



CENTRAL VALLEY REGIONAL
WATER QUALITY CONTROL BOARD

AMENDMENTS TO THE WATER QUALITY CONTROL
PLAN FOR THE SACRAMENTO AND
SAN JOAQUIN RIVER BASINS

FOR

THE CONTROL OF DIAZINON AND CHLORPYRIFOS
DISCHARGES

PUBLIC REVIEW DRAFT STAFF REPORT
JANUARY 2014

APPENDIX A

**SUMMARY OF MONITORING PROGRAMS, STUDIES, AND
DATABASES USED AS SOURCES OF DIAZINON AND
CHLORPYRIFOS CONCENTRATION DATA**

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Table A-1. List of Data Resources

Reference List	Agency	Title	Monitoring Time Period	Sample Frequency and type of water	Monitoring Segment
NAWQA, 2010	United State Geological Survey (USGS)	National Water Quality Assessment data, USGS. http://infotrek.er.usgs.gov/traverse/f?p=136:9:0::NO::#	Jan 2000 to Sept 2009	Various	see Table A-1
ILRP, 2011	California Central Valley Regional Water Quality Control Board (CVRWQC)	CVRWQC Irrigated Lands Regulatory Program (ILRP) Water Quality Monitoring. Monitoring data are available at http://www.waterboards.ca.gov/centralvalley/water_issues/irrigated_lands/water_quality_monitoring/data/program_participants/index.shtml	July 2004 to Aug 2010	Various	See Table A-2
ILRP UCD Phases I&II, 2011	California Central Valley Regional Water Quality Control Board (CVRWQC)	CVRWQC Irrigated Lands Regulatory Program (ILRP) Water Quality Monitoring. Monitoring data are available at http://www.waterboards.ca.gov/centralvalley/water_issues/irrigated_lands/water_quality_monitoring/data/program_participants/index.shtml	Aug 2003 to Nov 2007	Various	See Table A-3

Reference List	Agency	Title	Monitoring Time Period	Sample Frequency and type of water	Monitoring Segment
DPR SWDB, 2007	California Department of Pesticides Regulation (DPR)	Surface Water Database by California Department of Pesticides Regulation. Electronic data files and cover letter from California Department of Pesticide Regulation to Central Valley Regional Water Quality Control Board. 16 February 2007. http://www.cdpr.ca.gov/docs/emon/surfwtr/surfddata.htm	Jan 2000 to 2006	Various	See Table A-4
Pesticides TMDL&UCD, 2002 to 2008	California Central Valley Regional Water Quality Control Board (CVRWQC)	CVRWQC Pesticides TMDL Program contracted the Water Quality Monitoring to John Muir Institute of the Environment at University of California, Davis from 2003 to 2006. Monitoring reports by John Muir Institute of the Environment, U.C. Davis. Davis, CA.	June 2002 to Aug 2006	Various (Daily, biweekly, monthly) Storm events and Irrigation seasons	See Table A-5
Smalling, K. L., et al., 2005	United State Geological Survey (USGS) and Bay-Delta	Analysis of Pesticides in Surface Water and Sediment from Yolo Bypass, California, 2004–2005, Prepared in cooperation with the California Bay-Delta Authority, Scientific Investigation Report 2005-5220, USGS, 2005	Feb 2004 to Jan 2005	Various	Cache Creek, Sac River at Knight Landing, Landing Ridge Cut, Putah Creek, Willow Slough Bypass

Reference List	Agency	Title	Monitoring Time Period	Sample Frequency and type of water	Monitoring Segment
Kelley K., 2011	California Department of Pesticides Regulation (DPR)	Monitoring Pesticides in the Sacramento and San Joaquin Rivers, 2005 to 2007, California Environmental Protection Agency, California Department of Pesticides Regulation, Environmental Monitoring Branch Surface Water Protection Program, 1001 I street, Sacramento, CA 95812. Aug 11, 2011 Report 232_239,	Dec 2005 to Nov 2007	Various (storm events), Weekly, daily during storm event	Sac River at Freeport, Knight Landing, and Yolo bypass; San Joaquin River at Vernalis
Ensminger M and K. Kelley, 2011a	California Department of Pesticides Regulation,	Monitoring Urban Pesticides Runoff in California 2008 -2009, California Department of Pesticides Regulation, Environmental Monitoring Branch Surface Water Protection Program, 1001 I street, Sacramento, CA 95812. March 2011. Report 249	Apr 2008 to Aug 2009	Two storm events and one dry flow	Four storm drains in Pleasant Grove Creek, Roseville

