CITY OF El PASO DE ROBLES

WASTEWATER TREATMENTPLANT
2016 ANNUAL REPORT

Chris Slater, Technical Supervisor II

Submitted to the Central Coast Regional Water Quality Control Board

Order No. R3-2011 0002
NPDES No CA0047953

City of Paso Robles
3200 Sulphur Springs Road
Paso Robles, Calif.
805-237-3865
1/17/2017

City of Paso Robles
2016 Annual Wastewater Report

1. Introduction

The Paso Robles Wastewater Treatment Plant (WWTP) is operated by the City of Paso Robles. The newly upgraded plant that went on line April 15, 2015 is located at 3200 Sulphur Springs Road, Paso Robles, California and serves a population of approximately 31,000. New upgraded treatment processes include screening and grit removal, primary treatment, secondary treatment, mixed liquor recycle for biological nutrient removal (BNR), sludge thickening, anaerobic digestion, cogeneration, solids dewatering, and effluent disinfection. Treated effluent is currently discharged via a polishing channel into the Salinas River. Numerous auxiliary systems are required for proper operation of many plant processes including; process water, HVAC, electrical power distribution natural gas, methane gas, chemicals, instrument air and others.

The State Water Resources control board (SWRCB) has classified the Paso Robles Wastewater Treatment Plant as a Class III Secondary Treatment wastewater treatment facility. The facility currently operates under the SWRCB Order Number R3-2011-0002 issued on June 25, 2011 which expired on June 25, 2016.

This report is a summary of plant operation and performance during 2016. The old plant operated until April 2015 at which time the new upgraded process was placed on line. In addition to a discussion of improved effluent quality and the new plant's success in meeting treatment objectives, the report contains summaries of 2016 plant operations, maintenance, chemicals, utilities, and staffing.

2. Summary

Although we have struggled with some mechanical and control issues in the new BNR plant it has performed amazingly well. We have consistently been less than 5 mg/l in both suspended solids and BOD in our effluent discharge. The chlorine residual trim issues that we were struggling with are now dialed in and under control for good disinfection.

In the later part of 2016 we were experiencing foaming issues in the oxic basins. Nocardia and microthrix parvacella were abounding and are difficult to control. Mostly this was a visual issue with the dark greasy foam on both the oxic zones and final clarifiers and did not affect the quality of the effluent. It did cause problems with our downstream solids end of the plant specifically the lead digester. The excessive amount of foam was causing the digester to foam and due to the specific gravity of the digester effluent it would not transfer well to the next in line digester. This caused digester effluent to go to our concrete drying bed instead of transferring to the next digester. In November using increased wasting we finally were able to deplete the foaming and shortly the digester followed suit and is now performing correctly.

As with a lot of plants flow equalization is an issue due to the large drop off of Influent flow at night time. We currently are running about 2.3 MGD plant flow with max peaks of about 2.7 MGD. Night time flows are down to about .4 to .7 MGD. Because of the minimum turn down on pumps this causes problems with some process flows but staff has been able to make adjustments to dial it in as best we can to achieve optimum performance of the process.

The DAFT was taken down first of December for maintenance and yearly warranty. After draining and cleaning we discovered that the diffused air pipe (10" casing over the 6" injection piping) had blown a hole in it. We are in the process of repairing the 10" pipe and Westech is suppling a whole new 6" injection piping system to re-install and get the DAFT back on line. Hopefully by the middle of January. We currently are co-settling in the primary clarifier for wasting to the digester.

Design for re-cycled water infrastructure the City of Paso Robles has moved forward with the City hoping to go out to bid by early summer. The addition of cloth media filters, flow equalization, UV disinfection and a reservoir storage pond with pumping facility and chlorine disinfection will set the stage for delivery of re-cycled water to parks, ball fields, landscape medians, and possibly vineyards in the very near future.

Septage receiving has gone very well throughout most of the year but had to be shut down during the plant foaming issues in the oxic basins and digester and then followed by the DAFT issues. The plan is to start receiving again in mid-February when the DAFT goes back on line.

3. OPERATIONS

a. Influent Treatment and Quality

The plant operates at an average dry weather flow of 2.3 MGD, and during wet weather can experience flows above 4.2 MGD. A summary of annual flow and influent parameter concentrations for past four years is shown in Table 1. During the last five years there has been a 19% reduction in daily and 17% in annual plant Influent flows due to drought and water conservation. The new plant now has both Influent flow meter and an Effluent flow meter to adequately measure flow in to and out of the plant.

Table 1: Influent Parameters

	2012	2013	2014	2015	2016
Mean Influent flow, MGD	2.85	2.83	2.44	2.4	2.3
Total Annual flow. MG	1041	1035	975	879	868
Mean Influent SS, mg/l	307	287	304	412	427
Mean Influent BOD5, mg/l	325	351	414	336	320

b. Preliminary Treatment

The preliminary treatment process includes two new climber screens, washer / compactor and a vortex grit removal system along with influent flow measurement. Wastewater enters the plant from two different trunk lines, one from the older west side of town and one from the newer east side of town. Two new climber screens remove the larger pieces of debris from the wastewater stream. That debris travels through a washer /compactor and into a grit bin for disposal. The remaining grit is removed in the vortex removal system and also deposited into the grit bin and hauled to a sanitary landfill site.

c. Primary Treatment

After the grit removal the waste stream flows through a primary splitter box which divides flow to two primary clarifiers where velocity of the flow is reduced and sedimentation occurs. Utilizing both surface and bottom sludge collectors the primary sludge and scum are removed and pumped to the WAS EQ basin. The WAS EQ basin collects all primary scum and sludge, secondary scum, and waste activated sludge from the BNR basins where it is mixed and then pumped to the DAFT (Diffused Air Flotation Tank) where it is thickened by method of infusing air into the sludge and floating the sludge for removal. We have been able to achieve 6 to 7 % solids in this thickening process.

Table 2 contains a summary of key primary treatment effluent parameter concentrations over the previous three years.

Table 2: Primary Treatment Effluent Parameters

	2013	2014	2015	2016
Mean Primary Effluent SS, mg/l	90	90	*83	94
Mean Primary Eff. SS % removal	71	73	*80	23
Mean Primary Eff. BOD5, mg/l	162	195	*234	150
Mean Primary Eff. BOD5, % removal	50	47	*35	49

* New process on line starting April 7, 2015. We dropped one primary clarifier off line to feed more BOD to BNR process.

d. Secondary Treatment

The secondary treatment process includes biological treatment of the waste stream as well as solids separation process. In the activated sludge BNR process, effluent from the primary clarifiers is mixed with Return Activated Sludge (RAS) from final clarifiers and is aerated in aeration basins. The activated sludge is primarily comprised of micro-organisms and bacteria, which are a natural part of wastewater and are used to break down the organic solids in the wastewater. Micro-organisms are monitored microscopically weekly by operations and laboratory staff to confirm number, type, and general health of the process.

A mixed liquor recycle return system allows denitrification in the anoxic zones (2) for removal of Nitrate Nitrogen from the waste stream. A third zone was added prior to the two anoxic zones for the future anticipated limit on phosphorous or as we refer to the Bio P mode. This process improves the secondary treatment process by returning a portion of the alkalinity removed during the nitrification process and reducing the need for chemical addition.

The mixed liquor from the aeration basins flows to large secondary or final clarifiers where the activated sludge is allowed to settle. A controlled quantity of this sludge is "returned" to the aeration basins as Returned Activated Sludge (RAS) to repeat the treatment process, and excess quantities are removed as Waste Activated Sludge (WAS) to the WAS EQ tank. There are 3 final clarifiers and the number in operation is adjusted to optimize performance during varying flow conditions.

2016 was the wastewater plants first full year of operation since going online April of 2015.is shown in Table #3. The plant experienced several mechanical and control issues after startup which forced staff to drop one aeration bay off line. We expect results to improve even more through 2017.

Table 3: Primary Effluent, BNR and Secondary Effluent Averages for 2016

Mean Aeration Loading, lbs./day TSS	96.7 mg/l / day	1780 lb./day
Mean Aeration Loading, lbs. BOD / day	155mg/l / day	2886 lb. BOD5/ day
Mean Aeration Ammonia Loading, mg/l / day	55.6 mg/l avg.	1115 lbs. / day avg.
Mean Mixed Liquor Suspended Solids, mg/l – 1 bay, 2 bays	1-bay: 2463 mg/l 9038 lbs. MLSS	2- bays: 1904 mg/l ea. 14,490 lbs. MLSS
Mean SRT	5.1	5.1
Mean RAS concentration, mg/l / day	6206 mg/l / day	
Mean NEFF Ammonia Concentration, mg/l/day	1.08mg/l / day	
Mean NEFF TSS, lbs. / day	7.9 mg/l / day	158 lbs. / day

e. Final Effluent Treatment and Quality

Sodium Hypo Chlorite (chlorine) is combined with ammonium sulfite to form chloramines which are used to disinfect the final effluent before it is discharged. Ammonia is fed into the chlorine feed water at a carefully controlled dosage to limit the formation of Disinfection Byproducts specifically tri-halomethanes (THM's). The discharge stream then flows through a polishing channel over rocks and through pools to help volatize off any remaining byproducts or chlorine residual and to maintain an adequate Dissolved Oxygen level in the effluent discharge. A summary of key final effluent parameters for 2016 is shown in Table 4. Details of the final effluent qualities are presented in graphical form in Appendix A. A summary of other key treatment parameters for 2016 is shown in Table 5.

Table 4: Treated Wastewater Parameters 2016

(Results in bold indicate violation of discharge permit requirements)

Quarterly	January	April	July	October
Ammonia Nitrogen (mg/l)	0.09	1.94	2.25	2.51
Unionized Ammonia Nitrogen (mg/l)	ND	0.0175	0.0396	0.0493
Nitrate as nitrogen (mg/l)	7.40	8.20	7.30	3.90
Copper (ug/l)	11	18	17	7
Bromodichloromethane (ug/l)	**5.86**	**4.83**	.122	ND
Dibromochloromethane (ug/l)	**1.18**	**0.726**	ND	ND
pH	7.38	7.31	7.51	7.59
Total Nitrogen as N (mg/l)	7.37	8.20	**12.2**	7.23
Selenium	2	2	4	2
Bis(2-Ethlhexyl)phthalate	ND	ND	1.28	0.782
Acute Toxicity	Pass	Pass	Pass	Pass
Chronic Toxicity	1	1	1	1
Total Hardness CaCO3	236	207	249	202

Table 5: Key Treatment Parameters 2016

EFFLUENT BOD mg/l

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max	4.8	4.35	4.64	6.23	4.90	4.78	3.73	9.0	5.80	2.66	4.80	7.52
Mean	4.5	4.09	3.65	4.89	3.22	3.52	2.89	6.14	3.43	2	3.24	6.08
Average lbs./day	90	80	72.4	94.6	62.8	68.4	57.6	127	68.9	40	63.2	117

Influent BOD, mg/l

	Jan	Feb	Ma	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max	482	506	398	408	372	370	447	377	411	336	386	376
Mean	407	413	354	300	315	294	327	245	219	316	331	317
Average lbs./day	8110	8094	7081	5859	6147	5713	6517	5067	4402	6316	6332	5787

Influent TSS, mg/l

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max	924	840	942	1632	1116	810	1770	876	793	868	386	378
Mean	534	498	394	512	486	437	507	417	445	356	277	263
Average lbs./day	10665	9760	7786	9891	9484	8492	10106	8624	8944	7169	5401	5078

Effluent TSS, mg/l

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max	5.80	13.3	7.30	9.0	9.70	12.3	6.80	18.9	8.0	5.0	4.80	16.2
Mean	3.42	5.05	4.20	5.53	3.90	3.80	3.71	5.48	3.40	2.83	2.71	6.79
Average lbs./day	69	102	84.7	112	77	73.8	74	113	68.3	56.8	55.3	138.7

