

## NOVATO SANITARY DISTRICT

Meeting Date: October 19, 2015

The Wastewater Operations Committee of the Novato Sanitary District will hold a meeting at 2:00 PM, Monday, October 19, 2015 at the District offices, 500 Davidson Street, Novato.

### AGENDA

**1. AGENDA APPROVAL:**

**2. PUBLIC COMMENT (PLEASE OBSERVE A THREE-MINUTE TIME LIMIT):**

This item is to allow anyone present to comment on any subject not on the agenda, or to request consideration to place an item on a future agenda. Individuals will be limited to a three-minute presentation. No action will be taken by the Committee at this time as a result of any public comments made.

**3. CONSIDER APPROVAL OF MINUTES OF THE SEPTEMBER 21, 2015 MEETING**

**4. WASTEWATER TREATMENT FACILITIES OPERATIONS AND MAINTENANCE REPORT, SEPTEMBER 2015:**

- a. Treatment Plant Performance Report
- b. Maintenance Report
- c. Safety and training
- d. Odor control and landscaping report.

**5. COLLECTION SYSTEM OPERATIONS AND MAINTENANCE REPORT, SEPTEMBER 2015:**

- a. Collection System Maintenance
- b. Pump Station Maintenance
- c. Collection System Performance
- d. Safety and Training

**6. RECLAMATION FACILITY REPORT, SEPTEMBER 2015:**

- a. Ranch Operations
- b. Irrigation Parcels
- c. Irrigation Pump Station

**7. OTHER ITEMS:**

**8. ADJOURNMENT:**

***In compliance with the Americans with Disabilities Act, if you need special assistance to participate in this meeting, please contact the District at (415) 892-1694 at least 24 hours prior to the meeting. Notification prior to the meeting will enable the District to make reasonable accommodation to help ensure accessibility to this meeting.***

***Materials that are public records and that relate to an open session agenda item will be made available for public inspection at the District office, 500 Davidson Street, Novato, during normal business hours.***

September 21, 2015

A regular meeting of the Wastewater Operations Committee of Novato Sanitary District was held at 2:00 p.m., Monday, September 21, 2015, at the District Office, 500 Davidson Street, Novato.

MEMBERS PRESENT: Committee Members Jerry Peters and Brant Miller.

STAFF PRESENT: Sandeep Karkal, General Manager-Chief Engineer  
Erik Brown, Technical Services Manager  
Steve Krauthem, Field Services Manager  
Julie Swoboda, Administrative Secretary

OTHERS PRESENT: Lynda Farmery, Planner, Veolia  
John Bailey, Project Manager, Veolia

AGENDA APPROVAL: Approved as presented.

PUBLIC COMMENT: None.

APPROVAL OF MEETING MINUTES FOR AUGUST 17, 2015: The August 17, 2015 meeting minutes were approved as presented without objection.

WASTEWATER TREATMENT FACILITIES OPERATIONS AND MAINTENANCE REPORT FOR AUGUST 2015:

- Treatment Plant Performance Report, Maintenance Report and Safety & Training:

The General Manager introduced John Bailey, Veolia Plant Manager, who provided an overview of treatment plant operations for the month of August. He discussed key operations and maintenance events at the Novato facility, the Ignacio Transfer Pump Station, the Recycled Water Plant, and the Sludge Lagoons. He stated that the monthly average flow was 3.20 MGD and that water quality performance was excellent.

The Plant Manager discussed training events completed in August and stated that as of August 31<sup>st</sup>, Veolia employees have been accident free for a total of 1,924 days. He reviewed the operations and maintenance report and stated that the Recycled Water Facility produced 19.064 MG (million gallons) in August and had no excursions. He stated that Jerome Meter (H<sub>2</sub>S) readings continue to be taken within the treatment plant as well as in the Lea Drive neighborhood area and that seven (7) odor notifications were received in August. He stated that eight (8) noise complaints were received, all of which were associated with the District's demolition project for portions of the previously decommissioned facilities of the old treatment plant.

- Odor control and landscaping report: The General Manager discussed odor control related activities in August. He stated that in July the odor control beds were topped off and continue to function well. He stated that additional Jerome meter readings continue

to be taken in the neighborhood and that the Aqua-Fog system is used on an as-needed basis. Addressing site landscaping, he stated that the Oleander bushes on the west side of Lea Drive appear to be doing very well, and that the District has received a request for more Oleander plantings.

- Collection Systems Operation and Maintenance Report for August 2015: The Field Services Manager presented the Collection Systems Monthly Report for August 2015. He reported that, in August, the Collection Systems crew cleaned a total of 53,112 feet of sewer pipeline and that outside contractors cleaned a total of 8,990 feet of large diameter sewer mains. He stated that the department completed 367 maintenance work orders which were generated this month. He stated that the District's CCTV van (Closed Circuit TV) televised 61 line segments for 8,557 feet of production and he noted that one line segment was identified as needing repairs. He reported on the current Collection System Projects, and outlined the specialized training that the department completed. He stated that as of August 31<sup>st</sup>, 2015, the Collections Department and the District have worked accident free for a total of 1,632 days.

The Field Services Manager stated that there was one minor Category 3 sanitary sewer overflow (SSO) in August at a manhole near 857 DeLong Ave. He noted that the total estimated discharge was less than 15 gallons and that the probable cause was the result of root intrusion and debris in the line segment just below the discharge point.

- Reclamation Facility Report for August 2015: The Field Services Manager provided a summary of the Reclamation Facilities report. He stated that the rancher continued to work on weed management and sprinkler repairs. In terms of sludge disposal, he stated that an agreement was executed to pump sludge out of the sludge lagoons and into the Dedicated Land Disposal (DLD) area, and noted that approximately 0.48 million gallons of sludge had been pumped out of Lagoon 1 by month end. In terms of pasture irrigation, he stated a total of 62.45 million gallons of treated water was used for irrigation in August.

OTHER ITEMS: The General Manager stated that as part of its continuing effort to inspect the collection system using closed circuit television (CCTV) equipment, the District needs to CCTV certain inverted siphons in its collection system.

The Field Services Manager stated that these siphons require specialized CCTV equipment which the District does not own, therefore the District utilizes an outside contractor for this work. He stated that staff requested proposals from two local CCTV contractors to clean and inspect nine (9) inverted siphons that are 12" in diameter or smaller. He stated that Roto-Rooter provided the only bid in the amount of \$31,747.50.

The General Manager noted that complete information for this item had become available after the Committee agenda packet had gone out. He stated that he was bringing it forward on an informational basis to the Committee at this point, rather than waiting another month to the next Committee meeting, so that the District could keep moving forward and complete the work in advance of wet weather. He stated if the

Committee was agreeable to it, staff would proceed to request approval of the proposed contract from the full Board at the regular September 28<sup>th</sup> Board meeting. The Committee indicated that it was agreeable to this approach.

In closing, the General Manager noted that the next Wastewater Operations Committee meeting will be held on Monday, October 19<sup>th</sup> at 2:00 p.m. at the District office.

ADJOURNMENT: There being no further business to come before the Committee, the meeting adjourned at 2:44 p.m.

Respectfully submitted,

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Sandeep Karkal  
General Manager-Chief Engineer

Julie Swoboda, Recording

DRAFT



October 11, 2015

Mr. Sandeep Karkal  
Manager - Engineer  
Novato Sanitary District  
500 Davidson Street  
Novato, CA 94545

**Subject: Veolia Water Operations Report – September 2015**

Dear Mr. Karkal:

I am pleased to provide the Monthly Operation report for September 2015.

As always, please give me a call at 707-208-4491 should you have any questions.

Best regards,

A handwritten signature in blue ink that reads "John Bailey". The signature is stylized with a large, circular initial 'J' and a long, sweeping underline.

John Bailey  
Project Manager, Veolia



**MONTHLY OPERATIONS REPORT**  
**September 2015**

Prepared for

**NOVATO SANITARY DISTRICT (NSD)**  
**WASTEWATER TREATMENT PLANT**  
**500 Davidson Street**  
**Novato, CA 94545**

Prepared by

**Veolia Water West Operating Services, Inc. (VWWOS)**

**TABLE OF CONTENTS**

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TREATMENT PLANT PERFORMANCE SUMMARY.....	1
SAFETY AND TRAINING .....	2
OPERATIONS AND MAINTENANCE STATUS / REVIEW.....	2-3
LABORATORY ACTIVITIES SUMMARY.....	3-4
ADMINISTRATION .....	4
ODORS.....	4
MISCELLANEOUS.....	4
ATTACHMENTS	
• Photos	
○ Boiler Water Corrosion Inhibitor Application	
○ Sludge Lagoons Annual Cleaning – NSD Project	
• Laboratory Data	
○ BOD/TSS Report	
○ Conventional Pollutants Report	
• Recycled Water Compliance Summary Report	
• Annual Performance Graphs	
• Process Control Data / Graphs	
• Customer Notifications (Odor / Noise)	
• Jerome Meter Readings September 2015	
• Neighborhood Jerome Meter Reading Locations – Lea and McClelland	

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TREATMENT PLANT PERFORMANCE SUMMARY: September 2015:

Parameter	Value		Limit	
	Ave	Max	#1	#2
Flow, MGD (monthly ave/max)	3.23	3.82	N/A	N/A
Max Peak Hour, MGD – No Rainfall	N/A	~ 7	N/A	N/A
<b>Influent</b>				
BOD <sub>5</sub> , lb/day (month ave/max)	7,865	10,158	N/A	N/A
TSS, lb/day (monthly ave/max)	9,234	12,646	N/A	N/A
<b>Effluent</b>				
BOD <sub>5</sub> , mg/L (monthly ave/weekly max)	<6	6	40	N/A
TSS, mg/L (monthly ave/weekly max)	<4	5	N/A	N/A
BOD <sub>5</sub> - % Removal, Minimum	98	N/A	N/A	N/A
TSS - % Removal, Minimum	99	N/A	N/A	N/A
Ammonia, mg/L – (monthly ave/daily max)	N/A	N/A	N/A	N/A
pH, su (min / max)	6.9	7.0	6.0	9.0
Enterococcus, MPN/100 ml (30 day geo mean)	N/A	N/A	N/A	N/A
Fecal Coliform, MPN/100 ml (30 day median)	N/A	N/A	N/A	N/A
Fecal Coliform, MPN/100 ml (90 <sup>th</sup> percentile)	N/A	N/A	N/A	N/A
Total Coliform, MPN/100 ml (5 Sample Median/Max)	79	350	240	10,000
<b>Total Permit Exceedances (NPDES)</b>	0			

**Title 22 - Recycled Water Production and Quality**

Description	Units	Value	Limit
Volume Produced	Million Gallons	12.573	N/A
Average Turbidity	NTU	0.6	2.0
Turbidity > 5 NTU (in 24 hour)	Minutes	0	72
Minimum CT (disinfection)	mg-min/L	>450	450 minimum
Minimum Dissolved Oxygen (DO)	mg/L	8.0	2 mg/L minimum
Maximum Total Coliform	MPN/100 ml	<2	240
Maximum Total Coliform 2 Samples 30 d	MPN/100 ml	<2	23
Total Coliform 7 Sample Median	MPN/100 ml	<2	2.2

Discussion of Violations / Excursions: None

Waste Discharge Requirements (WDR) - None

Recycled Water - None

Rainfall – N/A

**SAFETY AND TRAINING:**

- Monthly plant safety inspections for Novato WWTP and Ignacio Transfer Pump Station completed
- Five Minute Tailgate training is held daily with all staff.
- No safety incidents for the month of September.
- Accident Free: 6/1/10 – 9/30/15: 1,954 days
- Monthly Safety Topics and Training:
  - Ergonomics
  - Cold Stress Prevention
- SOP's Reviewed
  - Chemical Analysis of Hot Water Loop – Boiler
  - Chemical Addition to Hot Water Loop – Boiler
  - Ignacio Transfer Pump Station Force Main Pigging Procedure

**OPERATION & MAINTENANCE STATUS / REVIEW:**

**Key events for the period:**

**Novato**

- Routine rounds, readings and maintenance
- Performed annual service on Flygt pumps and mixers
- Changed out door handles to lever handles on old Blower Room doors
- Assisted Brown and Caldwell with 2 week odor study

**Equipment Out of Service – Due to Planned Servicing, Maintenance, or Replacement**

- Aeration Basin #1 & #2 (not needed at current flows)
- Secondary Clarifier #1 (not needed at current flows)
- Primary Clarifier #2 (not needed at current flows)

**Ignacio Transfer Pump Station**

- Routine rounds, readings and maintenance
- Replaced floats and switch in Ignacio Emergency Generator Return Tank
- Performed annual service on Flygt pumps
- Assisted Collection Department with pigging (cleaning) of force main

**Equipment Out of Service – Due to Planned Servicing, Maintenance, or Replacement**

- None

**Recycled Water Plant (RWP)**

- Performed plant rounds and maintenance

**Equipment Out of Service – Due to Planned Servicing, Maintenance, or Replacement**

- None

**Sludge Lagoons**

- Performed routine rounds and inspection
- Flushed Decant line
- Flushed Sludge line

**LABORATORY ACTIVITIES SUMMARY:****Wildlife Pond and Reclamation Activities****Irrigation Wetwell Sampling**

Monthly sampling of the irrigation wetwell was performed in September. The data collected will be compiled and reported in the 2015 Triennial Irrigated Pasture Report.

**Wildlife Pond and Reclamation**

Samples and weekly/monthly observations at the Wildlife pond were taken in accordance with the WDR (Order No. 92-065).

**Sampler Installed**

A new HACH sampler was purchased and installed at the effluent common bay which is the designated sample point for most of the effluent samples.

The older sampler (Sigma SD900) that was in service at the effluent location will be used to replace the sampler at the primary clarifier.

**Nutrients**

Veolia staff worked with Mike Falk of HDR on the nutrient discharge data presented at the September Bay Area Clean Water Agencies (BACWA) Permits Committee meeting.

**Total Coliforms**

Three samples were analyzed each week for Total Coliforms and all results were under the regulatory limits

**Whole Effluent Toxicity Testing**

There are no requirements for toxicity testing during the reclamation discharge season.

**BOD**

BOD results from September 3 and 15 had the following qualifier

*BOD check standard (GGA) for this analytical batch yielded a value higher than the method upper acceptance limit. Some sample results reported from this batch may therefore have a high bias.*

BOD results from September 14, 15, 15 had the following qualifier.

*The dilution water blank associated with this sample exceeds the method prescribed limit for Dissolved Oxygen uptake of 0.2 ppm. Caltest additionally performs a daily BOD Method Blank (MB) to demonstrate the influence of the Dilution Water on samples. The MB result for this batch is ND (less than 5 ppm), indicating the high dilution water Dissolved Oxygen uptake should not have contributed to the sample results.*

**Training**

Kurt and Liz attended an IDEXX webinar on September 10<sup>th</sup>.

Bacterial Testing for Fecal Coliforms and E. coli in Wastewater: Multiple Tube Fermentation, Membrane Filtration, and Colilert/Colilert-18

**BACWA**

Veolia and NSD staff attended the September BACWA Permits Committee meeting.

**Pretreatment**

Kurt and Liz continued to work with Bob Adamson for training and familiarization with the NSD pretreatment program. In addition, Erik Brown, the new Technical Services Manager for NSD, implemented a weekly pretreatment meeting with Liz Falejczyk and Bob Adamson.

**Permits**

- Renewed Roy's Sewer Service Waste Hauler Permit
- Renewed Bio Marin Galli Non-Domestic Discharge Permit

**Inspections**

- Matt and Jeff's carwash was re-inspected after the initial inspection revealed hydraulic fluid in their sand and grease interceptor. Hydraulic fluid removed and accounted for.
- Thai Bistro change of ownership inspection. No functional grease removal device (GRD) in service. Currently installing a minimum 100lb GRD.

**ADMINISTRATION:**

- August Electronic Self-Monitoring Report (SMR) submitted on September 22, 2015
- August Electronic Discharge Monitoring Report (DMR) submitted on September 22, 2015
- August Recycled Water Report submitted on September 22, 2015

**ODORS:**

- Jerome meter (H2S) readings performed in neighborhood and within treatment plant.
- All readings in neighborhood were at the minimum detection threshold of the Jerome meter.
- Eleven contacts regarding odors.

