

# CITY OF SCOTTS VALLEY WASTEWATER TREATMENT FACILITY ANNUAL REPORT 2008

## Plant Summary and Compliance

We are proud to report that for the ninth straight year, the City did not record a single discharge violation. For the year 2008, effluent suspended solids averaged 9.0 mg/L (a 96.5% removal rate), effluent cBOD's averaged 3 mg/L (a 98.3% removal rate), and effluent BOD's averaged 5 mg/L (a 98.2% removal rate). Our compliance record is a direct result of a very knowledgeable and dedicated treatment plant staff that takes pride in their work and protecting the environment.

Recycled water usage reached a new high as a total of 48.14 million gallons of recycled water was used for irrigation at local parks, schools and residences in 2008. The Scotts Valley Water District continues to pursue additional recycled water users so we anticipate increased usage again in 2009.

We said goodbye to Robert Huber in 2008. Robert has been the plant's Senior Laboratory Analyst for the past 23 years! Robert left in July to retire in Colorado, however, he's only quasi-retired as he stays busy teaching at a local college. A couple of important acknowledgements are warranted in Robert's immediate absence. First, Operator II, Mark Cattera jumped in and took over the lion's share of the laboratory duties while the City recruited for a new Senior Lab Analyst. Mark has been with the City for 27 years and his cross training in operations and laboratory served himself and the City well during this transitional period. Secondly, we would like to acknowledge Interim Laboratory Director Robert (Bob) Barrett. Bob is a recently retired manager from the City of Santa Cruz Water Quality Laboratory who has been working for Scotts Valley on a contract basis until the City hired a permanent Senior Lab Analyst. Bob's experience and leadership skills have been a real asset to the City as Bob not only oversees all laboratory functions, including reporting and ELAP certification, but Bob played a key role in the recruitment process for the Senior Lab Analyst position. To complete this story, we are pleased to report that the City hired Kathleen (Kati) King as the City's new Senior Laboratory Analyst. Kati started as of the first of 2009 and comes to the City with many years of experience working in a local private laboratory.

A portion of the City's effluent force-main had to be relocated in 2008 to make way for a new pedestrian bridge that the City of Santa Cruz constructed. The City's 12-inch force main pipe travels 7.5 miles from Scotts Valley to Santa Cruz before discharging into the Pacific Ocean. To accommodate the new bridge that now spans the San Lorenzo River we had to relocate approximately 150-feet of pipeline at the end of Felker Street on the river levee. It took a complete plant shut-down for seven hours to allow the contractor the time needed to cut into the existing pipe and divert flow to the newly installed section. During the shut-down, plant flow was stored in the emergency storage cells of

the flow equalization basin. These storage cells are typically used during extreme rain events. Plant process flows were returned to normal by the end of the work day and there were no adverse affects to the treatment process.

## **Laboratory**

Throughout 2008, City of Scotts Valley Wastewater Reclamation Facility Laboratory maintained Certification requirements of the California Department of Public Health Environmental Laboratory Accreditation Program (ELAP). The laboratory was last inspected by ELAP in November 2007, and responded to all corrective action requirements. The laboratory successfully participated in performance evaluation studies in 2008. The laboratory holds ELAP Certificate No. 1062 which expires on December 31, 2009.

In order to ensure continuity of laboratory functions during the vacancy and transition to a new laboratory analyst we hired an interim Laboratory Director under the guidelines of 22 CCR §64817. Robert Barrett was approved to serve as our interim Laboratory Director by ELAP. Laboratory operations continued through the end of 2008 under the supervision of the interim director. The laboratory analyst job specifications were updated and a new analyst was hired to begin on January 5<sup>th</sup>, 2009. Kati King's qualification information to serve as Laboratory Director was submitted to DPH-ELAP in December for their approval. Robert Barrett will be retained to assist Kati as she familiarizes herself with our laboratory operation.

Total coliform and enterococcus testing by the Quanti-Tray™ method was implemented this year. The Regional Water Quality Control Board has approved our use of Quanti-Tray™ for total coliform in recycled water. We received ELAP approval for enterococcus by Quanti-Tray™. Other test methods have remained the same.

All monitoring data reported for compliance with NPDES effluent limits was determined by laboratories certified by the ELAP. Laboratories used during 2008 were:

### Inorganic Chemistry and Microbiology:

City of Scotts Valley Wastewater Reclamation Facility Lab  
700 Lundy Lane  
Scotts Valley, CA 95066  
ELAP Certificate No. 1062

Soil Control Lab  
42 Hanger Way  
Watsonville, CA 95076  
ELAP Certificate No. 1494

### Metals and Organic Chemistry:

McC Campbell Analytical, Inc.  
1534 Willow Pass Road  
Pittsburg, CA 94565  
ELAP Certificate No. 1644

Bioassay Testing:

Aquatic Testing Laboratories  
4350 Transport Street, Unit 107  
Ventura, CA 93003  
ELAP Certificate No. 1775

Annual HVWS:

California Department of Fish and Game  
2005 Nimbus Road  
Rancho Cordova, CA 95670  
ELAP Certificate No. 1622

Frontier Analytical Laboratory  
5172 Hillsdale Circle  
El Dorado Hills, CA 95762  
NELAP Certificate No. 02113CA

## **Lift Stations**

The City of Scotts Valley owns and operates seven lift stations at various locations throughout the City. All stations are inspected three times each week. During these routine inspections, hour readings are taken to verify normal running times and flow throughput, each pump is individually started and stopped to ensure proper operation, and wet-wells are visually inspected to confirm water levels with digital level reading on automatic pump controllers. Once each week, stations equipped with permanent emergency generators are tested on emergency power to ensure proper operation. Five stations are equipped with permanent emergency stand-by power. At this time, no other stations require permanent on-site emergency power, as limited flows allow ample time for City staff to respond to alarm conditions and provide portable generator power prior to overflows occurring.

All of the City's seven stations have back-up pumps and alarm systems that automatically call 24-hour emergency personnel in case of a power outage or high-level conditions.

## **Collection System**

Staff responded to two overflows in 2008. On January 9, crews responded to an overflow at 560 Bethany Drive. A manhole in front of the maintenance shop at Bethany Bible College was seeping water. The small spill was estimated at 15 total gallons and a hydro-jet truck was used to clean the line. The second spill was located at a private residence at 121 Sunset Terrace Drive and was estimated at 90 gallons. Crews cleared the partial blockage with a hydro-jet truck.

The City's sanitary sewer collection system is made up of approximately 40 miles of pipeline. City crews spend an average of one to two days each week performing preventative maintenance, using a combination vacuum/hydro-jet truck to clean the lines.

## **Source Control Program**

### Industrial:

There are two significant industrial users remaining in the City of Scotts Valley, AVIZA Technology Inc. and ThermoFisher. Both are categorical industries with AVIZA a semiconductor manufacturer (40 CFR 469.18) and ThermoFisher (formerly Thermo Kevex) a metal finisher (40 CFR 433.15).

AVIZA self-reported excursions in metals and total toxic organics during 2008, but upon further examination of the reports it was realized that it was an error in units calculations. The analytical laboratory reported both metals and volatile compounds in micrograms/liter, but AVIZA had reported the values in milligrams/liter. Several of the industrial processes that previously discharge to the sanitary sewer are no longer in operation (six of the nine processes are currently inactive). Industrial wastewater discharges from this site have decreased dramatically.

ThermoFisher had one excursion for nickel in their wastewater discharge exceeding their permitted effluent limit during the second quarter of 2008. No interference or upset was caused at the WWTF. The City was notified and the resample of the effluent was within permissible limits.

**Groundwater Remediation:** There is now a groundwater pump and treat site discharging to the sewer in the City of Scotts Valley, under a permit. The responsible parties for the site are Shell Oil Products US and ConocoPhillips, and the treatment system and reporting is managed by Delta Consultants. Discharge began on March 7, 2008. The site has met all permit conditions to date.

All categorical industries and the groundwater pump and treat site in the City were monitored and permitted through the pretreatment program in 2008.

### Grease Trap Installation and Maintenance:

The fats, oils, and greases (FOG) program is in place with most facilities operating in compliance with local ordinances. Source Control continues to routinely inspect and monitor the conditions of the grease interceptors operating in Scotts Valley. A Best Environmental Management Practices pamphlet is being used as a training tool for local restaurant managers and owners.