Influent Flow, MG

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max	2.84	2.52	2.79	2.47	2.49	2.46	2.61	2.64	2.57	2.60	2.61	2.48
Mean	2.39	2.35	2.37	2.32	2.34	2.33	2.39	2.48	2.41	2.41	2.34	2.32
Total	74.3	68.2	73.7	69.5	72.5	69.8	74.3	77.0	72.1	74.8	70.2	71.8

City of Paso Robles

Effluent Flow, MG

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max	2.86	2.59	2.91	2.65	2.55	2.42	*	*	*	*	2.76	2.65
Mean	2.44	2.43	2.42	2.44	2.45	2.35	*	*	*	*	2.45	2.45
Total	75.7	70.4	75.5	73.1	72.49	69.88	74.32	*	*	*	73.6	75.9

*=Flow meter malfunction

Settable Solids mg/L

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max	<.1	<.1	<.1	<.1	<.1	3.8	<.1	1.5	<.1	<.1	<1.0	<.1
Mean	<.1	<.1	<.1	<.1	<.1	<.2	<.1	<.2	<.1	<.1	<.1	<.1

Coliform MPN/100

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max	7.8	27	79	170	540	31	4.5	350	79	23	170	70
Mean	<2.3	3.4	4.7	16.3	30	6.5	2.5	57	13.2	6.4	36.9	19.8
7-day MPN (23) avg.	<1.8	2.0	<1.8	17	7.7	17	4	**27**	13	2	5.6	6.1

Effluent pH

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max pH	7.46	7.51	7.95	7.52	7.49	7.61	7.60	7.70	7.65	7.73	7.85	7.59
Min pH	7.22	7.33	7.25	7.27	7.25	7.32	7.33	7.40	7.26	7.49	7.36	7.20

Effluent Chlorine Residual, mg/L

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max	.03	**.05**	.04	**.05**	.04	.03	.03	.04	.04	**.06**	.03	.03
Min	.02	.02	.02	.03	.01	.02	.02	.01	.03	.03	.01	.03

Mixed Liquor Concentration, mg/L

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max	3188	3004	2592	2284	2644	2572	2448	**3892**	**4196**	**3632**	2984	2220
Mean	2520	2508	2361	2162	2392	2242	2018	**2681**	**3562**	**3085**	2105	1727

Bold indicates one basin in service, otherwise both basins were in service.

RAS, TSS

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max	7588	8436	7080	7340	7392	6764	5396	9812	10540	8068	6948	7820
Min	5256	6084	4552	4336	4964	3948	4352	3668	7268	6344	4232	3016
Mean	6498	7176	6133	5526	6286	5505	4908	7028	8476	7249	5384	4374

TWAS to Digesters, GPD

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max	28119	30074	29876	28789	35789	34593	32334	28308	30880	32693	28828	**
Min	873	25896	15340	24332	26206	27947	28436	22271	25849	***	18645	**
Mean	16498	27708	27402	26223	30954	32087	30389	24914	28096	24759	24614	**

** DAFT off line for repair.

Belt Press, GPD

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max	47121	37560	58504	38100	33998	38067	35144	30034	30051	31627	44196	32363
Mean	28928	29317	29766	25400	29575	31193	28667	15788	17907	22017	20665	24490
Total	896775	820878	833467	762021	916840	935813	888692	473668	519308	682551	619953	759205

DAFT/Digesters

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
TWAS TS %	3.6	3.8	3.6	4.3	4.0	3.4	3.8	3.7	3.8	3.6	3.3	*3.19
TWAS VS %	87.7	85.0	78.6	80.6	81.5	82.1	77.2	79.5	77.4	79.3	76.5	*87.8
DIG 3 TS %	1.9	1.9	1.9	1.6	1.9	2.4	2.1	2.1	2.3	2.0	1.5	1.6
DIG 3 VS %	78.1	77.5	65	65.5	74.8	71.6	62.7	61.4	69.8	67.3	58	68.8
DIG 3 ALK mg/l	1933	2040	1845	1932	1960	1820	1847	2312	2105	1965	1550	2285
DIG 1 TS %	1.67	1.59	1.78	1.76	1.86	1.87	1.9	1.65	1.58	1.58	1.47	1.46
DIG 1 Vs %	74.4	71.1	65	69.7	73.7	75.8	66	61	66.5	66.7	65.3	69.8
DIG 1 ALK mg/l	2413	2545	2380	2396	2488	2355	2293	2668	2730	2450	2300	2435

DAFT was taken out of service, co-settling in primary clarifier for wasting.

f. Solids Handling

The anaerobic digestion process reduces sludge volume and stabilizes the solids to form biosolids. In 2016, an average of 27,149 gpd TWAS was pumped to the anaerobic digesters for treatment. The average thickened waste activated sludge (TWAS) total solids concentration was 3.67 % and total volatile solids content was 81.1 % of total solids. The average hydraulic retention time of sludge in the series of three, 366,000 gallon digesters was 39.7 days. In 2016 approximately 1583.87 dry tons of biosolids were produced and used for cover material at the City of Paso Robles owned land fill. Results of tests performed in 2016 are presented in Table 6.

Table 6: Biosolids Quality Monitoring 2016

Dewatered Sludge, mg/kg	1st Q	2Nd Q	3rd Q	4th Q
Arsenic	1.43	2.33	3.93	4.71
Boron	81.8	116	64.2	46.5
Cadmium	2.71	2.17	2.21	3.27
Chromium	22.9	25.5	23.5	18.3
Copper	842	1080	829	697
Lead	15.2	13.9	12.3	11.2
Mercury	.0513	2.34	0.434	0.830
Molybdenum	29.6	25.3	26.6	20.5
Nickel	18.0	21.8	20.2	17
Phosphorus	38100	49700	36100	28100
Selenium	30.1	28.1	26.6	24.6
Zinc	1090	1200	902	787
Ammonia Nitrogen	5810	3950	5460	2160
% Moisture	84.8	40.5	39.8	63.3
Nitrate Nitrogen	13.2	3.36	9.97	8.17
Nitrogen, Total as Nitrogen	51300	28400	35400	20500
Nitrate + Nitrite as N	13.2	3.36	9.97	8.17
TKN	51300	28400	35400	20500
pH	7.16	6.74	6.44	6.78

4. Plant Maintenance Summary

a. Plant Maintenance Summary 2016

Table 7: Plant Maintenance Frequency

	Weekly	Monthly
Standby Generator test run	+	
Bar Screens rotated, cleaned & greased		+
Fire Extinguishers check		+
Eye wash stations(7) tested		+
All clarifier drives (5) greased and lubed		+
Daft drive greased and lubed		+
Duty / standby pumps rotated		+
Co-gen oil sampled, daily recorded run logs		250 hours
Standby Generator oil tested		quarterly
Belt press greased and oil added to auger if needed		+
Primary Moyno pump by-pass cleaned	+	
Primary Scum pump basin washed out	+	
Primary clarifiers (2) , Final clarifiers (3) sprayed down	(3)	(2)
PEP pumps and RAS pumps, standby rotated, bumped	+	
Control Panel maintenance (cleaning, bulb replacement)		quarterly
Electrical vaults, water pumped out		Wet season

b. Additional maintenance other than PM's on plant equipment:

- Plant **Backflow Preventers** tested;
- **Eye Wash Stations**: replaced thermostat and new controller;
- **Headworks**: barscreen motor #2 replaced, replace nut on compactor auger, replace proximity sensor magnet on auger, replace brushes on bar screens;
- **Primary Clarifiers**: switched primary #2 to #1 and greased #2;
- **Primary Effluent Pumps:** adjusted seal packing, clean regulator and solenoid, Eaton worked on VFD, repair leak on seal water, flush and clean rotometers;
- **Primary Sludge pumps**: Clean pump #2 pressure bypass, fixed seal water leak;
- **Primary Scum Pumps**: replaced clack valve, adjusted start and stop levels;
- **BNR Basins**: clean DO probes and replace air lines, changed out faulty mixers, replaced wipers on MLSS probes, installed new pH meters in basins, repaired MLSS probe, installed new pH meter and cleaned all DO probes;
- **Final Clarifiers**: added oil to drives, cleaned solenoid valves for sprayers, greased and check drive torque, Blowers: Replaced core on #1, had to replace Limitorq check valves on all three blowers, adjusted suction temp sensor due to suction temp. fails, changed all front and rear filters on all blowers;
- **RAS Pumps**: pull #3 pump to free up stuck impeller;

- **Secondary Scum pumps:** replace control board for level transducer, replace hydro ranger for level transducer;
- **DAFT**: replace packing on recycle pump, extend drain to vent away from pumps, replace seal water lines on TWAS pumps, tighten packing on pump again, replace defective elbow on downstream side of TWAS pumps, serviced both compressor units, clean transducer and WAS eq pumps, replace flash drive on controller;
- **Digesters & Mixers**: replaced silicone around manway lid on Dig. #2, replace hose bib #2, repair seal water leak #2 mixer, replace belts #2 mixer, adjust belts #2 mixer, replace starter contacts for #3 mixer, grease all three mixers, repair seal water leak #3 mixer;
- **Boilers**: replace seal water tubing #3, initiate hot water loop for boiler #3, flush air release on sludge recycle line;
- **Belt Press**: replace packing on conveyor #3, clean decant wet well, change auger drop chute, grease & change oil on all augers and motors, pipping switch over from blue tank to sludge feed pump, clean blue holding tank, change shower seal, replace wash seal, change both belt press belts, replace wash seal, flip doctor blade;
- **Chemical Stations**: (HYPO)bypass CCB to pond 4 to clean CCB, grease flash mixer, replace motor on AIT 5202, change tubing on hypo pumps, replace motor for AIT 5101, clean CCB #2, replaced CL2 in and out and DEOX analyzers, (SBS) change tubing, tubing fail replaced tubing, change tubing and roller assembly, installed new feed line to 3-water station, (Ammonium) test controls, changed to smaller tubing to work right, reduced size of tubing so would control correctly, replaced level transducer in chemical tank, (FERRIC) replaced tubing, install 17 gph tube on #7111, set hi pressure switch for #7111;
- **Standby Generator**: 2G replaced cards, several power fail tests, 2G fixed cold air system, 2G replace p100 sensor, changed out flex couplings, insulated cold air intake, 2G and Covello working on standby failure issues, two oil samples;
- **Co-Gen engines:** replaced cards, adjusted coolant pump breaker, changed flex couplings, replaced smoke detector, changed oil, tested oil, re-gapped spark plugs, replaced engine starter #1, 2G made adjustments to intake fan for max temp. fail, coolant leak at rubber flex hose replaced, test oil, co-gen fan breaker trip, 2G gapped spark plugs;
- **Flair**: replaced blown fan fuse twice, adjusted gas pressure switches;
- **Chem Scan**: ran ammonia and nitrate/nitrite standard for calibration accuracy, unclog injector #2, replace pump tube;
- **Digester Gas Treatment Skid**: dump valve stopped working repaired, chiller not working adjusted flow switch contact for chiller, adjusted FIT 9101, serviced both blowers, sprayed 5-10 gals. Water over both H2S vessels, changed oil on blowers, install capacitor for auto drain valve, replaced TT 001 temperature probe;
- **3W Station**: Flowtronics replaced flow meter and adjusted programing, replaced air filter on control cabinet, #3 pump fail on over temp., replaced pressure transducer, replaced transformer for a/c unit with larger unit;
- **Septage Receiving**: 4/7/2016 first day of receiving, rock trap blown up due to over pressure from hauler, replaced torque auger coupling, replaced rock trap assembly;

c. Flow Meter Calibration Record

Flow to the plant is measured at the headworks and chlorine contact basin effluent wier. The annual calibration was done on installation of meters at both sites and will be continued annually starting in 2016.