**MISCELLANEOUS**

- Process Control Management Plan (PCMP) meetings held weekly.
- Recruitment open for Maintenance Technician.

**Veolia Support Staff On/Off Site (Various Times)**

John O'Hare	Technical Support
Dave Coffman	Asset Management

## ***PHOTOS***



## BOILER WATER CORROSION INHIBITOR APPLICATION SEPTEMBER 2, 2015



Upper Left & Right – Christian Williams demonstrates chemical analysis for boiler water treatment  
Bottom – Review SOP and application of corrosion inhibitor



SLUDGE LAGOONS – ANNUAL CLEANING  
NSD PROJECT  
SEPTEMBER 2015



Upper Left – Sludge Lagoon #1 cleaned and ready for use  
Upper Right – Sludge Pumping Lagoon #6  
Bottom – Cleaning Digested Sludge feed lines

## ***LABORATORY DATA***





***RECYCLED WATER COMPLIANCE SUMMARY REPORT***

# NOVATO SANITARY DISTRICT

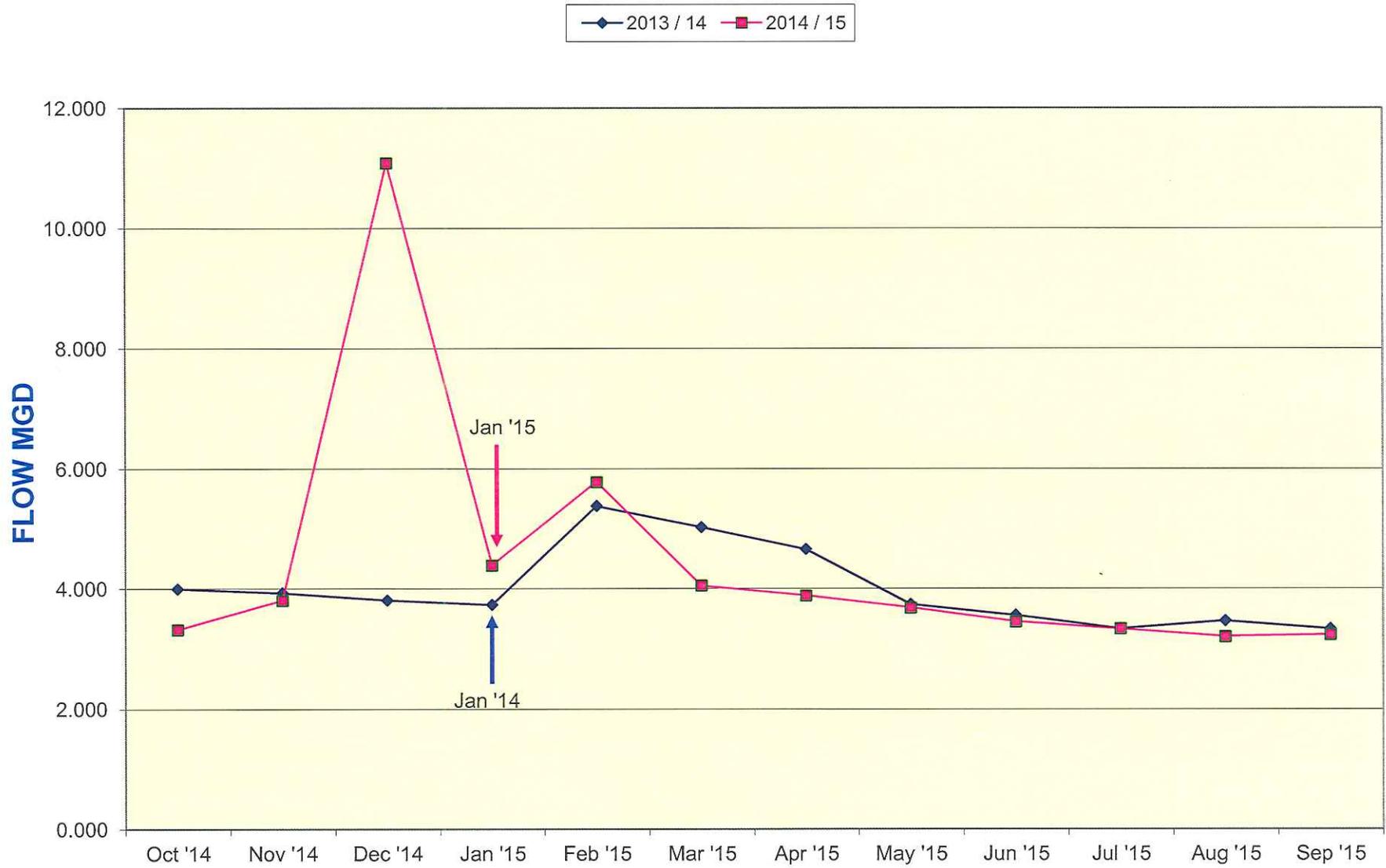
## RECYCLED WATER

### COMPLIANCE SUMMARY REPORT

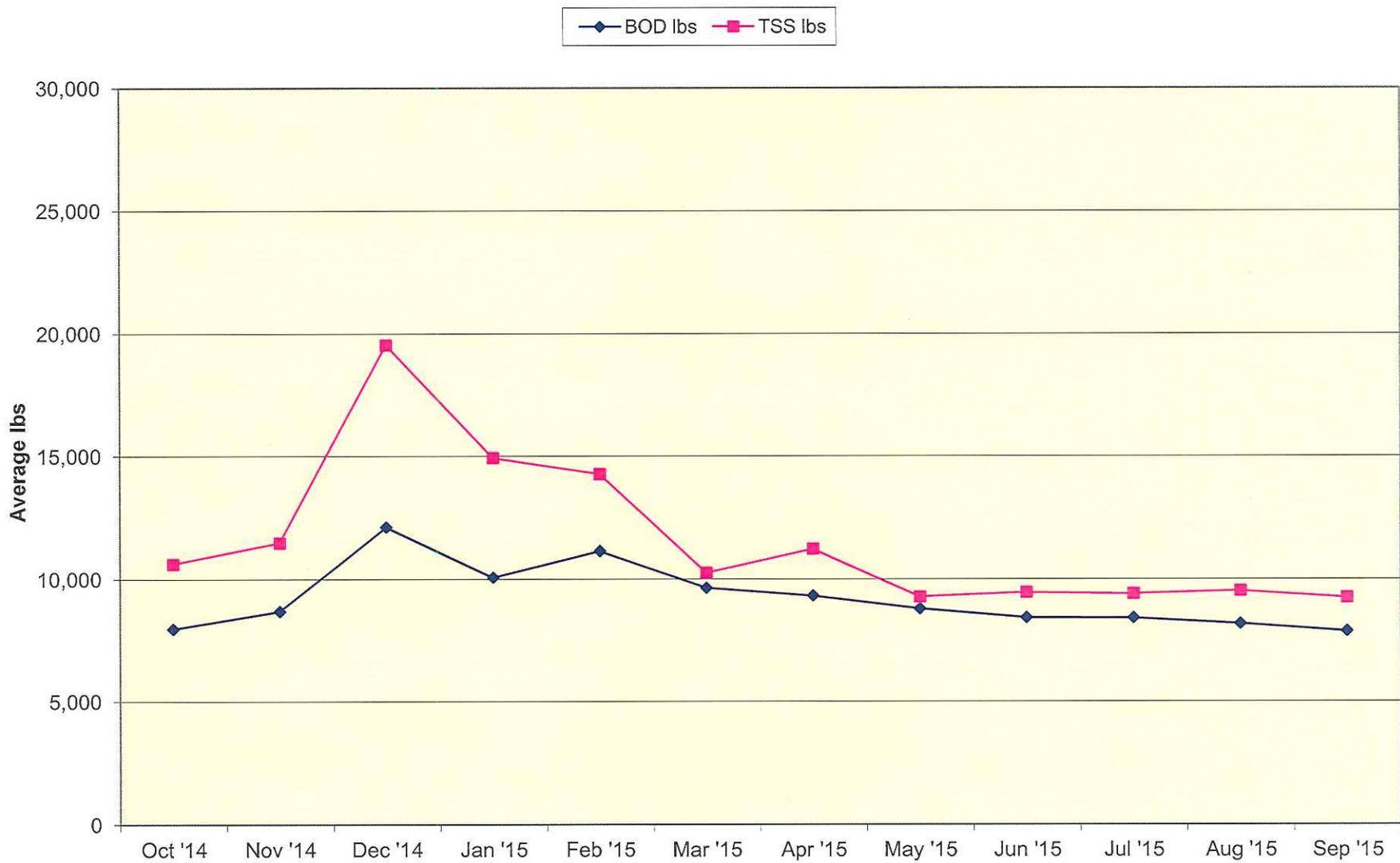
Date	Filter Influent Flow	Recycled Water Flow to Plum St.	Recycled Water Banked	Banked Water To Plum Street Tank	Potable Water To Plum St Tank	Recycled Water Influent Turbidity Max	Recycled Water Influent Turbidity Ave.	Minutes Over 5 NTU Turbidity	Filter Effluent 24 Hr Average Turbidity	Recycled Water Inf Chlorine Dose	Filter Effluent Dissolved Oxygen	Filter Effluent Total Coliform	Chlorint Contact Time
	MGD	MGD	MG	MGD	MGD	NTU	NTU	(m)	NTU	(mg/l)	(mg/l)	vPN/100m	Minutes
9/1/2015	0.690	0.624					1.1	0	0.8		8.3	<2	>450.000
9/2/2015	0.650	0.587					1.5	0	0.7			<2	>450.000
9/3/2015	0.650	0.579					1.5	0	0.6			<2	>450.000
9/4/2015	0.640	0.574					1.6	0	0.6			<2	>450.000
9/5/2015	0.650	0.581					1.6	0	0.6			<2	>450.000
9/6/2015	0.650	0.492					1.3	0	0.6			<2	>450.000
9/7/2015	0.650	0.579					1.3	0	0.6		8.8	<2	>450.000
9/8/2015	0.660	0.588					1.0	0	0.5		8.7	<2	>450.000
9/9/2015	0.720	0.641					0.7	0	0.5		8.7	<2	>450.000
9/10/2015	0.650	0.578					1.0	0	0.6			<2	>450.000
9/11/2015	0.640	0.575					0.7	0	0.6			<2	>450.000
9/12/2015	0.650	0.586					1.1	0	0.6			<2	>450.000
9/13/2015	0.640	0.581					0.7	0	0.5		8.7	<2	>450.000
9/14/2015	0.660	0.344					0.7	0	0.5		8.8	<1.8	>450.000
9/15/2015	0.650	0.139					1.2	0	0.5		8.7	<2	>450.000
9/16/2015	0.160	0.049					0.6	0	0.5			<2	>450.000
9/17/2015													
9/18/2015	0.790	0.403					1.6	0	0.5			<2	>450.000
9/19/2015	0.650	0.192					0.5	0	0.4			<2	>450.000
9/20/2015	0.640	0.232					0.5	0	0.5			<2	>450.000
9/21/2015	0.650	0.477					0.6	0	0.6		8.1	<2	>450.000
9/22/2015	0.670	0.610					0.6	0	0.6		8.0	<2	>450.000
9/23/2015	0.690	0.634					0.8	0	0.6		8.7	<2	>450.000
9/24/2015	0.580	0.409					0.8	0	0.6			<2	>450.000
9/25/2015	0.590	0.310					0.7	0	0.5			<2	>450.000
9/26/2015	0.580	0.291					0.8	0	0.5			<2	>450.000
9/27/2015	0.580	0.283					1.1	0	0.4		8.7	<2	>450.000
9/28/2015	0.570	0.276					0.8	0	0.5		8.3	<2	>450.000
9/29/2015	0.650	0.310					0.8	0	0.5		8.6	<2	>450.000
9/30/2015	0.650	0.049					0.6	0	0.5			<2	>450.000
Total	18.300	12.573					27.8	0	16.0		111.1	<52	>13,050.0
Minimum	0.160	0.049					0.5	0	0.4		8.0	<2	>450.0
Maximum	0.790	0.641					1.6	0	0.8		8.8	<2	>450.0
Average	0.631	0.434					1.0	0	0.6		8.5	<2	>450.0
Average	0.631	0.434					1.0	0	0.6		8.5	<2	>450.0

