CITY OF
VENTURA
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City of Ventura • Public Works
Environmental & Water Resources • Wastewater

Annual Report of Analysis 2009

Cover: Rarely seen in Southern California a Juvenile Tundra Swam swims at the VWRF Wildlife Pond. Mr. Don Williamson, an avid birdwatcher, took photo on November 17, 2009.

ANNUAL REPORT OF ANALYSIS

CITY OF SAN BUENAVENTURA

VENTURA WATER RECLAMATION FACILITY

2009

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DISCUSSION

I. INTRODUCTION: THE CITY OF SAN BUENAVENTURA

The City of San Buenaventura provides wastewater collection and treatment for the City, for McGrath State Beach Park, and for the North Coast Communities (Ventura County Service Area 29). These areas include a population of approximately 106,000 people.

THE WASTEWATER DIVISION:

Wastewater collection and treatment facilities are operated by the Wastewater Division, which along with the Water Division, and environmental services comprises Utilities Division of the Public Works Department. This year we are adjusting the length of the gravity sewer main facilities from 475 miles to 275 based on capacity assurance conceptual modeling conducted in 2009 for the Master Plan and Sanitary Sewer Management Programs. Also we operate 11 lift stations and the Ventura Water Reclamation Facility (VWRF), a tertiary treatment plant.

THE VWRF UNIT PROCESS:

The VWRF, at 1400 Spinnaker Drive, is located on the north bank of and discharges treated effluent to the Santa Clara River Estuary.

Processes employed at the treatment facility during 2009 include: screening, grit removal, primary sedimentation, primary flow equalization, activated sludge secondary biological treatment, tertiary effluent filtration chlorination and dechlorination.

Process solids are treated by anaerobic digestion to class B standards, dewatered and composted further to class A exceptional quality in Lost Hills, California through June 2009. Screenings and grit removed during the treatment process are disposed of at the Toland Road Landfill. Since July 2009, all solid waste is disposed at the Toland Road Landfill in Santa Paula, California.

Wastewater facilities include pump stations and pipelines for water reclamation. In 2009, the daily average volume of treated effluent reclaimed was 545,667 GPD . The maximum daily reuse volume measured in 2009 was 1,553,000 gallons.

The effluent reuse system provides effluent for irrigation of golf course, park and similar landscape areas. This reuse is an integral part of the city water conservation program and represents a reduction in demand on the freshwater supply each year of approximately 200,282 million gallons.

NPDES permit CA0053651, issued by the Los Angeles Regional Water Quality Control Board (Water Board) as Order R4-2008 – 0011 with a companion TSO R4-2008-0012, regulates discharge of treated effluent to the Santa Clara Tidal Prism. Regional Water Control Board issued these new permits in March 2008.

Reuse of effluent is regulated by Water Board Order 87-45.

The wastewater facility operation staff consists of certified operators. All hold State of California certificates as listed:

OPERATORS	Position	GRADE	CERTIFICATE NUMBER
Daniel E. Pfeifer	Wastewater Utility Manager	V	V-6737
Donald B. Burt	Wastewater Plant Supervisor	V	V-1915
Eric W. Miller	Lead Plant Operator	V	V-9798
Joseph E. Volpe	Plant Operator	V	V-8987
John S. Willis	Lead Plant Operator	IV	IV-9370
Michael S. Stehle	Lead Plant Operator (retired 12/30/09)	III	III-4731
Pete Vallejo	Lead Plant Operator (retired 12/30/09)	III	III-7055
Carey A. Adams	Plant Operator	III	III-9785
Curtiss W. Montague	Plant Operator	III	III-10475
Chad M. Steinclicht	Plant Operator	III	III-10297
Baltazar Cervantez Jr.	Plant Operator	II	II-9419
Adam J. Lopez	Plant Operator	II	II-10894
Raymond J. Flinchum	Plant Operator	I	I-28722
Bruce Lorenzana	Operator in Training (issued 6/22/2009)		

II. PROCESS PERFORMANCE AND COMPLIANCE WITH DISCHARGE REQUIREMENTS

During the reporting period the effluent 7-day median coliform limit was exceeded 23 times. Process changes completed for permit compliance requirements include installing new irrigation line to enable by-pass of wildlife ponds, De-chlorination process moved to Effluent Transfer Station (new discharge point), new flow meter installed in effluent discharge line and Chlorine/Sulfur Dioxide monitoring equipment installed at Effluent Transfer Station.

During the reporting period NO3 daily max of 21 mg/l and monthly average of 19 mg/l were exceeded. (Nitrate matrix below)

To alleviate exceeding Nitrate limits we are currently under construction with the Phase II project that will increase process capacity and detention time, which according to Betty Olson, Environmental Engineer, University of Irvine, is the contributing factor. Currently we are injecting Micro Glycerin into the Anoxic process to promote denitrification.

Date	Monitoring Period	Violation Type	Parameter	Reported Value	Permit Limit	Units
01/07/09	January 2009	Daily Maximum*	NO_2+NO_3	24.3	21	mg/L
01/28/09	January 2009	Daily Maximum*	NO_2+NO_3	22.2	21	mg/L
01/31/09	January 2009	Monthly Average*	NO_2+NO_3	21.3	19	mg/L
02/04/09	February 2009	Daily Maximum*	NO_2+NO_3	21.6	21	mg/L
02/11/09	February 2009	Daily Maximum*	NO_2+NO_3	22.6	21	mg/L
02/25/09	February 2009	Daily Maximum*	NO_2+NO_3	21.6	21	mg/L
02/28/09	February 2009	Monthly Average*	NO_2+NO_3	20.6	19	mg/L
03/04/09	March 2009	Daily Maximum*	NO_2+NO_3	22.2	21	mg/L
03/11/09	March 2009	Daily Maximum*	NO_2+NO_3	22.1	21	mg/L
03/25/09	March 2009	Daily Maximum*	NO_2+NO_3	21.9	21	mg/L
03/31/09	March 2009	Monthly Average*	NO_2+NO_3	21.9	19	mg/L
04/01/09	April 2009	Daily Maximum*	NO_2+NO_3	22.6	21	mg/L

04/15/09	April 2009	Daily Maximum*	NO_2+NO_3	21.5	21	mg/L
04/29/09	April 2009	Daily Maximum*	NO_2+NO_3	22.6	21	mg/L
04/30/09	April 2009	Monthly Average*	NO_2+NO_3	21.7	19	mg/L
05/13/09	May 2009	Daily Maximum*	NO_2+NO_3	22.7	21	mg/L
05/31/09	May 2009	Monthly Average*	NO_2+NO_3	19.7	19	mg/L
06/24/09	June 2009	Daily Maximum*	NO_2+NO_3	21.6	21	mg/L
07/01/09	July 2009	Daily Maximum*	NO_2+NO_3	22.8	21	mg/L
07/31/09	July 2009	Monthly Average*	NO_2+NO_3	20.5	19	mg/L
08/24/09	August 2009	Daily Maximum*	NO_2+NO_3	21.8	21	mg/L
09/23/09	September 2009	Daily Maximum*	NO_2+NO_3	22.2	21	mg/L
09/30/09	September 2009	Monthly Average*	NO_2+NO_3	19.5	19	mg/L
09/30/09	September 2009	Daily Maximum*	NO_2+NO_3	22.6	21	mg/L
10/07/09	October 2009	Daily Maximum*	NO_2+NO_3	24.3	21	mg/L
10/14/09	October 2009	Daily Maximum*	NO_2+NO_3	23.0	21	mg/L
10/21/09	October 2009	Daily Maximum*	NO_2+NO_3	22.2	21	mg/L
10/31/09	October 2009	Monthly Average*	NO_2+NO_3	22.6	19	mg/L
11/04/09	November 2009	Daily Maximum*	NO_2+NO_3	24.7	21	mg/L
11/10/09	November 2009	Daily Maximum*	NO_2+NO_3	22.4	21	mg/L
11/18/09	November 2009	Daily Maximum*	NO_2+NO_3	24.1	21	mg/L
11/25/09	November 2009	Daily Maximum*	NO_2+NO_3	21.9	21	mg/L
11/30/09	November 2009	Monthly Average*	NO_2+NO_3	23.3	19	mg/L
12/09/09	December 2009	Daily Maximum*	NO_2+NO_3	23.7	21	mg/L
12/16/09	December 2009	Daily Maximum*	NO_2+NO_3	22.3	21	mg/L
12/23/09	December 2009	Daily Maximum*	NO_2+NO_3	22.0	21	mg/L
12/31/09	December 2009	Monthly Average*	NO_2+NO_3	21.5	19	mg/L

Accelerated bioassay monitoring conducted on August 5th – October 15th on the effluent and receiving water station R4 (station downstream from the discharge) as directed by the permit when two consecutive results >1.0 TUC. Results of the monitoring are in the table below.

ETS (Effluent Transfer Station)			R4 (Receiving Water)		
Sample Date	TUc	Sample Type	Sample Date	TUc	Sample Type
05-Aug-09	3.13	C	05-Aug-09	1.00	G
20-Aug-09	1.00	C	19-Aug-09	1.00	G
04-Sep-09	1.79	C	04-Sep-09	1.00	G
17-Sep-09	1.00	C	16-Sep-09	1.79	G
04-Oct-09	1.00	C	01-Oct-09	1.00	G
15-Oct-09	1.00	C	15-Oct-09	1.00	G

C = Composite G = Grab

III. IRRIGATION EFFLUENT QUALITY

A summary of principle effluent mineral concentrations is presented below.

Year	Average TDS	Average Chloride	Average Sulfate	Average Boron	Average Fluoride	Average Sodium	Average Calcium	Average Magnesium	Average Potassium
1972	1950	487	421	1.5	1.04				
1973	1740	440	399	1.4	0.96				
1974	1547	422	358	1.5	1.11				
1975	1454	374	369	1.1	0.61	354	112	45	17
1976	1474	366	398	1.4	0.65	331	118	36	15
1977	1479	372	383	1.2	0.64	320	109	40	15

1978	1525	358	409	1.0	0.80	325	110	40	17
1979	1527	359	481	1.1	0.89	308	117	45	14
1980	1451	342	463	1.2	0.73	295	120	43	15
1981	1330	312	424	0.9	0.88	278	117	41	18
1982	1452	334	443	0.8	0.80	280	136	46	17
1983	1367	308	435	0.7	0.81	275	125	43	13
1984	1398	312	454	0.7	0.80	257	130	42	20
1985	1380	313	393	0.8	0.78	249	126	42	16
1986	1411	309	415	0.8	0.62	269	132	44	19
1987	1309	317	371	0.8	0.63	240	117	39	19
1988	1457	333	412	0.8	0.58	274	123	44	17
1989	1424	324	418	0.7	0.59	274	117	43	17
1990	1561	328	444	0.9	0.67	307	126	46	18
1991	1583	334	418	0.9	0.56	308	130	46	20
1992	1569	333	456	0.7	0.55	283	140	46	18
1993	1493	315	446	0.7	0.67	295	138	46	18
1994	1403	304	416	0.7	0.71	289	131	44	19
1995	1508	293	460	0.8	0.66	286	145	38	16
1997	1310	279	366	0.7	0.41	249	115	40	19
1998	1387	263	405	0.6	0.71	261	124	42	19
1999	1348	285	388	0.7	0.72	249	116	43	21
2000	1474	286	423	0.8	0.58	287	130	48	23
2001	1370	241	435	0.7	0.63	255	121	43	21
2002	1370	277	418	0.7	0.62	255	121	43	21
2003	1408	316	471	0.7	0.59	267	139	50	21
2004	1512	334	511	0.8	0.58	293	144	49.	23
2005	1533	297	563	0.7	0.53	281	135	50	23
2006	1502	268	540	0.5	0.53	274	138	48	26
2007	1431	286	497	0.8	0.55	261	117	47	28
2008	1512	298	535	0.7	0.61	266	120	51	28
2009	1478	303	505	0.8	0.53	273	113	47	28

LOCATION OF SAMPLE POINTS FOR MONITORING AND REPORTING PROGRAMS

From the wildlife ponds the flow discharges into the Santa Clara Tidal Prism and treated effluent is used for landscape irrigation as shown in the schematic plant flow diagram which follows. This has been the treatment plant operating mode throughout all of 2007

The total wastewater flow is treated and disinfected through the system as shown regardless to the ultimate discharge designation.

The following describes sample locations and the purposes for which each is used.

LOCATION 1 - INFLUENT PUMP STATION (IPS)

This location receives all raw wastewater flow to the treatment plant unless failure of pumping systems occurs. If such failure occurs, or should storm flows exceed the capacity of this primary station, all or part of the influent flow will be diverted to a standby facility, which has no provision for sampling or flow measurement. Such events are infrequent and a duplicate influent sampling programs is not warranted. IPS coordinates are 34 ° 14'21.45" N / 119° 115' 25.53" W.

The samplers used here are the ISCO 6712R which is programmed flow proportion .

The sampler is located in the main stream of the influent channel prior to the headwork adjacent to Harbor Boulevard.

Sampling is performed here for compliance monitoring and for process control. IPS is analyzed daily for pH, 5-day BOD, COD, suspended solids; weekly for ammonia; monthly for TKN; quarterly grab for metals and semi-annual priority pollutants.

LOCATION 2 – FLOW EQUALIZATION BASIN - PRIMARY EFFLUENT (EPE)

All effluent from the Primary Clarifier passes through this location. This sample station can be bypassed and raw sewage delivered directly to the Activated Sludge System for routine maintenance or emergency. EPE coordinates are 34°14'29.83" N / 119° 15'27.88" W.

ISCO Model 6712R sampler programmed to collect samples at uniform time intervals proportional to the flow to the secondary treatment process was used for sample collection/.

Sampling is performed at this location is for process control.

Analyses performed daily at this location are 5-day BOD, COD, pH, suspended solids; weekly for ammonia; monthly for TKN and MBAS.

LOCATION 3 - ACTIVATED SLUDGE PROCESS EFFLUENT

This site is at the end of the 36 inch line from the Activated Sludge Final Sedimentation (FS) Tanks and before the Mixed Media Filter Station Pump Wet Well. FS coordinates are 34° 14'22.89" N / 119° 15'27.45" W.

ISCO Model 6712R programmed to collect samples at uniform time intervals proportional to the flow to the Activated Sludge System was used for sample collection..

Sampling at this site is for process control.

Analyses performed daily are 5-day BOD, COD, suspended solid; weekly for ammonia and monthly for TKN and MBAS. The stream from the Activated Sludge System is monitored continuously by a process turbidimeter.

LOCATION 4 - EFFLUENT TRANSFER STATION (ETS)

This location follows the plant's filtration and disinfection. From here all treated effluent is pumped to the Wildlife Ponds. ETS coordinates are 34° 14'21.45" N / 119° 15' 31.26" W.

ISCO Model 6712FR programmed to collect samples at uniform time intervals proportional to the flow leaving the Mixed Media Filter Station was used for sample collection.

Sampling is conducted here for compliance monitoring and for process control.

ETS is analyzed daily for pH, 5-day BOD, COD, turbidity, chlorine residual, temperature, settleable solids, suspended solids and total dissolved solids. Weekly analyses include ammonia, nitrate and nitrite, chloride, sulfate, grease and oil, and ammonia. Monthly analyses are phosphate, TKN, total phosphorous, MBAS, boron, fluoride, sodium, calcium, magnesium, potassium, chlorophyll A , chronic bioassay, and metals. Analyses conducted semi-annually are phenols, pesticides, 17 dioxin congeners and the remaining priority pollutants. The flow from the Filtration and Disinfection processes is also continuously monitored here by a process turbidimeter.

Grab samples for bacteriological examination and total chlorine residual were collected daily at 11:00 AM from the Chlorine Contact Chamber.

LOCATION 5 - OUTFALL METERING STRUCTURE

This sample location is after the Wildlife Pond System and near the of sulfur dioxide building used for chlorine residual neutralization and head of the discharge to the Santa Clara River Tidal Prism. All effluent reaching the Tidal Prism passes through this site. Outfall coordinates are 34° 14'11.75" N / 119° 15' 33.85" W.

Sampling is performed here for compliance monitoring and for process control. Daily temperature is measured at this location.

RECEIVING WATER SAMPLE STATIONS

Five sample stations, designated R1 through R4 and R5 (formerly L5) within the Santa Clara Tidal Prism are specified by the Los Angeles Regional Water Quality Control Board in the facility NPDES permit in 2008.

Locations coordinates are:

1. R1 34° 13'55.58" N / 119° 15'27.59" W.
2. R2 34° 13'47.37" N / 119° 15'43.15" W.
3. R3 Variable at the mouth of the river.
4. R4 34° 14'04.15" N / 119°15'54.19" W.
5. R5 34° 14'01.63" N / 119°15'23.79"W.

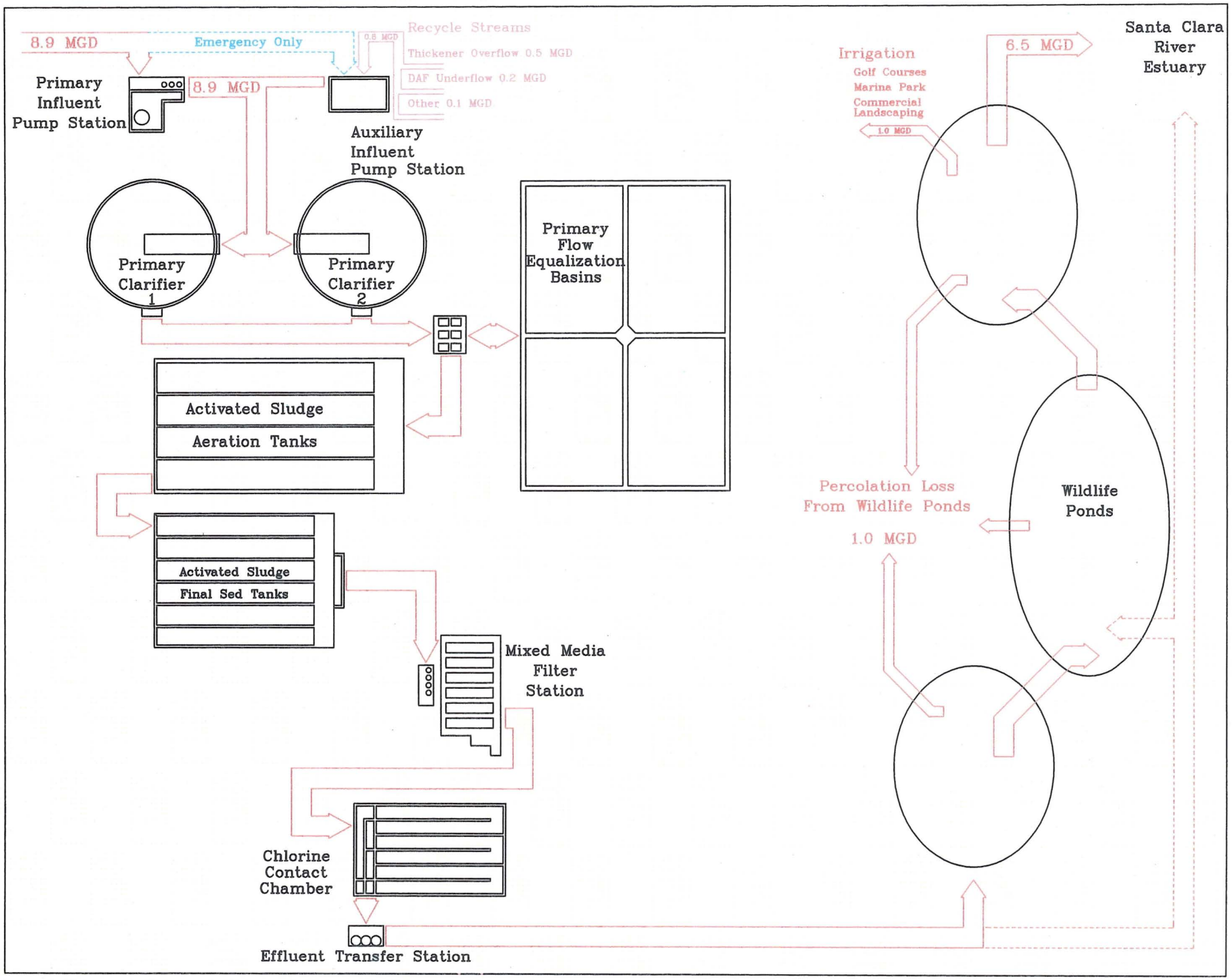
Water quality observations and field analyses performed at this site are water color, odor, visible sludge, foam, oil or grease, pH, temperature (air & water), salinity, chlorine residual and dissolved oxygen.

Weekly grab samples are analyzed for total coliform, fecal coliform and total hardness. Monthly analyses performed are total phosphorous, nitrogen compounds, metals, and chlorophyll A. Priority Pollutants are performed on sample stations R3, R4 and R5 semiannually.

Grab samples from station R3, on the west shoreline near the point of discharge, R4 located at the northwest shoreline if the Santa Clara estuary and R5 located at the upstream from the Santa Clara River and at the Harbor Boulevard Bridge crossing are analyzed quarterly for chronic toxicity.

Station R2 located downstream form the discharge point is analyzed semiannually for seventeen 2,3,7,8-TCDD.

A map showing sample locations follows the schematic plant flow diagram.


8.9 MGD
Emergency Only
0.8 MGD
Recycle Streams
Thickener Overflow 0.5 MGD
DAF Underflow 0.2 MGD
Other 0.1 MGD
Primary Influent Pump Station
8.9 MGD
Auxiliary Influent Pump Station
Primary Clarifier 1
Primary Clarifier 2
Primary Flow Equalization Basins
Activated Sludge
Aeration Tanks
Activated Sludge
Final Sed Tanks
Mixed Media Filter Station
Chlorine Contact Chamber
Effluent Transfer Station
Irrigation
Golf Courses
Marina Park
Commercial Landscaping
1.0 MGD
6.5 MGD
Santa Clara River Estuary
Percolation Loss From Wildlife Ponds
1.0 MGD
Wildlife Ponds

Inf-001
Discharge to the Ponds
1400 Spinnaker Drive, Ventura CA
M-001 Effluent Transfer
Harbor Blvd
Discharge to Estuary
© 2009 Tele Atlas
Image U.S. Geological Survey
Google
Pointer 34°14'20.15" N 119°15'38.85" W elev 5 ft Streaming 100%
Eye alt 2511 ft

Discharge to Estuary
Harbor Blvd
R-004
R-005
R-001
N Harbor Blvd
R-002
R-003
Image U.S. Geological Survey
© 2009 Tele Atlas
Google
Pointer 34°13'59.40" N 119°15'34.29" W elev 8 ft Streaming 100%
Eye alt 3295 ft

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Influent Pump Station

Month	Influent Total Flow MGD	Influent pH @ Lab SU	Influent Suspended Solids @ 105C MG/L	Influent BOD MG/L	Influent COD mg/l	Influent Ammonia mg/l	Influent Total Kjeldahl Nitrogen mg/l
January	8.27	7.53	266	263	513	29.8	45.1
February	8.74	7.51	268	235	530	26.1	42.8
March	8.31	7.52	280	243	564	26.9	42.6
April	8.33	7.55	282	244	555	27.6	39.3
May	8.70	7.51	297	252	583	26.7	43.4
June	8.59	7.42	284	263	584	27.3	44.7
July	8.56	7.44	277	251	569	27.0	40.1
August	8.80	7.43	196	256	593	33.2	46.1
September	8.75	7.53	239	232	577	30.0	43.8
October	8.58	7.54	282	274	632	29.9	39.7
November	8.47	7.44	259	285	717	29.3	40.2
December	8.59	7.36	278	269	605	28.1	44.9
Minimum	8.27	7.36	196	232	513	26.1	39.3
Maximum	8.80	7.55	297	285	717	33.2	46.1
Average	8.56	7.48	267	256	585	28.5	42.7

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Influent Pump Station

Month	Influent Aluminun, Total ug/l	Influent Antimony, Total ug/l	Influent Arsenic, Total ug/l	Influent Barium Total ug/l	Influent Beryllium, Total ug/l	Influent Cadmium, Total ug/l	Influent Chromium, Hexavalent Total ug/l	Influent Chromimun, Total ug/l	Influent Cobalt, Total ug/l	Influent Copper, Total ug/l
Jan 2009										
Feb 2009	118.0	<1.000	<2.000	52.900	<0.200	<4.000	<0.144	<7.000	<1.000	147.000
Mar 2009										
Apr 2009										
May 2009										58.700
Jun 2009										
Jul 2009										
Aug 2009	345.0	<1.000	<2.000	60.300	<0.200	<4.000	<1.000	<7.000	<1.000	64.600
Sep 2009										31.200
Oct 2009										
Nov 2009										102.000
Dec 2009										
Minimum	118.0	<1.000	<2.000	52.900	<0.200	<4.000	<0.144	<7.000	<1.000	31.200
Maximum	345.0	<1.000	<2.000	60.300	<0.200	<4.000	<0.144	<7.000	<1.000	147.000
Average	231.5	<1.000	<2.000	56.600	<0.200	<4.000	<1.000	<7.000	0.000	80.700

Analyzed by American Scientific Laboratories, Los Angeles, CA 90065

*Analyzed by City of San Buenaventura Wastewater Laboratory, Ventura, CA 93001

Ventura Water Reclamation Facility

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Influent Pump Station

Month	Influent Lead, Total ug/l	Influent Manganese * ug/l	Influent Mercury, Total ug/l	Influent Molybdenum, Total ug/l	Influent Nickel, Total ug/l	Influent Selenium, Total ug/l	Influent Silver, Total ug/l	Influent Thallium, Total ug/l	Influent Tin, Total ug/l	Influent Vanadium, Total ug/l	Influent Zinc, Total ug/l
Jan 2009											
Feb 2009	<5.000	194.40	<0.020	12.800	7.520	<2.000	<0.200	<1.000	<100.00	<4.000	139.00
Mar 2009											
Apr 2009											
May 2009		390.00	<0.020				<0.200				53.10
Jun 2009											
Jul 2009											
Aug 2009	<5.000	220.00	<0.020	5.280	4.920	<2.000	<0.200	<1.000	<100.00	<4.000	98.10
Sep 2009			<0.020				<0.200				171.00
Oct 2009											
Nov 2009		180.00	<0.020				<0.200				160.00
Dec 2009											
Minimum	<5.000	180.00	<0.020	5.280	4.920	<2.000	<0.200	<1.000	<100.000	<4.000	53.10
Maximum	<5.000	390.00	<0.020	12.800	7.520	<2.000	<0.200	<1.000	<100.000	<4.000	171.00
Average	<5.000	246.10	<0.020	9.040	6.220	<2.000	<.2000	<1.000	<100.000	<4.000	124.24

Analyzed by American Scientific Laboratories, Los Angeles, CA 90065

*Analyzed by City of San Buenaventura Wastewater Laboratory, Ventura, CA 93001

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Influent Pump Station

Month	Acetone ug/l	Chloroform ug/l	Toluene ug/l	Ethlylbenezene ug/l	Tetrachloroethylene ug/l	Xylene ug/l	1,1,1-Trichloroethane ug/l	1,4 Dichlorobenzene UG/L
February	118	2.340	<0.200	<0.340	<0.030	<0.500	<0.030	<0.500
August	1,100	1.510	<0.200	<0.340	<0.030	<0.500	<0.030	<4.400
Minimum	118	1.510	<0.200	<0.340	<0.030	<0.500	<0.030	<0.500
Maxium	1,100	2.340	<0.200	<0.340	<0.030	<0.500	<0.030	<4.400
Average	609	1.925	<0.200	<0.340	<0.030	<0.500	<0.030	<2.450

Analysis Performed by American Scientific Laboratory, Los Angeles, CA 90065

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Flow Equaliztion Basin - Primary Effluent

Month	EPE pH @ Lab SU	EPE BOD mg/l	EPE COD mg/l	EPE Suspended Solids @ 105C mg/l	EPE Ammonia mg/l	EPE Total Kjeldahl Nitrogen mg/l	EPE MBAS mg/l
January	7.56	144.8	303	87.1	31.9	44.2	7.61
February	7.55	148.2	299	90.6	29.8	43.3	6.00
March	7.62	129.1	300	96.4	28.8	41.3	6.53
April	7.65	132.1	318	91.7	31.0	39.8	6.81
May	7.59	136.7	316	84.1	31.8	42.4	6.60
June	7.52	143.5	324	81.9	30.6	37.9	7.52
July	7.50	124.6	296	80.5	30.1	36.0	7.50
August	7.51	127.8	310	77.3	29.7	***	***
September	7.46	142.7	312	80.5	29.6	39.9	8.75
October	7.52	133.2	286	80.8	29.3	33.8	7.48
November	7.46	152.9	329	85.6	31.3	34.2	11.85
December	7.39	150.8	331	82.7	30.4	37.5	10.26
Minimum	7.21	94.3	233	56.0	27.8	33.8	6.00
Maximum	7.78	261.9	389	144.0	33.5	44.2	11.85
Average	7.53	138.8	310	84.9	30.4	39.1	7.90

***No Data

Ventura Water Reclamation Facility
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Mixed Media Filter Station (FS) Influent

Month	Mixed Media Filter Flow MGD	FS Suspended Solids @ 105C mg/l	FS BOD mg/l	FS COD mg/l	FS Nitrate mg/l	FS Nitrite mg/l	FS Ammonia mg/l	FS Total Kjeldahl Nitrogen mg/l	FS MBAS mg/l
January,	9.72	9.76	8.9	34.8	21.0	<0.5	0.2	0.9	<0.5
February	10.19	10.37	10.5	43.9	21.6	<0.4	0.2	0.8	<0.5
March	9.79	11.47	8.3	45.6	21.2	0.5	0.3	0.6	<0.5
April	9.62	17.58	8.6	41.8	21.2	0.7	0.2	0.4	<0.5
May	9.72	12.08	8.8	43.0	19.2	0.5	0.1	0.5	<0.5
June	9.69	12.16	8.8	44.4	18.5	0.5	0.1	0.7	<0.5
July	9.67	10.62	9.0	39.1	20.0	<0.5	0.1	0.3	<0.5
August	9.77	7.64	11.3	34.5	19.2	<0.5	0.2	1.0	<0.5
September	9.72	8.06	8.8	35.1	18.3	0.8	1.1	5.4	<0.5
October	9.52	9.84	8.1	36.2	22.0	0.9	0.2	0.8	<0.5
November	9.30	10.45	7.9	37.5	23.9	0.6	0.3	1.0	<0.5
December	9.20	7.56	7.0	33.4	20.8	1.0	0.1	0.4	<0.5
Minimum	7.91	4.56	2.1	18.7	11.7	<0.4	0.1	0.3	<0.5
Maximum	12.8	49.0	76.0	75.5	25.4	1.6	4.8	5.4	<0.5
Average	9.65	10.68	8.8	39.1	20.5	0.6	0.3	1.1	<0.5

Ventura Water Reclamation Facility
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Effluent Transfer Station

Month	Effluent pH @ Lab SU	Effluent Suspended Solids @ 105C MG/L	Effluent Suspended Solid Load lbs/day	Effluent Total Dissolved Solids MG/L	Effluent Conductivity umhos/cm	Effluent BOD MG/L	Effluent BOD Load lbs/day	Effluent COD MG/L	Effluent Settable Solids MG/L	Effluent Dissolved Oxygen MG/L
January	7.2	0.74	58	1,500	2,338	2	150	27.3	<0.10	6.2
February	7.1	0.72	61	1,486	2,312	2	141	32.7	<0.10	6.2
March	7.3	0.85	67	1,551	2,360	2	164	31.2	<0.10	6.6
April	7.3	0.58	43	1,559	2,411	2	156	27.3	<0.10	6.6
May	7.3	0.68	51	1,555	2,456	2	142	30.7	<0.10	7.3
June	7.1	0.78	58	1,287	2,088	2	157	29.4	<0.10	7.5
July	7.2	0.65	47	1,446	2,252	2	125	28.0	<0.10	7.5
August	7.2	0.75	56	1,507	2,327	2	133	28.4	<0.10	7.4
September	7.2	0.88	66	1,462	2,248	2	143	29.8	<0.10	7.4
October	7.3	0.94	71	1,457	2,308	2	172	28.4	<0.10	7.6
November	7.1	0.81	61	1,471	2,294	2	120	26.0	<0.10	7.9
December	6.8	0.80	61	1,448	2,212	3	190	26.9	<0.10	8.0
Minimum	6.5	0.07	5	1,104	1,330	<2	15	15.1	<0.10	5.6
Maximum	7.6	1.60	137	1,723	3,200	8	91	49.3	<0.10	8.5
Average	7.2	0.77	58	1,478	2,301	2	91	28.8	<0.10	7.2

Limitations of Permit CA0053651

Daily Maximum		45	5,300	45	5,300	0.3
7 Day Average		40	4,700	30	3,500	
30 Day Average		15	1,800	20	2,300	0.1
Instantaneous Mi	6.5					
Instantaneous Mi	8.5					

Ventura Water Reclamation Facility
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Effluent Transfer Station