Reference List	Agency	Title	Monitoring Time Period	Sample Frequency and type of water	Monitoring Segment
Ensminger M and K. Kelley, 2011b	California Department of Pesticides Regulation,	Monitoring Urban Pesticides Runoff in Northern California, 2009 to 2010, California Department of Pesticides Regulation, Environmental Monitoring Branch Surface Water Protection Program, 1001 I street, Sacramento, CA 95812. May 2011. Report 264	Oct 2009 to June 2010	Daily sampling during two storm events; urban	Storm Drains from Pleasant Grove Creek, Dry Creek , Sacramento River, Alder/Willow Creek
CIWQS, 2011	California State Water Resources Control Board	California Integrated Water Quality System (CIWQS), http://ciwqs.waterboards.ca.gov/	Jan 2010 to Sept 2011	Various, WWTP effluent and receiving water data	Effluents of WWTPs and receiving water from Cities of Linda, Jackson, Rio Vista, Sacramento, Turlock, and Yuba.
SRWP, 2002 to 2007	Sacramento River Watershed Program	Sacramento River Watershed Program (SRWP), Proposition 50 Grant monitoring data and reports by Larry Walker Associates, 2002 to 2007	Oct 2002 to Aug 2007	Various (Storm events),	Sac River, Yuba River, Arcade Creek, Colusa Basin Drain, Feather River; American River

Reference List	Agency	Title	Monitoring Time Period	Sample Frequency and type of water	Monitoring Segment
SVWQC, 2008	Sacramento Valley Water Quality Coalition	Diazinon Runoff Management Plan for Orchard Growers in the Sacramento Valley: 2006, 2007, and 2008. Annual Reports for SVWQC prepared by Larry Walker Associates, 2006 to 2008	2006 report: Jan 2006 to Mar 2006; 2007 report: Feb 2007; 2008 report: Jan to Feb 2008	Storm events, daily	Sac River at Colusa, Colusa Basin Drain at Knight Landing, Sac Slough, Feather River above Yuba City and near Verona
Sacramento Region, 2007	Sacramento City Storm water	Memorandum by B. Laurenson, Larry Walker Associates, "Evaluation of additional pesticides Monitoring data-2007 update" dated on May 25, 2007	Dec 2003 to Feb 2007	Various	Chicken Rancho Slough, Elk Grove, Elder Creek, Morrison Creek, Natomas Drain, Willow Creek, Arcade Creek
SRCSD CMP, 2011	Sacramento Regional County Sanitation District Coordinated Monitoring Program (SRCSD CMP);	Sacramento Regional County Sanitation District (SRCSD) Coordinated Monitoring Program (CMP) reports by Camp Dresser & McKee Inc. and Larry Walker Associates from 2006 and 2011	July 2000 to Feb 2011	Various	Freeport, River Mile 44, Nimbus, Veterans bridge, Discovery Park