## **Maintenance and Repairs**

- Installed new 18-inch influent flow meter.
- Modified chlorine contact basin to increase size of submersible pump pit for cleaning purposes.
- Replaced quartz sleeves on all UV lamps for recycled water disinfection.
- Installed new drive motor for recycled water pump P-502.
- Repaired and modified brush cleaning assembly on clarifier #3.
- Installed new dissolved oxygen probes at aeration basins.
- Relocated section of 12-inch effluent force-main pipe in Santa Cruz on the San Lorenzo River levee to make way for new pedestrian bridge.
- Installed new diversion pump P-22 for recycled water system.
- Rebuilt jet aeration pump and placed back in service.
- Replaced check valves for RAS/WAS pumping system.
- Performed annual blower maintenance.

## **O & M Manual**

The plant's main operations and maintenance manual (O&M) was not changed during 2008; however, the plant's O&M manual library was updated to include new equipment that was placed into service over the past year. Updating the plant's O&M manual takes place on an ongoing basis. We have one O&M manual that is used for operational guidelines and minor service to plant equipment. We also catalog individual O&M's for every piece of equipment in place at the treatment plant, collection system, and lift stations.

## **Training**

- All staff was retrained in the plant's annual Red Cross Adult CPR certification program.
- All staff took part in training on the proper use of fire extinguishers. Training was provided by the Scotts Valley Fire Department.
- All staff participates in the plant's in-house safety/training meetings that are conducted every other Wednesday throughout the year.

- Operations staff participated in several one-day training classes and seminars related to wastewater treatment operations and maintenance.
- Operator II, Ted Domingos, attended the CWEA Northern Regional Training Conference in September.

## **Public Outreach/Education**

The Monterey Bay Area Green Business Program continues to thrive. Goals of the green business program include promoting pollution prevention, waste minimization, and implementing best management practices that go above and beyond the regulatory standards. A Task Force consisting of multimedia regulators (stormwater, air, hazardous materials, as well as wastewater) and several non-profit organizations continue to meet every quarter to coordinate the program. The program was expanded to begin certifying restaurants in July of 2004, plumbers in 2005, and office/retail facilities in 2006. In 2007, the program expanded to begin working with hotels/hospitality, custodial companies, beauty salons, and laundromats. In 2008, the program is now capable of servicing wineries, painters, and landscapers. A significant portion of the program for restaurants, hotels, and plumbers is dedicated to minimizing fats, oils, and grease (FOG) into the sanitary sewer.

Currently, the Program has certified, or is in the process of certifying, 185 businesses; this is up from 79 in 2007. There has been a dramatic increase in the number of businesses certified and the expansion of existing criteria to incentivize participation in innovative programs. Several new jurisdictions joined the program in 2008, including San Benito County, several areas in Monterey County, and the City of Santa Cruz. Seven businesses are now certified in the City of Scotts Valley, including the Water District and City Hall. Plans are underway to begin advertising these businesses in a local newspaper.

City Staff, in collaboration with the County of Santa Cruz and other City agencies, were successful in obtaining a grant from the California Integrated Waste Management Board (CIWMB) in order to implement a pharmaceutical and sharps disposal program. The goal of the program was to provide a convenient and permanent system to collect used sharps and unwanted pharmaceuticals in the County of Santa Cruz. The County established 30 convenient, widely publicized, and well-known locations throughout the region for drop-off of sharps and pharmaceutical waste. Most of the sites are pharmacies, in addition one medical facility, all of the local household hazardous waste (HHW) facilities, and the Santa Cruz Police Station. There are three such sites in the City of Scotts Valley: two are pharmacies and one is a medical office. A plan has been worked out with Hospice of Santa Cruz County to begin a legal, Drug Enforcement Agency (DEA)-approved mail-back program for controlled substances.

The program, dubbed Sharp Solutions for Home Medicines, has been highly publicized in the local media (see attached outreach material). Several newspaper articles were written. Newspaper, television, and radio commercials were aired to communicate the

program to the public. A kick-off collection event was held to collect stockpiles of large quantities of sharps and pharmaceutical waste from households on October 4<sup>th</sup>, 2008. A total of 703 pounds of medicines were collected at the one-day event and diverted from local wastewater and landfills. Additionally, 203 pounds of sharps were also brought in for sterilization and proper disposal. A total of 298 residents brought in their medicines or sharps for disposal at the event. Five pharmacies participated in the event: Horsnyders Pharmacy, New Leaf Market Pharmacy in Felton, Watsonville Pharmacy, Lauden Pharmacy in Capitola, and Westside Pharmacy in Santa Cruz.

The program will continue to collect household medicines and sharps to reduce water pollution and public health risks at the 30 permanent collection sites. Through this program, large quantities of pharmaceutical waste and sharps have been diverted from improper waste disposal channels such as the sewer systems and storm drains.

The City participated in a program funded by the Environmental Protection Agency (EPA), Region 9 to collect used fryer oil from local restaurants, turn it into biodiesel, and use the resulting blended biodiesel product in heavy equipment in public fleets. The Program, called the Fryer to Fuel Program, resulted in 9,947 gallons of waste oil collected over an 8-week period, improved storage practices of tallow, dramatically improving an ongoing water quality threat, and increased the collaboration and communication between the food service and tallow collection industries. The pilot program enrolled 31 of the largest waste oil producers in Santa Cruz County including UCSC, the Santa Cruz Wharf, the Capitola Mall, and multiple strip malls and large shopping complexes; two of which are in Scotts Valley.

From April 2008 to March 2009 it is expected that the Fryer to Fuel program will collect and process enough waste oil to produce 208,000 gallons of a B20 biodiesel blend to be used in public diesel fleets. This program has furthered the City's efforts to reduce fats, oils, and grease in the sewer, while also developing a local sustainable fuels industry. The BMPs for Fryer to Fuel have been incorporated into an existing BMP pamphlet for restaurants.

**Electronic Waste:** On Saturday, September 13, 2008, the City of Scotts Valley conducted its 6<sup>th</sup> annual e-waste collection event. The City collected 30,000 pounds of electronics, mostly in the form of computers, monitors and television sets, from over 300 participants. These items are now banned from landfill disposal because of their hazardous material content of lead, mercury, and other heavy metals. This event insures that the items collected will be properly reused, recycled, and disposed of and will not become a source of pollution to local rivers, streams and groundwater supplies.

**Appliance & Tire Collection:** The City of Scotts Valley held its 5<sup>th</sup> annual Appliance and Tire Collection Event on Saturday, October 11. The 80 participants dropped off a total of 98 appliances and 158 tires. Scrap metal from appliances was shredded, melted and made into new metal products. Collected tires were ground into small pieces and will be recycled into rubber playground surfaces and rubber floor mats.

On an annual basis, the treatment plant staff provides a number of ongoing public outreach/education services. Some of those services include:

- Oil Recycling: As a member of the County's regional oil recycling program, the City distributes oil recycling containers to local automotive supply stores where they are distributed to residents at no cost. The 2.5 gallon used oil containers have labels containing information on proper disposal practices and can be used throughout the county in any curbside collection program as part of the integrated regional program.
- Christmas Tree Recycling: Every year following the Thanksgiving Holiday on their three-times-weekly lift station rounds, operations staff delivers bundles of informational flyers to local Christmas tree vendors for distribution to residents and businesses. Flyers contain information on free tree collection and drop-off locations so that trees can be chipped and reused.
- As always, plant tours are encouraged and given upon request to any person or group wishing to learn about the treatment process. Several individual and group tours were given in 2008.

## NPDES PERMIT VIOLATIONS 2000-2008

	2000	2001	2002	2003	2004	2005	2006	2007	2008
January	0	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0	0
April	0	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0	0
June	0	0	0	0	0	0	0	0	0
July	0	0	0	0	0	0	0	0	0
August	0	0	0	0	0	0	0	0	0
September	0	0	0	0	0	0	0	0	0
October	0	0	0	0	0	0	0	0	0
November	0	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0
<b>Compliance</b>	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

**TABLE 1**

**2008 PLANT FLOW AND RAINFALL**

	Total Flow Million Gallons	Effluent Daily Flow MGD	Total Plant Flow MGD	Effluent Inst. Max. MGD	Recycled Total Flow Million Gallons	Rainfall Inches
January	36.731	1.182	1.185	3.93	0.102	19.82
February	32.330	1.114	1.115	3.84	0.021	7.53
March	27.709	0.807	0.894	3.81	2.680	0.34
April	25.133	0.716	0.838	3.74	3.656	0.40
May	24.616	0.583	0.794	2.35	6.556	0.00
June	24.457	0.547	0.815	2.42	8.047	0.00
July	24.268	0.525	0.783	2.23	8.005	0.00
August	24.566	0.571	0.792	2.35	6.879	0.00
September	24.131	0.606	0.804	3.40	5.962	0.00
October	24.857	0.661	0.802	2.38	4.382	1.73
November	25.883	0.824	0.863	2.83	1.156	5.31
December	26.176	0.826	0.844	2.30	0.579	4.64
<b>Total</b>	320.857				48.025	39.77
<b>Average</b>	26.738	0.747	0.877	2.97	4.002	3.31
<b>Maximum</b>	36.731	1.182	1.185	3.93	8.047	19.82
<b>Minimum</b>	24.131	0.525	0.783	2.23	0.021	0.00

ADDWF, MGD	0.798
including recy.	