Month	Effluent Grease & Oil MG/L	Effluent Grease & Oil Load lbs/day	Effluent ETS Turbidity Max NTU	Effluent Nitrate mg/l	Effluent Nitrite mg/l	Effluent Ammonia mg/l	Effluent Total Kjeldahl Nitrogen mg/l	Effluent Total Organic Nitrogen mg/l
January	4.6	361	0.4	21.3	<0.4	0.4	0.5	0.4
February	2.7	231	0.5	20.6	<0.4	0.7	0.7	0.4
March	1.4	108	0.6	21.9	<0.4	0.6	1.3	0.7
April	1.5	114	0.5	21.7	<0.4	1.0	0.5	0.1
May	2.4	179	0.6	19.7	<0.4	0.9	1.7	0.6
June	1.9	142	0.5	19.4	<0.4	1.0	1.3	0.4
July	1.1	78	0.9	20.5	<0.4	1.4	2.2	0.7
August	1.4	104	0.9	19.3	<0.4	1.2	1.3	0.6
September	2.2	169	0.9	19.1	<0.5	2.1	6.2	1.1
October	1.8	140	0.9	22.6	<0.4	0.9	1.4	0.7
November	1.2	90	0.7	23.3	<0.4	1.0	1.9	0.8
December	1.6	127	0.8	21.5	<0.4	1.0	0.8	0.3
Minimum	1.0	71	0.2	13.6	<0 .4	0.1	0.5	0.1
Maximum	5.3	436	5.0	24.7	0.7	5.1	6.2	1.1
Average	2.0	150	0.7	20.9	<0 .4	1.1	1.7	0.6

Limitations of Permit CA0053651

Daily Maximum	15	1,800
7 Day Average		
30 Day Average	10	1,200

*** No Data

Ventura Water Reclamation Facility

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Effluent Transfer Station

Month	Effluent Chloride mg/l	Effluent Sulfate mg/l	Effluent Sodium mg/l	Effluent Calcium mg/l	Effluent Magnesium mg/l	Effluent Potassium mg/l
January	304	546	294	116	51	29
February	287	542	254	102	48	27
March	323	606	276	112	52	27
April	305	566	292	128	50	28
May	288	484	304	117	54	32
June	277	386	246	112	40	27
July	289	446	226	90	38	26
August	285	494	272	124	46	26
September	313	488	275	119	47	28
October	321	498	267	107	44	27
November	333	514	259	105	47	28
December	313	497	309	122	51	30
Minimum	277	386	226	90	38	26
Maximum	333	606	309	128	54	32
Average	303	505	273	113	47	28

Ventura Water Reclamation Facility

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Effluent Transfer Station

Month	Effluent Phosphate mg/l	Effluent Total Phosphorus mg/l	Effluent Boron mg/l	Effluent Fluoride mg/l	Effluent Total Alkalinity mg/l	Effluent MBAS mg/l	Effluent Chlorophyll A* mg/l
January	2.69	6.85	0.91	0.56	161	<0.5	<0.002
February	2.91	3.10	0.74	0.55	221	<0.5	<0.002
March	2.24	2.08	0.88	0.66	197	<0.5	<0.002
April	2.15	2.21	0.78	0.64	165	<0.5	<0.002
May	2.65	2.13	0.77	0.14	185	<0.5	<0.002
June	2.70	2.78	0.67	0.57	120	<0.5	0.002
July	1.73	2.04	0.69	0.48	105	<0.5	<0.002
August	3.36	3.66	0.72	0.56	178	<0.5	<0.002
September	2.28	2.50	0.62	0.54	189	<0.5	0.002
October	2.99	2.54	0.70	0.58	200	<0.5	<0.002
November	2.69	2.59	0.72	0.58	171	<0.5	<0.002
December	3.40	2.88	0.87	0.50	169	<0.5	<0.002
Minimum	1.73	2.04	0.62	0.14	105	<0.5	<0.002
Maximum	3.40	6.85	0.91	0.66	221	<0.5	0.002
Average	2.65	2.95	0.76	0.53	172	<0.5	<0.002

* Analyzed by Aquatic Bioassay Consulting Laboratories, INC., Ventura, California 93001

Ventura Water Reclamation Facility
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Effluent Transfer Station

Month	Effluent Total Cyanide (As CN) ug/l	Effluent Aluminum, Total ug/l	Effluent Antimony, Total ug/l	Effluent Arsenic, Total ug/l	Effluent Barium, Total ug/l	Effluent Beryllium, Total ug/l	Effluent Cadmium, Total ug/l	Effluent Cobalt, Total ug/l	Effluent Chromium, Hexavalent, Total ug/l	Effluent Copper, Total ug/l
January	<5.000									<2.00
February	<5.000	38.400	<1.000	<2.000	22.400	<0.200	<4.000	<1.000	<1.000	3.24
March	<5.000									<2.00
April										<2.00
May										<2.00
June										<2.00
July										<2.00
August	<5.000	50.800	<1.000	<2.000	28.900	<0.200	<4.000	<1.000	<1.000	2.09
September										<2.00
October										<2.00
November										<2.00
December										<2.00
Minimum	<5.000	38.40	<1.000	<2.000	22.400	<.2000	<4.000	<1.000	<1.000	<2.00
Maximum	<5.000	50.80	<1.000	<2.000	28.900	<.2000	<4.000	<1.000	<1.000	3.24
Average	<5.000	44.60	<1.000	<2.000	25.650	<.2000	<4.000	<1.000	<1.000	0.44

Limitation of Permit CA0053651

Daily Maximum	14
Monthly Average	6.7

Analyzed by American Scientific Laboratories, Los Angeles, CA 90065

Ventura Water Reclamation Facility
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Effluent Transfer Station

Month	Effluent Lead, Total ug/l	Effluent Mercury, Total ug/l	Effluent Molybdenum, Total ug/l	Effluent Nickel, Total ug/l	Effluent Selenium, Total ug/l	Effluent Silver, Total ug/l	Effluent Thallium, Total ug/l	Effluent, Tin Total ug/l	Effluent Vanadium, Total ug/l	Effluent Zinc, Total ug/l
January		<0.020				<0.200				37.100
February	<5.000	<0.020	12.300	4.660	<2.000	<0.200	<1.000	<100.000	<4.000	22.600
March		<0.020				<0.200				23.300
April		<0.020				<0.200				22.700
May		<0.020				<0.200				24.700
June		<0.020				<0.200				17.600
July		<0.020				<0.200				19.600
August	<5.000	<0.020	9.090	4.140	<2.000	<0.200	<1.000	<100.000	<4.000	23.800
September		<0.020				<0.200				22.200
October		<0.020				<0.200				23.200
November		<0.020				<0.200				18.700
December		<0.020				<0.200				30.200
Minimum	<5.000	<0.020	9.090	4.140	<2.000	<0.200	<1.000	<100.00	<4.000	17.600
Maximum	<5.000	<0.020	12.300	4.660	<2.000	<0.200	<1.000	<100.00	<4.000	37.100
Average	<5.000	<0.020	10.695	4.400	<2.000	<0.200	<1.000	<100.00	<4.000	23.808

Limitation of Permit CA0053651

Daily Maximum	0.10	2.2	107
30 Day Average	0.051	0.71	45

Analyzed by American Scientific Laboratories, Los Angeles, CA 90065

Ventura Water Reclamation Facility
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Effluent Transfer Station

Month	Effluent Iron ug/l	Effluent Manganese ug/l	Effluent Chromium, Total * ug/l
January	100.000	30.000	
February	<100.000	<20.000	<7.000
March	100.000	30.000	
April	<100.000	50.000	
May	142.000	100.000	
June	<100.000	80.000	
July	100.000	50.000	
August	<100.000	20.000	<7.000
September	150.000	180.000	
October	<100.000	120.000	
November	110.000	150.000	
December	<100.000	20.000	
Minimum	<100.000	<20.000	<7.000
Maximum	150.000	180.000	<7.000
Average	<100.000	69.167	<7.000

*Analyses Performed by American Scientific Laboratories, Los Angeles, CA 90065

Ventura Water Reclamation Facility

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Effluent Transfer Station

Month	Aldrin ug/l	alpha - BHC ug/l	beta - BHC ug/l	delta - BHC ug/l	Lindane ug/l	PCBs ug/l	Chlordane ug/l	Toxaphene ug/l	DDD ug/l	alpha Endosulfan ug/l	beta Endosulfan ug/l
February	<0.004	<0.003	<0.006	<0.009	<0.004	<0.585	<0.014	<10.000	<2.800	<0.014	<0.004
May											
August	<0.004	<0.003	<0.006	<0.009	<0.004	<0.585	<0.014	<10.000	<2.800	<0.014	<0.004
November											
Average	<0.004	<0.003	<0.006	<0.009	<0.004	<0.585	<0.014	<10.000	<2.800	<0.014	<0.004
Maximum	<0.004	<0.003	<0.006	<0.009	<0.004	<0.585	<0.014	<10.000	<2.800	<0.014	<0.004
Minimum	<0.004	<0.003	<0.006	<0.009	<0.004	<0.585	<0.014	<10.000	<2.800	<0.014	<0.004

Permit Limit CA0053651

Analyses Performed by American Scientific Laboratories, Los Angeles, CA 90065

Ventura Water Reclamation Facility

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Effluent Transfer Station

Month	Bromoform ug/l	Chloroform ug/l	Dibromchloromethane ug/l	Dichlorobromomethane ug/l	Carbon Tetrachloride ug/l	1, 4 Dichlorobenzene ug/l
January	2.0	36.0	8.5	14.6		
February	0.6	11.2	2.8	5.9	<0.12	<4.40
March	4.3		13.7	22.1		
April						
May						
June						
July						
August	0.7	12.5	3.8	8.9	<0.12	<4.40
September						
October						
November						
December						
Minimun	0.6	11.2	2.8	5.9	<0.12	<4.40
Maximum	4.3	36.0	13.7	22.1	<0.12	<4.40
Annual Average	1.9	23.3	7.2	12.9	<0.12	<4.40

Permit Limit CA0053651

Analyses Performed by American Scientific Laboratories, Los Angeles, CA 90065

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Effluent Transfer Station

Month	Pentachlorophenol ug/l	Benzene ug/l	Bis (2-Ethylhexyl)phthalate ug/l	Acetone ug/l	Xylene ug/l	Chlorobenzene ug/l
January			<2.50			
February	<3.60	<0.20	<2.50	4.67	<0.50	<0.20
March			<2.50			
April						
May						
June						
July						
August	<3.60	<0.20	<2.50	<0.50	<0.50	<0.20
September						
October						
November						
December						
Minimun	<3.60	<0.20	<2.50	<0.50	<0.50	<0.20
Maximum	<3.60	<0.20	<2.50	4.67	<0.50	<0.20
Annual Average	<3.60	<0.20	<2.50	2.59	<0.50	<0.20

Permit Limit CA0053651

***No Data

Analyses Performed By American Scientific Laboratories, Los Angeles, CA 90065

Ventura Water Reclamation Facility

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Effluent Transfer Station

Month	Effluent - Contact Chamber CL2 @ 11AM MG/L	Effluent Chlorine Residual @ 11 AM mg/l
January	5.0	4.8
February	4.9	4.8
March	5.5	5.2
April	4.8	4.5
May	4.5	4.4
June	4.5	4.4
July	5.3	5.4
August	4.9	4.7
September	4.5	4.3
October	4.9	4.5
November	4.4	4.3
December	4.4	0.8
Minimum	1.2	0.1
Maximum	8.0	8.8
Average	4.8	4.3

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Effluent Transfer Station

Month	Effluent Estuary Flow MGD	Effluent Chlorine Residual Daily Max MG/L	Effluent Temperature Deg. C	Acute 96hr Toxicity Pimphales * %	Chronic Ceriodaphnia - Survival * TUc	Chronic Ceriodaphnia - Reproduction * TUc
January	10.17	<.10	17.9			
February	11.62	<.10	18.0			
March	10.22	<.10	20.0			
April	9.69	<.10	21.1	100.00		
May	10.00	<.10	23.3			
June	9.64	<.10	24.0			
July	9.36	<.10	24.7			
August	9.41	<.10	24.3			
September	9.48	<.10	25.2			
October	12.42	<.10	22.2			
November	9.44	<.10	20.2			
December	10.76	<.10	17.6			
Minimum	9.36	<.10	17.6	100.00		
Maximum	12.42	<.10	25.2	100.00		
Average	10.18	<.10	21.5	100.00		
Limitation of Permit CA0053651				90.00	1	1

Bioassays performed by Aquatic Bioassay Consulting Labortories, Ventura, CA 93001

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Effluent Transfer Station

	Chronic Fathead Larvae - Growth * TUc	Chronic Fathead Larvae- Survival * TUc	Chronic Selenastrum - Growth TUc
January			1.00
February			1.00
March			1.00
April			1.00
May			1.00
June			1.00
July			<6.25
August			3.13
September			1.79
October			1.00
November			1.00
December			1.00
Minimum			1.00
Maximum			<6.25
Average			1.58

Limiitation of Permit CA0053651	1.00	1.00	1.00

*Analyzed by Aquaic Bioassay Consulting Laboratoires, INC., Ventura, CA 93001

Ventura Water Reclamation Facility
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Receiving Water Stations -Temperatures

Month	R1 Air Temperature Deg. C	R2 Air Temperature Deg. C	R3 Air Temperature Deg. C	R4 Air Temperature Deg. C	R5 Air Temperature Deg. C	R1 Water Temperature Deg. C	R2 Water Temperature Deg. C	R3 Water Temperature Deg. C	R4 Water Temperature Deg. C	R5 Water Temperature Deg. C
January	15.8	15.5	17.8	18.3	17.3	11.8	13.2	13.0	14.8	13.9
February	16.0	16.0	17.3	17.5	17.4	13.0	12.1	11.9	16.5	11.7
March	16.0	15.5	16.8	17.4	16.9	14.3	15.6	15.6	19.1	16.4
April	15.6	15.4	16.1	18.2	18.4	17.6	18.7	18.7	19.3	18.4
May	16.1	16.1	17.0	17.2	16.4	18.7	19.9	20.1	20.6	19.1
June	15.5	15.7	16.1	16.3	15.9	19.7	19.7	20.7	21.0	20.4
July	18.3	18.4	19.3	20.0	18.6	21.1	23.1	23.1	22.5	22.6
August	18.2	18.3	19.6	19.6	18.4	20.1	22.3	21.7	21.3	26.9
September	19.0	18.7	19.7	20.3	19.6	22.4	23.0	21.6	23.2	22.4
October	16.0	16.6	17.5	17.9	17.3	15.4	18.5	18.6	20.0	17.0
November	16.5	16.8	18.9	19.5	18.0	15.8	16.4	16.9	18.9	17.1
December	12.5	12.9	13.7	13.9	14.5	12.8	12.6	13.0	13.9	14.4
Minimum	10.5	10.0	12.0	12.0	12.0	8.5	12.1	11.9	13.9	8.1
Maximum	20.5	21.5	22.4	25.0	25.0	22.6	23.1	23.1	23.2	23.8
Average	16.1	16.3	17.4	17.9	17.3	15.9	17.9	17.9	19.3	16.1

Ventura Water Reclamation Facility

Annual Report 2009

Receiving Water Stations - Chlorine Residual & Salinity

Month	R1 Chlorine Residual MG/L	R2 Chlorine Residual MG/L	R3 Chlorine Residual MG/L	R4 Chlorine Residual MG/L	R5 Chlorine Residual MG/L	R1 Salinity PPT	R2 Salinity PPT	R3 Salinity PPT	R4 Salinity PPT	R5 Salinity PPT
January	<0.10	<0.10	<0.10	<0.10	<0.10	5.2	6.2	7.5	3.6	4.1
February	<0.10	<0.10	<0.10	<0.10	<0.10	2.4	9.7	11.2	2.0	1.2
Mar	<0.10	<0.10	<0.10	<0.10	<0.10	2.1	8.4	7.5	1.4	1.4
Apr	<0.10	<0.10	<0.10	<0.10	<0.10	3.1	3.1	3.7	2.0	2.2
May	<0.10	<0.10	<0.10	<0.10	<0.10	2.1	2.0	2.0	1.7	1.9
June	<0.10	<0.10	<0.10	<0.10	<0.10	1.8	1.7	1.7	1.5	1.8
July	<0.10	<0.10	<0.10	<0.10	<0.10	1.9	1.8	1.9	1.3	1.8
August	<0.10	<0.10	<0.10	<0.10	<0.10	1.6	1.5	1.5	1.3	1.5
September	<0.10	<0.10	<0.10	<0.10	<0.10	1.5	14.9	16.5	2.5	1.8
October	<0.10	<0.10	<0.10	<0.10	<0.10	6.0	11.0	21.5	6.2	2.4
November	<0.10	<0.10	<0.10	<0.10	<0.10	6.2	7.3	10.5	5.3	5.0
December	<0.10	<0.10	<0.10	<0.10	<0.10	6.6	14.2	15.4	13.0	5.7
Minimum	<0.10	<0.10	<0.10	<0.10	<0.10	1.5	0.7	0.8	1.0	0.4
Maximum	<0.10	<0.10	<0.10	<0.10	<0.10	12.0	34.4	37.7	29.6	11.0
Average	<0.10	<0.10	<0.10	<0.10	<0.10	3.4	7.0	8.5	3.5	2.6

Ventura Water Reclamation Faclity

Annual Report 2009

Receiving Water Stations - DO & Hardness

Month	R1 Dissolved Oxygen MG/L	R2 Dissolved Oxygen MG/L	R3 Dissolved Oxygen MG/L	R4 Dissolved Oxygen MG/L	R5 Dissolved Oxygen MG/L	R1 Hardness MG/L	R2 Hardness MG/L	R3 Hardness MG/L	R4 Hardness MG/L	R5 Hardness MG/L
January	17.1	21.9	21.2	24.0	20.6	1,278	1,240	1,043	753	1,333
February	8.8	17.4	14.4	15.5	17.4	1,535	873	2,040	630	693
March	8.2	18.2	18.8	11.6	16.1	1,500	1,058	1,170	668	976
April	8.0	16.0	16.4	10.8	14.2	1,093	1,070	1,065	820	1,113
May	4.2	8.2	6.9	5.8	10.9	913	903	930	723	995
June	3.6	7.7	6.7	6.0	7.9	826	810	740	620	864
July	3.0	9.3	8.2	4.5	9.5	770	773	770	593	863
August	4.1	15.2	12.8	5.0	17.6	733	720	718	625	760
September	1.8	6.2	5.6	4.0	11.1	690	1,514	1,430	682	1,050
October	8.5	11.6	12.0	9.9	14.7	1,445	1,698	1,543	760	1,295
November	8.7	19.9	13.8	17.6	16.1	1,498	1,383	1,523	915	1,505
December	10.3	12.9	12.4	15.8	13.9	1,742	1,698	1,476	990	1,604
Minimum	1.6	2.2	2.4	2.7	4.9	660	550	500	520	410
Maximum	20.5	41.1	28.6	33.3	25.8	1,930	3,130	6,280	1,360	2,180
Average	7.4	13.6	12.4	10.8	14.0	1,182	1,154	1,204	732	1,090

Ventura Water Reclamaton Facililty
Annual Report 2009

Receiving Water Stations -Nitrate & Nitrite

Month	R1 Nitrate MG/L	R2 Nitrate MG/L	R3 Nitrate MG/L	R4 Nitrate MG/L	R5 Nitrate MG/L	R1 Nitrite MG/L	R2 Nitrite MG/L	R3 Nitrite MG/L	R4 Nitrite MG/L	R5 Nitrite MG/L
January	9.4	11.3	10.4	16.6	7.1	<0.4	<0.4	<0.4	<0.4	<0.4
February	3.5	3.5	0.9	2.1	0.5	<0.4	<0.4	<0.4	<0.4	<0.4
March	2.1	11.2	11.7	18.9	3.7	<0.4	0.4	0.4	<0.4	<0.4
April	8.1	9.2	9.3	14.9	5.4	0.4	0.8	0.5	<0.4	<0.4
May	7.5	8.9	<0.4	13.8	6.2	0.8	0.5	<0.4	0.6	0.6
June	6.3	9.5	9.4	14.1	9.3	<0.4	<0.4	0.4	<0.4	<0.4
July	6.3	7.7	7.7	13.7	5.2	<0.4	<0.4	<0.4	<0.4	0.5
August	4.5	5.3	5.3	10.0	5.2	<0.4	<0.4	<0.4	<0.4	<0.4
September	1.8	2.6	2.5	12.6	2.0	<0.4	<0.4	<0.4	<0.4	<0.4
October	***	2.4	<0.4	18.4	2.3	***	<0.4	<0.4	<0.4	<0.4
November	8.9	9.6	8.0	8.8	5.7	0.4	0.4	0.4	0.4	<0.4
December	9.1	9.6	10.3	13.2	7.5	0.4	0.5	0.5	<0.4	0.4
Minimum	1.8	2.4	<0.4	2.1	0.5	<0.4	<0.4	<0.4	<0.4	<0.4
Maximum	9.4	11.3	11.7	18.9	9.3	0.8	0.8	0.5	0.6	0.6
Average	6.1	7.6	6.4	13.1	5.0	<0.4	<0.4	<0.4	<0.4	<0.4

*** No data

Ventura Water Reclamation Facility
Annual Report 2009

Receiving Water Stations - Ammonia & TKN

Month	R1 Ammonia MG/L	R2 Ammonia MG/L	R3 Ammonia MG/L	R4 Ammonia MG/L	R5 Ammonia MG/L	R1 Total Kjeldahl Nitrogen MG/L	R2 Total Kjeldahl Nitrogen MG/L	R3 Total Kjeldahl Nitrogen MG/L	R4 Total Kjeldahl Nitrogen MG/L	R5 Total Kjeldahl Nitrogen MG/L
January	0.1	0.1	0.1	0.1	0.1	1.0	1.2	0.8	1.4	0.8
February	0.2	<0.1	<0.1	<0.1	<0.1	2.0	1.7	1.4	1.4	1.8
March	0.2	0.3	0.2	0.4	0.1	1.0	1.2	0.9	1.4	0.8
April	<0.1	0.1	<0.1	<0.1	<0.1	1.8	1.6	2.0	1.7	1.4
May	0.8	0.8	0.7	0.5	0.8	2.5	2.6	3.2	2.1	2.4
June	0.1	0.3	0.2	0.1	0.3	1.6	1.7	1.4	0.5	1.8
July	0.1	<0.1	<0.1	<0.1	0.1	1.4	1.2	1.0	1.2	1.4
August	0.1	0.1	0.1	<0.1	0.1	2.3	1.8	1.4	1.5	3.4
September	0.3	<0.1	0.1	0.2	0.1	4.0	2.7	3.0	2.6	3.5
October	0.1	<0.1	<0.1	0.3	0.1	2.7	1.7	2.0	1.6	3.2
November	0.1	0.1	0.1	<0.1	<0.1	1.5	1.5	1.9	1.3	1.0
December	0.1	0.1	0.1	0.1	<0.1	1.8	2.0	1.8	1.4	1.8
Minimum	0.1	0.1	0.1	0.1	0.1	1.0	1.2	0.8	0.5	0.8
Maximum	0.8	0.8	0.7	0.5	0.8	4.0	2.7	3.2	2.6	3.5
Average	0.2	0.2	0.2	0.2	0.2	2.0	1.7	1.7	1.5	1.9

Ventura Water Reclamation Facility
Annual Report 2009

Receiving Water Stations - Total Phosphorus & Chlorophyll A

Month	R1 Total Phosphorus MG/L	R2 Total Phosphorus MG/L	R3 Total Phosphorus MG/L	R4 Total Phosphorus MG/L	R5 Total Phosphorus MG/L	R1 Chlorophyll A MG/L	R2 Chlorophyll A MG/L	R3 Chlorophyll A MG/L	R4 Chlorophyll A MG/L	R5 Chlorophyll A MG/L
January	1.01	1.60	2.40	1.85	<.10	0.024	0.039	0.008	0.021	0.015
February	0.98	1.24	1.92	2.59	0.55	0.190	0.190	0.078	0.110	0.120
March	0.12	0.36	0.46	1.89	0.24	0.005	0.012	0.006	0.017	0.006
April	0.75	0.59	0.95	1.66	0.48	0.081	0.077	0.097	0.120	0.064
May	1.40	1.33	1.33	2.35	0.93	<0.002	<0.002	<0.002	<0.002	<0.002
June	1.53	1.60	1.42	2.84	1.51	0.018	0.002	0.004	0.016	0.002
July	1.28	1.22	1.27	1.52	0.85	0.027	0.005	<0.002	0.004	0.008
August	1.13	1.16	1.09	2.16	1.32	0.032	0.018	0.006	0.020	0.049
September	0.75	0.66	0.56	2.59	0.56	0.240	0.190	0.098	0.087	0.190
October	0.50	1.29	1.15	2.33	0.65	0.210	0.085	0.067	0.016	0.042
November	1.02	1.13	1.06	0.98	0.42	0.064	0.047	0.035	0.062	0.044
December	1.35	1.49	1.65	2.97	0.90	0.200	0.260	0.160	0.049	0.150
Minimum	0.12	0.36	0.46	0.98	<.10	<0.002	<0.002	<0.002	<0.002	<0.002
Maximum	1.53	1.60	2.40	2.97	1.51	0.240	0.260	0.160	0.120	0.190
Average	0.98	1.14	1.27	2.14	0.70	0.091	0.077	0.047	0.044	0.058

Chlorophyll A Analyzed By Sierra Environmental Monitoring, Inc., Reno, NV 89502-2400

Ventura Water Reclamation Facility

Annual Report 2009

Receiving Water Station

Month	R3 - Acute 96 hr Toxicity Pimphales % TU	R3 Chronic Selenastrum - Growth TUc	R3 Chronic Ceriodaphnia - Reproduction TUc	R3 Chronic Ceriodaphnia - Survival TUc	R3 Chronic Fathead Larvae - Growth TUc	R3 Chronic Fathead Larvae - Survival TUc
January						
February		10.00				
March						
April						
May		1.00				
June						
July						
August		3.13				
September						
October						
November		1.00				
December						
Minimum		1.00				
Maximum		10.00				
Average		3.78				

Analyzed by Aquatic Bioassay Consulting Laboratories, INC., Ventura, CA 93001

Ventura Water Reclamation Facility

Annual Report 2009

Receiving Water Station

Month	R4 - Acute 96 hr Toxicity Pimphales % TU	R4 - Chronic Selenastrum- Growth TUc	R4 - Chronic Ceriodaphnia - Reproduction TUc	R4 - Chronic Ceriodaphnia - Survival TUc	R4 - Chronic Fathead Larvae - Growth TUc	R4 - Chronic Fathead Larvae - Survival TUc
January						
February		1.00				
March						
April						
May		1.00				
June						
July						
August		1.00				
September		1.79				
October		1.00				
November		1.00				
December						
Minimum		1.00				
Maximum		1.79				
Average		1.13				

Analyzed by Aquatic Bioassay Consulting Laboratories, INC., Ventura, CA 93001

Ventura Water Reclamation Facility

Annual Report 2008

Receiving Water Station

Month	R5 - Acute 96 hr Toxicity Pimphales % TU	R5 - Chronic Selenastrum - Growth TUc	R5 - Chronic Cerodaphnia - Reproduction TUc	R5 - Chronic Ceriodaphnia - Survival TUc	R5 - Chronic Fathead Larvae - Growth TUc	R5 - Chronic Fathead Larvae - Survial TUc
January						
February		10.00				
March						
April						
May		1.00				
June						
July						
August		1.00				
September						
October						
November		1.00				
December						
Minimum		1.00				
Maximum		10.00				
Average		3.25				

Analyzed by Aquatic Bioassay Laboratories, INC., Ventura, CA 93001

Ventura Water Reclamation Facility
Annual Report 2009

Solid Streams

Total Metals - Dewatered Digested Sludge

Month	Filter Press 1 Run 1, Aluminum mg/kg/dry	Filter Press 1 Run 1, Antimony mg/kg/dry	Filter Press 1, Run 1, Arsenic mg/kg/dry	Filiter Press 1, Run 1, Barium mg/kg/dry	Filter Press 1 Run 1, Beryillum mg/kg/dry	Filter Press 1 Run 1, Cadmium mg/kg/dry	Filter Press 1 Run 1, Chromium mg/kg/dry	Filter Press 1 Run 1, Cobalt mg/kg/dry	Filter Press 1 Run 1, Copper mg/kg/dry
January									
February	5,338.1	4.8	5.9	395.0	<3.6	3.9	24.9	6.6	1,172.7
March									
April	7,516.8	4.6	4.3	353.0	<3.4	<3.4	54.1	6.1	1,067.1
May	7,241.4	6.0	4.8	379.3	<3.4	5.2	33.0	5.2	1,151.7
June									
July	6,543.2	4.6	4.8	506.2	<3.1	5.4	27.2	5.2	1,493.8
August	5,945.7	6.4	5.9	527.9	<3.9	5.3	71.2	36.8	1,441.9
September									
October	3,502.7	<2.7	<2.7	302.2	<2.7	3.8	19.3	8.5	847.0
November	4,697.7	3.7	4.0	387.9	<2.3	4.7	20.7	8.9	1,097.7
December									
Minimum	3,502.7	<2.7	<2.7	302.2	<2.3	<3.4	19.3	5.2	847.0
Maximum	7,516.8	6.4	5.9	527.9	<3.9	5.4	71.2	36.8	1,493.8
Average	5,826.5	4.7	4.6	407.4	<3.2	4.5	35.8	11.1	1,181.7

Analyses Perfomed by American Scientific Laboratories, Los Angeles, CA 90065

Ventura Water Reclamation Facility
Annual Report 2009

Solid Streams

Total Metals - Dewatered Digested Sludge

Month	Filter Press 1 Run 1, Lead mg/kg/dry	Filter Press 1 Run 1, Mercury mg/kg/dry	Filter Press 1 Run 1, Molybdenum mg/kg/dry	Filter Press 1 Run 1, Nickel mg/kg/dry	Filter Press 1 Run 1, Selenium mg/kg/dry	Filter Press 1 Run 1, Silver mg/kg/dry	Filter Press 1 Run 1, Thallium mg/kg/dry	Filter Press 1 Run 1, Tin mg/kg/dry	Filter Press 1 Run 1, Vanadium mg/kg/dry	Filiter Press 1 Run 1, Zinc mg/kg/dry
January										
February	16.6	<1.4	24.9	22.9	70.9	7.2	<3.6	40.3	9.3	1,050.4
March										
April	15.8	<1.3	20.1	21.9	25.2	6.6	<3.4	35.8	8.3	1,040.3
May	20.8	1.4	20.1	21.9	33.7	7.9	<3.4	36.1	8.5	1,096.6
June										
July	30.3	1.2	26.9	29.3	27.3	9.2	<3.1	38.4	10.8	1,370.4
August	23.3	1.9	33.3	55.2	29.8	16.0	<3.9	45.1	11.4	1,325.6
September										
October	11.3	<1.1	16.8	18.3	20.2	5.1	<2.7	<27.3	6.7	868.9
November	15.9	1.2	20.7	19.8	23.3	6.9	<2.3	26.4	8.7	1,120.9
December										
Minimum	11.3	<1.1	16.8	18.3	20.2	5.1	<2.3	26.4	6.7	868.9
Maximum	30.3	1.9	33.3	55.2	70.9	16.0	<3.9	45.1	11.4	1,370.4
Average	19.1	<1.4	23.3	27.0	32.9	8.4	<3.2	35.6	9.1	1,124.7

Analyses Performed by American Scientific Laboratories, Los Angeles, CA 90065

Ventura Water Reclamation Facility
Annual Report 2009

Solid Streams

Total Metals - Dewatered Digested Sludge

Month	Filter Press 1 Run 2, Aluminum mg/kg/dry	Filter Press 1 Run 2, Antimony mg/kg/dry	Filter Press 1 Run 2, Arsenic mg/kg.dry	Filter Press 1 Run 2, Barium mg/kg/dry	Filter Press 1 Run 2, Beryllium mg/kg.dry	Filter Press 1 Run 2, Cadmium mg/kg/dry	Filter Press 1 Run 2, Chromium mg/kg/dry	Filter Press 1 Run 2, Cobalt mg/kg/dry	Filter Press 1 Run 2, Copper mg/kg/dry
January									
February	4,826.1	3.7	3.2	361.5	<3.1	3.5	22.0	5.6	1,049.7
March									
April									
May	7,757.6	4.1	5.5	406.1	<3.0	5.6	34.8	5.0	1,236.4
June									
July									
August	4,762.7	5.0	3.4	431.1	<2.8	4.6	26.1	33.7	1,169.5
September									
October									
November	4,766.8	2.8	<2.6	390.2	<2.6	5.1	22.4	9.2	1,114.0
December									
Minimum	4,762.7	2.8	<2.6	361.5	<2.6	3.5	22.0	5.0	1,049.7
Maximum	7,757.6	5.0	5.5	431.1	<3.1	5.6	34.8	33.7	1,236.4
Average	5,528.3	3.9	3.7	397.2	<2.9	4.7	26.3	13.4	1,142.4

*Analyses Perfomed by American Scientific Laboratories, Los Angeles, CA 90065
Analyzed by City of San Buenaventura - Wastewater Laboratory, Ventura, CA 93001

