BUENA VISTA COALITION (BVC)

Irrigated Lands Regulatory Program

Annual Report

2014

Prepared in Accordance with the Requirements of the

Regional Water Quality Control Board.

MRP Order R5-2013-0120

525 N. Main Street
Buttonwillow, CA 93206

Prepared by BVC Staff

Table of Contents

Tables and Figures

EXECUTIVE SUMMARY

Irrigated lands within BVC were enrolled in the Southern San Joaquin Valley Water Quality Coalition (SSJVWQC) (MRP order R5-2008-0005) until 6/25/2013 when BVC's NOI and General Report was approved by the Water Board under order no R5-2011-0032. Buena Vista Coalition was then approved to operate as a Coalition under the new General Order, R5-2013-0120 on February 4, 2014.

The Buena Vista Water District had prepared a Surface Water Quality Management Plan, "Water Quality Management Plan – August 2012, Main Drain," which was approved by the RWQCB in August 2012. This plan indicates where and when monitoring is to occur, and steps to take to attempt to eliminate exceedances, especially in water which leaves the District.

The Buena Vista Coalition is reporting on the monitoring which has occurred under the "Water Quality Management Plan – August 2012, Main Drain." The monitoring and lab testing was performed under the QAPP originally prepared and submitted for the SSJVWQC by FGL and its subcontractors. When the BVC commenced operations and reporting, it used the same QAPP as the SSJVWQC, including the same laboratory, FGL, and subcontractors. In 2014 BVC switched labs to BSK, with a QAPP prepared by BSK.

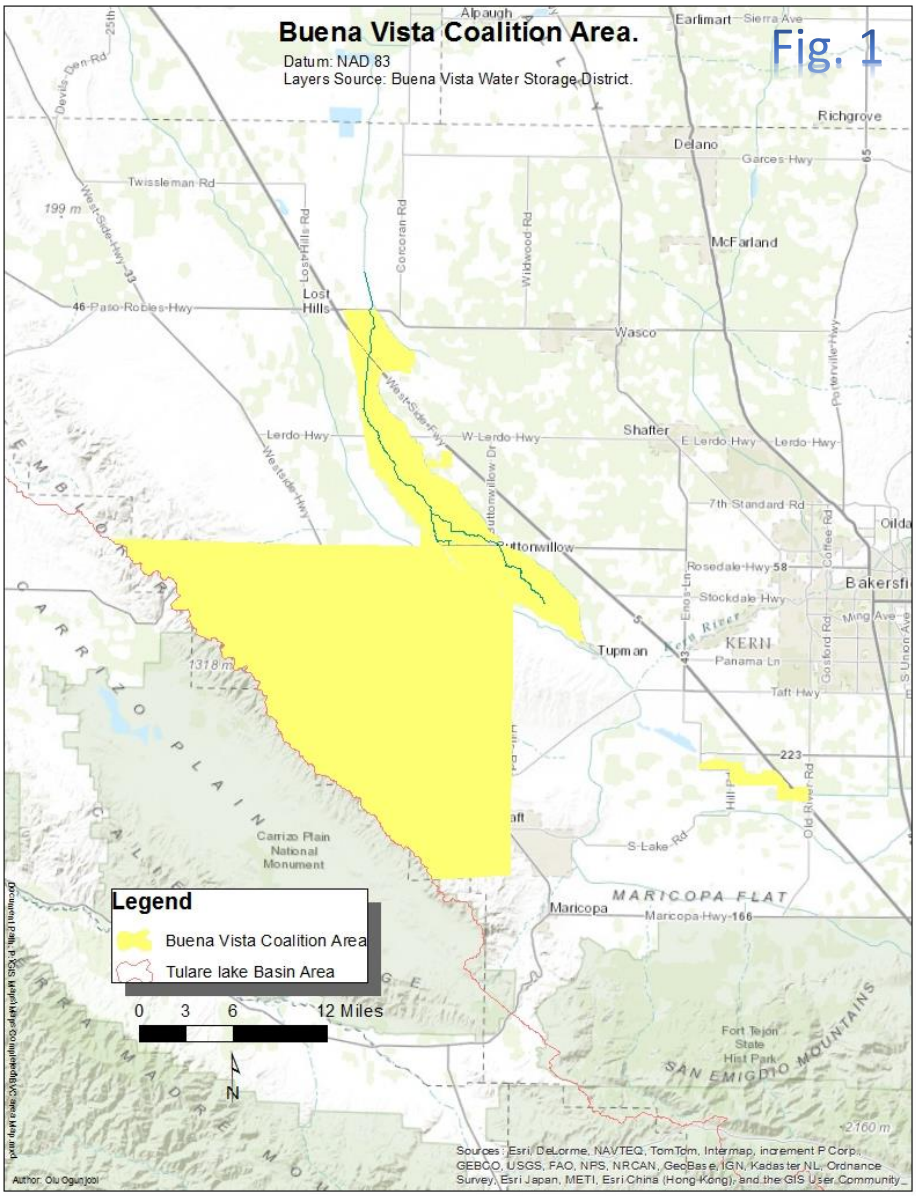
This report is being submitted under the format and regulations of the General Order, R5-2013-0120, with the testing per the Surface Water Quality Management Plan prepared under the Order R5-2008-005, and the "Water Quality Management Plan – August 2012, Main Drain."

The report was prepared by Buena Vista Water Storage District staff working for the Buena Vista Coalition, and submitted by Tim Ashlock of the Buena Vista Coalition. The data submitted includes data originally submitted in quarterly reports by the BVC. This summary report is a compilation of all four quarters.

Throughout the report the two terms BVC and BVWSD are used. They are different terms, and have different meanings, but they have a very similar make-up in terms of land, growers, Board of Directors and employees. Effort has been made to use the appropriate term in the appropriate place. However, it is likely that the reader may find the term used incorrectly somewhere in the document.

2. Description of Buena Vista Coalition Geographic Area

The original BVC service area is located in southwest area of the Kern River watershed in Kern County and approximately sixteen miles westerly of the City of Bakersfield, see **Figure 1**. The area is located in the trough of California's southern San Joaquin Valley and is separated into two noncontiguous areas: the northern Buttonwillow Service Area (BSA) comprising 45,800 acres, and the southern Maples Service Area (MSA) comprising 4,350 acres. These two areas are separated by about 15 miles, see Fig.1.



Approximately 50,000 acres of irrigated farmland all within the boundaries of Buena Vista Water Storage District (BVWSD) are represented in the coalition. The BVC has been expanded under Order R5-2013-0120 to cover additional lands to the west and south.. It is anticipated that all, or nearly all of the lands within the Buena Vista Water Storage District will enroll in the BVC. It is also expected that some adjacent lands to the original BVC boundary will choose to enroll in the BVC.

Of the acres enrolled in the BVC service area only about 18,000 acres - all within the BSA discharge irrigation tail water.

The remaining lands are either uncultivated (about 12,000 acres of conservation wetland and fallowed land) or irrigated with drip systems which produce no tailwater. Drip systems are used on all permanent crops planted within the BVC, both trees and vines, as well as some specialty crops, like tomatoes. 11,608 acres of trees and vines are presently cultivated with several thousand acres in preparation for planting of permanent crops. Row crops that utilize row or flood irrigation are predominantly cotton, wheat, and alfalfa. Onions are grown using sprinklers, which produce essentially no run-off.

The Kern River is the main source of water to the coalition area with secondary sources being waters from the California Aqueduct and the Friant-Kern Canal system. Both of these delivery systems have their sources from the Sacramento-San Joaquin River Delta.

BVWSD uses a discharge network of drains with the Main Drain Canal being the main artery which collects and transports tail irrigated water within the boundary of the district.

The Main Drain Canal is shown in Fig 2. It runs along the center and lowest elevation of the BSA and forms a natural conduit for draining tail water. It also has served as conveyance for flood water in wet years and for wheeling irrigation water within the district. It is also used to wheel water from the California Aqueduct to the Kern National Wildlife Refuge (KNWR) and other privately owned duck clubs.

The portion of the Main Drain inside the BVC is approximately 20 miles long. It leaves the BVC boundary at Hwy 46, ties with the Goose Lake Canal from where both canals can convey irrigation runoff and flood water to and beyond the Kern National Wildlife Refuge about 8 miles north of Hwy 46. In the 2014 calendar year no drainage wastewater left the BVC, except in the two months it was blended with waters being delivered to the Kern Wildlife Refuge. When the Northern Area Pipeline is operational, likely summer of 2016, the BVWSD will be able to deliver water to the refuge without blending it with tailwater. This is the goal of the BVWSD and the BVC.