5. CHEMICALS AND UTILITIES

a. Chemical Expenses

Chemicals are used for a variety of treatment processes at the plant. Major process chemicals are shown below and include:

		2015	2016
Sodium Hypochlorite	(Disinfection)	$204,394.13	$141,500.27
Sodium bisulfite	(De-chlorination)	$58,292.57	$87,591.78
Ammonium sulfate	(Chloramination)	$9,593.94	$27,954.32
Ferric chloride	(H_2S and odor control)	$30,083.82	$27,081.65
Polymer	(Belt press de-watering)	$19,648.44	$39,942.72
Total Chemical cost		$322,012.90	$324,070.74
Septage Receiving Income (for 6.5 months of 2016)			$164,266.06

b. Utilities

Potable water/sewer	$13,825.50
Electricity	$294,999.05
Natural gas	$26,806.06
Cogeneration Power	Total of 3,913 hours logged on co-gen engines @ avg. of 114kw

6. WWTP STAFFING

a. Operations Staffing

In 2016, the treatment plant had 10 employees. Plant staffing for 2016 is shown in Table 7.

Table 7: Plant Staffing

Tech Supervisor II	1
Tech Operator III	1
Tech Operator II	6
Lab Analyst	2
Maintenance Specialist III	2- future (2017)

b. Staff Training & Development

In addition to weekly safety meetings, the WWTP attends several training opportunities through CWEA Conferences both local and at the State level as well as numerous JPIA training offered through the City organizations. 2016 also included numerous training sessions on new equipment and controls. WWTP operating staff attended the following trainings:

- CPR
- First Aid
- Bloodborne Pathogens/Fire Extinguisher/ATD

- Hazard Communication
- Hazwoper
- Environmental Safety
- Confined Space
- Trench & Excavation
- SCADA Controls
- Lockout/Tag-out
- Blower Operation
- DAFT Operation
- Chem Scan/Chlorine Analyzer Operation
- BNR Microbiology

c. Operator Certification

The WWTP utilizes a Technician III position as the lead operator working a Monday –Friday shift to lead both 4-10 schedules, Sunday –Wed. and Wed. thru Sat. shifts. He answers to the Plant Supervisor and directs day to day operations of the plant. This position currently holds a Grade III certificate. This demonstrates compliance with the regulations of the Office of Operator Certification. Table 8 summarizes the status of operator certification held by WWTP operators at the facility during 2016.

Table 8: Wastewater Treatment Certification

Grade V	0
Grade IV	0
Grade III	4
Grade II	4
Grade I / OIT	0

Additional certifications held by WWTP staff include Laboratory Analyst III, Laboratory Analyst I and future Maintenance Technologist I and II positions. Several Treatment Plant Operators also hold CWEA Collection System Maintenance certifications.

7. Wastewater Laboratory Analysis

January 2016

- Quarterly: Paso City wastewater monitoring, Paso City effluent toxicity, Templeton City water and sewer monitoring, Paso City ground water monitoring, Paso City receiving water monitoring;
- Serviced drifting ammonia probe, changed membrane and electrolyte filling solution;
- Calibrated ChemScan online monitor, not properly subtracting NEFF ammonia for chloramination
- February 2016;
- Serviced ammonia probe changed electrolyte filling solution;
- Serviced composite samplers, calibrated volume and changed pump tubing;
- Changed FE composite sampler line because of algae build up;
- Installed composite sampler at primary clarifiers, replacing grab sample for ammonia and TSS;
- ZSA-120 analytical balance back put back in service after being repaired by ZSA factory;

March 2016

- Paso City Water treatment plant manganese and copper testing to try to trace problems with Cl2 interference problems;
- Priority Toxic Pollutants testing;
- Influent composite sampler serviced, replaced warn out pump tubing.

April 2016

- Start of Chloramination at WWTP;
- Start of quantitray BacT method to improve process data turnaround time;
- Paso City wastewater monitoring, Paso City effluent toxicity, Templeton City water and sewer monitoring, Paso City ground water monitoring, Paso City receiving water monitoring;
- Received nitrate probe replacing hazardous cadmium reduction method;
- Annual performance testing for recertification of ELAP accreditation;
- Calibration of septage receiving station pH probe;
- Serviced secondary composite sampler, changed worn out pump tubing.

May 2016

- Start of Vina Robles concert season and start of monitoring program
- Start of online chloramination monitoring with AMS THM-100, first online THM monitor used in WW application in the world.
- Annual calibration of laboratory balances by Wine Country Balance.

June 2016

- Annual calibration of laboratory thermometers;
- Serviced ammonia probe changed electrolyte storage solution;
- Replaced sample line on Secondary effluent and FE composite samplers.

July 2016

- FE composite sampler failure, replaced pump tubing, and replaced roller assembly and housing;
- Replaced composite sampler tubing on DAF.

August 2016

- Renewal of ELAP certification;
- Start of septage hauling monitoring;
- Paso City wastewater monitoring, Paso City effluent toxicity, Templeton City water and sewer monitoring, Paso City ground water monitoring;
- Replaced FE composite sampler pump tubing;
- Cleaned rags out of influent sampler line head;
- Replaced pump tubing on primary effluent sampler.

September 2016

- Implementation of new collection system sanitary sewer overflow monitoring program;
- Cleaned influent composite sampler line.

October 2016

- Local limits study in conjunction with industrial waste department;
- Annual reagent water testing;
- End of online THM monitoring with AMS THM-100;
- Secondary effluent sampler Fuse popped and replaced;
- Installed new oxygen sensor and battery on dissolved oxygen prob;

- Received new nitrate probe, old one failed, replaced on warrantee;
- End of Vina Robles concert season and end of monitoring program.

November 2016

- Paso City wastewater monitoring, Paso City effluent toxicity, Templeton City water and sewer monitoring, Paso City ground water monitoring;
- Start of Cogeneration system siloxane sampling;
- Implementation of new data management system: HACH WIMS;
- Serviced ammonia probe, replaced ripped probe membrane;
- Secondary effluent composite sampler failure, sample frozen, thermostat broken.

December 2016

- Publication of scientific paper titled “City of Paso Robles Uses Online Monitor to Detect Low-Level of THMs in Treated Wastewater.”;
- Primary effluent sampler pump tubing replaced because of sampler malfunction;
- Final effluent sampler failure, replaced pump tubing;
- Replaced Secondary effluent HACH sampler with QCEC vacuum sampler.

8. Pretreatment

Formal Pretreatment Program Requirement

On July 18, 2016 the City received a letter from the RWQCB requiring a formal Pretreatment Program submittal by July 12, 2017. The City submitted a work plan to the RWQCB for the development of 9 chapters including Organization and Multi-Jurisdictional Implementation, Local Limits, and Identification of Non-Domestic Users.

The City has a Sewer Connection Agreement with the Templeton Community Services District (TCSD) to take wastewater from the east side of Highway 101. Therefore, the TCSD must be included in the City’s Pretreatment Program. The City has been working with the TCSD to develop the multi-jurisdictional pretreatment agreement and to identify non-domestic users in within their jurisdiction.

Local Limit Development

In February 2016 the City contracted with Larry Walker and Associates to develop revised local limits. A Sampling plan was developed and the City sampled at four locations within the wastewater plant and one location in the collection system for seven days in October 2016. The results of the sampling were sent to Larry Walker and Associates in November and they are currently developing proposed local limits.

Pretreatment Software Development

The City is in the process of developing new software to be used by Community Development, Building Department, Stormwater and Pretreatment Programs. The Industrial Waste Manager has been working with the software developer to determine the type of data that needs to be tracked and revising forms that will be incorporated into the pretreatment software program.

Closure of Paris Precision

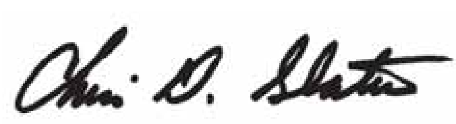
Paris Precision, which was a categorical metal finisher, closed in May 2016. San Luis Obispo County Environmental Health CUPA was the lead agency to ensure proper disposal of all hazardous wastes and closure of the facility. The City was the lead to ensure liquid wastes were properly disposed of and not discharged to the City sewer. During an on-site inspection, the City determined that the treatment plant was being used to treat the wastewater from cleaning the metal finishing tanks and floors. The City required Paris Precision to immediately cease discharging wastewater to the City and required a lock-out tag be placed on the treatment plant power switch and the discharge pipe to the City sewer be capped. The company was instructed to have the wastewater tested to determine if it was hazardous or non-hazardous and have it properly disposed of under the supervision of the CUPA. Paris Precision filed for bankruptcy the following day and the company assets were auctioned off. However, the wastewater treatment plant remained intact on site with the untreated wastewater in it until the property owner could enter the property and had a contractor haul the wastewater off-site for disposal. The City did routine visits to the site to ensure the wastewater discharge point had not been uncapped and that the wastewater was still on site until a contractor was hired to remove it. Manifests were provided as proof of proper disposal of the wastewater left in the treatment unit.

9. Certification of Report

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 the information submitted is to the best of my knowledge and belief, true, accurate, and complete.

If you have any questions or need additional information, please feel free to contact me at cslater@prcity.com or (805) 237-3865.

