



2012/2013 Summary Annual Report

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Year in Review

Second Decade of ESJWQC Begins with New Program

2013 marks ten years since the East San Joaquin Water Coalition was formed solely as an entity to represent its grower members before the Central Valley Regional Water Quality Control Board. Thousands of growers have participated and supported the organization since its inception and they deserve much credit for making this an organization that has shown its ability to solve water quality problems.

In these last 10 years, ESJWQC has proven to epitomize the core values of areas farmers and the way we operate to produce crops each year. During that period, our monitoring of local creeks and sloughs found significant levels of farm inputs, particularly pesticides, at levels that exceeded standards for aquatic life protections. Monitoring in 2008 marked the low point with 21 waterways showing pesticide exceedances. True to form for farmers, those problems were reported to them, actions were taken and by 2012, there were virtually no exceedances whose source could be positively associated with irrigated agriculture. Through September 2013, only four pesticide exceedances were found by Coalition sampling. No other region of the Central Valley can make similar claims of success.

ESJWQC enters its second decade of operation with enormous challenges ahead: groundwater has now been added to our responsibilities. When the Regional Water Board adopted our Waste Discharge Requirements (WDR) on December 7, 2012, we became the first of seven agricultural Coalitions in the Central Valley to be put under these new regulations. While the dairy industry also has a WDR passed in 2007 that applies to its facilities, corrals and cropland, this new program combines surface and ground water into a single program for irrigated cropland in our region. By mid-2014, all other Central Valley water quality Coalitions and the irrigated cropland they represent will be under WDRs very similar to ours in scope and impact.

The key issue for groundwater is high nitrates. Nitrates are prevalent in groundwater underlying our region and the Regional Water Board considers irrigated agriculture as a likely contributor. While dairies, rural septic systems, natural processes and city discharges also play a role in these high nitrate levels, the Regional Water Board is expecting irrigated agriculture to show it is properly managing use of fertilizers containing nitrogen. In

fact, the new WDR is being characterized as a "management approach" to minimizing contributions versus a more traditional "monitoring approach" required of cities and other industries permitted by the state agency. True, some regional groundwater monitoring will be put in place by the ESJQWC to track trends over time. But the lion's share of new requirements focus on reporting what is done on the farm to protect surface and groundwater. That will include a yet to be determined method for reporting nitrogen fertilizer applications to cropland, expected to complete by mid-2014.

ESJWQC will keep members apprised of upcoming reporting requirements from the new WDR through the ESJ Update newsletter and mailings. A timetable of when those reports will be due can be found on page 7. A template for the farm evaluation plan, the first report required of all ESJWQC members, was finalized in November and will be mailed to members in early 2014. Close behind that will be a sediment and erosion control plan required of members with irrigation drainage or areas with frequent storm runoff such as the eastern reaches of the Coalition region.

ESJWQC enters its second decade of operation with more than 1000 new members who farm 200,000+ acres. Combined with our existing members, our membership now totals more than 715,000 acres and just under 4000 members. The ESJWQC Board of Directors looks forward to harnessing our collective energy to show the Regional Water Board and the public we are up for the challenge of groundwater protection, just as we have been with surface water. And the Board of Directors commits to doing so in the most cost effective way possible.



Management Plan Update

Successful Management of Farm Inputs Equals Improved Water Quality

2004 was the first year water monitoring was conducted by the East San Joaquin Water Quality Coalition. The initial list of four waterways was expanded in 2007 to 20 rivers, creeks, sloughs and irrigation canals, then to 34 in 2008 as the Central Valley Regional Water Quality Control Board added requirements to assess the impact of irrigated agriculture on water quality on the 1.1 million acres of cropland in the Coalition region. Each year since 2008, new sites have rotated into the monitoring schedule.

When a water analysis shows exceedances of State standards more than twice in a waterway, for any constituent, the Regional Water Board requires the Coalition to develop a watershed Management Plan, a comprehensive description of steps to be taken to address the problem. The steps are:

- Identify potential sources of the water quality problems;
 - Work with growers to implement effective management practices;
 - Identify practices to be implemented;
 - Develop an implementation schedule.
- Measure and track water quality in the Coalition region;
 - Develop performance goals;

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- Set a monitoring schedule for each waterway;
- Report results to the Regional Water Board.

Since 2006, a total of 29 waterways in the ESJWQC region have been placed in Management Plans for multiple exceedances of water quality standards for pesticides, toxicity to indicator species, nutrients, *E. coli* and physical parameters.

To help track down potential sources of pesticide exceedances, ESJWQC obtains Pesticide Use Reports from the County Agricultural Commissioner. These reports help identify pesticide applications that could have contributed to detections.

GIS mapping is used to identify member parcels adjacent to the waterway and upstream of the sampling site; members are contacted to set-up appointments. During the visit with Coalition staff, information on pesticide applications and field management practices is collected and if needed, recommendations are made on additional practices that the grower could consider to mitigate pesticide movement into waterways. Discussions also cover known water quality problems and how to reduce or avoid future problems.

Improved Water Quality

Since 2009, Coalition staff has met with more than 200 members who farm along waterways under Management Plans and documented management practices used on fields totaling more than 30,000 acres. As we expected, most members are already using multiple practices for managing dormant sprays, sediment and erosion, storm drainage, irrigation runoff and drift from pesticide applications. After the visits, some growers do adopt additional practices and as a result, water quality has improved in many waterways with Management Plans.