## ***ANNUAL PERFORMANCE GRAPHS***

## FLOW COMPARISON



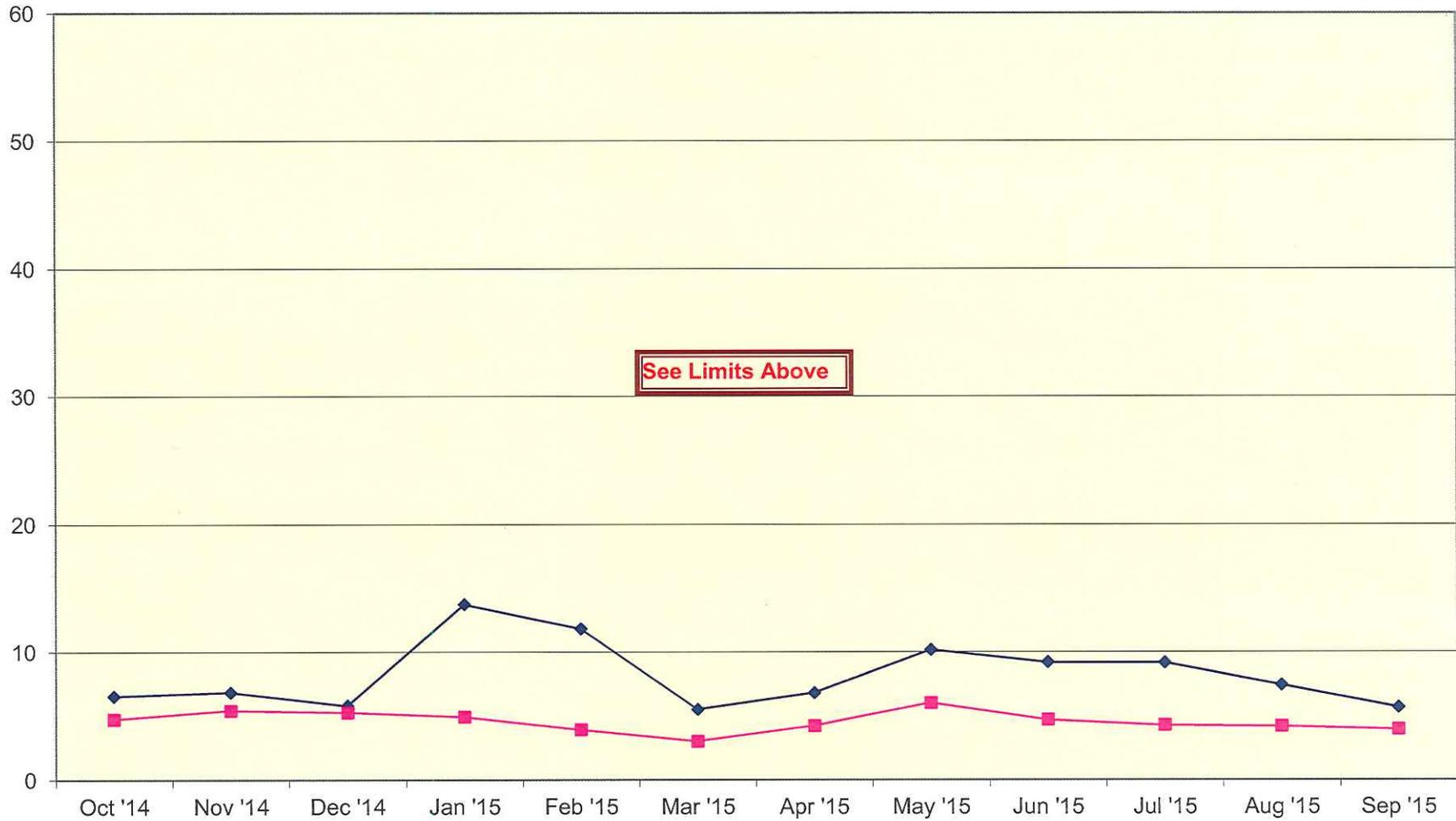
### Influent Load BOD / TSS lbs



## Effluent BOD / TSS Concentration

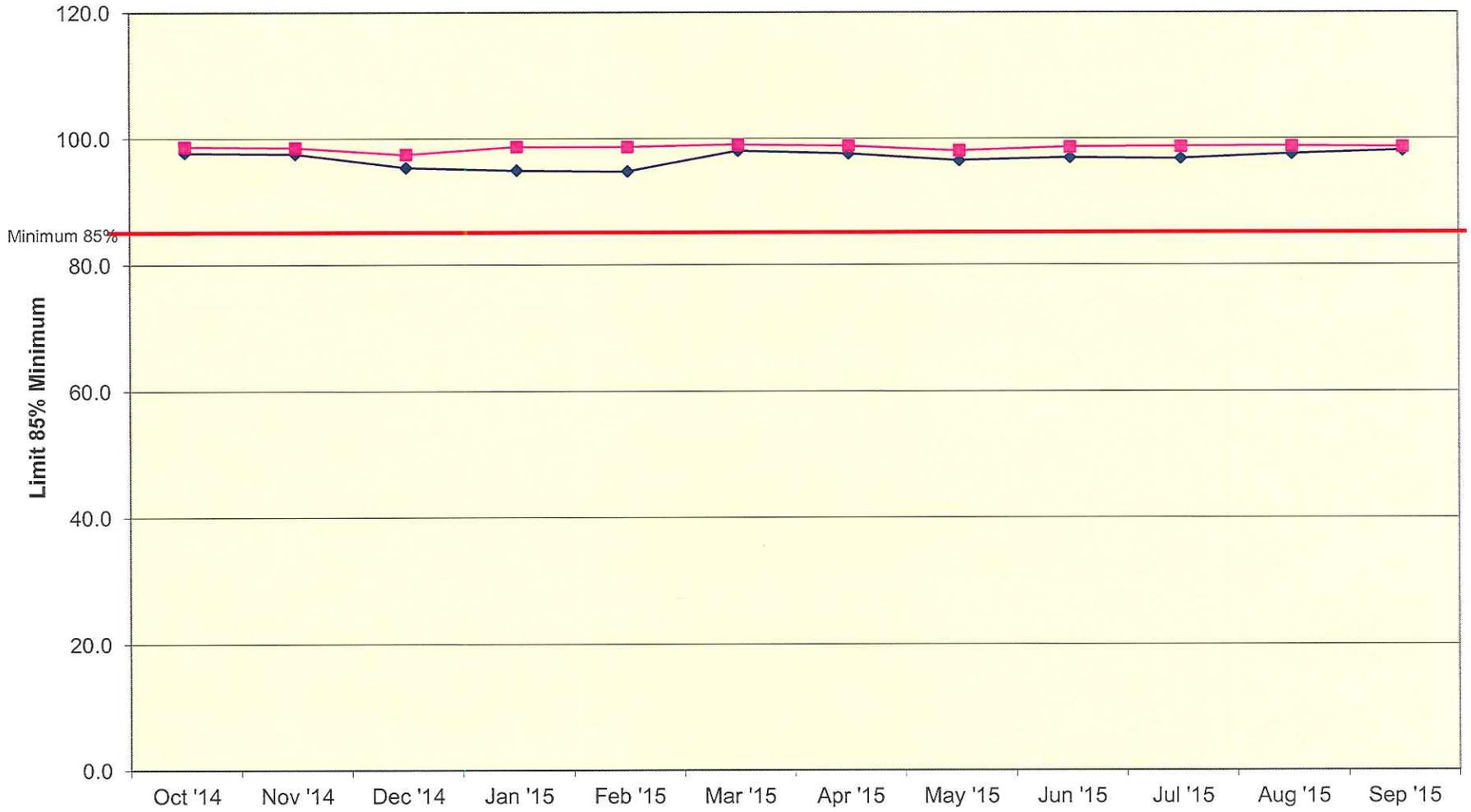
NPDES LIMITS WET SEASON  
BOD & TSS - 30 mg/L Monthly Ave, 45 mg/L Weekly Ave  
NPDES LIMITS DRY SEASON  
BOD - 15 mg/L Monthly Ave, 30 mg/L Weekly Ave  
TSS - 10 mg/L Monthly Ave, 20 mg/L Weekly Ave  
**WDR (Waste Discharge Requirements) RECLAMATION**  
**BOD - 40 mg/L**

◆ BOD ■ TSS



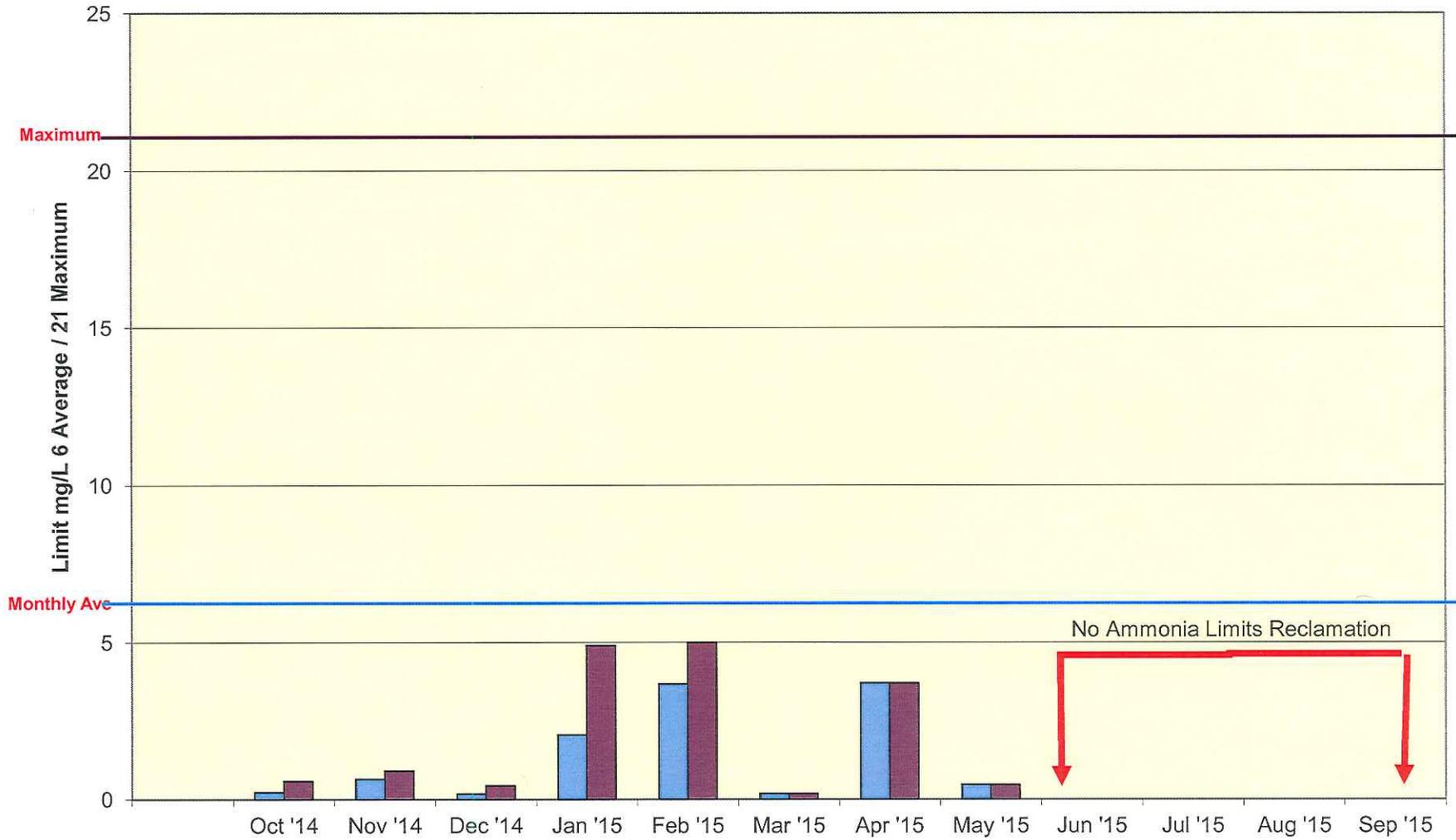
# BOD / TSS Percent Removal

◆ BOD    ■ TSS



# Effluent Ammonia

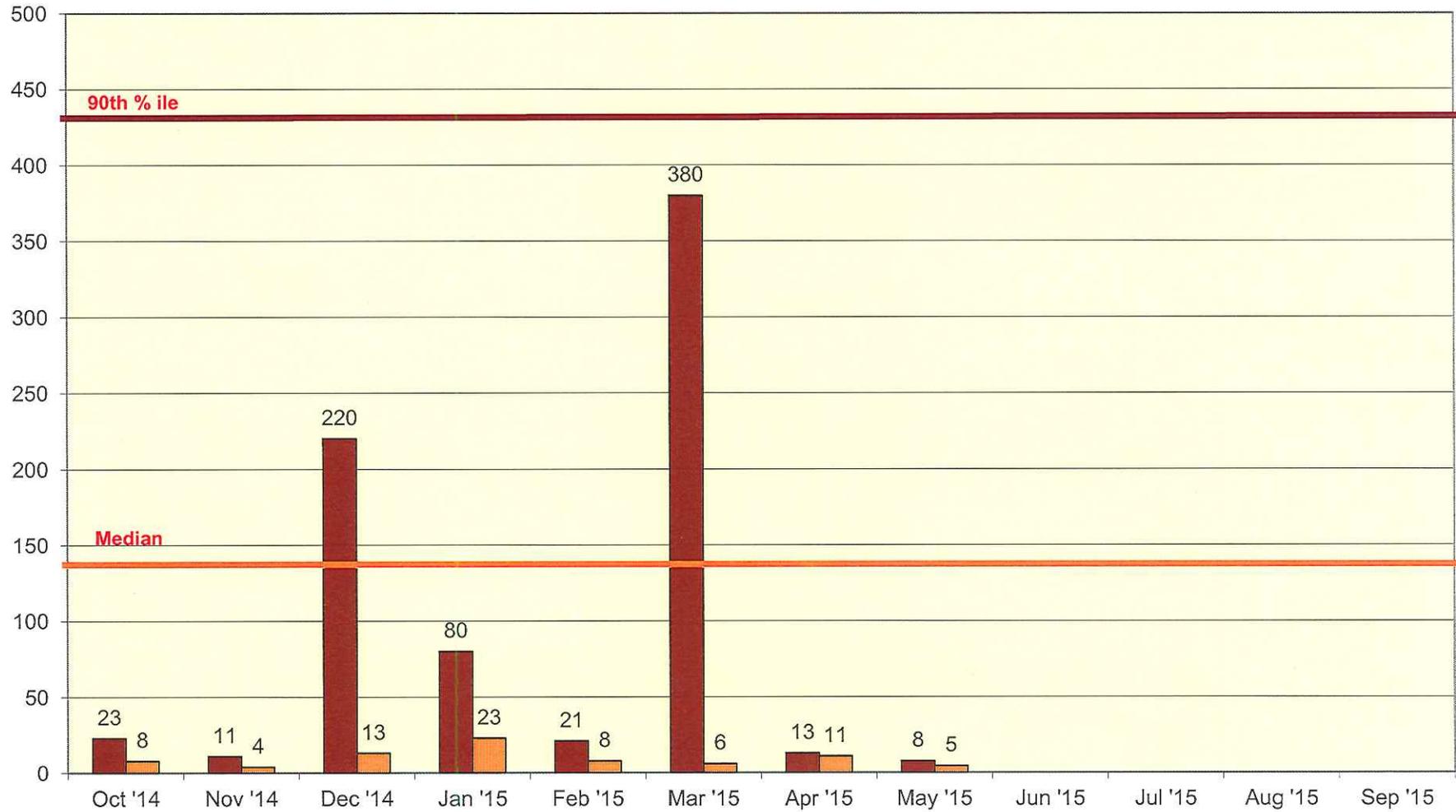
Average Maximum



# Disinfection - Fecal Coliform

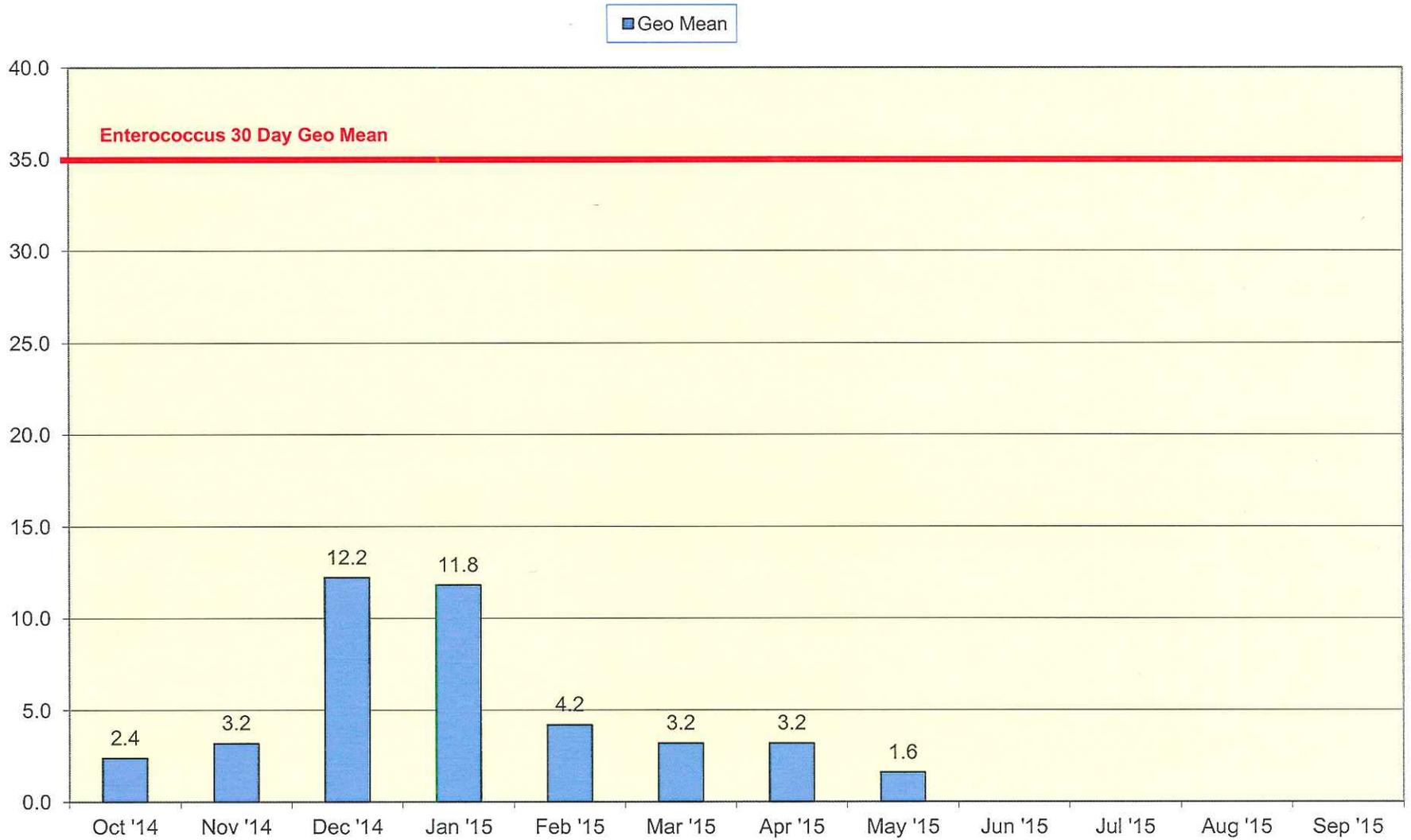
LIMITS - NPDES  
Fecal 140 mpn monthly median  
Fecal 430 mpn 90th percentile 30 day