Reference List	Agency	Title	Monitoring Time Period	Sample Frequency and type of water	Monitoring Segment
SRCSD, NPDES, 2011	Sacramento Regional County Sanitation District (SRCSD)	Sacramento Regional County Sanitation District (SRCSD) NPDES monitoring reports, 2002 to 2008. Data were obtained from Kathy Harder, staff of NPDES permit unit, CVWQCB.	Oct 2002 to June 2008	Various	Effluents of Sacramento WWTP
City of Modesto, 2011a	NPDES storm water permits from San Joaquin	NPDES storm water monitoring reports	Jan 2002 to Feb 2011	Various	Receiving waters: Dry Creek and Tuolumne River Up and Down stream; Storm Drains
City of Modesto, 2011b	NPDES permit for City of Modest WWTP	NPDES WWTP permit	Oct 2006 to Mar 2010	Twice per year.	Effluent of Secondary facility , receiving waters: San Joaquin River at West Main Bridge
City of Stockton, 2011a	Storm water monitoring	NPDES Storm Water permit	Apr 2003 to June 2006	Monthly	Receiving water: Mosher Slough, Smith Canal, Duck Creek. Urban storm discharges: Storm Drains
City of Stockton, 2011b	Wastewater Treatment Plant	NPDES WWTP permit required effluent monitoring data	Feb 2002 to Nov 2008	Monthly	WWTP Effluent

Reference List	Agency	Title	Monitoring Time Period	Sample Frequency and type of water	Monitoring Segment
Weston, D.P. and M.J. Lydy, 2010	UC Berkeley	Urban and agricultural sources of pyrethroid insecticides to the Sacramento-San Joaquin Delta. Data were obtained from Dr. Weston.	Jan 2008 to Nov 2008	3 to 5 occasions in dry and wet seasons	POTW effluents and Storm drains in the cities of Sacramento WWTP, Vacaville, and Stockton

Table A-1 Monitoring Waterbody Segments in the USGS_NAWQA dataset

Watershed	Waterbody Segment (NAWQA data)	# of sample
Delta	Yolo Bypass	2
Delta	Cosumnes River	26
Delta	Sac River (in Delta) Freeport	225
SAC	Sac River (Red_Bluff to Knight_L)	8
SAC	Feather River, Lower	20
SAC	Sac Slough	65
SAC	Arcade Creek	161
SJR	Storm Drain Inlet in Wentworth Modesto	2
SJR	Hospital Creek	4
SJR	Ingram Creek	4
SJR	Los Banos Creek	4
SJR	Olive Ave Drain	4
SJR	Spanish Grant Drain	4
SJR	Westport Drain	4
SJR	Bear Creek in SJR	6
SJR	McHenry Storm Drain	19
SJR	Newman Wasteway	21
SJR	Harding Drain	22
SJR	Livingston Canal nr Livingston	24
SJR	Highline Canal	34
SJR	Dry Creek within Tuolumne	44
SJR	Mud Slough	44
SJR	Salt Slough	44
SJR	San Joaquin River (Tuolumne River to Stanislaus River)	44
SJR	Culvert Discharge to Mustang Crk	50
SJR	Del Puerto Creek	68
SJR	San Joaquin River (Merced River to Tuolumne River)	90
SJR	Mustang Creek	106
SJR	San Joaquin River (Bear Creek to Mud Slough)	119
SJR	Stanislaus River	128
SJR	Tuolumne River, Lower	144
SJR	Orestimba Creek	272
SJR	Merced River	346
SJR	San Joaquin River (Stanislaus River to Delta Boundary)	486

Table A-2. Monitoring Waterbody Segments in the ILRP dataset

Watershed	Waterbody Segment (ILP data)	# of samples
Delta	Bear Creek in Delta	12
Delta	Big Indian Creek	4
Delta	Cache Creek	34
Delta	Calaveras River (above Diverting Canal)	2
Delta	Cosumnes River	32
Delta	Delta Drain- Terminous Tract off Glasscock Rd	18
Delta	Delta Drain- Terminous Tract off Guard Rd	16
Delta	Drain 14 at Lone Tree Creek	1
Delta	Drain at Woodbridge Rd	34
Delta	Drain to Stanislaus River	3
Delta	Dry Creek in Delta	12
Delta	Duck Creek	81
Delta	French camp slough	93
Delta	Grand Island Drain nr Leary Rd	24
Delta	Grant Line Canal	122
Delta	Kellogg Creek	62
Delta	Laguna Creek	34
Delta	LittleJohns Creek	78
Delta	Lone Tree Creek	90
Delta	Marsh Creek	34
Delta	Mokelumne River	62
Delta	Mormon Slough	42
Delta	Potato Slough	18
Delta	Roberts Island Drain	118
Delta	Sand Creek	43
Delta	Shag Slough	66
Delta	South Webb Tract Drain	32
Delta	Storm Drain to Marsh Creek	3
Delta	Sweany Creek	2
Delta	Terminous Tract Drain at Hwy 12	82
Delta	Toe Drain	8
Delta	Tule Canal	34
Delta	Ulati Creek	58