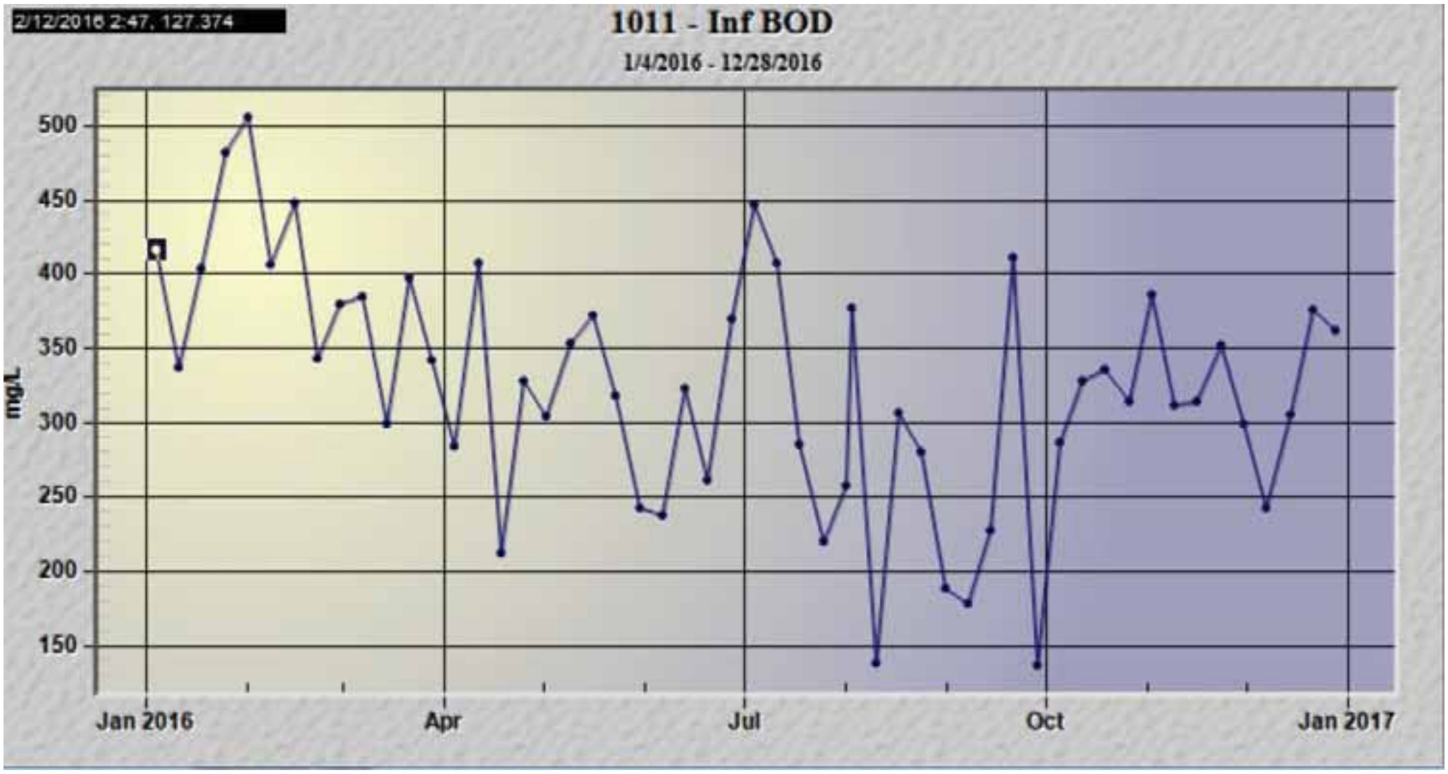
Sincerely,

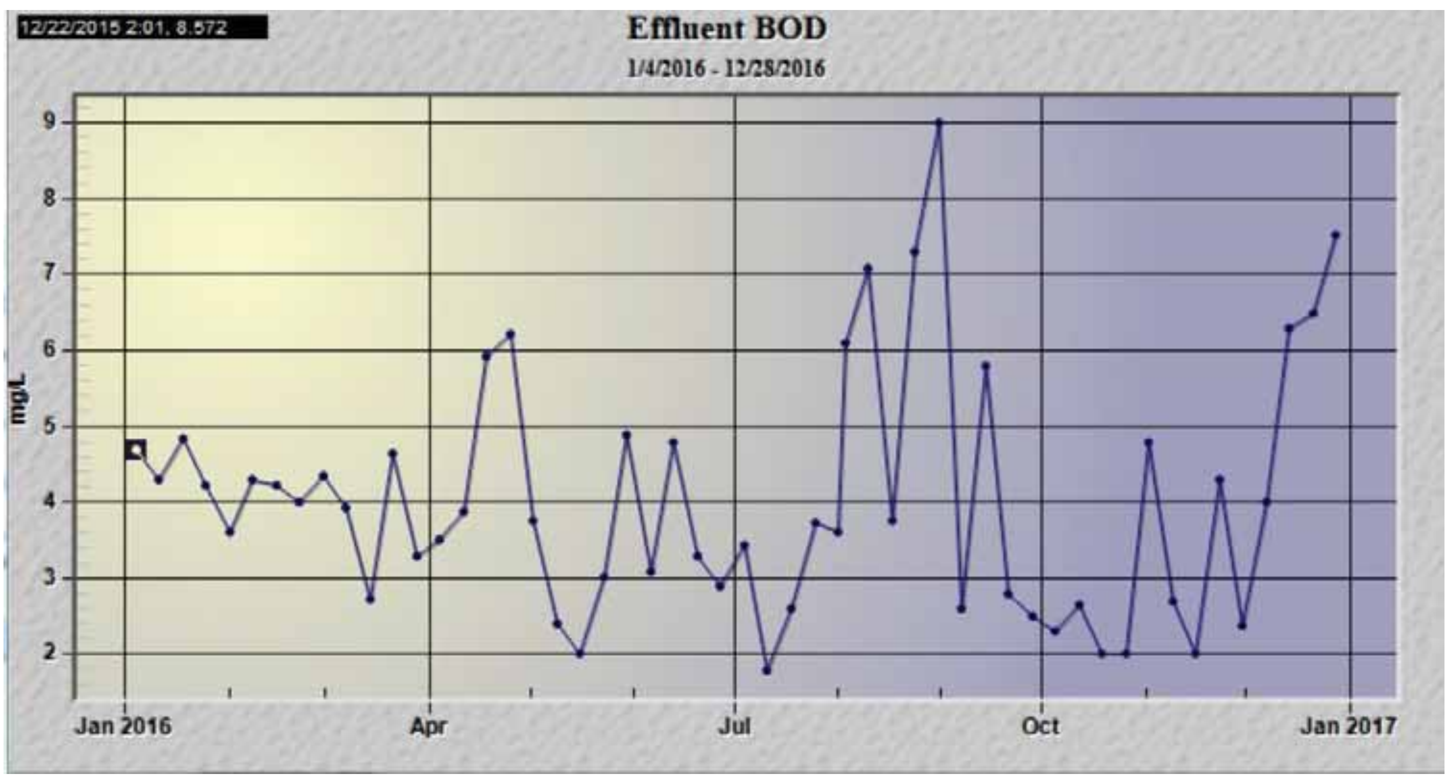


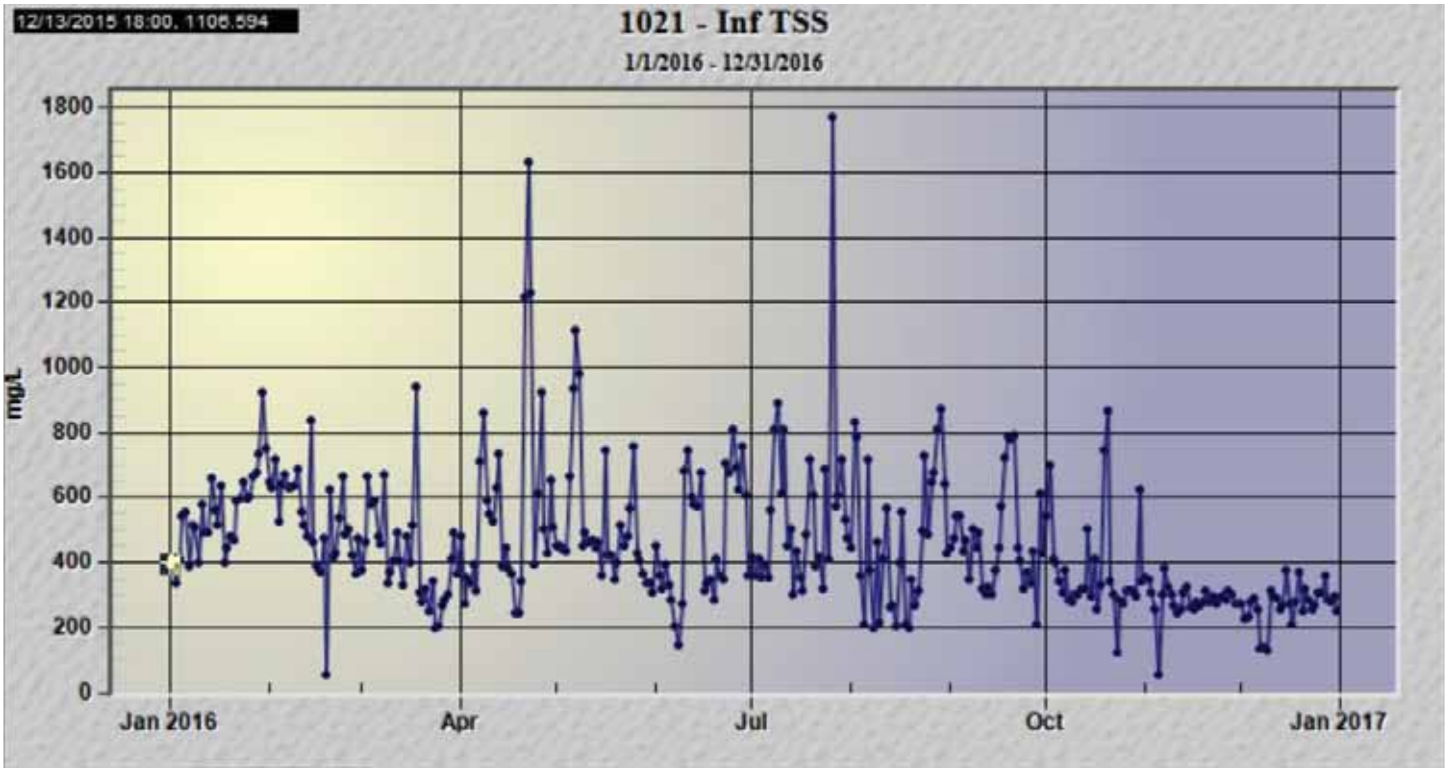
Chris Slater, WWTPO III-8852
Technical Supervisor / Chief Plant Operator
City of Paso Robles WWTP
Paso Robles, Ca.