**TABLE 2****2008 Influent & Effluent Suspended Solids**

	Influent mg/L	Effluent mg/L	Effluent lb/day	Percent Removal
<b>January</b>	245	7	67	97.1%
<b>February</b>	247	10	87	96.0%
<b>March</b>	238	10	71	95.8%
<b>April</b>	245	6	35	97.6%
<b>May</b>	268	7	31	97.4%
<b>June</b>	278	8	43	97.1%
<b>July</b>	260	8	34	96.9%
<b>August</b>	273	15	63	94.5%
<b>September</b>	230	10	49	95.7%
<b>October</b>	253	12	62	95.3%
<b>November</b>	242	6	38	97.5%
<b>December</b>	266	9	64	96.6%
<b>Average</b>	254	9	54	96.5%
<b>Maximum</b>	278	15	87	97.6%
<b>Minimum</b>	230	6	31	94.5%

**TABLE 3****2008 Influent & Effluent BOD & cBOD**

	Influent BOD mg/L	Effluent BOD mg/L	Effluent BOD lb/day	Percent Removal	Influent cBOD mg/L	Effluent cBOD mg/L	Effluent cBOD lb/day	Percent Removal
January	243	4	39	98.4%	179	3	30	98.3%
February	230	5	43	97.8%	170	4	31	97.6%
March	242	6	38	97.5%	184	3	23	98.4%
April	248	3	18	98.8%	173	2	13	98.8%
May	279	4	17	98.6%	221	2	11	99.1%
June	288	7	36	97.6%	255	3	18	98.8%
July	255	4	17	98.4%	210	3	12	98.6%
August	274	7	30	97.4%	172	5	20	97.1%
September	274	4	23	98.5%	229	4	21	98.3%
October	305	5	26	98.4%	195	5	24	97.4%
November	314	4	24	98.7%	198	3	19	98.5%
December	352	4	25	98.9%	232	3	21	98.7%
<b>Average</b>	275	5	28	98.2%	202	3	20	98.3%
<b>Maximum</b>	352	7	43	98.9%	255	5	31	99.1%
<b>Minimum</b>	230	3	17	97.4%	170	2	11	97.1%

**TABLE 4****2008 Tertiary Effluent Nitrogen**

	Tertiary Ammonia mg/L as N	Tertiary Organic N mg/L as N	Tertiary Nitrate mg/L as N	Tertiary Nitrite mg/L as N	Influent Total N mg/L as N	Tertiary Nitrogen Removal Percent
January	< 0.4	1.2	2.6	< 0.1	44	> 90.2%
February	< 1.1	1.0	4.6	< 0.1	40	> 82.9%
March	2.2	1.9	3.8	< 0.1	65	> 87.8%
April	2.0	1.5	3.5	< 0.1	55	> 87.1%
May	2.3	1.3	4.0	< 0.2	59	> 86.8%
June	1.9	1.4	4.2	< 0.1	55	> 86.2%
July	< 0.3	1.6	5.2	< 0.1	43	> 83.2%
August	< 0.5	1.3	4.6	< 0.1	54	> 87.9%
September	< 0.5	1.2	3.1	< 0.1	58	> 91.6%
October	0.7	2.4	5.0	< 0.1	66	> 87.6%
November	< 0.3	1.6	2.6	< 0.2	64	> 92.9%
December	< 0.3	1.6	6.4	< 0.2	63	> 87.2%
	*median			*median		
Average	< 0.6	1.5	4.1	< 0.1	56	> 87.6%
Maximum	2.3	2.4	6.4	< 0.2	66	> 92.9%
Minimum	< 0.3	1.0	2.6	< 0.1	40	> 82.9%

**TABLE 5****2008 Influent & Effluent pH and Effluent Turbidity, Settleable Solids, and Oil & Grease**

	Influent pH units	Effluent pH units	Effluent Turbidity NTUs	Effluent Settleable Solids mL/L	Effluent Oil & Grease mg/L*	Effluent Oil & Grease lb/day*
January	8.1	7.1	3.3	< 0.10	< 5.0	< 49.3
February	8.0	7.0	5.1	< 0.10	< 5.0	< 44.5
March	8.1	7.0	5.1	< 0.10	< 5.0	< 32.0
April	8.2	7.1	2.9	< 0.10	< 5.0	< 30.1
May	8.2	7.1	3.4	< 0.10	16.0	85.5
June	8.1	7.2	5.4	< 0.10	< 5.0	< 30.1
July	8.1	7.1	6.0	< 0.10	< 5.0	< 13.2
August	8.1	7.2	10.0	< 0.10	< 5.0	< 22.6
September	8.2	7.1	3.8	< 0.10	5.0	23.8
October	8.2	7.2	5.7	< 0.10	5.0	25.0
November	8.2	7.2	3.6	< 0.10	< 5.0	< 37.9
December	8.2	7.1	4.7	< 0.10	< 5.0	< 28.2
					*median	*median
Average	8.1	7.1	4.9	< 0.10	< 5.0	< 30.1
Maximum	8.2	7.2	10.0	< 0.10	16.0	85.5
Minimum	8.0	7.0	2.9	< 0.10	< 5.0	< 13.2

**TABLE 6****2008 Effluent Chlorine Residual and Bacteriological Quality**

	<b>Chlorine Residual mg/L</b> @Santa Cruz	<b>Total Coliform MPN/100mL</b>	<b>Fecal Coliform MPN/100mL</b>	<b>Enterococcus MPN/100mL</b>
<b>January</b>	< 0.02	1,095	< 200	< 409
<b>February</b>	< 0.01	1,720	< 240	< 320
<b>March</b>	0.55*	920	< 200	< 100
<b>April</b>	< 0.02	660	< 200	< 100
<b>May</b>	< 0.01	660	< 380	< 100
<b>June</b>	< 0.01	630	< 220	< 100
<b>July</b>	< 0.02	7,600	1,640	< 204
<b>August</b>	< 0.02	18,700	6,280	< 820
<b>September</b>	< 0.02	1,530	< 116	< 100
<b>October</b>	< 0.03	4,820	3,780	< 100
<b>November</b>	< 0.03	1,760	< 620	< 140
<b>December</b>	< 0.01	9,133	< 517	< 900
<b>Geomean</b>	< 0.02	2,115	< 498	< 194
<b>Maximum</b>	< 0.03	18,700	6,280	< 900
<b>Minimum</b>	< 0.01	630	< 116	< 100

\*March chlorine data taken at Scotts Valley contact tank. Santa Cruz chlorine analyzer under repair. Scotts Valley data not used for determination of geomean or maximum.