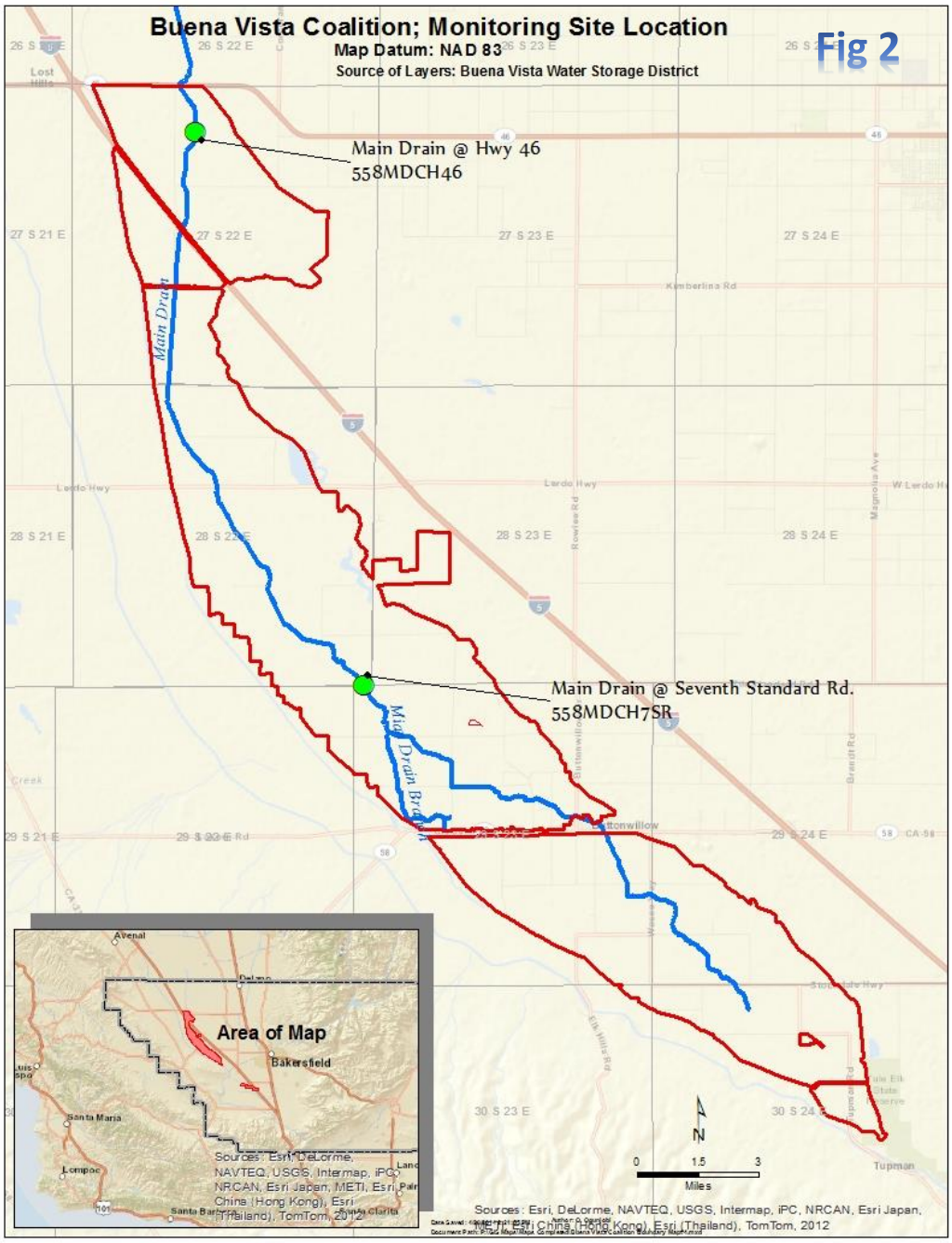


Fig 2: Monitoring Site Location

Site name	CEDEN Code	Latitude	Longitude
Main Drain @ Hwy 46	558MDCH46	35.60139	-119.60970
Main Drain @ 7th Standard Rd	558MDCH7SR	35.44177	-119.54997

The map above (Fig 2) and the accompanying table (immediate above) show the location details of the sampling sites. Of the 12 months in 2014, only during 2 months at Hwy 46 and 6 months at 7th Standard Rd., were there enough flow past the sites to warrant sample collection. The remaining months saw no water flowing through the sites, therefore no samples were collected.

3. Monitoring Objectives and Design

To develop a successful monitoring plan there are four primary considerations:

1. Location
2. Frequency
3. Water Quality Issues
4. Quality Assurance

The Main Drain has had samples which exceeded limits, which required the development of a Surface Water Management Plan. This plan involved both monitoring the Main Drain for water quality/exceedances and a management plan to identify sources and eliminate or control them in an acceptable manner.

Since the Main Drain Canal is a combined system waterway it operates under a wide range of flows and conditions. Historically, the Buena Vista Slough drained through the land of the BVWSD in the location of the Main Drain Canal. The flows in the channel were based strictly on rainfall. As agriculture developed, water was diverted from the Kern River, reducing flows in the channel. In the 1920's a diversion channel was built to carry the high flow river water around the lands of the BVWSD. When the Isabella Dam was built flows were regulated and high flows became rare. The river flow never enters the Main Drain Canal. However, it still is the storm drain conveyance canal for the lands of the BVWSD. Due to its historical nature, the Main Drain Canal has been classified as a tributary of the Waters of the State. This was because it had waters which flowed into Tulare Lake and then combined to flow out to the San Francisco Bay. But as time has passed, Tulare Lake rarely has water, the Main Drain Canal rarely has flows which reach the lake, and these flows rarely combine to reach Waters of the State.

As farming developed initially in the 1870's on BVWSD lands, there was one major landowner. They allowed for the Main Drain Canal to take tailwater from all lands to carry it north, out of the District. With both surface water and well water available to irrigate crops the Main Drain would operate as a tailwater system about 10 months a year.

Ultimately the concern for water quality issues centers on the Main Drain Canal at Highway 46. This is where waters leave the District and possibly join other Waters of the State. With flow often ten months a year, a plan for monitoring was to test monthly at the Main Drain and Highway 46. A Second location at Seventh Standard was also added, at about the midpoint of the Main Drain Canal in the BVWSD. This would give information to help identify sources and trends of quality issues and just in general be a second data point. On the occasions when the Canal was dry, the tests would just be skipped.

The plan has an extensive series of chemicals, elements, and other tests to be performed. See Appendix A for a complete list of tested constituents. Groundwater is the primary source of some of the constituents which are tested for, as such they are identified in the lab analysis of in elevated quantity or as exceedance. If the quantity of such constituents is in exceedance, it may still be accepted under the Surface Water Management Plan as an acceptable and controllable quality of water.

The design of the quality control portion of developing a monitoring plan is discussed in greater detail later in this report.

4. Sampling Sites Description

Main Drain Canal at Highway 46 is one of two existing water quality monitoring sites. See Fig 2. This site was chosen since it is where the tailwater, if flowing in the Main Drain Canal, would be leaving the BVC. Since the BVWSD was originally developed as one farm in the 1870's, it made sense to use the Main Drain Canal as a District wide tailwater system. It is not the system one would design now if developing the lands for the first time, both for efficiency reasons, as well as environmental reasons. As the waters leave the District they can no longer be classified as tailwater, as there are no further opportunities to reclaim the water.

Flows in the Main Canal at Highway 46 follow the irrigation season. With the three primary row crops, cotton, alfalfa, and wheat, it usually means water is flowing in portions of the Man Drain Canal 10 months of the year. Because the majority of the crops grown in BVWSD are field crops, the Main Canal system can be dry during the non-irrigation season. The second testing location is at Seventh Standard Road in the Main Drain. This site was selected as it is approximately midway between the beginning of the Main Drain and the northern boundary of the District. It was felt that this secondary location could help identify issues in resolving any exceedance problem. The testing at this location will be addressed to the RWQCB in a subsequent document. Current Coalition staff does not see any benefit to this additional testing location.

5. Crop Patterns

Attached in Figure 3 is a breakdown of the crops between permanent crops, row crops, conservation lands, and fallow lands. This was for 2014, which was a dry year. In a more traditional year the quantity of fallow land is much lower. The high quantity of fallow land was also due in part to lands being converted from row crops to permanent crops. This number may be similar for a few years going forward, as growers indicate thousands of acres are planned for conversion to permanent crops in each of the near future years. The irrigation practices and timing of all of the District permanent crops, pistachios, pomegranates, dried-on-the-vine raising typically have a fall harvest, justify lumping them altogether. Note, there are a nominal amount of cherries, which have a late spring/early summer harvest.

Similarly the row crops are lumped together, as they are primarily cotton, wheat, and alfalfa. The farms which produce these crops have a crop rotation, and while specific quantities and locations vary from year to year, the individual farms, and District totals are somewhat constant from year to year, less the land being converted to permanent crops. Historically, for over 100 years the lands of the BVC and BVWSD were row irrigated using typically a gravity flow system. While a few trees in the District are close to 30 years old, significant crop conversions did not begin until 2006. Due to the District's water supply, it would not be surprising if the trend of crop conversion continues until the District is primarily or entirely permanent crops.

FIGURE 3

May 2014 Crop Map

N

0 0.75 1.5 3 Miles

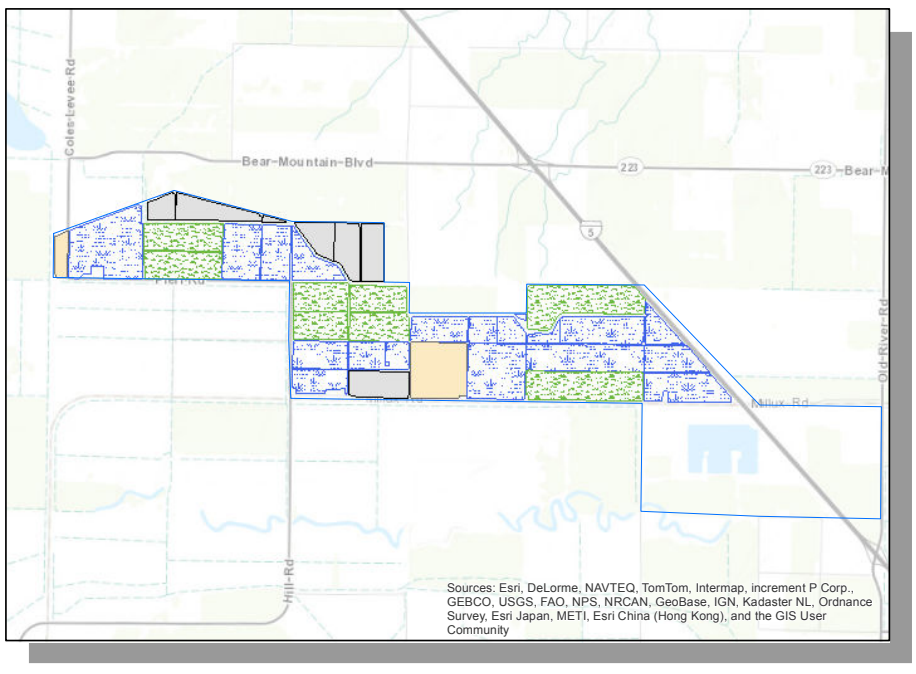
Legend

- Alfalfa = 7749 Acres
- Wheat = 1444 Acres
- Cotton = 9455 Acres
- Forage Mix = 45 Acres
- No Crop = 7580 Acres
- Onion = 715 Acres
- Tomato = 1069 Acres
- Water Melon = 251 Acres
- Others* = 269 Acres

Trees

- Cherry = 105 Acres
- Grapes = 2273 Acres
- Olive = 80 Acres
- Pistachio = 7048 Acres
- Pomegranate = 1725 Acres
- Prep for Trees = 377 Acres

*Other Crops are Forage Mix; 141 Acres, Corn; 146 Acres and Oat; 26 Acres



The cropping pattern is significant, as the permanent crops can use more water, and most are on drip irrigations systems, which typically do not have any tailwater. The longer irrigation season of the permanent crops also has the District looking to build a parallel pipeline delivery system. Currently District Water is delivered in unlined canals. Construction has begun to convert the northern portion of the BSA to a pipeline delivery system. This too will change the surface water and tailwater in the Main Drain Canal.

6. Rainfall Data 2014

Table 1, below, shows the quantity of rainfall/precipitation in 2014 as measured at the Buena Vista Water Storage District.

Table 1: Average Monthly Precipitation in 2013 in Inches.

Month	Oct 2013	Nov 2014	Dec 2013	Jan 2014	Feb 2014	Mar 2014	Apr 2014	May 2014	June 2014	July 2014	Aug 2014	Sept 2014	**Total**
Inches	0.03	0.42	0.08	0.00	0.34	0.43	0.13	0.00	0.00	0.00	0.00	0.00	**1.46**

The town of Buttonwillow discharges storm water runoff into the Main Canal, which may impact the quality of the water as it is conveyed northward. Because Kern County's annual rainfall averages about 6.5 inches, storm water discharges from Buttonwillow do not typically create serious water quality problems. The Buena Vista Coalition will work with the County of Kern to address this storm discharge into the Main Drain Canal.