Ventura Water Reclamation Facility
Annual Report 2009

Solid Streams

Total Metals - Dewatered Digested Sludge

Month	Filter Press 1 Run 2, Lead mg/kg/dry	Filter Press 1 Run 2, Mercury mg/kg/dry	Filter Press 1 Run 2, Molybdenum mg/kg.dry	Filter Press 1 Run 2, Nickel mg/kg/dry	Filter Press 1 Run 2, Selenium mg/kg.dry	Filter Press 1 Run 2, Silver mg/kg/dry	Filter Press 1 Run 2, Thallium mg/kg/dry	Filter Press 1 Run 2, Tin mg/kg/dry	Filter Press 1 Run 2, Vanadium mg/kg.dry	Filter Press 1 Run 2, Zinc mg/kg/dry
January										
February	14.6	1.2	21.9	20.4	25.6	6.1	<3.1	34.8	8.3	950.3
March										
April										
May	23.1	1.3	22.4	23.0	34.4	7.0	<3.0	38.4	9.2	1,181.8
June										
July										
August	26.5	1.9	28.0	31.7	25.9	11.0	<2.8	30.3	9.2	1,101.7
September										
October										
November	16.9	2.0	20.8	20.9	24.6	10.1	<2.6	26.8	9.0	1,119.2
December										
Minimum	14.6	1.2	20.8	20.4	24.6	6.1	<2.6	26.8	8.3	950.3
Maximum	26.5	2.0	28.0	31.7	34.4	11.0	<3.1	38.4	9.2	1,181.8
Average	20.3	1.6	23.3	24.0	27.6	8.5	<2.9	32.6	8.9	1,088.2

Analyses Performed by American Scientific Laboratories, Los Angeles, CA 90065

Ventura Reclamation Facility
Annual Report 2009

Solid Streams

Total Metals - Dewatered Digested Sludge

Month	Filter Press 2 Run 1, Aluminum mg/kg/dry	Filter Press 2 Run 1, Antimony mg/kg.dry	Filter Press 2 Run 1, Arsenic mg/kg/dry	Filter Press 2 Run 1, Barium mg/kg/dry	Filter Press 2 Run 1, Beryllium mg/kg/dry	Filter Press 2 Run 1, Cadmium mg/kg/dry	Filter Press 2 Run 1, Chromium mg/kg/dry	Filter Press 2 Run 1, Cobalt mg/kg/dry	Filter Press 2 Run 1, Copper mg/kg/dry
January									
February	5,973.5	7.9	6.0	447.0	3.3	4.3	26.7	6.6	1,284.8
March									
April									
May	7,470.6	4.8	5.8	386.5	2.9	4.9	33.0	4.6	1,176.5
June									
July									
August	5,041.0	6.2	<4.1	450.0	4.1	5.2	27.9	32.5	1,229.5
September									
October									
November	4,954.5	4.8	3.0	407.3	2.3	5.0	21.3	977.3	1,159.1
December									
Minimum	4,954.5	4.8	3.0	386.5	2.3	4.3	21.3	4.6	1,159.1
Maximum	7,470.6	7.9	6.0	450.0	4.1	5.2	33.0	977.3	1,284.8
Average	5,859.9	5.9	<4.7	422.7	3.2	4.9	27.2	255.3	1,212.5

Analyses Peformed By American Scientific Laboratories, Los Angeles, CA 90065

Ventura Reclamation Facility

Annual Report 2008

Soild Streams

Total Metals - Dewatered Digested Sludge

Month	Filter Press 2 Run 1, Lead mg/kg/dry	Filter Press 2, Run 1, Mercury mg/kg.dry	Filter Press 2 Run 1, Molybdenum mg/kg/dry	Filter Press 2 Run 1, Nickel mg/kg/dry	Filter Press 2 Run1, Selenium mg/kg/dry	Filter Press 2 Run 1, Silver mg/kg/dry	Filter Press 2 Run 1, Thallium mg/kg/dry	Filter Press 2 Run 1, Tin mg/kg/dry	Filter Press 2 Run 1, Vanadium mg/lkg/dry	Filter Press 2, Run 1, Zinc mg/kg/dry
January										
February	20.5	<1.3	26.9	24.6	32.8	8.1	<3.3	42.9	10.3	1,178.8
March										
April										
May	22.2	<1.2	21.1	24.3	32.3	7.3	<2.9	34.6	8.9	1,164.7
June										
July										
August	21.8	3.2	28.8	33.3	24.3	12.0	<4.1	<41.0	9.3	1,155.7
September										
October										
November	16.0	1.5	21.9	22.4	25.5	7.6	<2.3	27.9	9.3	1,172.7
December										
Minimum	16.0	<1.2	21.1	22.4	24.3	7.3	<2.3	27.9	8.9	1,155.7
Maximum	22.2	3.2	28.8	33.3	32.8	12.0	<4.1	42.9	10.3	1,178.8
Average	20.1	<1.8	24.7	26.1	28.7	8.7	<3.2	36.6	9.4	1,168.0

Analyses Performed by American Scientific Laboratories, Los Angeles, CA 90065

Ventura Reclamation Facility
Annual Report 2009

Solid Streams

Total Metals - Dewatered Digested Sludge

Month	Filter Press 2 Run 2, Aluminum mg/kg/dry	Filter Press 2 Run 2, Antimony mg/kg/dry	Filter Press 2 Run 2, Arsenic mg/kg/dry	Filter Press 2 Run 2, Barium mg/kg/.dry	Filter Press 2 Run 2, Beryllium mg/kg/dry	Filter Press 2 Run 2, Cadmium mg/kg/dry	Filter Press 2 Run 2, Chromium mg/kg/dry	Filter Press 2 Run 2, Cobalt mg/kg/dry	Filter Press 2 Run 2, Copper mg/kg/dry
January									
February	5,849.1	4.8	2.7	434.9	<2.4	4.0	25.9	6.4	1,264.2
March									
April									
May	7,165.8	6.4	4.5	378.1	<2.7	4.3	31.1	4.5	1,133.7
June									
July									
August	4,816.6	4.4	3.9	432.5	<3.0	4.6	25.4	33.0	1,189.3
September									
October									
November	5,084.7	4.9	4.6	419.6	<2.6	5.3	22.8	9.6	1,206.3
December									
Minimum	4,816.6	4.4	2.7	378.1	<2.4	4.0	22.8	4.5	1,133.7
Maximum	7,165.8	6.4	4.6	434.9	<3.0	5.3	31.1	33.0	1,264.2
Average	5,729.0	5.1	3.9	416.3	<2.7	4.5	26.3	13.4	1,198.4

Analyses Peformed By American Scientific Laboratories, Los Angeles, CA 90065

Ventura Reclamation Facility

Annual Report 2009

Soild Streams

Total Metals - Dewatered Digested Sludge

Month	Filter Press 2 Run 2, Lead mg/kg/dry	Filter Press 2 Run2, Mercury mg/kg/dry	Filter Press 2 Run 2, Molybdenum mg/kg/dry	Filter Press 2 Run 2, Nickel mg/kg/dry	Filter Press 2 Run 2, Selenium mg/kg/dry	Filter Press 2 Run 2, Silver mg/kg/dry	Filter Press 2 Run 2, Thallium mg/kg/dry	Filter Press 2 Run 2, Tin mg/kg.dry	Filter Press 2 Run 2, Vanadium mg/kg/dry	Filter Press 2 Run 2, Zinc mg/kg/dry
January										
February	18.2	<0.9	25.4	25.8	34.4	8.9	<2.4	40.8	9.8	1,146.2
March										
April										
May	21.7	1.2	19.9	21.2	32.1	7.2	<2.7	32.6	8.3	1,123.0
June										
July										
August	21.4	1.4	27.2	32.0	24.1	10.9	<3.0	1.4	8.9	1,112.4
September										
October										
November	15.8	1.3	21.4	22.5	25.1	7.3	<2.6	28.6	9.3	1,222.2
December										
Minimum	15.8	<0.9	19.9	21.2	24.1	7.2	<2.4	1.4	8.3	1,112.4
Maximum	21.7	1.2	27.2	32.0	34.4	10.9	<3.0	40.8	9.8	1,222.2
Average	19.3	<1.2	23.5	25.4	28.9	8.6	<2.7	25.9	9.1	1,151.0

Analyses Performed by American Scientific Laboratories, Los Angeles, CA 90065

Ventura Water Reclamation Facility
Annual Report 2009

Solid Streams

Organics - Dewatered Digested Sludge

Month		Acetone mg/kg/dry	Chloromethane mg/kg/dry	Bis (2-Ethyylhexylphthalate) mg/kg/dry	1,4-Dichlorobenzene mg/kg/dry	Toluene mg/kg/dry	Xylene mg/kg/dry	TOX mg/kg/dry
February	Filter Press 1 Run 1	16.98	<2.16	<2.37	<0.72	<0.14	<0.43	<359.71
May	Filter Press 1 Run 1	<3.45	<2.07	128.97	<0.69	<0.14	<0.41	<344.83
August	Filter Press 1 Run 1	<3.88	<2.33	67.05	<0.78	<0.16	<0.47	<387.60
Minimum		<3.45	<2.07	<2.37	<0.69	<0.14	<0.41	<344.83
Maximum		16.98	<2.33	128.97	<0.78	<0.16	<0.47	<387.60
Average		8.10	<2.19	66.13	<0.73	<0.15	<0.44	<364.05

Analyses Performed by American Scientific Laboratories, Los Angeles, CA 90065

Ventura Water Reclamation Facility
Annual Report 2009

Solid Streams

Total Metals - Dry Weight

Dissolverd Air Flotation System (Waste Activated Sludge)

Month	Cadmium mg/kg/dry	Chromium mg/kg dry	Copper mg/kg/dry	Lead mg/kg/dry	Nickel mg/kg/dry	Silver mg/kg/dry	Zinc mg/kg/dry
February	0.88	31.35	1,461.91	39.13	24.78	2.29	841.02
May	<0.05	23.51	793.64	14.25	13.20	2.91	508.73
August	<0.05	6.08	877.09	12.10	20.20	9.18	479.55
November	1.80	6.41	716.40	28.78	11.56	3.85	483.36
Annual Average	0.70	16.84	962.26	23.57	17.44	4.56	578.17

Gravity Thickener (Primary Sludge)

Month	Cadmium mg/kg/dry	Chromium mg/kg/dry	Copper mg/kg/dry	Lead mg/kg/dry	Nickel mg/kg/dry	Silver mg/kg/dry	Zinc mg/kg/dry
February	0.97	37.73	1,485.48	59.07	25.27	3.17	854.59
May	<0.05	57.24	332.21	17.40	10.69	1.15	390.75
August	<0.05	19.50	769.84	12.83	63.06	0.32	541.06
November	1.30	7.53	401.11	20.19	9.46	0.62	458.29
Annual Average	0.59	37.73	747.16	27.37	27.12	1.32	561.17

Ventura Water Reclamation Facility

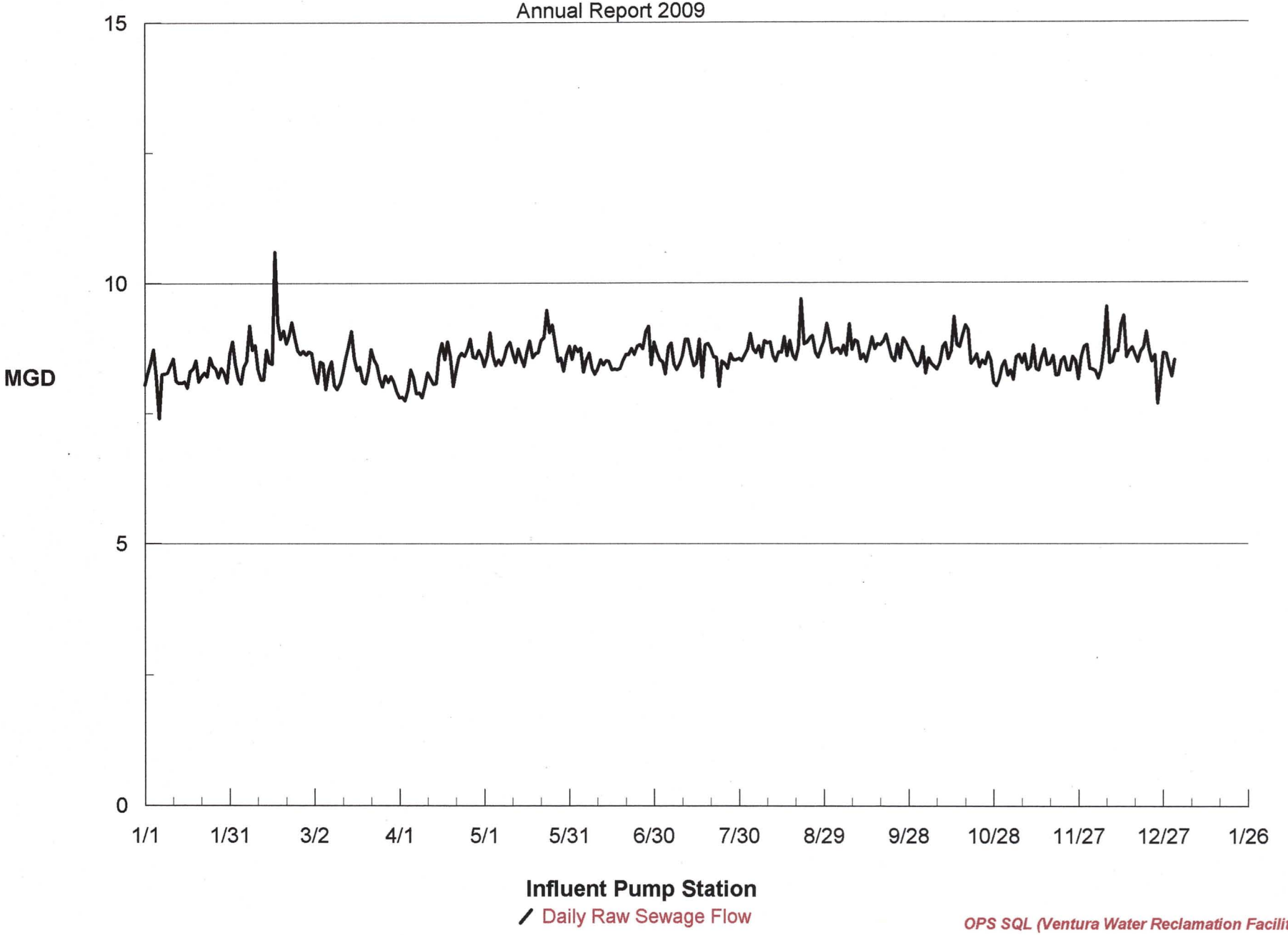
Annual Report 2009

Irrigation Reuse Flows

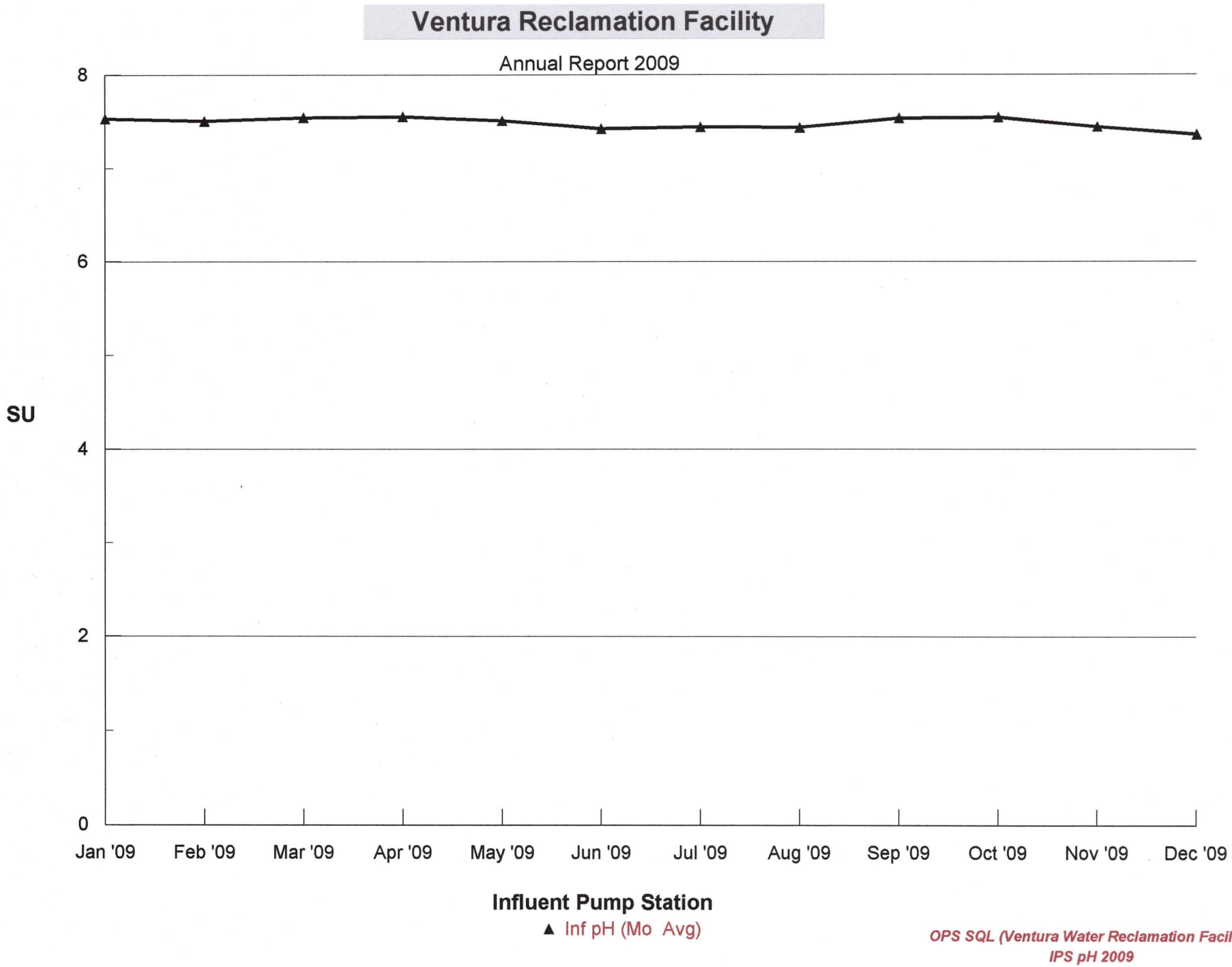
Month	Olivas Irrigation MGD	Buena Irrigation MGD	Marina Irrigation MGD	Irrigation Total MGD
January	0.1266	0.1440	0.0027	0.2733
February	0.0311	0.0557	0.0012	0.0880
March	0.1641	0.1965	0.0029	0.3635
April	0.3663	0.3579	0.0066	0.7308
May	0.5039	0.2862	0.0066	0.7967
June	0.5489	0.3710	0.0059	0.9258
July	0.5890	0.4399	0.0074	1.0362
August	0.4327	0.3442	0.0064	0.7833
September	0.3635	0.2961	0.0055	0.6651
October	0.2437	0.2256	0.0030	0.4723
November	0.1637	0.1580	0.0040	0.3257
December	0.0388	0.0538	0.0015	0.0941
Minimum	0.0000	0.0000	0.0000	0.0002
Maximum	1.0000	0.7810	0.0152	1.5525
Average	0.2992	0.2451	0.0045	0.5487

Ventura Water Reclamation Facility

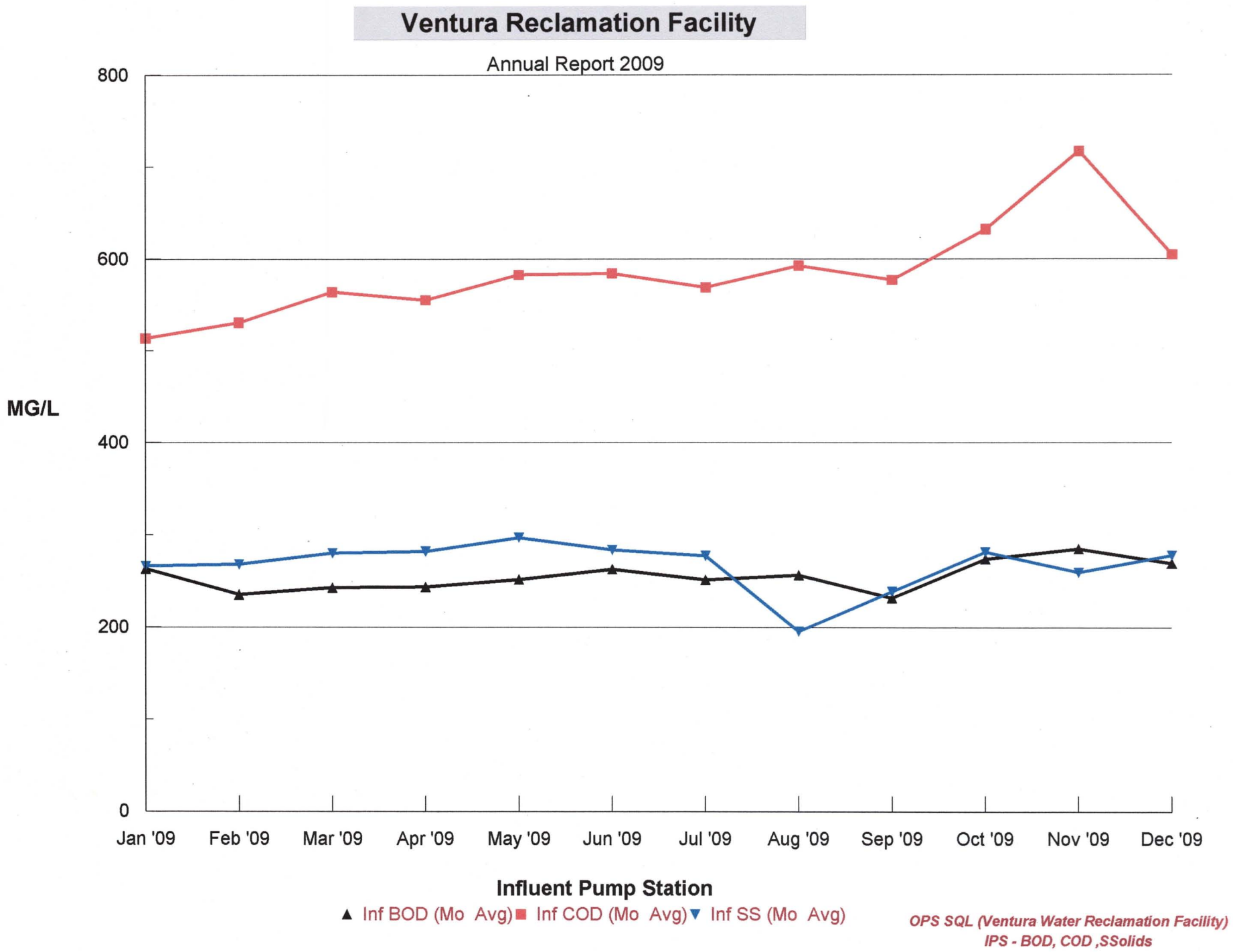
Annual Report 2009

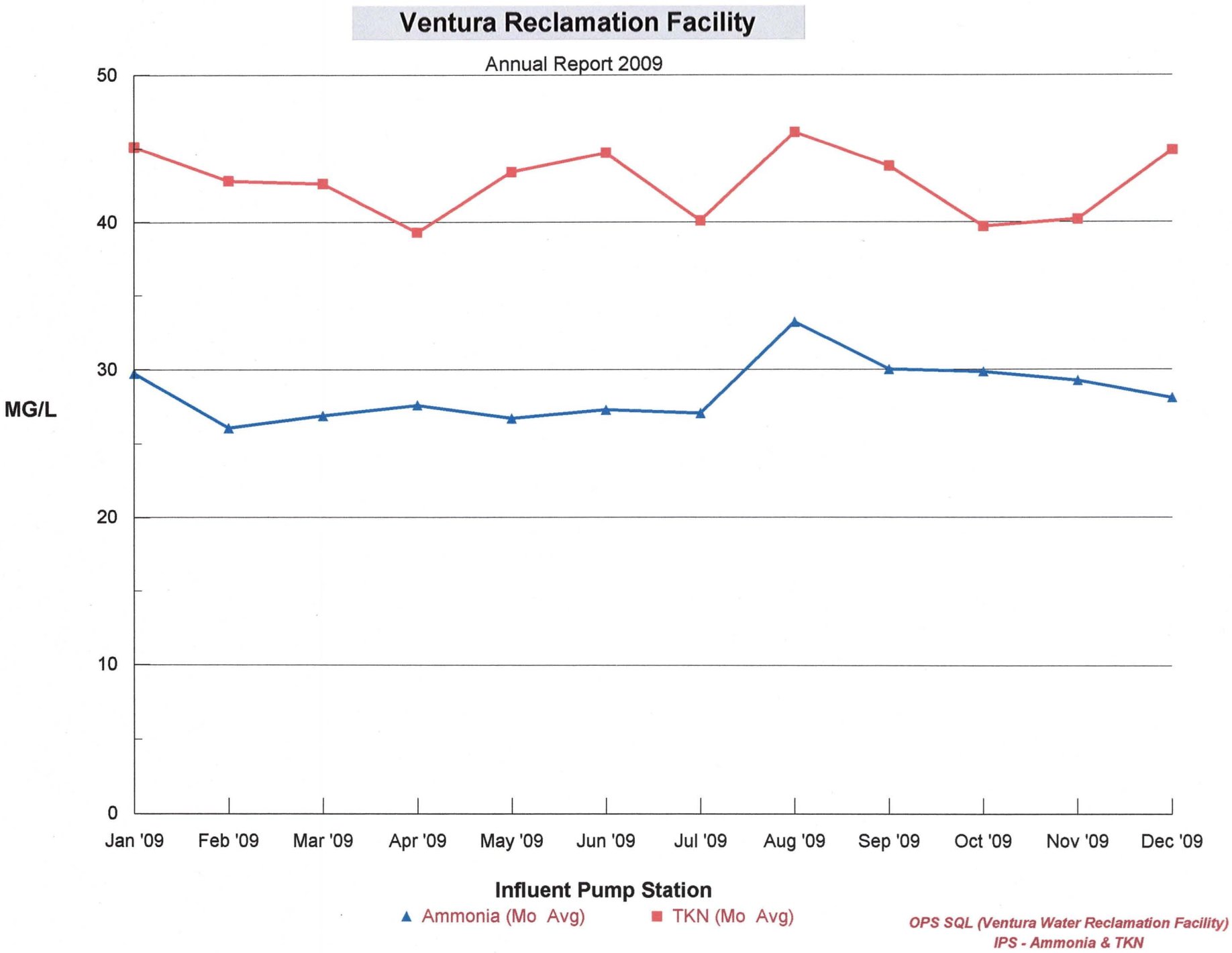


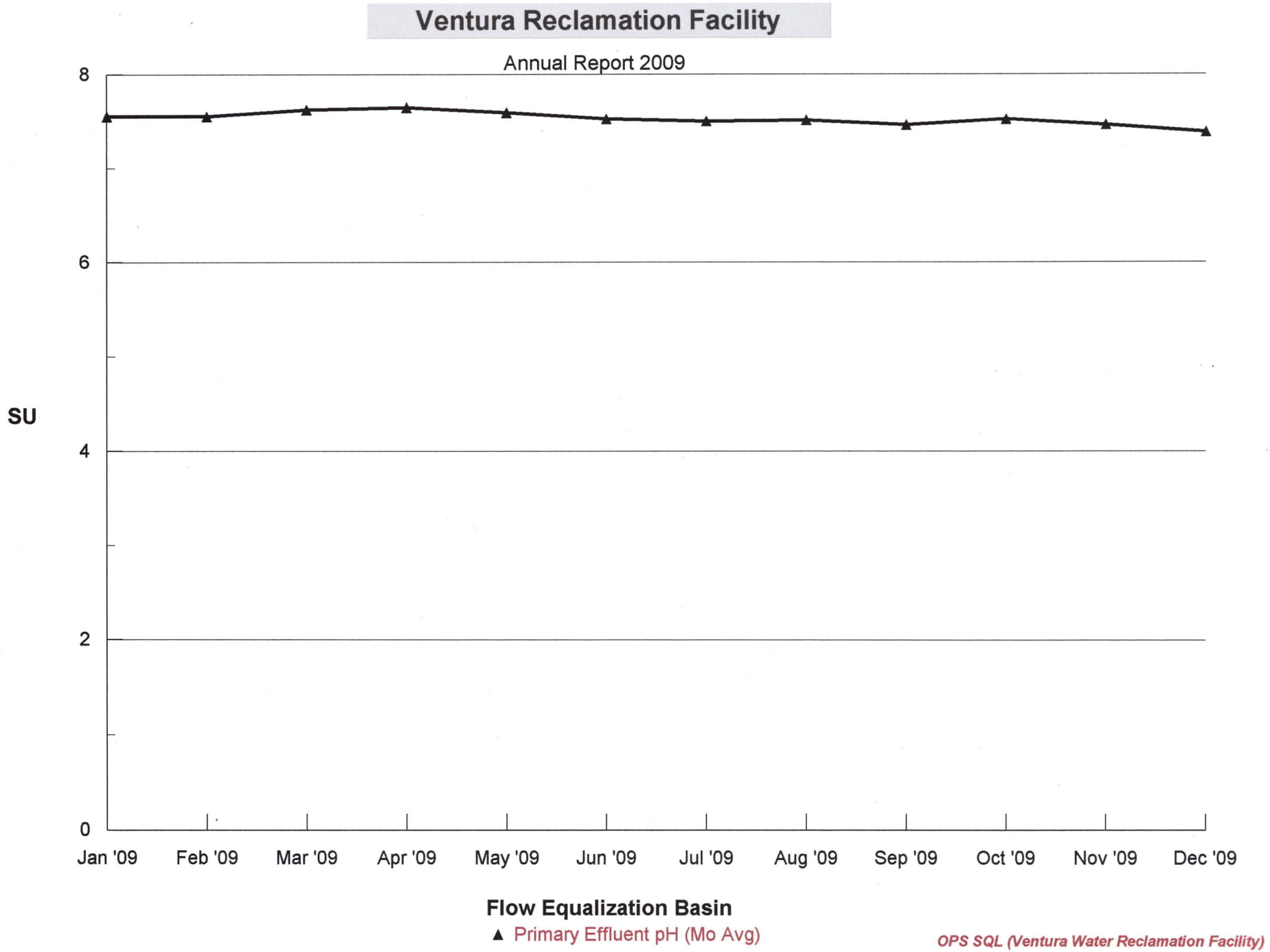
OPS SQL (Ventura Water Reclamation Facility)
Raw Sewage Flow



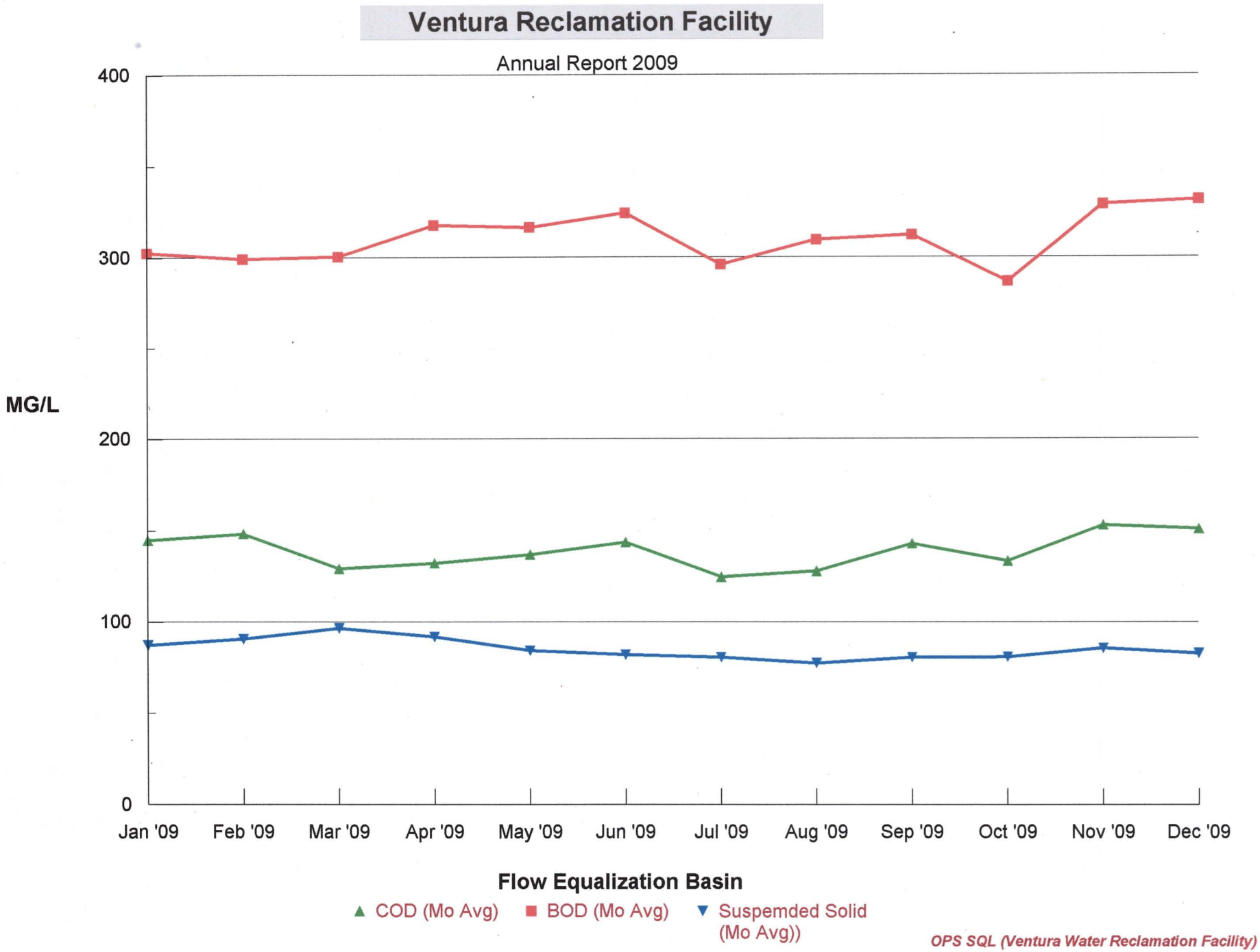
OPS SQL (Ventura Water Reclamation Facility)
IPS pH 2009