Initial Management Plan activities are focusing on pesticides and metals including chlorpyrifos (Lorsban, NuPhos, Govern, etc.) and copper. Most notable in recent years is the reduction in chlorpyrifos detections as well as exceedances of the extremely low standard of 15 parts per trillion. This low limit is set by the Regional Water Board because of the potential impact to aquatic organisms from this insecticide. The most chlorpyrifos exceedances were in 2008 (27). In 2012 there were zero exceedances, a dramatic improvement in just four years. In 2013, a single exceedance was found in samples taken in September.

Because pesticide exceedances have dropped dramatically in waterways monitored by ESJWQC, the Regional Water Board has removed 38 constituents, including pesticides and copper, from Management Plan monitoring requirements. A petition for Management Plan completion is submitted to the Regional Board when no exceedances are found over a three-year period. Approval to remove the waterway plan requirements can take up to a year.

If improvements continue, the Coalition will have fewer waterways and constituents to monitor in Management Plans. The ESJWQC will continue to work with members to document water quality improvements that are a direct result of using effective management practices. Our goal is to improve water quality in the Coalition region and reduce the costs associated with Management Plans in the future.



Management Plan	Total Removed	Total Removed										
Constituent	2012	2013										
Dissolved Oxygen	2	0										
pH*	1	0										
Specific Conductance	4	0										
Metals												
Arsenic	0	0										
Copper	2	1										
Lead	1	1										
Molybdenum	0	0										
	Physical Parameters											
Ammonia	1	0										
E. coli	2	0										
Nitrate	0	0										
Total Dissolved Solids	2	0										
	Pesticides											
Chlorpyrifos	7	2										
DDE	0	0										
Diazinon	1	1										
Dimethoate	0	0										
Diuron	3	0										
Simazine	1	0										
	Toxicity											
Invertebrate toxicity	1	1										
Fish toxicity	0	0										
Algae toxicity	2	2										
Sediment toxicity	0	0										
TOTAL	30	8										

Status of Management Plan Constituents for all ESJWQC Monitoring Sites

High Priority Set	High Priority Subwatershed	Timeframe for Outreach		
	Dry Creek @ Wellsford Rd			
1 st Priority Subwatersheds	Duck Slough @ Hwy 99	2008-2010		
	Prairie Flower Drain @ Crows Landing Rd			
	Bear Creek @ Kibby Rd			
2 nd Driarity Subwatarshads	Cottonwood Creek @ Ave 20	2010 2012		
2 Phoney Subwatersheus	Duck Slough @ Gurr Rd	2010-2012		
	Highline Canal @ Hwy 99			
	Berenda Slough along Ave 18 ½			
2 rd Briarity Subwatarshads	Dry Creek @ Rd 18	2011 2012		
5 Phoney Subwatersheus	Lateral 2 ½ near Keyes Rd	2011-2013		
	Livingston Drain @ Robin Ave			
	Black Rascal Creek @ Yosemite Rd			
4 th Briarity Subwatarshads	Deadman Creek @ Gurr Rd	2012 2014		
4 Phoney Subwatersheds	Deadman Creek @ Hwy 99	2012-2014		
	Hilmar Drain @ Central Ave			
	Hatch Drain @ Tuolumne Rd			
E th Briarity Subwatarshads	Highline Canal @ Lombardy Rd	2012 2015		
5 Phoney Subwatersheds	Merced River @ Santa Fe	2013-2013		
	Miles Creek @ Reilly Rd			
	Ash Slough @ Ave 21			
6 th Priority Subwatersheds	Mustang Creek @ East Ave	2014-2016		
	Westport Drain @ Vivian Rd			



Priority Subwatershed Sets

Comparison of Chlorpyrifos and Copper Detections above the Water Quality Standard in Samples Collected from 2007-September 2013

Results for 1st, 2nd and 3rd Priority Subwatersheds.



Categories of Management Practices and Associated Acreages with at Least One Practice Implemented

Survey Results from 1st, 2nd and 3rd Priority Subwatersheds.





Management Practices Implemented After Coalition Outreach in 1st-3rd Priority Subwatersheds (2009 – 2013)



Groundwater Program

New Groundwater Program Begins in 2014

A new program covering groundwater in the ESJWQC region was adopted by the Regional Water Board on December 7, 2012. The new General Order, or Waste Discharge Requirements (WDR), apply to both surface and groundwater and encompass all irrigated cropland in the coalition region where commercial agriculture is being practiced. All other coalition regions in the Central Valley will have WDRs in place by March 2014.

Key components of the new program

Vulnerability Designations: The vulnerability rankings describe the potential risk of discharges of sediment or farm inputs (fertilizers or pesticides) to either surface water or groundwater. Groundwater designations are being proposed in the Groundwater Assessment Report (GAR) that is due to the Regional Water Board on January 13, 2014. The GAR, being written by a consulting firm specializing in hydrogeology that was hired by EJWQC, will propose which areas in the region are either low or high vulnerability to groundwater contamination. The same is being done for surface water. Areas proposed for groundwater high vulnerability in the draft report are illustrated on pages 10-12. Surface water high vulnerability areas are the watersheds already in management plans. The Regional Board will review the GAR and is expected to approve final designations in February or March 2014.