Table 2: Tabulated Results of Sample Analyses: Main Drain @7th Standard Rd.

Test Results 2014	Sample Location	MDC @ SEVENTH STANDARD RD. 558MDC7SR											
	Sampled Date	Units	Lab	PQL	BPO	Oct-13	Feb-14	Apr-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14
	Lab					Sediment			Sedmnt				
	Flows (CFS)	CFS	FGL & BSK					0		4	0	0	2.77
Field Measurements	Conductivity	umhos/cm	FGL & BSK	0.5	**700**		703	1477		1889	1794	984	850
	Oxygen, Dissolved	mg/L	FGL & BSK	0	>5		11.52	7.15		8.22	9.67	7.06	7.7
	pH	units	FGL & BSK	1	6.5-8.3		8.33	7.88		8	8.5	8.02	7.09
	Temp	°C	FGL & BSK	0			14	21.3		26.3	26	24.9	24.5
Dissolved Metals	Cadmium	ug/L	FGL & BSK	0.1	**5**		0.058	ND		0.023	ND	ND	0.027
	Copper	ug/L	FGL & BSK	0.5	**1300**		5.64	3.68		4.04	8.05	4.03	3.1
	Lead	ug/L	FGL & BSK	0.2	**15**		0.39	ND		0.22	0.184	ND	ND
	Nickel	ug/L	FGL & BSK	0.5	**100?**		2.11	1.68		1.98	1.88	1.19	4.9
	Zinc	ug/L	FGL & BSK	1			13.4	ND		ND	1.35	2.92	2
Total Metals	Arsenic	ug/L	FGL & BSK	0.2	**10**		12.9	16.8		14.2	14.3	17.4	15
	Boron	mg/L	FGL & BSK	10	**700**		617	544		678	898	324	500
	Cadmium	ug/L	FGL & BSK	0.1			0.079	0.106		0.043	0.04	0.09	0.054
	Calcium	mg/L	FGL & BSK	1			159	125		168	141	84.1	130
	Copper	mg/L	FGL & BSK	1	1300		5.25	7.69		5.91	4.38	8.46	2.8
	Total Hardness as CaCO3	mg/L	FGL & BSK	2.5			556	367		476	414	241	380
	Magnesium	mg/L	FGL & BSK	1			38.5	13.4		13.7	15.1	7.49	12
	Lead	ug/L	FGL & BSK	0.2	15		1.08	1.39		0.745	1.14	0.9	0.1
	Molybdenum	ug/L	FGL & BSK	1	10		8.43	12.4		11.6	12.3	9.48	9
	Nickel	ug/L	FGL & BSK	1			1.9	3.95		2.57	0.624	1.78	5.2
	Selenium	ug/L	FGL & BSK	1	5		0.501	2.48		1.06	0.98	0.51	0.5
	Zinc	ug/L	FGL & BSK	5			31.7	22.5		21.6	5.74	11.7	2
Wet Chemistry	Ammonia Nitrogen	mg/L	FGL & BSK	0.1	1.5					0.408	0.3	ND	0.28
	Conductivity	umhos/cm	FGL & BSK	1	700		698	1500		1860	1740	971	1400
	TDS	mg/L	FGL & BSK	40	450			1060		1280	1210	650	940
	Nitrate + Nitrite as N	mg/L	FGL & BSK	0.05			1.73	1.10		5.4	2.13	0.438	0.53
	Kjeldahl Nitrogen	mg/L	FGL & BSK	0.5									
	Nitrogen, Total Kjeldahl	mg/L	FGL & BSK	0.5			2.16	2.13		2.09	1.64	0.688	1.1
	Phosphate	mg/L	FGL & BSK	0.01			0.246	0.681		0.617	0.396	0.181	
	Phosphorus, Total	mg/L	FGL & BSK	0.01			0.294	0.764		0.651	0.327	0.218	0.35
	Solids, Total Suspended (TSS)	mg/L	FGL & BSK	10			468	14.1		17.5	61.6	39.2	ND
	Turbidity	NTU	FGL & BSK	0.2			7.26	10.9		14.9	18.2	13.6	1.9
	Unionized Ammonia Nitrogen	mg/L	FGL & BSK	0.05			ND	0.00481		0.0239		ND	
Organic	Triphenylphosphate	%	FGL & BSK	70-130				91.6		86.8	71.7	101	
	Atrazine	ug/L	FGL & BSK	0.5	1		ND	ND		ND	ND	ND	ND
	Simazine	ug/L	FGL & BSK	0.5	4		ND	ND		ND	ND	ND	ND
	Cyanazine	ug/L	FGL & BSK	0.5	1		ND	ND		ND	ND	ND	ND
	Glyphosate	ug/L	FGL & BSK	5	700		ND	40.9		19	3.44	10.6	
	Paraquat	ug/L	FGL & BSK	0.5	3.2		ND	ND		ND	ND	ND	
	Tetrachloro-m-xylene	%	FGL & BSK	45-112			71.1	74.2		63.2	63.8	54.6	
	Dicofol	ug/L	FGL & BSK	0.05			ND	ND		ND	ND	ND	ND
	TOC	mg/L	FGL & BSK	0.5			16.9	6.16		3.94	2.65	2.44	7.4
	p,p'-DDD	ng/L	FGL & BSK	5	1		ND	ND		ND	ND	ND	ND
	p,p'-DDE	ng/L	FGL & BSK	5	1		ND	ND		ND	ND	ND	ND
	p,p'-DDT	ng/L	FGL & BSK	5	1		ND	ND		ND	ND	ND	ND
	Dieldrin	ng/L	FGL & BSK	5	56		ND	ND		ND	ND	ND	ND
	Endrin	ng/L	FGL & BSK	5	760		ND	ND		ND	ND	ND	ND
	Methoxychlor	ng/L	FGL & BSK	5	30		ND	ND		ND	ND	ND	ND
	o,p - DDD	ng/L	FGL & BSK	5			ND	ND		ND		ND	ND
	o,p - DDE	ng/L	FGL & BSK	5			ND	ND		ND		ND	ND
	o,p - DDT	ng/L	FGL & BSK	5			ND	ND		ND		ND	ND
	Tetrachloro-m-xylene	%	FGL & BSK	5			42	47		24.3	48.8	48.9	99
rous Compounds	Chlorpyrifos	ug/L	FGL & BSK	0.015	0.015		0.4	0.136		0.091	0.00552	0.023	0.031
	Dimethoate	ug/L	FGL & BSK	0.1	1		ND	ND					
	Methamidophos		FGL & BSK										
Pathogens	Total Coliform		FGL & BSK	1			22000	15000		14000	7900	160000	>1600
	Fecal Coliform	MPN/100ml	FGL & BSK	1	400 (235)		170	460		11	490	3500	23
Water Column Toxicity	Fathead Minnow Bioassay	% Survival	ABC		<50%		100	100		100	95	97.5	100
	Ceriodaphnia Bioassy	% Survival	ABC		<50%		100	95		100	100	100	100
	Selenastrum Algae Bioassy	% NOEC	ABC		<50%		100	100		100	100	100	100
	Hyallea Azteca	% Survival	ABC		<50%	97.5			0				
Carbamates	Aldicarb	ug/L	BSK & APPL	0.4	3		ND	ND		ND	ND	ND	ND
	Carbaryl	ug/L	BSK & APPL	0.07	2.53		ND	ND		ND	ND	ND	ND
	Carbofuran	ug/L	BSK & APPL	0.07	0.5		ND	ND		ND	ND	ND	ND
	Diuron	ug/L	BSK & APPL	0.4	2		ND	ND		ND	ND	ND	ND
	Linuron	ug/L	BSK & APPL	0.4	1.4		ND	ND		ND	ND	ND	ND
	Methiocarb	ug/L	BSK & APPL	0.4	5		ND	ND		ND	ND	ND	ND
	Methomyl	ug/L	BSK & APPL	0.07	0.52		0.052	ND		ND	ND	ND	ND
	Oxamyl	ug/L	BSK & APPL	0.4	50		ND	ND		ND	ND	ND	ND