Watershed	Waterbody Segment (ILP data)	# of samples
Delta	Unnamed Drain to Lone Tree Creek	63
Delta	Walthall Slough	48
Delta	Willow Slough	8
Delta	Willow Slough Bypass	44
Delta	Z Drain Dixon RCD	32
SAC	Anderson Creek	14
SAC	Burch Creek	4
SAC	Butte Creek	24
SAC	Butte Slough	28
SAC	Colusa Basin Drain	86
SAC	Coon Creek	70
SAC	Coyote Creek	22
SAC	Feather River, Lower	29
SAC	Freshwater Creek	30
SAC	Gilsizer Slough	34
SAC	Logan Creek	30
SAC	Lower Honcut Creek	16
SAC	Lower Snake River	32
SAC	Lurline Creek	30
SAC	Pine Creek	30
SAC	Rough and Ready Pumping Plant	44
SAC	Sac River (Above RedBluff) Below Keswick	29
SAC	Sac River (Red Bluff to Delta) Vet Bridge	30
SAC	Sac River (Red Bluff to KnightL) Colusa	30
SAC	Sac River (Red Bluff to KnightL) Hamilton	30
SAC	Sacramento Slough	44
SAC	Stone Corral Creek	10
SAC	Stony Creek	36
SAC	Wadsworth Canal	34
SAC	Walker Creek	46
SAC	Yuba River	30
SJR	Ash Slough	24
SJR	August Rd Drain	4
SJR	Bear Creek in SJR	62
SJR	Berenda Slough	21
SJR	Black Rascal Creek	46

Watershed	Waterbody Segment (ILP data)	# of samples
SJR	Blewett Drain at Hwy 132	11
SJR	Cottonwood Creek (Madera County)	54
SJR	Deadman Creek	143
SJR	Del Puerto Creek	93
SJR	Delta Mendota Canal	68
SJR	Drain to Stanislaus River	3
SJR	Dry Creek (Madera County)	42
SJR	Dry Creek within Tuolumne	73
SJR	Duck Slough (Merced County)	149
SJR	Hatch Drain at Tuolumne Rd	26
SJR	Highline Canal	122
SJR	Hilmar Drain	60
SJR	Hospital Creek	64
SJR	Howard Lateral	28
SJR	Ingram Creek	68
SJR	Jones Drain	45
SJR	Lateral 2 1/2 near Keys Rd	34
SJR	Livingston Drain	26
SJR	Lone Willow Slough	10
SJR	Los Banos Creek	180
SJR	Marshall Rd Drain	62
SJR	Merced River	82
SJR	Miles Creek	29
SJR	Mootz Drain	46
SJR	Mud Slough	132
SJR	Mustang Creek	34
SJR	Newman Wasteway	70
SJR	Orestimba Creek	155
SJR	Poso Slough	17
SJR	Prairie Flower Drain	67
SJR	Ramona Lake	58
SJR	Salado Creek	7
SJR	Salt Slough	216
SJR	San Joaquin River (Bear Creek to Mud Slough)	132
SJR	San Joaquin River (Mendota Pool to Bear Creek)	70
SJR	San Joaquin River (Merced River to Tuolumne River)	53

Watershed	Waterbody Segment (ILP data)	# of samples
SJR	Silva Drain	43
SJR	South Slough	18
SJR	Turner Slough	47
SJR	Westley Wasteway	54
SJR	Westport Drain	26

