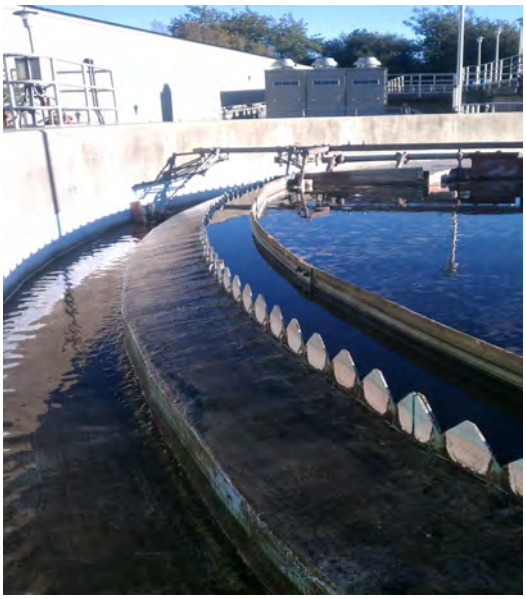
# CITY OF SCOTTS VALLEY
## Wastewater Reclamation Facility
## 2012 Annual Report



# CITY OF SCOTTS VALLEY
# WASTEWATER TREATMENT FACILITY
# ANNUAL REPORT 2012

## Plant Summary and Compliance

A record 61.49 million gallons of recycled water was used in 2012! That's nearly seven million more gallons than in 2011. The Scotts Valley Water District continues to pursue additional recycled water users so we anticipate that we will continue to see increased recycled water usage.

An equipment failure at the close of 2012 led to a series of four violations for the month of December. A main seal failure in clarifier #3 failed and the clarifier needed to be taken out of service for a short time until repairs could be made. We violated the effluent 7-day averages for BOD, cBOD, and total suspended solids. These are the first violations since 2008 when the plant exceeded its TCDD (Dioxin) limit.

For the year 2012, effluent suspended solids averaged 11.0 mg/L (a 95.8% removal rate), effluent cBOD's averaged 5 mg/L (a 97.9% removal rate), and effluent BOD's averaged 5 mg/L (a 98.1% removal rate). Many thanks to a very knowledgeable and dedicated treatment plant staff. Without them, the continued high standards the City has become accustomed to would not be possible.

We are very proud to announce that Operator II, Tony Alvarez and Senior Laboratory Analyst, Kati King have been acknowledged by their peers in the Monterey Bay Section of the California Water Environment Association as Operator of the Year and Laboratory Person of the Year respectively. Congratulations to Tony and Katy for receiving these well deserved honors!

## Laboratory

The City of Scotts Valley Wastewater Reclamation Facility Laboratory is busy accommodating EPA's Final Methods Update Rule which includes new and revised wastewater methods and new QA/QC requirements for each analysis. The new methods update will be enforced during the middle of 2013.

The new requirements will cause the analyst to spend more time on each analysis performed. It will be a challenge for the analyst to streamline the lab as much as possible in order to be able to complete all aspects of the job.

Laboratories used during 2012 were:

Inorganic Chemistry and Microbiology:
City of Scotts Valley WWTP
700 Lundy Lane
Scotts Valley, CA 95066
ELAP Certificate No. 1062

Metals/Inorganic and Organic Chemistry:
BC Laboratories, Inc.
4100 Atlas Ct.
Bakersfield, CA 93308
ELAP Certificate No. 1186

Annual HVWS & Biosolid TCDD:
Frontier Analytical Laboratory
5172 Hillsdale Circle
El Dorado Hills, CA 95762
ELAP Certificate No. CA02113

Aquatic Bioassay & Consulting Labs
29 N. Olive Street
Ventura, CA 93001
ELAP Certificate No. 1907

**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**

Following is a summary of the three collection system overflows reported by the City in 2012:

- August 2 – Manhole on El Pueblo Road plugged spilling 1,100 gallons. Collection system cleaning in the area may have dislodged debris causing the plug. SSO Event ID 784555.
- October 15 – Plumber working on a private lateral released a large clump of roots into City's sewer main causing a blockage. An estimated 1,125 gallons spilled onto Mt. Hermon Road. SSO Event ID 787212.

- December 23 – Power failure during extreme rain event caused pump failure and subsequent overflow of 500-700 gallons from flow equalization tank at WWTP. SSO Event ID 789605.

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

## Source Control Program

### Industrial

There are now two significant industrial users (SIU) in the City of Scotts Valley: ThermoFisher, a categorical metal finishing industry (40 CFR 433.15), and Bay Photo, a printer and photo processor discharging treated silver-bearing wastewater. During the month of July, results from a test and retest showed that nickel was over the limit by 1.3 mg/L. In August, another retest was completed and the nickel levels remained only slightly above the limit. A retest in September had results within limits. The annual inspection was scheduled in August to discuss nickel exceedances. Steps were discussed for further treatment if the nickel exceedances continue.

Groundwater Remediation: There were two groundwater pump and treat sites discharging to the sewer in the City of Scotts Valley, both under a permit. The responsible party for the first site is Shell Oil Products and Phillips 66 (formerly ConocoPhillips) managed by Conestoga-Rovers & Associates (CRA). Discharge began on March 7, 2008. The site has met all permit conditions to date. The second site is the Manana Woods Groundwater Well, owned by the San Lorenzo Valley Water District. The District started discharging filter backwash water on August 1, 2011. The backwash will be treated as necessary to remove pollutants to concentrations below the City of Scotts Valley Sanitary Sewer discharge limits. The site has met all permit conditions to date. Two additional groundwater well sites owned by the Scotts Valley Water District will be permitted in early 2013.

All categorical industries and the groundwater pump and treat site in the City were monitored and permitted through the pretreatment program in 2010.

### Grease Trap Installation and Maintenance

The fats, oils, and greases (FOG) program is in place with most facilities operating in compliance with local ordinances. A handful of restaurants had minor violations that were corrected immediately following inspection. The most common area of correction in regards to stormwater and wastewater were improper maintenance of exterior waste containers and enclosure areas. These poor management practices can allow harmful

solids and liquids to enter the storm drain; such as tallow and liquids from trash enclosures. The poor waste management practices included tallow bins covered with waste oil, oil spills around the drum/bins, trash around dumpsters and tallow bins left open at all times. The source control inspector worked with the tallow service and the business owners/managers to address this issue and properly clean or replace and service the tallow bins and, if necessary, hire a service to clean the enclosures to prevent the waste from entering the storm drain. Working with the tallow companies proved to be very beneficial and created an opportunity to express concerns and challenges on both ends and establish a positive relationship with the tallow service vendors. The business owners/managers were grateful to have support as well. 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**

- Made repairs to aeration panels
- Replaced bearings on backwash blowers for tertiary system
- Installed new motor for belt press lower drive
- Installed permanent chemical feed system for SulFree at Granite Creek Pump Station
- Rebuilt lower belt hydraulic rams on belt press
- Replace screening basket and spiral brush on screening washer
- Installed new secondary effluent pH probe
- Purchase and installed new SCADA computer
- Replaced check valves at Granite Creek Pump Station
- Installed new VFD for effluent pump P-10
- Installed rebuilt P-8 waste pump
- Installed new permanent emergency generator at Granite Creek Pump Station
- Clarifier #3 taken out of service for repairs (main seal failure)
- Rebuilt effluent pumps P-9 and P-10 (P-11 rebuild in progress at end of 2012)
- Other plant maintenance and repairs were performed as required

**O & M Manual**

The plant's main operations and maintenance manual (O&M) was not changed during 2012; 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 biannual Red Cross Adult CPR and Standard First Aid Certification Program.
- All staff participates in the plant's in-house safety/training meetings that are conducted every other Wednesday throughout the year.
- All Operations and Laboratory staff participated in several one-day training classes and seminars related to wastewater treatment, laboratory and maintenance.

## Public Education/Outreach

The Scotts Valley Green Schools Program was developed in 2010 to provide environmental education to Scotts Valley students and to encourage the institution of best environmental practices at the schools following the model of the Green Business Program. The Green Schools Program was funded by the City of Scotts Valley, and offered free to the area schools. It was offered to the ninth graders at Scotts Valley High School, and to the fifth graders at Vine Hill Elementary School and Baymonte Christian School, two grade levels in which ecology concepts are taught. In 2010-2011, two series of presentations and three community service events were offered at Scotts Valley High School. Two series of presentations were also offered at Vine Hill Elementary, along with a Save Our Shores presentation, and the formation of an Environmental Leadership Council. In 2012, due to a cutback in funds, only one set of presentations were given at Vine Hill Elementary.

The 2012 Vine Hill program consisted of a one-hour program on water issues to 80 fifth graders on October 26, 2012. The program addressed two areas: 1) the source of water in Scotts Valley and the importance of water conservation measures, and 2) where water goes (sewer, septic systems, and the storm drain system), and the necessity of keeping storm drain water clean. LeAnne Ravinale from the Scotts Valley Water District taught the first part of the program, using a model of an aquifer, and playing charades to act out water conservation strategies. The second part of the program was taught by Sheila Peck from the Green Schools Program. For this piece, students designed their own storm drain placards to explain why storm drains should be kept clean for plants and animals downstream. A second program at Vine Hill, as well as a two-day program at Scotts Valley High School, is planned for spring, 2013.

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. Since its launch in July, 2004, the program has developed nineteen different business certification sectors, including: restaurants, plumbers, office/retail facilities, hotels/hospitality services, custodial companies, beauty salons, laundromats, wineries, painters, and landscapers, property management/multi-family dwellings, schools, medical facilities, garment cleaners, vehicle service facilities, auto body shops, printers,

contractors/remodelers, and pharmacies. A significant portion of the program for restaurants, hotels, and plumbers is dedicated to minimizing discharges of fats, oils, and greases (FOG) into the sanitary sewer. The program is supported by a database launched in 2010, which allow it to collect metrics on water and energy savings, and pollution and waste reduction, and so assess the program's impacts. Nineteen businesses have been certified to date in Scotts Valley. These businesses have been advertised in a local paper and will be advertised again in the spring.

Having been certified for more than three years, several Scotts Valley green businesses underwent "recertification" in 2012. One such organization that demonstrated continued green achievement was the Central California Alliance for Health. With approximately 200 employees, this group has made a significant and impressive conservation impact. Since it became certified in 2009, it has reduced CO2 emissions by 886,437 lbs, saved 655,053 kWh of energy, 664,891 gallons of water, and 7,138 gallons of gas, and diverted 903,458 lbs of solid waste from the landfill.