Note: BSK replaced FGL and APPL from Aug 2014

Note: Oct-Dec 2013, Jan,Mar & Sept 2014 were No Flow

	Analysis from Sediment
ND	Not Detected
	Exceedances
BPO	Basin Plan Objective

Table 3: Tabulated Results of Sample Analyses: Main Dain @Hwy 46

Test Results 2014	Location	MDC @ HWY 46. 558MDCH46							
	Sampled Date	Units	Lab	PQL	BPO	Oct-13	Apr-14	Aug-14	Sep-14
	Lab					Sediment	Sediment		
	Flows (CFS)	CFS	FGL & BSK					57.7	45.8
Field Measurements	Conductivity	umhos/cm	FGL & BSK	0.5	**700**			1040	1360
	Oxygen,	mg/L	FGL & BSK	0	>5			12.01	9.06
	pH	units	FGL & BSK	1	6.5-8.3			8.46	7.34
	Temp	°C	FGL & BSK	0				29.4	23.2
Dissolved Metals	Cadmium	ug/L	FGL & BSK	0.1	**5**			ND	0.083
	Copper	ug/L	FGL & BSK	0.5	**1300**			1.8	1.1
	Lead	ug/L	FGL & BSK	0.2	**15**			ND	0.058
	Nickel	ug/L	FGL & BSK	0.5	**100?**			2.6	0.051
	Zinc	ug/L	FGL & BSK	1				0.87	0.94
Total Metals	Arsenic	ug/L	FGL & BSK	0.2	**10**			9.3	6.8
	Boron	ug/L	FGL & BSK	10	**700**			490	700
	Cadmium	ug/L	FGL & BSK	0.1				ND	0.083
	Calcium	ug/L	FGL & BSK	1				61	65
	Copper	mg/L	FGL & BSK	1	1300			1.7	1.7
	Total Hardness	ug/L	FGL & BSK	2.5				220	210
	Magnesium	mg/L	FGL & BSK	1				17	12
	Lead	ug/L	FGL & BSK	0.2	15			0.092	0.23
	Molybdenum	ug/L	FGL & BSK	1	10			10	15
	Nickel	ug/L	FGL & BSK	1				2.6	2.6
	Selenium	ug/L	FGL & BSK	1	5			ND	0.62
	Zinc	ug/L	FGL & BSK	5				1.3	2
Wet Chemistry	Ammonia	mg/L	FGL & BSK	0.1	1.5			0.12	0.032
	Conductivity	umhos/cm	FGL & BSK	1	700			1100	1200
	TDS	mg/L	FGL & BSK	40	450			650	740
	Nitrate + Nitrite	mg/L	FGL & BSK	0.05				ND	0.43
	Kieldahl	mg/L	FGL & BSK	0.5					
	Nitrogen, Total	mg/L	FGL & BSK	0.5				0.65	0.45
	Phosphate	mg/L	FGL & BSK	0.01					
	Phosphorus,	mg/L	FGL & BSK	0.01				0.15	0.056
	Solids, Total	mg/L	FGL & BSK	10				ND	13
	Turbidity	NTU	FGL & BSK	0.2				4.7	3.3
	Unionized	mg/L	FGL & BSK	0.05					
Organic	Triphenylphosp	%	FGL & BSK	70-130					
	Atrazine	ug/L	FGL & BSK	0.5	1			ND	ND
	Simazine	ug/L	FGL & BSK	0.5	4			ND	ND
	Cyanazine	ug/L	FGL & BSK	0.5	1			ND	ND
	Glyphosate	ug/L	FGL & BSK	5	700			ND	ND
	Paraquat	ug/L	FGL & BSK	0.5	3.2			ND	ND
	Tetrachloro-m-	%	FGL & BSK	45-112					73
	Dicofol	ug/L	FGL & BSK	0.05				ND	ND
	TOC	mg/L	FGL & BSK	0.5				4	2.1
	p,p'-DDD	ng/L	FGL & BSK	5	1			ND	ND
	p,p'-DDE	ng/L	FGL & BSK	5	1			ND	ND
	p,p'-DDT	ng/L	FGL & BSK	5	1			ND	ND
	Dieldrin	ng/L	FGL & BSK	5	56			ND	ND
	Endrin	ng/L	FGL & BSK	5	760			ND	ND
	Methoxychlor	ng/L	FGL & BSK	5	30			ND	ND
	o,p - DDD	ng/L	FGL & BSK	5				ND	ND
	o,p - DDE	ng/L	FGL & BSK	5				ND	ND
	o,p - DDT	ng/L	FGL & BSK	5				ND	ND
	Tetrachloro-m-	%	FGL & BSK	5				105	89
Organophosphor ous Compounds	Chlorpyrifos	ug/L	FGL & BSK	0.015	0.015			0.031	0.0036
	Dimethoate	ug/L	FGL & BSK	0.1	1				ND
	Methamidophos		FGL & BSK						
Pathogens	Total Coliform		FGL & BSK	1				1600	1600
	Fecal Coliform	MPN/100ml	FGL & BSK	1	400 (235)			110	23
Water Column Toxicity	Fathead Minnow	% Survival	ABC		<50%			93	100
	Ceriodaphnia	% Survival	ABC		<50%			100	95
	Selenastrum	% NOEC	ABC		<50%			100	100
	Hyallea Azteca	% Survival	ABC		<50%	100	92.5		
Carbamates	Aldicarb	ug/L	BSK & APPL	0.4	3			ND	ND
	Carbaryl	ug/L	BSK & APPL	0.07	2.53			ND	ND
	Carbofuran	ug/L	BSK & APPL	0.07	0.5			ND	ND
	Diuron	ug/L	BSK & APPL	0.4	2			ND	ND
	Linuron	ug/L	BSK & APPL	0.4	1.4			ND	ND
	Methiocarb	ug/L	BSK & APPL	0.4	5			ND	ND
	Methomyl	ug/L	BSK & APPL	0.07	0.52			ND	ND
	Oxamyl	ug/L	BSK & APPL	0.4	50			ND	ND

Note: BSK replaced FGL and APPL from Aug 2014

Note: Oct-Dec 2013, Jan-Jul 2014 were No Flow

	Analysis from Sediment
ND	Not Detected
	Exceedances
BPO	Basin Plan Objective

7. Discussion of Sample Data

During 2014, the Main Drain was sampled at the 2 sites as stipulated in in the 2012 Water Quality Management Plan. The 7th Standard Rd. site was sampled 6 times during the year when water was flowing past the site. In 6 months during the year there was no flow and as such no sampling was carried out.

The site at Hwy 46 was sampled 2 times during the year, the remaining 10 months witnessed a no-flow condition and no sampling was carried out.

Sediment samples were collected for sediment toxicity analysis. This was carried out in October and April at both sites.

The Tables 2 and 3 provide detail information on the result of each months sample analyses. Brief discussion of the results are as follows;

Main Drain at 7th Standard Rd (CEDEN Code 558MDCH7SR)

This site was introduced in 2009 to help identify potential sources of water quality issues and has since been sampled on a monthly basis. The 2014 results shows an elevated quantity of Chlorpyrifos in February. April, May, July and August. A single water column toxicity issue was also seen in April with 0% survival of the Hyallea Azteca. Also recorded but of secondary importance are the exceedances in Arsenic and Boron, as well as in pH, EC and TDS. It is noteworthy to state here that routine analysis of groundwater from Irrigation well shows comparable values for the As, B, as well as EC and pH. This is an indication of groundwater being the source of these constituents.

Main Drain at Hwy 46 (CEDEN Code 558MDCH46)

This site represents the site of importance to the success of the implementation of the Main Drain MP. It is the last downstream sampling station and it shows the constituents of water leaving the area through the Main Drain. 10 months during the year, this site was dry. This was partly because the year was dry but most importantly the dryness was deliberate ongoing effort by the BVWSD to reduce and eventually permanently stop irrigation tail water from leaving the area. Various successful measures were taken in this regards with the most important being the recycling and efficient reuse of the tail water. The flows in August and September of 2014 were when water was delivered to the Kern Wildlife Refuge, with only a small component of tailwater, if any.

2014 results in Table 3 closely resemble what was seen in samples data from Main Drain at 7th Standard Rd. Elevated Chlorpyrifos were reported from August. A single water column toxicity issue was also seen in April with 0% survival of the water flea species Ceriodaphnia. As in Main Drain at 7th Standard Rd., reported but of secondary importance are the exceedances in Arsenic, Boron, as well as in pH, EC and TDS and as already stated, routine analysis of groundwater from Irrigation well shows comparable values for the As, B, as well as EC and pH and indication of groundwater being the source of these constituents.

Sediment sampling took place in October and April. There was no toxicity issues.

In both sample collection and analysis the objectives of the Management Plan (MP) were met.

8. Sampling and Analytical Methods

FGL follows the EPA mandated methods of reporting limits, detection limits for each constituents. See Appendix A for a table of Limits and Analytical methods as well as lists of all tested constituents.

In accordance with guidelines from the MRP for Order R5-2008-0005 FGL followed appropriate sample collection methods.

Water samples are grab samples, sediment samples are composite samples. Grab samples are collected from the canal bank in lab provided containers. Collections are done with the sampler facing upstream direction (direction of flow) with every precaution taken to collect only water that has not been affected by the disturbed sediment in the canal. Containers are briefly filled, dumped and refilled prior to sealing for transport.

A cleaned stainless steel scoop is used to collect sediment sample with the scoop working upstream. Samples are homogenized by the lab prior to the beginning of the toxicity and grain size tests. Samples collected are immediately kept cool using blue ice until they are packed in wet ice for transport to the lab.

9. Laboratory and Field Quality Control Sample Results

Quality control results, which includes all internal calibration checks, method blanks, and surrogate spikes required under the specific methods are submitted with each quarterly submittal. The report include any issues that occur at the lab during analysis. Data for the 4 quarters are included in the accompanying CD. (Appendix B)

Field QC results are included in Tables 2 and 3 as duplicates (Dup) of field readings. Field instrument calibration checks are included in the accompanying CD. There were no QAQC issues in 2013. Minor issues are handled using standard QAQC procedures.

The following sets of **Tables of Completeness (pages 16-24)** state issues and ways in which the labs handled those issues. See Table 5

Table 4(i): Completeness Evaluation- Field Parameters

Completeness Evaluation: Field Parameters

Main Drain Canal@Hwy 46 Main Drain Canal@7th St.	**Field Parameters 1st Qtr (Oct-Dec 2013)**					
	Oct		Nov		Dec	
Field Parameters	Wet	Dry	Wet	Dry	Wet	Dry
Obsevations		2		2		2
Photos		2		2		2
Measurements		2		2		2
Sample Collection		2		2		2

Main Drain Canal@Hwy 46 Main Drain Canal@7th St.	**Field Parameters 2nd Qtr (Jan-Mar 2014)**					
	Jan		Feb		Mar	
Field Parameters	Wet	Dry	Wet	Dry	Wet	Dry
Obsevations		2	1	1	1	1
Photos		2	1	1	1	1
Measurements		2	1	1	1	1
Sample Collection		2	1	1	1	1

Main Drain Canal@Hwy 46 Main Drain Canal@7th St.	**Field Parameters 3rd Qtr (Apr-Jun 2014)**					
	Apr		May		Jun	
Field Parameters	Wet	Dry	Wet	Dry	Wet	Dry
Obsevations	1	1	1	1	1	1
Photos	1	1	1	1	1	1
Measurements	1	1	1	1	1	1
Sample Collection	1	1	1	1	1	1

Main Drain Canal@Hwy 46 Main Drain Canal@7th St.	**Field Parameters 4th Qtr (Jul-Sep 2014)**					
	Jul		Aug		Sept	
Field Parameters	Wet	Dry	Wet	Dry	Wet	Dry
Obsevations	1	1	2		1	1
Photos	1	1	2		1	1
Measurements	1	1	2		1	1
Sample Collection	1	1	2		1	1

Table 4(ii): Completeness Evaluation- Water Quality

Completeness Evaluation: Water Quality												
Main Drain Canal@Hwy 46. Main Drain Canal@7th St.	**Water Quality 1st Qtr (Oct - Dec 2013)**											
		Oct-13			Nov-13			Dec-13				
Constituents	Lab	Samples	Qualified Results	QA/QC Failures	Samples	Qualified Results	QA/QC Failures	Samples	Qualified Results	QA/QC Failures	Keys to comments	
Physical Parameters												
Flow		0			0			0				
pH		0			0			0				
D Oxy		0			0			0				
Temp		0			0			0				
Color		0			0			0				
Turbidity		0			0			0				
General Chem												
TDS		0			0			0				
TSS		0			0			0				
Hardness		0			0			0				
TOC		0			0			0				
Pathogens												
Fecal (E. coli)		0			0			0				
Total Coliform		0			0			0				
Water Column Toxicity												
Selenastrum												
Pimphales												
Ceriodaphnia												
Sediment												
Hyalella azteca		16			0			0				
Grain Size		2			0			0				
Total		20										
% Completeness		100										

% Completeness = (QAQC Failure/ Required Samples) x100

ABC

Main Drain Canal@Hwy 46. Main Drain Canal@7th St.	**Water Quality 2nd Qtr (Jan-March 2014)**											
		Jan-14			Feb-14			Mar-14				
Constituents	Lab	Samples	Qualified Results	QA/QC Failures	Samples	Qualified Results	QA/QC Failures	Samples	Qualified Results	QA/QC Failures	Keys to comments	
Physical Parameters											(A) Missing QC MS1 sample. QAPP does not require Matrix Spike for Bacteria analyses	
Flow					1							
pH					1							
D Oxy					1							
Temp					1							
Color					1							
Turbidity					6							
General Chem												
TDS					6							
TSS					6							
Hardness					3							
TOC					7							
Pathogens												
Fecal (E. coli)					3	1 (A)						
Total Coliform					3	1 (A)						
Water Column Toxicity												
Selenastrum					8							
Pimphales					8							
Ceriodaphnia					8							
Total					63	2						
% Completeness					100							

