6 July 2012

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REVIEW OF THE SAN JOAQUIN RIVER CHLORPYRIFOS AND DIAZINON 2011 WATER YEAR ANNUAL MONITORING REPORT– EAST SAN JOAQUIN WATER QUALITY COALITION AND WESTSIDE SAN JOAQUIN RIVER WATERSHED COALITION

Thank you for submitting the San Joaquin River Chlorpyrifos and Diazinon 2011 Water Year Annual Monitoring Report (AMR) for the Total Maximum Daily Load (TMDL) compliance monitoring. The TMDL AMR is a joint effort by the East San Joaquin Water Quality Coalition (ESJWQC) and the Westside San Joaquin River Watershed Coalition (Westside Coalition) to meet the conditions of the Monitoring and Reporting Program Orders No. R5-2008-0005 and R5-2008-0831, and the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins for the Diazinon and Chlorpyrifos Runoff in the San Joaquin River Basin.

Central Valley Regional Water Quality Control Board (Central Valley Water Board) staff reviewed the TMDL AMR for completeness and accuracy; including data collection and reporting requirements, as well as evaluation of compliance with the seven Basin Plan requirements. The monitoring and reporting program allowed collecting information necessary to adequately address the seven monitoring objectives outlined in the Basin Plan, and the TMDL AMR demonstrates compliance with the TMDL requirements. Based on the provided data, the diazinon and chlorpyrifos water quality objectives in the San Joaquin River are currently being met.

If you have any questions regarding the TMDL AMR review, please contact Jelena Hartman at (916) 464-4828 or by email at jhartman@waterboards.ca.gov.

Original signed by

Joe Karkoski, Program Manager
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Original signed by

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Enclosure: Staff Review of 2011 Water Year TMDL AMR

TO: Susan Fregien
Senior Environmental Scientist
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FROM: Jelena Hartman
Environmental Scientist
MONITORING AND IMPLEMENTATION UNIT
IRRIGATED LANDS REGULATORY PROGRAM

DATE: 5 July 2012

SUBJECT: REVIEW OF SAN JOAQUIN RIVER CHLORPYRIFOS AND DIAZINON 2011 WATER YEAR ANNUAL MONITORING REPORT – EAST SAN JOAQUIN WATER QUALITY COALITION AND WESTSIDE SAN JOAQUIN RIVER WATERSHED COALITION

On 30 April 2012, the California Regional Water Quality Control Board, Central Valley Region (Central Valley Water Board) received the San Joaquin River Chlorpyrifos and Diazinon 2011 Water Year Annual Monitoring Report for Compliance with the Total Maximum Daily Load requirements (TMDL AMR). The TMDL AMR reports on the East San Joaquin Water Quality Coalition (ESJWQC) and the Westside San Joaquin River Watershed Coalition (Westside Coalition) joint monitoring program from 1 October 2010 through 30 September 2011.

The TMDL AMR was reviewed to determine compliance with reporting and monitoring requirements pursuant to the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins, and the Monitoring and Reporting Program (MRP) Orders No. R5-2008-0005 and R5-2008-0831. The MRP Order requirements were adequately addressed with only a few minor omissions to be addressed in the future (Appendix I). This memorandum reviews monitoring results and outcomes of actions taken to meet the seven objectives described in the Basin Plan, which are the centerpiece of the TMDL AMR:

1. Determine compliance with established water quality objectives and the loading capacity applicable to diazinon and chlorpyrifos in the San Joaquin River

According to the Basin Plan, compliance with the chlorpyrifos and diazinon loading capacity and load allocation was required by 1 December 2010. To determine compliance with the water quality objectives and the loading capacity in the San Joaquin River, the Coalitions monitored quarterly at three points (ESJWQC), and monthly at the remaining three compliance points (Westside Coalition). Both storm and irrigation sampling were captured during the 2011 water year. The first quarter of 2011 monitoring included storm sampling at all six compliance points (February), and additional storm samples were collected in December 2010 and January 2011 at the compliance points monitored monthly. The remaining quarterly sampling events captured irrigation season. No exceedances of the established water quality objectives and the loading capacity in the San Joaquin River were observed in the 2011 water year.