Scotts Valley City Staff, in collaboration with the County of Santa Cruz and other City agencies, were successful in obtaining a grant in 2008 from the California Integrated Waste Management Board (CIWMB) in order to implement a pharmaceutical and sharps disposal program. Since that time, the Sharp Solutions for Home Medicines Program has provided a convenient and permanent system to dispose of home-generated used sharps and unwanted pharmaceuticals in the County of Santa Cruz. The County has established 33 convenient and well-publicized drop-off locations, primarily at pharmacies, throughout the region.

Since 2010, the Palo Alto Medical Foundation (PAMF) has accepted medicines from its patients at its clinic in Scotts Valley. PAMF now offers this service at all 5 of its major clinics in Santa Cruz County. Since PAMF's program is limited to its patients and it covers all costs of the program, collection data from its sites is not available.

From July 2008 through December 2012, over 73,000 pounds of sharps and pharmaceuticals have been collected and diverted from county landfills and water systems, thus reducing water pollution and public health risks. The three take-back sites in Scotts Valley alone collected 1,114 pounds of sharps and 1,937 pounds of medicines during 2012. Compared to countywide data, these figures amount to 10% and 18%, respectively, of the two medical wastes collected in a city that comprises only 4.4% of county population.

The Scotts Valley Police Department, in cooperation with the County Sheriff's Office, participated in the Federal Department of Justice's National Drug Take-Back Days on April 28 and September 29, 2012. All drugs, including controlled substances, are allowed at these events. Residents turned in 120 pounds of drugs at the April collection day and 10 pounds in September. The Police Department plans to continue to participate in these events, and they are also considering a proposal from Sharp Solutions to become a permanent drug take-back site.

**Electronic Waste:** On Saturday, September 15, 2012, the City of Scotts Valley conducted its 10th annual e-waste collection event. The City collected nearly 20,000 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.

**Appliance Collection:** The City of Scotts Valley held its 9th annual Appliance Collection Event on Saturday, October 13. In the previous eight years the event included tire collection as well, but the City lost its grant to pay for tire disposal/recycling and is no longer able to offer that service. 45 participants dropped off a total of 5 water heaters, 3 washers, 4 dryers, 4 oven/stoves, 10 refrigerators and 20 misc. small appliances. Scrap metal from appliances was shredded, melted and made into new metal products.

To address the new Mandatory Commercial Recycling legislation, Assembly Bill 341 that went into effect July 1, 2012, the source control inspector conducted recycling outreach at all restaurants, auto body shops and auto repair shops. The inspector used the inspections as an opportunity to outreach and educate business owners and managers about the new legislation and explain their responsibility. Each business was given a Bilingual Recycling Poster to put up at their business indicating the various recyclable and non recyclable items.

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.

- 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 2012.

# NPDES PERMIT EFFLUENT VIOLATIONS 2003-2012

| | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|---|---|---|---|---|
| **January** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **February** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **March** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **April** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **May** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **June** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **July** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **August** | 0 | 0 | 0 | 0 | 0 | 1* | 0 | 0 | 0 | 0 |
| **September** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **October** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **November** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **December** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| | | | | | | | | | | |
| **Total** | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 4 |

*TCDD

Eff. Weekly
Avg.BOD
CBOD,TSS
sett.solid

**TABLE 1**

# 2012 PLANT FLOW AND RAINFALL

| | Total Plant Flow<br>Eff.+Rec.MGD<br>Mo. Total | Effluent Daily Flow<br>MGD<br>Mo. Total | Effluent Inst. Max.<br>MGD<br>(peak) | Recycled Total Flow<br>Million Gallons<br>Mo. Total | Rainfall<br>Inches<br>(Total) |
|---|---|---|---|---|---|
| **January** | 26.073 | 23.814 | 3.52 | 2.259 | 7.57 |
| **February** | 22.911 | 20.369 | 2.33 | 2.542 | 2.37 |
| **March** | 31.283 | 30.193 | 3.54 | 1.090 | 12.87 |
| **April** | 26.722 | 25.160 | 2.53 | 1.562 | 3.58 |
| **May** | 24.659 | 16.511 | 2.13 | 8.148 | 0.03 |
| **June** | 23.288 | 13.488 | 3.10 | 9.800 | 0.17 |
| **July** | 23.544 | 13.469 | 3.54 | 10.075 | 0.02 |
| **August** | 23.375 | 12.721 | 1.74 | 10.654 | 0.00 |
| **September** | 22.129 | 14.096 | 2.10 | 8.033 | 0.00 |
| **October** | 23.099 | 17.917 | 2.57 | 5.182 | 1.59 |
| **November** | 25.709 | 23.932 | 3.40 | 1.777 | 10.80 |
| **December** | 32.884 | 32.518 | 3.58 | 0.366 | 13.67 |
| | | | | | |
| **Total** | 305.68 | 244.19 | | 61.49 | 52.67 |
| **Average** | 25.47 | 20.35 | 2.84 | 5.12 | 4.39 |
| **Maximum** | 32.88 | 32.52 | 3.58 | 10.65 | 13.67 |
| **Minimum** | 22.13 | 12.72 | 1.74 | 0.37 | 0.00 |

| | |
|---|---|
| **ADDWF, MGD** | **0.765** |
| **Eff + Recycle** | |

**TABLE 2**

# 2012 Influent & Effluent Suspended Solids

| | Influent mg/L | Effluent mg/L | Effluent lb/day | Percent Removal |
|---|---|---|---|---|
| **January** | 262 | 7 | 44 | 97.4% |
| **February** | 266 | 4 | 27 | 98.4% |
| **March** | 233 | 6 | 63 | 97.4% |
| **April** | 254 | 7 | 54 | 97.1% |
| **May** | 271 | 10 | 29 | 96.3% |
| **June** | 276 | 14 | 60 | 94.8% |
| **July** | 262 | 11 | 36 | 95.7% |
| **August** | 275 | 9 | 33 | 96.9% |
| **September** | 273 | 7 | 23 | 97.3% |
| **October** | 283 | 9 | 40 | 96.7% |
| **November** | 269 | 14 | 105 | 94.4% |
| **December** | 222 | 30 | 199 | 86.6% |
| | | | | |
| | | | | |
| **Average** | 262 | 11 | 59 | 95.8% |
| **Maximum** | 283 | 30 | 199 | 98.4% |
| **Minimum** | 222 | 4 | 23 | 86.6% |

**TABLE 3**

# 2012 Influent & Effluent BOD & cBOD

| | Influent BOD mg/L | Effluent BOD mg/L | Effluent BOD lb/day | BOD Percent Removal | Influent cBOD mg/L | Effluent cBOD mg/L | Effluent cBOD lb/day | cBOD Percent Removal |
|---|---|---|---|---|---|---|---|---|
| **January** | 288 | 4 | 25 | 98.7% | 239 | 3 | 21 | 98.7% |
| **February** | 308 | 3 | 19 | 99.1% | 220 | 2 | 17 | 98.8% |
| **March** | 221 | 3 | 22 | 98.5% | 173 | 3 | 18 | 98.4% |
| **April** | 260 | 5 | 36 | 97.9% | 218 | 5 | 34 | 97.7% |
| **May** | 279 | 5 | 32 | 98.3% | 226 | 4 | 25 | 98.4% |
| **June** | 293 | 4 | 30 | 98.5% | 240 | 4 | 27 | 98.3% |
| **July** | 310 | 4 | 28 | 98.6% | 248 | 3 | 22 | 98.6% |
| **August** | 331 | 4 | 28 | 98.8% | 276 | 3 | 23 | 98.8% |
| **September** | 295 | 3 | 20 | 99.0% | 253 | 2 | 17 | 99.0% |
| **October** | 300 | 4 | 27 | 98.6% | 242 | 3 | 23 | 98.6% |
| **November** | 317 | 5 | 35 | 98.3% | 254 | 4 | 28 | 98.4% |
| **December** | 241 | 18 | 123 | 92.9% | 188 | 17 | 116 | 91.3% |
| | | | | | | | | |
| | | | | | | | | |
| **Average** | 287 | 5 | 36 | 98.1% | 231 | 5 | 31 | 97.9% |
| **Maximum** | 331 | 18 | 123 | 99.1% | 276 | 17 | 116 | 99.0% |
| **Minimum** | 221 | 3 | 19 | 92.9% | 173 | 2 | 17 | 91.3% |

**TABLE 4**

# 2012 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** | 0.06 | **1.0** | 5.8 | < 0.1 | 76 | 88.3 |
| **February** | 0.04 | **0.7** | 3.1 | < 0.1 | 72 | 90.0 |
| **March** | 0.05 | **0.7** | 1.4 | < 0.1 | 62 | 86.4 |
| **April** | 1.16 | **0.5** | < 1.0 | < 0.1 | 64 | 84.8 |
| **May** | 0.08 | **1.0** | 2.8 | < 0.1 | 77 | 87.2 |
| **June** | 0.09 | **1.0** | 4.5 | < 0.1 | 76 | 86.2 |
| **July** | 0.07 | **0.9** | 5.5 | < 0.1 | 75 | 84.0 |
| **August** | 0.08 | **1.0** | 4.6 | < 0.1 | 78 | 90.8 |
| **September** | 0.07 | **0.8** | 3.4 | < 0.1 | 73 | 90.4 |
| **October** | 0.07 | **0.9** | 2.5 | < 0.1 | 79 | 88.4 |
| **November** | 0.07 | **0.9** | 3.1 | < 0.1 | 61 | 91.8 |
| **December** | 0.90 | **0.8** | 1.1 | < 0.1 | 58 | 91.5 |
| | | | | | | |
| | | | | | | |
| **Average** | 0.23 | 0.8 | 3.2 | < 0.1 | 70.7 | 88.3 |
| **Maximum** | 1.16 | 1.0 | 5.8 | < 0.1 | 78.6 | 91.8 |
| **Minimum** | 0.04 | 0.5 | 1.0 | < 0.1 | 58.0 | 84.0 |