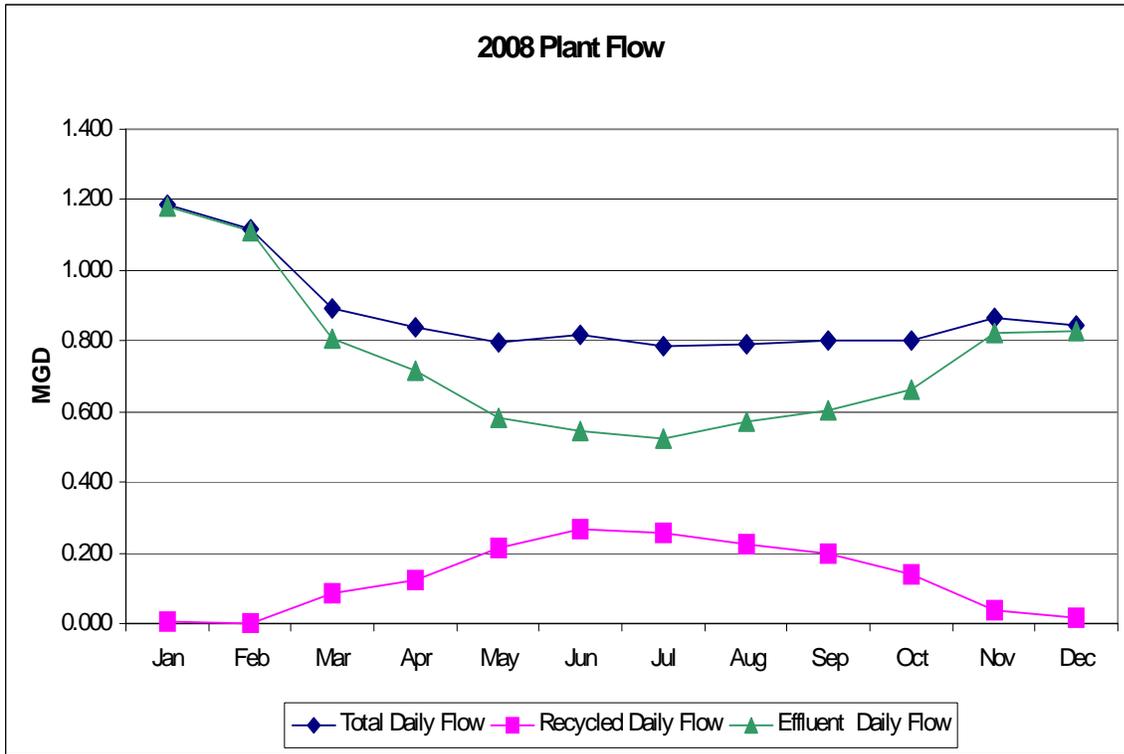
**TABLE 7****2008 Sludge Wasting**

	<b>WAS Flow MG</b>	<b>WAS Percent Solids</b>	<b>Dry Wt. MetricTons Wasted</b>	<b>Hours Pressed</b>	<b>Sludge Cake % Solids</b>	<b>Tons of Sludge Hauled</b>
<b>January</b>	0.634	1.22	27.6	151	16.6	197
<b>February</b>	0.654	1.19	27.6	148	16.8	201
<b>March</b>	0.593	1.10	21.3	129	16.3	163
<b>April</b>	0.725	1.09	26.3	143	17.5	191
<b>May</b>	0.646	1.00	23.5	140	16.7	189
<b>June</b>	0.660	1.00	23.3	138	16.4	188
<b>July</b>	0.627	1.02	22.1	134	16.9	180
<b>August</b>	0.554	0.96	19.5	125	16.5	148
<b>September</b>	0.612	0.95	21.3	138	17.2	164
<b>October</b>	0.587	0.93	19.8	140	16.7	163
<b>November</b>	0.510	1.03	17.2	123	16.9	146
<b>December</b>	0.649	0.96	22.3	147	18.0	183
<b>Total</b>	7.449		271.9	1,654		2113
<b>Average</b>	0.621	1.04	22.7	138	16.9	176
<b>Maximum</b>	0.725	1.22	27.6	151	18.0	201
<b>Minimum</b>	0.510	0.93	17.2	123	16.3	146

**TABLE 8****2008 Plant Operating Parameters**

	<b>Aerator lbs</b>	<b>Clarifier lbs</b>	<b>Total lbs</b>	<b>RAS mg/L</b>	<b>MLSS mg/L</b>	<b>Clar. SS mg/L</b>	<b>MCRT 7-day</b>	<b>F/M 7-day</b>	<b>SVI Ratio</b>
<b>January</b>	13,485	10,284	23,769	10,743	5,361	2,430	12.4	0.22	174
<b>February</b>	13,631	9,658	23,288	10,237	5,419	2,282	11.5	0.22	174
<b>March</b>	11,447	6,676	18,123	8,838	4,551	1,578	10.4	0.21	194
<b>April</b>	12,789	9,236	22,025	9,765	5,084	2,183	11.4	0.20	186
<b>May</b>	12,667	8,311	20,978	9,491	5,036	1,964	12.3	0.22	190
<b>June</b>	12,355	8,244	20,599	8,985	4,912	1,948	11.4	0.23	195
<b>July</b>	12,321	6,727	19,048	8,720	4,898	1,590	13.6	0.22	187
<b>August</b>	11,135	6,533	17,668	8,469	4,427	1,544	11.4	0.25	207
<b>September</b>	12,150	6,609	18,758	8,588	4,830	1,562	12.0	0.24	184
<b>October</b>	12,337	5,534	17,872	8,876	4,905	1,308	12.6	0.23	167
<b>November</b>	13,031	6,164	19,195	9,470	5,180	1,457	13.2	0.23	174
<b>December</b>	14,046	7,398	21,444	9,594	5,584	1,749	14.0	0.20	168
<b>Average</b>	12,616	7,615	20,231	9,315	5,016	1,799	12.2	0.22	183
<b>Maximum</b>	14,046	10,284	23,769	10,743	5,584	2,430	14.0	0.25	207
<b>Minimum</b>	11,135	5,534	17,668	8,469	4,427	1,308	10.4	0.20	167