New Reporting Requirements

Farm Evaluation Plans specify measures being taken on member farms to protect water quality. The report is completed once and updated annually, depending on the risk designation. In low vulnerability areas,

plans are kept at the farming headquarters and must be provided to the Regional Board upon request. Members in high vulnerability greas submit plans to the coalition for regional compilation. A Plan survey is being mailed to members in January 2014 to be completed by March 1, 2014.

Nitrogen Management Plans summarize nitrogen fertilizer applications compared to crop production. The annual report will contain previous year nitrogen use and projected use for the upcoming season. In high vulnerability areas, the plan must be signed off by a Certified Crop Advisor or the arower trained to self-certify the plan. The first plans will cover the 2014 crop year with templates mailed to members late in 2014.

Sediment and Erosion Control Plans are required if a field has irrigation drainage or frequent storm water runoff into surface waters. Areas where these plans will be required are to be outlined in a report due to the Water Board in January 13, 2014. A template plan will be mailed to members in mid-2014.

Meeting Attendance

All members are required to attend one coalition sponsored (or co-sponsored) education/outreach event each calendar year, beginning in 2014.

Members are required to maintain a copy of the General Order at the farm headquarters and be familiar with its contents. Electronic copies of the order are available on the coalition website or printed copies will be provided on request. The entire WDR as adopted can be reviewed at: www.esjcoalition.org/generalorder.asp

							1	
Due Date	Member Requirement	WDR Reference	Low Vulnerability	High Vulnerability	Low Vulnerability	High Vulnerability	Submitted To	completed by Members to be
May 11, 2013	Notice of Confirmation	Pg 23		Or	nce	ESJWQC	compliant with Waste Discharge Requirements (WDR Amended o	
March 1, 2014	Farm Evaluation Plan	Pg 24		Annually		Annually	ESJWQC	October 3, 2013). Small Farming
July 11, 2014	Sediment and Erosion Control Plan	Pg 26			As needed	As needed	Kept on farm	Operations refers to members
January 11, 2014	Sediment and Erosion Control Plan	Pg 25	As needed	As needed			Kept on farm	operating less than 60 total acre of irrigated land. Members with
March 1	Farm Evaluation Plan	Pg 24			Every 5 yrs		ESJWQC	
2015	Nitrogen Management Plan	Pg 26				Annually	ESJWQC	identified by the FSIWQC.
March 1,	Nitrogen Management Plan	Pg 26-27	Annually	Annually	Annually		ESJWQC	,
2017	Farm Evaluation Plan	Pg 24	Every 5 yrs				ESIWOC	1

Groundwater Dates









Proposed High Vulnerability Area for the East San Joaquin Water Quality Coalition With Additional Extensions for Well Nitrate Exceedances

Northern Region

Proposed High Vulnerability Area for the East San Joaquin Water Quality Coalition With Additional Extensions for Well Nitrate Exceedances

Central Region

C CONSULTING ENGINEERB





Southern Region

G CUNDORFF & SCALMANINI CONSULTING ENGINEERS



Coalition Overview

Membership

As of December 20, 2013:

- 3,993 landowner/operators
- 716,051 irrigated acres

Boundaries

The Coalition includes Madera County and portions of Stanislaus, Merced, Tuolumne, Mariposa and Calaveras counties. Coalition borders are the crest of the Sierra Nevada on the east, the San Joaquin River on the west and south, and the Stanislaus River on the north. There are four major tributaries in the watershed: Chowchilla River, Merced River, Tuolumne River and Stanislaus River. (Note: a limited number of landowners have opted to join adjacent water quality coalitions to obtain ILRP coverage.)

Structure

The Coalition was formed in 2003 in compliance with the Irrigated Lands Regulatory Program (ILRP) adopted by the Central Valley Regional Water Quality Control Board. A volunteer Board of Directors oversees this organization, which is structured as a public benefit, non-profit entity, to perform tasks required under the ILRP. In November 2005, the Coalition was granted non-profit status as a 501c5 organization by the Internal Revenue Service. The Coalition is managed by a Board of Directors and administered by an Executive Director. Water monitoring, membership management and outreach are performed by entities contracted to ESJWQC.

Board Officers

- Parry Klassen, (Executive Director); Executive Director of Coalition for Urban/Rural Environmental Stewardship (CURES); fruit grower
- Wayne Zipser, Stanislaus County Farm Bureau (Vice-Chairman)
- Bill McKinney, (Secretary/Treasurer); almond grower

Board Members

- Bill Brush, B&B Consulting
- Amanda Carvajal, Merced County Farm Bureau
- Gary Caseri, grower
- Bill McKinney, almond grower
- Mike Niemi, Turlock Irrigation District
- Anja Raudabaugh, Madera County Farm Bureau
- Alan Reynolds, Gallo Vineyards, Inc.
- Al Rossini, Albertoni Land Co Ltd., grape grower
- Jim Wagner, Wilbur-Ellis Co.
- Wayne Zipser, Stanislaus Co. Farm Bureau

Non-voting Board Members

- Milton O'Hare, Stanislaus County Agricultural Commissioner
- Diana Waller, District Conservationist, USDA-NRCS
 Modesto Field Office
- David Robinson, Merced County Agricultural Commissioner
- Stephanie McNeill, Madera County Agricultural Commissioner
- Dennis Westcot, San Joaquin River Tributaries Group

ESJWQC Goals

- To operate an efficient, economical program that enables members to comply with the Irrigated Lands Regulatory Program (ILRP).
- File required reports with the Central Valley Regional Water Quality Control Board to maintain ILRP coverage for Coalition members.
- Implement an economical and scientifically valid water monitoring program for rivers and agricultural drains (as required by the ILRP).
- Spread costs equitably among owners/operators who are Coalition members.
- Communicate to landowners where water monitoring indicates problems and work to solve those issues.