■ 90th % ile ■ 30 day med



# Disinfection - Enterococcus

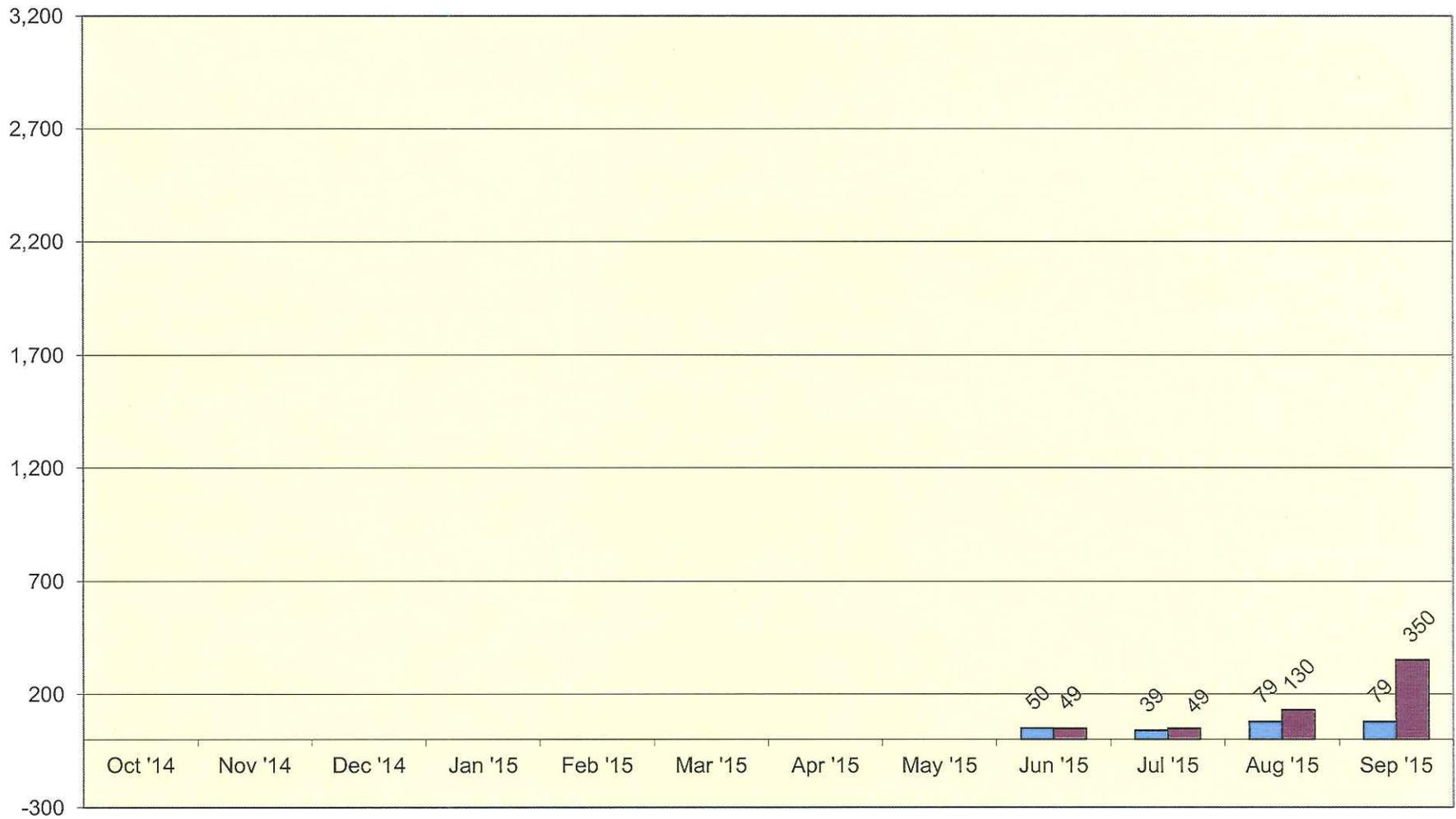
LIMITS - NPDES  
Enterococcus 30 day geo mean 35 mpn /100ml



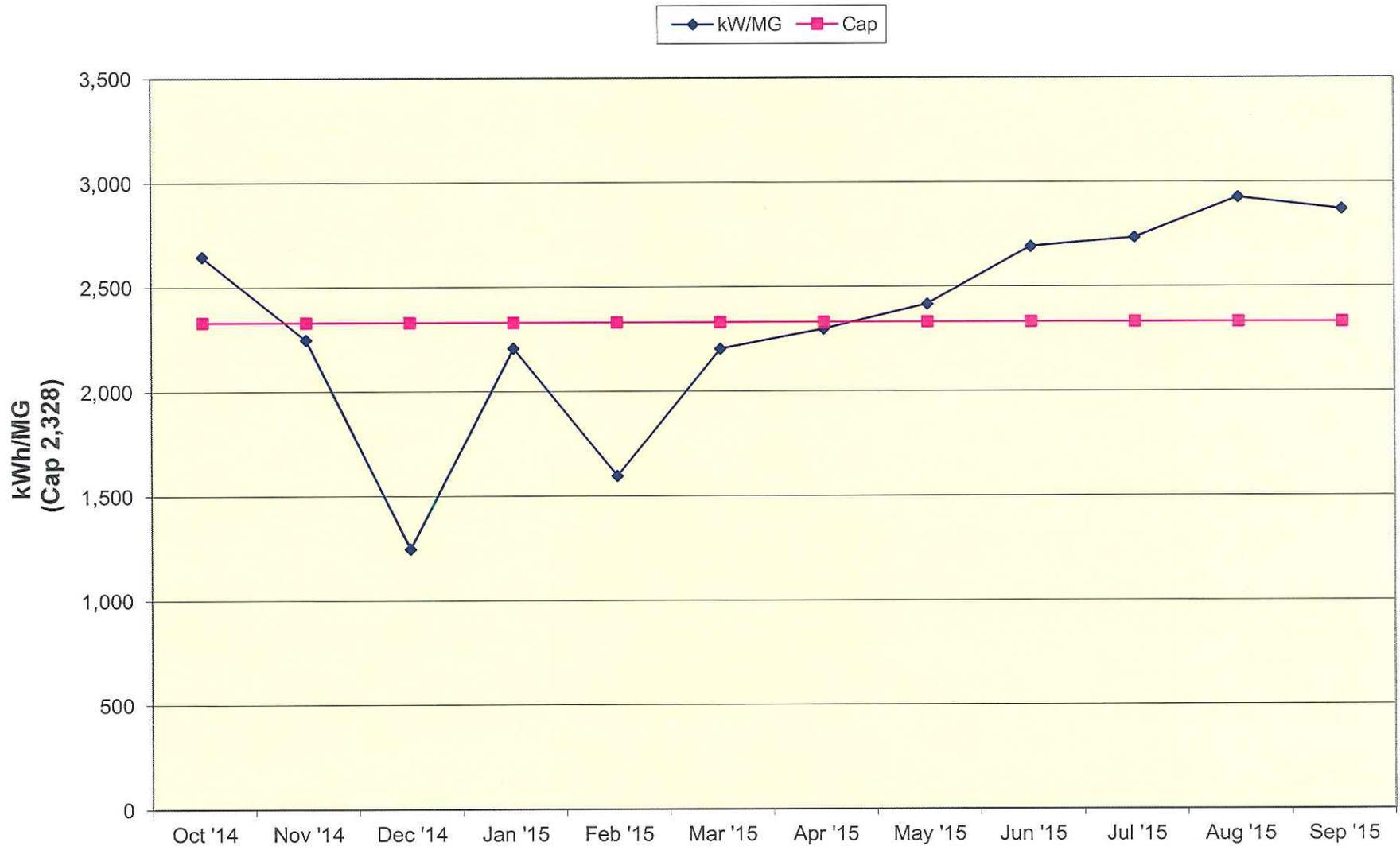
# Disinfection - Total Coliform

TOTAL COLIFORM LIMITS - WDR  
5 Sample Median - 240 mpn /100 ml  
Maximum - 10,000 mpn/100 ml

