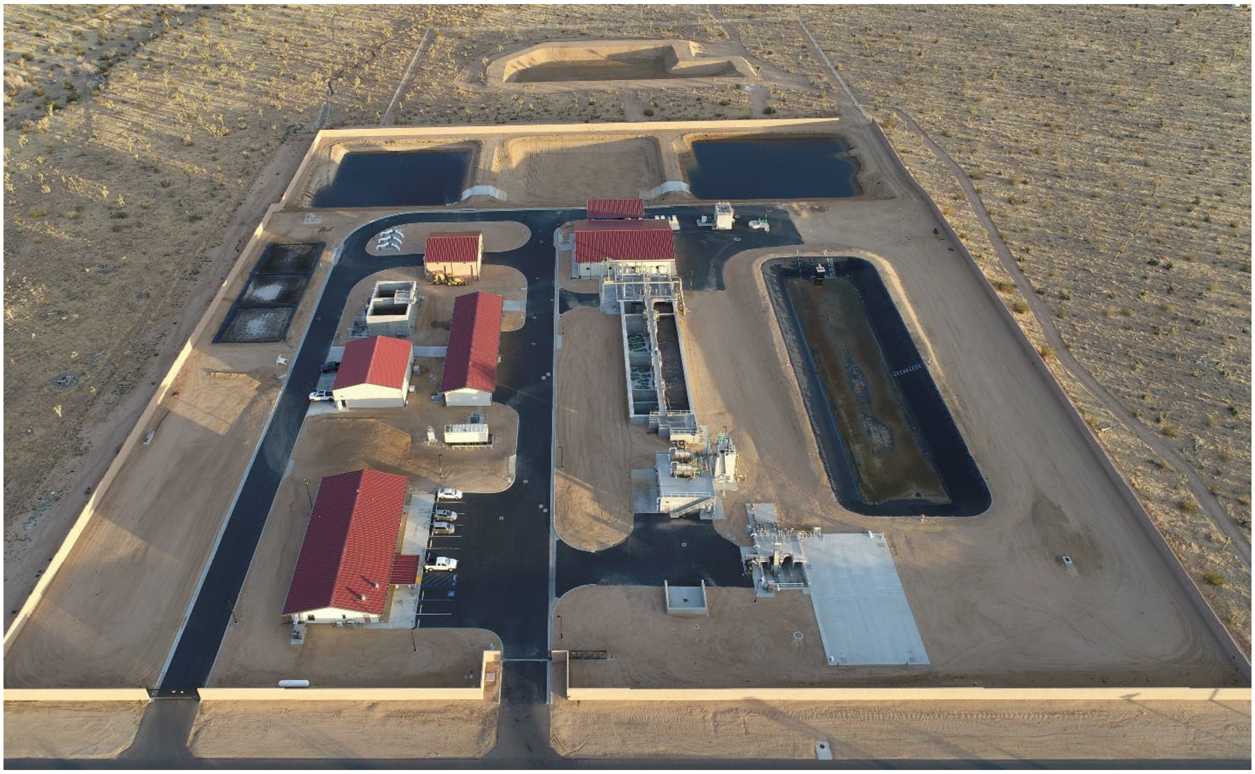
Hi-Desert Water District

Water Reclamation Facility

2024 ANNUAL REPORT

January 24, 2025

Prepared by Matt Mayo
Chief Plant Operator



1. Introduction

The Hi-Desert Water District (District) Water Reclamation Facility (WRF) treats sewage from a relatively new collection system, completed in 2019, within the Town of Yucca Valley (TOYV). In order to meet effluent water quality and operational objectives, the District constructed a membrane bioreactor (MBR) treatment process for the WRF. The MBR permeate quality allows the District to use the permeate for groundwater recharge and future water reuse in Phase 2 of the project. The Plant processes are designed to operate in compliance with the Waste Discharge Requirements (WDR) and produces Title 22 disinfected tertiary recycled water. The WRF has the ability to treat flows from the collection system equal to an annual average daily flow (AADF) of 1.0 million gallons per day (MGD). The WRF will be expanded in the future to treat collection system flows equal to an AADF of 1.6 MGD.