% Completeness = (QAQC Failure/ Required Samples) x100

ABC FGL

Table 4(ii): Completeness Evaluation- Water Quality (Contd)

Main Drain Canal@Hwy 46. Main Drain Canal@7th St.	**Water Quality 3rd Qtr (Apr-Jul 2014)**											
		Apr-14			May-14			Jun-14				
Constituents	Lab	Samples	Qualified Results	QA/QC Failures	Samples	Qualified Results	QA/QC Failures	Samples	Qualified Results	QA/QC Failures	Keys to comments	
Physical Parameters												
Flow					1			1				
pH		1			1			1			(A) Missing sample QC. Another BVC sample was selected as dup	
D Oxy		1			1			1				
Temp		1			1			1				
Color		1			1			1				
Turbidity		4			4			4	1 (D)		(B) RPD exceeded limit for Total Coliform, possibly due to matrix	
General Chem												
TDS		5			6			6	1(C)			
TSS		4			7			6				
Hardness		3			3			3				
TOC		7			6			7				
Pathogens											1(C)=TDS & EC > PQL in Field Blank	
Fecal (E. coli)		3	1 (A)		3			3				
Total Coliform		3	1 (B)		3			3				
Water Column Toxicity												
Selenastrum		8			8			8				
Pimphales		8			8			8			(D) Sample nonhomogeneity may be affecting analyte. Data accepted based on on the LCS or CCV	
Ceriodaphnia		8			8			8				
Sediment												
Hyalella azteca		16			0			0				
Grain Size		2			0			0				
Total		75	2		61			61	2			
% Completeness			100			100			100			

% Completeness = (QAQC Failure/ Required Samples) x100

ABC FGL

Main Drain Canal@Hwy 46. Main Drain Canal@7th St.	**Water Quality 4th Qtr (Apr-Jul 2014)**											
		Jul-14			Aug-14			Sep-14				
Constituents	Lab	Samples	Qualified Results	QA/QC Failures	Samples	Qualified Results	QA/QC Failures	Samples	Qualified Results	QA/QC Failures	Keys to comments	
Physical Parameters												
Flow		1			2			1				
pH		1			2			1				
D Oxy		1			2			1				
Temp		1			2			1				
Color		1			2			1				
Turbidity		6			5			6			(A) Sample matrix may be affecting this analyte. Data cacepted based on the LCS or CCV recovery.	
General Chem												
TDS		6			6			4				
TSS		7			5			4				
Hardness		1			8			1				
TOC		7	2(A)		8			6				
Pathogens												
Fecal (E. coli)		3			5			4				
Total Coliform		3			5			4				
Water Column Toxicity												
Selenastrum		8			24			16				
Pimphales		8			24			16				
Ceriodaphnia		8			24			16				
Sediment											FGL/BSK*. BSK replaced FGL from Aug 2014	
Hyalella azteca												
Grain Size												
Total		62	2		124			82				
% Completeness			100			100			100			

% Completeness = (QAQC Failure/ Required Samples) x100

FGL ABC BSK

Table 4(iii): Completeness Evaluation- Metal Nutrients

Completeness Evaluation: Metal Nutrients												
Main Drain Canal@Hwy 46.	Metal Nutrients 1st Qtr (Oct - Dec 2013)											
Main Drain Canal@7th Std.												
		Oct-13			Nov-13			Dec-13				
Constituents	Lab	Samples	Qualified Results	QA/QC Failures	Samples	Qualified Results	QA/QC Failures	Samples	Qualified Results	QA/QC Failures	Keys to comments	
Metals												
Arsenic		0			0			0				
Boron		0			0			0				
Cadmium		0			0			0				
Copper		0			0			0				
Lead		0			0			0				
Molybdenum		0			0			0				
Nickel												
Selenium		0			0			0				
Zinc		0			0			0				
Nutrients		0			0			0				
Ammonia N		0			0			0				
Unionized Ammonia												
Nitrate- N		0			0			0				
Phosphorous		0			0			0				
Orthphosphate_P												
Total Kjeldahl Nitrogen												
Total												
% Completeness												

% Completeness = (QAQC Failure/ Required Samples) x100

Completeness Evaluation: Metal Nutrients												
Main Drain Canal@Hwy 46.	Metal Nutrients 2nd Qtr (Jan - Mar 2014)											
Main Drain Canal@7th Std.												
		Jan-14			Feb-14			Mar-14				
Constituents	Lab	Samples	Qualified Results	QA/QC Failures	Samples	Qualified Results	QA/QC Failures	Samples	Qualified Results	QA/QC Failures	Keys to comments	
Metals												
Arsenic		0			7			0			(A)Sample matrix may be affecting these analytes. Data accepted based on the LCS or CCV recovery	
Boron		0			7			0				
Cadmium		0			7	1(A)		0				
Copper		0			7			0				
Lead		0			7	1(A)		0				
Molybdenum		0			7			0				
Nickel					7							
Selenium		0			7			0				
Zinc		0			7	2(A)		0				
Nutrients								0				
Ammonia N		0			9			0				
Unionized Ammonia												
Nitrate- N		0			8			0				
Phosphorous		0			12			0				
Orthphosphate_P					7							
Total Kjeldahl Nitrogen					8							
Total					107	4						
% Completeness					100							

% Completeness = (QAQC Failure/ Required Samples) x100

FGL

Table 4(iii): Completeness Evaluation- Metal Nutrients (Contd)

Completeness Evaluation: Metal Nutrients												
Main Drain Canal@Hwy 46. Main Drain Canal@7th Std.	Metal Nutrients 3rd Qtr (Apr - Jun 2014)											
		Apr-14			May-14			Jun-14				
Constituents	Lab	Samples	Qualified Results	QA/QC Failures	Samples	Qualified Results	QA/QC Failures	Samples	Qualified Results	QA/QC Failures	Keys to comments	
Metals											(A) Analytes detected in Field Blank. Data was accepted based on LCS recovery. In May sampl, Molydenum, Pb exceeded recovery for MSD, RPD acceptable. (B) Post digestion spike not within acceptable range because of matrix interference.	
Arsenic		7			7			7				
Boron		7			7	1(B)		7	1(B)			
Cadmium		7			7	1 (A)		7				
Copper		7	2(A)		7	1 (A)		7				
Lead		7	1 (A)		7	1 (A)		7	1(B)			
Molybdenum		7	1 (A)		7			7				
Nickel		7			7	2 (A)		7	1 (A)			
Selenium		7			7			7				
Zinc		7	2 (A)(B)		7	3 (A)(B)		7				
Nutrients												
Ammonia N		7			10			7				
Unionized Ammonia		3			3			3				
Nitrate- N		10			7			8				
Phosphorous		7			7			7	2 (A)			
Orthphosphate_P		11			7			7				
Total Kjeldahl Nitrogen		7			7			7				
Total		108	6		104	9		102	5			
% Completeness		100			100			100				

% Completeness = (QAQC Failure/ Required Samples) x100

FGL

Completeness Evaluation: Metal Nutrients												
Main Drain Canal@Hwy 46. Main Drain Canal@7th Std.	Metal Nutrients 4th Qtr (Jul - Sep2014)											
		Jul-14			Aug-14			Sep-14				
Constituents	Lab	Samples	Qualified Results	QA/QC Failures	Samples	Qualified Results	QA/QC Failures	Samples	Qualified Results	QA/QC Failures	Keys to comments	
Metals											(A) Trace of these Metals detected in Filed Blank. Data was accepted based on LCS or CCV recovery.	
Arsenic		7			8			0				
Boron		7	1(B)		8			0				
Cadmium		7	2 (A)		8			0				
Copper		7	2 (A)		8			0			(D) Trace level of these analytes detected in Method Blank associated with all samples. Level < RL; ok with QAPP.	
Lead		7	2 (A)		8			0				
Molybdenum		7	1 (A)		8			0				
Nickel		7	1 (A)		8							
Selenium		7			8			0				
Zinc		7	1 (A)		8			0			(B) Post digestion spike not within acceptable range because of matrix interference.	
Nutrients												
Ammonia N		7			8	1 (D)		0				
Unionized Ammonia		3			8							
Nitrate- N		7			8	1 (D)		0				
Phosphorous		7			8	1 (D)		0				
Orthphosphate_P		7			8						Note: Calcium in MS2 exceeds upper limit control of Lab. This is due to high Ca level in samples from BVC area	
Total Kjeldahl Nitrogen		7			8	1 (D)						
Total		101	10		120	4						
% Completeness		100			100							

% Completeness = (QAQC Failure/ Required Samples) x100

FGL BSK

Table 4 (iv): Completeness Evaluation

Completeness Evaluation: Pesticides & Herbicides												
Main Drain Canal@Hwy 46.	Pesticides & Herbicides 1st Qtr (Oct - Dec 2013)											
Main Drain Canal@7th Std.												
		Oct-13			Nov-13			Dec-13				
Constituents	Lab	Samples	Qualified Results	QA/QC Failures	Samples	Qualified Results	QA/QC Failures	Samples	Qualified Results	QA/QC Failures	Keys to comments	
Organochlorines												
DDD		0			0			0				
DDE		0			0			0				
DDT		0			0			0				
Dicofol		0			0			0				
Dieldrin		0			0			0				
Endrin		0			0			0				
Methoxychlorine		0			0			0				
Tetrachloro-m-xylene		0			0			0				
Organophosphorous												
Azinphos methyl		0			0			0				
Chlorpyrifos		0			0			0				
Dementon-S												
Dichlorvos		0			0			0				
Dimethoate		0			0			0				
Disulfoton		0			0			0				
Malathion		0			0			0				
Methidathion		0			0			0				
Parathion, Methyl		0			0			0				
Phorate		0			0			0				
Phosmet		0			0			0				
Malathion		0			0			0				
Carbamates												
Aldicarb		0			0			0				
Carbaryl		0			0			0				
Carbofuran		0			0			0				
Diuron		0			0			0				
Methiocarb		0			0			0				
Methomyl		0			0			0				
Oxamyl		0			0			0				
Herbicides												
Atrazine		0			0			0				
Cyanazine		0			0			0				
Simazine		0			0			0				
Diuron		0			0			0				
Linuron		0			0			0				
Molinate		0			0			0				
Thiobencarb		0			0			0				
Glyphosate		0			0			0				
Paraquat		0			0			0				
Trifluralin		0			0			0				
Total												
% Completeness												

% Completeness = (QAQC Failure/ Required Samples) x100

Table 4 (iv): Completeness Evaluation (Contd.)