■ 5 Sampl Med ■ Monthly Max

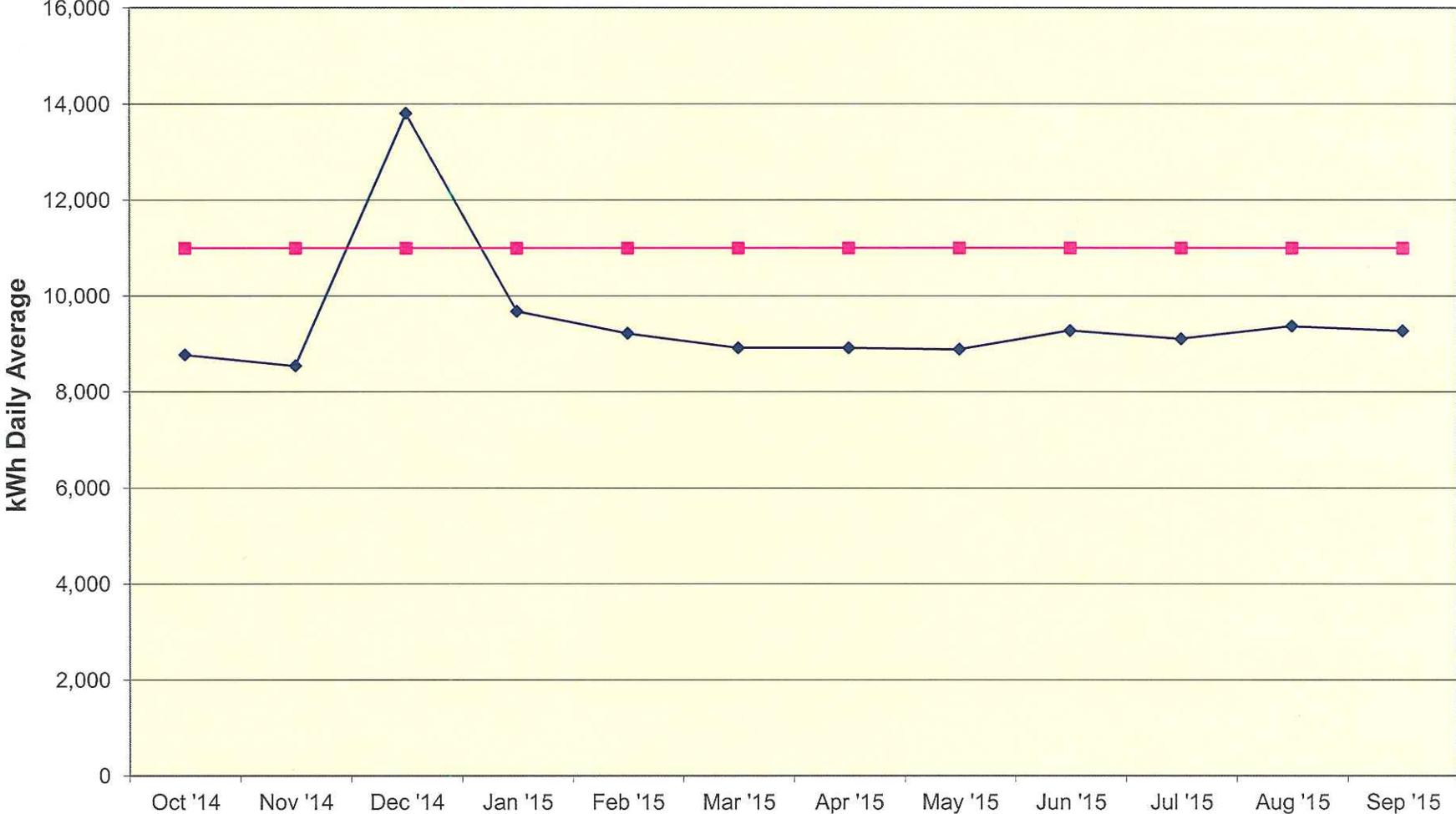


# Energy kWh/MG

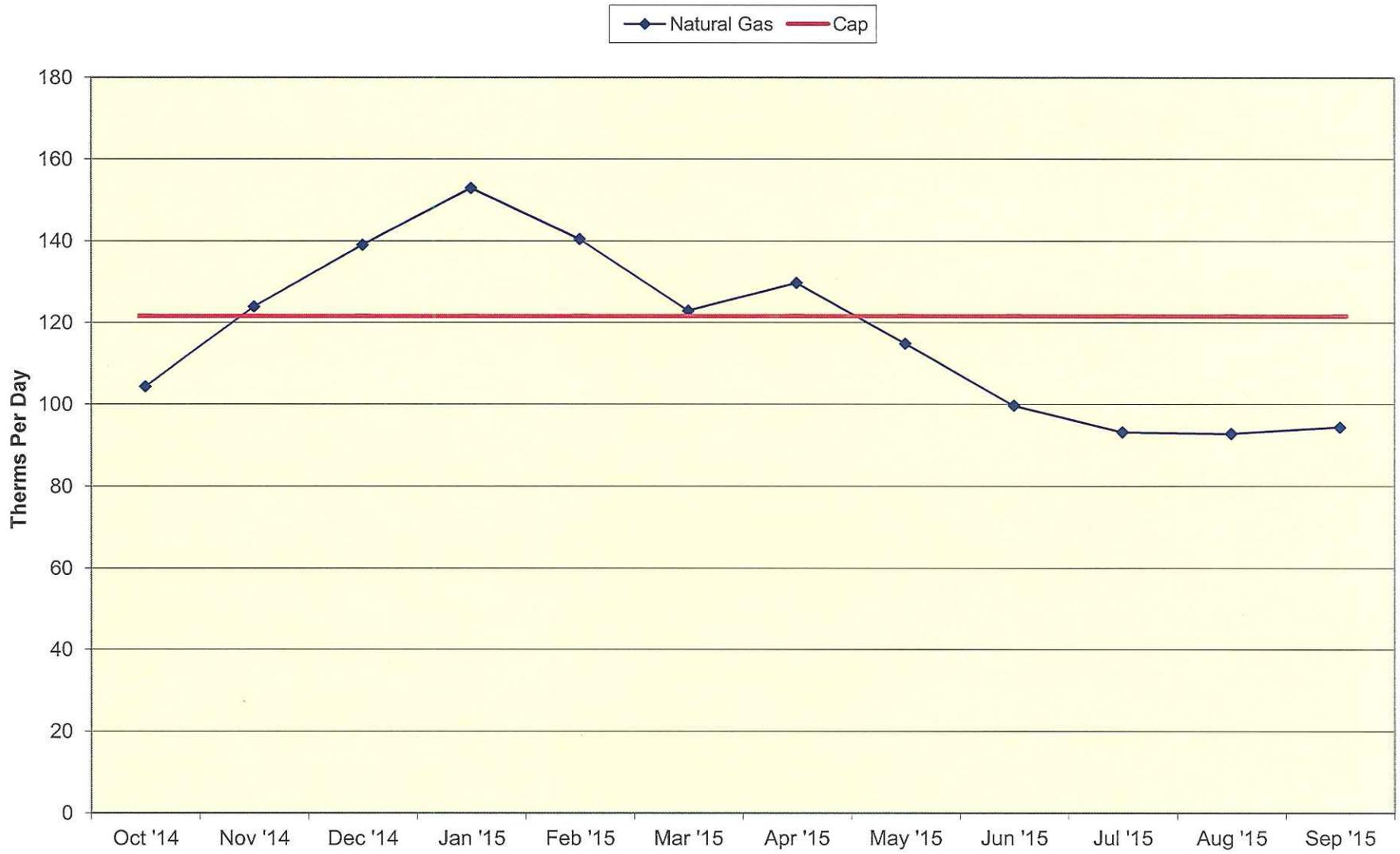


# Energy kWh

—◆— kWh —■— Cap



### Natural Gas Use

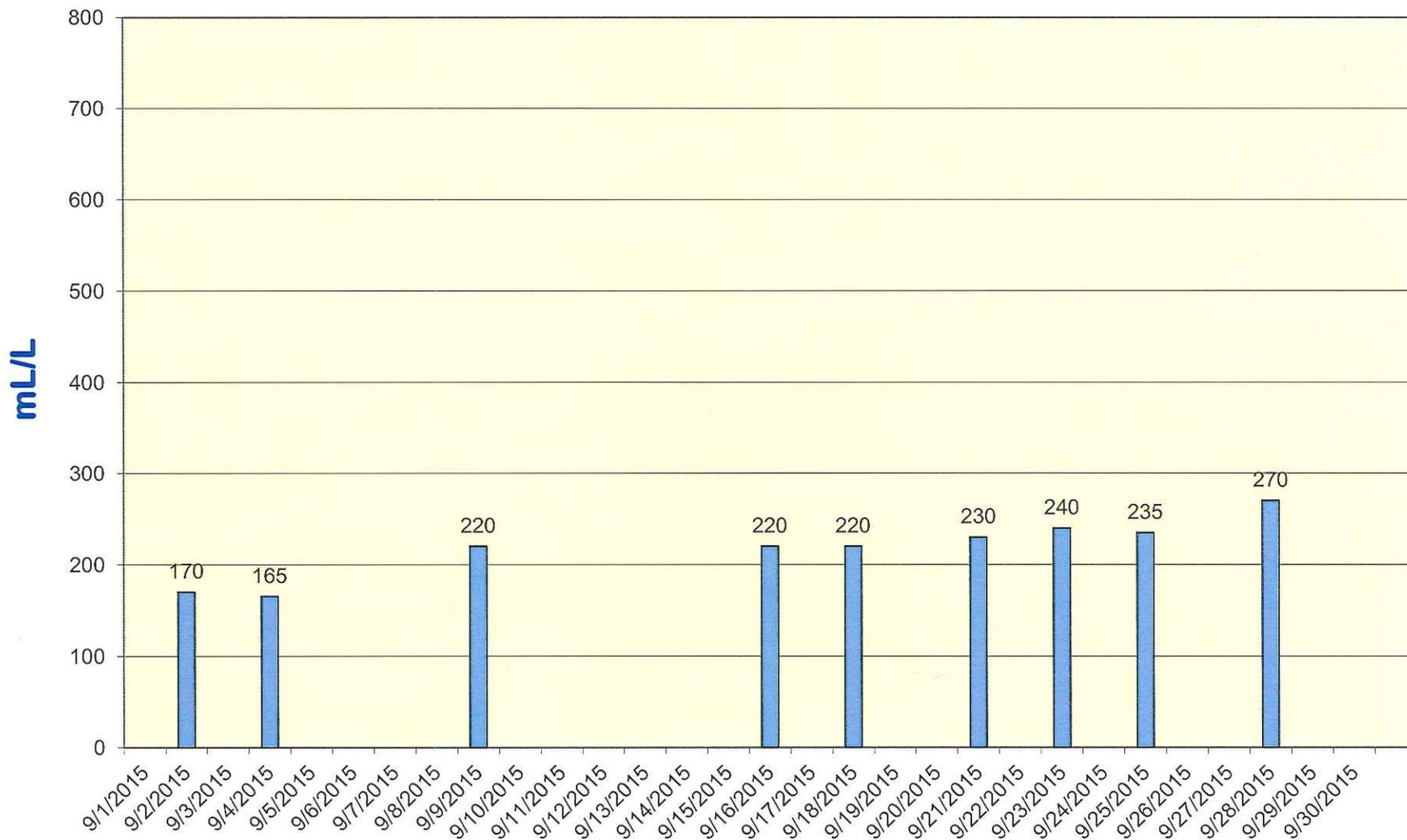


***PROCESS CONTROL DATA/GRAPHS***

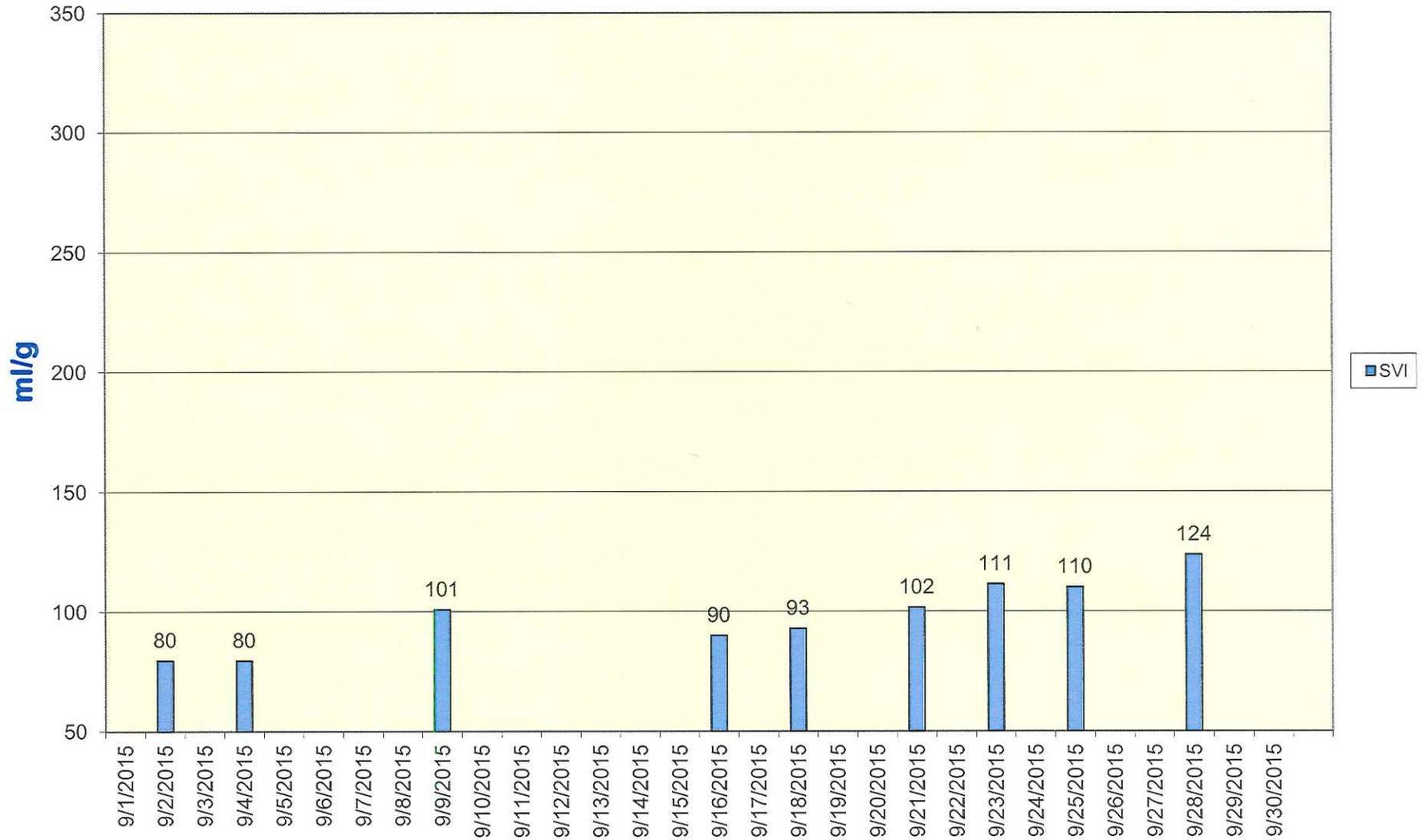
## Process Control Data

	Influent Flow	Settleability	MLSS Concentration	MLSS Inventory	F:M Ratio	MCRT	SVI
9/1/2015	3.34		2,090	37,232		9.0	
9/2/2015	3.45	170	2,150	38,301		8.4	80
9/3/2015	3.38		2,200	39,191		8.0	
9/4/2015	3.31	165	2,080	37,054		8.4	80
9/5/2015	3.21						
9/6/2015	3.11						
9/7/2015	3.33						
9/8/2015	2.92		2,220	39,548	0.19	8.9	
9/9/2015	2.92	220	2,200	39,191		8.0	101
9/10/2015	2.92		2,170	38,657		8.9	
9/11/2015	2.87		2,270	40,438		8.4	
9/12/2015	3.01						
9/13/2015	3.12						
9/14/2015	3.51		2,230	39,726	0.24	8.7	
9/15/2015	3.76		2,340	41,685		9.6	
9/16/2015	3.82	220	2,450	43,645			90
9/17/2015	3.53		2,410	42,932		8.7	
9/18/2015	3.14	220	2,370	42,220		8.8	93
9/19/2015	3.68						
9/20/2015	3.73						
9/21/2015	3.07	230	2,270	40,438		8.2	102
9/22/2015	2.88		2,160	38,479	0.14	7.9	
9/23/2015	2.86	240	2,160	38,479		8.3	111
9/24/2015	2.96		2,130	37,944		8.0	
9/25/2015	2.87	235	2,140	38,122		8.2	110
9/26/2015	3.20						
9/27/2015	3.37						
9/28/2015	3.08	270	2,190	39,013	0.19	8.4	124
9/29/2015	3.29		2,280	40,616		8.7	
9/30/2015	3.24		2,170	38,657		8.5	
Minimum	2.86	165.00	2,080.00	37,054	0.14	7.9	80
Maximum	3.82	270	2,450	43,645	0.24	9.6	124
Total	93.64	1,970	44,510	792,912	0.76	161.7	889
Average	3.23	219	2,226	39,646	0.19	8.5	99