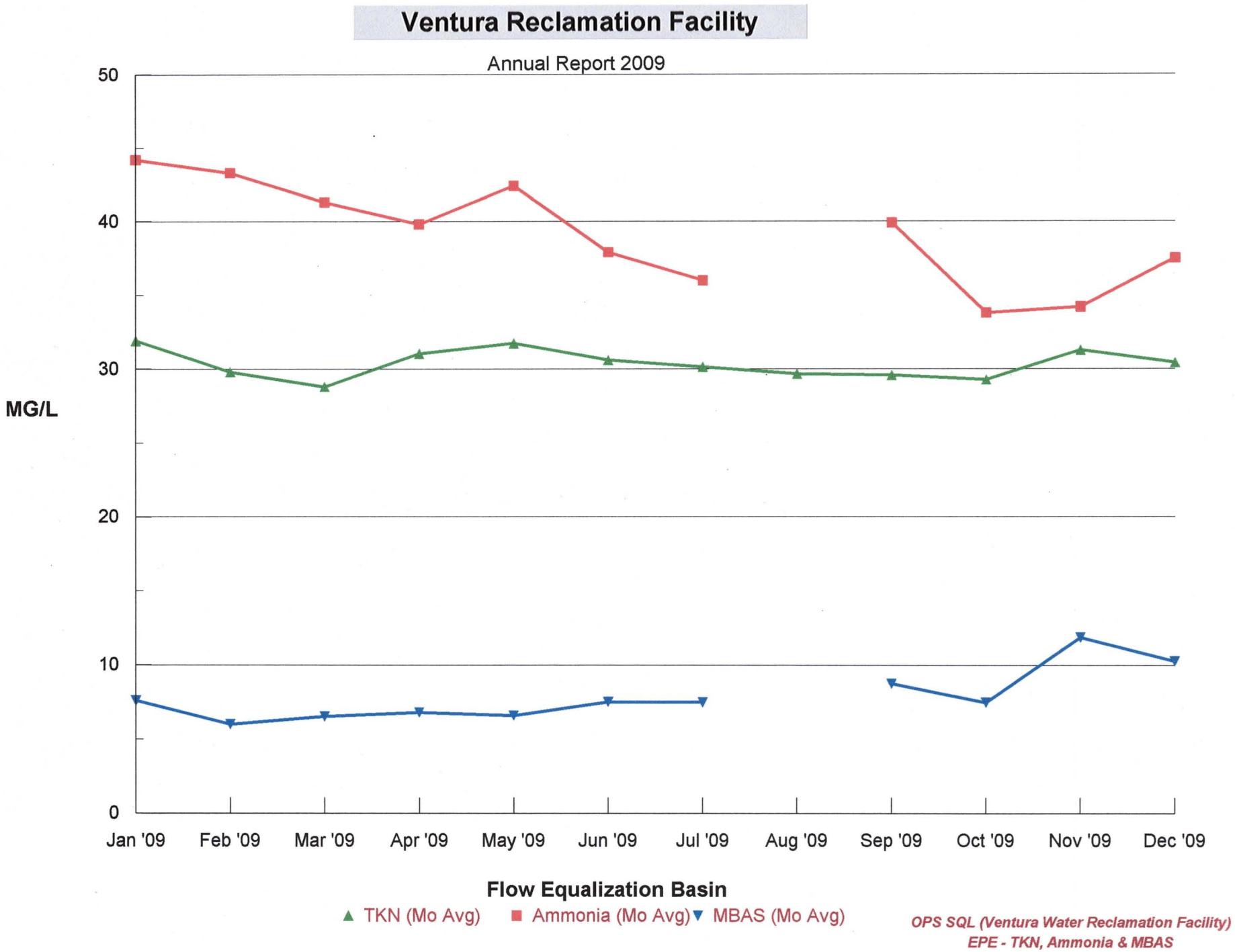

Ventura Reclamation Facility
Annual Report 2009
MG/L
800
600
400
200
0
Jan '09
Feb '09
Mar '09
Apr '09
May '09
Jun '09
Jul '09
Aug '09
Sep '09
Oct '09
Nov '09
Dec '09
Influent Pump Station
▲ Inf BOD (Mo Avg) ■ Inf COD (Mo Avg) ▼ Inf SS (Mo Avg)
OPS SQL (Ventura Water Reclamation Facility)
IPS - BOD, COD ,SSolids

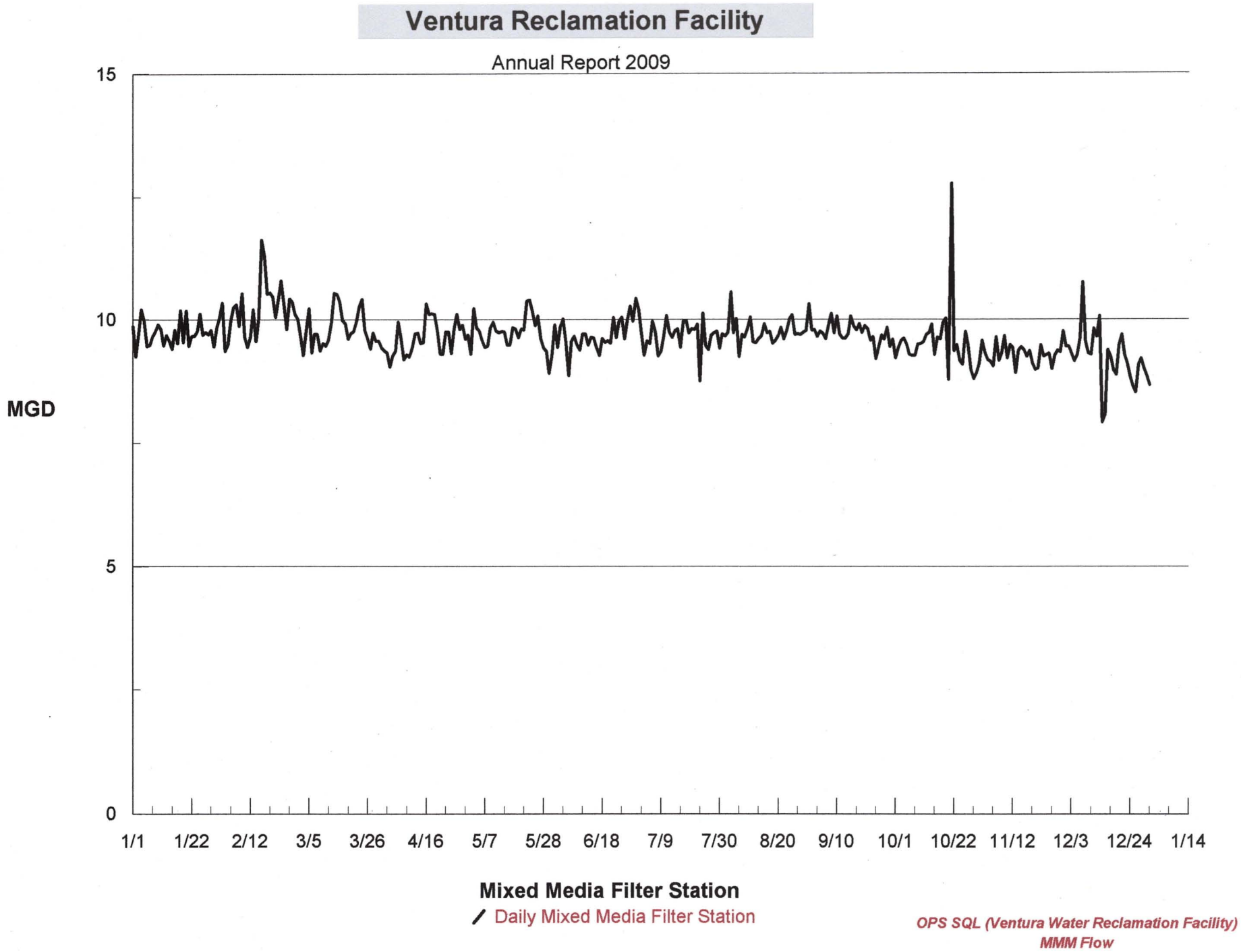

Ventura Reclamation Facility
Annual Report 2009
MG/L
50
40
30
20
10
0
Jan '09
Feb '09
Mar '09
Apr '09
May '09
Jun '09
Jul '09
Aug '09
Sep '09
Oct '09
Nov '09
Dec '09
Influent Pump Station
Ammonia (Mo Avg)
TKN (Mo Avg)
OPS SQL (Ventura Water Reclamation Facility)
IPS - Ammonia & TKN

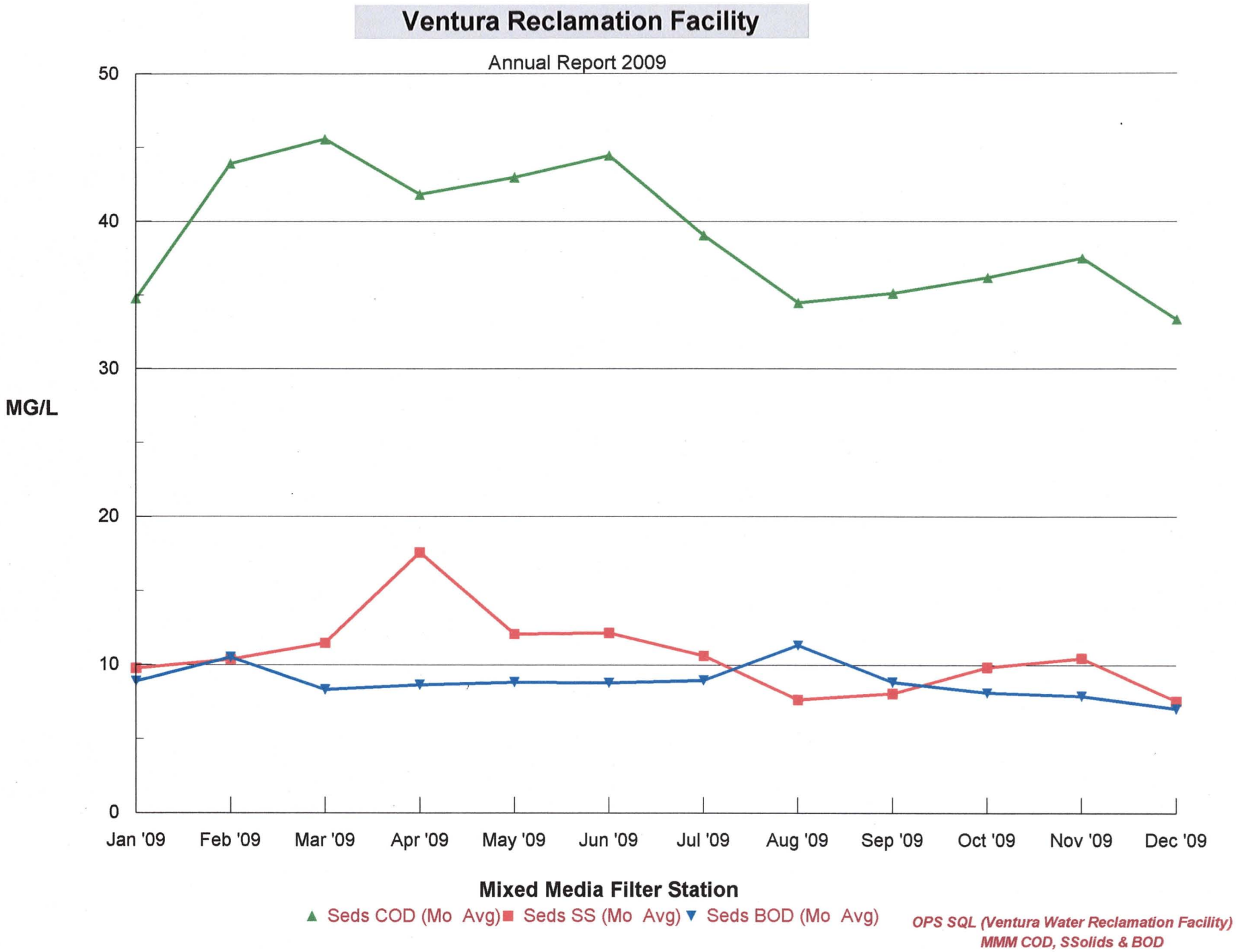


OPS SQL (Ventura Water Reclamation Facility)
EPE - pH


Ventura Reclamation Facility
Annual Report 2009
400
300
200
100
0
MG/L
Jan '09
Feb '09
Mar '09
Apr '09
May '09
Jun '09
Jul '09
Aug '09
Sep '09
Oct '09
Nov '09
Dec '09
Flow Equalization Basin
COD (Mo Avg)
BOD (Mo Avg)
Suspemded Solid (Mo Avg))
OPS SQL (Ventura Water Reclamation Facility)
EPE - COD, BOD, SSoilds

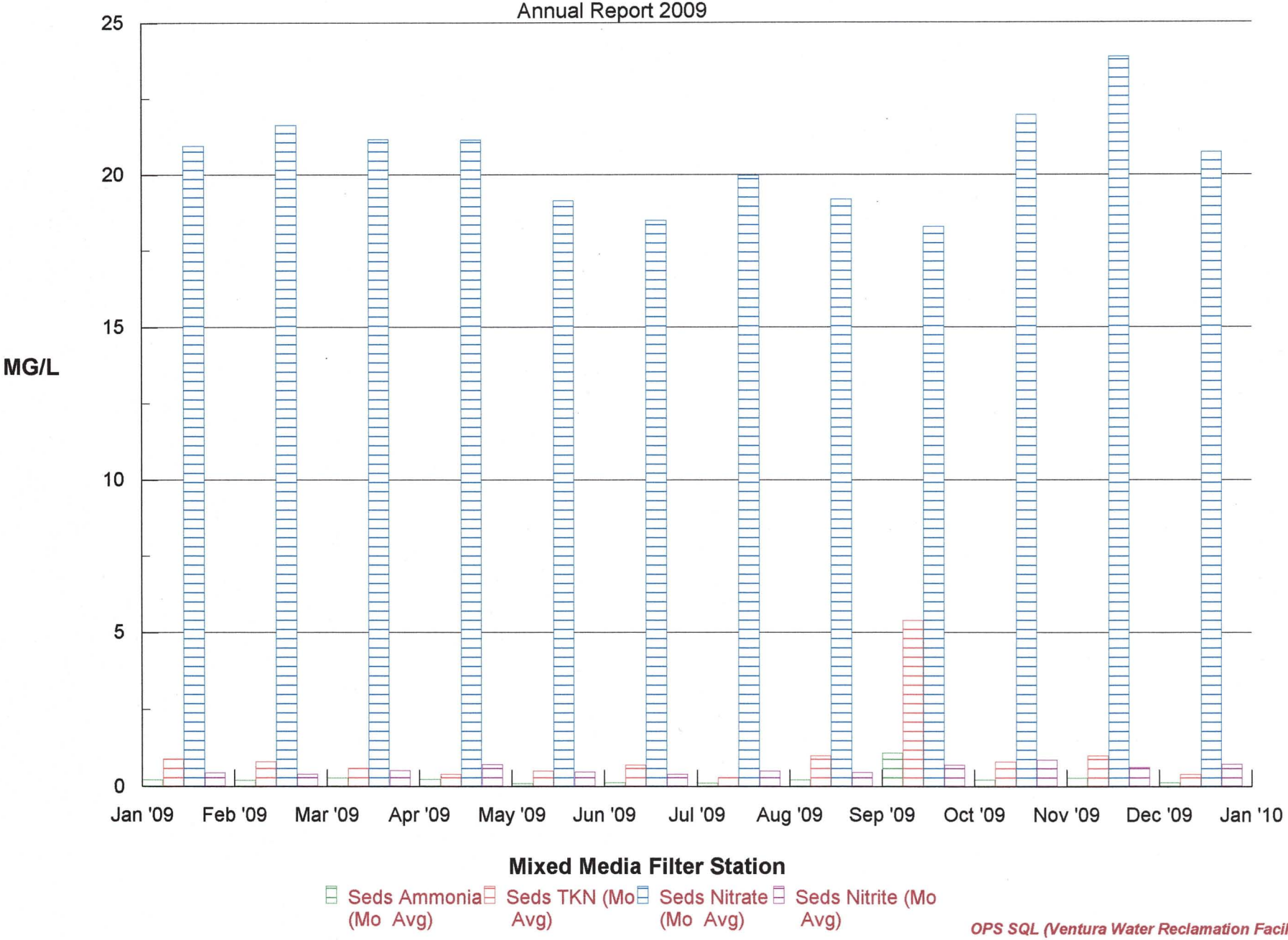

Ventura Reclamation Facility
Annual Report 2009
50
40
30
20
10
0
MG/L
Jan '09
Feb '09
Mar '09
Apr '09
May '09
Jun '09
Jul '09
Aug '09
Sep '09
Oct '09
Nov '09
Dec '09
Flow Equalization Basin
TKN (Mo Avg)
Ammonia (Mo Avg)
MBAS (Mo Avg)
OPS SQL (Ventura Water Reclamation Facility)
EPE - TKN, Ammonia & MBAS


Ventura Reclamation Facility
Annual Report 2009
15
10
5
0
MGD
1/1
1/22
2/12
3/5
3/26
4/16
5/7
5/28
6/18
7/9
7/30
8/20
9/10
10/1
10/22
11/12
12/3
12/24
1/14
Mixed Media Filter Station
Daily Mixed Media Filter Station
OPS SQL (Ventura Water Reclamation Facility)
MMM Flow

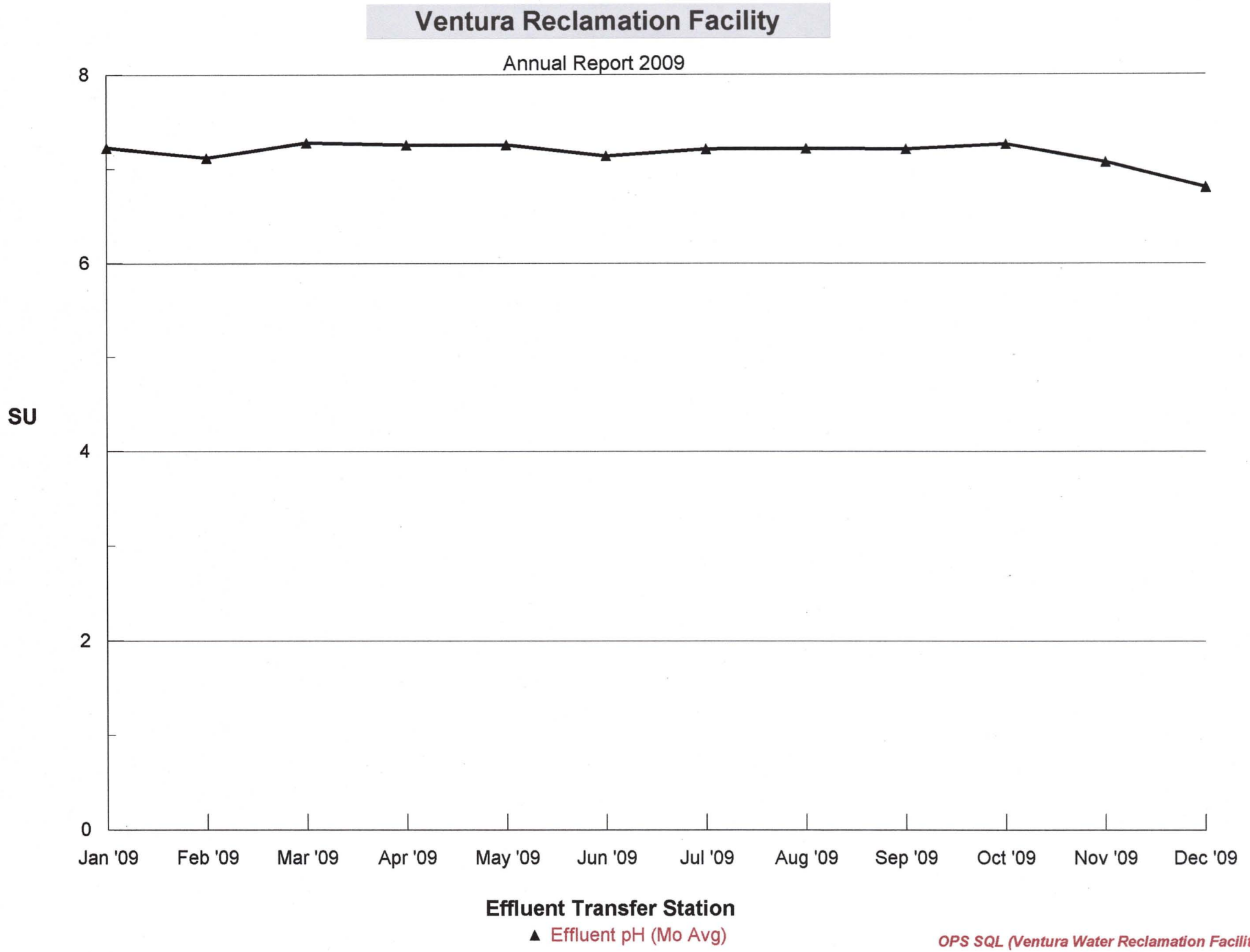

Ventura Reclamation Facility
Annual Report 2009
MG/L
50
40
30
20
10
0
Jan '09
Feb '09
Mar '09
Apr '09
May '09
Jun '09
Jul '09
Aug '09
Sep '09
Oct '09
Nov '09
Dec '09
Mixed Media Filter Station
Seds COD (Mo Avg)
Seds SS (Mo Avg)
Seds BOD (Mo Avg)
OPS SQL (Ventura Water Reclamation Facility)
MMM COD, SSolids & BOD

Ventura Reclamation Facility

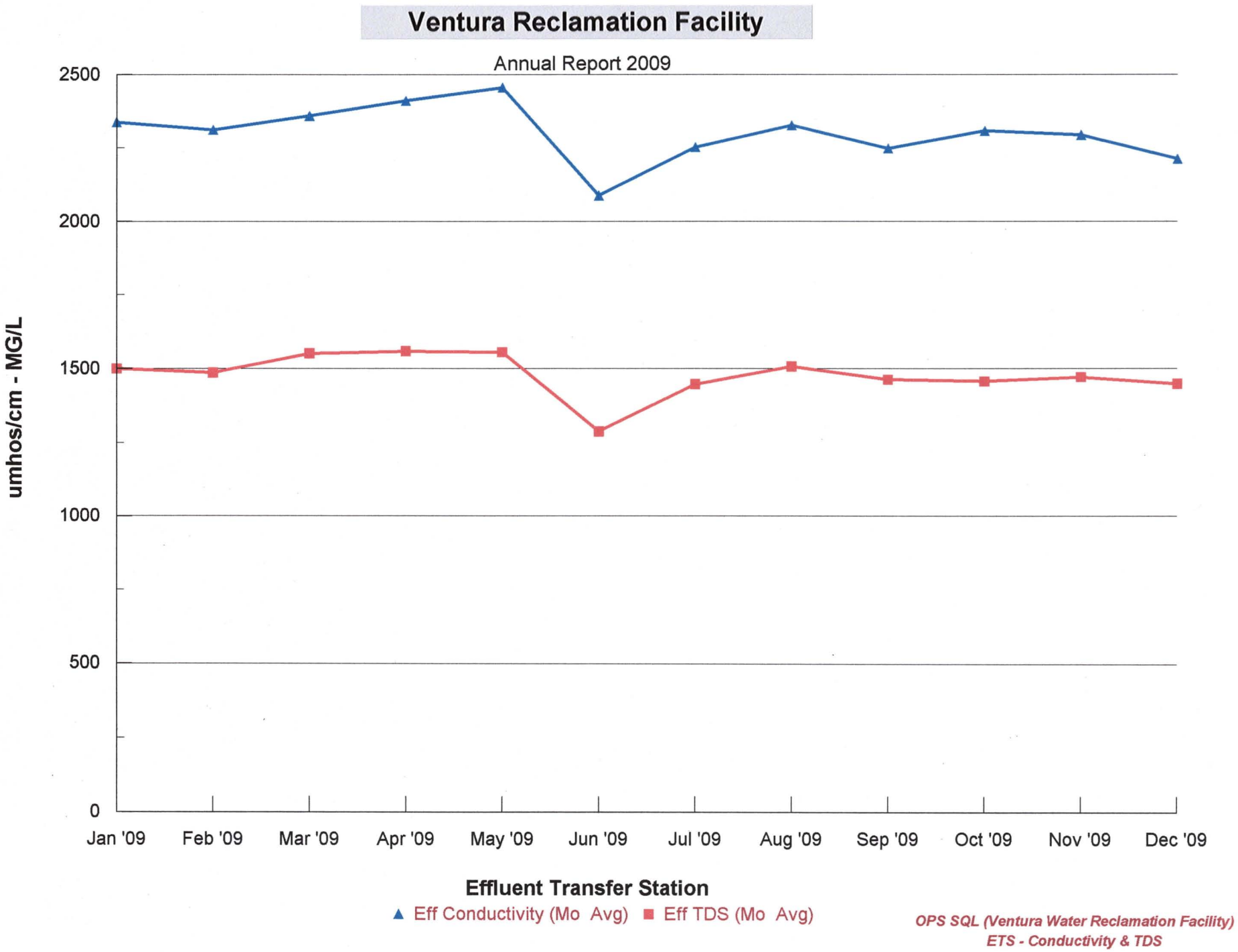
Annual Report 2009



OPS SQL (Ventura Water Reclamation Facility)
MMM Nitrogen Compounds

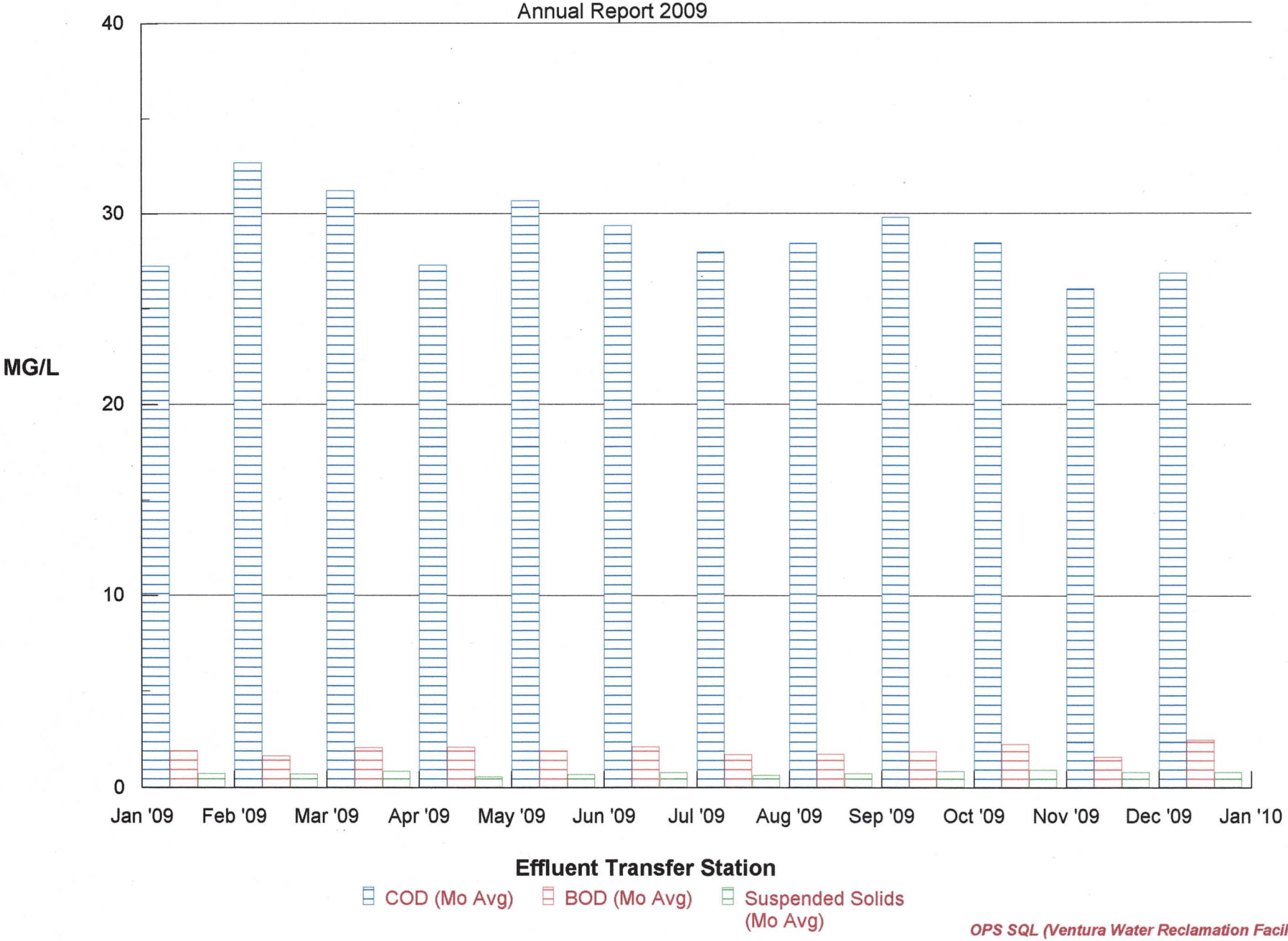


OPS SQL (Ventura Water Reclamation Facility)
Effluent pH

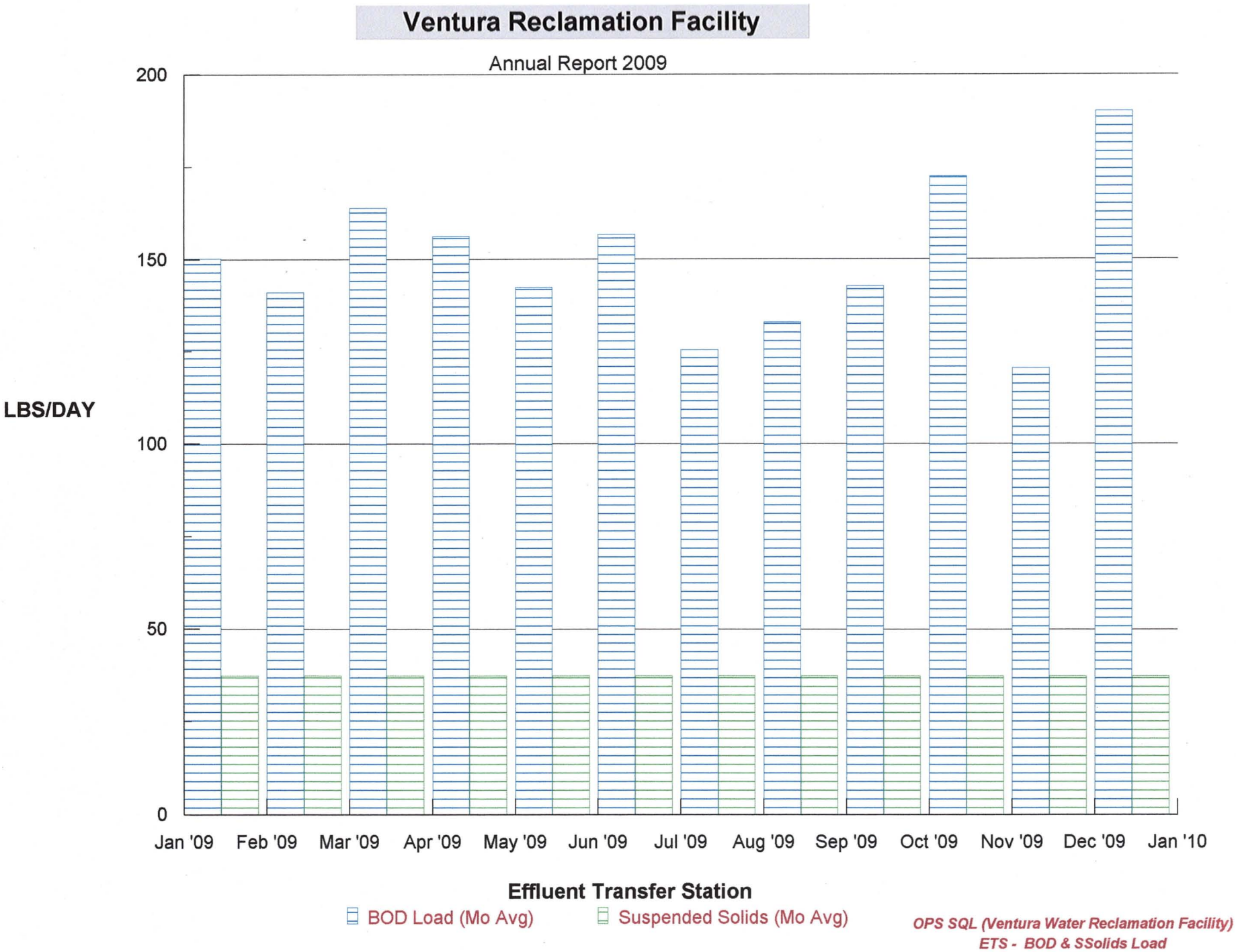

Ventura Reclamation Facility
Annual Report 2009
umhos/cm - MG/L
2500
2000
1500
1000
500
0
Jan '09
Feb '09
Mar '09
Apr '09
May '09
Jun '09
Jul '09
Aug '09
Sep '09
Oct '09
Nov '09
Dec '09
Effluent Transfer Station
Eff Conductivity (Mo Avg)
Eff TDS (Mo Avg)
OPS SQL (Ventura Water Reclamation Facility)
ETS - Conductivity & TDS