Completeness Evaluation: Pesticides & Herbicides												
Main Drain Canal@Hwy 46. Main Drain Canal@7th Std.	Pesticides & Herbicides 2nd Qtr (Jan - Mar 2014)											
		Jan-14			Feb-14			Mar-14				
Constituents	Lab	Samples	Qualified Results	QA/QC Failures	Samples	Qualified Results	QA/QC Failures	Samples	Qualified Results	QA/QC Failures	Keys to comments	
Organochlorines											(A) CCV above acceptable range. Samples which were non-detect for this analyte were accepted.	
DDD		0			7			0				
DDE		0			7			0				
DDT		0			7	1 (B)		0				
Dicofol		0			7	1 (A)		0				
Dieldrin		0			7	1 (B)		0				
Endrin		0			7			0				
Methoxychlorine		0			7						(B) Sample matrix may be affecting this analyte. Data accepted based on the LCS or CCV recovery	
Tetrachloro-m-xylene		0			7	1 (A)		0				
Organophosphorous								0				
Azinphos methyl		0			7			0				
Chlorpyrifos		0			7			0				
Dementon-S		0			7							
Dichlorvos		0			7			0				
Dimethoate		0			7			0				
Disulfoton		0			7			0				
Malathion		0			7			0				
Methidathion		0			7			0				
Parathion, Methyl		0			7			0				
Phorate		0			7			0				
Phosmet		0			7			0				
Malathion		0			7			0				
Carbamates								0				
Aldicarb		0			7			0				
Carbaryl		0			7			0				
Carbofuran		0			7			0				
Diuron		0			7			0				
Methiocarb		0			7			0				
Methomyl		0			7			0				
Oxamyl		0			7			0				
Herbicides								0				
Atrazine		0			7			0				
Cyanazine		0			7			0				
Simazine		0			7			0				
Diuron		0			7			0				
Linuron		0			7			0				
Molinate		0			7			0				
Thiobencarb		0			7			0				
Glyphosate		0			7			0				
Paraquat		0			7			0				
Trifluralin		0			7							
Total		0			259	4						
Total						100						
% Completeness												
% Completeness = (QAQC Failure/ Required Samples) x100					FGL	APPL						

Table 4 (iv): Completeness Evaluation (Contd.)

Completeness Evaluation: Pesticides & Herbicides												
Main Drain Canal@Hwy 46. Main Drain Canal@7th Std.	Pesticides & Herbicides 3rd Qtr (Apr- Jun 2014)											
		Apr-14			May-14			Jun-14				
Constituents	Lab	Samples	Qualified Results	QA/QC Failures	Samples	Qualified Results	QA/QC Failures	Samples	Qualified Results	QA/QC Failures	Keys to comments	
Organochlorines											(A) LCS &/or CCV above acceptable range. Samples which were non-detect for this analyte were accepted.	
DDD		7			7			10				
DDE		7			7			10				
DDT		7			6			10	1 (B)			
Dicofol		7	1 (A)		7			6	1 (A)			
Dieldrin		7			7			10				
Endrin		7			7			10				
Methoxychlorine		7			7			10			(B) Sample matrix may be affecting this analyte. Data accepted based on the LCS or CCV recovery	
Tetrachloro-m-xylene		7	1 (A)		7			10	1 (B)			
Organophosphorous												
Azinphos methyl		7			7			7				
Chlorpyrifos		7			7			7				
Dementon-S		7			7			7	1 (B)			
Dichlorvos		7			7			7				
Dimethoate		7			7			7				
Disulfoton		7			7			7				
Malathion		7			7			7				
Methidathion		7			7			7				
Parathion, Methyl		7			7			7				
Phorate		7			7			7				
Phosmet		7			7			7				
Malathion		7			7			7				
Carbamates												
Aldicarb		7			7			7				
Carbaryl		7			7			7				
Carbofuran		7			7			7				
Diuron		7			7			7				
Methiocarb		7			7			7				
Methomyl		7			7			7				
Oxamyl		7			7			7				
Herbicides												
Atrazine		7			7			10				
Cyanazine		7			7			10				
Simazine		7			7			10				
Diuron		7			7			10				
Linuron		7			7			10				
Molinate		7			7			10				
Thiobencarb		7			7			10				
Glyphosate		7			7			10				
Paraquat		7	1 (A)		7			10	1 (B)			
Trifluralin		7	1 (B)		7			10				
Total		259	4		258			309	5			
% Completeness		100			100			100				

% Completeness = (QAQC Failure/ Required Samples) x100

APPL FGL

Table 4 (iv): Completeness Evaluation (Contd.)

Completeness Evaluation: Pesticides & Herbicides												
Main Drain Canal@Hwy 46. Main Drain Canal@7th Std.	Pesticides & Herbicides 4th Qtr (Jul- Sep 2014)											
		Jul-14			Aug-14			Sep-14				
Constituents	Lab*	Samples	Qualified Results	QA/QC Failures	Samples	Qualified Results	QA/QC Failures	Samples	Qualified Results	QA/QC Failures	Keys to comments	
Organochlorines											(A) LCS &/or CCV above acceptable range. Samples which were non-detect for this analyte were accepted.	
DDD		7	1 (B)		8			7				
DDE		7			8			7				
DDT		7			8			7				
Dicofol		7	1 (A)		8			7	1 (A)			
Dieldrin		7			8			7				
Endrin		7	1 (B)		8			7				
Methoxychlorine		7			8			7			(B) Sample matrix may be affecting this analyte. Data accepted based on the LCS or CCV recovery	
Tetrachloro-m-xylene		7			8			7				
Organophosphorous												
Azinphos methyl		7			8			7				
Chlorpyrifos		7			8			7				
Dementon-S		7	1 (B)		8			7				
Dichlorvos		7			8			7				
Dimethoate		7			8			7				
Disulfoton		7			8			7				
Malathion		7			8			7				
Methidathion		7			8			7				
Parathion, Methyl		7			8			7				
Phorate		7			8			7				
Phosmet		7			8			7				
Malathion		7			8			7				
Carbamates												
Aldicarb		7			8			7				
Carbaryl		7			8			7				
Carbofuran		7			8			7				
Diuron		7			8			7				
Methiocarb		7			8			7				
Methomyl		7			8			7				
Oxamyl		7			8			7				
Herbicides												
Atrazine		7			8			7				
Cyanazine		7			8			7				
Simazine		7			8			7				
Diuron		7			8			7				
Linuron		7			8			7				
Molinate		7			8			7				
Thiobencarb		7			8			7				
Glyphosate		7			8			7				
Paraquat		7	1 (A)		8	1 (B)		7				
Trifluralin		7			8			7				
Total		259	5		296	1		259	1			
% Completeness			100			100			100			

% Completeness = (QAQC Failure/ Required Samples) x100

Lab*: BSK replaced FGL and APPL from Aug 2014 onward

BSK FGL APPL

10. Summary of Quality Assurance Evaluation

The summary of Quality Assurance Evaluation results is presented in the table below. There are no major reported issues that affect the integrity of any of the results from the 2 sites and the 338 sampled constituents.

Table 5: Summary of QA Evaluation Results.

Main Drain @Hwy 46 Main Drain @ 7th Std RD.	**Summary of Quality Assurance Evaluation Results-2014**														
Constituent	1st Quarter			2nd Quarter			3rd Quarter			4th Quarter			**2014 Summary**		
	No of Samples	Qualified Results	QAQC Failures	No of Samples	Qualified Results	QAQC Failures	No of Samples	Qualified Results	QAQC Failures	No of Samples	Qualified Results	QAQC Failures	No of Samples	Qualified Results	QAQC Failures
General Water quality	0			63	2		197	4		268	2				
Metal & Nutrients	0			107	4		314	20		221	14				
Pesticides & Herbicides	0			259	4		826	9		814	7				
Total	**0**			**429**	**10**		**1337**	**33**		**1303**	**23**		**3069**	**66**	**0**
Overall Completeness														**100%**	

11. Flow Monitoring

Flow rates vary throughout the length of the Main Drain Canal due to its many inputs of flow. Flow rates can be determined in multiple ways. At the end of 2013 a new measurement flume was installed in the Main Drain Canal just less than one mile south of Highway 46. This will allow for very accurate flow measurement leaving the District. Prior to this, a weir located 1 mile south of Hwy 46 was used to measure flow. The flow at the weir would be similar to the flow at Hwy 46.

At times when there was a very high flow in the Main Drain Canal, it was because the BVWSD was wheeling water to the Kern Wildlife Refuge. The BVWSD has a historical and contractually obligation to deliver water to this location. These flows are most, if not all the flow when they occur. This inflow into the Main Drain Canal is metered, which allows these flows to be quantified. The District has installed a new pipe outlet to the Main Drain at the north end of the District to supply the refuge with its water. This will allow for the refuge water to enter the Main Drain Canal north of I-5, approximately 1.5 miles south of Highway 46.

However, due to a paperwork issue, the Bureau of Reclamation was unable to use this new location as a delivery point in 2014.

In 2014 and going forward, no fields north of I-5 will have row irrigation, and there should be zero drain flows entering the Main Drain Canal north of I-5. If the District can achieve its goal of keeping all drain water south of I-5, it will be easy to confirm zero drain flow north of Highway 46, even when water is being wheeled to the Refuge. The water being wheeled to the Refuge comes from the SWP, and will be delivered by the Semitropic 120" pipeline which crosses the BVWSD. The paperwork issues should be resolved in 2015.

There is no structure near 7th Standard Rd., and these flows are approximations based on measurements using a flow meter and approximate area. At the testing location.

Flow Rates at Sample Times

Flow in cfs	Oct	Nov	Dec	Jan	Fe	Mar	Apr	Ma	Jun	Jul	Au	Se
7th Std .	0	0	0	0	5	0	5	5	0	0	3	0
Hwy 46	0	0	0	0	0	0	0	0	0	0	58*	46*
*Main Drain used to Wheel Aqueduct Water past Hwy 46												

Table 6: Flow Rate at Sample Sites

12. Exceedance Summary

Table 7 is a summary of the exceedances recorded in 2014. Of all the exceedances, 0% survival of *Hyallea azteca* belongs to the "high priority tier" as defined in the Main Drain Water Quality Management Plan.

Other exceedances such as the high showing of the organophosphate Chlorpyrifos, and trace metals; Arsenic and Molybdenum are of Intermediate Priority. The rest of the bunch including EC, pH, TDS and Diuron and Fecal Coliform are of low priority.

Table 7: Summary of Exceedances.

Main Drain@ 7th Standard Rd.