## TABLE 5

# 2012 Influent & Effluent pH and Effluent Turbidity, Settleable Solids, and Oil & Grease

| | Influent pH Std Units | Effluent pH Std Units | Effluent Turbidity NTU | Effluent Settleable Solids ml/L | Effluent Oil & Grease mg/L | Effluent Oil & Grease lb/day |
|---|---|---|---|---|---|---|
| **January** | 8.2 | 7.2 | 2.7 | < 0.1 | < 5 | < 34 |
| **February** | 8.2 | 7.3 | 2.8 | < 0.1 | < 5 | < 34 |
| **March** | 8.1 | 7.2 | 3.3 | < 0.1 | < 5 | < 34 |
| **April** | 8.1 | 7.2 | 7.8 | < 0.1 | < 5 | < 34 |
| **May** | 8.1 | 7.2 | 6.7 | < 0.1 | < 5 | < 34 |
| **June** | 8.1 | 7.2 | 5.0 | < 0.1 | < 5 | < 34 |
| **July** | 8.1 | 7.2 | 4.0 | < 0.1 | < 5 | < 34 |
| **August** | 8.1 | 7.2 | 3.1 | < 0.1 | < 5 | < 34 |
| **September** | 8.2 | 7.2 | 2.6 | < 0.1 | < 5 | < 34 |
| **October** | 8.2 | 7.3 | 3.0 | < 0.1 | < 5 | < 34 |
| **November** | 8.2 | 7.2 | 8.5 | < 0.1 | < 5 | < 34 |
| **December** | 8.0 | 7.1 | 8.0 | < 0.1 | < 5 | < 34 |
| | | | | | | |
| | | | | | | |
| **Average** | 8.1 | 7.2 | 4.8 | < 0.1 | < 5.0 | < 34 |
| **Maximum** | 8.2 | 7.3 | 8.5 | < 0.1 | < 5.0 | < 34 |
| **Minimum** | 8.0 | 7.1 | 2.6 | < 0.1 | < 4.6 | < 34 |

**TABLE 6**

# 2012 Effluent Chlorine Residual and Bacteriological Quality

| | Chlorine Residual mg/L @Santa Cruz | Total Coliform MPN/100mL | Fecal Coliform MPN/100mL | Enterococcus MPN/100mL |
|---|---|---|---|---|
| **January** | < 0.01 | 970 | < 200 | 39 |
| **February** | < 0.01 | 690 | < 200 | 10 |
| **March** | < 0.01 | 2000 | < 200 | 18 |
| **April** | < 0.01 | 1110 | < 280 | 61 |
| **May** | < 0.01 | 2083 | 217 | 42 |
| **June** | < 0.01 | 3780 | 1210 | 32 |
| **July** | < 0.01 | 2440 | 520 | 989 |
| **August** | < 0.01 | 15430 | 890 | 284 |
| **September** | < 0.01 | 2290 | 240 | 255 |
| **October** | < 0.01 | 10620 | < 2280 | 287 |
| **November** | < 0.01 | 3110 | < 310 | 89 |
| **December** | < 0.01 | 6670 | < 690 | 96 |
| | | | | |
| | | | | |
| **Geometric** | < 0.01 | 2,790 | < 422 | < 83 |
| **Maximum** | < 0.01 | 15,430 | 1,160 | 989 |
| **Minimum** | < 0.01 | 690 | < 200 | 10 |

**TABLE 7**

# 2012 Sludge Wasting

| | WAS Flow MGD | WAS Percent Solids | WAS Metric Tons per month (dry wt) | Hours Pressed per/mnth | Sludge Cake % Solids | Sludge Hauled Tons/mnth (dry wt) |
|---|---|---|---|---|---|---|
| **January** | 0.6987 | 0.92 | 22.3 | 123 | 15.3 | 29.0 |
| **February** | 0.7558 | 0.92 | 25.4 | 125 | 15.0 | 27.1 |
| **March** | 0.6484 | 0.97 | 25.6 | 119 | 15.2 | 31.0 |
| **April** | 0.6308 | 1.03 | 29.2 | 127 | 15.5 | 27.5 |
| **May** | 0.6694 | 0.94 | 26.0 | 135 | 15.4 | 26.0 |
| **June** | 0.5297 | 0.98 | 28.6 | 105 | 15.7 | 26.9 |
| **July** | 0.7142 | 0.99 | 30.8 | 143 | 15.1 | 24.3 |
| **August** | 0.9750 | 0.90 | 25.3 | 128 | 14.3 | 26.2 |
| **September** | 0.6266 | 0.89 | 26.3 | 123 | 14.8 | 21.8 |
| **October** | 0.7083 | 0.80 | 20.1 | 139 | 15.0 | 24.8 |
| **November** | 0.6425 | 0.80 | 20.1 | 128 | 14.4 | 26.2 |
| **December** | 0.7272 | 0.74 | 15.9 | 140 | 14.7 | 29.4 |
| | | | | | | |
| **Total** | 8.327 | | 295.5 | 1,534 | | 320.2 |
| **Average** | 0.694 | 0.91 | 24.6 | 128 | 15.0 | 26.7 |
| **Maximum** | 0.975 | 1.03 | 30.8 | 143 | 15.7 | 31.0 |
| **Minimum** | 0.530 | 0.74 | 15.9 | 105 | 14.3 | 21.8 |

**TABLE 8**

# 2012 Plant Operating Parameters

| | Aerator lbs | Clarifier lbs | Total lbs | RAS mg/L | MLSS mg/L | Clar. SS mg/L | MCRT 7-day | F/M 7-day | SVI Ratio |
|---|---|---|---|---|---|---|---|---|---|
| **January** | 13727 | 9385 | 23,112 | 9467 | 5457 | 2217.8 | 10.0 | 0.19 | 168 |
| **February** | 13813 | 8798 | 22,610 | 9015 | 5491 | 2079.0 | 8.2 | 0.19 | 167 |
| **March** | 13693 | 9901 | 23,594 | 9387 | 5444 | 2339.8 | 8.9 | 0.22 | 167 |
| **April** | 14805 | 12542 | 27,347 | 10011 | 5886 | 2963.7 | 10.1 | 0.19 | 154 |
| **May** | 13972 | 9589 | 23,561 | 9263 | 5555 | 2265.9 | 8.9 | 0.19 | 160 |
| **June** | 15083 | 11882 | 26,965 | 9501 | 5997 | 2807.9 | 11.1 | 0.17 | 157 |
| **July** | 13682 | 9905 | 23,587 | 8725 | 5439 | 2340.6 | 8.1 | 0.18 | 170 |
| **August** | 13180 | 9021 | 22,201 | 8614 | 5240 | 2131.7 | 8.0 | 0.19 | 172 |
| **September** | 12559 | 10505 | 23,064 | 8053 | 4993 | 2482.4 | 8.2 | 0.20 | 190 |
| **October** | 12573 | 9605 | 22,178 | 8106 | 4999 | 2269.8 | 9.0 | 0.20 | 194 |
| **November** | 11957 | 11043 | 23,001 | 7754 | 4754 | 2609.7 | 9.0 | 0.21 | 205 |
| **December** | 10249 | 14003 | 24,252 | 6990 | 4075 | 3309.0 | 9.4 | 0.35 | 233 |
| | | | | | | | | | |
| | | | | | | | | | |
| **Average** | 13,274 | 10,515 | 23,789 | 8,741 | 5,277 | 2,485 | 9.1 | 0.21 | 178 |
| **Maximum** | 15,083 | 14,003 | 27,347 | 10,011 | 5,997 | 3,309 | 11.1 | 0.35 | 233 |
| **Minimum** | 10,249 | 8,798 | 22,178 | 6,990 | 4,075 | 2,079 | 8.0 | 0.17 | 154 |