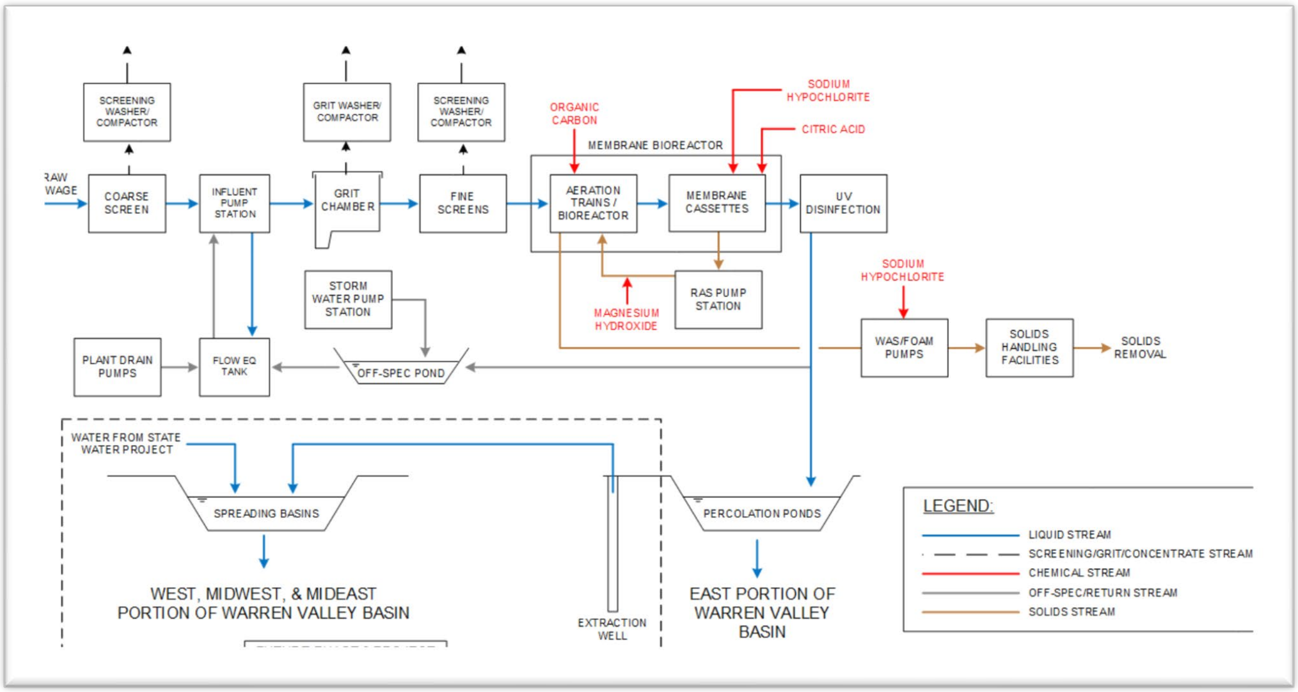
The District is governed by Board Order R7-2022-0014-01 under the jurisdiction of the California Regional Water Control Board Colorado River Basin Region (Regional Board). Order R7-2022-0014-01 provides the Waste Discharge Requirements (WDR) for the facility. In addition to the requirements specific to the WDR as mandated by the Regional Board, the District is required to meet discharge standards defined in the California Code of Regulations (CCR) Title 22 due to the future plan to become a Groundwater Reuse and Replenishing Project (GRRP).

2. Summary

The WRF sits on two rectangular 40-acre parcels running north-south for a total of 80-acres located adjacent to and south of State Route 62 (SR 62), Twenty-nine Palms Highway, east of Indio Avenue, and north of Sunnyslope Drive. The WRF consists of preliminary treatment, accomplished through both coarse and fine screens and a grit removal chamber, membrane bioreactor (MBR) treatment, ultraviolet (UV) disinfection for pathogen inactivation, solids dewatering, effluent percolation ponds, and support buildings/facilities. The MBR system is the main process for wastewater treatment. The MBR is a combined biological and filtration process and serves as the location of denitrification and suspended solids removal.

A process flow schematic is included on Figure 2-1. It shows the WRF treatment processes and the disinfected MBR effluent flowing to the percolation ponds. The graphics within the dotted portion represents future plans for a GRRP.

Figure 2-1 Process Flow Schematic:



Following is a list of Sanitary Sewer Overflows (SSO), Effluent Violations (EV) and Order Condition (OC) infractions from 2024:
-NONE

3. OPERATIONS

a. Pretreatment

As part of the District's Sewer Use Ordinance (SUO) implementation of the Fats, Oils and Grease (FOG) Control Program (Element 7 of the City's SSMP) staff conducted regular inspections of commercial businesses with pretreatment devices within the town. The authority to require grease interceptors, when necessary, at commercial businesses lies with the Town of Yucca Valley (TOYV) although enforcing the maintenance requirements and Best Management Practices (BMPs) are under the authority of the District.

