these conditions through field sheets, photos, and other means meets the completeness goal for that site and event (MRP Order Attachment C, page 9), which may affect completeness assessment as shown below. Additionally, as Lateral 3 along East Taylor Road is not reported in the 2011 sampling schedule (Tables 5 and 6), and related water quality data are not included in the main body of the AMR (e.g. page 20), results associated with samples collected at Lateral 3 along East Taylor Road should be removed from completeness summaries. An updated Table 17 should be included in the AMR amendment - in addition to revisions regarding samples collected at Lateral 3 along East Taylor Road, it is recommended that the number of expected samples along with the number of obtained results is tabulated.

Example of Field & Transport Completeness Calculations

77	expected number of samples in 2011 for OC pesticides, Group A pesticides, and glyphosate and paraquat: 11 monitoring sites sampled (without Lateral 3) x 7 events (January through June + August)
-4	dry sites (not taking into account two events when Lateral 3 was dry)
73	OC and Group A pesticide samples collected and received by laboratory for analysis ● **Field & Transport Completeness = (73+4)/77 = 100%**
-9	paraquat and glyphosate samples lost by courier (February)
64 *	paraquat and glyphosate samples collected and received by laboratory for analysis ● **Field & Transport Completeness = (64+4)/77 = 88%**

*Table 17 in the AMR incorrectly identifies 60 as the number of samples analyzed for paraquat; both the above calculation and the submitted EDD indicate that 64 samples were analyzed (excluding 5 samples collected at Lateral 3 along East Taylor Road).

For the Laboratory Completeness, the AMR presents proportions of quality control samples that were within acceptance criteria for each analyte, for example acceptable quality control samples for paraquat LCS, MS and MSD were 93.75%, 44.44%, and 77.78%, respectively. An overall assessment of laboratory completeness, from sample reception by the laboratory, storage, preservation and holding times, extraction, analysis, including QA/QC measures (MRP Attachment C, page 9) would strengthen the section about Laboratory Completeness. In the majority of cases, the Laboratory Completeness is 100%, and with the exception of exceeding holding time, most data are considered acceptable, or acceptable with minor deviations. Adding a statement that interprets the proportion of field samples affected by failing QC and the resulting amount of acceptable data (e.g. out of 64 samples that were received by the laboratory for analysis, how many valid/acceptable data for paraquat were derived, i.e. laboratory completeness) would make determination of the overall Project completeness more transparent.

<u>The use of non-project spikes is not appropriate.</u> Please note that matrix spike and MS duplicate must be prepared using sample water collected specifically by the project to be analyzed within the same analytical batch as the original samples, MRP Attachment C, p. 19 (i.e. non-project MS/MSD cannot be included to meet the completeness requirement).

Item 17. Specify the method used to obtain flow at each monitoring site during each monitoring event
If flow is too high and a stream cannot be safely waded, an alternative approach for estimating discharge should be considered, such as floats (measurements should be flagged as estimates).

While staff generally agrees how water and sediment sampling was conducted under no flow or low flow conditions, and how the discharge was recorded (page 65), please note that the referenced document does not contain regulatory requirements.

Item 19. Summary of Exceedance Reports submitted during the reporting period and related pesticide use information
Discussion of exceedances and PUR investigation (MRP Order p.23-24) are provided by the Zone. PUR data required for all pesticide and toxicity exceedances are identified and listed. Available data are included in the AMR, and the outstanding PUR data summarized in Table 31 and in Appendix IV will be provided in an addendum to the AMR on 6/1/2012.

Item 20. Conclusions and Recommendations
The Coalition discusses the five key programmatic questions using water quality information obtained in 2011. Staff suggests that overarching conclusions are added to the conclusions section.