Table 19 in the TMDL AMR summarizes chlorpyrifos and diazinon loading capacity compliance at each of the six monitoring locations in the San Joaquin River since the inception of the San Joaquin River monitoring. While data prior to 1 December 2010 do not contribute to determining compliance, they provide a record of trends in the San Joaquin River water quality with respect to chlorpyrifos and diazinon. The tally of exceedances in Table 19 should be revised to incorporate all data collected at the San Joaquin River compliance points when loading capacity was greater than 1.0, including exceedances observed outside the scheduled TMDL monitoring (Table A).

Table A. Tally of chlorpyrifos and diazinon exceedances of water quality objectives before (bottom portion of the table) and since the inception of the San Joaquin River TMDL monitoring in 2010. Compliance date for chlorpyrifos and diazinon TMDL loading capacity was 12/1/2010.

Site Name	Sample Date	Concentration (µg/L)		Loading Capacity†
SJR at Las Palmas (PID Pumps)	9/16/2010	Chlorpyrifos	0.016	1.07
SJR at Las Palmas (PID Pumps)	7/22/2010*	Chlorpyrifos	0.041	2.73
SJR at Las Palmas (PID Pumps)	7/14/2010	Chlorpyrifos	0.019	1.27
SJR at Sack Dam	7/14/2010	Chlorpyrifos	0.036	2.40
SJR at Las Palmas (PID Pumps)	5/11/2010	Chlorpyrifos	0.040	2.67
SJR at Las Palmas (PID Pumps)	10/14/2009	Chlorpyrifos	0.023	1.53
SJR at Las Palmas (PID Pumps)	7/14/2009	Chlorpyrifos	0.033	2.20
SJR at Sack Dam	9/10/2008	Chlorpyrifos	0.016	1.07
SJR at Las Palmas (PID Pumps)	8/12/2008	Chlorpyrifos	0.048	3.20
SJR at Sack Dam	8/12/2008	Chlorpyrifos	0.022	1.47
SJR at Lander Avenue	7/8/2008	Diazinon	0.120	1.20
SJR at Lander Avenue	8/14/2007	Chlorpyrifos	0.024	1.60

† Loading capacity is required to be ≤1.0

* scheduled TMDL monitoring event

2. Determine compliance with established load allocations for diazinon and chlorpyrifos

Both coalitions monitor water quality in tributaries to the San Joaquin River. There were 16 exceedances of the chlorpyrifos water quality objective in the Westside Coalition region, and three in the ESJWQC region in the 2011 water year. The broad issue of water quality along the entire reach of tributaries is addressed by the Management Plans in the high priority subwatersheds in the ESJWQC region, and focused plans in the Westside Coalition region. However, exceedances observed along the tributary stream reaches do not necessarily indicate non-compliance with load allocation assigned to subareas.

Load allocations are assigned by subareas discharging into a given reach of the San Joaquin River. Based on the interpretation in the Final Staff Report[1] (page 21), "*the allocations [do] not apply to the whole tributary stream reach, but only to the discharge point to the San Joaquin River*". Hence, although exceedances of chlorpyrifos were observed in the upper reaches of the

[1] Beaulaurier, D., Karkoski, J., Davis, G., McClure, D., Menconi, M., McCarthy, M. 2005. Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River basins for the Control of Diazinon and Chlorpyrifos Runoff into the Lowers San Joaquin River. California Regional Water Quality Control Board, Central Valley Region. Sacramento, CA. Final Staff Report, October 2005.

Salt Slough and Poso Slough, no exceedances at the monitoring location closest to the discharge point into the San Joaquin River (Salt Slough at Lander Avenue) indicated that the load allocation was not exceeded on those occasions.

Overall, the load allocation was exceeded in three out of five subareas[2] in the 2011 water year:

- Load allocation in the combined Tuolumne River, Northeast Bank, and Westside Creek subareas was exceeded in February, May, June, and September. A total of six chlorpyrifos exceedances were observed in Ingram and Hospital Creeks, Del Puerto Creek, and Westley Waterway. Focused plans are underway in all affected subwatersheds.
- The combined Turlock, Merced, and Greater Orestimba subarea exceeded the load allocation in April, May and September. The subarea was out of compliance with the load allocation due to chlorpyrifos exceedances at Orestimba Creek at River Road site in April and May, and at Marshall Road Drain near River Road and Ramona Lake near Fig Avenue sites in May and September. Orestimba Creek subwatershed is addressed by a Focused Plan.
- The established load allocation was exceeded in April and September in the combined Bear Creek and Fresno-Chowchilla subarea due to chlorpyrifos exceedances in the Berenda Slough and Deadman Creek subwatersheds. Both subwatersheds are currently in the high priority status (under a management plan).