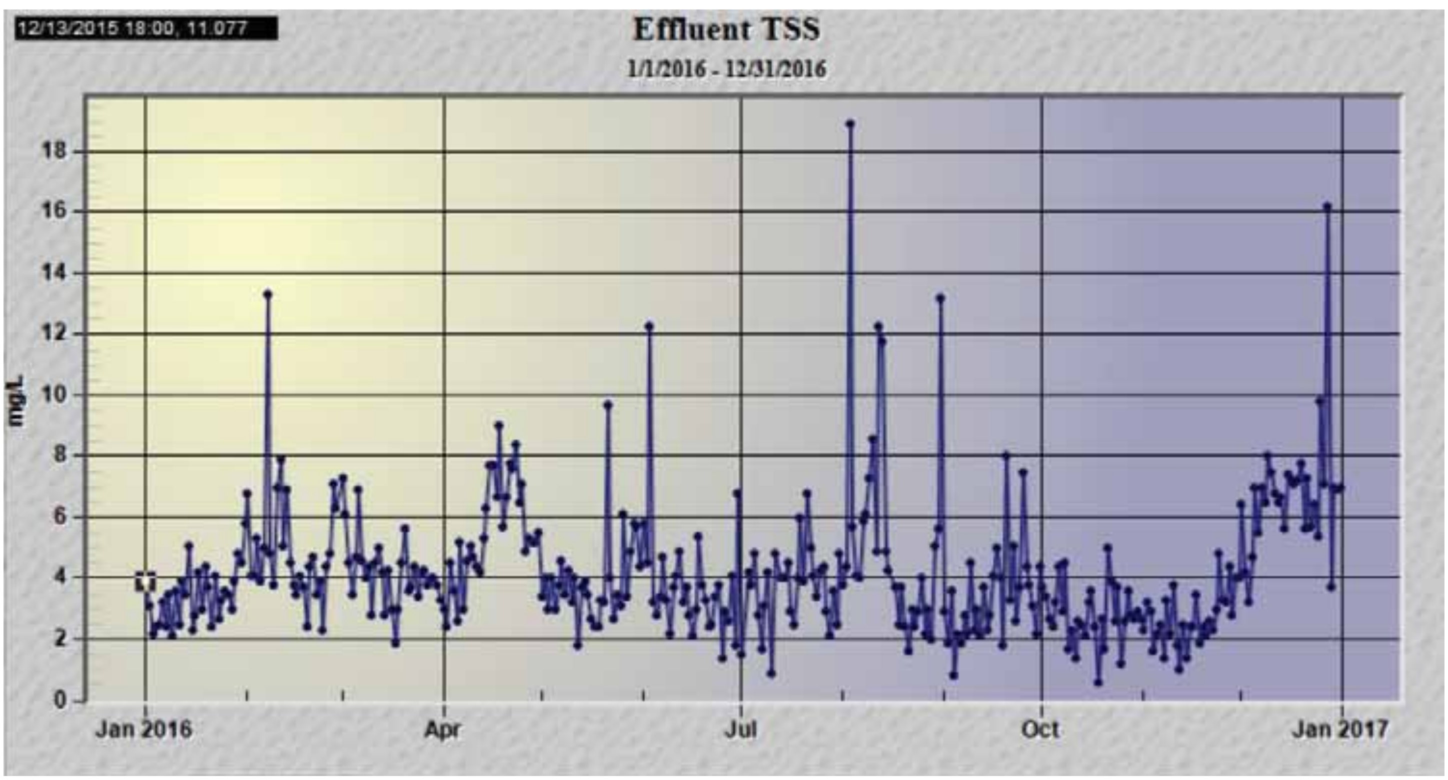
Appendix A

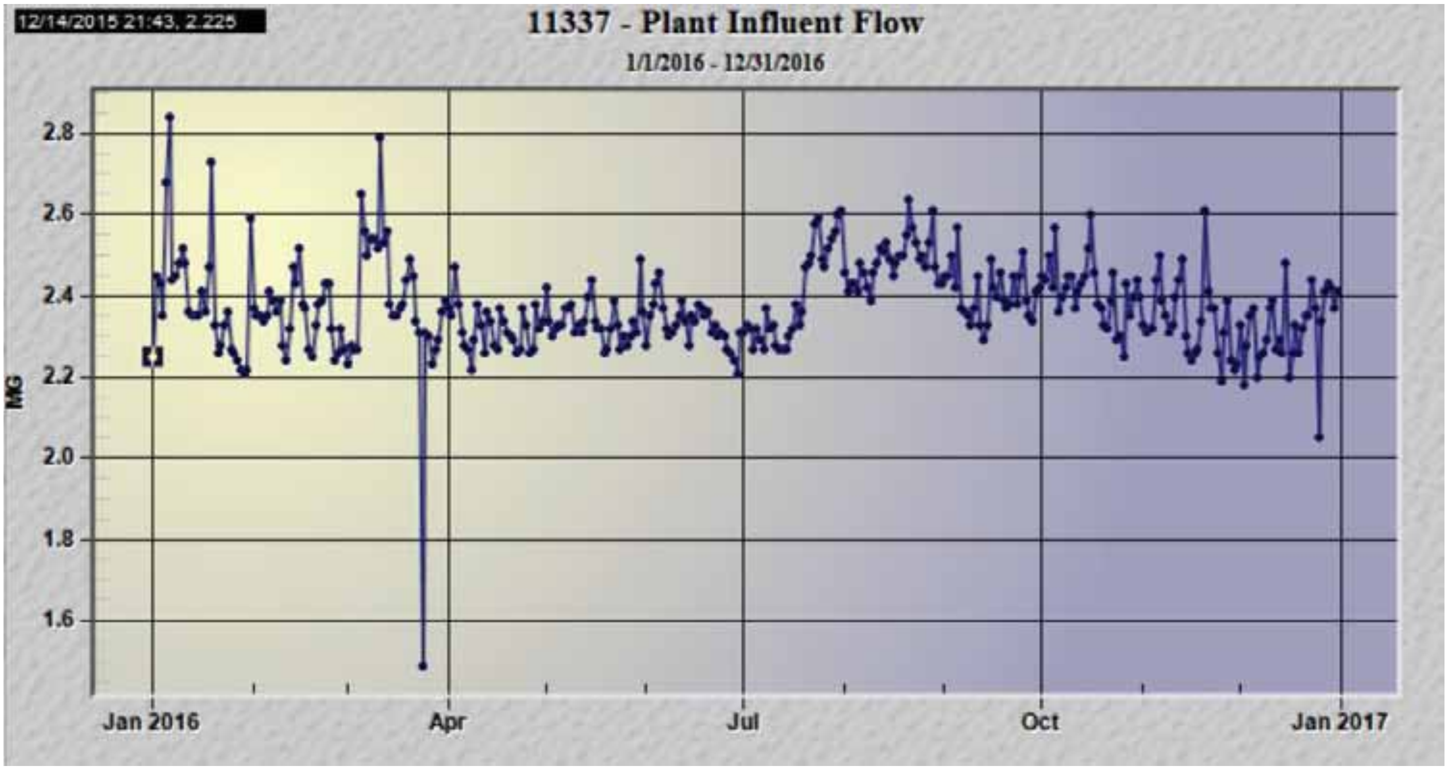
Performance Charts

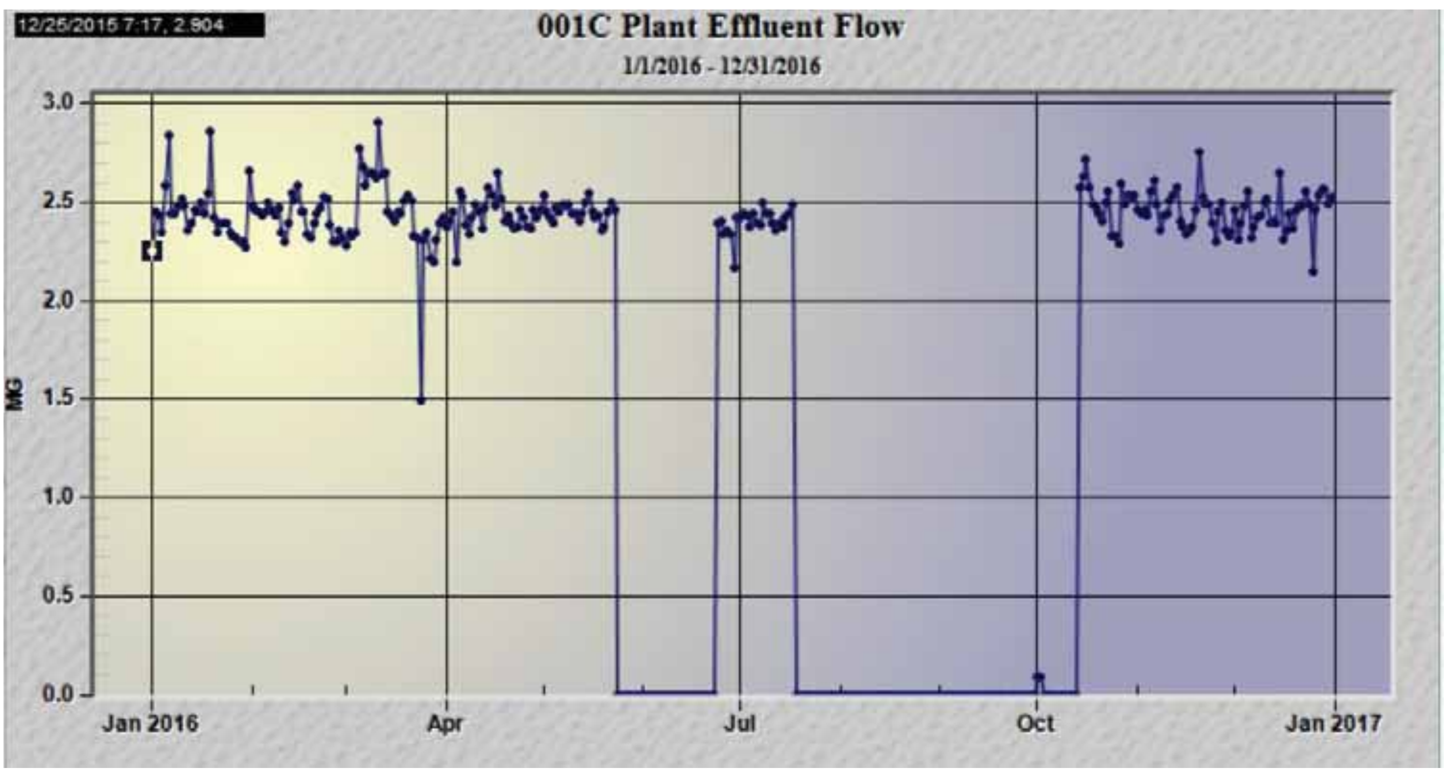

2/12/2016 2:47, 127.374
1011 - Inf BOD
1/4/2016 - 12/28/2016
mg/L
500
450
400
350
300
250
200
150
Jan 2016
Apr
Jul
Oct
Jan 2017

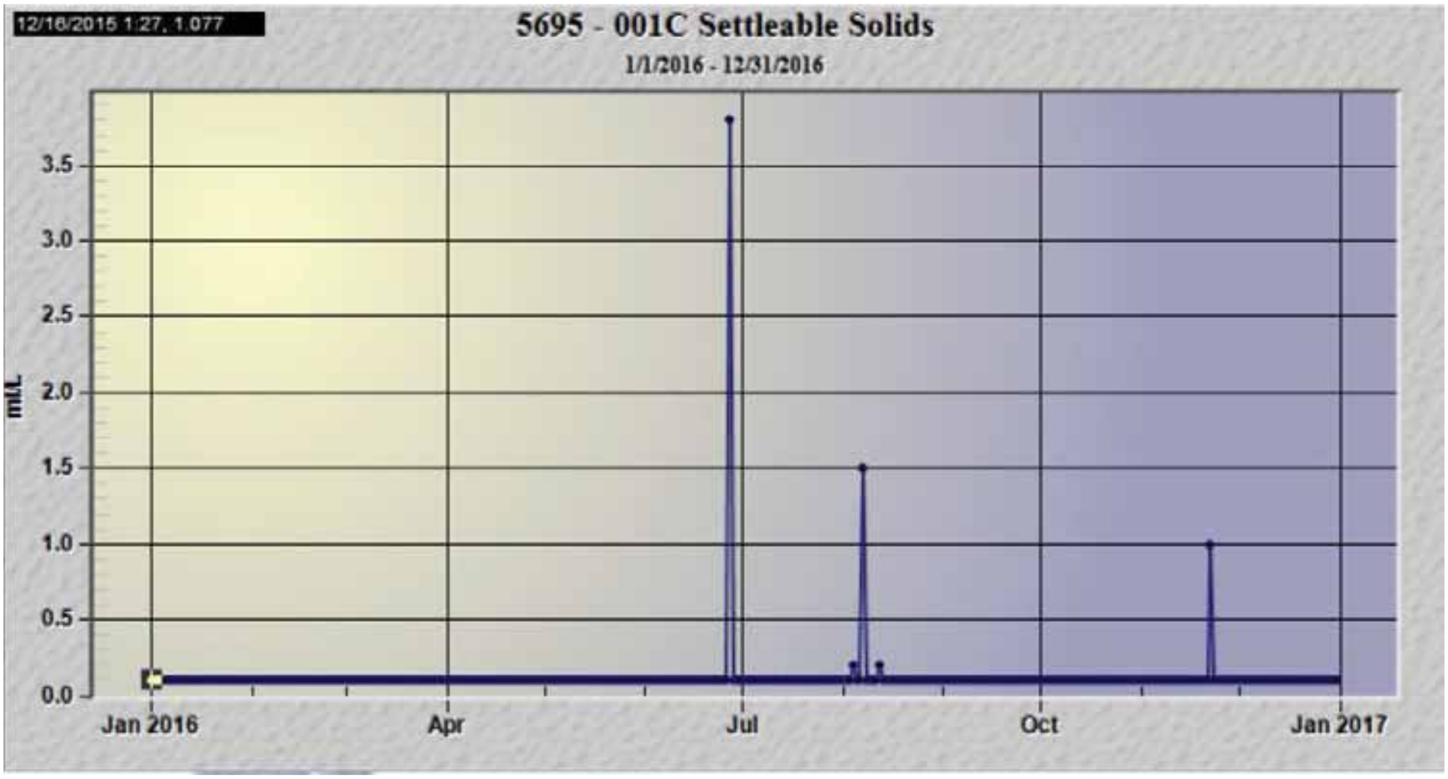

12/22/2015 2:01, 8.572
Effluent BOD
1/4/2016 - 12/28/2016
mg/L
9
8
7
6
5
4
3
2
Jan 2016
Apr
Jul
Oct
Jan 2017


12/13/2015 18:00, 1106.594
1021 - Inf TSS
1/1/2016 - 12/31/2016
1800
1600
1400
1200
1000
800
600
400
200
0
mg/L
Jan 2016
Apr
Jul
Oct
Jan 2017