**FIGURE 1**

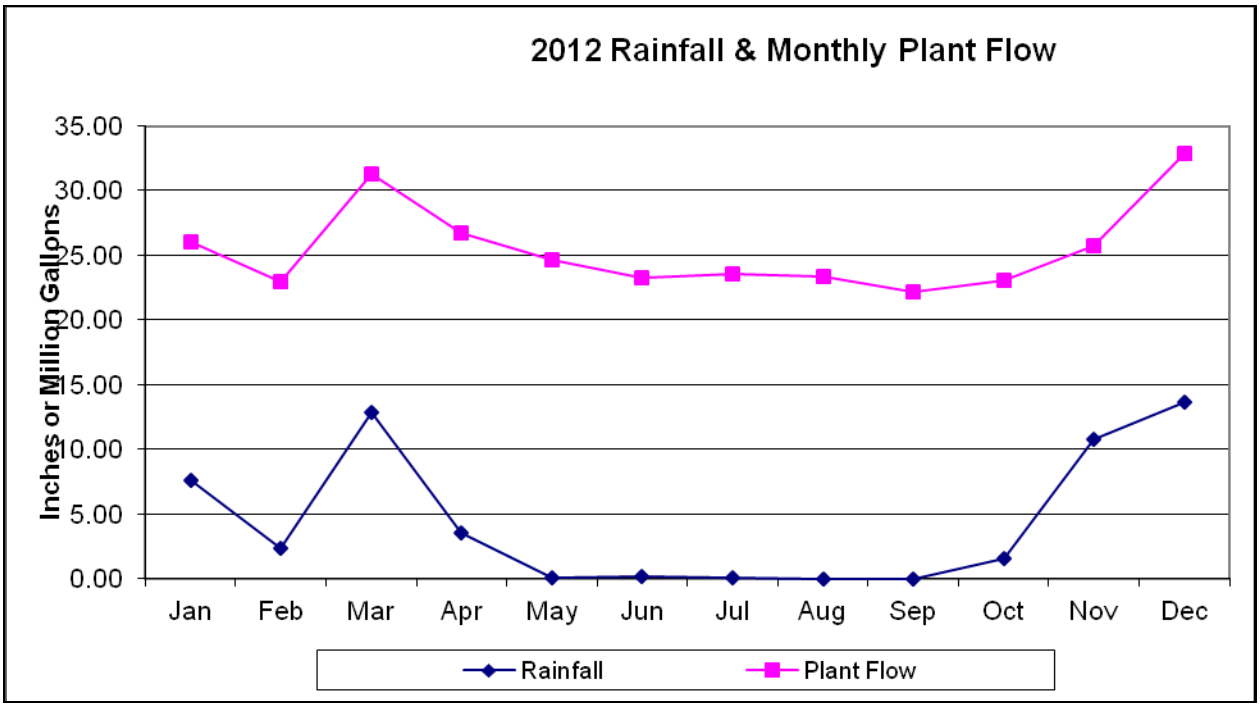



**FIGURE 2**

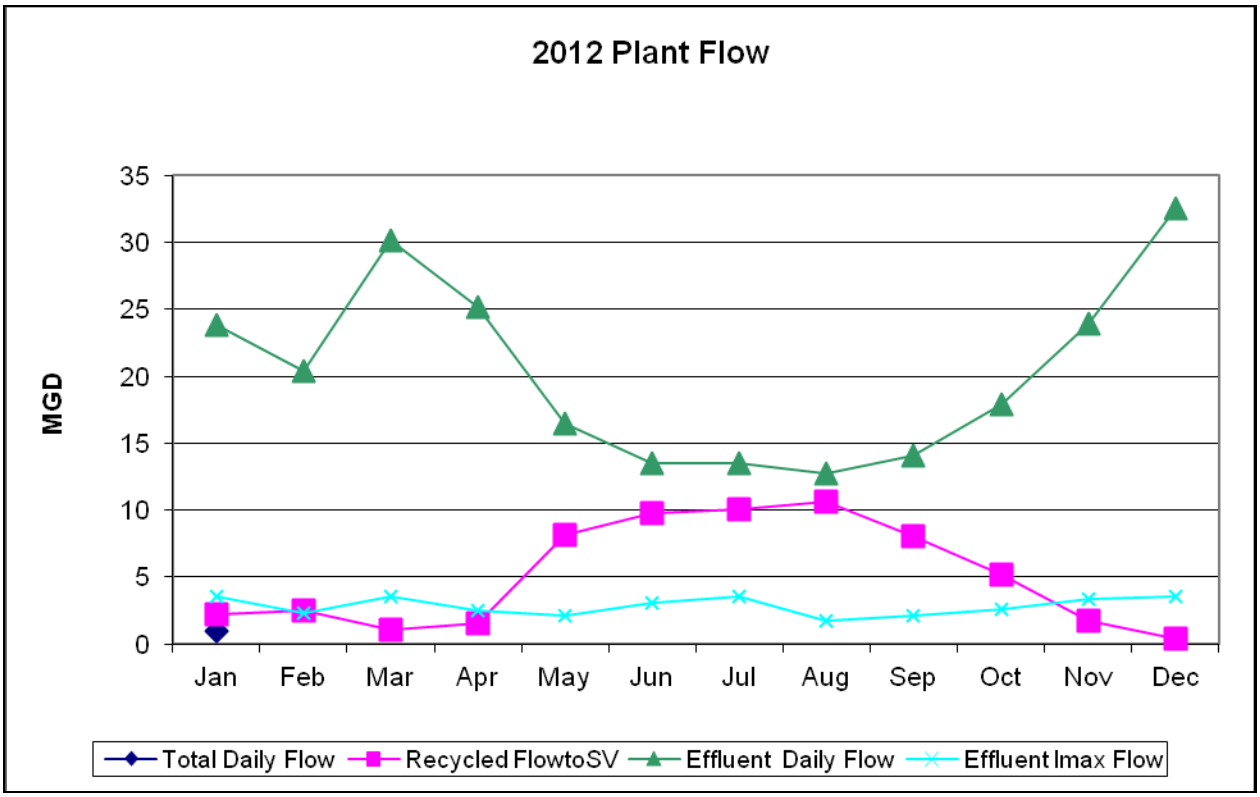


**FIGURE 3**

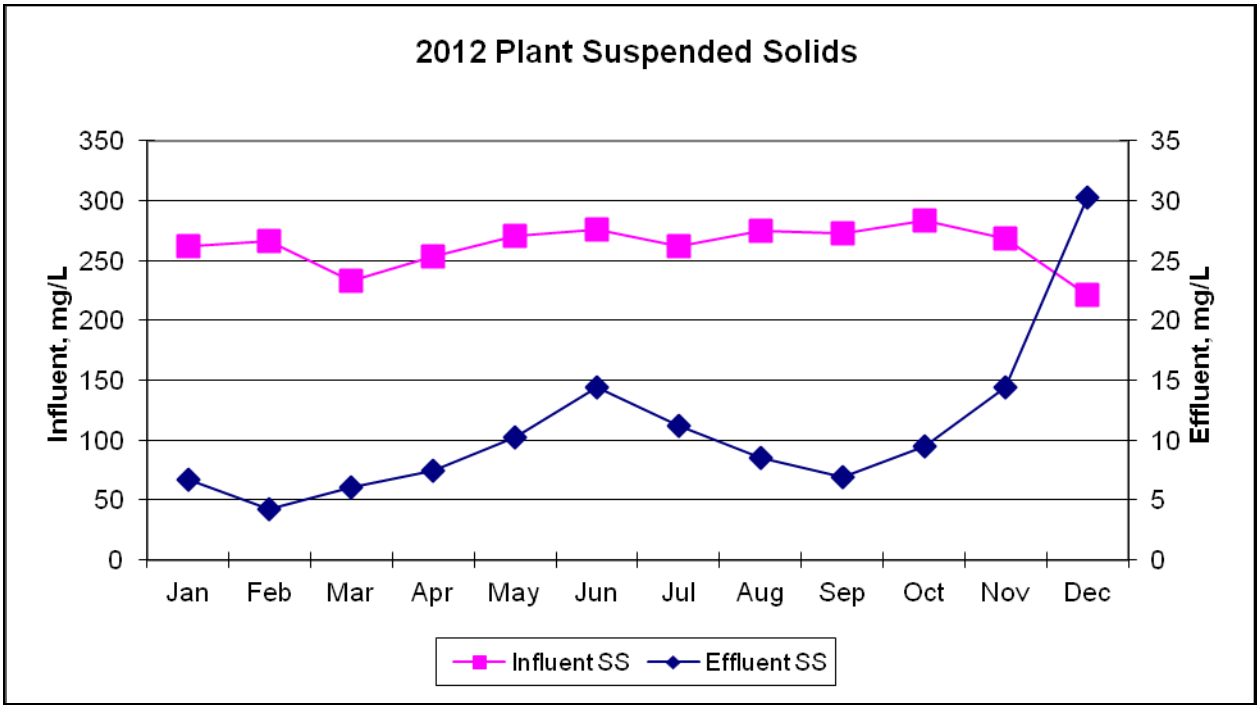



**FIGURE 4**

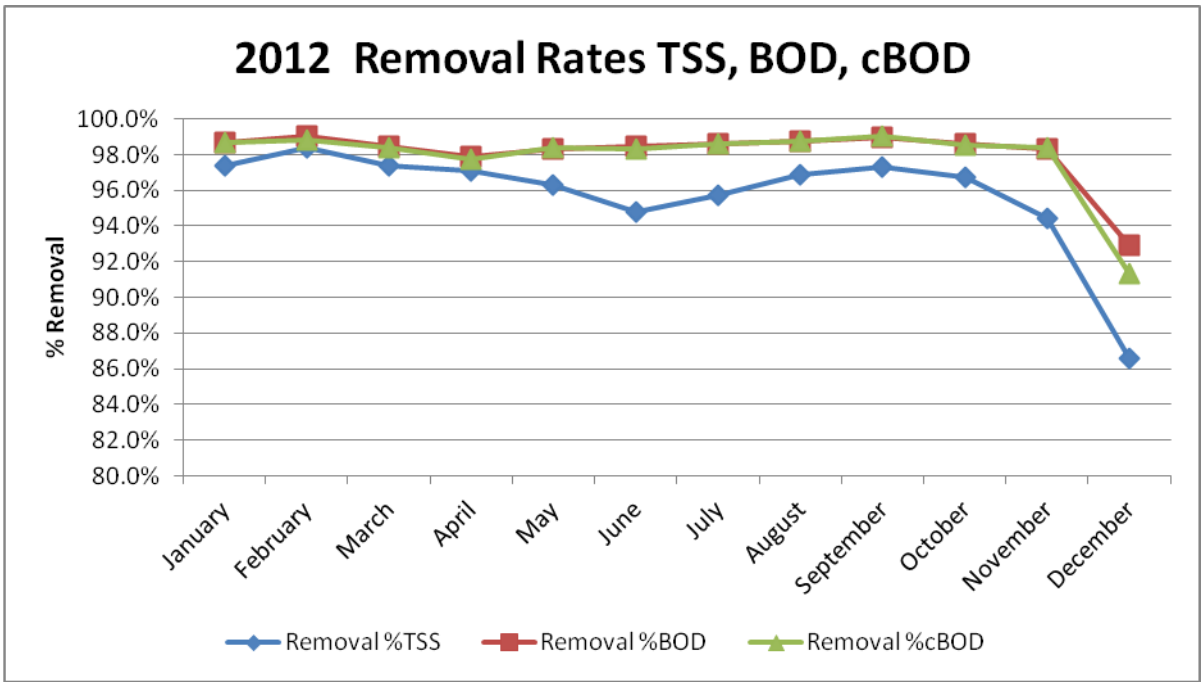
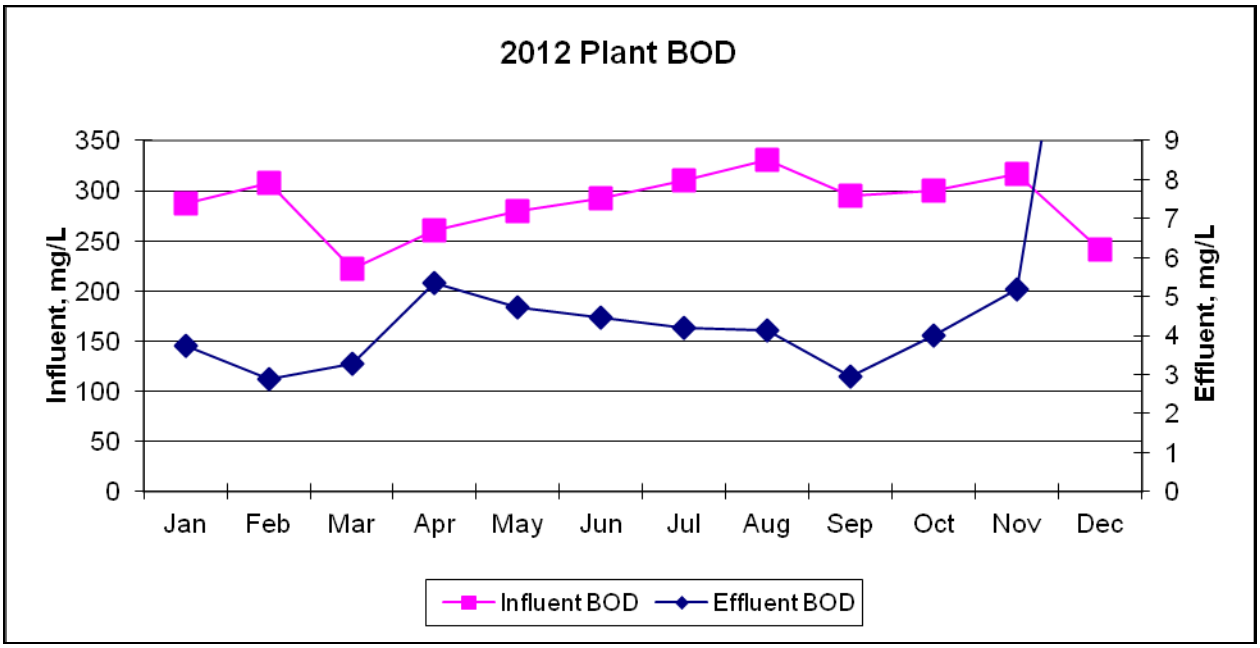