Load allocation calculations are summarized in Tables 21 and 24, and Appendix IV of the TMDL AMR. Discharge information (included in Table 24, and should be added in Table 21) could be used to calculate instantaneous loads. While instantaneous loads should not be extrapolated, the loads can be interpreted as the amount of chlorpyrifos that potentially reaches the San Joaquin River when the sampled water has travelled downstream.

3. Determine the degree of implementation of management practices to reduce off-site movement of diazinon and chlorpyrifos

Both Coalitions collect information that allows determining implementation of management practices. The ESJWQC surveys management practices for parcels that are currently farmed, have reported pesticide use, and have the potential to have drainage or drift to surface waters in the high priority subwatersheds. The Westside Coalition inventories management practices in the focused plan subwatersheds.

Thus far, the Coalitions have collected detailed information on management practices implemented to reduce migration of pesticides in subwatersheds from four out of five subareas defined in the Basin Plan (Table 28, page 41). The results of surveys in the high priority/focus plan subwatersheds for which data are available indicate that the majority of parcels have at least one management practice in place to reduce the offsite movement of pesticides, such as water management, sediment and erosion management, pesticide applications and use practices. The above management practices also prevent or minimize water quality impacts from alternatives to chlorpyrifos and diazinon (Objective 5).

[2] Five subareas assigned load allocations for non-point source discharges into the san Joaquin River (Basin Plan, page IV-36.03)

Acreage in the ESJWQC region with one or more implemented management practices per each category of practices identified to be effective in reducing the off-site movement of pesticides is presented in Figure 10 of the TMDL AMR, while Table 27 summarizes all implemented management practices designed to reduce offsite movement of pesticides in the first three sets of High Priority subwatersheds (on 1 June 2012 the ESJWQC amended Figure 10 and Table 27 to include current practices in the third priority subwatersheds). Reduction in application rates, and change to low risk products are additional practices that could minimize off-site movement of diazinon and chlorpyrifos (ESJWQC 2012 MPUR, page 50).

Management practices in the surveyed subwatersheds in the Westside Coalition region are summarized in Table 28 of the TMDL AMR. On 5 July 2012 the Westside Coalition submitted an updated version of Table 28 to add missing information and correct minor omissions. In addition to surveys in the Focused Plan subwatersheds, the Westside Coalition collects information on management practices during individual grower "tailgate" meetings. Available information from individual grower meetings will be summarized by August 31, 2012. Data on additional acreage affected by newly implemented management practices as a result of the Coalition outreach is not required, but would be useful for assessing the effectiveness of management practices (Objective 4).

4. Determine the effectiveness of management practices and strategies to reduce off-site migration of diazinon and chlorpyrifos

Both Coalitions document the newly implemented management practices, and in combination with monitoring data, evaluate the reduction in off-site migration of chlorpyrifos and diazinon that could be attributed to implementation of new or additional management practices. No detections of chlorpyrifos and diazinon in the San Joaquin River during the 2011 water year, and a decrease in the proportion of pesticide exceedances imply a positive change in water quality due to implemented management practices. Continued monitoring and additional data are necessary to evaluate trends resulting from implemented management practices, and to assess if the improvement in water quality is sustained.

Table 29 in the TMDL AMR summarizes the number of collected samples and exceedances in the ESJWQC region from 2006 to 2011. The numbers of chlorpyrifos and diazinon detections in the Westside Coalition tributaries by year are displayed in Figure 11 (on 5 July, the Westside Coalition revised Figure 11 and provided a tabular summary of diazinon and chlorpyrifos detections for all seasons, and not just during irrigation season). The comparison of water quality and proportion of exceedances or detections between areas with implemented management practices and without those practices in place could be evaluated as an additional piece of information for assessing the effectiveness of management practices for preventing off-site migration of pesticides.