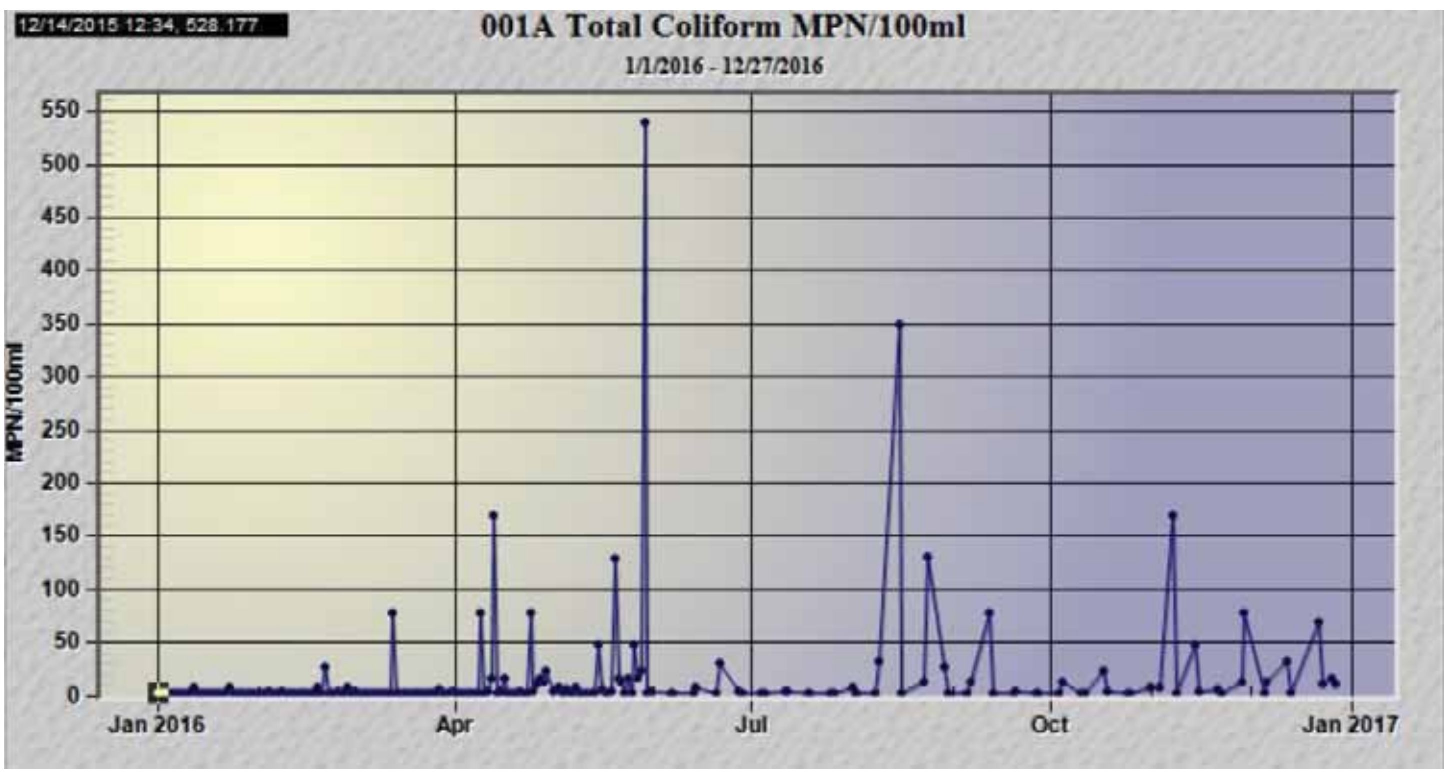

12/13/2015 18:00, 11.077
Effluent TSS
1/1/2016 - 12/31/2016
18
16
14
12
10
8
6
4
2
0
mg/L
Jan 2016
Apr
Jul
Oct
Jan 2017


12/14/2015 21:43, 2.225
11337 - Plant Influent Flow
1/1/2016 - 12/31/2016
2.8
2.6
2.4
2.2
2.0
1.8
1.6
MG
Jan 2016
Apr
Jul
Oct
Jan 2017

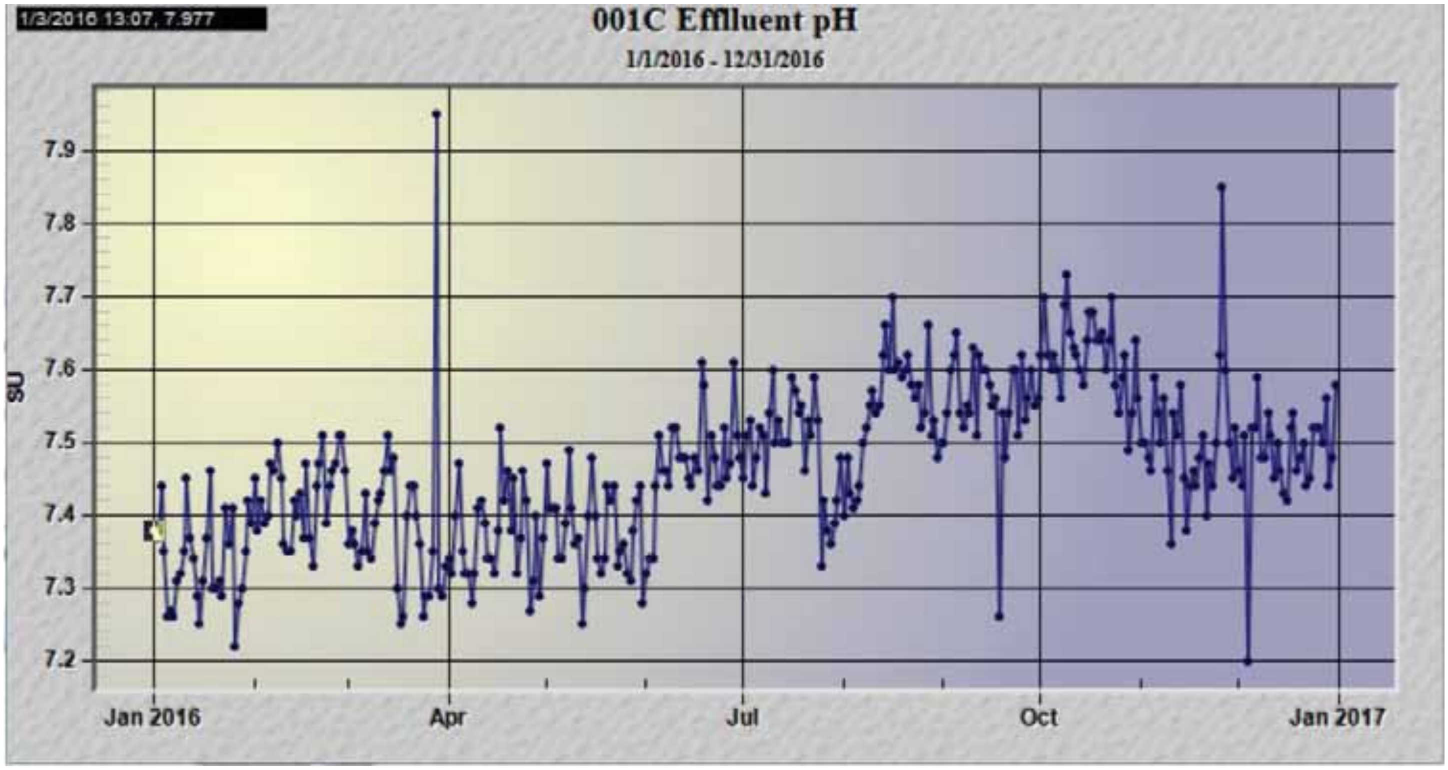

12/25/2015 7:17, 2.904
001C Plant Effluent Flow
1/1/2016 - 12/31/2016
3.0
2.5
2.0
1.5
1.0
0.5
0.0
MG
Jan 2016
Apr
Jul
Oct
Jan 2017

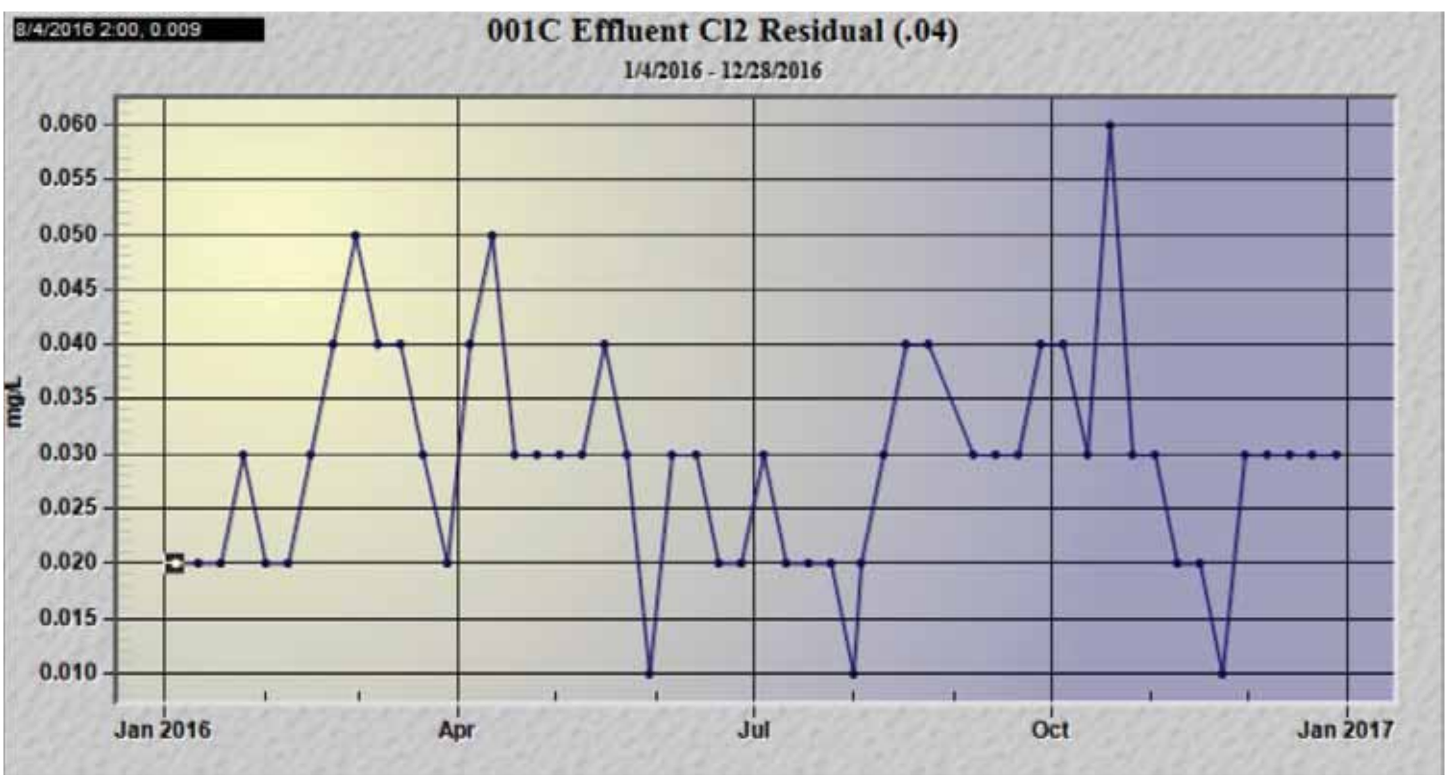


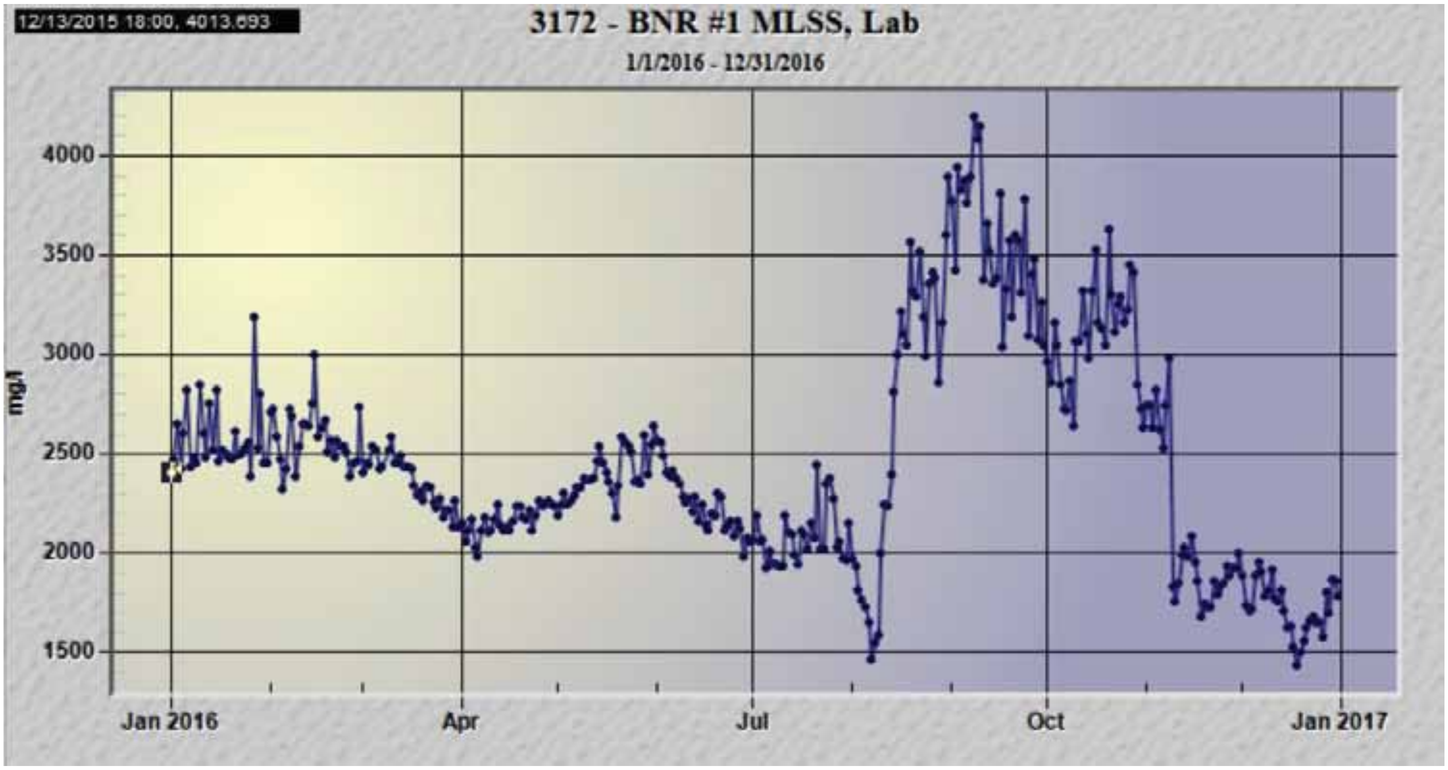
12/16/2015 1:27, 1.077
5695 - 001C Settleable Solids
1/1/2016 - 12/31/2016
mL
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Jan 2016
Apr
Jul
Oct
Jan 2017