For example, the information in Table 47 indicates the biggest improvement in the proportion of protected beneficial uses (BU) in monitored subwatersheds occurred from 2009 to 2010. The change was largely due to improvements in three subwatersheds (Highline Canal @ Hwy 99, Howard Lateral @ Hwy 140, and Lateral 2 ½ near Keyes Rd). The Coalition has identified management practices that contribute to water quality improvements (page 155), but specifically *What worked in the subwatersheds where BU have been successfully protected?*

The extent and frequency of exceedances are well described and discussed (pages 151-153). *What could be concluded about the magnitude of exceedances (relative to WQTL), either by constituent group or Coalition Zone, or the change of magnitude of exceedances over time?*

Report Name: Annual Monitoring Report ESJWQC, January 2011-December 2011					Reviewer Name: Jelena Hartman				
Submittal Date: 1 March 2012					Review Date: 29 March 2012				
Item No.			AMR Component Name	Acceptable	Unacceptable	Incomplete/ Not Included	Not Applicable	Page Number	Comments
1	Signed Transmittal Letter								
	1.1		Penalty of Perjury Statement	✓					
	1.2		Signature of Authorized Coalition Representative	✓					
	1.3		Dated	✓					
	1.4		Discussion of exceedances, and corrective actions taken or planned (or reference to previous correspondence)	✓				7-8	Exceedances and a summary of responses are discussed in the Executive Summary.
	1.5		Submitted on time	✓					
2	Title Page								
	2.1		Report title	✓					
	2.2		Date of the report	✓					
	2.3		Monitoring date range covered by the report	✓					
	2.4		Coalition Group name	✓					
3	Table of Contents								
	3.1		List of sections/chapters, tables, figures, appendices/attachments with page numbers	✓				i-viii	The list of appendices has been included in the AMR per previous staff recommendation, thank you.
4	Executive Summary								
	4.1		Summary of key results and activities	✓				5-8	
	4.2		Brief summary of conclusions and recommendations	✓				8-9	A narrative with recommendations presented on p. 160 would round off the Executive Summary well.
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	✓				10-19, MRPP p. 9-27	The Coalition clarified the discussion regarding the discrepancy in the irrigated acres in Tables 2 and 3 per Staff comment in the previous AMR review.

Item No.			AMR Component Name	Acceptable	Unacceptable	Incomplete/ Not Included	Not Applicable	Page Number	Comments
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)	✓				20	
	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)	✓				p. 20-27, 43-45, Tables 10, 12	The Coalition provided a rationale why the requirement of sampling at least two storm runoff events (MRP Plan, p. 50) was not met in 2011. The Coalition region spans a large area, and meeting the precipitation trigger limit across the entire region is frequently difficult.
		6.2.1	Assessment Monitoring: sites, parameters, schedule	✓				Tables 5-6	
		6.2.2	Core Monitoring: sites, parameters, schedule	✓				Tables 5-6	
		6.2.3	Special monitoring (Management Plan, TMDL, source identification): sites, parameters, schedule	✓				30-32	Monitoring design also includes special monitoring other than MP (such as TMDL or source studies) which should be included or referenced in descriptions of monitoring objectives and design, e.g. MRPP p. 54-56; AMR p. 146. The Coalition did not conduct source studies in 2011.
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	✓				36-42	Also included are annual site photos in Appendix VIII (as required in QAPP element A.6.4)
	7.2		Rainfall records in graphic or narrative form (in inches of precipitation)	✓				43-48	
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	✓				14-19, 37, Appendix VIII	
		8.1.1	Datum identified on map (must be WGS 1984 or NAD 1983)			X			Please identify datum on each map (MRP Order, p. 19).
		8.1.2	Source and date of all data layers identified on map	✓				14-19, 37	
	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)	✓				Table 10	
9	**Tabulated Results**								
	9.1		Data are in tabular form, clearly organized and readily discernible	✓				Appendix II, CD	
	9.2		Tabulated results agree with the electronically submitted data	✓				Appendix II, CD	