Table A-3 Monitoring Waterbody Segments in the ILP UCD Phases I & II dataset

Watershed	Waterbody Segment (ILRP UCD)	# of samples
Delta	Bear Creek in Delta	50
Delta	Calaveras River (above Diverting Canal)	62
Delta	Drain at Robben Rd. & Midway Rd.	6
Delta	Drain to Grant Line Canal off Wing Levee Rd.	24
Delta	Drain to North Canal at South Bonetti Rd.	24
Delta	Drain to SJRiver off South Manthey Rd.	26
Delta	Lateral to Gordon Slough at Rd 19	2
Delta	LittleJohns Creek	4
Delta	Lone Tree Creek	1
Delta	Mormon Slough	10
Delta	Paddy Creek	8
Delta	Pixley Slough	70
Delta	Roberts Island Drain	4
Delta	Sycamore Slough	18
Delta	Ulatis Creek	8
Delta	Unnamed Canal at Howard Rd	8
Delta	Unnamed canal at West end of Woodbridge Rd	10
Delta	West Adams Canal	10
Delta	Willow Slough	10
Delta	Winters Canal	18
SAC	Antelope Creek	20
SAC	Bear River, Lower (below Camp Far West Reservoir)	8
SAC	Butte Creek	16
SAC	China Slough	6

Watershed	Waterbody Segment (ILRP UCD)	# of samples
SAC	Colusa Basin Drain	16
SAC	Comanche Creek (from Little Chico Creek to Angel Slough, Butte County)	8
SAC	Drain to Walker Cr at County Rd	4
SAC	Hamilton Slough	10
SAC	Howard Slough	8
SAC	Hunters Creek	8
SAC	Jack Slough	8
SAC	Lurline Creek	8
SAC	Main Drainage Canal	25
SAC	Mud Creek	8
SAC	North Main Canal at Sankey Rd.	8
SAC	N-S Ditch along Natomas Rd	8
SAC	Sac Slough	2
SAC	Salt Creek	16
SAC	Simmerly Slough	8
SAC	Spring Creek	82
SAC	Stone Corral Creek	16
SAC	Stony Creek	18
SAC	Tributary Home Colony Canal	8
SAC	Unnamed Canal at Hwy 45	8
SAC	Unnamed Ditch at SW corner of Levee and Riego Rd	6
SAC	Unnamed Drain of Walker Creek on Co. Rd. 28	18
SAC	Yankee Slough	10
SJR	Berenda Creek (Madera County)	36
SJR	Boundary Drain	8
SJR	Cottonwood Creek (Madera County)	6
SJR	Dry Creek within Tuolumne	10
SJR	Duck Slough (Merced County)	18
SJR	El Nido Canal	8
SJR	Hospital Creek	2
SJR	Ingalsbe Slough	10
SJR	Island Field Drain at Catrina Rd	8
SJR	Lateral 5 at Paradise Road	8
SJR	Lateral 6 at Central Avenue	8
SJR	Livingston Canal	16

Watershed	Waterbody Segment (ILRP UCD)	# of samples
SJR	Lower Lateral 2 at Grayson Road	8
SJR	Orestimba Creek	10
SJR	Owens Creek	8
SJR	Poso Drain	10
SJR	Stevinson Lower Lateral	10
SJR	TID Lateral #2 on Service Road	8

Table A4. Monitoring Waterbody Segments in the DPR Surface Water Database

Watershed	Waterbody Segment (SWDB data)	# of samples
Delta	Cache Slough	1
Delta	Sac River (in Delta) Freeport	1
Delta	Walthall Slough	6
SAC	Arcade Creek	19
SAC	Bear River, Lower (below Camp Far West Reservoir)	2
SAC	Big Chico Creek	6
SAC	Butte Creek	2
SAC	Butte Slough	3
SAC	Cherokee Canal	1
SAC	Colusa Basin Drain	6
SAC	Cross Canal	16
SAC	Deer Creek	6
SAC	Feather River, Lower	44
SAC	Gilsizer Slough	12
SAC	Jack Slough	22
SAC	Main Drain Canal	1
SAC	Mill Creek	6
SAC	Obanion Outfall	3
SAC	Sac River (above Red Bluff) Below Keswick	1
SAC	Sac River (above Red Bluff) Bend Bridge	1
SAC	Sac River (KnightL to Delta) Alamar	66
SAC	Sac River (Red Bluff to Delta) Vet Bridge	20
SAC	Sac River (Red Bluff to KnightL) Colusa	21