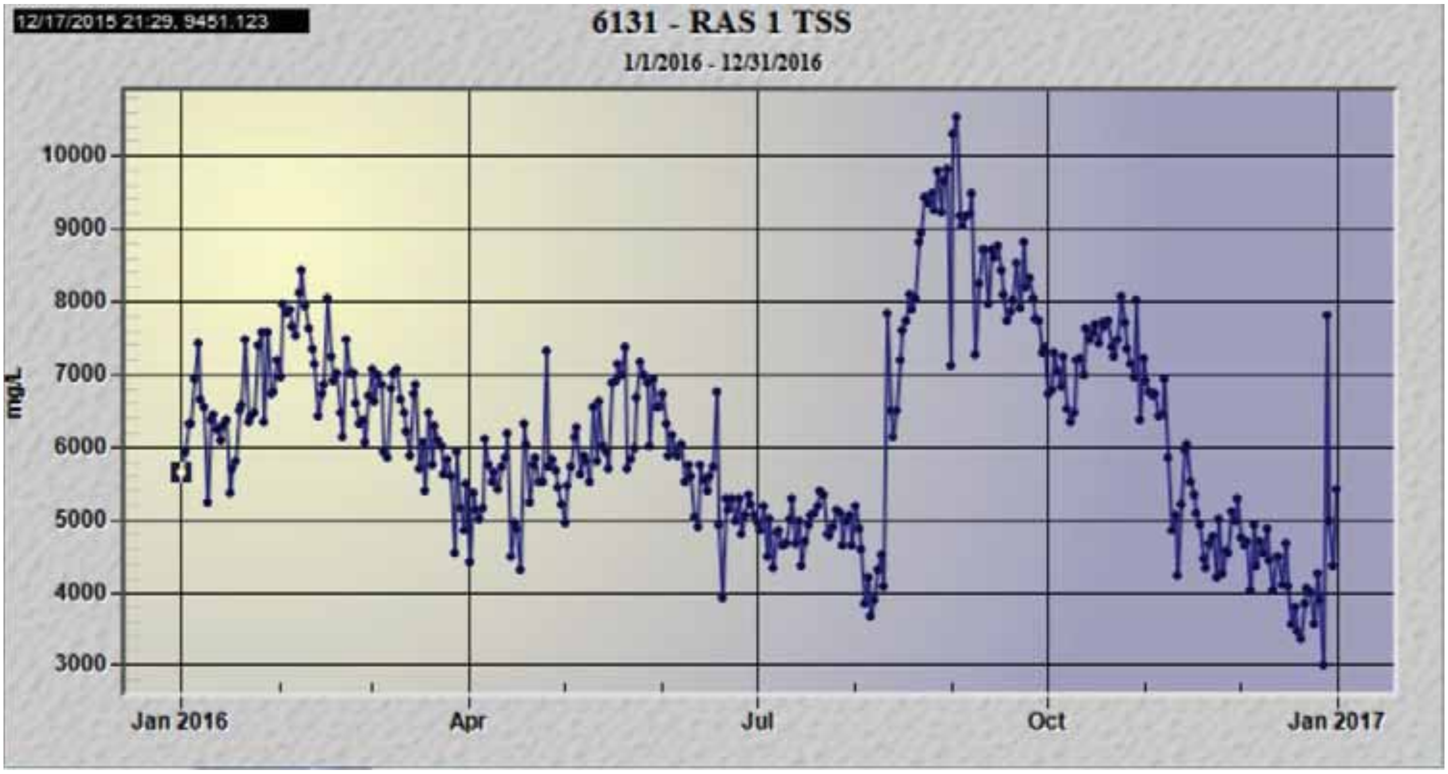
12/14/2015 12:34, 528.177
001A Total Coliform MPN/100ml
1/1/2016 - 12/27/2016
MPN/100ml
550
500
450
400
350
300
250
200
150
100
50
0
Jan 2016
Apr
Jul
Oct
Jan 2017

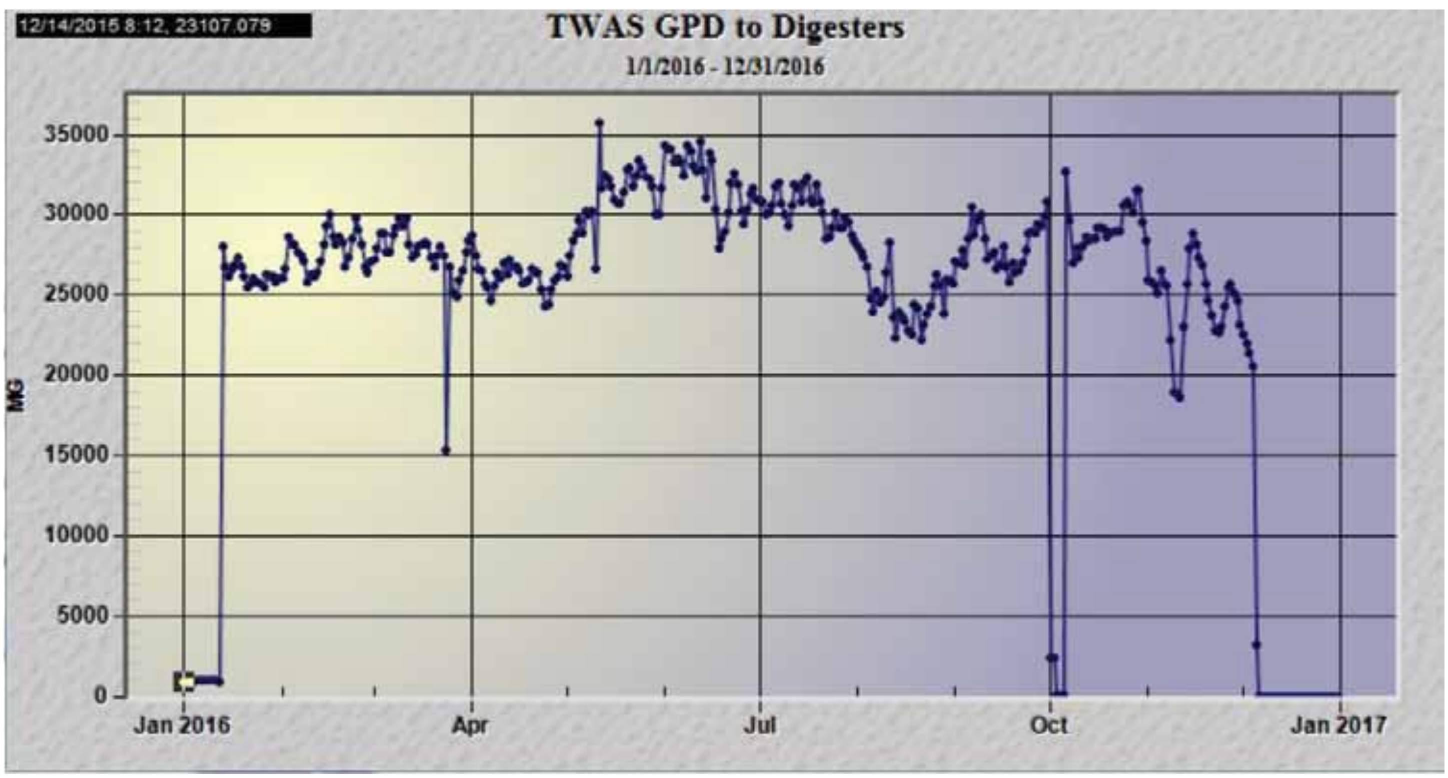

1/3/2016 13:07, 7.977
001C Effluent pH
1/1/2016 - 12/31/2016
SU
7.9
7.8
7.7
7.6
7.5
7.4
7.3
7.2
Jan 2016
Apr
Jul
Oct
Jan 2017

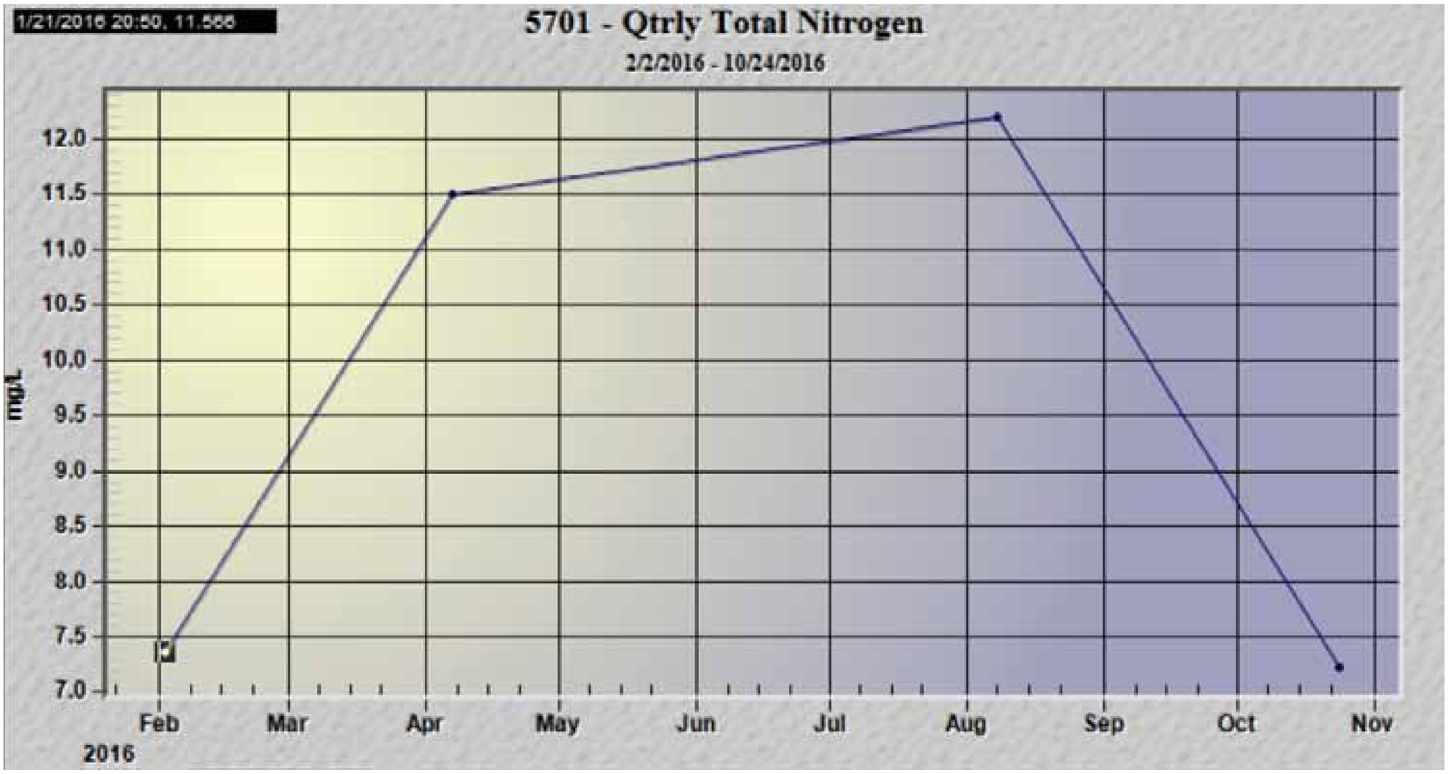

8/4/2016 2:00, 0.009
001C Effluent Cl2 Residual (.04)
1/4/2016 - 12/28/2016
mg/L
0.060
0.055
0.050
0.045
0.040
0.035
0.030
0.025
0.020
0.015
0.010
Jan 2016
Apr
Jul
Oct
Jan 2017