5. Determine whether alternatives to diazinon and chlorpyrifos are causing surface water quality impacts

The overall amount of diazinon applied in the San Joaquin River watershed declined 85% between 2004 and 2010. Chlorpyrifos continues to be widely used, although the overall amount applied during the irrigation season from March through August has decreased in recent years (Figure 4). The top five crops for chlorpyrifos applications in Stanislaus and Merced Counties from 2007 to 2010 were almonds, walnuts, alfalfa, corn, and grapes, accounting for 95% of chlorpyrifos use (Table B below). Compounds that are most commonly recommended for almonds, grapes and walnuts (Table 30) or are used in the region (Table 35) have been

identified, and data show that the use of the recommended alternatives in almonds, walnuts, and grapes have increased (Figures 12-14).

Table B. Top five crops receiving the most chlorpyrifos, amount of chlorpyrifos applied and percentage of total chlorpyrifos used in Stanislaus and Merced Counties from 2007 through 2010 (CalPIP).

Crop Name	Amount of active ingredient applied (lbs)	Percentage of total
Almonds	160,970	33%
Walnuts	120,486	24%
Alfalfa	92,769	19%
Corn	49,482	10%
Grapes	44,910	9%

Monitoring for some of the potential alternatives is already underway (Table 31 summarizes monitoring in the ESJWQC region). Based on the PUR data analysis, chemistry and toxicity results, carbaryl, dimethoate (Table 32), and pyrethroids were identified as potential alternatives impairing water quality in the ESJWQC region. Several alternatives impairing water quality were detected in the Westside Coalition region – pyrethroids, carbamates, current use organochlorines (endosulfan and metoxychlor) and organophosphate pesticides. Management and focused plans that are in place promote implementation of management practices that minimize water quality impacts from alternatives to chlorpyrifos and diazinon.

The Coalitions will continue to monitor for potential alternatives to chlorpyrifos and diazinon in water column and sediment (when pesticide analyses are warranted) according to the approved MRP Plans. The Coalitions do not monitor for all potential alternatives to chlorpyrifos and diazinon due to analytical limitations, or due to limited use. Monitoring combined with PUR data may help discern patterns in pesticide use and water quality impairments, and whether monitoring of additional compounds is needed.

6. Determine whether the discharge causes or contributes to a toxicity impairment due to additive or synergistic effects of multiple pollutants

Water and sediment toxicity tests integrate toxicity of compounds in an environmental sample. Any observed water column or sediment toxicity is reviewed for presence of pesticides and metals. Results of Toxicity Identification Evaluations are carefully examined for pollutants that could potentially have an additive or synergistic interaction with chlorpyrifos and diazinon, such as organophosphate pesticides, carbamate pesticides and neonicotinoids.

In the 2011 water year, there was no water column toxicity associated with chlorpyrifos detections in the ESJWQC region. Seven samples exhibited water column toxicity to *Ceriodaphnia dubia* in the Westside Coalition region (Table 37). DDE was detected in two samples, and one case of toxicity to *C. dubia* was attributed to chlorpyrifos. However, no cause of *C. dubia* toxicity could be determined for a sample collected at SJR @ Lander Ave in June 2011 and for samples from three tributaries in the combined Stevinson and Grassland subareas in August 2011. It is possible that a non-monitored compound(s), or a combination of pollutants caused toxicity although individual analytes were within the water quality objectives.

Two samples collected in the ESJWQC region were toxic to *Hyalella azteca*; bifenthrin and chlorpyrifos were indicated in one instance of sediment toxicity (Table 34). Ten sediment samples collected in the Westside Coalition region during the 2011 water year were toxic to *H. azteca*. While relevant information is available in the Westside Coalition's semi-annual monitoring reports, sediment toxicity data should be summarized (e.g. Table C) in future TMDL AMR's. Compounds causing aquatic toxicity can move from the water column to the sediment, and evaluation of sediment toxicity and chemistry can help determine if there are potential additive or synergistic effects of multiple pollutants.

Table C. Sediment toxicity to *Hyalella azteca* in the Westside Coalition region durring the 2011 water year, and pesticides detected in sediment and water samples.