Member Outreach and Best Management Practices

The Coalition is continuing its efforts to work with landowners in watersheds where monitoring indicates problems. Central to this effort will be promoting Best Management Practices (BMPs) with the best potential for solving the problem. When a problem is identified, the Coalition will:

- Contact landowners upstream of the monitoring site and inform them of the constituent(s) identified.
- Distribute BMP information through mailings and individual visits and local grower and crop advisor meetings.
- Give educational presentations on monitoring results and potential BMPs at commodity and farm group meetings in the coalition region.

Monitoring Program Objectives

- Characterize discharge from irrigated agriculture in the Coalition region
- Identify locations where water quality objectives are violated
- Identify potential source(s) of the exceedances
- Promote to landowners the implementation of management practices to eliminate water quality problems

Fees Assessed by the State Water Resources Control Board

In 2013, the Coalition paid the 56 cents per acre fee for its members to cover State Water Resources Control Board cost for implementing the ILRP, primarily for Regional Board staff. All members of agricultural coalitions throughout the state pay this annual fee. The fee increases to 75 cents per acre in 2014. The per acre fee is included as part of Coalition membership dues.

Surface and Groundwater Program Management

Michael L. Johnson LLC, Davis, CA

- Staff: Mike Johnson President Francisca Johnson – Vice President Melissa Turner – Vice President
- Luhdorff & Scalmanini Consulting Engineers, Woodland, CA Groundwater consulting firm

Analytical Laboratories

- AQUA-Science, Davis, CA (water column toxicity)
- APPL Inc., Fresno, CA (pesticide analysis)
- North Coast Laboratories Ltd., Arcata, CA (glyphosate and paraquat analysis)
- Caltest Analytical Laboratory, Napa, CA (Sediment chemistry analysis, physical parameters, metals and nutrient analysis)
- Nautilus Environmental, San Diego, CA (sediment toxicity)

Questions, Comments, Changes in Membership

Members are welcome to contact the Coalition Board of Directors or management with questions or to update membership information. The most efficient way to contact us is through the Coalition's website www.esjcoalition.org. Go to "Contact Us."

Outreach meeting dates and locations will be posted on the Coalition website and periodic announcements will be mailed to members.

Changes to membership information can be submitted to:

ESJWQC 1201 L Street Modesto, CA 95354

Or call: 209-846-6112

Be sure to use your membership ID number in any correspondence.



Financial Report

Financial Overview

Reported below is a financial overview comparing the ESJWQC 2012 budget with the actual 2012 expenditures. As shown in Net Income, the coalition operated at a considerable loss in 2012, prompting the dues increase to \$4 per acre in 2013. Revenue from that increase plus an additional 200,000+ acres added to the coalition roles in 2013 provided a significant boost in ESJWQC revenue, leading the Board of Directors to decrease dues to \$3.75 per acre for 2014. A complete financial review of 2013 expenditures will be available in early 2014.

All funds collected as membership dues go to pay for the cost of administering the Irrigated Lands Regulatory Program for the coalition region. Many regional and state regulatory processes are participated in by Parry Klassen, executive director of ESJWQC. His representation gives the coalition an active voice in these water quality regulatory processes that directly impact agriculture in the coalition region and Central Valley as a whole.

CV SALTS Executive Committee: Mr. Klassen serves as Chair of this collaborative stakeholder process that is developing a comprehensive salt and nitrate plan for the Central Valley farm and urban sectors. http://www.cvsalinity.org/ **Biological Objectives Stakeholder Advisory Group:** Mr. Klassen represents irrigated agriculture in this State Water Board-initiated process to develop biological objectives for freshwater streams and rivers in California. The State intends to have biological objectives for waterways, both narrative and numeric benchmarks, by 2015.

http://www.waterboards.ca.gov/plans_policies/stakeholder_advisory. shtml

The Coalition for Urban Rural Environmental Stewardship (CURES) is a non-profit organization that supports educational efforts for agricultural and urban communities on pesticides and nutrients. Under a separate employment arrangement, Mr. Klassen is executive director of CURES, which brings BMP projects and funding to irrigated agriculture operations in the Central Valley, complimenting ESJWQC mission and goals. www.curesworks.org

			5
	ACTUAL* 2011/12 \$ K,	BUDGET 2011/12 \$ K,	
	(Thousands)	(Thousands)	DESCRIPTION
INCOME			
TOTAL INCOME	1,197	1,192	Membership dues plus interest on bank accounts for November 2011 thru October 2012.
EXPENSES			
Organizational**	603	359	Executive director, legal, accounting, State Ag Waiver fees, management of membership records and related communications, and miscellaneous business costs.
Program	1,107	1,334	Program manager, site monitoring/special studies, quality control/assurance, data management, BMP assessments, communications with Coalition members regarding monitoring results, and reports to RWQCB.
Travel and Meeting	15	15	Expenses for executive director, program manager and contractors doing work for the Coalition.
TOTAL EXPENSES	1,725	1,708	
NET INCOME	-528	-516	Difference between TOTAL INCOME and TOTAL EXPENSES.