12/13/2015 18:00, 4013.693
3172 - BNR #1 MLSS, Lab
1/1/2016 - 12/31/2016
mg/l
4000
3500
3000
2500
2000
1500
Jan 2016
Apr
Jul
Oct
Jan 2017

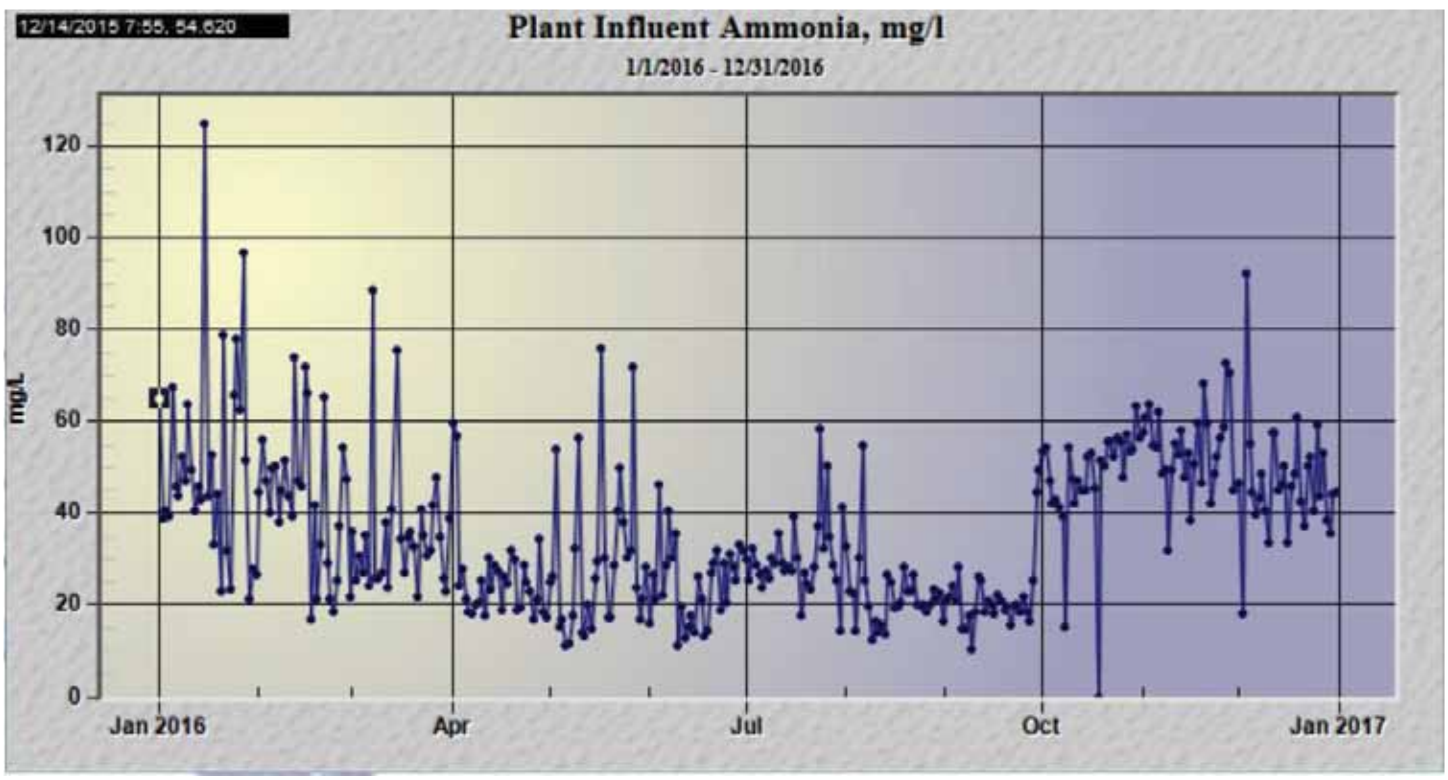

12/20/2015 18:48, 1481.113
BNR #2 MLSS, Lab
1/1/2016 - 12/31/2016
mg/l
3000
2500
2000
1500
1000
500
0
Jan 2016
Apr
Jul
Oct
Jan 2017


12/17/2015 21:29, 9451.123
6131 - RAS 1 TSS
1/1/2016 - 12/31/2016
mg/L
10000
9000
8000
7000
6000
5000
4000
3000
Jan 2016
Apr
Jul
Oct
Jan 2017

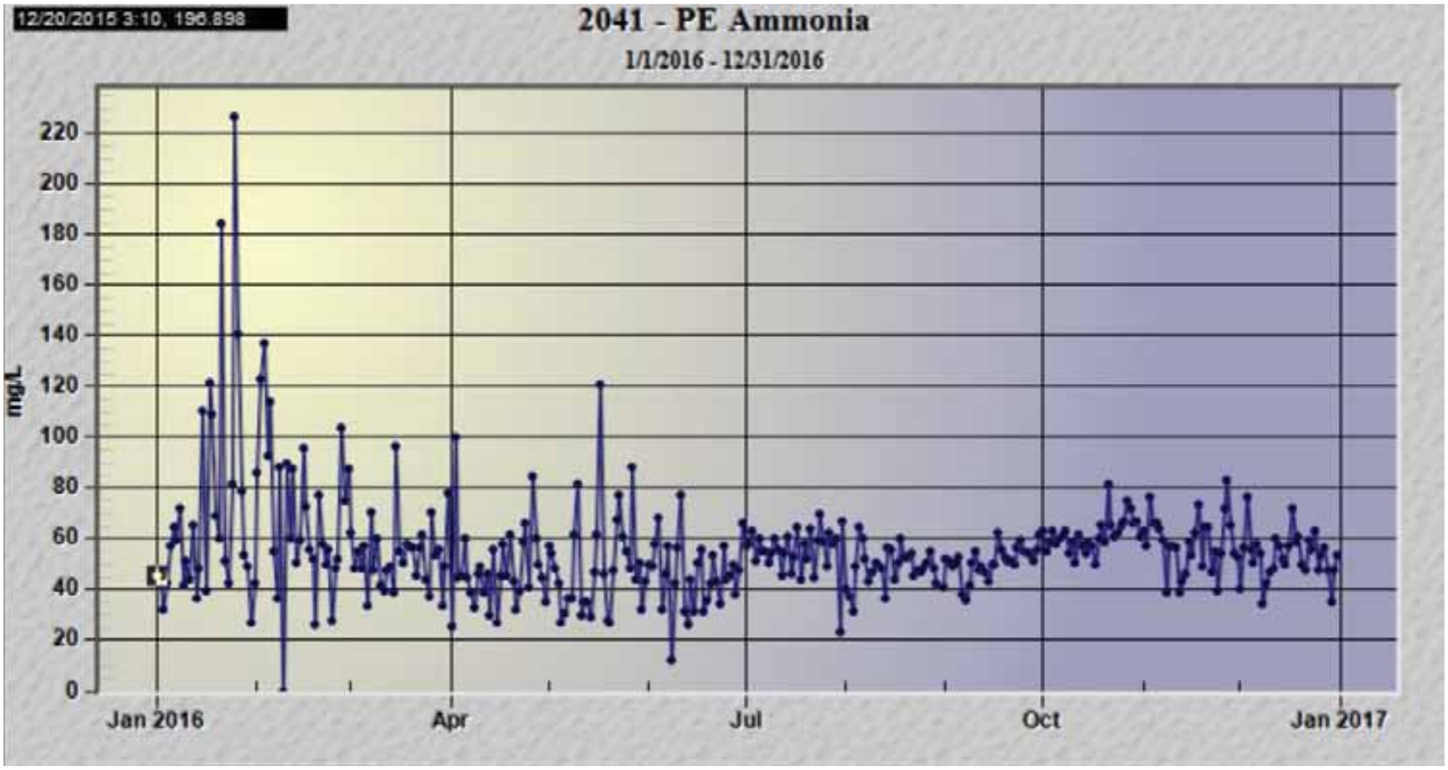

12/14/2015 8:12, 23107.079
TWAS GPD to Digesters
1/1/2016 - 12/31/2016
MG
35000
30000
25000
20000
15000
10000
5000
0
Jan 2016
Apr
Jul
Oct
Jan 2017



1/21/2016 20:50, 11.566
5701 - Qtrly Total Nitrogen
2/2/2016 - 10/24/2016
mg/L
12.0
11.5
11.0
10.5
10.0
9.5
9.0
8.5
8.0
7.5
7.0
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
2016



12/14/2015 7:55, 54.620
Plant Influent Ammonia, mg/l
1/1/2016 - 12/31/2016
mg/L
120
100
80
60
40
20
0
Jan 2016
Apr
Jul
Oct
Jan 2017


12/20/2015 3:10, 196.898
2041 - PE Ammonia
1/1/2016 - 12/31/2016
mg/L
220
200
180
160
140
120
100
80
60
40
20
0
Jan 2016
Apr
Jul
Oct
Jan 2017

2016 Toxicity Compliance Summary

		1st. Q. 2016	2nd. Q. 2016	3rd. Q. 2016	4th. Q. 2016
Sample Point		001C	001C	001C	001C
Sample Date		1/27/2016	4/16/2015	8/30/2016	10/25/2016
Test Species					
Acute 96 Hour Fathead Minnow	Survival %	100%	100%	100%	100%
	Growth TUa	0	0	0	0
Chronic Fathead Larvae Survival	NOEC	100%	100.00%	100.00%	100.00%
	TUc	1	1	1	1
	IC25	>100%	>100 %	>100%	>100%
	IC50	>100%	>100%	>100%	>100%
Chronic Fathead Larvae Growth	NOEC	100%	100.00%	100.00%	100.00%
	TUc	1	1	1	1
	IC25	>100%	>100 %	>100 %	>100%
	IC50	>100%	>100%	>100%	>100%
Acute 96 Ceriodaphnia	Survival %				
	Growth TUa				
Chronic Ceriodaphnia Survival	NOEC	100%	100.00%	100.00%	100.00%
	TUc	1	1	1	1
	IC25	>100%	>100 %	>100 %	>100%
	IC50	>100%	>100%	>100%	>100%
Chronic Ceriodaphnia Reproduction	NOEC	100%	100.00%	<100.00%	100.00%
	TUc	1	1	1	1
	IC25	>100%	>100%	83.88%	>100.00%
	IC50	>100%	>100%	>100.00%	>100.00%
Chronic Selenastrum Algae	NOEC	100.00	100%	100.00%	100.00%
	TUc	1	1	1	1
	IC25	>100%	>100%	>100%	>100%
	IC50	>100	>100%	>100%	>100%

River Flow Information for live surface water sampling implementation.

2016