Watershed	Waterbody Segment (SWDB data)	# of samples
SAC	Sac River (Red Bluff to KnightL) Hamilton	18
SAC	Sutter Bypass	44
SAC	Wadsworth Canal	59
SAC	Yuba River	6
SJR	Del Puerto Creek	23
SJR	Dry Creek (Madera County)	4
SJR	Highline Canal	8
SJR	Orestimba Creek	80
SJR	Salt Slough	15
SJR	San Joaquin River (Stanislaus River to Delta Boundary)	73
SJR	Tuolumne River, Lower	15
SJR	Turlock Irrig. Dist. Drain #3	19
SJR	Unnamed Drain nr Paradise Ave	17
SJR	Westport Drain	1

Table A5. Monitoring Waterbody Segment in the Central Valley Regional Board TMDL Program dataset

Watershed	Waterbody Segment (TMDL data)	# of samples
Delta	Cache Slough	96
Delta	Calaveras River (Diverting Canal to SJ R)	84
Delta	Duck Slough (in Delta Waterways, northern portion)	122
Delta	Five Mile Slough	118
Delta	French Camp Slough	124
Delta	Grant Line Canal	8
Delta	LittleJohns Creek	16
Delta	Lone Tree Creek	16
Delta	Marsh Creek	98
Delta	Middle River	8
Delta	Mokelumne River	82
Delta	Mormon Slough	16
Delta	Mosher Creek	8
Delta	Mosher Slough	116
Delta	Old River	60
Delta	Paradise Cut	42

Watershed	Waterbody Segment (TMDL data)	# of samples
Delta	Pixley Slough	16
Delta	Roberts Island Drain	112
Delta	Sac River (in Delta) Freeport	35
Delta	Sac River (in Delta) Rio Vista	98
Delta	Sac River (Red Bluff to Delta) Tower Bridge	115
Delta	SJ River (in Delta) Antioch	8
Delta	SJ River (in Delta) Hwy4	8
Delta	Steamboat Slough	56
Delta	Ulatis Creek	142
SAC	American River, Lower	28
SAC	Butte Slough	34
SAC	Chicken Ranch Slough	8
SAC	Colusa Basin Drain	86
SAC	Comanche Creek (from Little Chico Creek to Angel Slough, Butte County)	16
SAC	Feather River, Lower	48
SAC	Gilsizer Slough	24
SAC	Live Oak Slough	16
SAC	Main Drain Canal	70
SAC	Morrison Slough	16
SAC	Natomas East Main Drainage Canal (aka Steelhead Creek, downstream of confluence with Arcade Creek)	48
SAC	Sac River (KnightL to Delta) Alamar	18
SAC	Sac River (Red Bluff to Delta) Vet Bridge	52
SAC	Sac River (Red Bluff to KnightL) Colusa	82
SAC	Sac Slough	49
SAC	Strong Ranch Slough	8
SAC	Sutter Bypass	4
SAC	Wadsworth Canal	122
SJR	Del Puerto Creek	79
SJR	Dry Creek within Tuolumne	76
SJR	Merced River	190
SJR	Orestimba Creek	78
SJR	Salt Slough	36
SJR	San Joaquin River (Bear Creek to Mud Slough)	78

Watershed	Waterbody Segment (TMDL data)	# of samples
SJR	San Joaquin River (Merced River to Tuolumne River)	142
SJR	San Joaquin River (Stanislaus River to Delta Boundary)	251
SJR	Stanislaus River	392
SJR	Tuolumne River, Lower	317

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