Ventura Reclamation Facility

Annual Report 2009

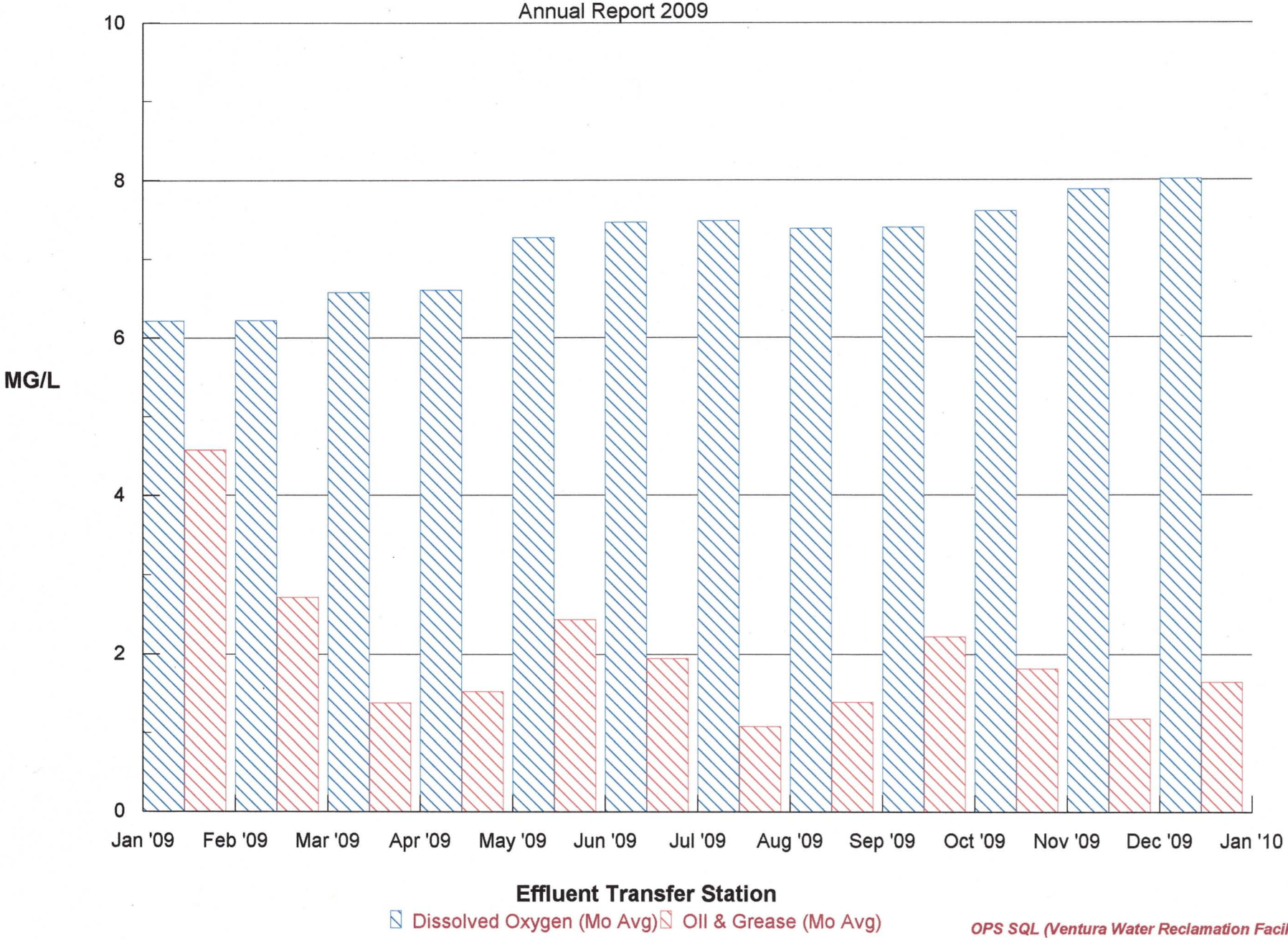


OPS SQL (Ventura Water Reclamation Facility)
ETS - COD, BOD & SSolids


Ventura Reclamation Facility
Annual Report 2009
LBS/DAY
200
150
100
50
0
Jan '09
Feb '09
Mar '09
Apr '09
May '09
Jun '09
Jul '09
Aug '09
Sep '09
Oct '09
Nov '09
Dec '09
Jan '10
Effluent Transfer Station
BOD Load (Mo Avg)
Suspended Solids (Mo Avg)
OPS SQL (Ventura Water Reclamation Facility)
ETS - BOD & SSolids Load

Ventura Reclamation Facility

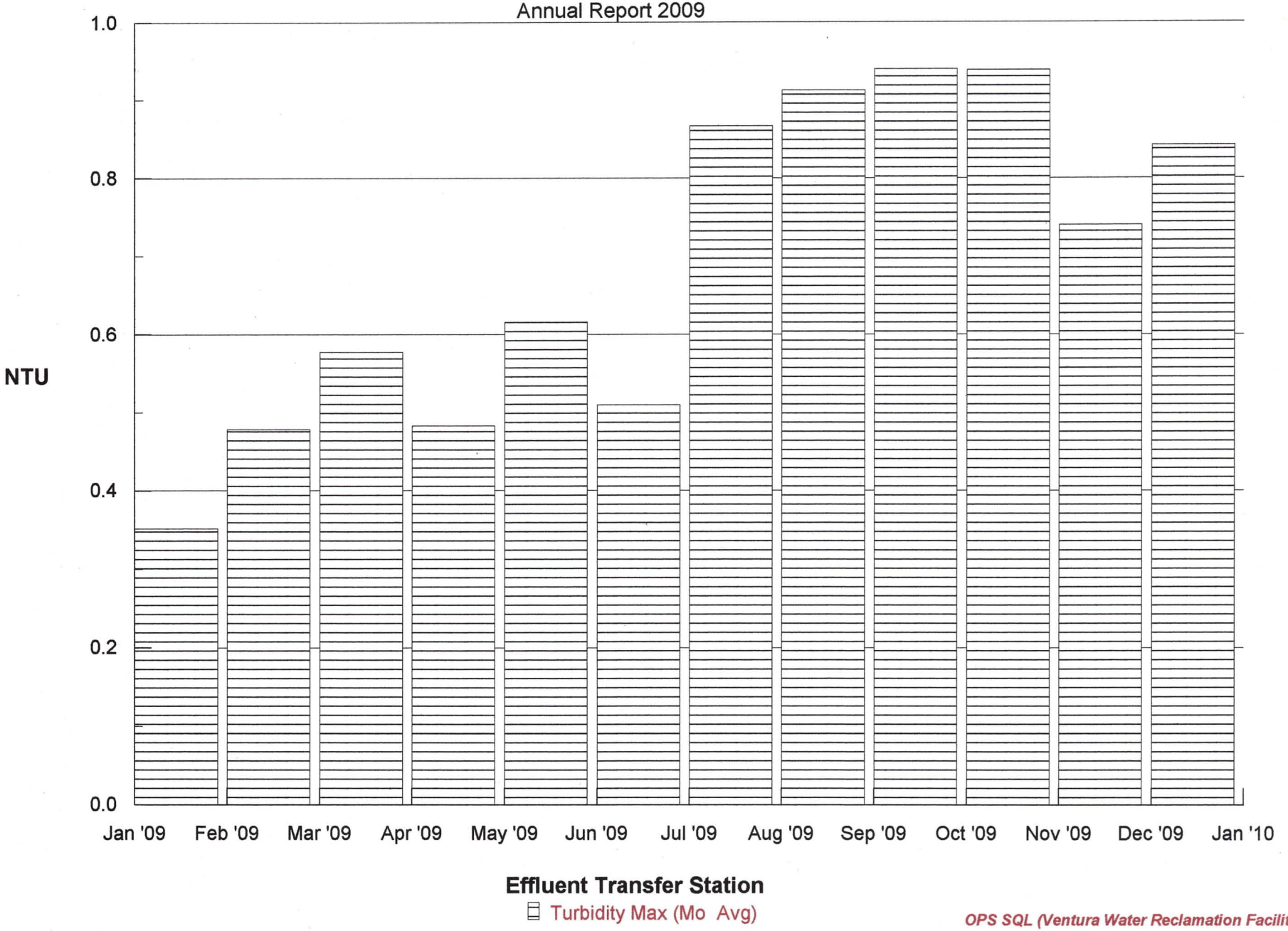
Annual Report 2009



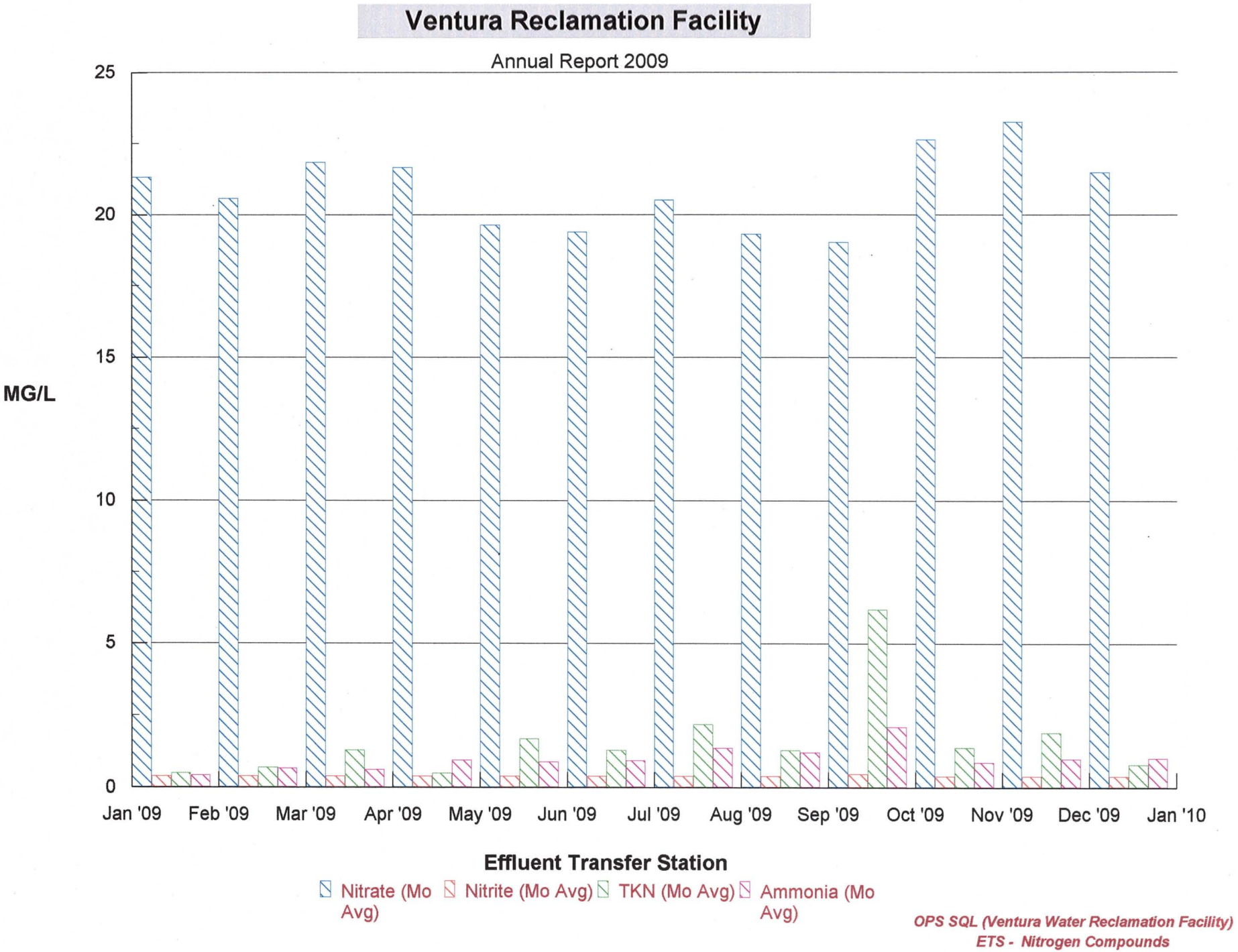
OPS SQL (Ventura Water Reclamation Facility)
ETS - DO & O & G

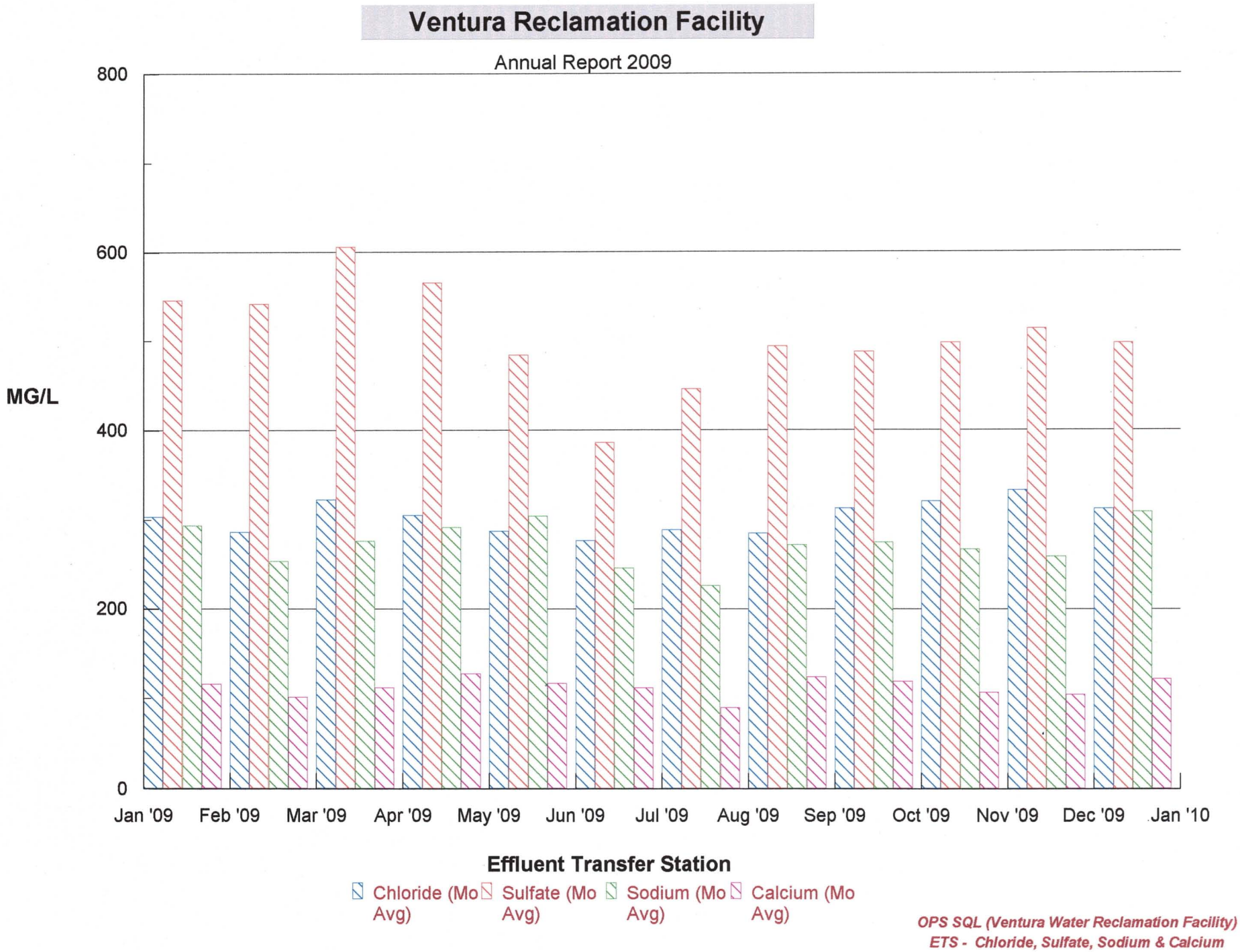
Ventura Reclamation Facility

Annual Report 2009



OPS SQL (Ventura Water Reclamation Facility)
ETS - Turbidity Max 09

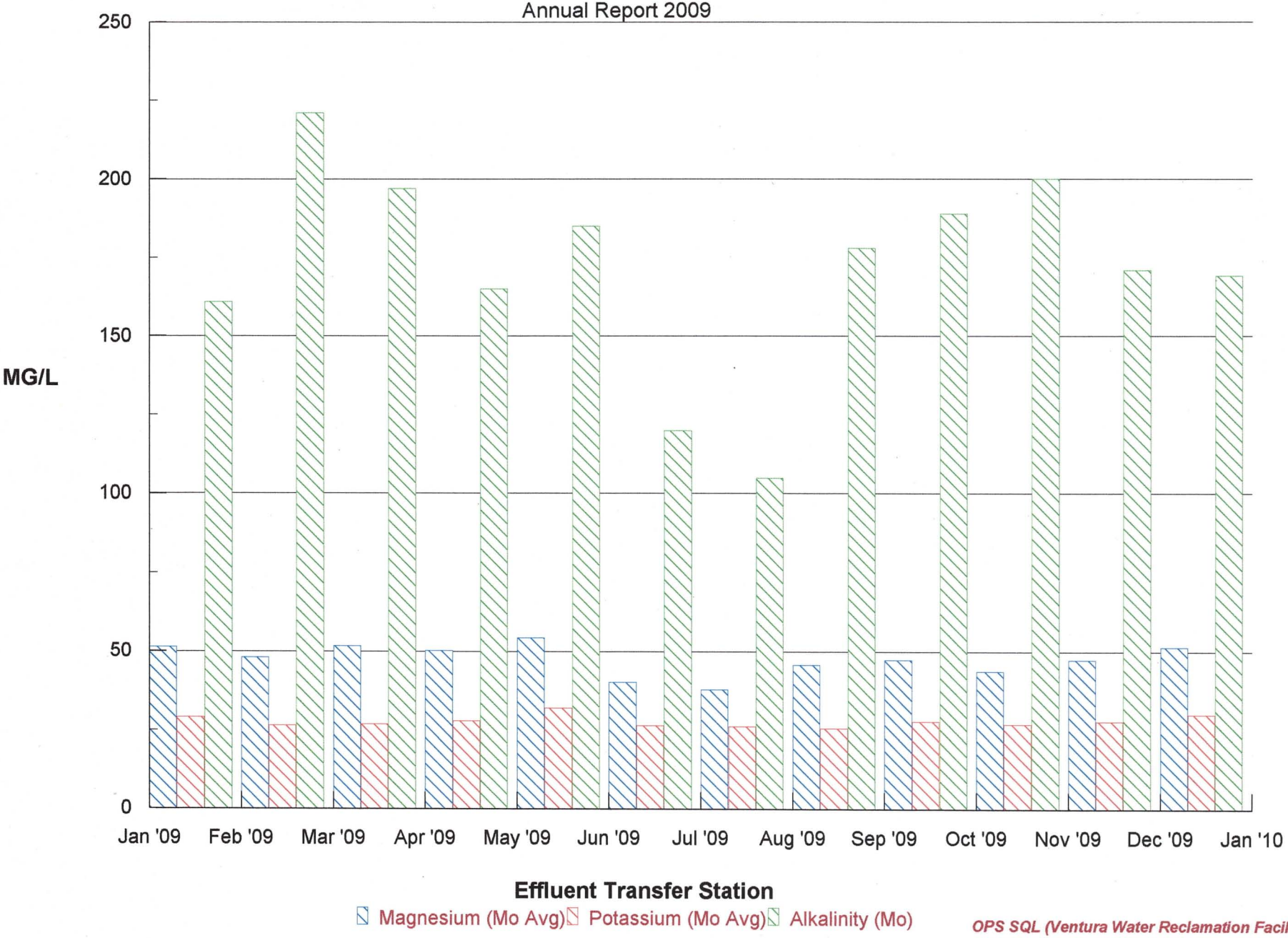

Ventura Reclamation Facility
Annual Report 2009
MG/L
25
20
15
10
5
0
Jan '09
Feb '09
Mar '09
Apr '09
May '09
Jun '09
Jul '09
Aug '09
Sep '09
Oct '09
Nov '09
Dec '09
Jan '10
Effluent Transfer Station
Nitrate (Mo Avg)
Nitrite (Mo Avg)
TKN (Mo Avg)
Ammonia (Mo Avg)
OPS SQL (Ventura Water Reclamation Facility)
ETS - Nitrogen Compounds



OPS SQL (Ventura Water Reclamation Facility)
ETS - Chloride, Sulfate, Sodium & Calcium

Ventura Reclamation Facility

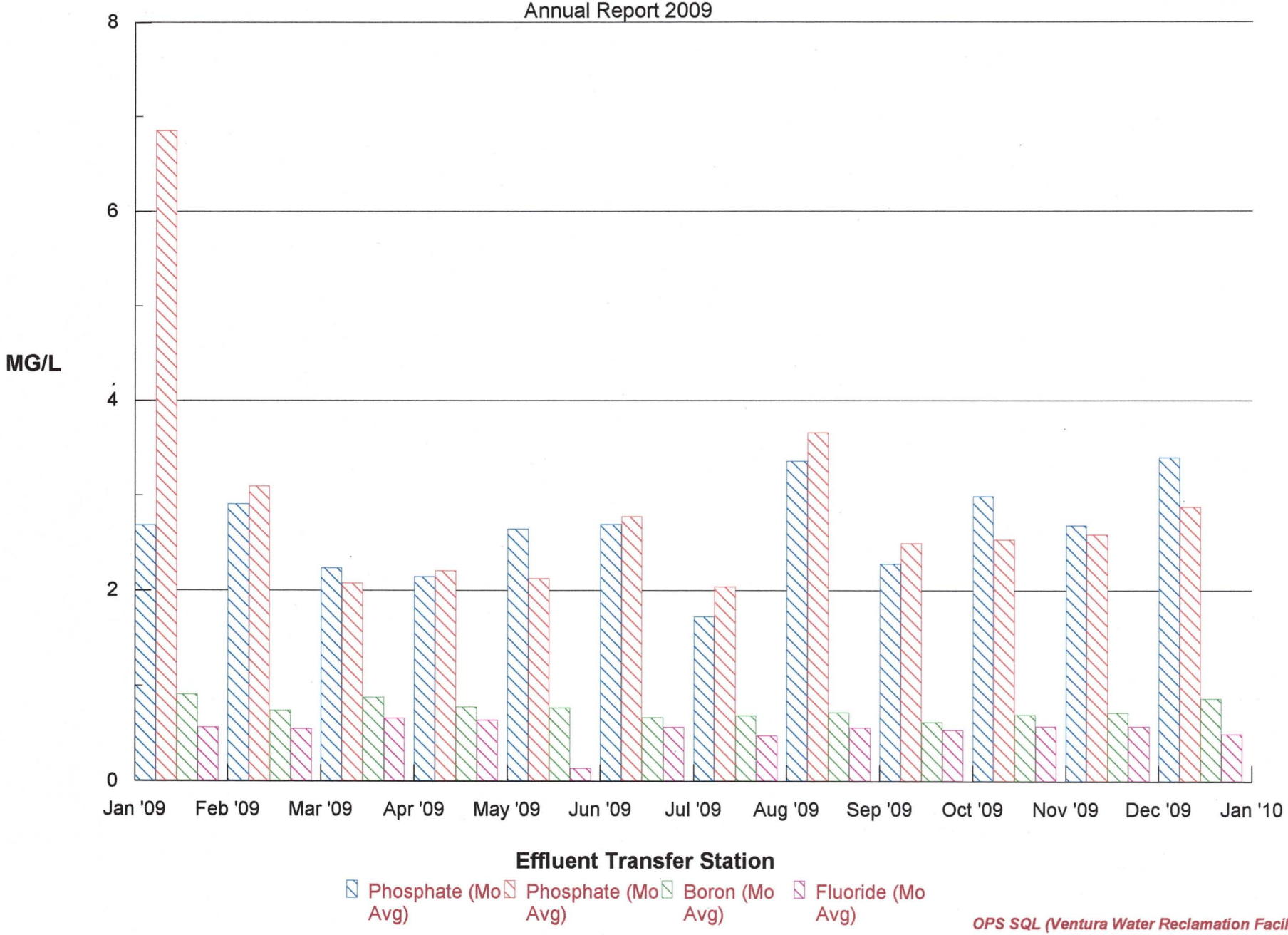
Annual Report 2009



OPS SQL (Ventura Water Reclamation Facility)
ETS - Magnesium, Potassium & Alkalinity

Ventura Reclamation Facility

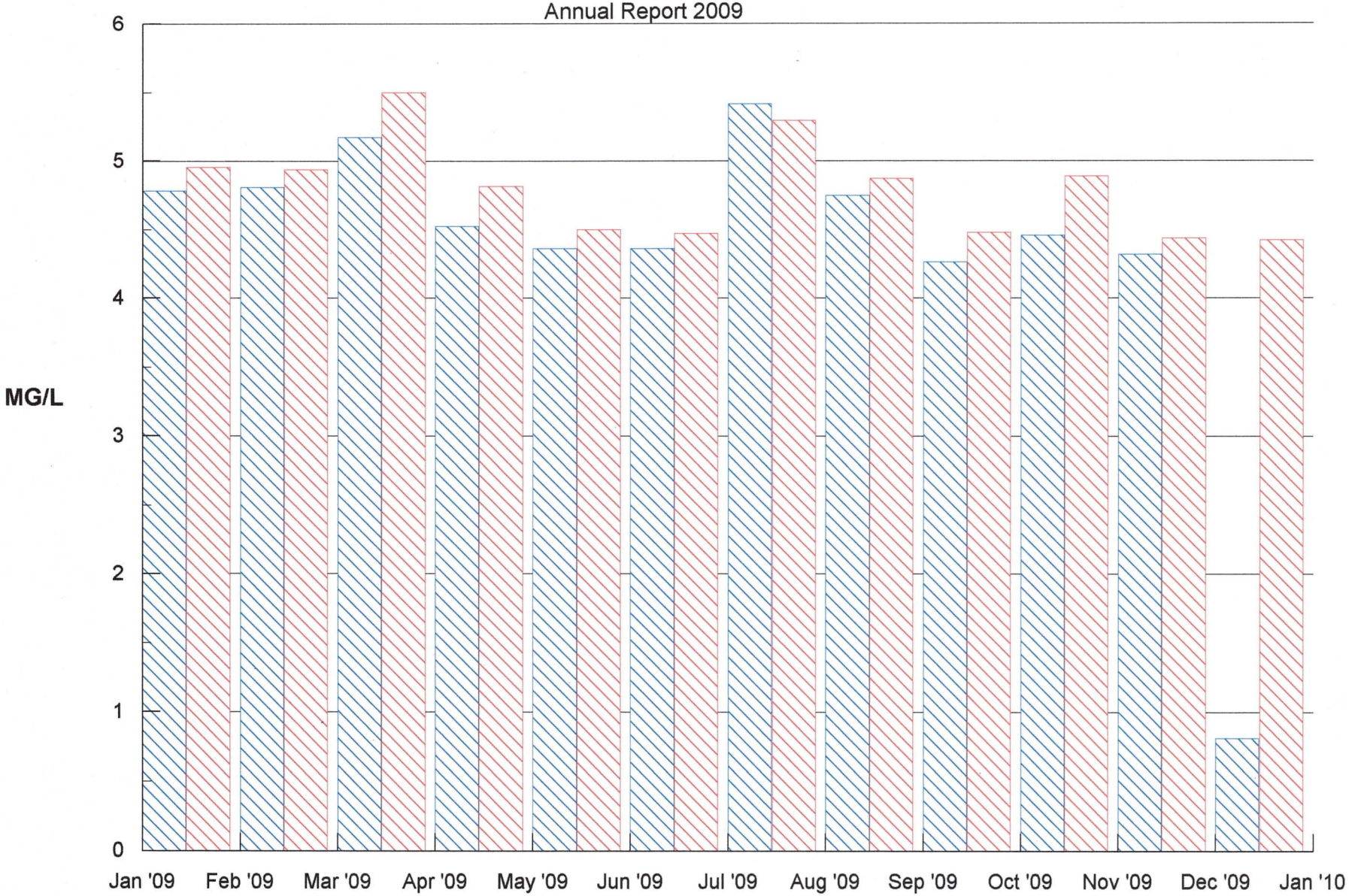
Annual Report 2009



OPS SQL (Ventura Water Reclamation Facility)
ETS - Phosphate, Phosphorous, Boron & Fluoride