Sampling Event	Site Name	*H. azteca* (% survival)	Sediment (µg/kg)*							Water (µg/L)			
			Bifenthrin	Chlorpyrifos	Cyfluthrin	Cypermethrin	Es/Fenvalerate	Lambda-cyhalothrin	Permethrin	Chlorpyrifos	DDE	DDT	Malathion
May 2011	Del Puerto Creek near Cox Road	81	Not Required							0.018	0.004	-	-
	Hospital Creek at River Road	9	2.0	4.1	-	-	24.5	0.9	-	-	-	-	-
	Ingram Creek at River Road	16	3.3	-	-	-	-	3.5	0.4	0.067	0.035	0.012	0.067
	Poso Slough at Indiana Ave	88	Not Required							-	-	-	-
	Ramona Lake near Fig Ave	93	Not Required							0.065	-	-	-
	Salt Slough at Sand Dam	79	3.2	2.2	0.5	-	-	3.2	-	-	-	-	-
September 2011	Blewett Drain at Hwy 132	56	5.1	0.2	-	-	0.2	0.7	2.6	-	-	-	-
	Hospital Creek at River Road	20	0.2	0.5	-	-	-	1.3	-	0.270	-	-	-
	Ingram Creek at River Road	0	3.0	1.4	-	-	1.5	32.2	0.2	-	0.018	-	-
	Orestimba Creek at Hwy 33	0	25.5	1.3	0.2	-	27.4	0.7	0.5	0.090	0.026	-	-

* Sediment analysis for pesticides is required when *H. azteca* survival is ≤80%.

7. Demonstrate that management practices are achieving the lowest pesticide levels technically and economically achievable

The Coalitions track implementation and effectiveness of management practices in preventing off-site movement of pesticides. Overall, growers have been responsive and implemented additional non-structural practices, and structural management practices as the funding was available. In addition to evaluating current and recommending implementation of new management practices, the Coalitions support grower efforts to apply and obtain funding for implementation of structural management practices.

APPENDIX I
Chlorpyrifos and Diazinon Annual Monitoring Report Checklist

San Joaquin River Chlorpyrifos and Diazinon 2011 Water Year Annual Monitoring Report, October 1, 2010-September 30, 2011 (TMDL AMR)				
Report Submittal Date: 30 April 2012			Review Date and Reviewer Name: 22 May 2012, Jelena Hartman	
Item No.	**TMDL AMR Component Name[(1)]**		**Page Number**	**Comments**
1	**Signed Transmittal Letter**	✓		Letter is dated, Penalty of Perjury Statement included, signed by authorized Coalition representatives, submitted on time.
2	**Title Page**	✓	i	Report title, date of the report, monitoring range covered by the report, Coalition group names included.
3	**Table of Contents**	✓	ii-viii	List of sections, tables, figures, appendices with page numbers included.
4	**Executive Summary**	✓	xiv-xvi	Summary of key results and activities included. The TMDL AMR should contain a conclusions section at the end of the report, and a brief summary of conclusions (see item 22) should be added in the executive summary.
5	**Introduction**	✓	1	General description of relevant aspects of the chlorpyrifos and diazinon TMDL requirements and the Coalitions joint effort to address compliance with those requirements are included.
6	**Monitoring Objectives and Design**	✓	2-11	Monitoring objectives based on the Basin Plan requirements, and Coalition actions to meet the objectives are listed. Monitoring design aligns with the approved approach, and includes quarterly monitoring at compliance points, and monthly tributary monitoring. Modifications of the monitoring design used in 2010 have been documented.
	Loading capacity: monitoring schedule and parameters at compliance points	✓	6, 8-9, 11, Table 4	For consistency in terminology, and connectivity with the electronically submitted data and laboratory reports, the TMDL AMR report and all associated electronic data should use the compliance point names defined in the Basin Plan. The San Joaquin River at Las Palmas compliance point identified in the Basin Plan is monitored by the Westside Coalition, and samples are collected at SJR @ PID Pumps monitoring location in close proximity of the compliance point. The TMDL AMR should clarify that sampling at PID Pumps represents the Las Palmas location (e.g. statement in the SAMR submitted in June 2012, page 12).
	Load allocations: tributary monitoring sites, parameters, schedule	✓	Table 20	Details on the tributary monitoring in the Westside region are not provided in the TMDL AMR, but the information can be found in SAMR's or can be inferred from the information in Appendix IV to the TMDL AMR. It is recommended that a tabular summary showing tributary monitoring schedule for chlorpyrifos and diazinon is included in the main text of future TMDL AMR's, which would allow for a comprehensive evaluation of the compliance with the TMDL requirements.
7	**Sampling Site Descriptions and Rainfall Records for the time period covered under the AMR**	✓	12-24	Sampling sites are listed, and land use and top crops are tabulated for the six compliance point drainage areas. Detailed information about tributaries is provided in the respective Coalitions' documents, and references to relevant sections by page numbers would be appropriate. Daily rainfall records for four locations in the ESJWQC and Westside Coalition region are provided in graphic form.
8	**Location Maps(s) of sampling sites, crops, and land uses**	✓	17-21	Location maps show sampling sites, and sources of data layers are identified on maps. No land use data are included on the maps, however the land use and crop information is located in Tables 8 and 9. Individual Coalitions' documents provide detailed descriptions of the tributaries, and references to relevant pages would be appropriate.
	Datum identified on map (must be WGS 1984 or NAD 1983)	X		Datum used in the TMDL AMR is NAD 1927, and should be adjusted in the future.