Item No.			AMR Component Name	Acceptable	Unacceptable	Incomplete/ Not Included	Not Applicable	Page Number	Comments
	9.3		Previously reported exceedances match exceedances identified in the AMR	✓				108-115, Appendix II, CD	Summary of exceedances reconciled with Staff files.
	9.4		All required constituents for each site have reported results	✓				Appendix II, CD	Lateral 3 along East Taylor Roadd results reported in Appendix X, the removal of the moniotirng location from the Coalition MRP Plan was approved on 7 February 2012.
	9.5		All necessary re-sampling completed and results reported	✓				Appendix II, CD	There were instances of holding time violation for nitrate + nitrite, carbofuran (Table 28, Appendix II), or lost sample batch by a courier - by the time the failure was observed it was not appropriate to re-sample.
10	**Data Discussion to Illustrate Compliance**								
	10.1		Results discussed in text agree with tabulated data	✓					
	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	✓				6-9, 117-145, 148-159	The formula for calculating instantaneous load on page 49 should be edited: the conversion factor from cubic feet to liters is in units liter/cubic feet.
	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	✓				Table 32, p. 108-136	The Coalition also discusses the data in the context of effectiveness of conducted activities by considering changes in water quality (p. 158-160).
11	**Electronic data submitted in a SWAMP comparable format, <u>either</u> Option A or B**								
	11.1	A	<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						
		B	<u>Option B. SWAMP database format:</u> All field and lab data uploaded into a SWAMP comparable database (following the most current *Required Data Submission Format* document)	✓				dBase on CD	
	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)	✓				dBase on CD	
	11.3		Toxicity analyses include: individual sample results, negative control summary results, replicate results, water quality measurements (pH, ammonia, temperature, SC, DO)	✓				dBase on CD	
	11.4		Data not meeting project QA acceptance guidelines are flagged and include brief notes detailing the problem in the *Comments* field	✓				dBase on CD	LabSubmissionCode and LabBatchComments included.

Item No.			AMR Component Name	Acceptable	Unacceptable	Incomplete/ Not Included	Not Applicable	Page Number	Comments
12	**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	✓				60-61	Table 13 should be reconciled with the MRP Order and the Coalition's QAPP (please see Staff memo).
	12.2		Description of analytical methods used (references to SOP's and QAPP as appropriate); any deviations from the QAPP are described and explained	✓				62-64	Has sampling for TKN and soluble ortho phosphate been reduced to one storm and one irrigationevent per year starting July 2011 (superscript 1 in Table 16)? Please make appropriate corrections.
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	✓				Appendix I	Ice chest temperature at log-in missing on some COC.
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	✓				Appendix IX, CD	
	14.2		All analytical reports (attached/provided on CD) are included, complete, and signed by authorized laboratory representative	✓				Lab Reports CD1 (Caltest) & CD2 (APPL, NCL)	Signature missing on some APPL reports (e.g. Irrigation 6_Part2 for methamidophos and 8321A data validation package, Fall2 report for methamidophos). Electronically submitted NCL reports for June 14 and 21 could not be opened - damaged files on the CD.
		14.2.1	Sample results with units, RLs and MDLs	✓				Lab Reports CD1&2	
		14.2.2	Sample preparation, extraction and analysis dates	✓				Lab Reports CD1&2	
		14.2.3	Results for all QC samples: field and laboratory blanks, lab control spikes, matrix spikes, field and laboratory duplicates, surrogate recoveries	✓				Lab Reports CD1&2	
		14.2.4	Chemistry lab narrative describes all QC failures, analytical problems and anomalous occurrences.	✓				Lab Reports CD1&2	
	14.3		All toxicity lab reports (attached/provided on CD) are included, complete, and signed by authorized lab representative	✓				Lab Reports CD2 (Aqua, Nautilus), Appendix VI	Signature missing on some Aqua Science reports (e.g. Event 11-06B for 6/21/11 sample date).
		14.3.1	All toxicity sample results included	✓				Lab Reports CD2 , Appendix VI	
		14.3.2	Results for all QC samples: field duplicate, negative control, narrative summary of reference toxicant results	✓				Lab Reports CD2	