Ventura Reclamation Facility

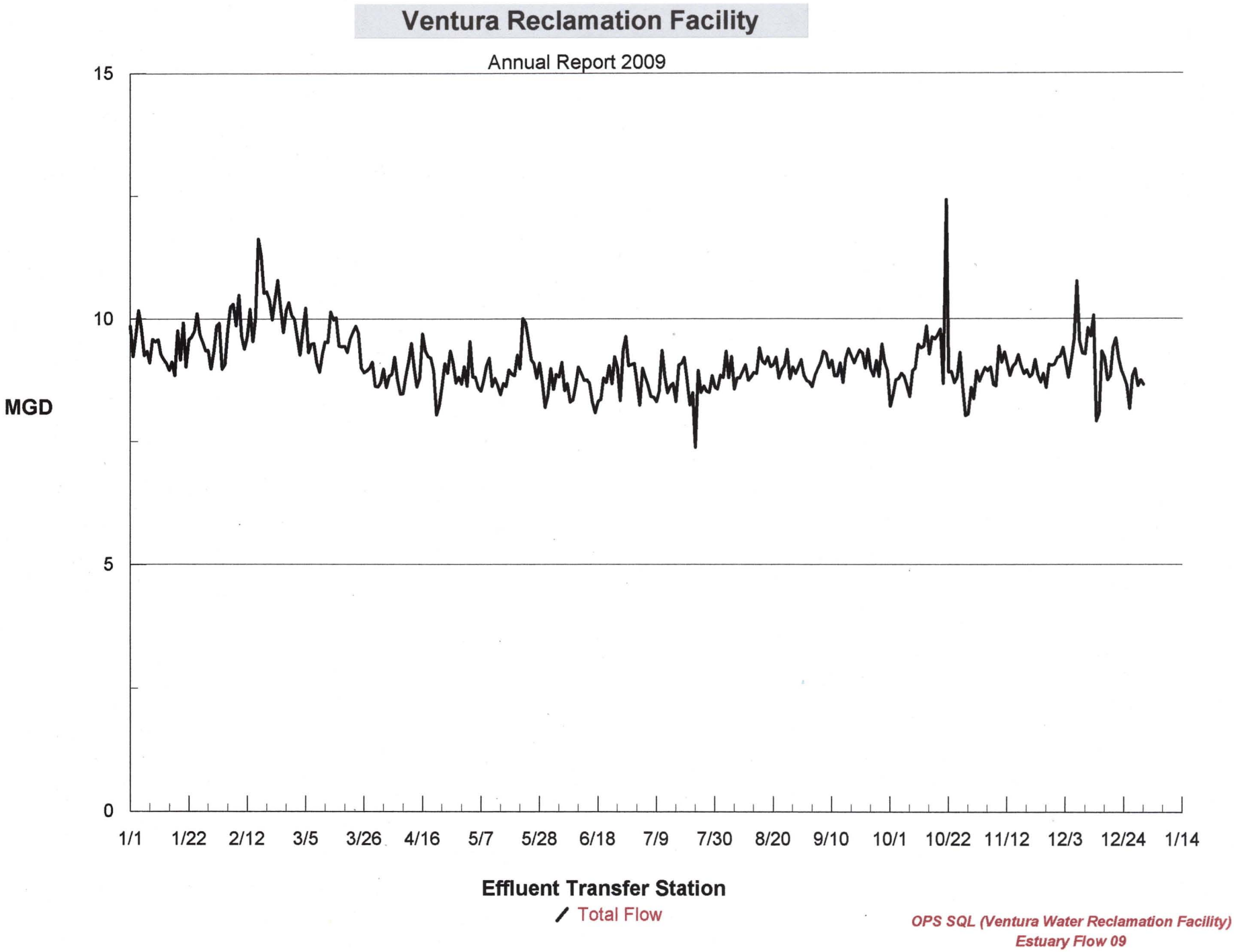
Annual Report 2009

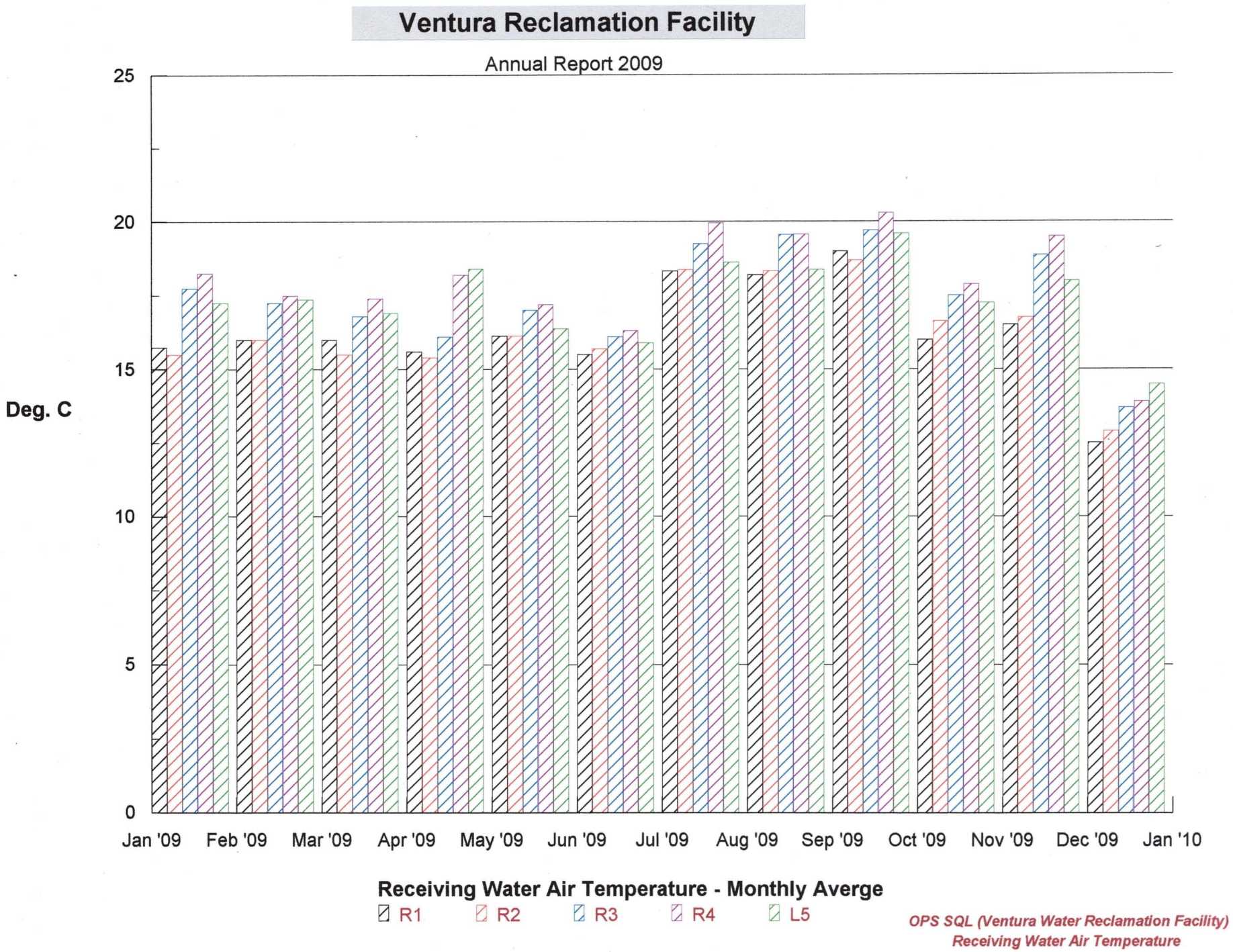


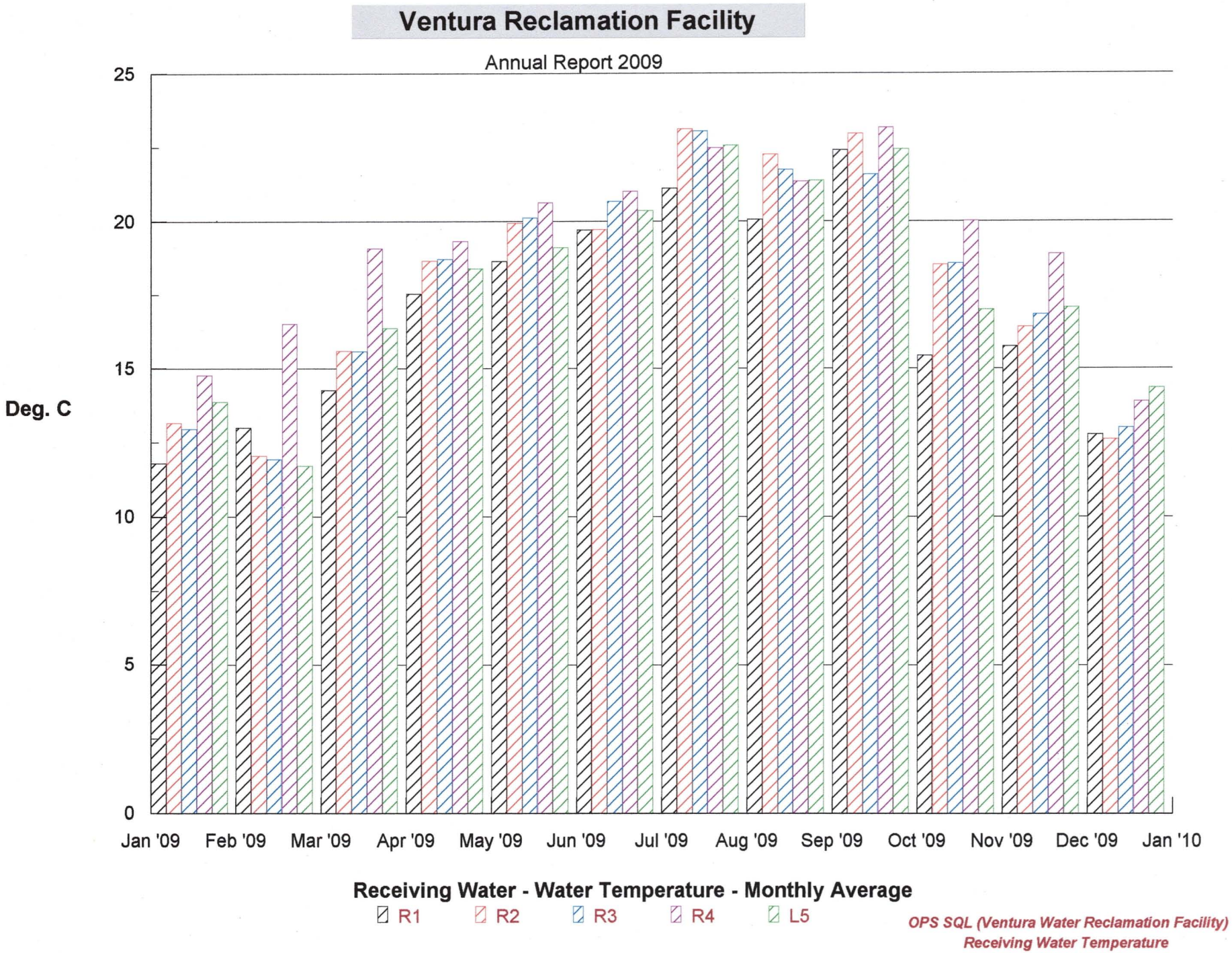
Effluent Transfer Station -Chlorine Residuals @ 11 AM

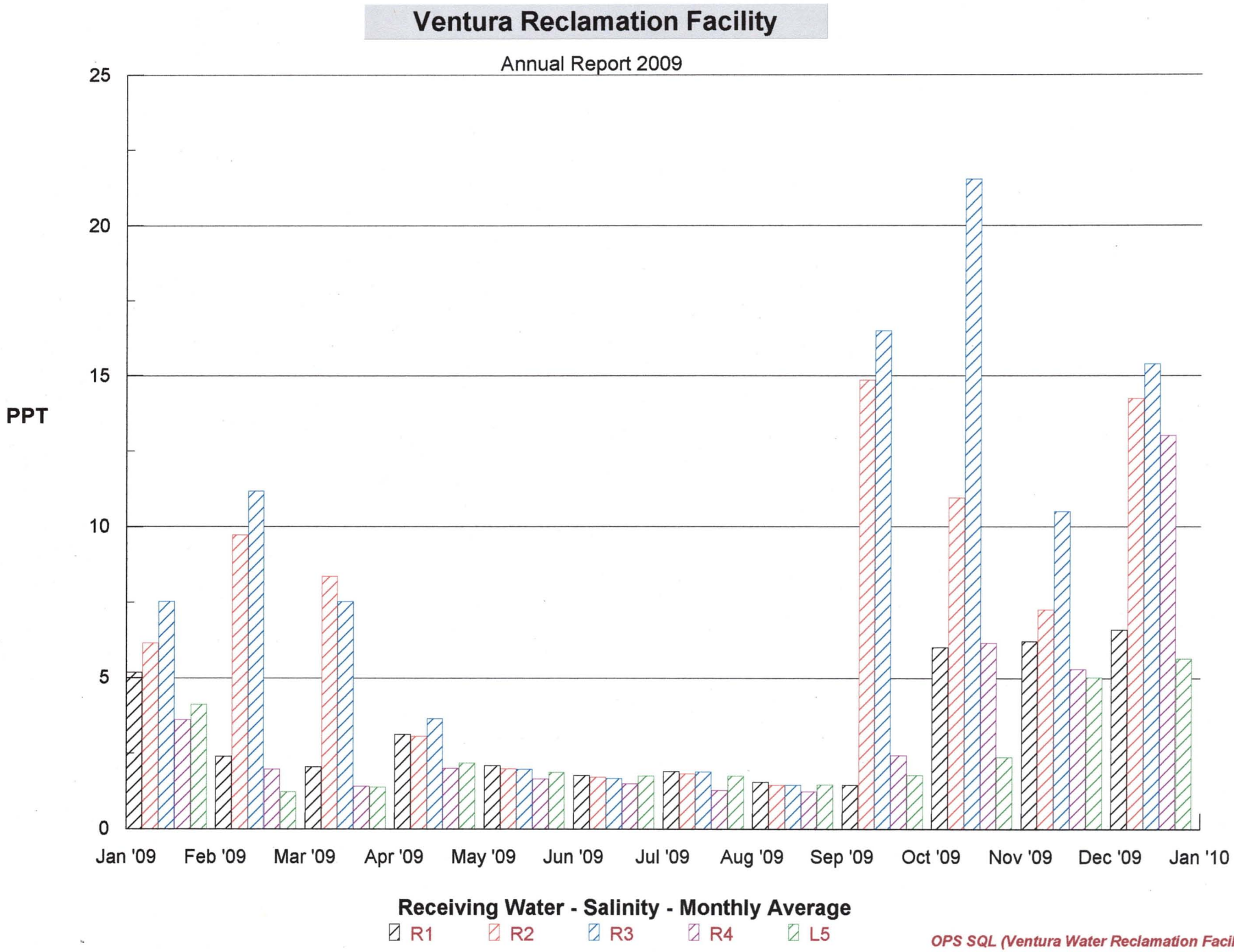
Effluent (Mo Avg) Contact Chamber (Mo Avg)

OPS SQL (Ventura Water Reclamation Facility)
ETS - Effluent & Contact Chamber Cl2 Residuals


Ventura Reclamation Facility
Annual Report 2009
15
10
5
0
MGD
1/1
1/22
2/12
3/5
3/26
4/16
5/7
5/28
6/18
7/9
7/30
8/20
9/10
10/1
10/22
11/12
12/3
12/24
1/14
Effluent Transfer Station
Total Flow
OPS SQL (Ventura Water Reclamation Facility)
Estuary Flow 09


Ventura Reclamation Facility
Annual Report 2009
Deg. C
25
20
15
10
5
0
Jan '09
Feb '09
Mar '09
Apr '09
May '09
Jun '09
Jul '09
Aug '09
Sep '09
Oct '09
Nov '09
Dec '09
Jan '10
Receiving Water Air Temperature - Monthly Averge
R1
R2
R3
R4
L5
OPS SQL (Ventura Water Reclamation Facility)
Receiving Water Air Temperature

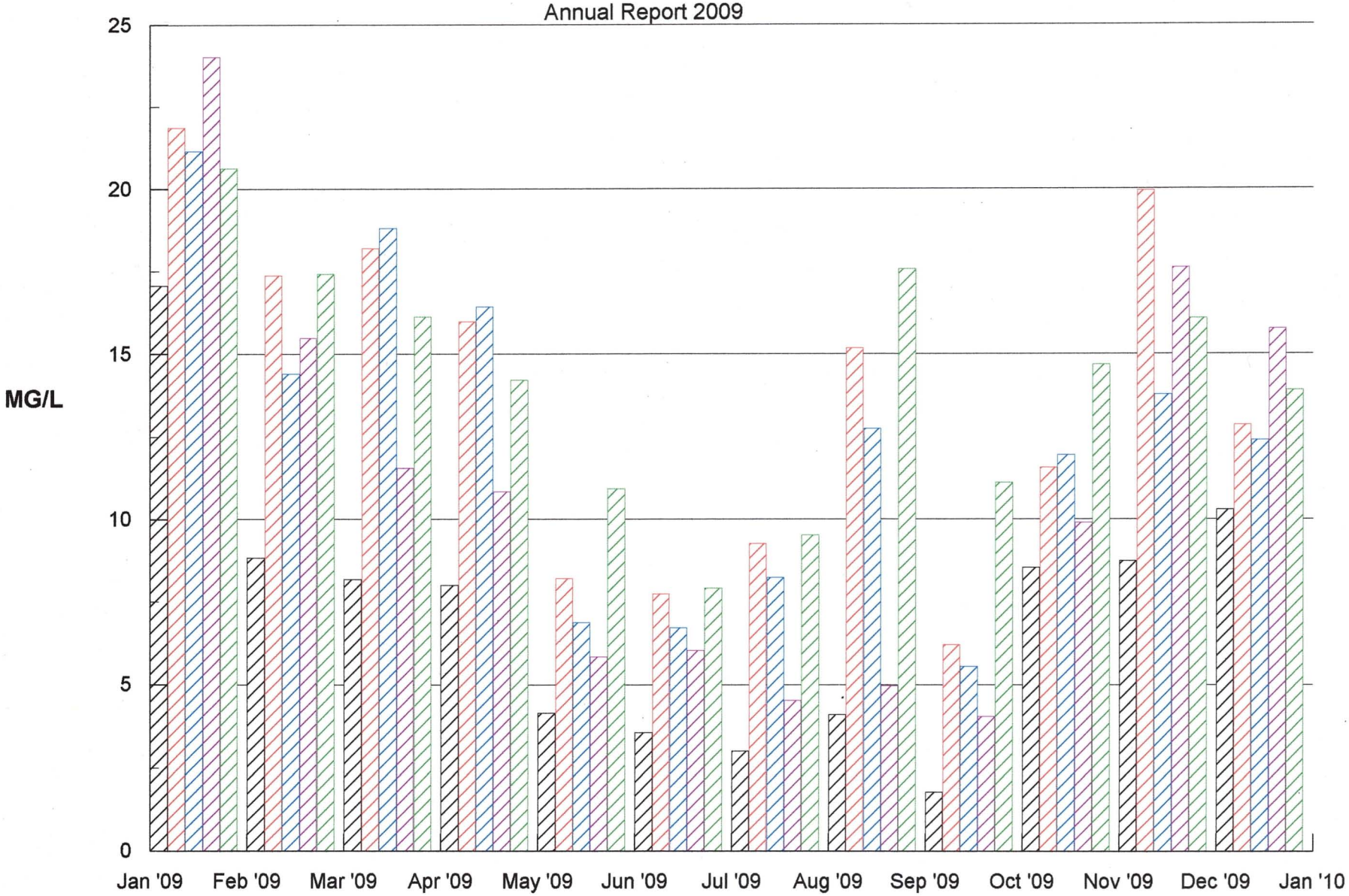

Ventura Reclamation Facility
Annual Report 2009
Deg. C
25
20
15
10
5
0
Jan '09
Feb '09
Mar '09
Apr '09
May '09
Jun '09
Jul '09
Aug '09
Sep '09
Oct '09
Nov '09
Dec '09
Jan '10
Receiving Water - Water Temperature - Monthly Average
R1
R2
R3
R4
L5
OPS SQL (Ventura Water Reclamation Facility)
Receiving Water Temperature



OPS SQL (Ventura Water Reclamation Facility)
Receiving Water Salinity 09

Ventura Reclamation Facility

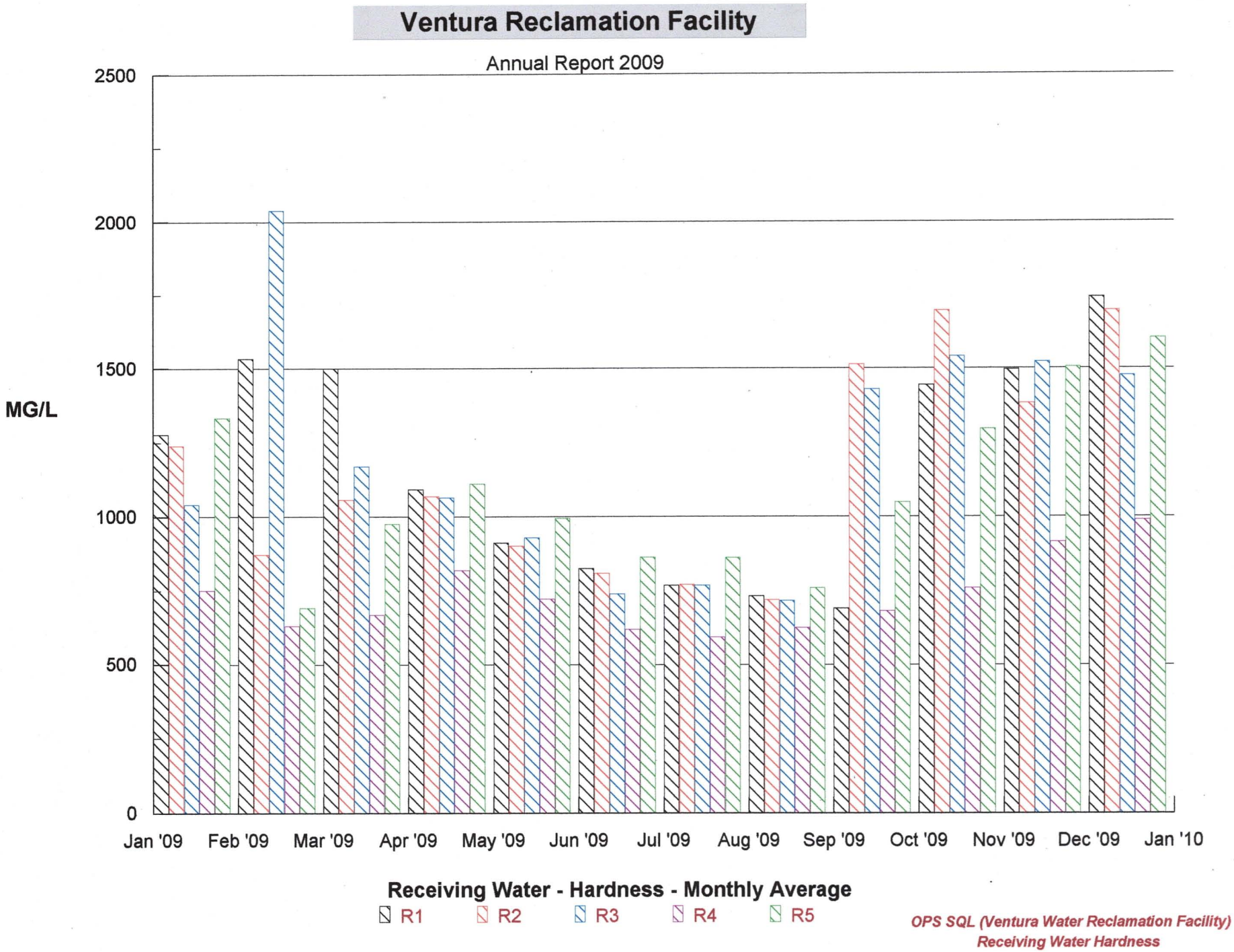
Annual Report 2009

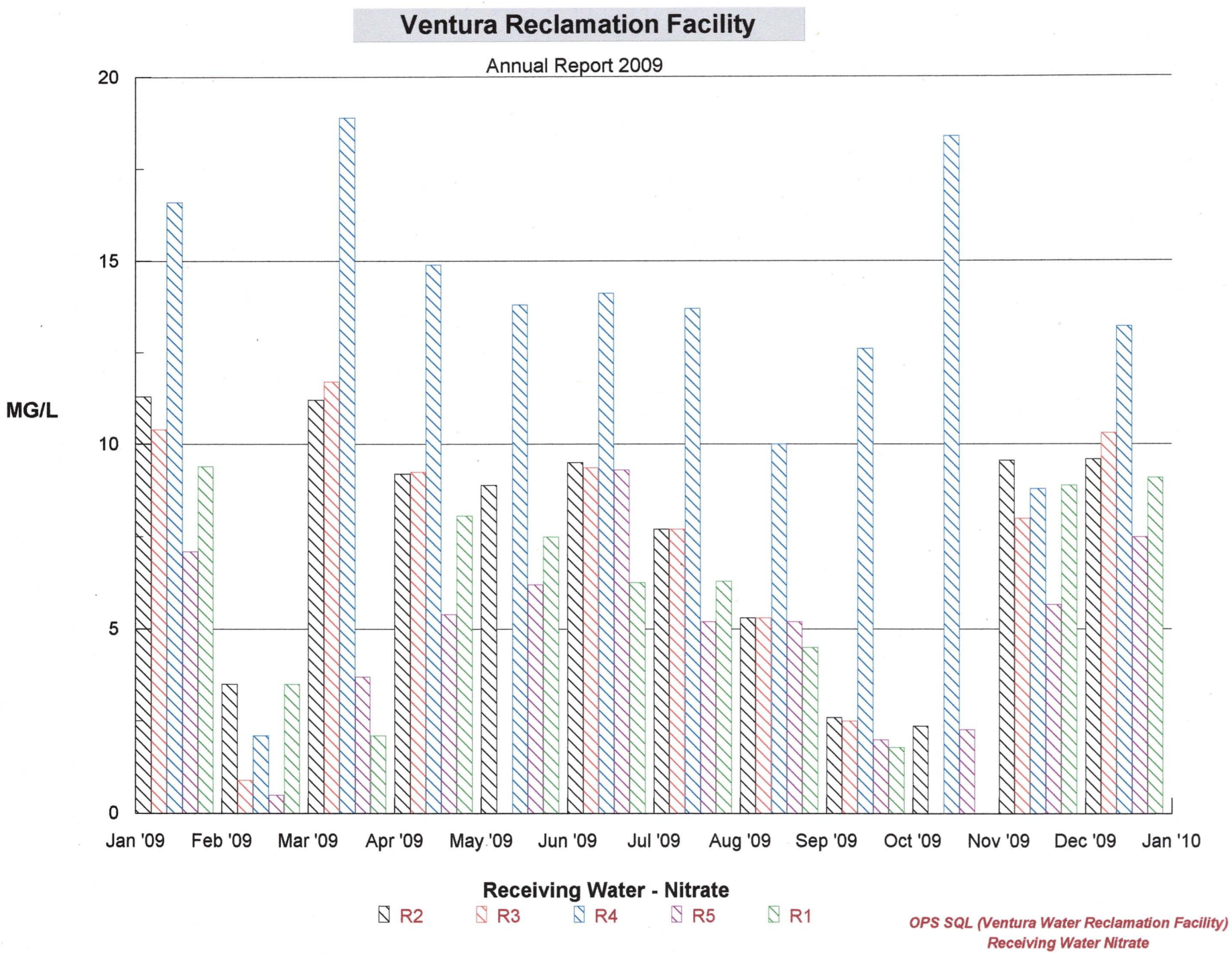


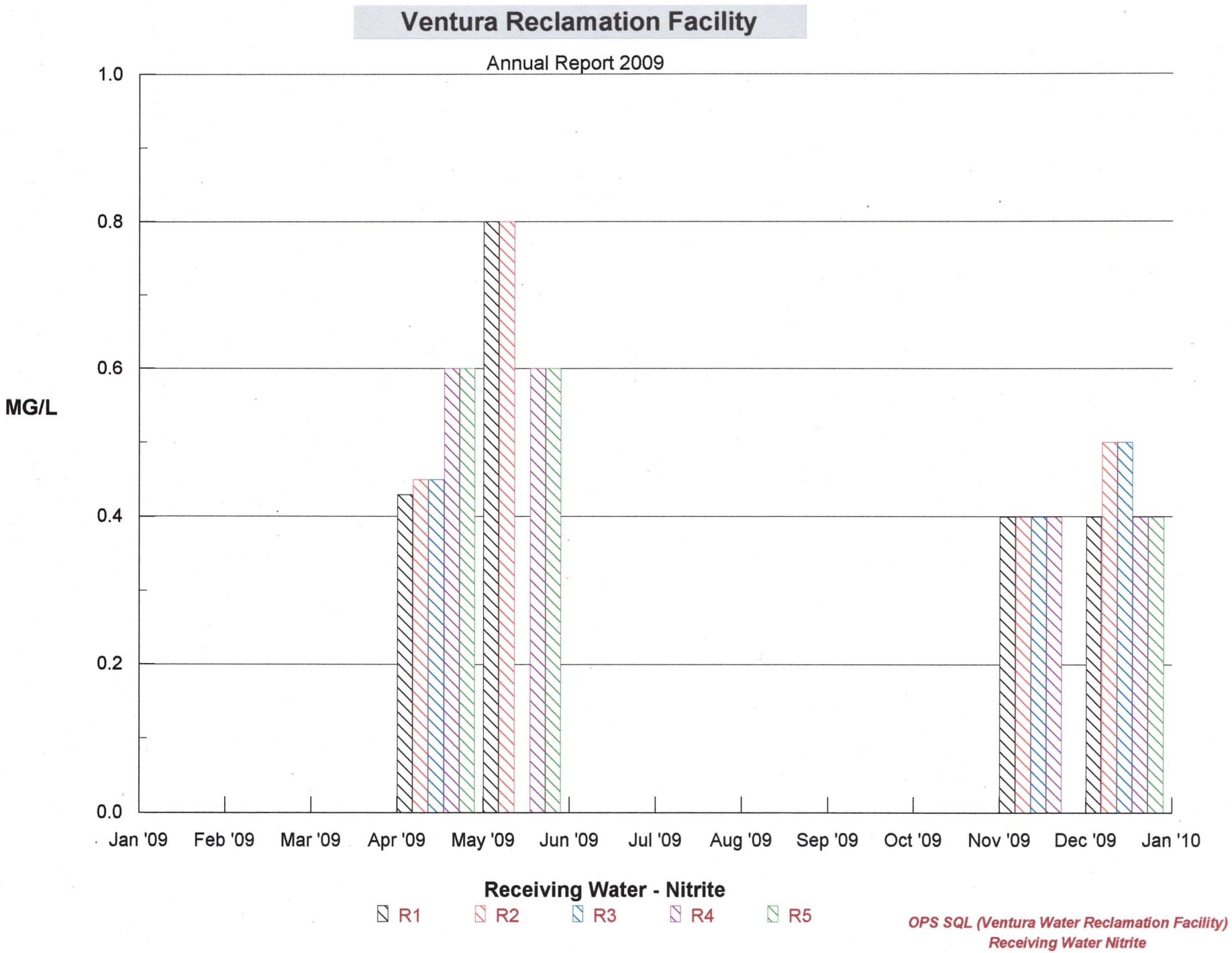
Receiving Water - Dissolved Oxygen - Monthly Average

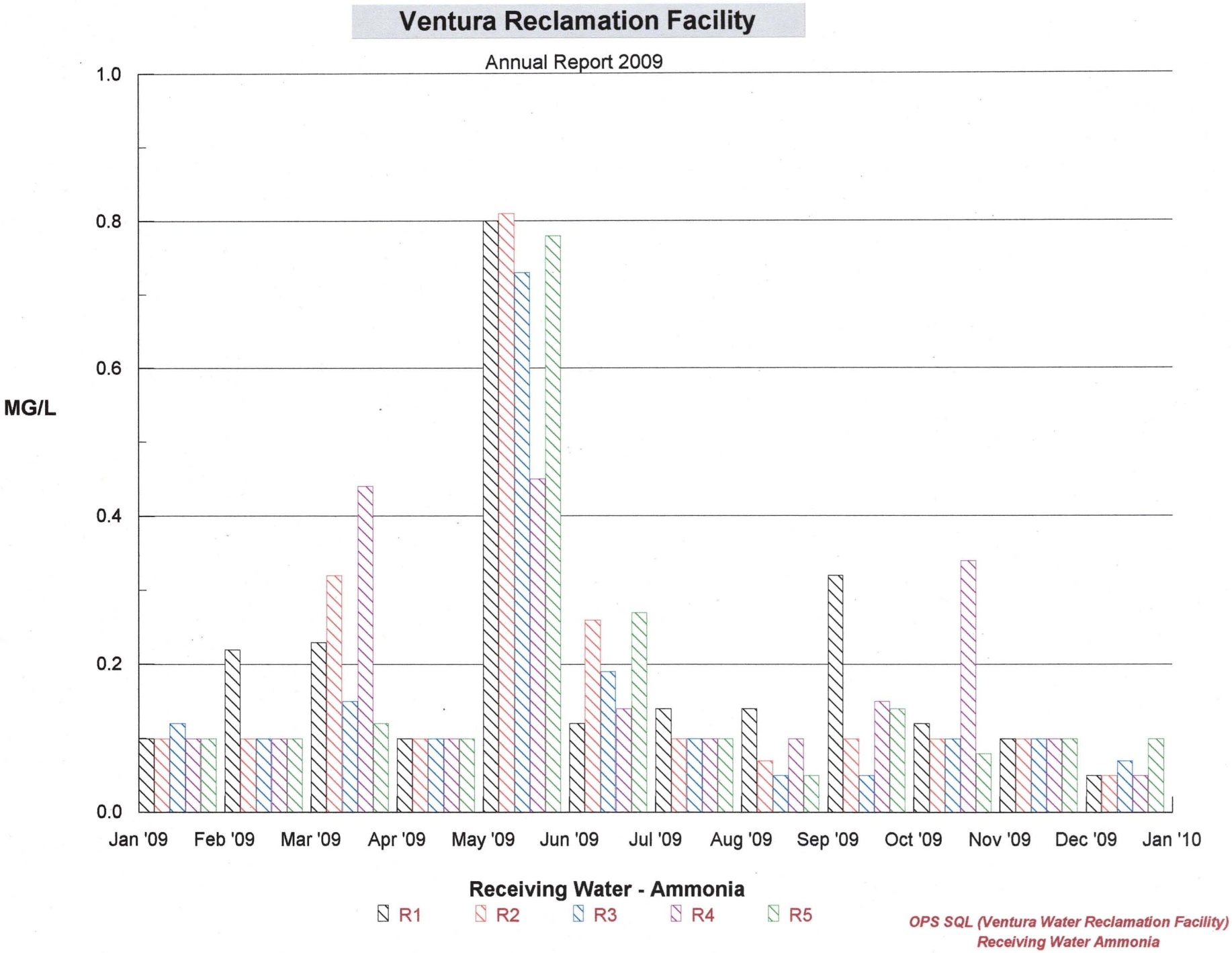
R1 R2) R3 R4 R5

OPS SQL (Ventura Water Reclamation Facility)
Receiving Water DO


Ventura Reclamation Facility
Annual Report 2009
MG/L
2500
2000
1500
1000
500
0
Jan '09
Feb '09
Mar '09
Apr '09
May '09
Jun '09
Jul '09
Aug '09
Sep '09
Oct '09
Nov '09
Dec '09
Jan '10
Receiving Water - Hardness - Monthly Average
R1
R2
R3
R4
R5
OPS SQL (Ventura Water Reclamation Facility)
Receiving Water Hardness


Ventura Reclamation Facility
Annual Report 2009
MG/L
20
15
10
5
0
Jan '09
Feb '09
Mar '09
Apr '09
May '09
Jun '09
Jul '09
Aug '09
Sep '09
Oct '09
Nov '09
Dec '09
Jan '10
Receiving Water - Nitrate
R2
R3
R4
R5
R1
OPS SQL (Ventura Water Reclamation Facility)
Receiving Water Nitrate


Ventura Reclamation Facility
Annual Report 2009
MG/L
1.0
0.8
0.6
0.4
0.2
0.0
Jan '09
Feb '09
Mar '09
Apr '09
May '09
Jun '09
Jul '09
Aug '09
Sep '09
Oct '09
Nov '09
Dec '09
Jan '10
Receiving Water - Nitrite
R1
R2
R3
R4
R5
OPS SQL (Ventura Water Reclamation Facility)
Receiving Water Nitrite