APPENDIX I
Chlorpyrifos and Diazinon Annual Monitoring Report Checklist

Item No.	TMDL AMR Component Name[(1)]		Page Number	Comments
	Accompanying list or table indicates: site name, ID number, ILRP station code number, and GPS coordinates (latitude and longitude in decimal degrees	X	Tables 4 and 6	Station codes in EDD and tabulated in the Report should be reconciled, or listed in a single table for reference (station codes in the report and in the EDD are different for three sites: 541XSJRPP, 541MAD007, and 541MER522, and SJRPP, SJRSD, and SJRLA, respectively).
9	**Tabulated Results**	✓	Appendices II and IV	Data are in tabular form, clearly organized and readily discernible. In general, tabulated results agree with the electronically submitted data with the exception of compliance point terminology (item 6) and the inconsistent use of SWAMP and ILRP site ID's in text and in EDD (item 8). All required constituents for each site have reported results. Field parameters, and chlorpyrifos and diazinon results are reported for the six compliance points in the San Joaquin River. Detailed data for tributaries can be located in the respective Coalitions' reports, and a summary of chlorpyrifos and diazinon results is provided in Tables IV-2 to IV-8.
10	**Data Discussion to Illustrate Compliance[(2)]**	✓	34-64	Results discussed in text agree with tabulated data, and TMDL AMR clearly illustrates compliance with the chlorpyrifos and diazinon TMDL objectives. Please see Staff memo for detailed discussion of Basin Plan objectives.
11	**Electronic data submitted in a SWAMP comparable format**	✓	CD	ESJWQC field and lab data uploaded into a SWAMP comparable database, Westside Coalition lab and field data submitted within the SWAMP comparable spreadsheets. All sample results and required QC results are included: field blanks, field duplicates, lab blanks, spikes (LCS, MS), duplicates (LCD, MSD, replicates), surrogates, and data not meeting project QA acceptance guidelines are flagged and include brief notes detailing the problem in the Comments field.
12	**Sampling and analytical methods used**	✓	25-26	Sampling (collection containers, sample preservation, holding times, field measurements) and analytical methods are summarized. Both Coalitions use appropriate analytical methods with low detection limits. In lieu of providing additional details, references to relevant sections in the Coalitions' QAPP's or specific SOP's would be appropriate to round off the TMDL AMR.
13	**Copies of chain-of-custody forms and sample receipt documentation**	✓	Appendix I	Copies of all COCs are included, legible and completelly filled out; any anomalies are noted. Ice chest temperature not recorded on the COC forms, but is included in the laboratory reports.
14	**Field Data Sheets, Lab Reports, Lab Raw Data**	✓	Appendix V, CD	Copies of all field data sheets are attached (Appendix V), legible, contain the required elements in the ILRP template, and are completely filled out. All analytical reports are provided on CD, complete, and signed by authorized laboratory representative. Included are sample results with units, RLs and MDLs; sample preparation, extraction and analysis dates; results for all QC samples: field and laboratory blanks, lab control spikes, matrix spikes, field and laboratory duplicates, surrogate recoveries; and chemistry lab narrative describes all QC failures, analytical problems and anomalous occurrences.
15	**Associated laboratory and field quality control samples results**	✓	Appendix III	Chemical analyses include: field blank, field duplicate, lab blank, matrix spike and MSD, lab control spike and LCSD, surrogate recovery, and results are included in the TMDL AMR.
16	**Summary of Quality Assurance Evaluation results**	✓	31-33	Acceptance criteria for all field and laboratory QA/QC measurements are identified and in agreement with the ILRP requirements, summaries of accuracy and precision are included, field and laboratory completeness are calculated and reported, and overall Project completeness is determined. QA/QC results that did not meet acceptance criteria are identified, and discussion of how the failed QA/QC results affect the validity of the reported data would further strengthen this section. Corrective actions for QA/QC results that did not meet acceptance criteria need to be addressed in the TMDL AMR. In lieu of duplicating information provided elsewhere in the Coalitions' documents, references to relevant documents by section and page number would be appropriate.