Item No.			AMR Component Name	Acceptable	Unacceptable	Incomplete/ Not Included	Not Applicable	Page Number	Comments
		14.3.3	All raw data (including failed tests) and original bench sheets showing individual replicates	✓				Lab Reports CD2 , Appendix VI	
		14.3.4	Toxicity lab narrative describes all QC failures, analytical problems and anomalous occurrences	✓				Lab Reports CD2	
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	✓				Appendix III	
	15.2		Microbiological analyses include: field blank, field duplicate, negative control, positive control	✓				Appendix III (lab blank, FB and FD), Lab Reports CD1 (MB and replicate)	Reported that all required elements were included (p. 69), but detailed negative control and positive control results are not provided as required in MRP Attach. C, p. 18 (please see Staff memo).
	15.3		Toxicity tests include: field duplicate, negative control, reference toxicant (narrative OK, raw data not required)	✓				Lab Reports CD2 (Aqua, Nautilus), Appendix VI	
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	✓				Tables 18-30, Appendix III, adjustments to RL on p. 66	Staff recommends that specific values for RL are included in Tables 18, 19, and 21 (similar to the way RL are listed in Appendix III)
	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	✓					Summary of accuracy (average spike recovery) and precision (average RPD for duplicates) should be included (please see Staff memo).
	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)	✓				66-75	
		16.3.1	Discussion of how the failed QA/QC results affect the validity of the reported data	✓				66-75	The Coalition should add a more substantive interpretation explaining effects of failed QA/QC on the data validity in the next report (please see Staff memo).
		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		66-75	Corrective actions for QA/QC results that did not meet acceptance criteria need to be addressed (please see Staff memo).
	16.4		Both field and laboratory completeness are calculated and reported; overall Project completeness is determined	✓				p. 49, 66-67, 100, Tables 17-29	Results from Lateral 3 along East Taylor Road should be omitted, and appropriate calculation steps should be followed to compute completeness. A statement about the overall Laboratory completeness should be added (please see Staff memo). The use of non-project spikes for completeness is not appropriate (MRP Attachment C, p. 19).

Item No.			AMR Component Name	Acceptable	Unacceptable	Incomplete/ Not Included	Not Applicable	Page Number	Comments
17	**Flow Monitoring Method(s)**								
	17.1		The method used to obtain flow measurement at each monitoring site during each monitoring event is listed	✓				Table 15	If flow is too high and a stream cannot be safely waded, an alternative approach for estimating discharge should be considered (please see Staff memo).
18	**Monitoring Site Photos**								
	18.1		Photos are included for each monitoring site for every monitoring event, either electronically or in hard copy	✓				CD 1 & 2	
	18.2		Each photo is clearly labeled with site ID and date	✓				CD 1 & 2	
	18.3		Photos are descriptive and useful	✓				CD 1 & 2	Photos taken late in the day during winter are dark, e.g. photos at BCAKR and DSAHN around 6 pm during Storm sampling in February 2011. Please ensure the safety of sampling crews if sampling late in the day and during high flow.
19	**Summary of Exceedance Reports submitted during the reporting period and related pesticide use information**								
	19.1		Summary of all Exceedance Reports submitted during the AMR period is included	✓				107-115, Appendix V	Tabulated summary of exceedances by date and station name, and copies of all submitted exceedance report during the reporting period.
	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	✓				116-136, Appendix IV, CD	All PUR required for pesticide and toxicity exceedances are listed. Outstanding PUR data summarized in Table 31 and in Appendix IV will be provided in an addendum to the AMR on 6/1/2012
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	✓				137-145, Appendix VII	The Coalition included a discussion of management plan strategies associated with exceedances in 2011 per Staff recommendations in the previous AMR review.
	20.2		Updates or additional management practices implemented	✓				137-139	
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	✓				137-139, 146-147	Detailed evaluation of management practices and water quality improvements is included in the 2012 MPUR.
22	**Conclusions and Recommendations**								
	22.1		Conclusions are supported by the data presented in the AMR	✓				148-160	Please see Staff memo for suggestions.
	22.3		Recommendations are appropriate and adequately detailed	✓				160	