Statement of Financial Activities November 2011 thru October 2012 vs. Budget

* At the end of October balances in the checking and savings accounts totaled \$217 K.

** Variance with Budget due to higher than anticipated legal, RWQCB fees and expenses reimbursed to the Stanislaus County Farm Bureau for membership management support and membership communications.

Membership Policy

Adopted 2004

As a member of the Coalition in good standing, irrigated acres that you own or manage are now legally covered under the requirements described for watershed coalitions in the Irrigated Lands Regulatory Program (Central Valley Regional Water Quality Control Board Resolution No. R5-2003-0105).

Member Responsibilities

As a member of the East San Joaquin Water Quality Coalition (Coalition), you agree to:

- Respond to requests for information by ESJWQC that enable the Coalition to remain in compliance with requirements of the ILRP.
- Cooperate with the ESJWQC to take corrective action should water quality problems be tracked back to your farming operation.
- Implement management practices that minimize or eliminate fertilizer, pesticide and sediment runoff.

ESJWQC Responsibilities

- 1. Perform activities that enable Coalition members to be in compliance with the Irrigated Lands Regulatory Program.
- 2. File required reports with the Central Valley Regional Water Quality Control Board (Regional Board) to maintain ILRP coverage for Coalition members.
- 3. Implement an economical and scientifically valid water monitoring program for waterways within the Coalition boundaries.
- 4. Spread costs equitably among Coalition members.
- 5. Communicate to Coalition members where water monitoring indicates water quality problems are related to farming practices and facilitate efforts to solve those problems.



Surface Water Program

East San Joaquin Water Quality Coalition – Monitoring Sites (2004 – September 2013)

East San Joaquin Water Quality Coalition Monitoring Sites 2004-September 2013 (alphabetical). 'X' indicates sampling occurred during the years specified.

	COUNTY	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Ash Slough @ Ave 21	Madera		Х	Х	Х	Х	Х	Х			
Bear Creek @ Kibby Rd	Merced		Х	Х	Х	Х		Х	Х	Х	Х
Berenda Slough along Ave 18 1/2	Madera			Х	Х	Х			Х	Х	Х
Black Bascal Creek @ Yosemite Rd	Merced			X	X						Х
Cottonwood Creek @ Rd 20	Madera		x	X	x	X	x	x	X	x	X
	Marcad	v	~	×	×	×	×	×	~	×	X
	ivierceu	^		×	×	×	~	~		×	^
Deadman Creek @ Hwy 59	Merced			Х	Х	Х			Х	Х	X
Dry Creek @ Rd 18	Madera		Х	Х	Х	Х			Х	Х	Х
Dry Creek @ Wellsford Rd	Stanislaus/Merced		Х	Х	Х	Х	Х	Х	Х	Х	Х
Duck Slough @ Gurr Rd	Merced	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х
Duck Slough @ Hwy 99	Merced		Х	Х	Х	Х	Х	Х	Х	Х	
Hatch Drain @ Tuolumne Rd	Stanislaus				Х	Х					Х
Highline Canal @ Hwy 99	Merced		Х	Х	Х	Х	Х	Х	Х	Х	Х
Highline Canal @ Lombardy Rd	Merced		Х	Х	Х	Х	Х	Х	Х	Х	Х
Hilmar Drain @ Tuolumne Rd	Merced		Х	Х	Х	Х	Х			Х	Х
Howard Lateral @ Hwy 140	Merced						Х	Х	Х		Х
Lateral 2 ½ near Keyes Rd	Stanislaus					Х	Х	Х	Х		Х
Levee Drain @ Carpenter Rd	Stanislaus									Х	Х
Livingston Drain @ Robin Ave	Merced				Х	Х			Х	Х	Х
McCoy Lateral @ Hwy 140	Merced								Х	Х	Х
Merced River @ Santa Fe Rd	Merced	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х
Miles Creek @ Reilly Rd	Merced				Х	Х	Х	Х			Х
Mootz Drain ¹	Stanislaus						Х	Х			Х
Mustang Creek @ East Ave	Merced			Х	Х	Х	Х	Х			Х
Prairie Flower Drain @ Crows Landing Rd	Stanislaus		Х	Х	Х	Х	Х	Х	Х	Х	Х
Rodden Creek @ Rodden Rd	Stanislaus								Х	Х	
Silva Drain @ Meadow Drive	Merced			Х	Х	Х					
Unnamed Drain @ Hwy 140	Merced										Х
Westport Drain @ Vivian Rd	Stanislaus				Х	Х					

¹Years associated with monitoring for Mootz Drain combine the years in which sampling occurred for Mootz Drain @ Langworth Rd and Mootz Drain downstream of Langworth Pond locations.



ESJWQC January through September 2013 Monitoring Sites





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Water Quality Monitoring Results April-September 2013

Data below represent water discharge measurements and exceedances of water quality standards.