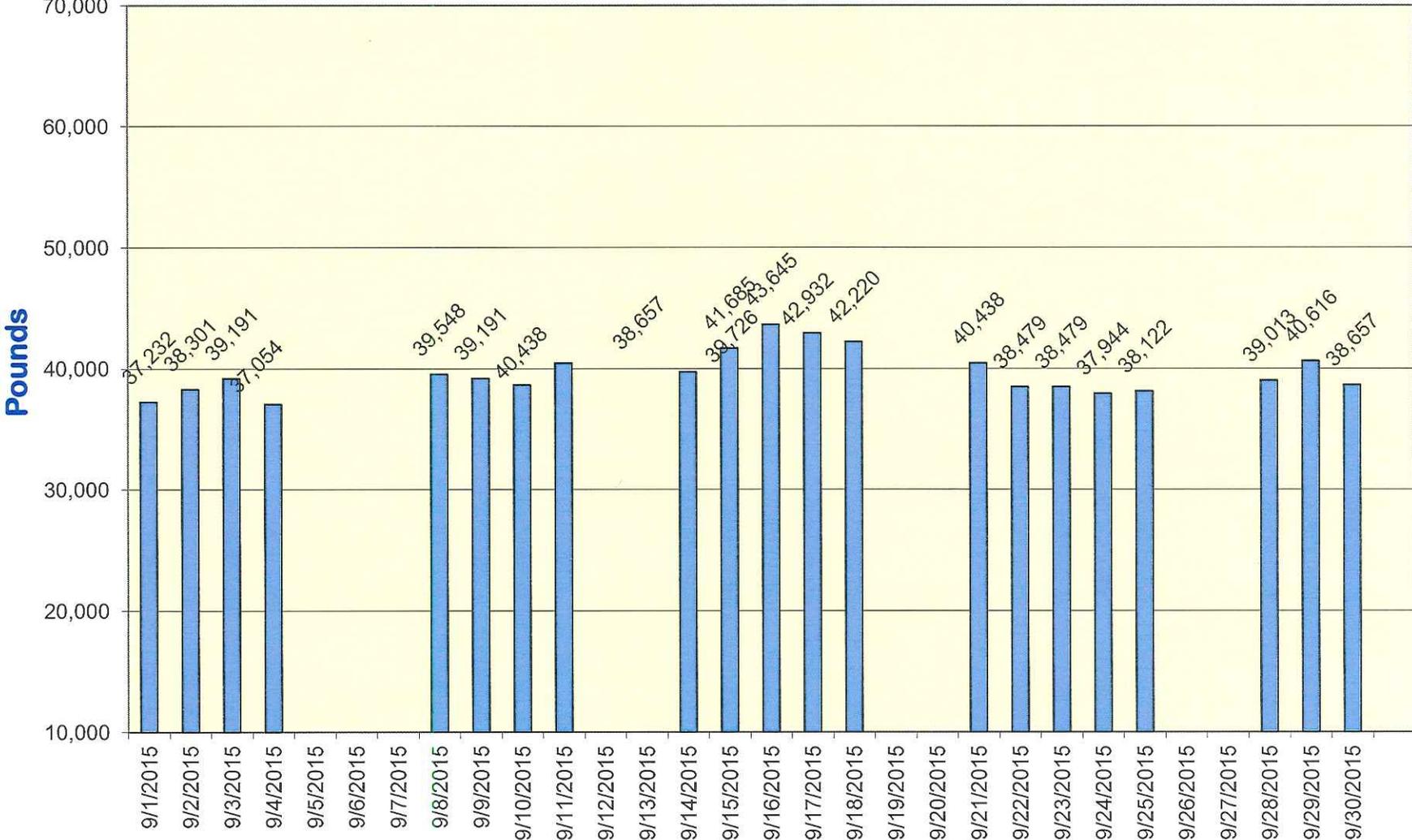
# Settleability



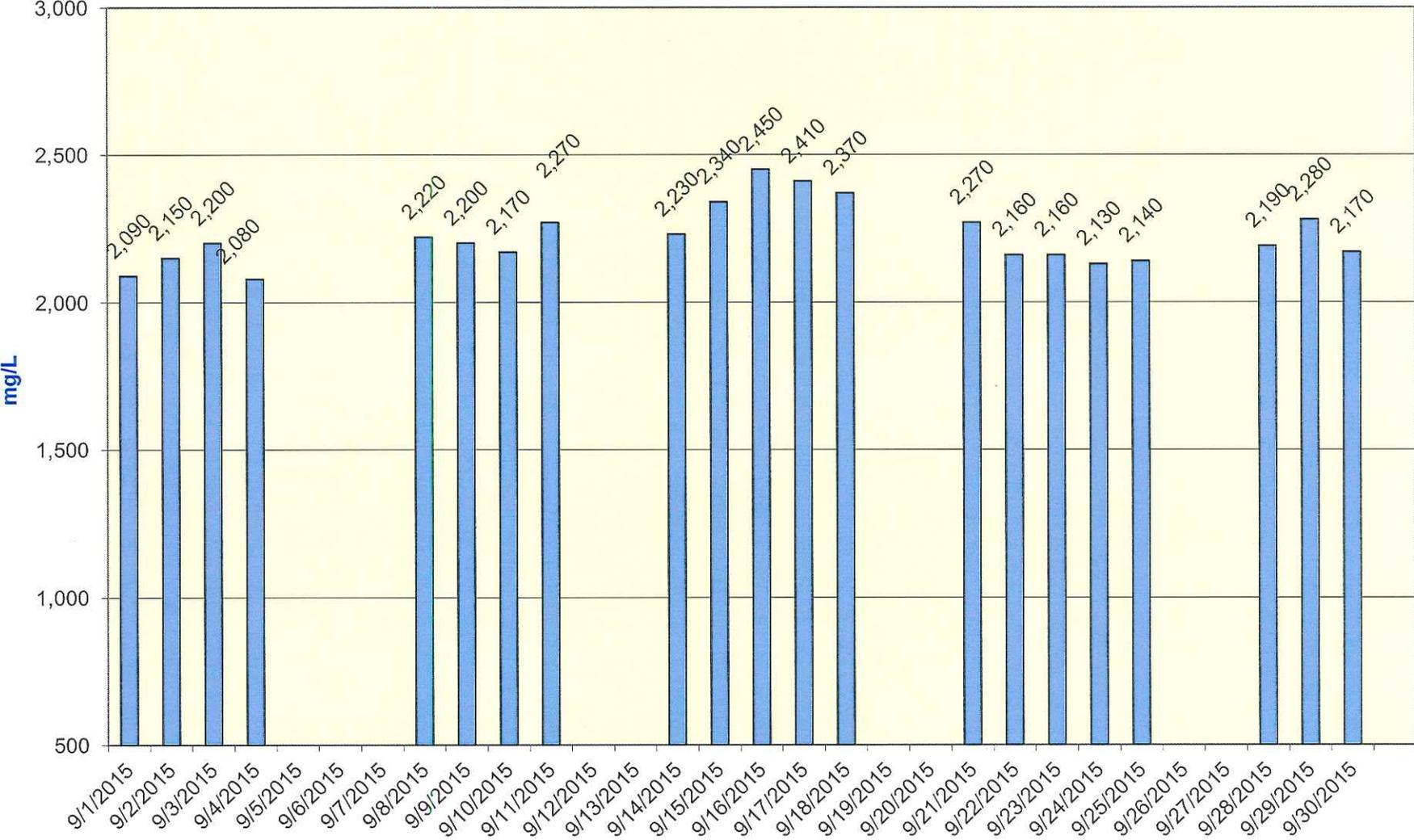
## Sludge Volume Index



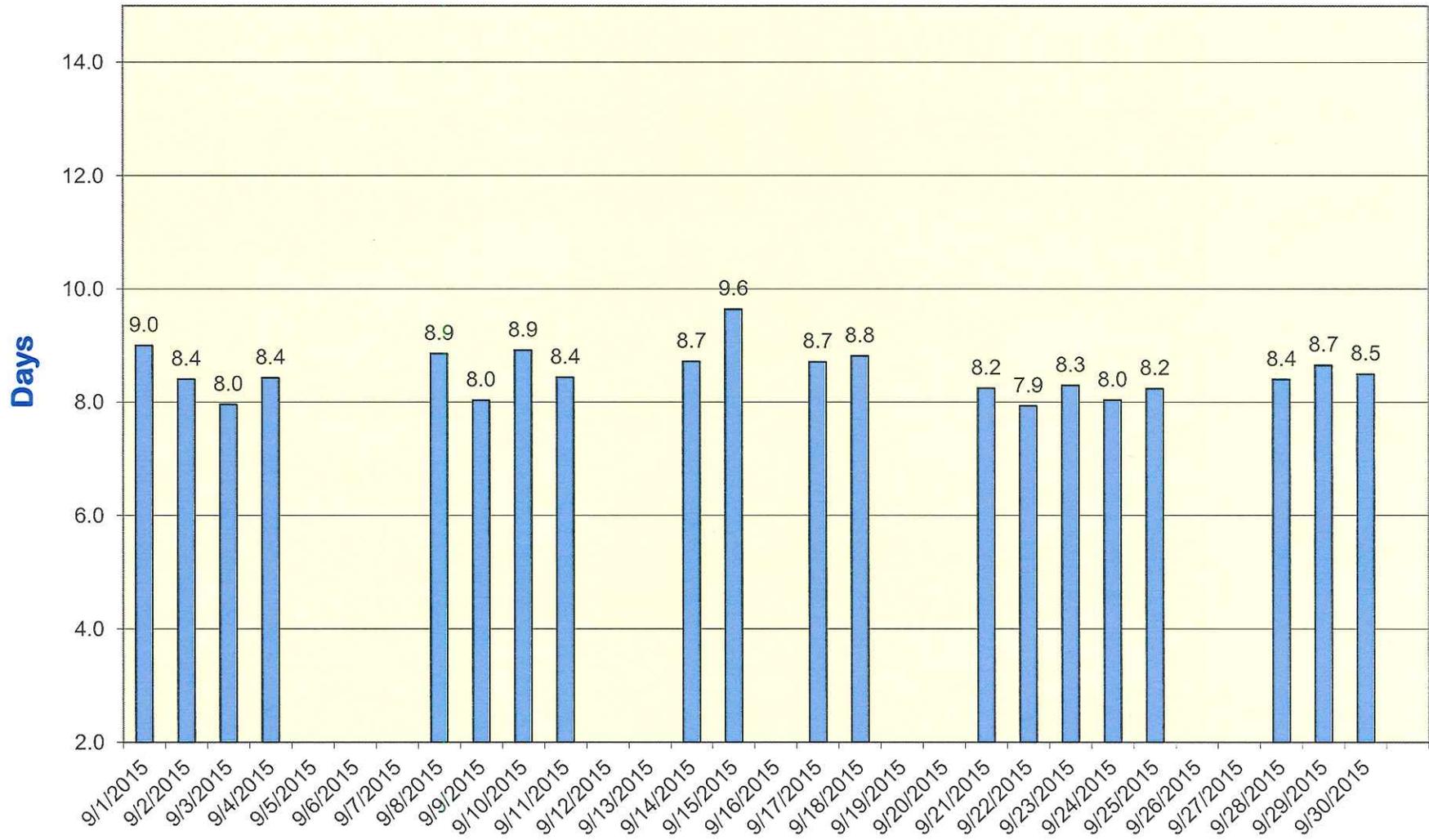
# MLSS Inventory



### MLSS Concentration

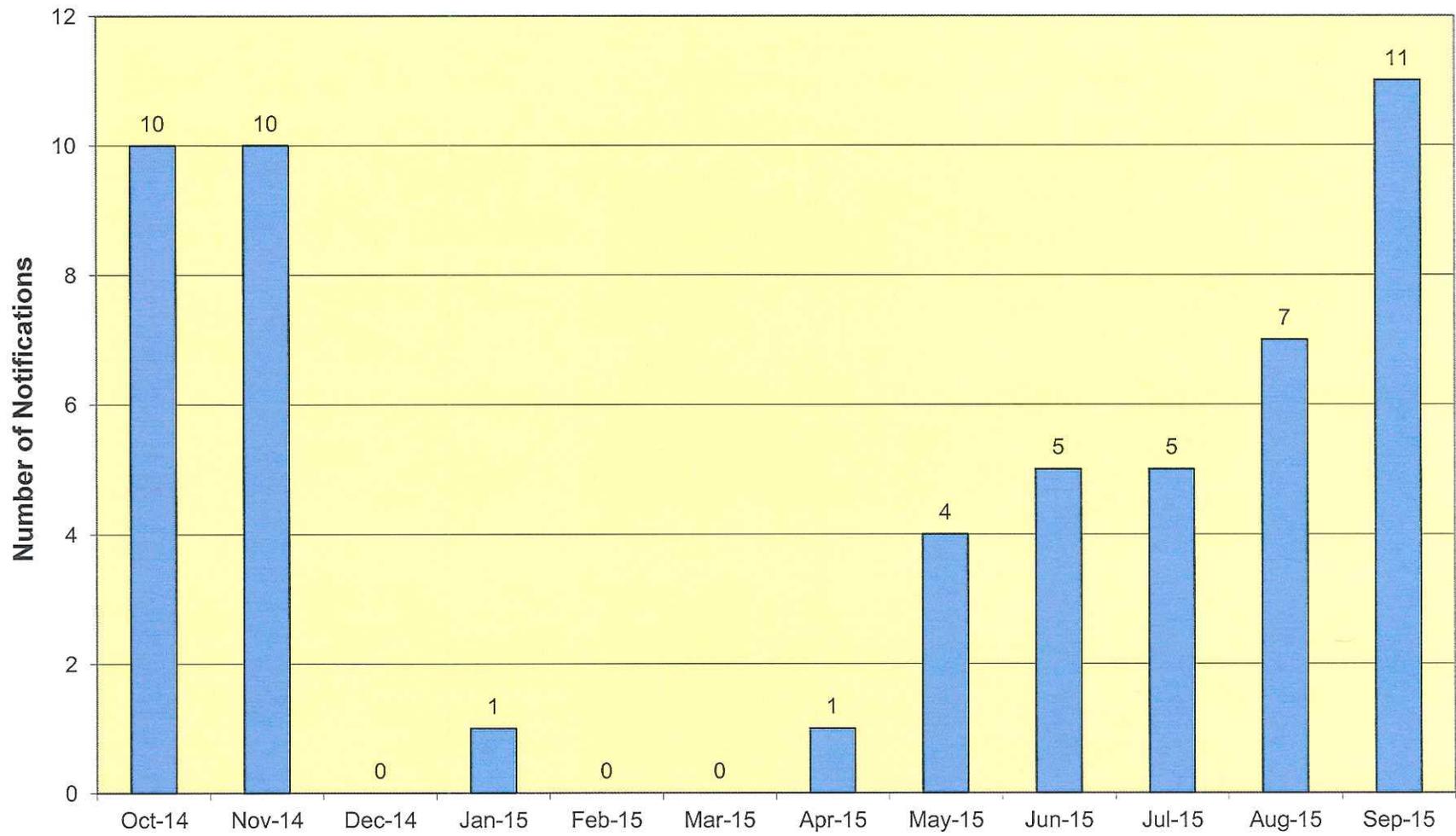


## Mean Cell Residence Time



***CUSTOMER NOTIFICATIONS (ODOR/NOISE)***

## Complaints / Contacts Received



***JEROME METER READINGS***

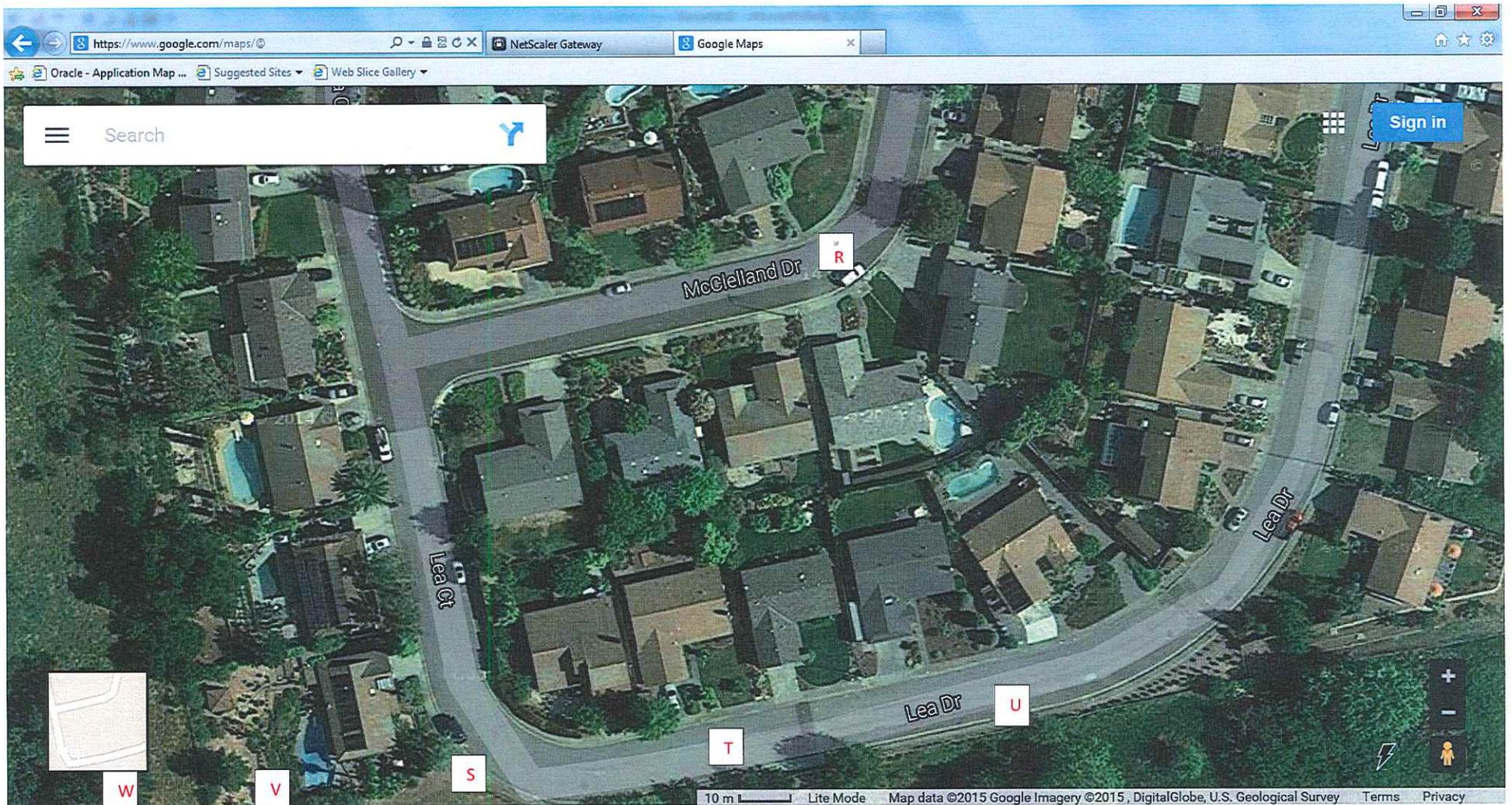
***SEPTEMBER 2015***

JEROME METER READINGS - SEPTEMBER 2015

Sample Location	Min	Max	Ave	NOTES / COMMENTS
A: Influent Pump Station	0.001	0.062	0.012	
B: Septage Dumpster	0.000	0.005	0.001	
C: Primary Clarifier #1 Odor Bed	0.001	0.310	0.076	
D: Primary Clarifier #1	0.000	0.033	0.010	
E: Headworks	0.000	0.037	0.009	
F: Primary Clarifier #2 Odor Bed West	0.001	0.029	0.008	
G: Primary Clarifier #2 Odor Bed East	0.000	0.009	0.003	
H: Primary Clarifier #2	0.000	0.004	0.002	
I: Influent Odor Bed	0.000	0.005	0.002	
J: Behind Aeration Basins	0.000	0.035	0.008	
K: Between Aeration Basins 3 & 4	0.000	0.008	0.003	
L: Between Aeration Basins 1 & 2	0.000	0.004	0.002	
M: Digester Odor Bed	0.000	0.003	0.001	
N: Digester #2	0.000	0.003	0.002	
O: Flare Stack	0.000	0.004	0.002	
P: Digested Sludge Transfer Pit	0.000	0.002	0.001	
Q: Digester #1	0.000	0.360	0.061	
R: McLelland	0.000	0.002	0.001	Neighborhood
S: Lea 1	0.000	0.005	0.002	Neighborhood
T: Lea 2	0.000	0.004	0.002	Neighborhood
U: Lea 3	0.000	0.008	0.002	Neighborhood
V: Lea 4	0.000	0.003	0.001	Neighborhood
W: Lea 5	0.000	0.001	0.001	Neighborhood
Primary Clarifier #1 Headspace	0.240	20.000	0.011	Scrubbed Space
Primary Clarifier #2 Headspace	0.002	0.011	0.005	Scrubbed Space

***NEIGHBORHOOD JEROME METER READING LOCATIONS  
LEA AND MCCLELLAND***

## NEIGHBORHOOD JEROME METER LOCATIONS – LEA AND McCLELLAND.



**NOVATO SANITARY DISTRICT**  
**Wastewater Operations Committee Meeting**  
**Odor Control and Landscaping Report**  
**September 2015**

## **1.0 Background**

Staff continues to maintain the on-going operation of the odor control facilities; and the landscaping, especially at the fence-line area next to the Lea Drive neighborhood, and at the northeast portion of the Novato Treatment Plant (NTP) site.

As mentioned in prior reports, the District has already invested significant amounts beyond the substantial initial investment for odor control and landscaping from the original WWTP Upgrade Project. These additional costs have included operational changes, measures related to further odor control measures, noise abatement, visual screening, wind shielding, and daily monitoring.

## **2.0 Odor control**

Activities related to maintenance of the odor control facilities in September included:

- In late September, operations staff assisted the District's odor consultant Mr. David McEwen of Brown and Caldwell in installing a pilot odor control system at the Headworks area. The system utilized a chemical system to feed a mist of sodium hypochlorite and sodium hydroxide. The chemicals were fed at a controlled rate into the headspace of the headworks area to neutralize odor causing compounds. The test was conducted for about a week (about 2 weeks including mobilization/demobilization), and other than operations staff time and small amounts of power and water, was entirely funded by Brown and Caldwell under one of their innovative technology grant programs. Mr. McEwen is currently reviewing the data from the test period.
- Operations staff continued to monitor media in the large odor control bed between primary clarifiers #1 & #2. The media for this bed, as well as all of the other odor beds, was topped off in July, and all seem to be functioning well.
- Additional Jerome meter readings in the neighborhood continued at the Committee's request from earlier in the summer.
- The Aqua-Fog system continues to be used as needed (from a prior recommendation by Mr. McEwen).
- Pre-chlorination: Sodium hypochlorite continues to be added as an oxidizer on an as-needed basis to the influent flow, with operations staff monitoring performance (from another prior recommendation by Mr. McEwen).