**Figure 1**



**Figure 2**

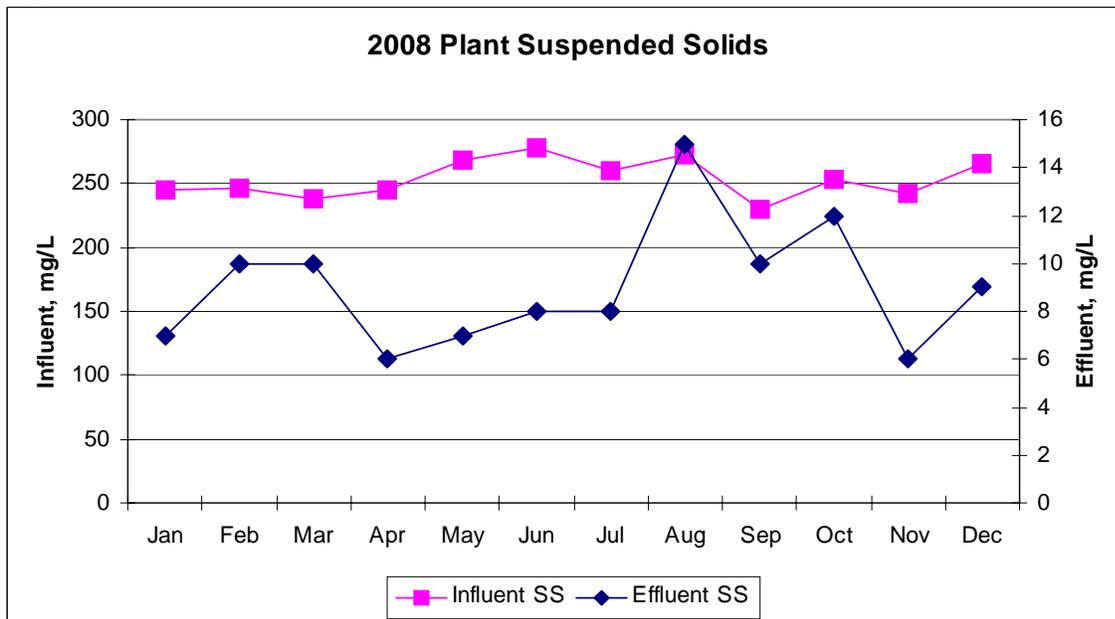


Figure 3

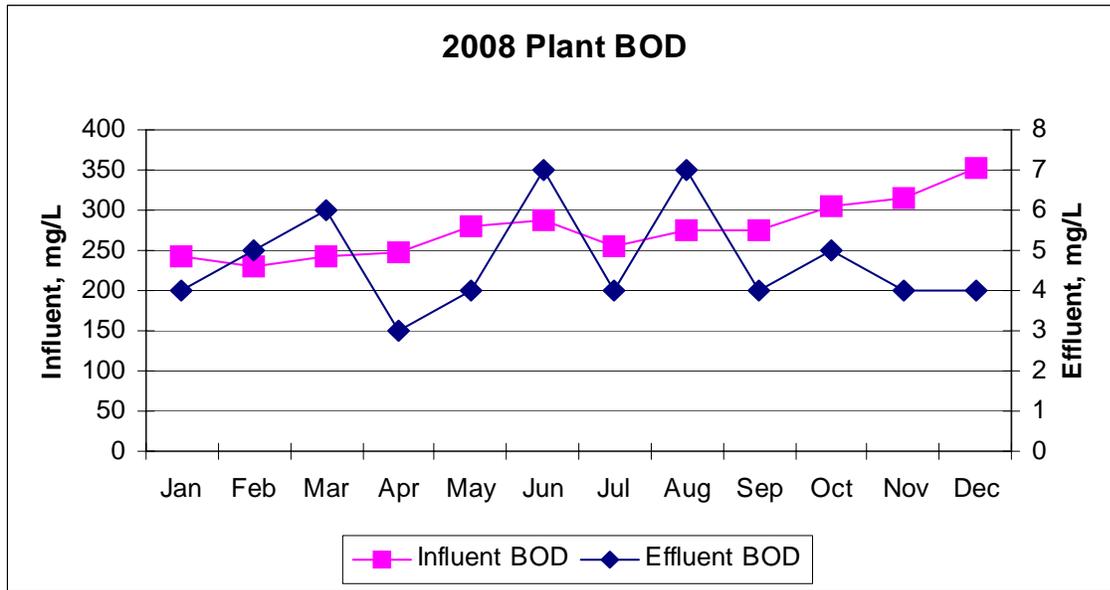


Figure 4

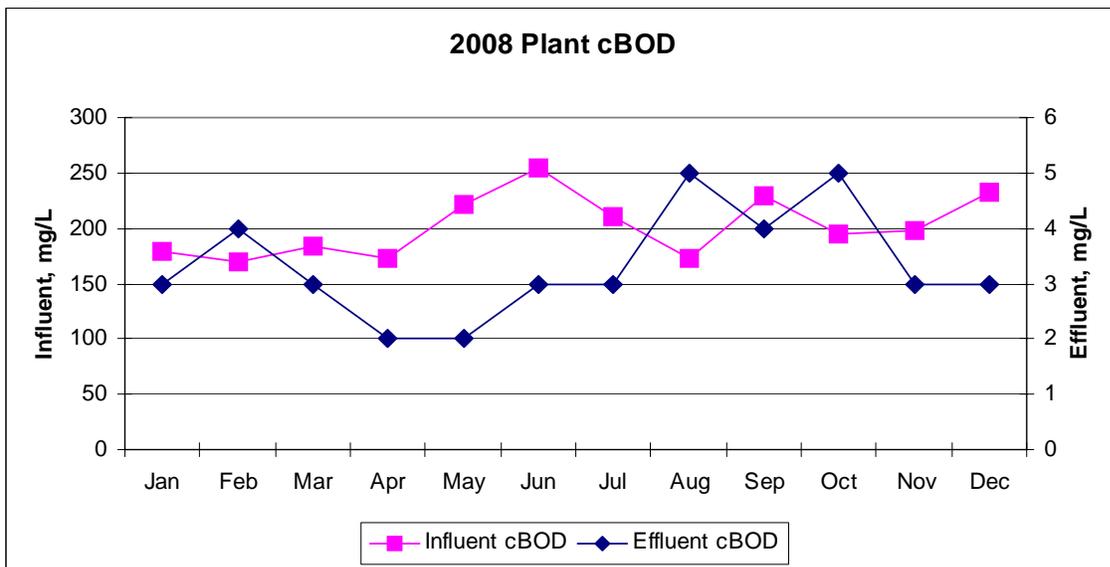


Figure 5

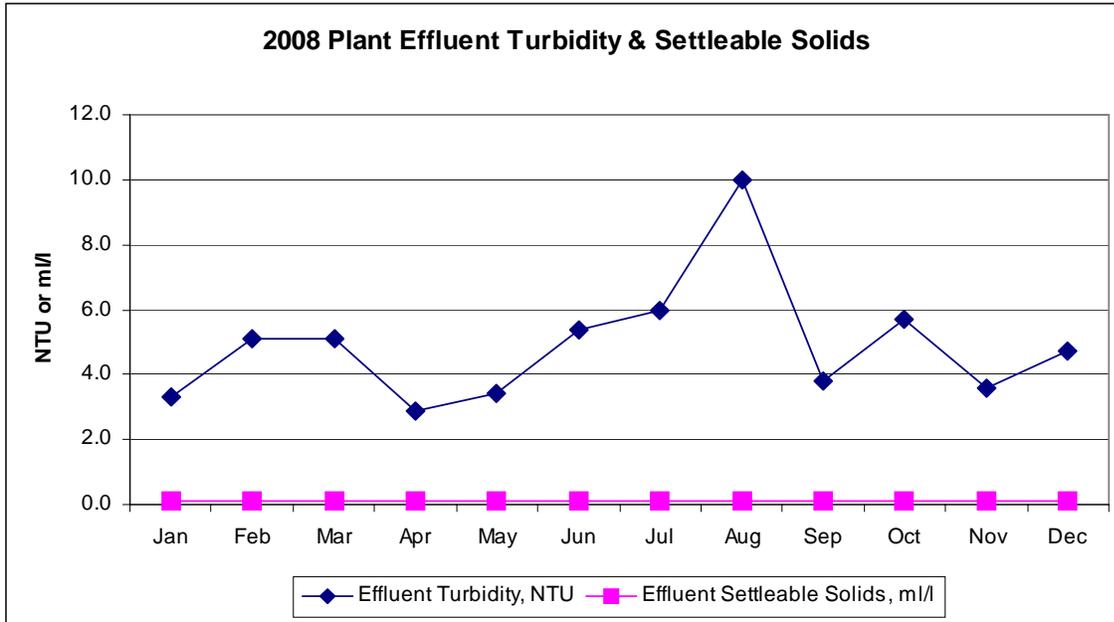
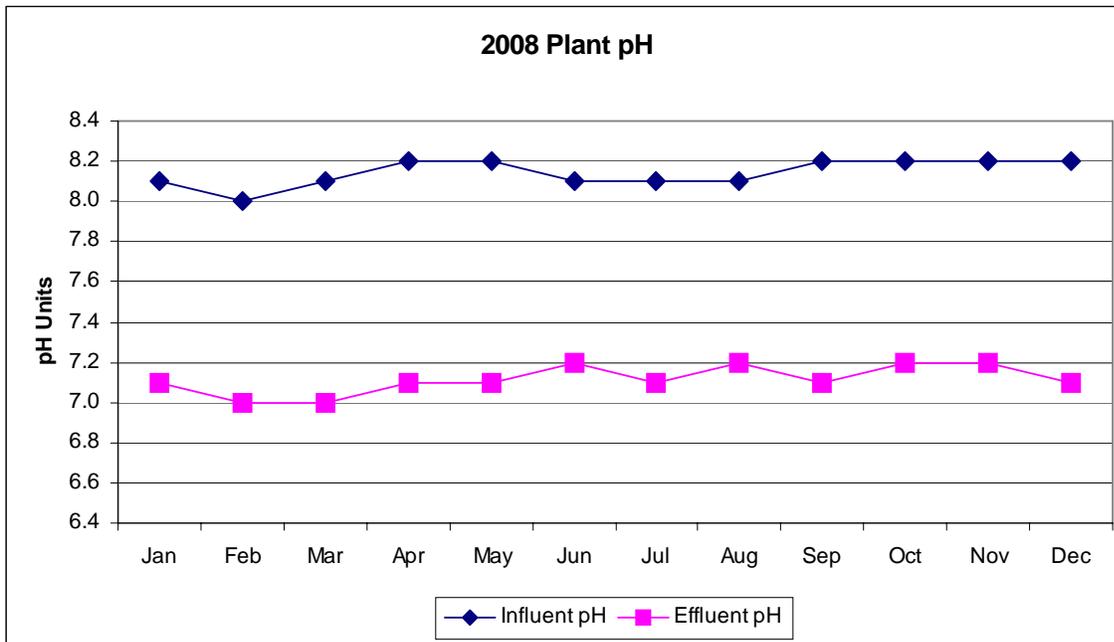
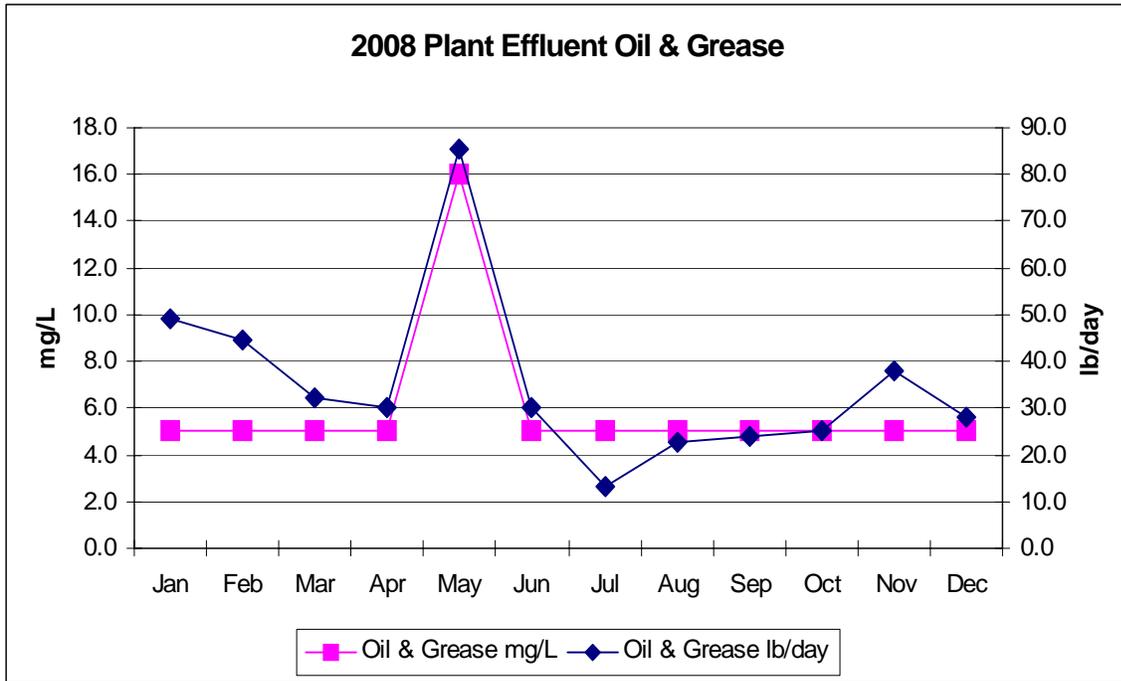