	<u>Constituent</u>	DO ⁺	pH⁺	SC⁺	TDS⁺	Ammonia [†]	Nitrate + Nitrite ⁺	E. coli †	Copper⁺	Malathion⁺	Chlorpyrifos [†]	Water Flea [†]	Sediment ⁺	Discharge*
Wate Monitoring Location	r Quality Goal Sample Date	7 mg/L	<6.5 or >8.5	700 µmhos/cm	450 mg/L	1.5 mg/L	10 mg/L	235 MPN /100 ml	µg/L (variable)	0 µg/L	0.015 µg/L	Toxicity	Toxicity	Second
Bear Creek	8/13/2013													NM
	4/9/2013													Dry
	5/14/2013													Dry
Berenda Slough	6/11/2013	2.66												Dry
along Ave 18 1/2	//9/2013	3.66												**
	8/13/2013													Dry
	9/10/2013	6.40												0.05
	4/9/2013 E/14/2012	1 69												0.03
Black Rascal	5/14/2015	1.08	6.96											
@ Yosemite Rd	//9/2013	2.40	6.26											0.34
	8/13/2013	1.92								-		-		0.07
	9/10/2013													0.07 Drv
	5/14/2013													Dry
Cottonwood Creek	6/11/2013													Dry
@ Rd 20	7/9/2013	5.28						1203.3						0.90
	8/13/2013													Dry
	9/10/2013	5.34						1986.3						**
	4/9/2013													1.92
	6/11/2013													NM
Deadman Creek	7/9/2013													NM
@Gurr Rd	8/13/2013	6.46												NM
	9/10/2013									1				NM
	4/9/2013													2.14
Deadman Creek	8/13/2013													Dry
@ Hwy 59	9/10/2013													Dry
	4/2/2013		8.57											**
	5/14/2013							207.0	C O (1 77)					0.06
Dry Creek	6/11/2013							307.6	0.8 (1.77) 2 7 (1 60)					7.01
@ Rd 18	9/12/2013	6 5 4							3.7 (1.00)					9.00
	0/10/2013	5.17							2 3 (1 67)				Toxic	5.00
	4/2/2013	6.96							2.3 (1.07)				TUXIC	50.58
	5/14/2013	5.99						307.6						19.20
Dry Creek	6/11/2013	6.10						344.8						22.83
@ Wellsford Rd	7/9/2013	5.61						261.3						47.84
	8/13/2013							461.1						54.25
	9/10/2013	6.93		1000							0.14			54.77
	4/2/2013		8 73	1823										0.17
Duck Slough	6/11/2013		0.75											0.05
@ Gurr Bd	7/9/2013	6.62		871	530			325.5						0.89
	8/13/2013	6.56						>2419.6						0.40
	9/10/2013	4.29						410.6					Toxic	0.47
	4/9/2013	2.56		1296										NM
Hatch Drain	5/14/2013	0.96		1283										NM
@ Tuolumpe Bd	7/9/2013	0.37		1156										NM
	8/13/2013	0.49												NM
	9/10/2013	2.05	0.01	1028									Toxic	NM
	4/2/2013		9.01							-		-		NIVI 58.81
Highline Canal	6/11/2013		0.05											66.34
	7/9/2013													96.60
e	8/13/2013		8.53											72.09
	9/10/2013													23.50
	4/9/2013													NM
	5/14/2013													102.27
Highline Canal	7/9/2013													163.82
@ Lombardy Ave	8/13/2013													107.76
	9/10/2013		<u> </u>							1		1		NM

	<u>Constituent</u>	D0⁺	pH⁺	SC⁺	TDS⁺	Ammonia [†]	Nitrate + Nitrite ⁺	E. coli †	Copper⁺	Malathion ⁺	Chlorpyrifos [†]	Water Flea [†]	Sediment [*]	Discharge ⁺
Water Monitoring Location	r Quality Goal Sample Date	7 mg/L	<6.5 or	700	450 mg/L	1.5 mg/L	10 mg/L	235 MPN	µg/L	0 µg/L	0.015 µg/L	Toxicity	Toxicity	Second
Womtoring Location			>8.5	µmhos/cm	<u> </u>	Ű	Ű	/100 ml	(variable)			,	,	2 80
Hilmar Drain	6/11/2013			1080										3.99
	7/9/2013			1651										**
la central Ave	9/10/2013			1175										NM
	4/9/2013			11/5					7.2 (4.95)					6.53
Howard Lateral	6/11/2013													4.26
@ Hwy 140	7/9/2013													2.94
Lateral 2 1/2	4/9/2013		8.79											5.49
near Keves Rd	7/9/2013		8.54											0.30
near neges na	4/2/2013							720.0						1.78
	5/14/2013	4.99		1324	780		11	517.2						1.62
Levee Drain	6/11/2013	4.77		1305	800		11	>2419.6						0.93
@ Carpenter Rd	7/9/2013	1.07		1015	640	5.4	40	>2419.6				Toxic		3.02
	8/13/2013	3.82		1203	/20		12	517.2						0.80
	9/10/2013	3.76	0 00	1583	1000			461.1						0.33
	5/21/2013		8.54											0*
Livingston Drain	6/11/2013		8.85											0.65
@ Rohin Ave	7/9/2013		9.44											0.14
	8/13/2013		8.81											**
	9/10/2013													Dry
McCoy Lateral	6/11/2013		9.29											1.70
@ Hwy 140	9/10/2013		9.25						2.1 (1.87)					2.66
	4/2/2013													211.00
Managal Diver	5/14/2013	6.41												135.00
Nerced River	6/11/2013	6.05												75.00
@ Santa Fe	8/13/2013	6.20												67.00
	9/10/2013	6.82												78.00
	4/2/2013									0.078J				0.27
	5/14/2013							387.3						0.02
Miles Creek	6/11/2013													0.41
@ Reilly Rd	7/9/2013				1700			325.5						0.24
	9/10/2013	4 97												0.55
	4/2/2013	4.32						2000.0						1.19
	5/14/2013	4.17						>2419.6						3.46
Mootz Drain	6/11/2013	4.28						>2419.6						1.50
downstream of Langworth Pond	7/9/2013	4.35	6.42					920.8						3.90
	9/10/2013	3.05						>2419.0						4.00
	4/2/2013	5.07						· 2 113.0						Dry
	5/14/2013													Dry
Mustang Creek	6/11/2013													Dry
@ East Ave	7/9/2013													Dry
	9/10/2013													Dry
	4/2/2013			2196	1400		28	240.0						**
	5/14/2013	1.58		1202	730		17							**
Prairie Flower Drain	6/11/2013			1841	1200		22							0.35
@ Crows Landing Rd	8/13/2013	1 65		0/5	<u>1400</u> 600			110.6				Toxic		**
	9/10/2013	4,10		1544	920			410.0				TUXIC		0.05
	4/2/2013			1044				440.0						12.78
	5/14/2013	5.79												3.42
Unnamed Drain	6/11/2013							261.3						6.04
@ Hwy 140	7/9/2013	5.70												1.38
	9/10/2013													3.30 13.10