**FIGURE 5**

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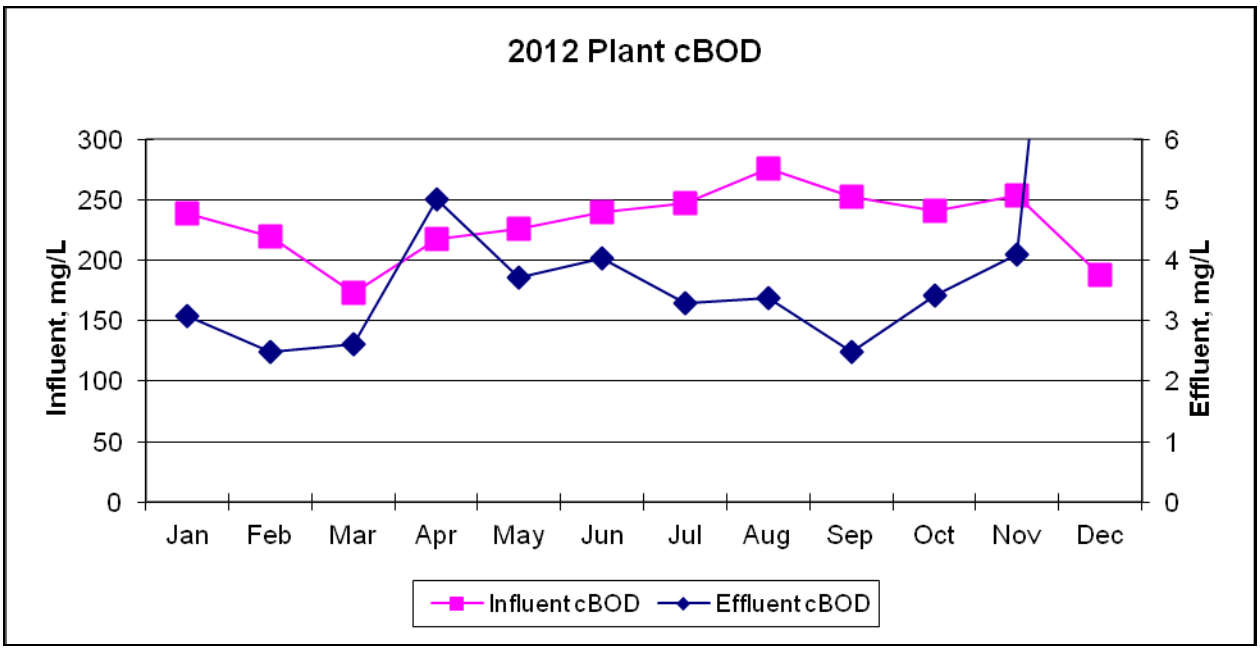