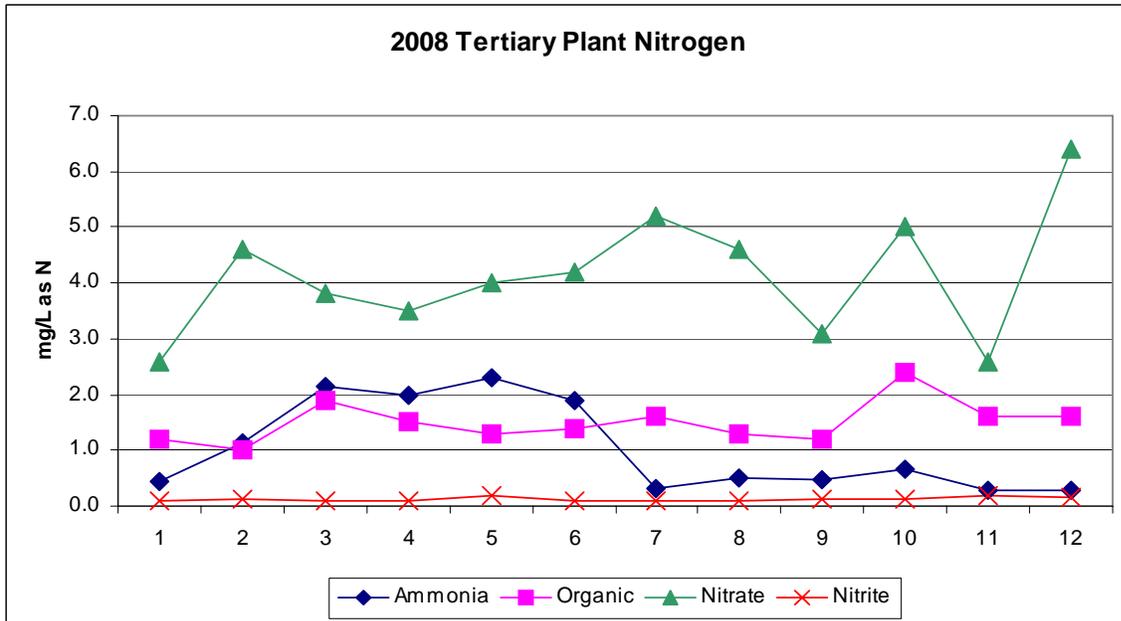
Figure 6



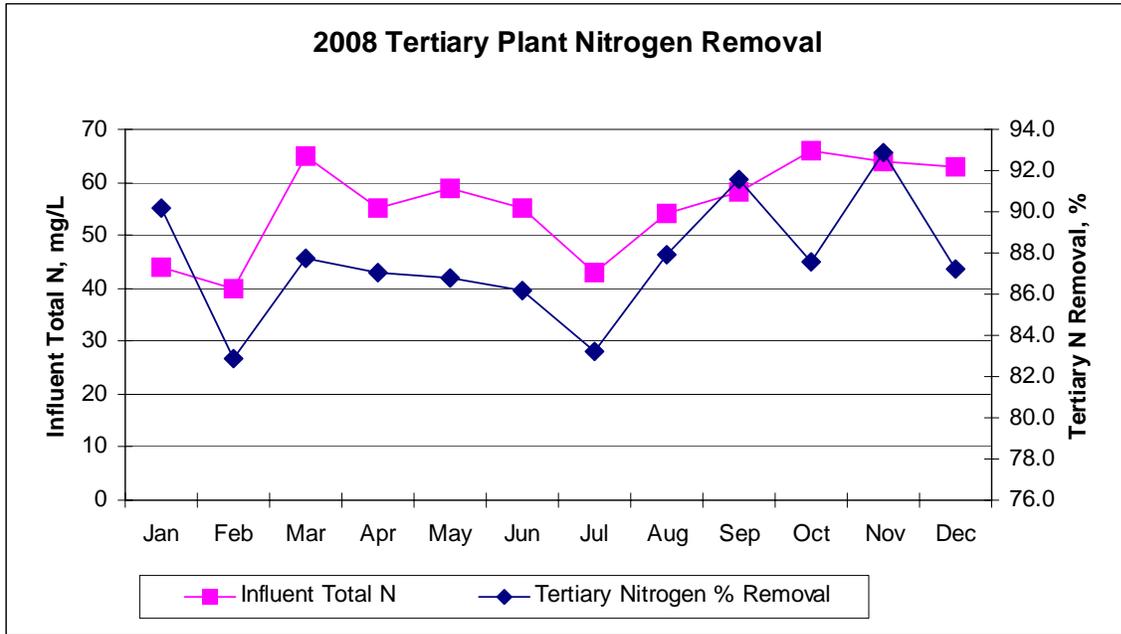
**Figure 7**



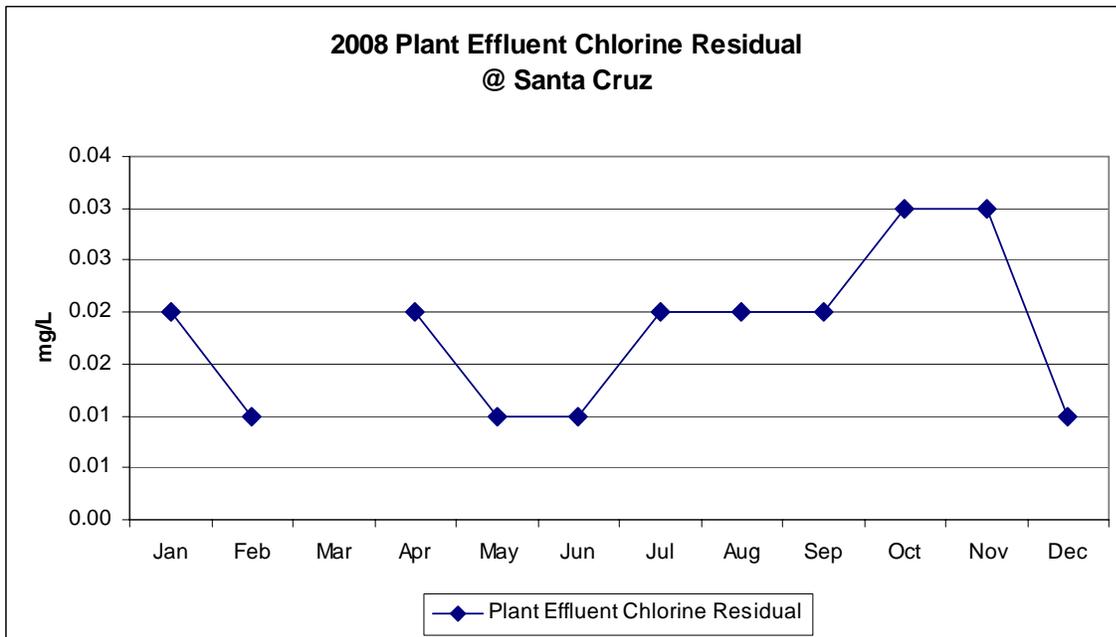
**Figure 8**



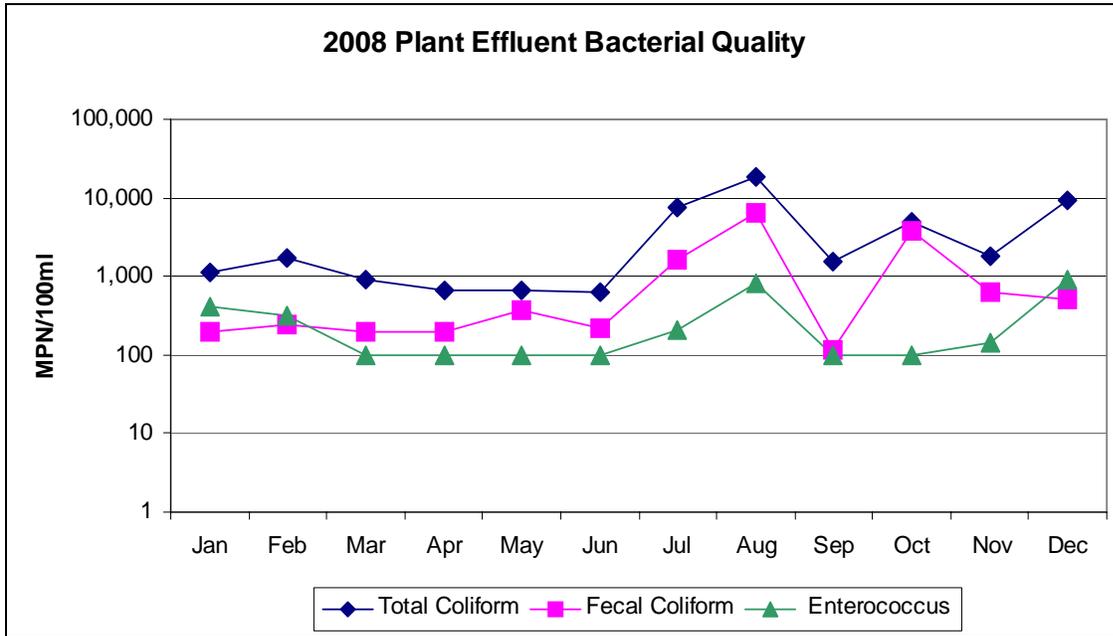