APPENDIX I
Chlorpyrifos and Diazinon Annual Monitoring Report Checklist

Item No.	TMDL AMR Component Name[(1)]		Page Number	Comments
17	**Flow Monitoring Method(s)**	✓	Table 12	Discharge method and gauge for the compliance points in the San Joaquin River are listed in the TMDL AMR. Although details about tributary sampling, including discharge method, are available in the respective Coalition documents, specific references to relevant sections in the Coalitions' QAPP's or specific SOP's would be appropriate.
18	**Monitoring Site Photos**	✓	Appendix VI	Monitoring site photos for all sampling events at the compliance points in the San Joaquin River are included, and show the actual sample site and the surroundings. Photos are clearly labeled with site ID and date, and are descriptive and useful. Photographs for the tributary sampling were included in the respective Coalition's annual or semi-annual monitoring reports.
19	**Summary of Exceedance Reports submitted during the reporting period and related pesticide use information**	✓	37-40, Appendix IV	Summary of all Exceedance Reports submitted during the TMDL AMR period period is included and matches previously reported exceedances (Tables 21 and 24). Coalitions should continue to include PUR data in future TMDL AMR. While the utility of PUR data may be limited in some cases, PUR data indicate which pesticides are being applied and on what crops, and compared to previous data, pesticide use trends can be evaluated for increase/decrease in use, crop use trends, or time of year of application.
20	**Actions Taken to Address Water Quality Exceedances**	✓	37, 44-45	Discussion of actions taken to address water quality exceedances during the time frame of the TMDL AMR period is covered in discussion of Basin Plan objectives, and is included in the ESJWQC's AMR and MPUR, and Westside Coalition's SAMR (references to relevant sections by page number would be appropriate).
21	**Status update on preparation and implementation of all management plans and other special projects**	-		An update on status of all Management Plans and special projects that are in preparation or being implemented are provided in the ESJWQC's AMR and MPUR, and Westside Coalition's SAMR.
22	**Conclusions and Recommendations**	X		The discussion addressing the Basin Plan objectives is good and a summary of findings could serve as a conclusions section. It would be appropriate to add a statement that comments on the overall compliance and an overall assessment of how the seven Basin Plan objectives for the TMDL monitoring have been addressed and what the outcome was for the 2011 water year. Recommendations about monitoring design, management practices, or other data that the Coalitions deem potentially useful should be included in the TMDL AMR. If the current monitoring strategy does not adequately address TMDL compliance evaluation needs, the Coalitions may want to recommend modifying the timing and frequency of the SJR compliance point monitoring, or select tributary monitoring locations closer to the discharge point for load allocation compliance.

Footnotes

(1) Monitoring and Reporting Program Order No. R5-2008-0005 for Coalition Groups under the Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands Amended Order No. R5-2006-0053. Part III.B (pages 18-23)

(2) Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins (Diazinon and Chlorpyrifos Runoff in the San Joaquin River Basin, page V-4.00)

Symbol key

- ✓ **Item meets requirements**
- X **Incomplete item/ Not Included**
- \- **Not Applicable**