**FIGURE 7**

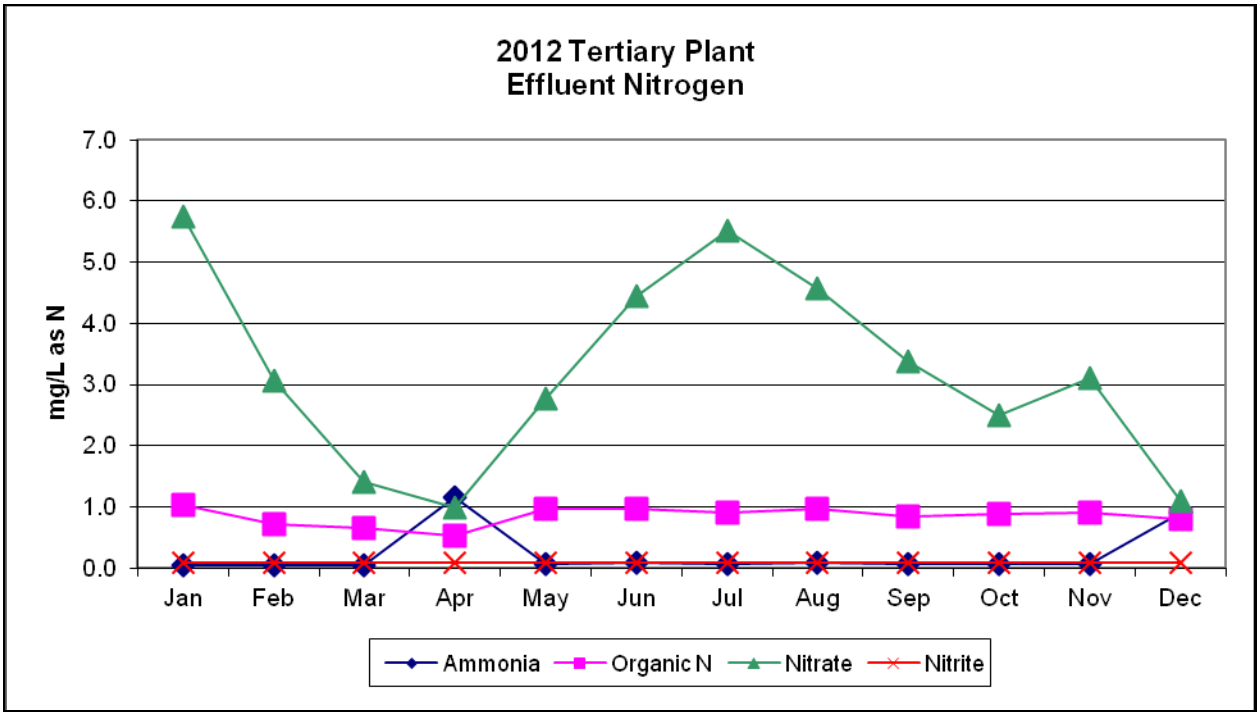



**FIGURE 8**

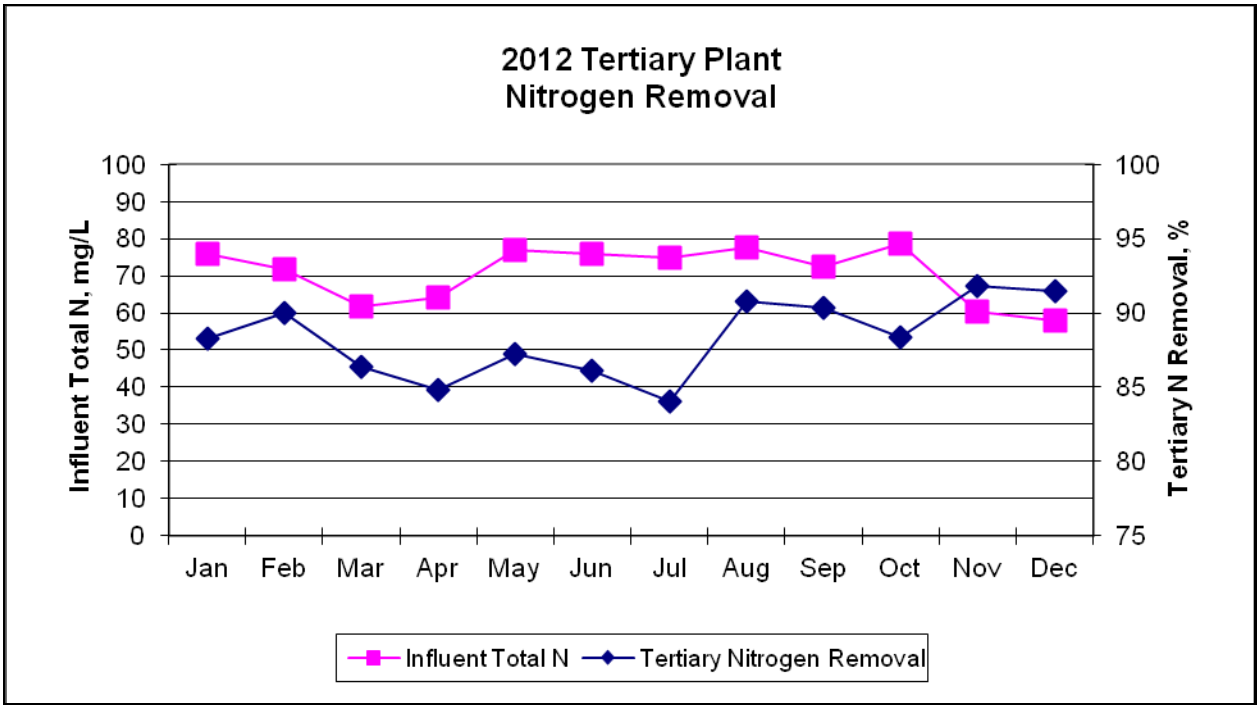


**FIGURE 9**

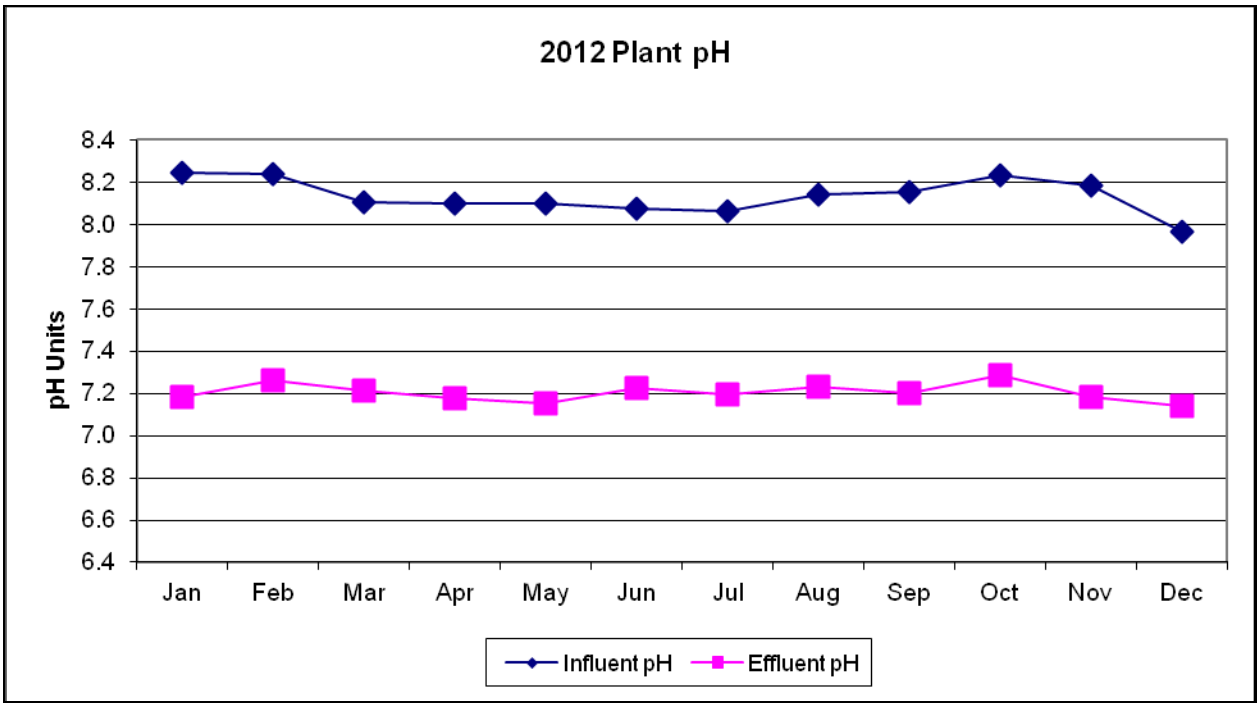
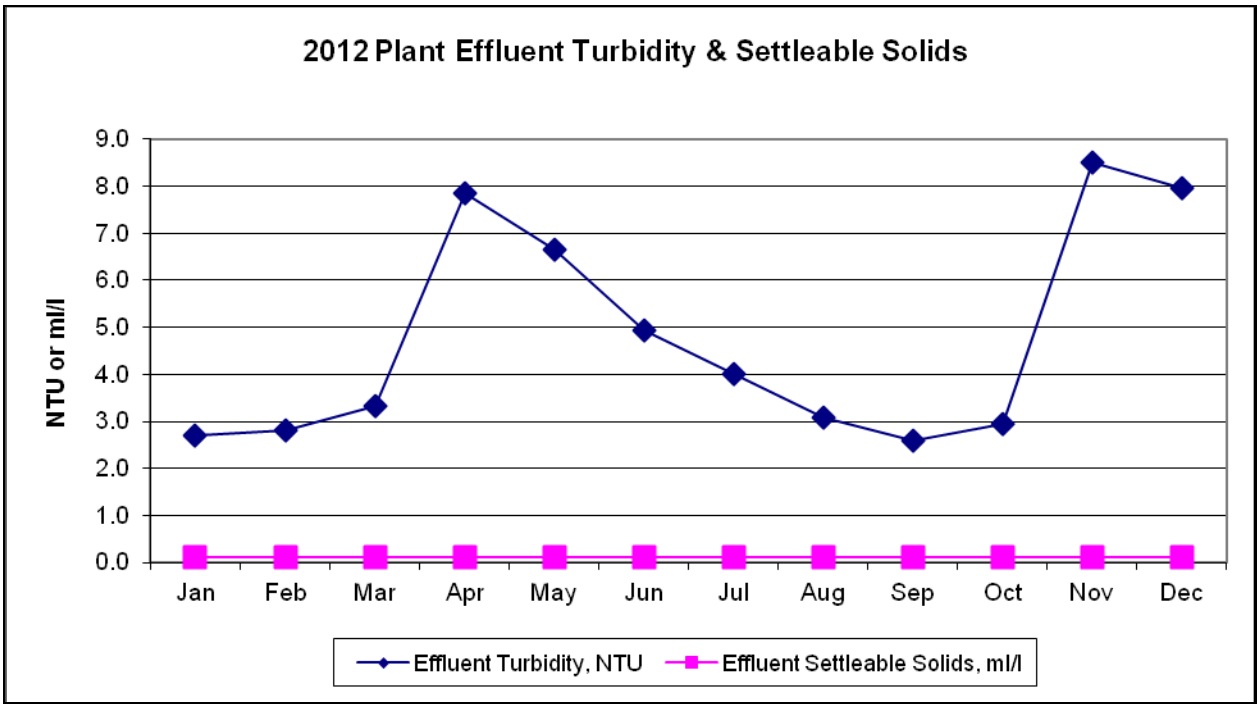



**FIGURE 10**



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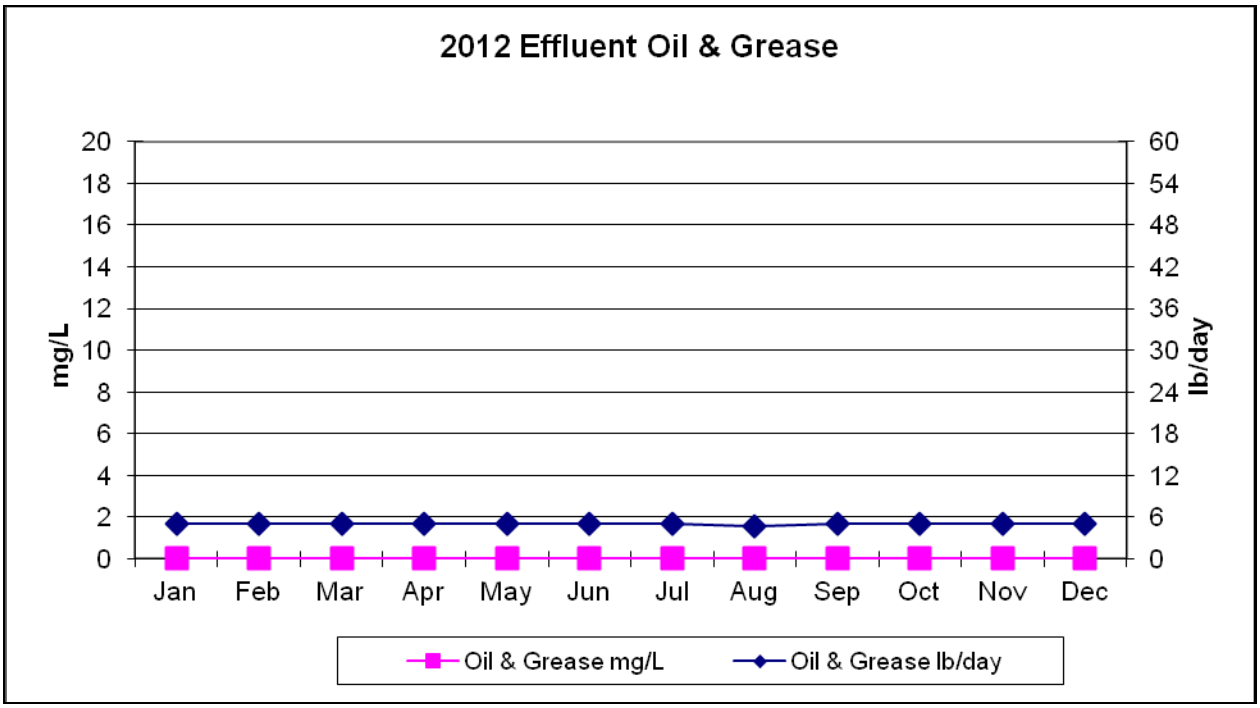


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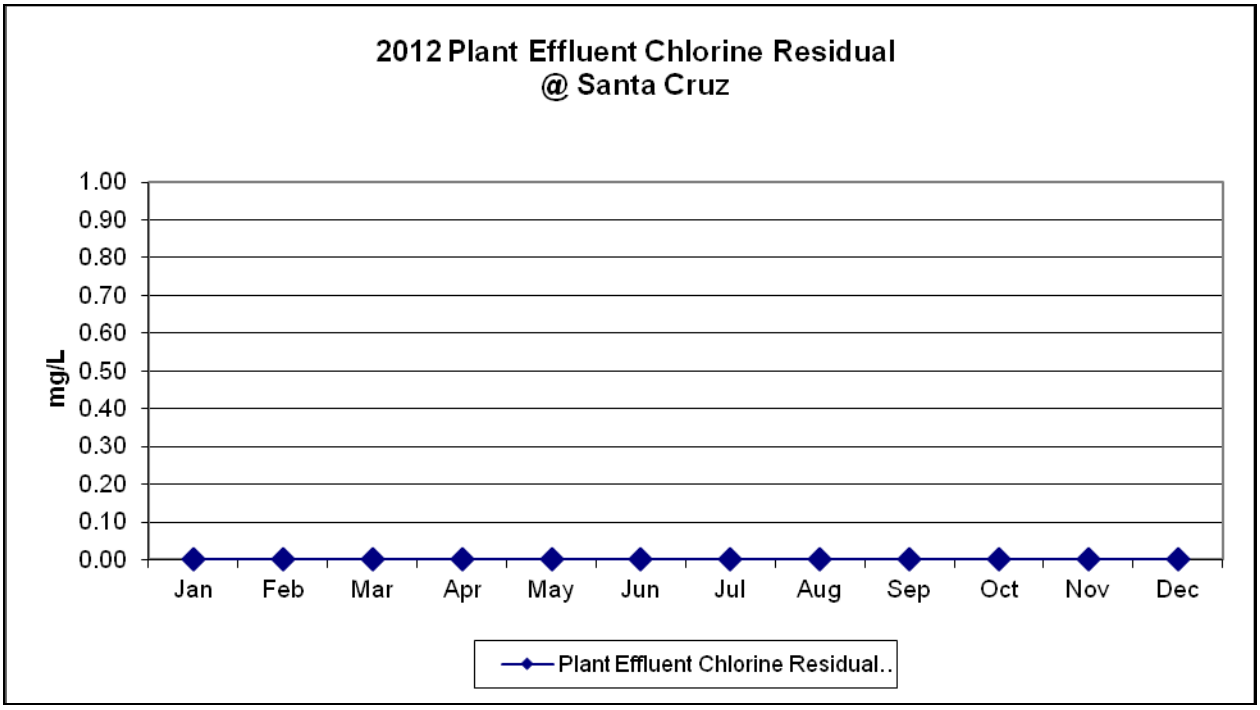