	Sample Location	MDC @ SEVENTH STANDARD RD. 558MDC7SR										
Test Results 2014	Sampled Date	Units	Lab	PQL	BPO	Feb-14	Apr-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14
								Sedmnt				
	Flows (CFS)	CFS	FGL & BSK				0		4	0	0	2.77
Field Measurements	Conductivity	umhos/cm	FGL & BSK	0.5	700	703	1477		1889	1794	984	850
	pH	units	FGL & BSK	1	6.5-8.3	8.33				8.5		
Total Metals	Arsenic	ug/L	FGL & BSK	0.2	10	12.9	16.8		14.2	14.3	17.4	15
	Boron	ug/L	FGL & BSK	10	700					898		
	Conductivity	umhos/cm	FGL & BSK	1	700		1500		1860	1740	971	1400
	TDS	mg/L	FGL & BSK	40	450		1060		1280	1210	650	940
Organophopsphorous	Chlorpyrifos	ug/L	FGL & BSK	0.015	0.015	0.4	0.136		0.091		0.023	0.031
Toxicity	Hyallea azteca	% Survival	ABC		<50%			0*				
	Note: 0% survival of H. azteca triggered analysis of Pyrethroid- See below table for result											

Pyrethroids Soil Result for MDC@7th Std Rd. 551MDC7SR- Sampled 4/26/2014								
MethodName	AnalyteName	FractionN	Unit	DilFactor	Result	ResultQualCode	MDL	RL
EPA 160.3	Moisture	Total	% recovery	1	41.2	=	0	2.0
EPA 8081A	Bifenthrin	Total	ng/g dw	1	-27.00	ND	27.00	85.0
EPA 8081A	Cyfluthrin, total	Total	ng/g dw	1	-27.00	ND	27.00	85.0
EPA 8081A	Cyhalothrin, Total lambda-	Total	ng/g dw	1	-27.00	ND	27.00	85.0
EPA 8081A	Cypermethrin, total	Total	ng/g dw	1	-140.00	ND	140.00	430.0
EPA 8081A	Esfenvalerate/Fenvalerate, total	Total	ng/g dw	1	-27.00	ND	27.00	85.0
EPA 8081A	Fenpropathrin	Total	ng/g dw	1	-27.00	ND	27.00	85.0
EPA 8081A	PCB 209(Surrogate)	Total	% recovery	1	87.5		-88	-88
EPA 8081A	Permethrin, total	Total	ng/g dw	1	-27.00	ND	27.00	85.0
EPA 8081A	Tetrachloro-m-xylene(Surrogate)	Total	% recovery	1	80.2		-88	-88
EPA 8141A	Chlorpyrifos	Total	ng/g dw	1	59*	DNQ	29.00	170.0
EPA 8141A	Tributylphosphate(Surrogate)	Total	% recovery	1	101		-88	-88
EPA 8141A	Triphenyl phosphate(Surrogate)	Total	% recovery	1	113		-88	-88
					* Estimated			
					ND= Detected			

Toxicity exceedance 0% survival of Hyallea azteca was reported from the sediment sample collected in April 26 2014 from the 7th Standard Rd site (551MDC7SR). These exceedance triggered analyses of that sediment samples for Pesticides/Pyrethroids and Chlorpyrifos.

Result (see above table) indicates the occurrences of Pesticides/Pyrethroids and Chlorpyrifos in very low level and may not be responsible for the 0% survival of H. azteca. This is an isolated case of toxicity exceedance and the cause is not apparent at this time.

Main Drain@ Hwy 46

	Sample Location	MDC @ HWY 46. 558MDCH46					
Test Results 2014	Sampled Date	Units	Lab	PQL	BPO	Aug-14	Sep-14
	Lab						
	Flows (CFS)	CFS	BSK			57.7	45.8
Field Measurements	Conductivity	umhos/cm	BSK	0.5	700	1040	1360
	Oxygen, Dissolved	mg/L	BSK	0	>5		
	pH	units	BSK	1	6.5-8.3	8.46	
	Conductivity	umhos/cm	BSK	1	700	1100	1200
	TDS	mg/L	BSK	40	450	650	740
Organophosphorous	Chlorpyrifos	ug/L	BSK	0.015	0.015	0.031	

Both sites recorded exceedances in EC and TDS. The groundwater in most parts of the coalition area drained by the Main Drain Canal exhibit elevated level of these constituents. This indicates that high salinity and pH are from groundwater and are not Irrigation issues.

Trace metals with high showing above the BPO include Arsenic and Boron. As mentioned above in relation to EC and TDS, analyses of Irrigation well water shows elevated level of these two elements.

13. Actions Taken to Address Exceedances

There are four areas where actions were taken to address Exceedances. They are:

1. Reduce Inflows to the Main Drain
2. Reclaim more Water from the Main Drain
3. Publicize goals of zero Drain Flow Leaving the District
4. Educate and outreach to growers to improve drain water quality

If there was no flow in the Main Drain Canal, there could not be exceedances. To try and approach the no flow the District instituted a policy of water tolls. 2013 was the first year in the History of BVWSD where growers had to pay for the surface water supplied to them. This gave the growers a financial incentive to manage flows through their fields more efficiently. Water tolls had the desired effect of getting the growers to watch their water more closely. The BVWSD was helped in this effort by the State of California passing a law requiring the tolls. In 2014 due to the drought there was no surface water delivered to growers in the BVC. This caused a reduction in plantings, which probably reduced drain flows.

Additionally, many growers are converting their fields to permanent crops where they irrigate with drip irrigation. The drip irrigation has zero drain water for run-off. Over 33% of the lands in the Buttonwillow Service Area of the BVWSD now do not have drain water run-off into the Main Drain Canal. When the first exceedance was recorded it was close to 100% had drain water enter the Main Drain. This reduction of flow, however does not change the type of water which enters the Main Drain. The chlorpyrifos, which is a major water quality issue, is used both on the permanent crops being planted, and the alfalfa that it is displacing. So although the flows have been reduced, the risk of exceedance has not been reduced.

Another way the District is minimizing storm flows into the Main Drain Canal is by abandoning drains. As fields are altered with planting of permanent crops several growers have requested permission to abandon a drain in their field. Where the drain is abandoned it means in a storm event, the time of concentration will be longer for the water to reach the Main Drain, which will reduce peak flows.

The second effort was to reclaim 100% of the water. The BVWSD has encouraged this by installing several new turnouts for growers from the Main Drain Canal. This has created more opportunities for capturing this water and returning it, just like a typical tailwater sump. The District also has priced the reclaimed water at a significantly lower price than the surface water, which is cheaper than the well water. This again gives the grower the financial incentive to use the reclaimed water as the first choice. Currently there is usually a waiting list for access to the reclaimed water.

The District has made other improvements which allow growers to maximize reclaimed water use. Some of these include automating pumps so they can come on when water is available, even in the middle of the night. The District has a grower set up where his wetlands, which are located at the very north end of the District, can act as an overflow from the Main Drain so that should any water reach him it can be captured and reclaimed. The District has several reclamation pumps which pump water from the drains into the supply canals. One of these had a variable speed motor installed so that the District could capture low flows as well as intermediate and high flows. In support of the BVC's efforts the BVWSD does not charge growers for new turnouts that reclaim water from the Main Drain, or any other drain. At the north end of the District many fields can pump directly from the Main Drain Canal to reclaim drainwater.

Repetition is the key to learning. The BVC and the BVWSD have taken this approach in educating the field employees and the growers of the goal to reclaim 100% of the water in the Main Drain. That point is said in safety meetings, in newsletters, in daily discussions, in board meetings. By repeating the goal incessantly, it sinks in. Employees have seen overtime given to stop the flow. They have seen turnouts built and installed to stop the flow. They understand it is a District wide goal, and they work with the growers to help accomplish this goal.

The growers who pay the bills, understand the cost of monitoring. They must pay for this monitoring with their BVC Coalition fee. They can see their fee is higher than adjacent Coalitions. They know that by working with the BVC and BVWSD and reclaiming the water, that the BVC's monitoring cots will go down, and hence their fees.

But the BVC knows that it may not always stop 100% of the water. There is still continued effort to educate the growers on water quality issues and management practices that can improve the water quality in the Main Drain Canal.

Historically the BVWSD has always delivered water to the Kern Wildlife Refuge through the Westside Canal. This unlined canal had seepage losses which went into the perched water table. This good quality water was mixing with high TDS water and becoming high TDS water too. This had a major negative impact on cropping patterns, especially in the northern portion of the District. In 2013 water was delivered through the Westside Canal to the refuge for two and a half months. The change in the perched water table was noticeable. The District decided it was in the best interest of the growers to deliver the water to the Refuge through the Main Drain Canal. While this was done, it made the goal of having no drain water leave the District much harder to accomplish, as drain water would enter the Canal north of the entry point for the Refuge water supply. The BVWSD has installed a new turnout at a point 1-1/2 miles south of Highway 46, and north of the last drain water entry into the Main Drain Canal. Instead of having the goal that no drain water leave the District, the new goal is to have no drain water go north of I-5 in the Main Drain or any other drain. That can be accomplished going forward, in part due to cropping pattern changes.

The BVC thinks it can cease operation of tailwater in the Main Drain Canal north of I-5. This would mean north of I-5 the only water in the Main Drain would be supply water from the SWP to the Kern Wildlife Refuge. If a mile of the Main Drain is dry, the District feels it can convince the RWQCB that the water flowing is a different water. Also built in the Main Drain, ½ mile north of the new Refuge supply, and a mile south of Highway 46 is a new measuring flume. This will allow for very accurate measurement of flows, which should be just the flows from the Refuge supply. When the SCADA installations are complete at this location the RWQCB should be able to monitor flows in the Main Drain if they desired. With this

upgraded monitoring the BVC hopes to change the status of monitoring in the Main Drain from monthly to when water flows go north of I-5. This would only be in high storm flows if the BVWSD and BVC continue to get buy-in from growers. Until a wet year arrives, nobody really knows how the growers will respond in managing their tailwater.

14. Evaluation of Monitoring and Spatial Trends

The distance between the two monitoring sites is 11 miles. The question is how sufficient is this in terms of gathering information for action, and is more or less data required to fulfill the management objectives of eliminating exceedances as the water leaves the BVWSD in the Main Drain. Since this plan was been put into action there has been a major conversion to permanent crops north of Seventh Standard Road. The crop map shown in Figure 1 reflects lands as of 2013. In 2014 there are no row crops being grown north of I-5, nor are any expected in the future.

As the permanent crops expand, thousands more acres are planned north of Seventh Standard Road, the justification for two testing sites becomes less evident. The BVC will address this issue in the Surface Water Quality Management Plan which will be re-considered or revised in the near future. If the District continues to capture and reclaim all drain water it would expect to be allowed to delete the Seventh Standard monitoring site.

15. Summary of Nitrogen Management Plans

Currently there are no nitrogen management plans to comment on.

16. Summary of Management Practice Information from Farm Evaluations

Currently there are no Farm Evaluations to summarize.

17. Summary of Mitigation Monitoring

There are no projects which the BVC or BVWSD undertook which would require reporting under this Order. There were a couple of projects mentioned within this report, which were outside of the scope of the Order, and they all had their own CEQA reports, requirements, and documentation. The BVC is aware that lands within its boundaries were often settled by Indian tribes and that extra precaution is required when any activity is undertaken.