Ventura Reclamation Facility
Annual Report 2009
MG/L
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0.8
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Jan '09
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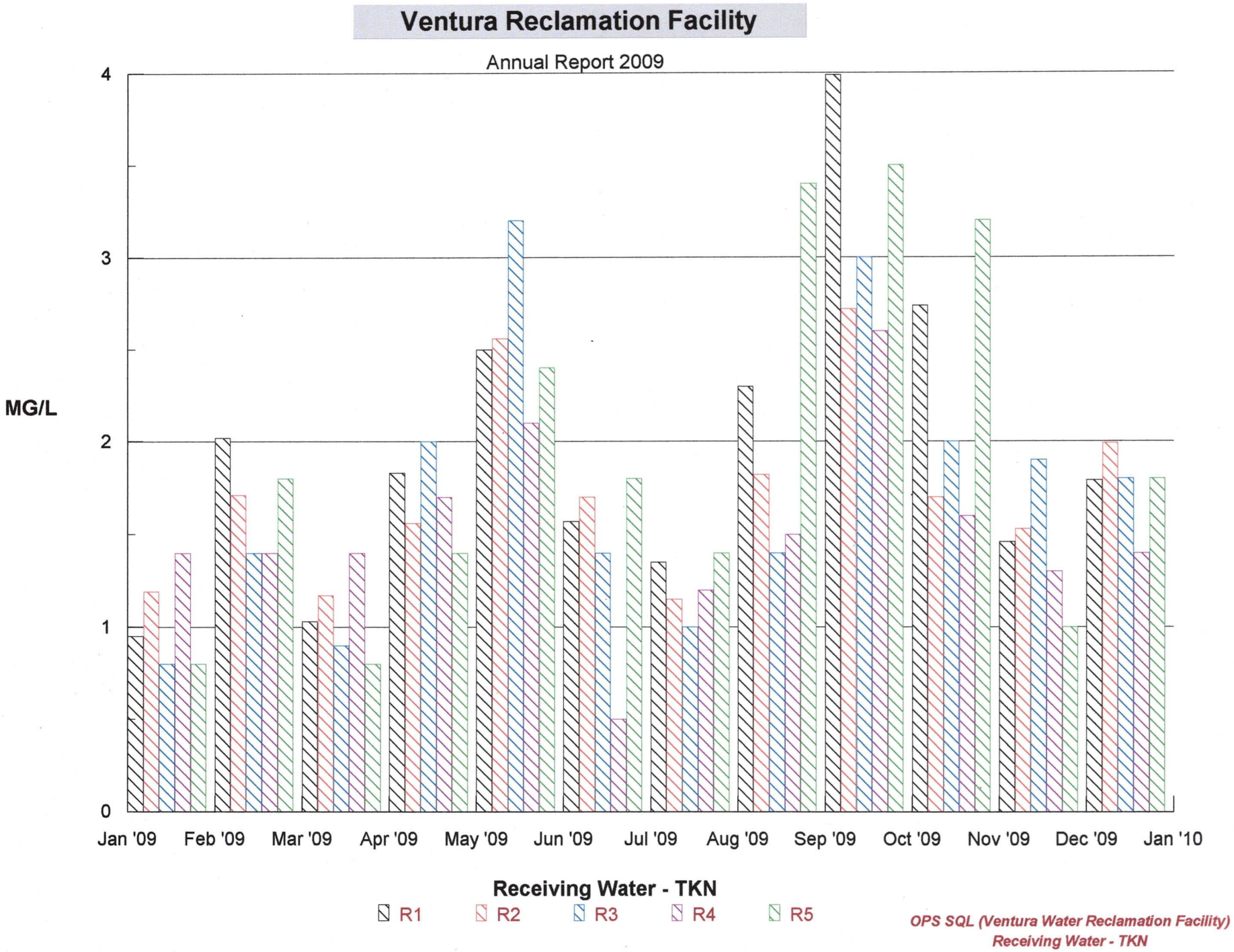
Mar '09
Apr '09
May '09
Jun '09
Jul '09
Aug '09
Sep '09
Oct '09
Nov '09
Dec '09
Jan '10
Receiving Water - Ammonia
R1
R2
R3
R4
R5
OPS SQL (Ventura Water Reclamation Facility)
Receiving Water Ammonia


Ventura Reclamation Facility
Annual Report 2009
MG/L
4
3
2
1
0
Jan '09
Feb '09
Mar '09
Apr '09
May '09
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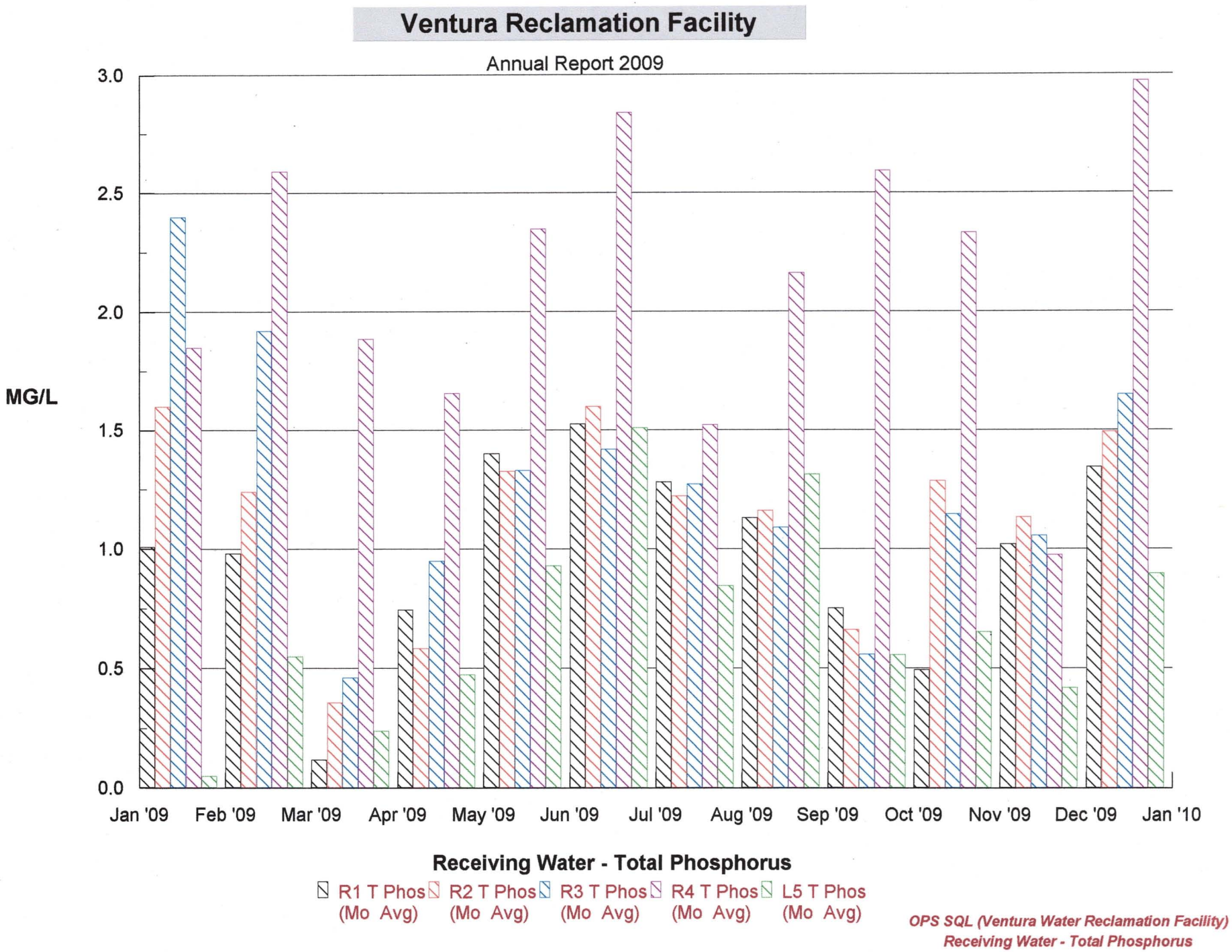
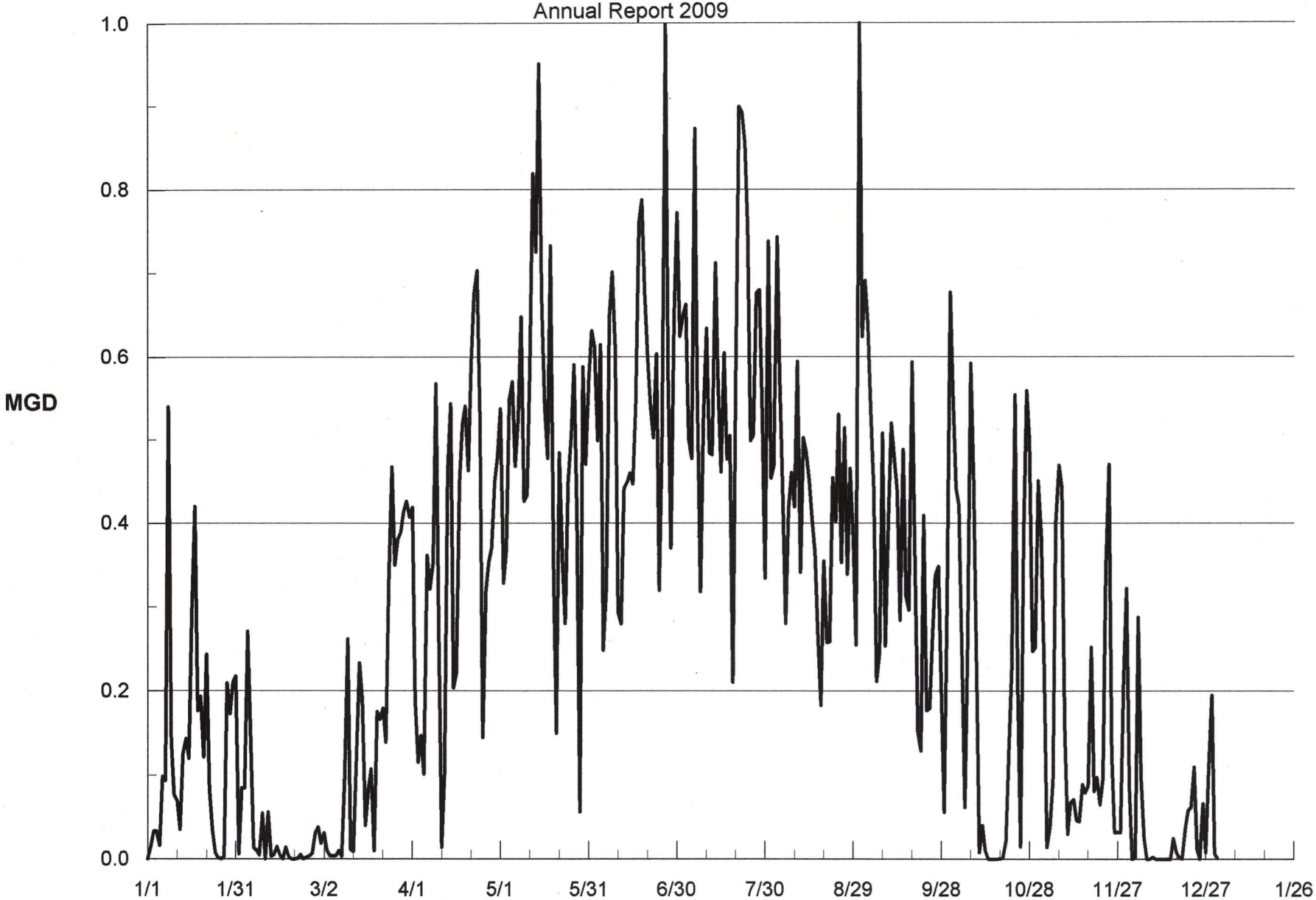
Jul '09
Aug '09
Sep '09
Oct '09
Nov '09
Dec '09
Jan '10
Receiving Water - TKN
R1
R2
R3
R4
R5
OPS SQL (Ventura Water Reclamation Facility)
Receiving Water - TKN



OPS SQL (Ventura Water Reclamation Facility)
Receiving Water - Total Phosphorus

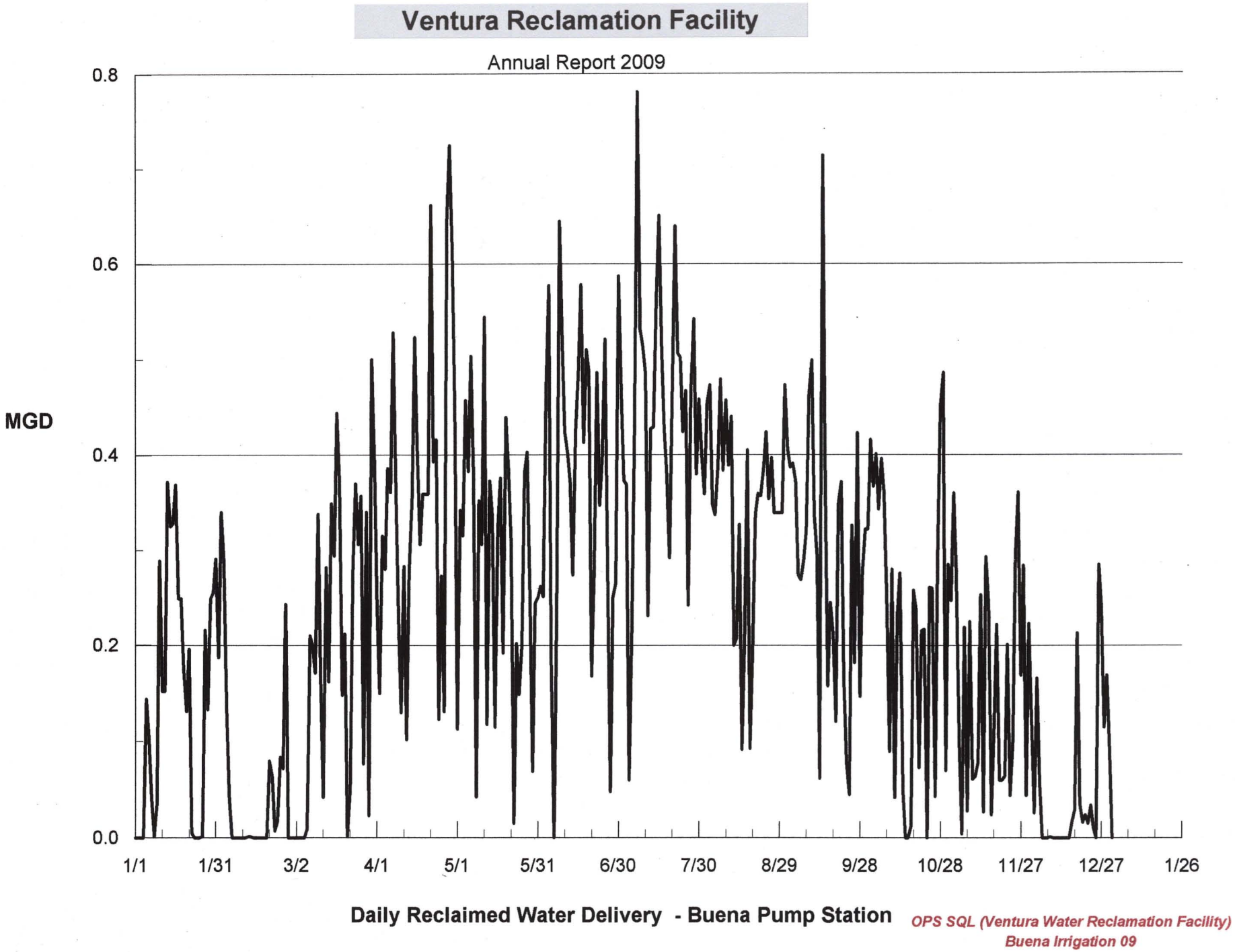
Ventura Reclamation Facility

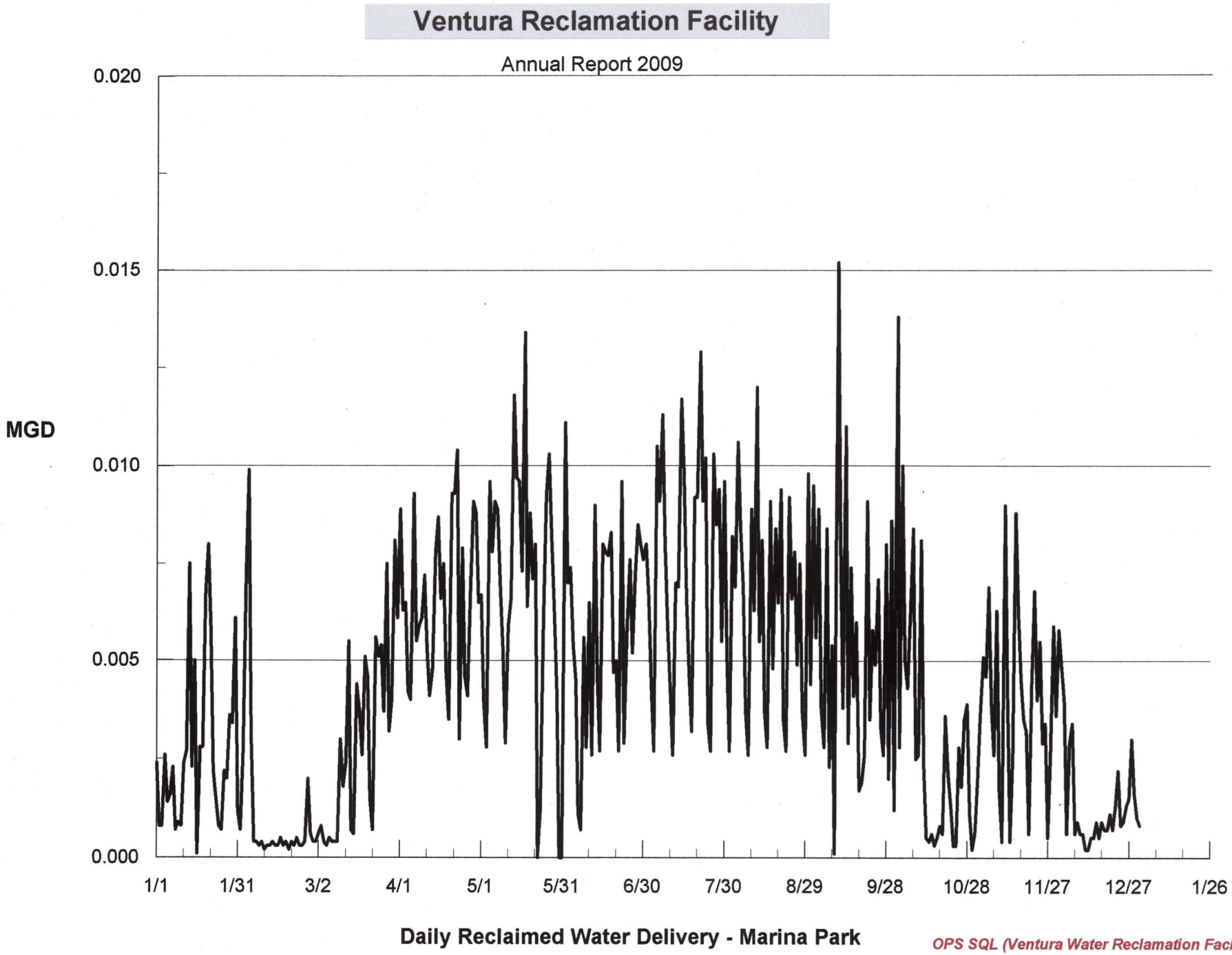
Annual Report 2009



Daily Reclaimed Water Delivery - Olivas Pump Station

OPS SQL (Ventura Water Reclamation Facility)
Olivas Irrigation 09


Ventura Reclamation Facility
Annual Report 2009
MGD
0.8
0.6
0.4
0.2
0.0
1/1
1/31
3/2
4/1
5/1
5/31
6/30
7/30
8/29
9/28
10/28
11/27
12/27
1/26
Daily Reclaimed Water Delivery - Buena Pump Station
OPS SQL (Ventura Water Reclamation Facility)
Buena Irrigation 09


Ventura Reclamation Facility
Annual Report 2009
MGD
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0.015
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0.005
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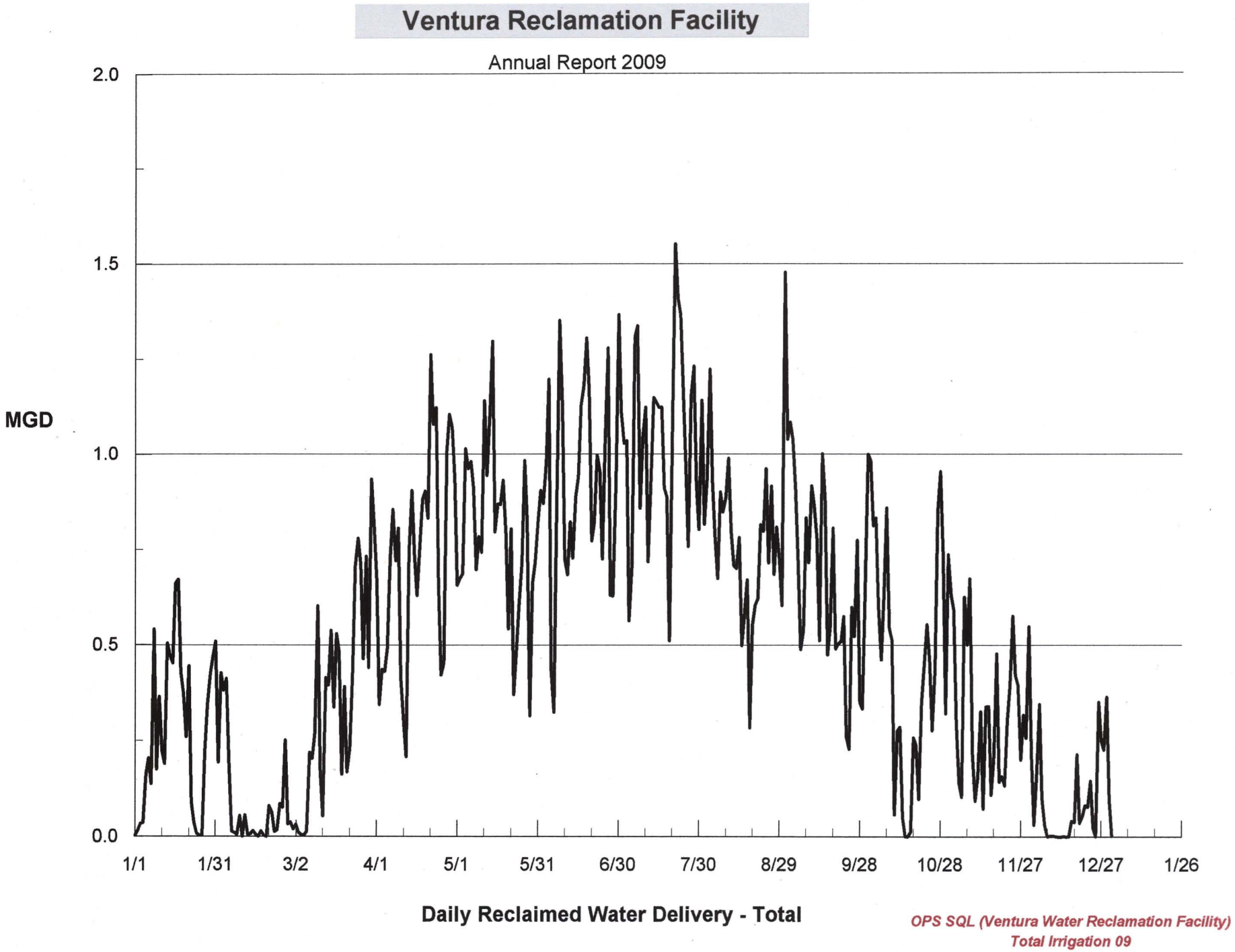
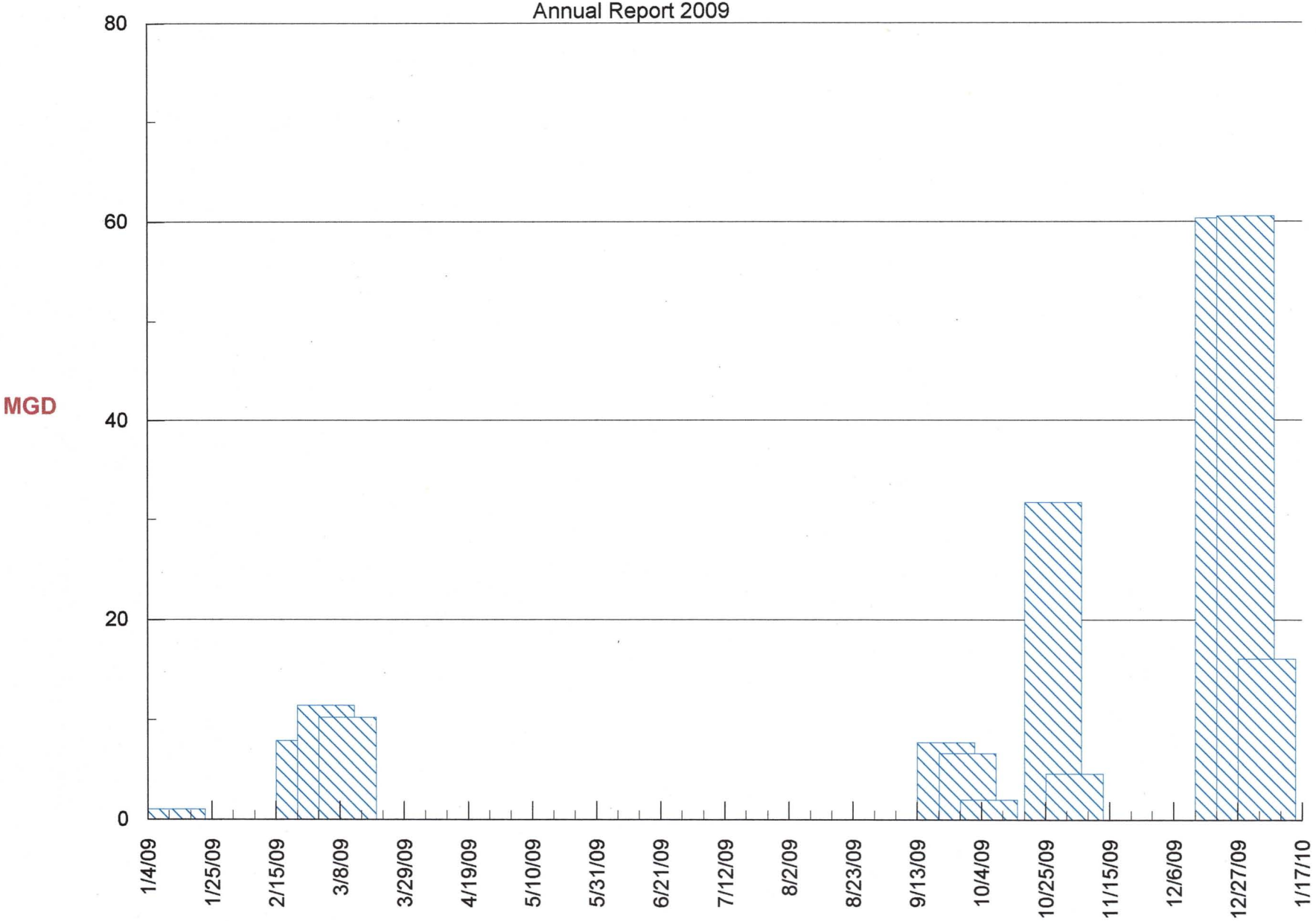
1/1
1/31
3/2
4/1
5/1
5/31
6/30
7/30
8/29
9/28
10/28
11/27
12/27
1/26
Daily Reclaimed Water Delivery - Marina Park
OPS SQL (Ventura Water Reclamation Facility)
Marina Irrigation 09


Ventura Reclamation Facility
Annual Report 2009
MGD
2.0
1.5
1.0
0.5
0.0
1/1
1/31
3/2
4/1
5/1
5/31
6/30
7/30
8/29
9/28
10/28
11/27
12/27
1/26
Daily Reclaimed Water Delivery - Total
OPS SQL (Ventura Water Reclamation Facility)
Total Irrigation 09

Ventura Reclamation Facility

Annual Report 2009



Santa Clara River Flow - Weekly Average

OPS SQL (Ventura Water Reclamation Facility)
River Discharge 09

ANALYTICAL QUALITY ASSURANCE PROGRAM 2009

I. LABORATORY DUTIES AND OBJECTIVES

The City of San Buenaventura Wastewater Laboratory is responsible for all sampling and analysis for purposes of NPDES compliance monitoring related to the City operated wastewater treatment plant, industrial waste and for the City domestic water supply and water distribution system monitoring for SDWA compliance. It is aim to provide a product the does not cause harm to the public or the environment.

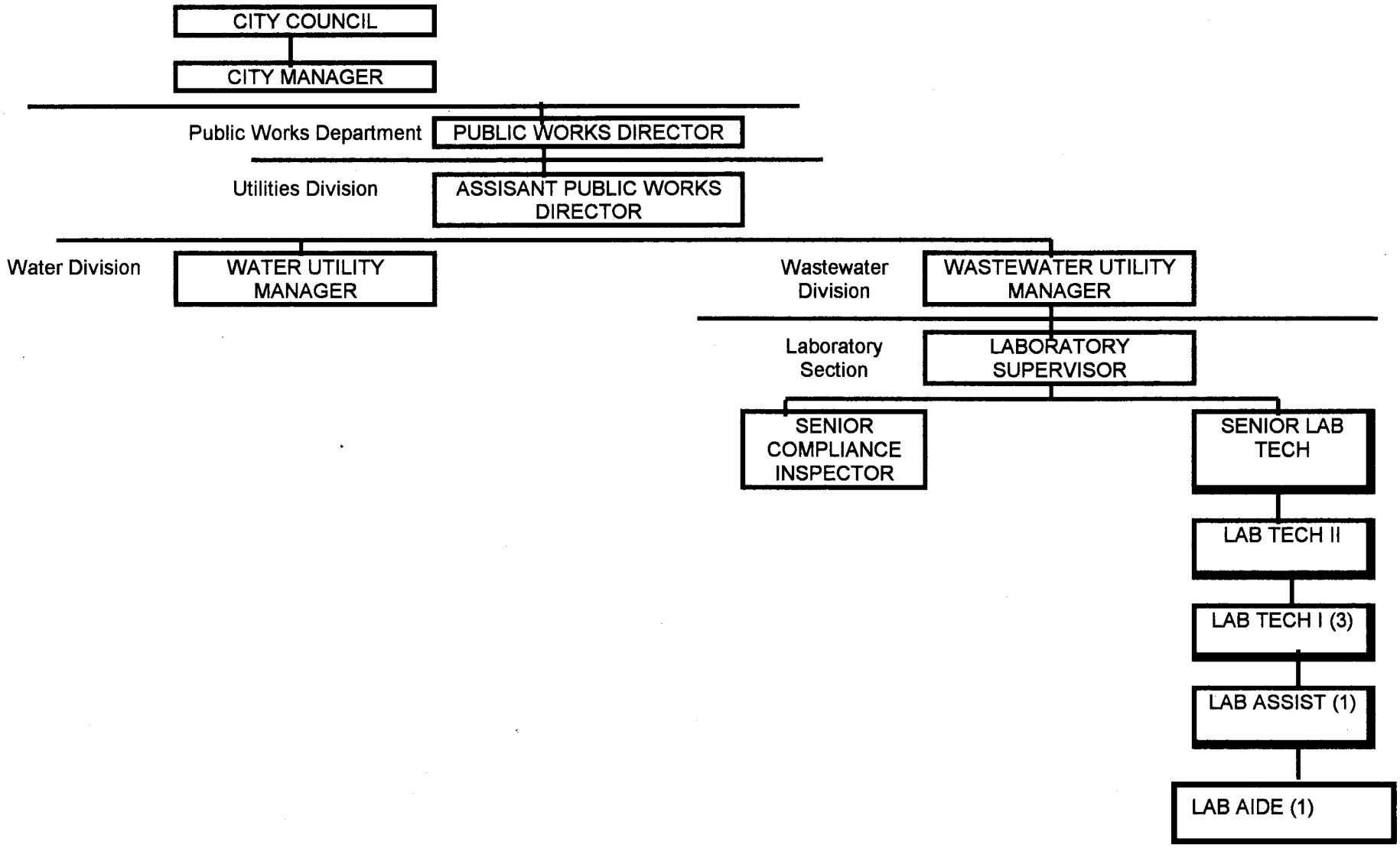
Current State of California Department of Health Services laboratory certification is attached.

All analyses for purposes of NPDES and SDWA reporting or for industrial waste monitoring conforms to the current requirements of 40 CFR Part 136, "Guidelines Establishing Test Procedures for the Analysis of Pollutants" or of 40 CFR Part 141, "National Interim Primary Drinking Water Regulations."

The purpose of this document is to outline the laboratory quality assurance procedures as they relate to compliance monitoring and to evaluate performance where statistically valid numbers of control results are available.

II. Laboratory Overview

A. Organization



B. Laboratory Personnel Qualifications and Experience

Laboratory Supervisor: Florence Jay - May 1998 to Present

Education:

Bachelor of Sciences Fort Valley State College Major - Biology

Master of Sciences Iowa State University Major - Fisheries Biology

Experience:

Lab Tech I, City of San Buenaventura Water Division

Lab Tech II, City of San Buenaventura Wastewater Division

Senior Lab Tech, City of San Buenaventura Wastewater Division
Present Duties:

Responsibilities include the supervision of the laboratory and industrial waste staff, which involves the preparing of employees' evaluations and overseeing the day to day activities. Prepare water and wastewater monitoring reports of analyses including electronic transfer of water data. Prepare the laboratory budget and the ordering of supplies and chemicals. Other administrative duties include attending various meetings, coordination of sample schedule with other departments and assist with the chemical, physical and biological analysis of water, wastewater and industrial waste samples.