*All data are preliminary and will undergo additional review prior to being finalized.

0*Discharge recorded as zero due to water flowing from west to east in an upstream direction. **No measurable flow.

+See reverse side for definitions

J-Estimated value. NM-No measurement: Too deep to measure flow or water column toxicity monitoring only.



MONITORING CONSTITUENTS DEFINITIONS

Dissolved Oxygen (DO): D0 criterion is protective of aquatic life: (min. of 7 mg/L). D0 levels are affected by water temperature, photosynthesis & respiration. Added nutrients can stimulate algae production which dies and breaks down by microbial activity. The activity requires oxygen, depleting D0 and resulting in an inability to support aquatic communities.

pH: Power of Hydrogen (pH) measures acidic or basic levels in a solution. Acceptable range = 6.5-8.5. Water temperature, photosynthesis & respiration can affect levels. Fertilizers & pesticides can affect pH of water/ soil.

Specific Conductance (SC): Specific conductance (SC) is a measure of salt and is measured in μ S/cm. SC is an indirect measure of the presence of ions such as chloride, nitrate, sulfate, phosphate, sodium, magnesium, calcium and iron. The SC standard (700 μ S/cm) is protective of sensitive agricultural crops such as beans.

Total Dissolved Solids (TDS): TDS describes all solids (usually mineral salts) dissolved in water and is measured in mg/L. TDS is frequently associated with SC exceedances. Potential sources are minerals leached from soils by upstream surface water, groundwater, or drain water from irrigated agriculture (Ag). Ag sources include fertilizers & native soils.

Ammonia: Total ammonia consists of the unionized (NH3) form plus the ionized (NH4+) form also called ammonium. Ammonium can enter a water body through direct discharge from agricultural fertilizers or animal waste, discharges from waste water treatment plants, or from the breakdown of organic matter in the stream. In soils, ammonium from fertilizers is typically converted to nitrite and then to nitrate over a short period of time. Exceedances of the ammonia standard are based on water temperature and pH which affect the level at which ammonia is toxic to aquatic life. Regardless of the water temperature or pH, all ammonia concentrations above 1.5 mg/L are exceedances of the drinking water standard.

Nitrate + Nitrite: Potential sources include runoff of fertilizers or organic matter from irrigated pasture, leaking septic systems, waste water treatment plant effluent and animal waste. Nitrate and nitrite are very soluble and can enter surface or groundwater with irrigation and/or storm water. Animal waste can be converted to nitrate by nitrifying bacteria. Sources of animal waste include dairies, poultry, pasture and/or wildlife.

E. coli: A common bacterium that inhabits intestinal tracts and is voided in fecal material. E. coli in water (measured as MPN/100mL where MPN is the Most Probable Number) is compared to the water quality standard protective of recreational activities (235 MPN/100mL). E. coli may persist in presence of oxygen for periods of time after being voided. Any species of vertebrate that voids feces can contribute E. coli to surface waters. Potential sources:

leaky septic systems or sewer lines, discharge from waste water treatment plants, application of biosolids to agricultural land, defecation in or near water bodies, dairies, manure or poultry operations.

Copper: Can occur in surface water dissolved or bound to sediment. Measurement of dissolved copper=dissolved form only measurement of total copper= both dissolved & bound. Dissolved copper is adjusted for the hardness (CaCO3) in water to determine concentrations that would be toxic to aquatic species. Total copper is also evaluated based on the criteria protective of the drinking water beneficial use.