**FIGURE 13**

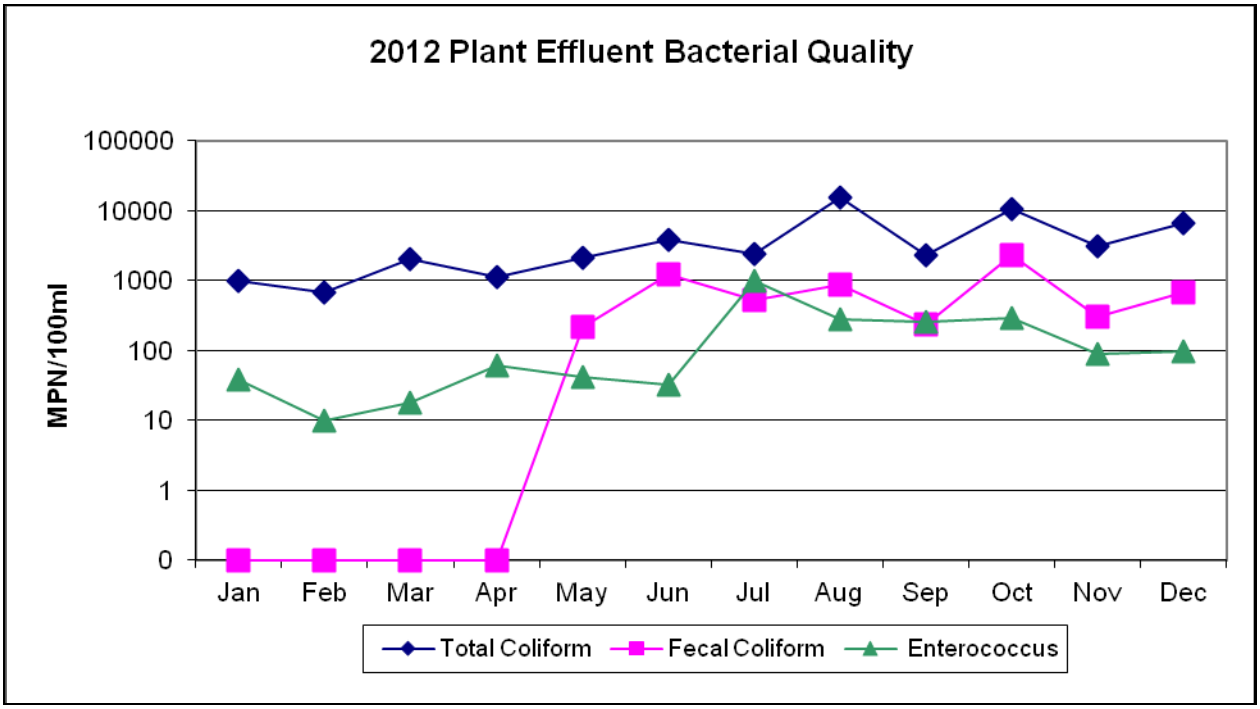



**FIGURE 14**

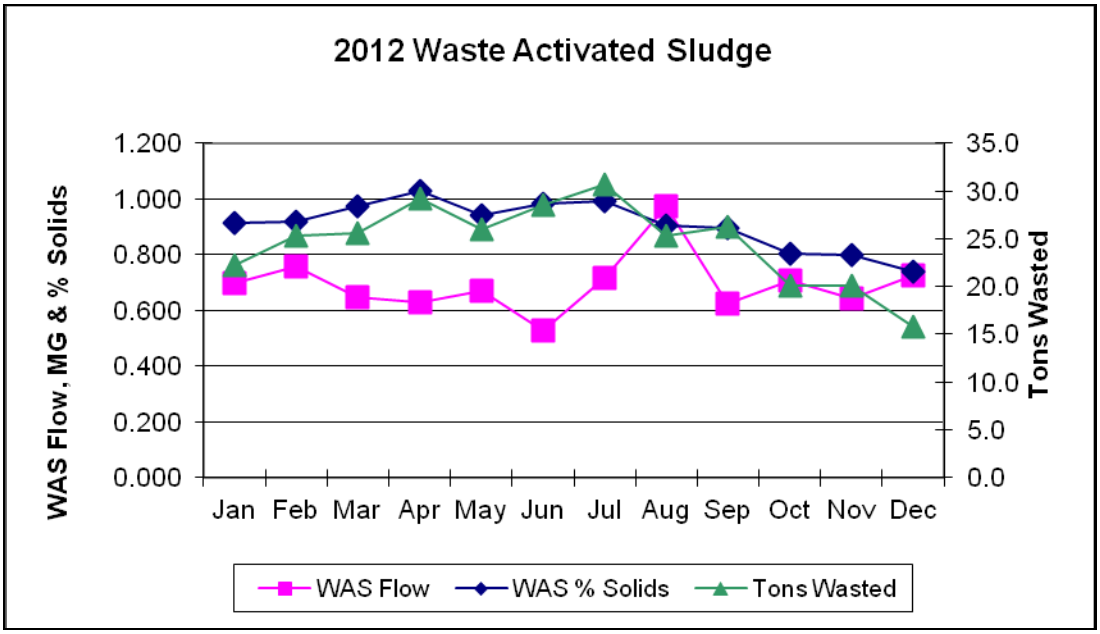


**FIGURE 15**

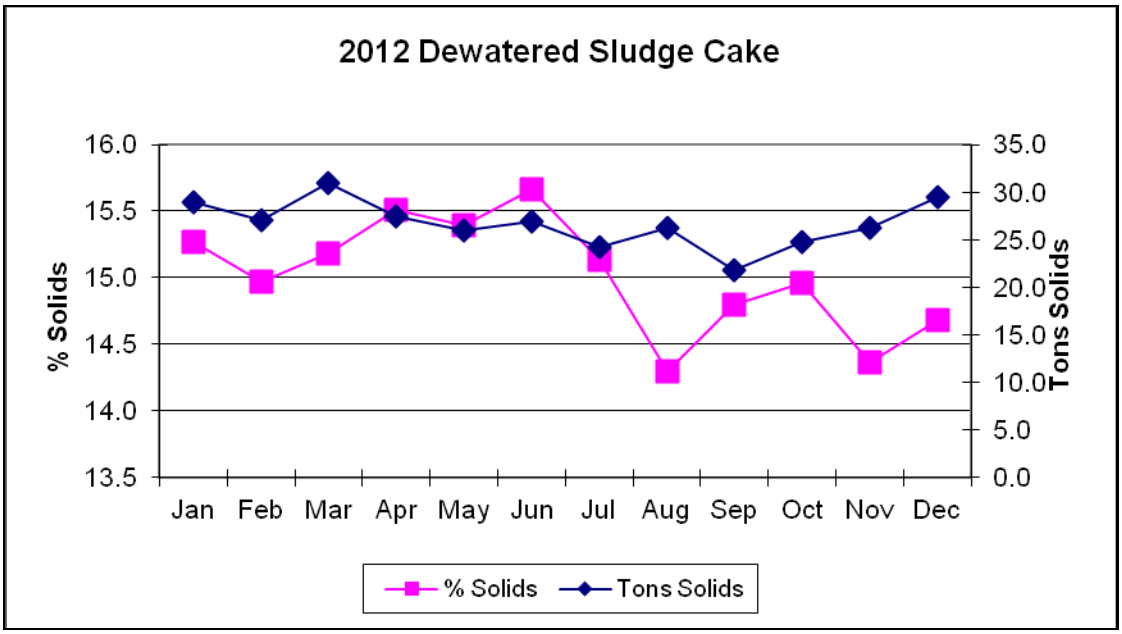



**FIGURE 16**

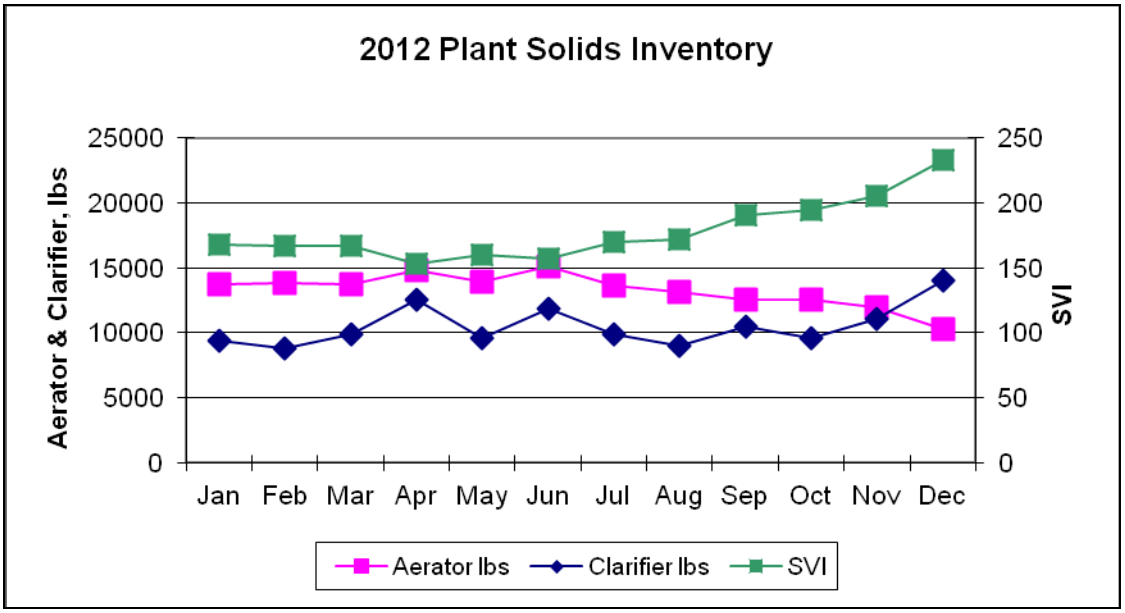
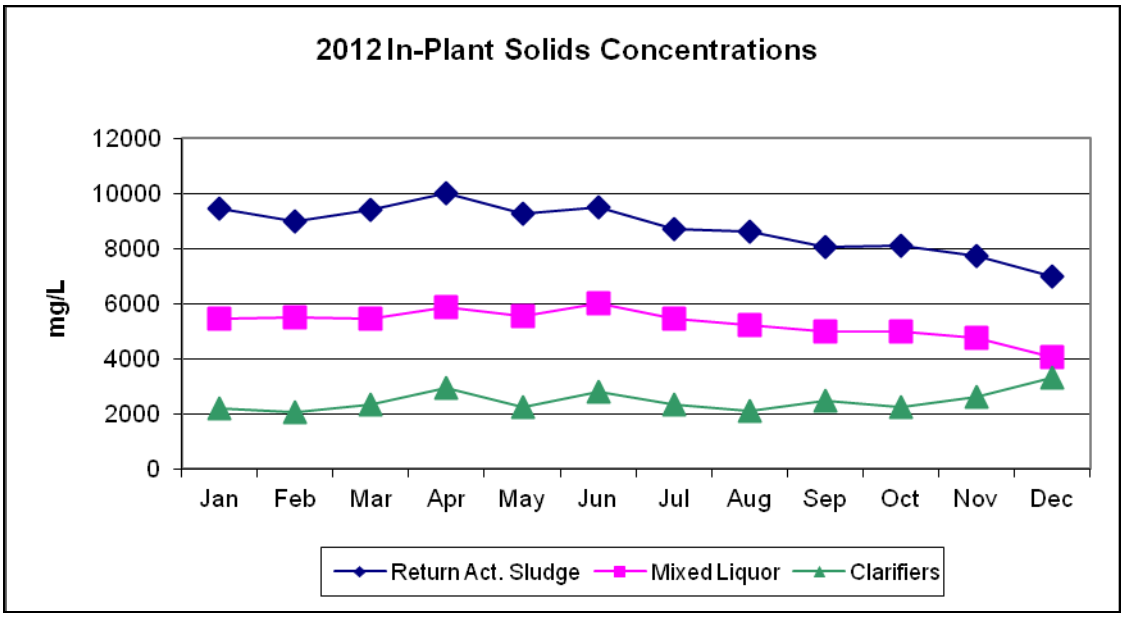