18. Summary of Education and Outreach Activities

The BVC has taken three pro-active steps to educate its growers. The BVWSD has always had an annual lunch where its growers would come and management would update them on issues. In 2014 this lunch was held in mid April 2014, prior to the required enrollment for the BVC. District management did discuss IRLP issues with the growers, especially the enrollment process.

Additionally, shortly after formation of the BVC, staff instituted a quarterly newsletter. This newsletter is mailed to all landowners and operators within the BVC. It is an effective way to update, give guidance, communicate, and educate the growers on IRLP issues.

In the monthly Board of Directors meeting for the BVWSD IRLP updates are usually given.

The BVC staff has budgeted time for small group and one on one educational meetings. Being located within the BVC boundaries the BVC staff has people always available to help Members with issues. While some Coalitions seem to feel this is an obligation, the BVC considers this an opportunity. The Coalition's job is much easier if things are going the proper direction. The Members are the people that can make that happen. Every Member who enters the staff office gets to hear how their operation is affecting the BVC, whether positively or negatively. The BVC is always looking for ways to partner with growers in ways which will positively impact the quality of the surface and groundwater and aid their operation. Giving time throughout the year, is what is necessary to have educated growers who can make the changes required. Over half the Members have met directly with BVC staff to discuss their personal IRLP questions.

The feedback that the message is being received is reflected in the Activities reported above to address exceedances. In addition to educating the growers staff knows the importance of its education. The order is large and complex, with many parts. It takes many readings to gain some understanding. BVC staff has always known it can get guidance from RWQCB staff to help it understand issues. The RWQCB staff has always made itself available when BVC staff needed their help to grasp an issue. The BVC staff expects to continue its education too, to try and stay ahead of the issues on the horizon, so it can educate the growers in its Coalition.

19. Conclusions and Recommendations

2014 was a very busy year for the Buena Vista Coalition. From a concept, it became a reality. As the District continues to discover what it has taken on by forming the BVC, with each step it takes it realizes this formation was an excellent choice. The BVC is small enough and close knit enough that rather than being just a "Third Party" reporting on items, it can be a constructive partner with the growers to meet the challenges and goals presented in the Irrigated Lands Regulatory Program.

The BVC has already been able to take hold of issues, and make significant steps into solving them. In a larger group, management would not be able to be hands-on enough to move this quickly. The BVC can foresee an actual total resolution to its surface water exceedance issues. BVC and BVWSD staff are anxious to see if grower cooperation can accomplish the same things in very wet years, as they have in the recent dry years. The BVC may have been lucky to have years like 2013 and 2014 to train and educate growers on how they can help solve Main Drain Canal exceedance issues. The dry year, coinciding with the District

instituting tolls for water caught the growers' attention. They now have the buy-in knowing that as a group if each does his part, the goals can be met.

The BVC is also fortunate to have good neighbors. The two adjacent coalitions, as well as the third coalition in the sub-basin are all willing to help each other with issues. Each Coalition knows that they all serve the same growers, as many growers are members of multiple Coalitions. At least initially, there has not been the infighting that often occurs in these type of programs. Each knows that the Coalitions have interfaces and by working together we can accomplish our goals easier. This may allow for joint ventures in some future monitoring programs.

While the BVC was unable to eliminate all exceedances, the BVC was able to minimize exceedances leaving the District and entering the "Waters of the State." The BVC has built monitoring conditions that will give the RWQCB more ability to see what is happening in real time, and give them the ability to see data in real time, not months after the fact.

The BVC feels it has a partner in the RWQCB. Despite hundreds of pages of regulations, most of what is required makes sense, and staff is willing to explain that items that don't. The BVC hopes the RWQCB is happy it let the BVWSD form its own Coalition. The smaller group has allowed for faster progress. As the workload grows, the BVC's goal is to be able to have that same attitude in five and ten years. That the RWQCB is a partner with the BVC in protecting the water quality in the region, managing the water quantity in the region, and making farming operations as well as the water sustainable for the future.

This annual report is based on the Hydrologic Year, so some of the information is being reported in duplicate as the 2013 Annual Report was based on a calendar year. Going forward this will not occur.

APPENDIX A **Limits and Analytical Methods**								
Categories	**Constituent**	**Units**	**Lab/Field**	**BPO**	**PQL**	**MDL**	**Methods**	**Matrix**
Field Measurements	EC	umhos/cm	FGL	700	0.5			Fresh Water
	Oxygen, Dissolved	mg/L	FGL	>5	0			Fresh Water
	pH	units	FGL	6.5-8.3	1			Fresh Water
	Temp	°C	FGL		0			Fresh Water
Dissolved Metals	Cadmium	ug/L	FGL	5	0.1		200.8	Fresh Water
	Copper	ug/L	FGL	1300	0.5		6020	Fresh Water
	Lead	ug/L	FGL	15	0.2		6020	Fresh Water
	Nickel	ug/L	FGL	100?	0.5		6020	Fresh Water
	Zinc	ug/L	FGL		1		200.8	Fresh Water
Total Metals	Arsenic	ug/L	FGL	10	0.2	0.09	6020	Fresh Water
	Boron	ug/L	FGL	700	10	5	200.8	Fresh Water
	Cadmium	ug/L	FGL		0.1	0.02	200.8	Fresh Water
	Calcium	ug/L	FGL		1		200.7	Fresh Water
	Copper	mg/L	FGL	1300	1	0.13	200.8	Fresh Water
	Total Hardness as CaCO3	ug/L	FGL		2.5	1	200.7	Fresh Water
	Magnesium	mg/L	FGL		1		200.7	Fresh Water
	Lead	ug/L	FGL	15	0.2	0.11	200.8	Fresh Water
	Molybdenum	ug/L	FGL	10	1	0.07	200.8	Fresh Water
	Nickel	ug/L	FGL		1	0.16	200.8	Fresh Water
	Selenium	ug/L	FGL	5	1	0.1	200.8	Fresh Water
	Zinc	ug/L	FGL		5	2.3	200.8	Fresh Water
Wet Chemistry	Ammonia Nitrogen	mg/L	FGL	1.5	0.1		4500NH3G	Fresh Water
	EC	umhos/cm	FGL	700	1		2510B	Fresh Water
	TDS	mg/L	FGL	450	40	4.4	160.1	Fresh Water
	Nitrate + Nitrite as N	mg/L	FGL		0.05	0.2	300.0	Fresh Water
	Kjeldahl Nitrogen	mg/L	FGL		0.5		EPA351.2	Fresh Water
	Nitrogen, Total Kjeldahl	mg/L	FGL		0.5		EPA351.2	Fresh Water
	Phosphate	mg/L	FGL		0.01		4500-PE	Fresh Water
	Phosphorus, Total	mg/L	FGL		0.01	0.081	4500-PE	Fresh Water
	Solids, Total Suspended (TSS)	mg/L	FGL		10		2540P	Fresh Water
	Turbidity	NTU	FGL		0.2	0.035	2130B	Fresh Water
	Unionized Ammonia Nitrogen	mg/L	FGL		0.05		4500NH3G	Fresh Water
	Triphenylphosphate	%	FGL		70-130		507	Fresh Water
Herbicides	Atrazine	ug/L	APPL	1	0.5	0.07	507	Fresh Water
	Simazine	ug/L	APPL	4	0.5	0.08	507	Fresh Water
	Cyanazine	ug/L	APPL	1	0.5	0.09	507	Fresh Water
	Glyphosate	ug/L	FGL	700	5		547	Fresh Water
	Paraquat	ug/L	APPL	3.2	0.5		549.2	Fresh Water
Organochlorine	Tetrachloro-m-xylene	%	FGL		45-112		608	Fresh Water
	Dicofol	ug/L	FGL		0.05		8081A	Fresh Water
	TOC	mg/L	FGL		0.5	0.13	5310C	Fresh Water
	p,p'-DDD	ug/L	FGL	1	5		8081A	Fresh Water
	p,p'-DDE	ug/L	FGL	1	5		8081A	Fresh Water
	p,p'-DDT	ug/L	FGL	1	5		8081A	Fresh Water
	Dieldrin	ug/L	FGL	56	5		8081A	Fresh Water
	Endrin	ug/L	FGL	760	5		8081A	Fresh Water
	Methoxychlor	ug/L	FGL	30	5		8081A	Fresh Water
	o,p - DDD	ug/L	FGL		5		8081A	Fresh Water
	o,p - DDE	ug/L	FGL		5		8081A	Fresh Water
	o,p - DDT	ug/L	FGL		5		8081A	Fresh Water
Organophosphate	Chlorpyrifos	ug/L	APPL	0.015	0.015	0.0026	EPA 8141A LL	Fresh Water
	Methamidophos							
	Dimethoate	ug/L	APPL	1	0.1	0.01	EPA 8141A LL	Fresh Water
Pathogens	Total Coliform	MPN/100ml	FGL		1		SM9221	Freshwater
	Fecal Coliform	MPN/100ml	FGL	400 (235)	1		SM9221	Freshwater
Water Column Toxicity	Fathead Minnow Bioassay	% Survival	ABC	<50%			821-R02-013	Freshwater
	Ceriodaphnia Bioassay	% Survival	ABC	<50%			821-R02-013	Freshwater
	Selenastrum Algae Bioassay	% NOEC	ABC	<50%			821-R02-013	Freshwater
Sediment	Hyallea Azteca	% Survival	ABC	<50%			600-R-99-064	Sediment
Carbamates	Aldicarb	ug/L	APPL	3	0.4	0.2	EPA 8321A LL	Fresh Water
	Carbaryl	ug/L	APPL	2.53	0.07	0.05	EPA 8321A LL	Fresh Water
	Carbofuran	ug/L	APPL	0.5	0.07	0.05	EPA 8321A LL	Fresh Water
	Diuron	ug/L	APPL	2	0.4	0.2	EPA 8321A LL	Fresh Water
	Linuron	ug/L	APPL	1.4	0.4	0.2	EPA 8321A LL	Fresh Water
	Methiocarb	ug/L	APPL	5	0.4	0.2	EPA 8321A LL	Fresh Water
	Methomyl	ug/L	APPL	0.52	0.07	0.05	EPA 8321A LL	Fresh Water
	Oxamyl	ug/L	APPL	50	0.4	0.2	EPA 8321A LL	Fresh Water

Note: BSK Laboratory replaced FGL and APPL from Aug 2014

Appendix B

Contents of Accompanying CD

- 2014 1st Qtr Submittal
- 2014 2nd Qtr Submittal
- 2014 3rd Qtr Submittal
- 2014 4th Qtr Submittal
- BVC Boundary Shapefile
- BVC Sites Shapefile
- BVC Main Drain Shapefile

*Note- Buena Vista Water Storage District is the source of all GIS Shape files.