Chlorpyrifos: An organophosphate insecticide used in alfalfa, grapes & orchards (among other crops). Trademarked names include: GovernTM, Lock-OnTM, LorsbanTM, NuPhosTM, etc. Chlorpyrifos can bind to sediment or remain in water column. The 0.015 μ g/L objective is protective of aquatic life.

Malathion: Malathion is an organophosphate insecticide applied to over 100 crops in the United States including alfalfa, rice, cotton, sorghum, wheat, and walnuts. It is also used for structural pest control (mosquito and fruit fly eradication, and home settings). Malathion is easily mixed with water and can be found in both urban and agricultural runoff. Malathion is a prohibited discharge pesticide except under the Rice Coalition Management Plan and any detection of the constituent is considered an exceedance. Malathion is known to be toxic to C. dubia (LC50 = $3.35 \mu g/L$).

Sediment Toxicity: One species (Hyalella azteca – amphipod) is used in sediment analysis to determine toxicity that may occur to pelagic organisms. Amphipods are sensitive to pyrethroids and other pesticides that are not highly water soluble including some herbicides, fungicides and insecticides. Amphipod toxicity is measured as percent survival within the sediment sample as compared to the survival in a control treatment.

Water flea toxicity: water fleas (invertebrates) are especially sensitive to water soluble pesticides such as chlorpyrifos & diazinon. Toxicity is measured as % survival in sample compared to survival in control treatment.

Flow: Measure of water flow-cubic feet per second (cfs) at sample site. List of units mg/L milligrams per liter MPN/100 mL Most Probable Number per 100 milliliters (measure of bacteria) μ g/L micrograms per liter (same as parts per billion or ppb) μ S/cm microsiemens per centimeter (measure of conductivity)

Companies Providing Services to Test Wells for Nitrates

The information below is a compilation provided by ESJWQC. The list of companies is not exhaustive and will be updated periodically. The companies offer water analysis services in the Central Valley.

Types of companies who provide this service:

- Specialize in agricultural consulting and nitrogen budgeting; plant tissue testing and soil nutrient management
- Specialize in geology or engineering; also offer groundwater mapping services
- Specialize in water quality analysis (laboratory only)

Lab	Ag Specialist	Sampling Service	Lab Nama	Streat	City	Tin	Phone
			A & L Western Agricultural	1311 Woodland Ave	City	zīb	Filone
Х	х		Laboratories, Inc.	Suite 1	Modesto	95351	(209) 529-4080
X		X	Apex Envirotech, Inc.	11244 Pyrites Way	Gold River	95670	(916) 851-0174
х			APPL	908 N. Temperance Ave	Clovis	93611	(559) 275-2175
Х			Argon Analytical Services, Inc. DBA Argon Laboratories	2905 Railroad Ave	Ceres	95307	(209) 581-9280
Х		Х	Blaine Tech Services Inc.	4731 Pell Drive, Suite 5	Sacramento	95838	(916) 925-2913 ext. 102
X		х	BSK Associates	1414 Stanislaus Street	Fresno	93706	(559) 497-2888
Х	x	Х	California AgQuest Consulting, Inc.	4545 N. Brawley Ave	Fresno	93722	(559) 275-8095 (559) 275-5301
х	х		California Growers Laboratory Inc.	4630 W. Jennifer, Suite 104	Fresno	93722	(559) 275-3377 (559) 275-8270
х	х	Х	California Laboratory Services	3249 Fitzgerald Rd	Rancho Cordova	95742	(916) 638-7301 (916) 638-4510
х	х	х	Dellavalle Laboratory, Inc.	1910 West Mckinley Ave, Suite 110	Fresno	93728	(559) 351-2741
х		х	Dudek	980 9th Street, Suite 1750	Sacramento	95814	(760) 479-4127
Х	X		FGL Laboratory	2500 Stagecoach Rd	Stockton	95215	(209) 942-0182
Х		х	Geoanalytical Laboratories, Inc.	2300 Maryann Drive	Turlock	95380	(209) 669-0100
X			IEH-JL Analytical Services	217 Primo Way	Modesto	95358	(209) 538-8111
X	х	X	JM Lord, Inc.	267 N. Fulton St.	Fresno	93701	(559) 268-9755 (559) 486-6504
		X	MLJ-LLC	632 Drew Ave	Davis	95616	(530) 756-5200
X	х	X	Pacific Agronomics	3402 W. Holland Ave #101	Fresno	93711	(559) 276-0401
	X	X	Perry Laboratory	424 Airport Blvd.	Watsonville	95076	(831) 722-7606
х		х	Precision Enviro-Tech	3935 North Coronado Ave	Stockton	95204	(209) 477-8105
X	X	х	Soil and Plant Laboratory, Inc.	1101 S. Winchester Blvd., Suite G-173	San Jose	95128	(408) 727-0330
х	х		Soil Control Lab	42 Hangar Way	Watsonville	95076	(831) 761-7272 (831) 724-5422
X			VPN Laboratory	3402 W. Holland Ave #101	Fresno	93711	(559) 276-0403 (559) 272-9363

ADDITIONAL RESOURCES:

California Department of Health – Certified Laboratories: http://www.cdph.ca.gov/certlic/drinkingwater/Pages/Nitrate.aspx





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1201 L Street, Modesto, CA 95354 209-846-6112 www.esjcoalition.org