**Figure 9**



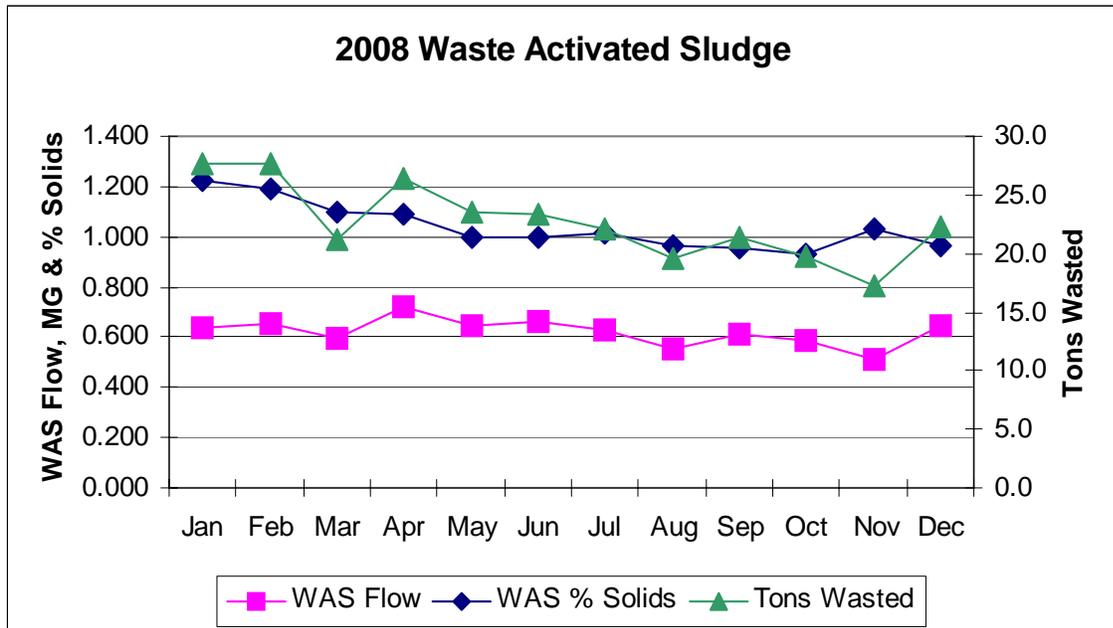
**Figure 10**



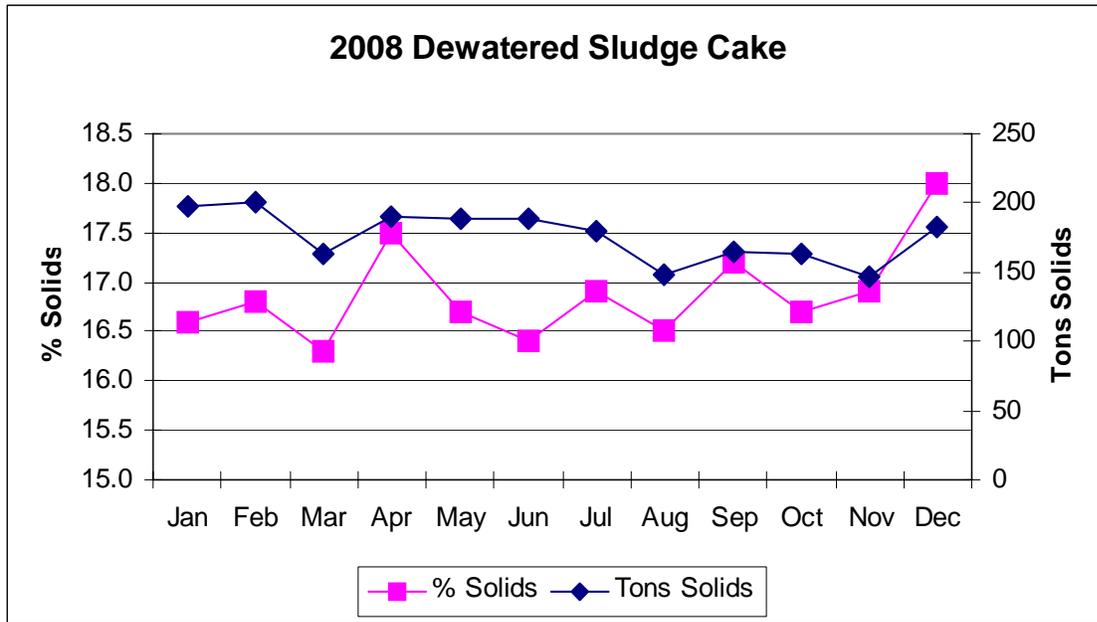
**Figure 11**



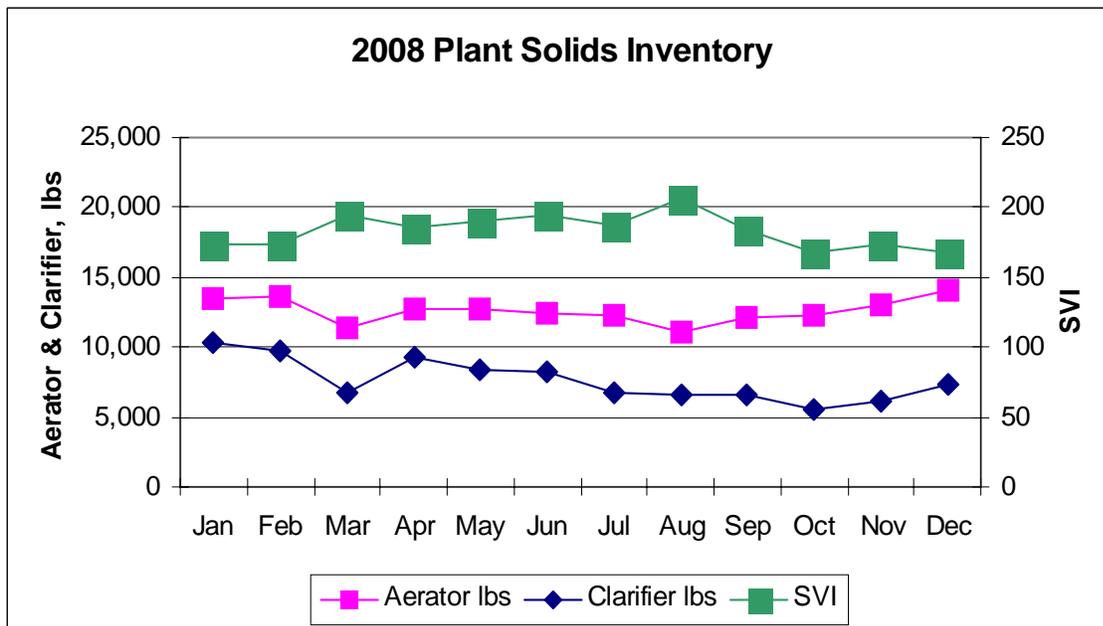
**Figure 12**



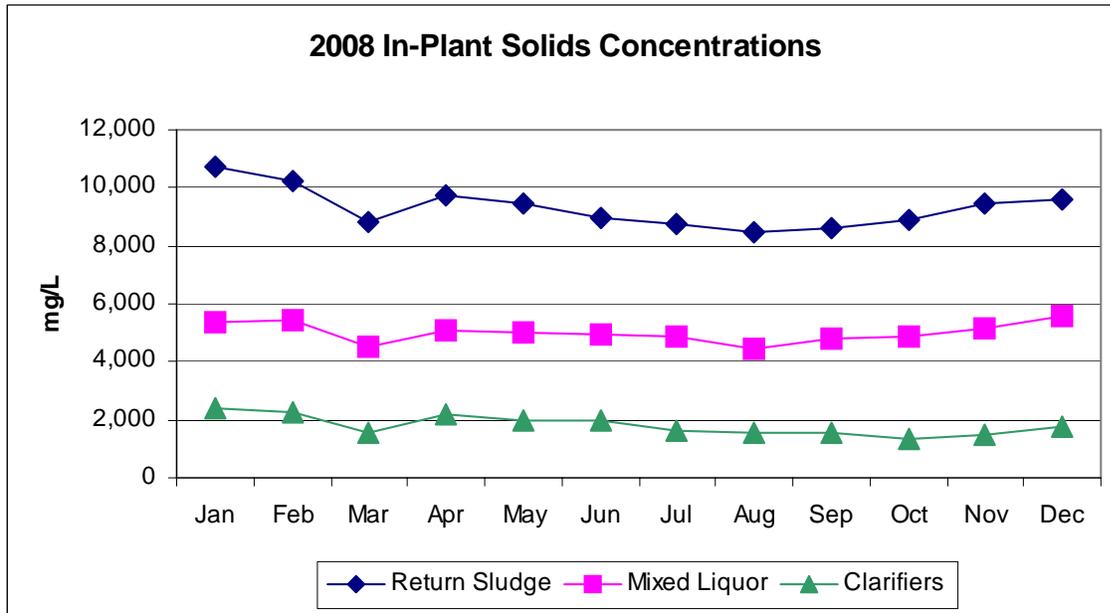