Senior Technician: Michael L. Torres - August 1999 to Present

Education:

Bachelor of Science Microbiology – California State University @ Northridge (Pending)

Experience:

Microbiologist – Montgomery Watson Laboratories

Present Duties:

Responsibilities include the inorganic and organic analyses of water, wastewater and industrial waste samples using the Gas Chromatogram and the Ion Chromatograph. As the bench supervisor direst, train and assist the staff with physical, chemical and biological analyses. Operate the laboratory's quality control program, maintain records, data entry of results and oversee the laboratory safety program. Supervise the laboratory in the absence of the supervisor.

Lab Tech II: Craig Jones – September 2000 to Present

Education:

Bachelor of Science in Biology - University of North Carolina @ Chapel Hill

Experience:

Laboratory Technician I City of San Buenaventura Wastewater, Ventura California
Laboratory Technician, Ventura County Waterworks, Moorpark, California

Present Duties:

Analyze water, wastewater and industrial waste sample using the Atomic Absorption Spectrometer for mineral and metals. Perform other physical, chemical and biological analyses of water, wastewater and industrial waste samples Daily input and recording of laboratory data. Maintenance and repair of laboratory equipment.

Lab Tech I: Mary Champion – July 2005 to Present

Education:

Bachelor of Science in Biology, minor in Chemistry, University of May Harding – Baylor

Experience:

Laboratory Technician, Los Angeles County Sanitation District Via Fastek
Laboratory Technician, San Manuel Bottle Water Group

Present Duties:

Perform routine chemical, physical and biological analysis of water, wastewater and industrial waste samples. Effluent chronic toxicity, collect water, wastewater, and receiving water samples for laboratory analyses. Daily input and recording of laboratory data. General housekeeping and repair of laboratory equipment.

Lab Tech I: Felicitas Ramirez – September 2005 to Present

Education:

Bachelor of Science - Commerce Management - Saint Louis University Philippines
Bachelor of Science - Biology Ventura College

Experience:

Laboratory Technician I Aquatic Bioassay Consulting Laboratories, INC
Aquatic Biologist Aquatic Bioassay Consulting Laboratories, INC
Laboratory Supervisor Aquatic Bioassay Consulting Laboratories, INC

Present Duties:

Perform routine chemical, physical and biological analysis of water, wastewater and industrial waste samples. Chronic bioassay testing of effluent, collect water, wastewater, and receiving water samples for laboratory analyses. Daily input and recording of laboratory data. General housekeeping and repair of laboratory equipment.

Lab Tech I: Manuel Zapien – July 2006 – Present

Education:

Associate of Science in General Science – Ventura College
Bachelor of Science in Geology – University California at Santa Barbara

CWEA Grade 1 Laboratory Analyst Certificate

Experience:

Laboratory Technician – Ventura County Water Works
Laboratory Technician – NUSII Technology, INC

Present Duties:

Perform routine chemical, physical and biological analysis of water, wastewater and industrial waste samples. Collect water, wastewater, and receiving water samples for laboratory analyses. Daily input and recording of laboratory data. General housekeeping and repair of laboratory equipment.

Laboratory Assistant: Jason Wong – August 2006 – Present

Education:

High School Diploma - Adolf Camarillo High School

Experience:

Laboratory Aide – City of Ventura Wastewater Laboratory

Present Duties:

Collect water, wastewater, industrial waste and receiving water samples for laboratory analyses. Perform simple chemical, physical and bacteriological analyses on the various water samples. Input laboratory data, perform general maintenance of laboratory equipment.

C. Instrumentation and Equipment

The division laboratory owns and maintains the following equipment and instrumentation.

UNIT	MANUFACTURER/MODEL	MAINTENANCE
Water Still	Corning 3 Liter Megapure	Division
	Barnstead Nanopure Diamond	Division
D. I. Water Supply	Culligan Commercial Units	Culligan
Forced Convection Oven	VWR S/P Model 1370FM	Division
Oven	VWR Model 1670 HAFO Series	Division
Muffle Furnace	Barnstead/Thermolyne Furnace Model F304203C	Division
Incubator (Air)	Precision Model 30M	Division
Incubator (Air)	Fisher Scientific Counter Top Model 6500	Division
Incubator (Water Bath)	Precision Circulating Bath Model 270	Division
Incubator (BOD)	Fisher Scientific Model FFU20FC4CWO	Division
Autoclave	Getinge/Castle Model 133LS	Getinge/Castle
	Market Forge Sterilmatic	Division
pH Meters	Orion Model 601	Division
	Orion Model 701	Division
	Cole-Parmer 5938-00 Portable	Division
Specific Ion System	Orion Model EA 940 Meter/Electrodes	Division
Sealer	Idexx Quant- Tray Sealer Model 2X	Idexx
Conductivity Meter	Orion Model 162A	Division
Centrifuge	Sorvall Legend	Division
D.O. Meters	Orion SL 9 Portable Probe	Division
	Orion Model 9708 Electrode	Division
	Thermo Orion Model 826A	Division
Nepthelometers	Hach Model 2100A	Hach
Water Bath	Blue M Magniwhirl Model 1110A	Division
	Thermo-Scientific Lindberg/Blue M Circulating Bath	Division
	Precision Circulation Bath Model 270	Division
Analytical Balances	Mettler Model AT 201 Mettler Model AE 163	Mettler
Top-Loading Balances	Mettler Model PM2000	Mettler
	Mettler Model PM2000	Mettler
Microscopes	American Optical 40-1000X Phastar	Division

	American Optical .7-3X Stereo	Division
	Nikon Eclipse E600	Division
Refrigerators	3 –Thermo Scientific Isotemp	Fisher Scientific; Winkler
Spectrophotometers	2 – Agilent 8453 UV-Visible Spectrophotometer	
	Bausch & Lomb Spectronic 20	Division
	HACH DR/4000	
Spectrophotometer AA-AE	Varian Spectra 220/Furnace Atomizer/ GTA110 Autosamplers	Varian
Ion Chromatograph	Dionex, ASRS-I Self Regenerating Supressor/Dionex, CD20 conductivity Detector	Full Spectrum
Gas Chromatograph	HP 6890 GCSystem Series Autosampler; Micro EC Detector Flame Ionization Detector	Agilent;
Purge/Trap system	HP 7695	Agilent
Dispenser/Diluter	Gilson 222	Division
Samplers	5 - ISCO Model 6712FR	Division/ MRC Technologies, Inc
	1 – American Sigma 900	Division/America Sigma
	3 - ISCO Model 3700	Division/ MRC
	4 – American Sigma 800SL	Division/America Sigma
Dishwashers	2 – Miele Professional Washers G-7783	Miele
Agilent	-- 1-800-227-9770	
Getinge/ Castle	-- Getinge/Castle Rochester, New York	
Idexx	--Idexx Westbrook, Maine	
Full Spectrum	--Full Spectrum, Orange, CA	
Varian	-- Varian Sugarland, Texas	
MRC Technologies, Inc	--MRC Technologies, Newbury Park, CA	
Mettler Toledo	--Mettler Toledo Columbus, OH	
Miele	--Miele, Inc, La Verne, CA	
American Sigma	-- Ponton Industries, Inc, Santa Fe, Spring CA	
Division	-- Ventura Sanitation Division Personnel	

III. PROCEDURES, RECORDS AND REPORTS

A. Sampling

Procedures for sampling, sample preservation, handling, storage, disposal and transportation conform to the requirements of 40 CFR Part 136 and/or to 40 CFR Part 141 and amendments.

1. Collection

Samples are collected and delivered to the Wastewater Laboratory for analysis by wastewater personnel (laboratory staff and plant operators), industrial waste inspector, water division and other City's staff.

Sample types collected are grab or 24-hour composite. All composite samples are collected using ISCO Models 6712 FR, 3700. Samplers operate in flow proportion by utilizing the non-uniform time option of the control electronics.

Sample containers are of a material that does not produce positive or negative errors or cause contamination to the sample. Sample containers used for composite samples are pre–clean ICHEM plastic cubtainers or stainless steel container for organic analysis. Grab samples are collected in pre-cleaned plastic ICHEM cubtainers, pre-cleaned glass amber bottles or pre-cleaned 40 vials depending upon the analysis.

All samples are collected in a manner that will not introduce contaminates or interference causing erroneous results. Samples are collected daily, weekly, monthly, quarterly, semi-annually in accordance with the NPDES permit or as a special request, one time basis.

2. Sample Preservation

Sample preservations are done in accordance with the analysis to be performed in 40CFR. At sample collection the sampler does field measurements for pH, chlorine residuals and temperatures.

The laboratory preserves all samples not analyzed immediately that are collected and delivered to the laboratory by wastewater personnel (laboratory staff and plant operators). Technicians performing the analyses preserve samples delivered by outside agencies if not preserved in the field.

The industrial waste inspector or the lab assistant preserves all industrial samples collected for laboratory analyses.

3. Handling and Storage

The person preserving the sample is responsible for storage of the sample. When possible the samples are stored in their original containers in the containers.

All samples not requiring immediate analysis are preserved and refrigerated below 4° C. They remain in storage until all the analyses have been completed and data approved. The technicians responsible for performing the required analysis remove and replace the samples in storage.

Samples placed into storage must be labeled with the sample name, date, and time sampled, the analysis required and the initial of the sampler. As part of the chain of custody the technician fills out the sign in and out label on the sample container or custody sheet when the sample is taken out of storage.

The amount of time a sample is held in storage varies from .5 hours to 6 months depending upon the analysis to be performed. The holding time for each sample is checked before it is placed into storage to ensure that the analysis is done within that time frame.

4. Disposal

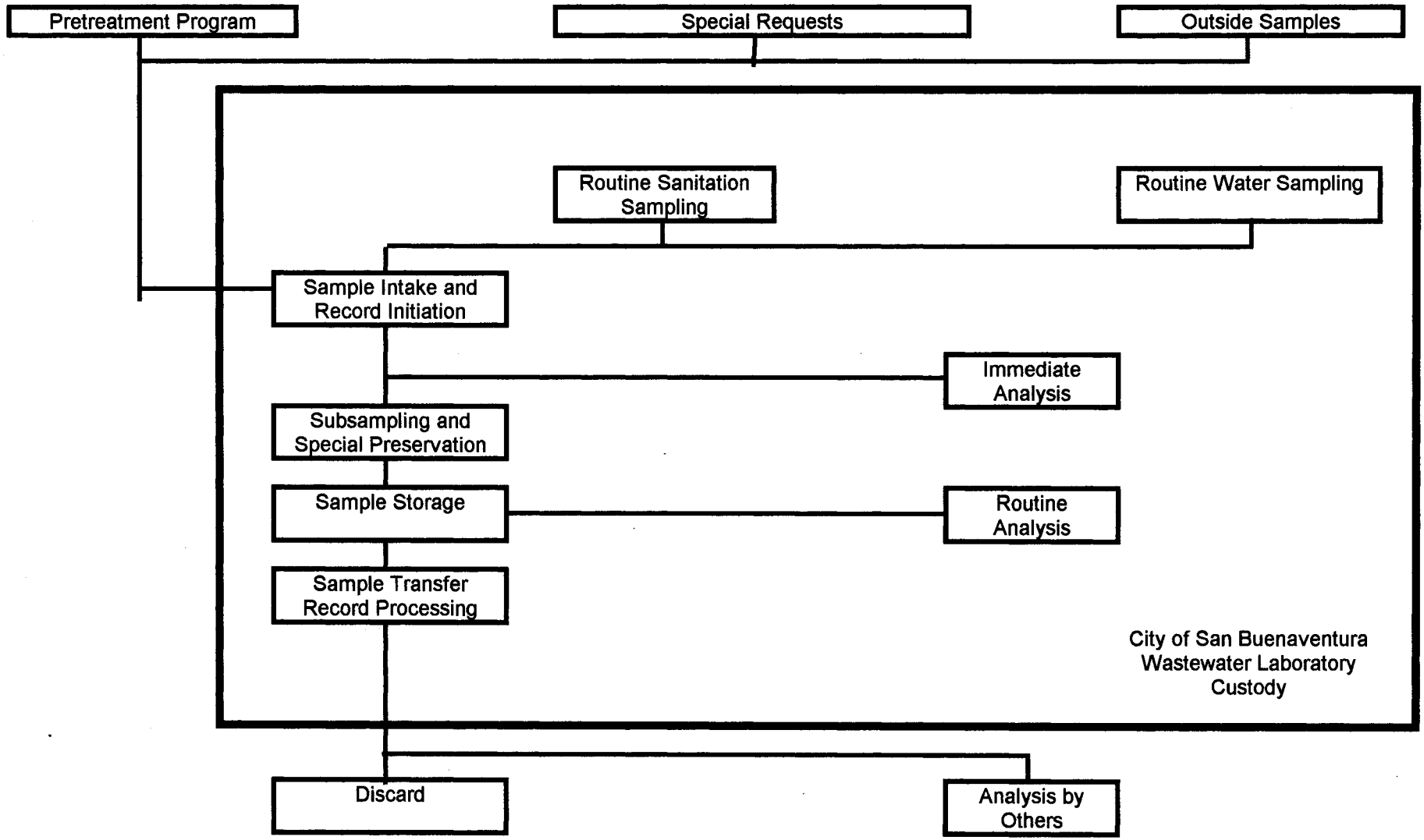
Samples are disposed of after the analysis is completed and the laboratory supervisor, senior lab tech and industrial waste inspector have reviewed the data. Samples are disposed of in a safe manner that will not harm employees or the environment. Special care must be taken with samples that have been stored for long periods of times especially industrial waste samples.

Wastewater and some industrial waste samples that have been stored for several weeks can create hazardous odor such as sulfides at the time of disposal. Proper safety attire and precaution must be taken when disposing these samples.

Samples analyzed for minerals and some metals maybe dumped down the drain and flushed with large of water for disposal.
Others must be neutralized before they can be disposed as in the case of COD vials. Samples that have been analyzed for pesticides or phenols can be evaporated under the fume hood. Large volumes of waste solvents and other hazardous materials are disposed of at hazardous waste disposal sites.

Review the Material Safety Data Sheet (MSDS) or check with the laboratory supervisor or the senior lab tech if you have questions on proper disposal of laboratory chemical or reagents.

The laboratory sample path is shown in the chart below.



A. Sample Identification

Sampling sites for routine wastewater and drinking water, which are, monitored daily, weekly, quarterly or semi-annually have fixed identity by name, number or acronym. This identification is used on location maps, in sample logs, on bench worksheets, on permanent records and on analysis reports.

The Laboratory Computer Data System assigns a Laboratory Identification Number (LID) to other water, wastewater or customer complaint sample. Industrial waste samples are logged into the Electron Control Database (ECD). The LID is in numerical order and is automatically assigned by the computer. This number is used in sample logs, bench worksheets, permanent records and on analysis reports. A copy of the Computer Data System is in the laboratory's Standard Operation Procedures (SOP).

B. Custody

A Chain of custody is initiated when a sample enters or leaves the laboratory unit. All samples done on a regular bases have printed worksheet which sample collectors log in custody information. All other samples enter the laboratory are log in the incoming sample book and given a laboratory Identification number.

Custody documents vary with the sampling purpose, but all custody transfers identify the sample by name and/or LID number, the sample collector and documents date, time, location, analysis required and circumstances of sample collection along with the history of sample transfers by person and/or organization. An example of the chain of custody form is in the laboratory's SOP.

C. Analysis Procedures

Analytical Procedures, which the laboratory is certified to perform are according to the Standard Methods for the Examination of Water and Wastewater 18th – 20th, EPA Chemical Method for Analysis of Water and Wastes and EPA 40 CFR 136 & 141.

Bench procedures for analytical methods performed by the laboratory are maintained in a loose-leaf notebook in the laboratory work area. These are derived from approved standard procedures; which include reagents, standard preparation and concentration, test procedures, equipment and instrumentation with the analytical options for interference correction; samples and sample volumes defined for the samples analyzed. These procedures are reviewed periodically and revised to accommodate method and sample changes.

For unfamiliar and non-routine samples, the primary analytical procedures are followed to determine dilution, interference correction and all other method variables.

D. Records

Systematic procedures for record keeping and retention have been established in conformance with the requirements of compliance monitoring and good practice.

The following summarizes the purposes and retention criteria for each general type of written laboratory record.

Record	Function	Retention
Field Logs	Record of Field Measurements and Circumstances of Sampling	7 Years
Receiving Log	Record of Samples Received from Others	7 Years
Sample/Custody Form	Pretreatment Program Sampling	7 Years
Chromatographs	Analysis from Gas Chromatograph, Ion Chromatograph and Atomic Absorption	7 Years
Bench Logs	Worksheets for Data and Calculation	7 Years
Bound Record Books	Permanent Record of Analysis Results	7 Years
Reports	Transmittal of Information to Others	7 Years

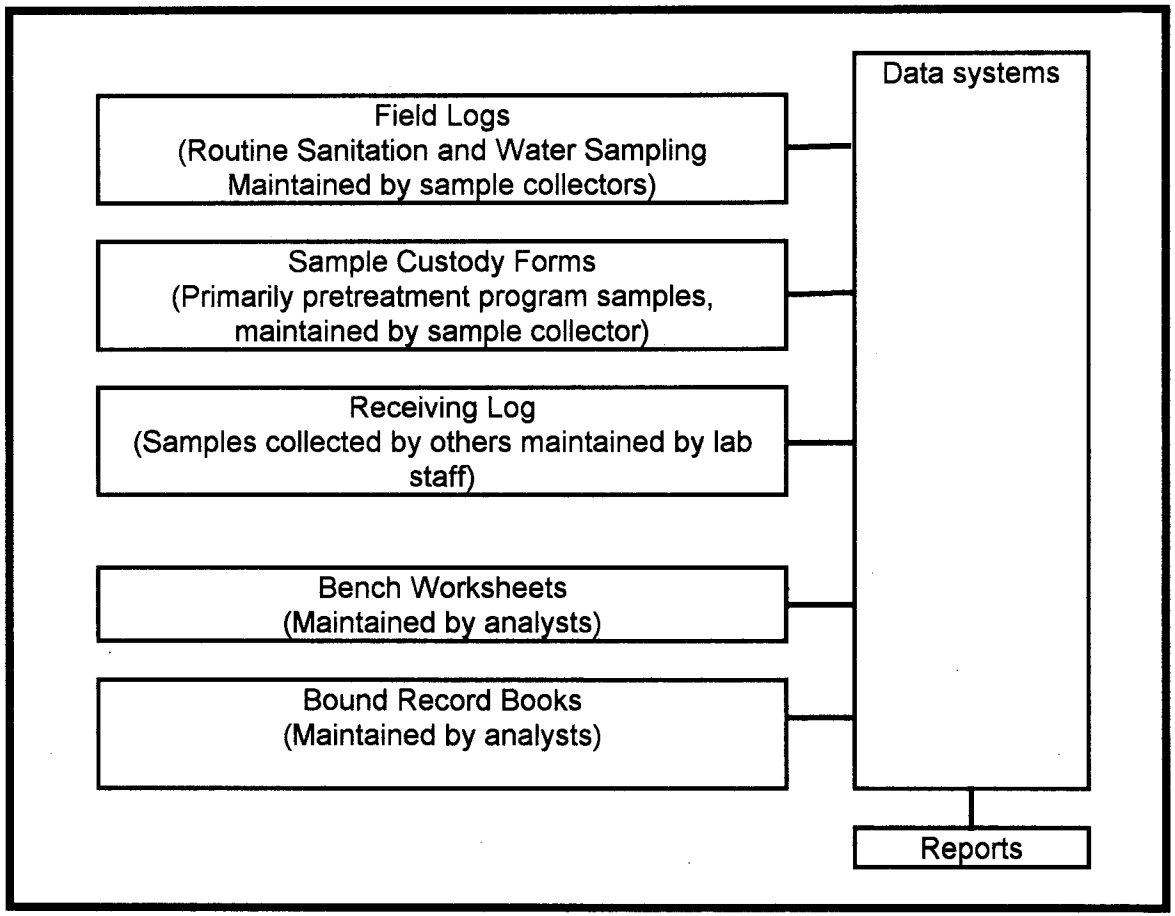
E. Reports

Report formats and contents are generally specified by the agency requesting the reports. Reports of routine monitoring are provided by computer methods designed to meet these specifications. Reports for water samples are generated from data entered into Run: Input1and Input 2 through the City VAX system. OPS Strategic Data Management program is used to generate wastewater reports. Industrial Waste reports are generated from the Environmental Control Database. Reports generated from data with LID numbers are generated from the VAX using Run Tra Input 3. A copy of the Laboratory Computer Data Systems is located in the SOP manual in the Laboratory.

Data from field logs, custody forms, receiving logs, bench worksheets, bound logbooks, chromatographs and spectrophotometer is used to compile information required for these report. A flow chart for data input information is below.

All current procedures, records and reports are available at the laboratory for review and inspection. Records of annual analytical results are available for review. Reports are reviewed and signed by the Laboratory Supervisor before sending to various agencies.

Data flow from generation to reporting is shown below.



Sample Retention Requirements

Sample Source	Frequency	Subsample	Discard After:	Authorization by:
Drinking Water	Weekly	Turbidity, Iron Filters	Analysis Complete	Analysts
Drinking Water	Any	Bacti	Inoculation Complete	Analysts
Drinking Water	Monthly	Chemical & Physical	Report Reviewed	Lab Supervisor
Drinking Water	Quarterly	THM	Report Reviewed	Lab Supervisor
Drinking Water	Annual	Metals	Report Reviewed	Lab Supervisor
Submerged Wells	Any	All	Report Reviewed	Lab Supervisor
Surface and Ocean	Any	Bacti	Inoculation Complete	Analysts
Wastewater	Daily Grab	pH, Turbidity, Residual	Analysis Complete	Analysts
Wastewater	Daily Grab	Bacti	Inoculation Complete	Analysts
Wastewater	Daily Composite	pH, Solids, Oxygen Demands, Conductivity	Analysis Complete	Analysts
Wastewater	Weekly Composite	Nitrogen, Chloride, Sulfate	Analysis Complete	Analysts
Wastewater	Monthly Composite	MBAS, Total P	Report Reviewed	Lab Supervisor
Wastewater	Monthly Composite	PO4, Alkalinity, B, F	Analysis Complete	Analysts/Supervisor
Wastewater	Weekly Grabs	Oil & Grease	Analysis Complete	Analysts
Wastewater	Quarterly Grabs	Cyanide	Analysis Complete	Analysts
Wastewater	Monthly Composite	Bioassay	Test Complete	Analysts/Supervisor
Wastewater	Quarterly Composite	Metals,	Report Reviewed	Lab Supervisor
Wastewater	Quarterly Composite	Pesticides, Phenol	Report Reviewed	Lab Supervisor
Receiving Waters	Weekly	Bacti, Chemical & Physical	Analysis Completed	Analysts
Receiving Waters	Monthly	Nitrogen, PO_4, Total P	Analysis Completed	Analysts/Supervisor
Receiving Waters	Quarterly	Priority Pollutants	Report Reviewed	Lab Supervisor
Source Control	Any	All	Report Reviewed	IW Inspector
Special	Any	All	Report Reviewed	Lab Supervisor

IV. QUALITY ASSURANCE PROCEDURES AND DOCUMENTATION

A. General

The quality assurance procedures employed by the laboratory are intended to accomplish the following objectives:

1. Provide primary control over the accuracy reagents, standards and other related materials employed in analysis.
2. Provide day-to-day control over the accuracy of measurements.
3. To ensure that the technicians understand the analyses.

Specific actions designed to accomplish these goals in each area of laboratory measurement are discussed below.

B. Laboratory Equipment

Equipment effected by the environmental, mechanical or electronic reasons is checked periodically for alignment. Other units, such as ovens or incubators are monitored for accuracy and consistency. Readings are taken or calibration procedures are performed and recorded at the frequency indicated below.

Unit	Calibration Procedure	Frequency
Ovens	Verify Temperature and Adjust as needed	Daily
Incubators	Verify Temperature and Adjust as needed	Daily
Furnace	Verify Temperature and Adjust as needed	Daily
Conductivity Meter	Calibrate with 1413 calibration standard	Daily
pH Meters	Calibrate with Buffer Solutions	Prior to Use
D.O. Meters	Air Calibrate	Prior to Use
D.O. Meters	Check Against Winkler Titration	Weekly
Light Merer		Annually
Turbidimeters	Calibrate with Secondary Turbidity Standards	Daily
Turbidimeters	Calibrate with Certified Standards	Daily
Turbidimeters	Calibrated by Hach	Annually
Spectrophotometer	Verify Wavelength Accuracy with Holmium Oxide Filter	Quarterly
Autoclave	Verify Accuracy of Integral Recorder with Lag Thermometer	Weekly
Weights	Calibrated by Troemner Precision Weights	Annually
Balances	Verify Accuracy with External Calibration Weights	Weekly
Balances	Calibrated Mettler Toledo	Annually

C. Primary Quality Control (QC)

Stock standard and reagents used in the analysis are logged with: the quantity used, dilution, finally volume, initials of the preparer, date prepared and discards date. This information is on each container. The method procedure is checked for the stability and storage of the stock solution or the reagent.

Titration reagents used on a daily basis is standardized weekly. The results from that standardization such as the multiplication factor adjustments; the normality of the reagent; and the initials of the person doing the standardization is label on the buret and the logged into the prep book. Other titration reagents are standardized prior to use and labeled with the same information listed above.

D. Chemical Analysis

Analysis reagents and standards are prepared from Primary standard materials, calibrated against Primary Standard materials, or purchased as certified purity and/or certified concentration standards from an approved agency such as NSI.

These procedures are used to assure conformance to narrow standard deviation or purity limits when procedures require it. It aids in determining when a reagent must be discarded and calculation factors to avoid errors in analysis results.

E. Day-to-day Control for Accuracy of Results

Testing for chemical and physical composition is conducted on a batch basis. Each sample batch is run with controls and spikes. An acceptance of sample results as valid is based on the results of the control analyzed and spike recovery. Weekly QC is performed on all daily analyses. QC is performed on all monthly, quarterly and annual analyses following the same format as for weekly QC.

Routine control samples are prepared in house for frequently performed analyses. For other procedures the Division Laboratory analyzes NSI and Accustandard traceable commercial reference samples.

In addition to these primary checks on the accuracy and precision of measurement, blank, sample replicates and matrix spikes are carried through all procedures.

F. Corrective Actions

Some laboratory data reduction is automated in many cases including instrument data generation. For automated applications, when a control, spike or sample duplicate evaluation fails to meet standard criteria for method performance, the analysis process is halted and/or sample results are withheld by the software system. Analysis cannot continue until the cause of the failure is identified and acceptable results from the control materials are produced.

In procedures where automation is not employed, the analyst performs the same function: data is not reportable unless results from analysis of control, spike and sample duplicates analyzed with the analysis batch are within acceptance standards.

All controls, spikes and duplicates must be within the acceptance limits before the results from the analysis can be recorded. After reviewing the analysis procedures, calculations and repeat of the analysis it cannot be determine the reason for the failure analyst check with the QA person and the laboratory supervisor before recording the data. If it is determined that the QA material failed and the sampled material was accurate an explanation must be recorded for the failure in the "QIR" Qualitative Investigate Report book.

G. Special considerations for Trace Inorganic and Organic Analyses

The Quality Assurance requirements for trace inorganic and organic analyses are narrowly defined by the approved analytical procedures. These requirements are adhered to.

Materials used for preparing standards, spikes and control for Trace Inorganic analysis are obtained from SCP Science, Champlain, NY, AccuStandard, Inc, New Haven, CT and VHG, Manchester, NH.

Materials used to prepare standards; spikes and control for trace organic analysis are normally obtained from Supelco/Sigma Aldrich, Milwaukee, WI. If appropriate materials are not available from this source, they are obtained from NSI Solution, Raleigh, NC or from normal chemical supply sources.

As with all other measurements, acceptability of sample results is dependent on controls, spikes and duplicates analysis results being within acceptance limits. No QA analysis data can be recorded if the control, spike or duplicate fail without a valid reason.

H. Special Considerations for Toxicity Analysis

Instrument Calibration

Continuous temperature recorders for monitoring test solution temperatures are Taylor Instrument drum recorders with remote sensor probes. Recorders are calibrated against ASTM certified reference –1 ^{0} to 101 ^{0} glass thermometer by adjustment of the pen arm.

ASTM 30 ^{0} C thermometers are calibrated annual against the reference thermometer any corrections are labeled on the thermometer.

pH measurement is made with Thermo Orion meter, which is calibrated prior to use.

D.O. measurement is made with a Thermo Orion meter which is calibrated daily.

Reference materials are analyzed as noted below.

Analysis	Reference Material	Frequency of Reference Analysis
Algae Growth Chronic Toxicity	Zinc	With Every Test Sample
Ceriodaphnia Survival and Reproduction	Copper	With Every Test Sample
Larval Fathead Minnow Survival and Growth	Copper	With Every Test Sample

Other test acceptance criteria:

Analysis	Criterion
Algae Growth Chronic Toxicity	Control cell counts at least 1 x 10^6
Algae Growth Chronic Toxicity	Control Replicate Counts << 20% Different
Ceriodaphnia Survival	Survival in Controls >> 80%
Ceriodaphnia Reproduction	Number of young must be 15 or greater
Ceriodaphnia Survival and Reproduction	60% of Surviving Adults produce 3 broods
Larval Fathead Minnow Survival and Growth	Survival in Controls >> 80%

Larval Fathead Minnow Survival and Growth	Control Average Dry Weight >> 0.250 mg

Moderate hard synthetic dilution water is used as the control for all chronic bioassay analyses. The control is exposed to the sample conditions as the sample. A summary of the test acceptance for each species is below and a table for each is at the end of the QC report.

For green alga, *Selenastrum Capricornutum,* at the end of 96- hour the cell mass density in the control must be at least 1 x 10^6 cells/ml and variability (CV $^o/_o$) among control replicates less than or equal to 20$^o/_o$ required. Test organisms must be 4 to 7 days old and have a cell density of 10,000 cells/ml.

For daphnid, *Ceriodaphnia Dubia,* 60$^o/_o$ or more of the control females must have three brood with in an 8 day time period and 80$^o/_o$ or greater survival of all control organisms. Each surviving control female must produce an average of 15 or more babies. Test organisms must be less than 24 hours old and all released within an 8 hours period.

For fathead minnow,*Pimephales Promelas,* at the end of 7 days the control must have 80$^o/_o$ or greater survival. Each survivor must have a dry weight or 0.25 mg or greater. Test organisms must be newly hatched larvae less than 24 hours old. If shipped not more than 48 hours old.

I. Bacteriological Analysis

Bacteriological analysis required by NPDES and SDWA monitoring is routinely performed by the multiple-tube fermentation procedure. Drinking water samples are analyzed using Colilert and recreational water by Idexx Quanti Tray method.

The Laboratory is equipped to perform Multiple Tube Fermentation (MTF) for total coliform, fecal coliform and fecal streptococci; membrane filter tests for total and fecal coliform analyses. Heterotrophic plate count (HPC) is performed monthly on water samples.

Quality assurance is for MTF, Colilert, and idexx methods consist of analyses of a blank, positive and negative control using the appropriate bacteria strand. Each new batch of MTF media and bacteriological supplies is tested before use. Controls are analyzed with each colilert an idexx tests.

Total coliform testing is performed following the procedures of Section 9221B of "Standard Methods for the Examination of Water and Wastewater," 18th – 20th Edition. All Samples are carried through the Brilliant Green Bile confirmation step.

At least 10% of all samples testing positive in the confirmed coliform procedure are carried through the completed procedure.

Fecal Coliform testing is performed following the procedures of Section 9221E of "Standard Methods for the Examination of Water and Wastewater," 18th – 20th Edition.

Fecal streptococcus testing is routinely performed following the procedures of Idexx Enterolert Quanti-Tray Method.

Control tests for water suitability and for inhibitory residues are performed annually following the procedures of Section 9020B(3)(a)(2) and 9020A(3)(c)(1) of "Standard Methods for the Examination of Water and Wastewater," 18th Edition. Commercial dehydrated media is used for all analysis. Media is tested for accurate response by inoculation of portions from each prepared batch with Escherichia coli (ATCC 25922), Staphylococcus aureus (ATCC 25923) and Streptococcus faecalis (USEPA-EMSL Cincinnati 111054).

Coliform test materials failing to give a positive response to Enterobacter aerogenes and/or Echerichia coli, a negative response to Staphylococcus aureus and no response upon incubation of non-inoculated media are discarded.

Fecal strep test materials failing to give a positive response to Streptococcus faecalis, a negative response to Staphylococcus aureus and no response upon incubation of non-inoculated media are discarded.

Both media and equipment are prepared in weekly batches, and materials are tested for sterility using Tryptic Soy Broth before use and dated to assure they are used within acceptable holding periods or discarded.

ANNUAL REPORT OF ANALYSIS

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted.

Based on my inquiry of the person or persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of a fine and imprisonment for knowing violations.

Executed on the 1st day of April 2010, at Ventura, CA.

Daniel Pfeifer
Wastewater Utility Manager

Florence B. Jay
Laboratory Supervisor