**FIGURE 17**

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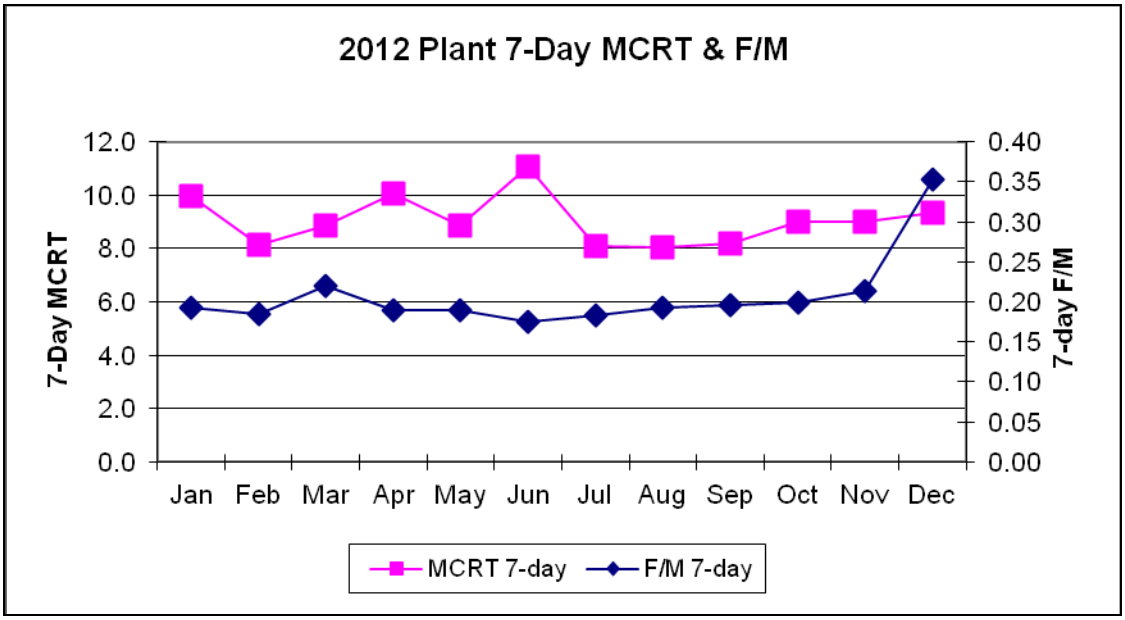
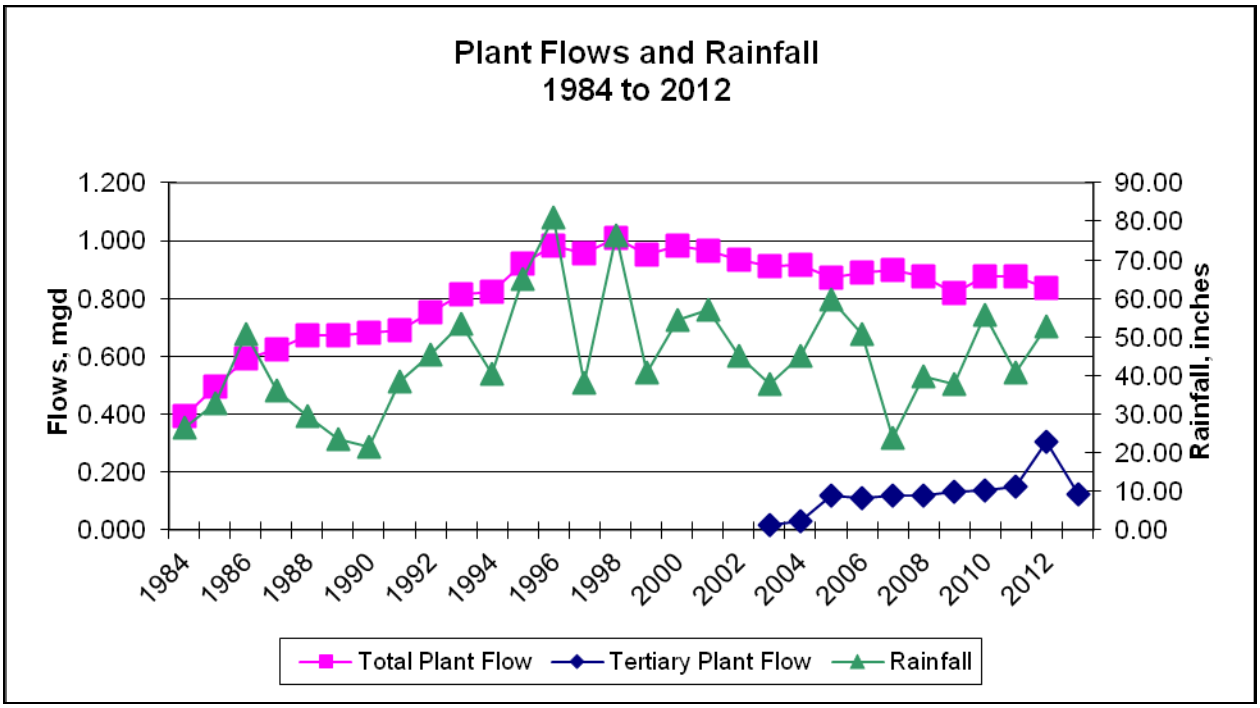


**FIGURE 19**



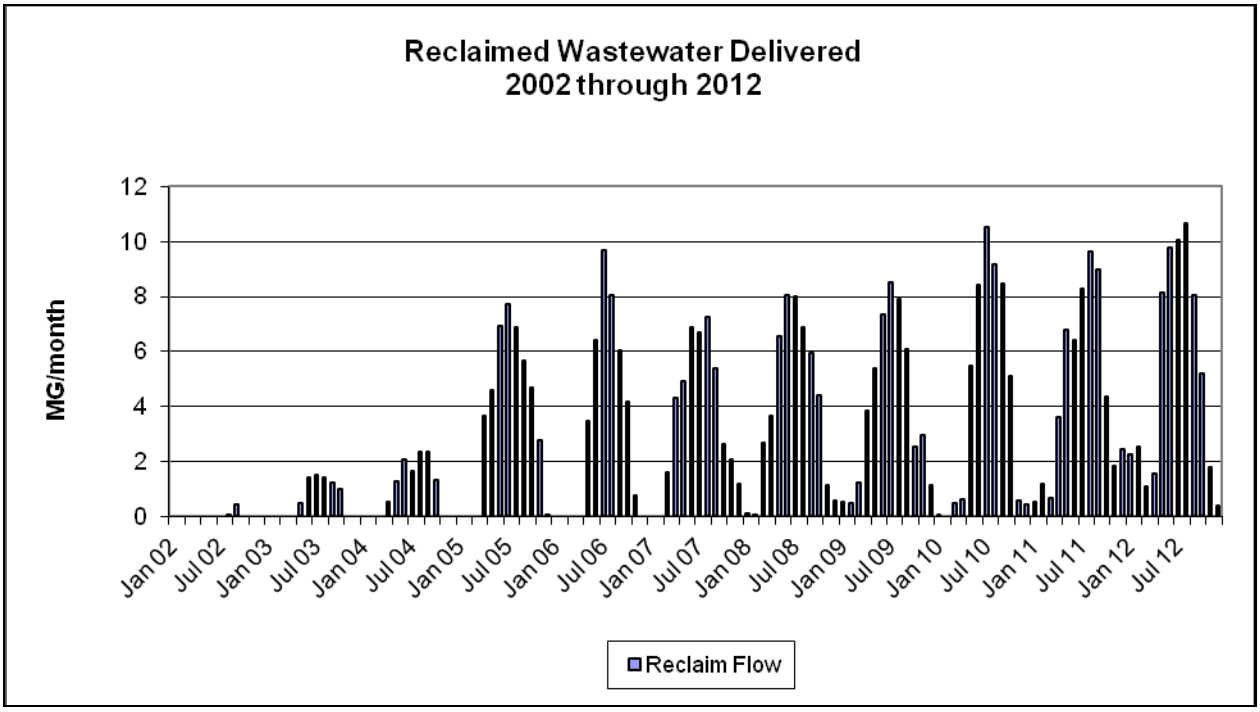


**FIGURE 20**