**Figure 13**



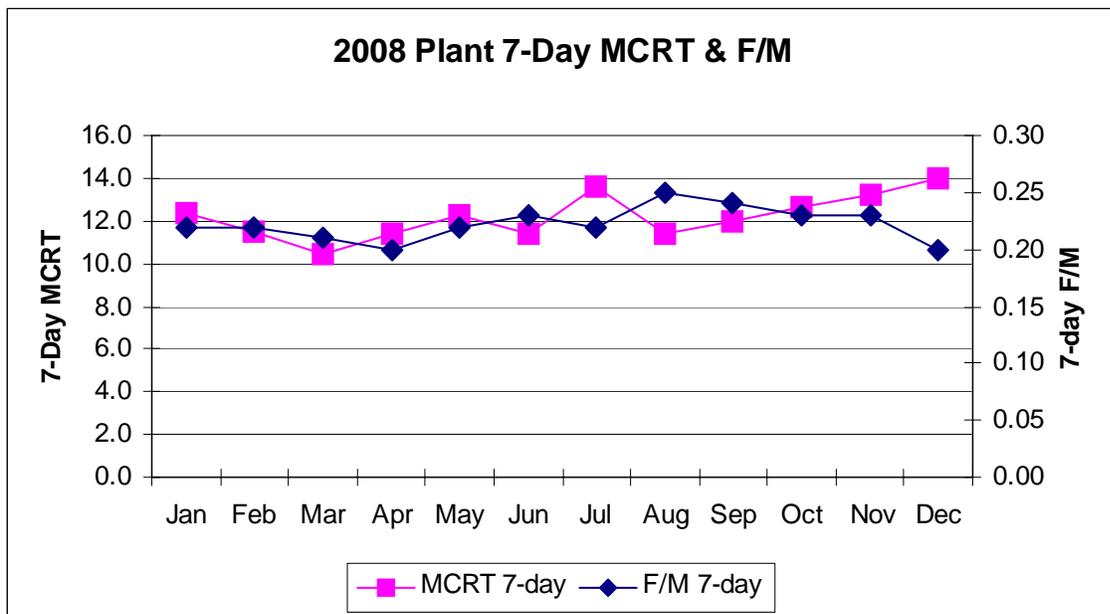
**Figure 14**



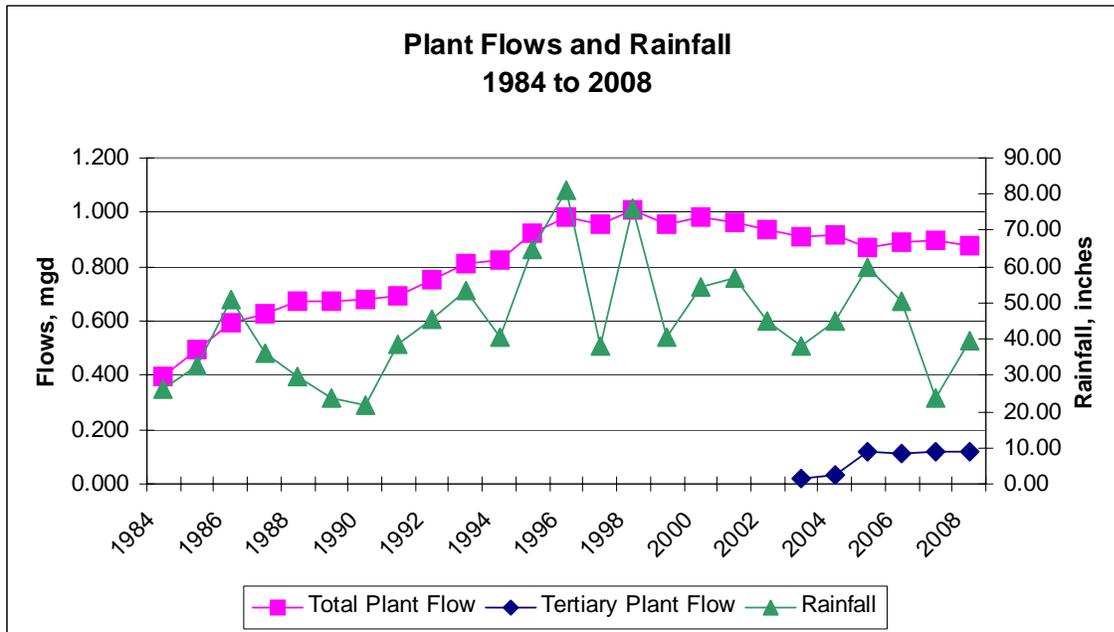
**Figure 15**



**Figure 16**



**Figure 17**



**Figure 18**