## **3.0 Landscaping**

The District's landscaping contractor Cagwin and Dorward (C&D) continues to work on an as-needed/as-directed basis on landscaping and vegetation at the District's fence-line on Lea Drive, and at the northeast corner area of the NTP. The redwood trees in the northeast corner of the plant site, and the site vegetation continue to be irrigated with recycled water and are continuing to respond well to the drought conditions.

The Oleander along the northeast fence-line especially seems to be doing very well despite suffering frost damage in previous winters, and the District has received positive comments on it, along with a neighborhood request for more Oleander plantings.

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**Novato Sanitary District  
Wastewater Operations Committee meeting  
Collection System Operations Report  
September 2015**

**1.0 General:**

An equivalent of about six (6) full time employees (FTE) worked in the Collection System Department during the month of September. The breakdown of staff time for the month in terms of equivalent full-time employee hours utilized, works out approximately as follows:

- 1.6 FTE field workers for Sewer Maintenance (main line cleaning)
- 1.0 FTE field workers for Pump Station Maintenance
- 0.5 FTE field workers for Closed Circuit Television (CCTV) work
- 2.8 FTE field workers for time spent on data input, training, service calls, overflow response, or any other activity that does not directly relate to main line cleaning, CCTV work, or pump station maintenance, or special activities (for e.g. smoke testing of mainlines), and
- An equivalent of 1.1 FTE field workers for vacation, holiday or sick leave.

**2.0 Collection System Maintenance:**

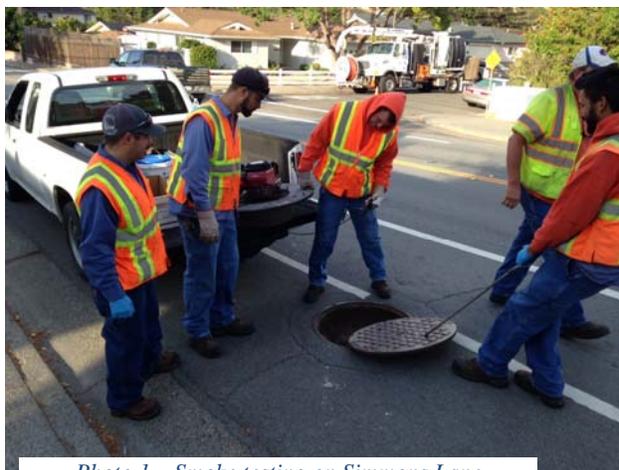
Performance metrics for the department are presented in the attached graphs showing the length of line cleaned/month, footage cleaned/hour worked, overflows/month, and the CCTV footage achieved. A brief discussion is also provided below.

Line Cleaning Performance:

A total of 345 work orders were generated for September by the ICOM3 Computerized Maintenance Management System (CMMS). Staff completed 340 work orders leaving five (5) work orders outstanding. The 340 maintenance work orders completed in September resulted in 63,461 feet of sewer pipelines cleaned by staff. In addition, outside contractors cleaned 2,506 feet of large diameter sewer mains this month.

Smoke Testing

In addition to line cleaning, Collection System Department staff continued smoke testing of the neighborhoods along the Simmons Lane corridor between Novato Creek and San Marin Drive including Shady Lane, Benton Lane, Marion Avenue and adjacent streets. Approximately 13,179 feet of sewer main was smoke tested. The smoke testing identified additional areas of missing cleanout caps on resident laterals as well as damaged sewer mains. Staff also identified one roof gutter downspout tied



*Photo 1 – Smoke testing on Simmons Lane*

**Novato Sanitary District  
Wastewater Operations Committee meeting  
Collection System Operations Report  
September 2015**

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into a sewer cleanout. Staff will be contacting residents to and notifying them to repair the deficiencies as well as scheduling repairs of District sewer mains.

CCTV Performance:

The District's CCTV van was in the field for eight (8) working days inspecting 70 line segments totaling 7,687 feet. Staff also televised 8 line segments totaling 1,805 feet using the Push Cam. The push cam work was performed in lieu of hand rod work.

CCTV Findings:

- Infrastructure related: The September CCTV identified three line segments that will require spot repairs, which will be appropriately prioritized under the District's Annual Collection System Repairs Project, Account No. 72805.
- O&M related: The September CCTV work did not identify any areas that require a change in sewer line operations.

**3.0 Pump Station Maintenance:**

The Collection System Department conducted 227 lift station inspections this month. 155 of the inspection visits were generated through the District's JobsCal Plus CMMS system. There are 13 outstanding work orders for the month, 7 corrective and 6 preventive. A Collection Systems (Pump Stations) Work Order Statistics summary is attached.

In addition to normal maintenance activities, District staff performed the following:

- Performed the annual cleaning of the Ignacio Transfer Pump Station Force Main by launching a cleaning "pig" from the pump station site, to the discharge point just south of Novato Community Hospital (photos below).



*Photo 2 – Placing pig in launcher*



*Photo 3 - Retrieving pig from catcher manhole*

**Novato Sanitary District  
Wastewater Operations Committee meeting  
Collection System Operations Report  
September 2015**

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- Installed a 5 hp pump at Bahia Pump Station No. 4 that was loaned to the District by SHAPE Inc. to compare flow characteristics with the existing 3 hp pump. This pump station historically surcharges during wet weather events.
- All standby generators (stationary & portable) were serviced by Cal Diesel.

#### **4.0 Air Relief/Vacuum Valves (ARVs):**

Staff completed maintenance inspections on three (3) air relief/vacuum valves.

#### **5.0 Safety and Training:**

##### General:

Collection System staff attended four (4) safety tailgate meetings.

##### Specialized training:

- Two staff members attended CWEA's Collection System Boot Camp
- All staff members received hearing tests.
- Staff attended a demonstration/training on cleaning nozzles (photo at right).



*Photo 4 – Nozzle demonstration in clear tube*

##### Safety performance:

There were no lost time accidents this month for a total of 1,662 accident free days since the last lost time accident.

#### **6.0 Minor Projects:**

- A contractor installed a decorative rock drain at Bel Marin Keys Pump Station No. 10 to prevent the concrete slab in front of the Control Cabinet from flooding during heavy rain events.
- A contractor raised a rod inlet and manhole to grade at 7514 Redwood Blvd. These structures were buried and needed to be raised for maintenance access.

#### **7.0 Standard Operating Procedures (SOPs):**

No new core SOPs were identified, and as development of lower priority SOPs is being balanced against workload priorities, department staff did not generate any new SOPs in September. Staff did take the opportunity to revise the Ignacio Transfer Pump Station Pig Launching SOP during the activity performed this month.

**Novato Sanitary District  
Wastewater Operations Committee meeting  
Collection System Operations Report  
September 2015**

Also, the recently completed draft Core Competency Checklist continues to be used to track the initial training of a recently hired employee, and lessons learned will be incorporated in the final version, which will be used track the training of all department employees. Staff will also develop a similar draft checklist to use for tracking annual checks of Collections Department employees to determine where annual training is necessary.

**8.0 Sanitary Sewer Overflows (SSOs):**

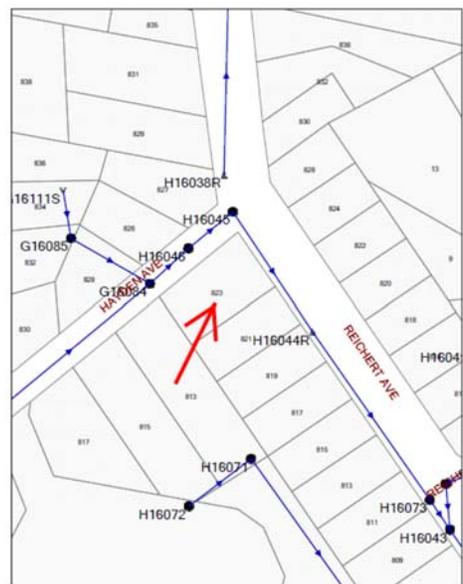
There was one (1) SSO in September.

No.	Date	Location	Amount, gal	Cause/Probable Cause
1.	9/21/2015	823 Reichert Ave.	8	Roots/Debris

On Monday, September 21, 2015 at 3:12 PM, June Brown received a call from Joe Lewis of Roto-Rooter Plumbers reporting a possible stoppage in the sewer main at 823 Reichert Avenue. June contacted Steve Krauthem, Field Services Manager, and advised Steve of the reported problem. Steve immediately contacted Javier Vega, Collection System Worker (CSW) III, and advised him of the possible stoppage and told him to have a flusher respond to the location. Javier contacted Aaron Hendricks, CSW I and Joe Moreno, CSW I and asked them to respond to the location.

Steve arrived on site at 3:20 PM and met with Mr. Lewis of Roto-Rooter and Peter Merck, the property owner. Mr. Lewis showed Steve the cleanout outside the house and Steve found the cleanout surcharged but there was no active flow. Aaron & Joe arrived at 3:25 PM and set up at the downstream manhole (H16073). Aaron noted that there was active flow in the manhole channel indicating a partial stoppage.

Aaron proceeded to clean the sewer main with the hydro flusher to break the stoppage. Shortly after sending the cleaning nozzle up the sewer main the manhole filled with sewage indicating that he broke a stoppage. After checking with Joe & Steve, the cleanout at the house was still surcharged indicating that there may be a second stoppage in the sewer main.



*Figure 1 – Location Map*

After the manhole surcharge subsided Aaron changed nozzles and tried to clean the line into the upstream manhole (H16045). Due to the steep grade of the sewer main the cleaning nozzle could not reach the upstream manhole. Steve contacted Javier and requested the rodder truck to break the stoppage. Javier and Bob Stiles, CSW I arrived

**Novato Sanitary District  
Wastewater Operations Committee meeting  
Collection System Operations Report  
September 2015**

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on site at around 3:40 PM to assist. At approximately 3:50 PM PJ Siragusa, CSW I arrived on site with the rodder truck. The crew proceeded to clean the sewer main with the rodder truck from the upstream manhole and the stoppage was broken at around 4:00 PM.

Prior to the Collection System Department crew arrival, Steve interviewed Mr. Lewis from Roto-Rooter and Mr. Merck, the property owner. Mr. Lewis reported that he was at the residence during the morning performing annual maintenance on the house lateral as requested by Mr. Merck. Later that morning Mr. Merck found the toilet in the garage had overflowed and called Roto-Rooter back to the residence. Mr. Merck reported that no more than three (3) gallons of clear water overflowed out of the toilet.

Mr. Lewis reported that he proceeded to try to clear the stoppage without success and after running approximately 150 feet of snake down the cleanout, he pulled the cover off the upstream manhole in the street and could hear the cleaning snake turning in the sewer main. The manhole channel was clear and flowing. Mr. Lewis poured some dye into the manhole channel and then went to the downstream manhole to look for the dye without success. At this point Mr. Lewis contacted the District office to report a potential stoppage. Steve inspected the site around the cleanout and asked Mr. Lewis approximately how much sewage discharged out of the cleanout. Mr. Lewis reported that the only water that came out of the cleanout was essentially what he added when he was trying to break the stoppage which he estimated was less than five (5) gallons. Mr. Merck was offered and declined cleaning services from the District. He was then offered and completed the District's standard California Sanitation Risk Management Authority (CSRMA) Cleaning Declination form, which the District will retain on file.



*Photo 5 – Standing water around cleanout at address*

The initial determination was that this was a Category III event because the overflow was very low volume and did not reach a storm drain or waterway.

This line segment was last cleaned on August 29, 2014 using the rodding truck after the line was root treated on June 19, 2014. This line segment was on a twenty-four (24) month cleaning frequency which has been changed to a twelve (12) month cleaning frequency.

CCTV inspection following the discharge event showed the line segment to be clear with light to medium roots at some joints and some minor structural defects. Staff

**Novato Sanitary District  
Wastewater Operations Committee meeting  
Collection System Operations Report  
September 2015**

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specifically looked at the area around and downstream of the lateral connection and did not see any active root growth.

Based on this, staff suspects that the stoppage may have been created when Roto-Rooter cleaned the lateral sewer to the residence and may have pushed roots into the main at the connection causing a stoppage and after a few hours of flow, the sewage pushed clear water used during the morning cleaning out of the toilet.

As mentioned above, this line segment was previously root treated and is still within the warranty period. Dasse spoke with Mr. Tom Edwards of Duke's Root Control and they will come and root treat the sewer main the next time they are in the area. Staff will stay in touch with Duke's to insure that the line is re-treated.

This event was reported into the CIWQS database on September 24, 2015 as a Category III event, SSO Event ID # 818305 and was certified in CIWQS on September 29, 2015, Certification ID # 675078.

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Novato Sanitary District  
Collection System Monthly Report For September 2015 (as of September 30, 2015)

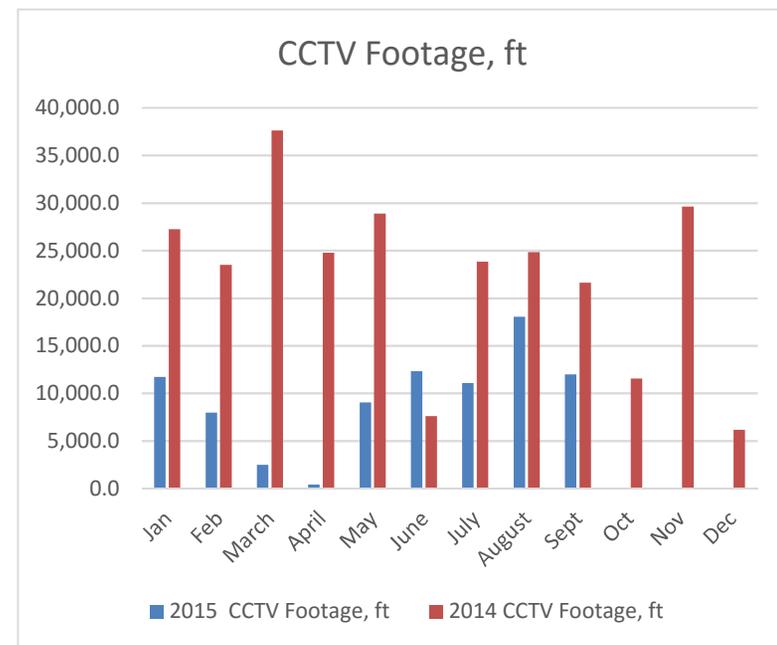
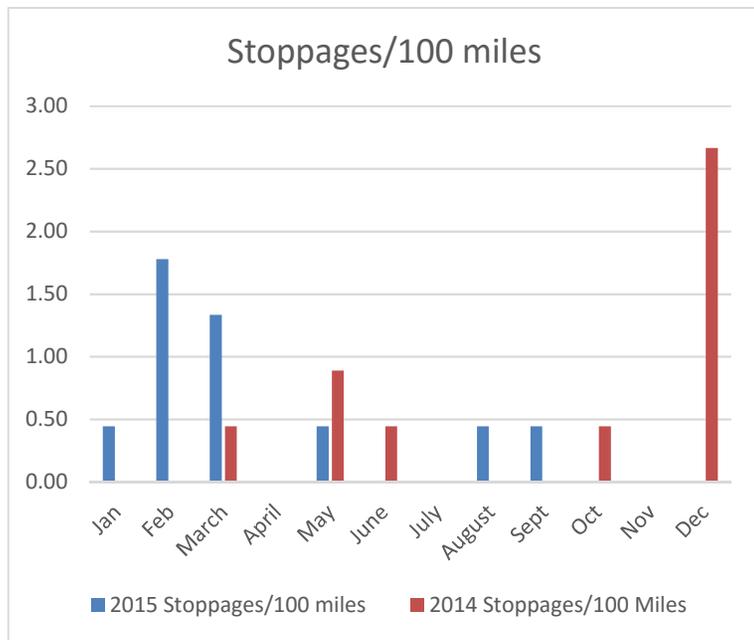
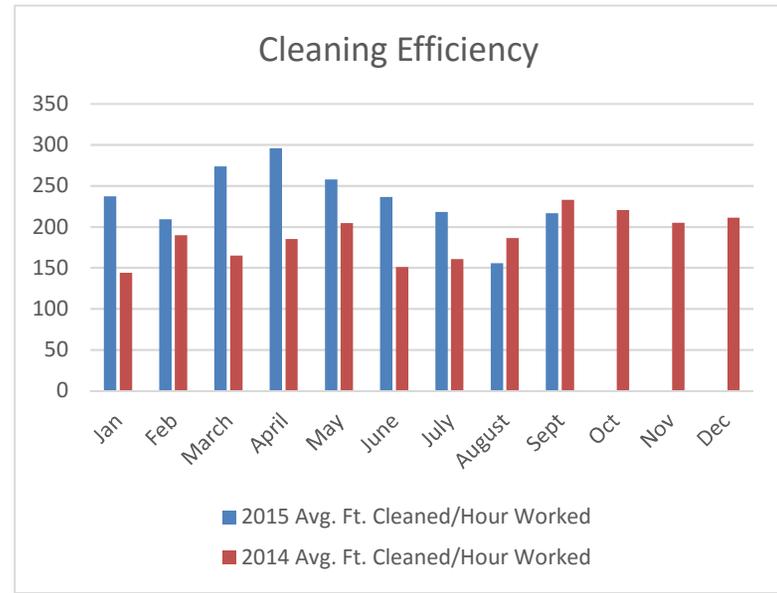
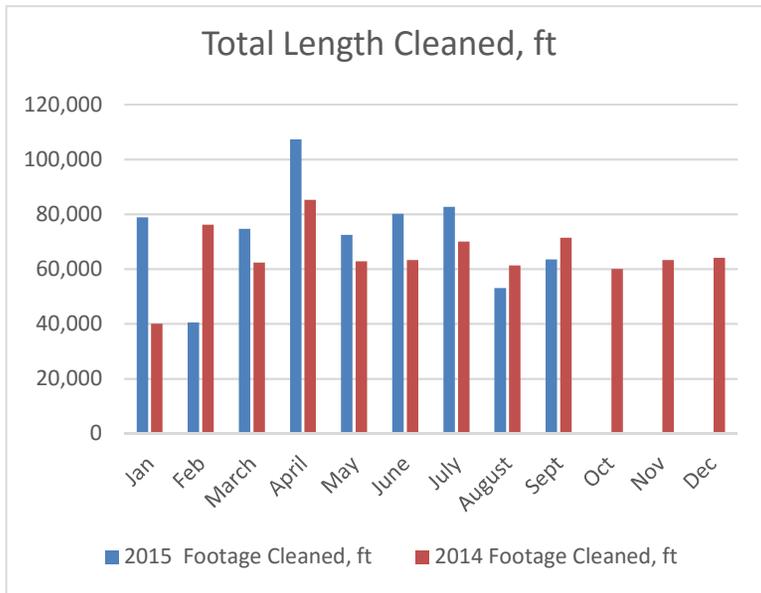
	Jan	Feb	March	April	May	June	July	August	Sept	Oct	Nov	Dec	Total Year to Date	Average Year to Date
<b>A. Employee Hours Worked</b>														
Number of FTEs (main line cleaning), hrs.	1.9	1.2	1.5	2.2	1.7	1.9	2.1	2.0	1.6	0.0	0.0	0.0	NA	1.3
Number of FTEs (other)	1.6	2.1	1.8	2.0	1.9	2.1	2.4	2.3	2.8	0.0	0.0	0.0	NA	1.6
Number of FTEs (CCTV)	0.1	0.2	0.0	0.0	0.4	0.4	0.2	0.4	0.5	0.0	0.0	0.0	NA	0.2
Total, FTEs	3.6	3.5	3.4	4.2	4.0	4.5	4.7	4.7	5.0	0.0	0.0	0.0	NA	3.1
Regular Time Worked, (main line cleaning), hrs	333	194	273	363	281	339	380	341	293					
Regular Time Worked on Other, hrs (1)	281	329	320	341	312	382	433	392	505					
Regular Time Worked on CCTV (2)	15	36	4	0	71	72	45	67	86					
Total Regular time, worked, hrs	628	559	597	703	663	793	857	800	884	0	0	0	6,482	540
Total Vacation/Sick Leave/Holiday, hrs	403	356	271	277	307	239	181	180	193				2,403	267
Vacation/Sick Leave/Holiday, FTEs	2.3	2.2	1.5	1.6	1.8	1.3	1.0	1.1	1.1	0.0	0.0	0.0	13.9	1.2
Overtime Worked on Coll. Sys., hrs	3	0	16	3	7	4	6	9	3				50	6
Overtime Worked on Other, hrs (1)	14	45	31	19	15	29	39	31	15				237	26
Overtime Worked on CCTV (2)	0	0	0	0	4	0	0	3	0				7	1
Total Overtime, hrs	17	45	46	22	25	33	45	43	18	NA	NA	NA	293	33
<b>B. Productivity</b>														
<b>1. Line Cleaning</b>														
Rodder Work Orders generated	90	31	42	23	11	46	69	43	40				395	44
Rodder 3208 ft. cleaned	15,611	6,776	7,657	3,885	2,857	8,033	12,373	7,451	7,679				72,322	8,036
Rodder - outside services, ft cleaned	0	0	0	0	0	0	0	0	0				0	0
Flusher Work Orders generated	340	183	388	543	455	396	351	324	305				3,285	365
Truck 3205V ft. cleaned	107	4,165	2,352	22,584	18,806	1,100	4,618	0	4,349				58,081	6,453
Truck 3206V ft. cleaned	63,145	29,612	64,665	80,792	50,753	70,998	65,731	45,661	51,433				522,790	58,088
Flusher - outside services, ft. cleaned	1,349	553	0	127	0	0	0	8,990	2,506				13,525	
Total Footage cleaned(3)	78,863	40,553	74,674	107,261	72,416	80,131	82,722	53,112	63,461	NA	NA	NA	653,193	72,577
Work Orders completed	416	198	397	551	449	413	405	367	340				3,536	393
Work Orders backlog	14	16	33	15	17	29	15	0	5	NA	NA	NA	144	16
<b>2. Closed Circuit Television (CCTV)</b>														
Camera Work Orders generated	0	0	0	0	0	0	0	0	0				0	
CCTV Truck 3126T, ft. videoed	3,998	6,622	1,795	303	7,211	7,037	6,793	3,396	7,687				44,842	4,982
CCTV (hand cam), ft. videoed	6,378	806	706	0	1,842	5,303	4,279	5,161	1,805				26,280	
CCTV Inspection - outside services, ft. videoed	1,349	553	0	127	0	0	0	9,496	2,506				14,031	
Total CCTV footage(3)	11,725	7,981	2,501	430	9,053	12,340	11,072	18,053	11,998	NA	NA	NA	85,153	
<b>C. Sanitary Sewer Overflows (SSOs)</b>														
Minor (Category III)	1	4	3	0	1	0	0	1	1				11	NA
Major (Category II)	1	1	1	0	1	0	0	1	1				6	NA
Major (Category I)	0	0	0	0	0	0	0	0	0				0	NA
Major (Category I)	0	3	2	0	0	0	0	0	0				5	NA
Overflow Gallons	126	2,419	1,603	0	5	0	0	15	8				4,176	NA
Volume Recovered	0	0	98	0	0	0	0	0	0				98	NA
Percent Recovered	0%	0%	6%	NA	0%	NA	NA	0%	0%	NA	NA	NA	2%	NA
<b>D. Service Calls (non-SSO related)</b>														
Service calls, normal hours, #	10	11	7	2	5	6	6	4	10				61	7
Normal hours S.C. response time, mins (avg.)	22	20	15	10	25	45	24	30	20				211	23
Service Callouts, after hours, #	1	1	1	1	1	1	0	1	2				9	1
After Hours S.C. response time, mins (avg.)	33	35	40	7	40	45	0	45	20				265	29
<b>E. Benchmarks</b>														
Average Ft. Cleaned/Hour Worked	237	209	274	296	258	236	218	156	217	NA	NA	NA	NA	233
Total Stoppages/100 Miles	0.4	1.8	1.3	0.0	0.4	0.0	0.0	0.4	0.4	0.0	0.0	0.0	4.8	NA
Average spill response time (mins)	28	5	22	0	55	0	0	0	10				NA	13
Callouts/100 Miles	0.4	0.4	0.4	0.4	0.4	0.4	0.0	0.4	0.9	0.0	0.0	0.0	3.9	0.3
Overtime hours/100 Miles	1	0	7	1	3	2	3	4	1	0	0	0	22.00	2
Overflow Gallons/100 Miles	55	1052	697	0	2	0	0	7	3	0	0	-	1,816	151

(1) This category includes time spent on: Data input, Training, Service Calls, Overflow Response, as well as any other activity that does not directly relate to main line cleaning or CCTV work.

(2) This category separates time spent on CCTV from other Collection System maintenance activities.

(3) Does not include outside services (tracked separately)

# Collection System 2014-15 Graphs



Novato Sanitary District

Pump Station Monthly Report For September 2015 (as of September 30, 2015)

	Jan	Feb	March	April	May	June	July	August	Sept*	Oct	Nov	Dec	Total Year to Date	Average Year to Date
<b>Employee Hours Worked</b>	210	286	260	245	205	246	276	242	201	0	0	0	2,170	
Number of Employees (FTEs)	1.2	1.3	1.2	1.2	1.1	1.2	1.3	1.2	1.0	0.0	0.0	0.0		0.9
Regular Time Worked on Pump Sta	176	206	201	200	187	215	232	204	170				1,790	
Overtime Worked on Pump Sta	34	80	59	45	18	31	44	38	32				380	
After Hours Callouts	6	20	12	13	9	1	3	4	1				69	
Average Callout response time (mins)	30	33	30	24	30	25	20	45	50				287	32
<b>Lift Station Inspections</b>														
Number generated in month														
Number closed in month														
<b>Work Orders</b>														
Number generated in month	125	117	180	144	143	182	236	165	120				1412	157
Number closed in month	121	112	167	126	121	160	236	150	107				1300	144
Backlog	4	5	13	18	22	22	0	15	13	0	0	0	112	9

**COLLECTION SYSTEM (Pump Stations)  
WORK ORDER STATISTICS  
September 1, 2015 - September 30, 2015**

	<b>Open Work Orders Due Prior to 9/1/2015</b>	<b>Open Work Orders 9/1/2015 - 9/30/2015</b>	<b>Total Open Work Orders</b>
Preventive	2	159	161
Corrective	7	0	7
<b>Total</b>	<b>9</b>	<b>159</b>	<b>168</b>

	<b>Closed Work Orders 9/1/2015 - 9/30/2015</b>
Preventive	155
Corrective	0
<b>Total</b>	<b>155</b>

<b>Total Outstanding Work Orders as of 9/30/2015</b>	<b>13</b>
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**NOVATO SANITARY DISTRICT  
Wastewater Operations Committee Meeting  
Reclamation Facilities Report  
September 2015**

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**1.0 Summary:**

The rancher tended to his cattle this month as well as working on weed management, sprinkler repairs and a fresh water line repair in the irrigated parcels. Parcels were irrigated on all Sites without any reportable issues. The failed culvert under the road to Pond No. 1 was replaced. Work to clean out the Sludge Lagoons was completed this month.

**2.0 Ranch Operations:**

The rancher spent most of his time tending to the cattle, weed management and sprinkler head repair & replacement. The rancher also repaired a fresh water leak in Parcel 7 on Site 3.

**3.0 Irrigation Parcels:**

District staff continues to check the control systems at each site every few weeks to ensure they are functioning as expected. Staff found the controller for Site 2 was not working properly at the end of the month. Staff is investigating the problem and will make the necessary repairs once the problem is identified.



Work was completed to replace 70 feet of 24-inch culvert beneath the Pond No. 1 Access Road near the entry to Site 2 at Highway 37 (see photo at right). This culvert failed last winter and caused the drainage ditch to back up and flood across another access road and onto Parcel 21.

**4.0 Irrigation Pump Station:**

Approximately 58.24 MG of treated water was used for irrigation this month.

**5.0 Sludge Handling & Disposal:**

In August, upon Board authorization, an Agreement was executed between the District and Custom Tractor Service (CTS) of Petaluma to pump sludge out of the sludge lagoons and into the Dedicated Land Disposal (DLD) area, in addition to dredging the lagoons. CTS completed the work this month, one month ahead of schedule. CTS pumped approximately 3.12 MG of sludge out of the lagoons and into the DLD. In addition, approximately 5,175 cubic yards of solids were excavated out of the Sludge Lagoons and spread in the DLD.

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**NOVATO SANITARY DISTRICT**

**Reclamation Facility - Monthly Statistics for Calendar Year 2015, as of September, 2015**

	January	February	March	April	May	June	July	August	September	October	November	December	Total Year to Date	Annualized Monthly Average
<b>Irrigation Pump Station</b>														
Plant flow to ponds (MG)	0	0	0	0	0	90.64	88.64	80.12	84.31				343.7	28.64
Irrigation (MG)	0	0	0.0	0.09	7.86	59.2	91.59	62.45	58.24				279.4	23.29
Irrigation Pump 1 Hours				0.3	17.2	100.2	125.6	88.6	91.6				423.5	35.29
Irrigation Pump 2 Hours				0.1	16.7	102.4	121.1	96.7	93.7				430.7	35.89
Irrigation Pump 3 Hours				0.1	15.2	99.6	127.9	88.5	88.2				419.5	34.96
Washdown Water Pump Hours				0	0	0	0						-	0.00
Wildlife Feed Pump Hours			331.5	51.6	0	626.8	740.5	743.4	743.8				3,237.6	269.80
Water Circulated through Wildlife Pond (MG)	0	0	20.88	3.25	0	39	47	47	47	0	0	0	204.0	17.00
Strainer No. 1 Hours				0.2	6.3	38	45.9	33.7	33.6				157.7	13.14
Strainer No. 2 Hours				0	6.3	39.8	45.9	33.7	33.6				159.3	13.28
Pond 1 Gauge @ Beginning of Month	5.4	5.4	5.6	5.4	5.4	4.9	5.3	3.6	3.8					
Pond 1 Gauge @ End of Month	5.4	5.6	5.4	5.4	4.9	5.3	3.6	3.8	5.1					
Pond 1 Gallons Stored @ End of Month(MG)	39.2	41	39.2	39.2	35.2	38.4	24.8	26.4	36.1					
Pond 2 Gauge @ Beginning of Month	5.5	5.5	5.7	5.5	5.5	5	5.5	3.7	3.9					
Pond 2 Gauge @ End of Month	5.5	5.7	5.5	5.5	5	5.5	3.7	3.9	5.2					
Pond 2 Gallons Stored @ End of Month(MG)	52	54	52	52	47	52	33	35	49					
Total Irrigation Water Stored	91.2	95	91.2	91.2	82.2	90.4	57.8	61.4	85.1	0	0	0		
<b>Drainage Pump Station No. 3</b>														
Drainage Pump No. 1 Hours	0	133.1	2.4	1.2	0	0	0	0	0					
Drainage Pump No. 2 Hours	0	0	2.1	0.1	0	0	0	0	0					
Drainage Pump No. 3 Hours	100.3	127.1	0.6	2.7	0	0	0	0	0					
Total Gallons Stormwater Pumped (MG)	30.09	78.06	1.53	1.2	0	0	0	0	0	0	0	0	110.88	9.24
<b>Drainage Pump Station No. 7</b>														
Drainage Pump No. 1 Hours	331.6	46.2	13.3	0.2	0.1	0	0	0	0					
Drainage Pump No. 2 Hours	0	0	0	0	0	0	0	0	0					
Drainage Pump No. 3 Hours	0	1.5	2.7	7.5	0.1	0	0	0	0					
Total Gallons Stormwater Pumped (MG)	149.22	21	7	3.47	0.09	0	0	0	0	0	0	0	181.44	15.12