The District requires that all commercial businesses, regardless of whether they believe they are FOG producers, submit a FOG inspection application. The application is reviewed by District staff to determine whether an inspection is needed based on information provided by the applicant in the permit application. Following the inspection, a discharge permit is issued if it is deemed necessary. The commercial businesses that are required to have a discharge permit are inspected annually to ensure BMPs are being followed. Inspection procedures includes an informal interview of the commercial business’s Owner or Manager regarding their existing infrastructure and kitchen practices, and an educational discussion of FOG source control as well as inspection of facilities and review of FOG disposal documentation. Violations are documented and proof of corrective actions is required. While most of the discharge permits issued are for Food Service Establishments (FSE) there are car washes and auto repair shops that have required permits as well in order to monitor the grease and oil discharge through the applicable grease removal devices installed.

The District's Collection crew is proactive and inspects the sewer manholes and other infrastructure for Inflow & Infiltration (I&I) that may contribute to unnecessary volumes of wastewater to be treated.

b. Influent Treatment and Quality

The plant took in an average dry weather flow of .709 Million Gallons per Day (MGD) in 2024. 61 connections were installed during the year for a total of 4396, which represents approximately 99% of the total connections in Phase 1.

The treatment plant operates through a series of both gravity and pressurized process streams. Wastewater enters the plant at the influent pump station and flow meter, where the influent first passes through a coarse screen and flows by gravity to the influent pump station wet well. The coarse screen is a mechanically cleaned coarse screen with 6-millimeter (mm) openings. The screen has a hydraulic capacity of 7.3 million gallons per day (MGD), which is the buildout peak hour flow. A manually cleaned bar rack is available as the standby unit for periods when the mechanically cleaned screen may be out of service.

After passing through the primary screens, wastewater flows by gravity to a wet well where variable speed submersible pumps convey the wastewater to either the equalization (EQ) tank or the grit removal structure. At this juncture the flows do not warrant grit removal as the fine screens have done the job well enough without the use of the Grit Removal System so that is bypassed. The Flow EQ pumps are designed to accommodate the difference between the design influent pumping capacity (peak diurnal flow) and the peak hour wet weather flows.

A summary of annual flow and influent parameter concentrations is shown in Table 1.

Table 1: Influent Parameters

	2024
Mean Influent Flow, MGD	.709
Total Annual Flow, MG	259.1
Mean Influent TSS, mg/L	193
Mean Influent BOD_5, mg/L	217

c. Preliminary Treatment

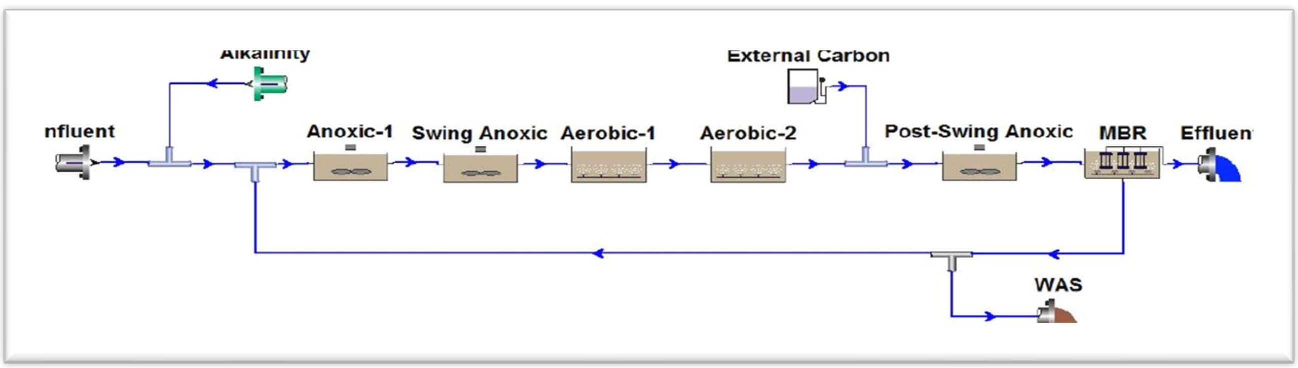
The preliminary treatment process includes screening and grit removal (when needed) as well as influent flow monitoring. The process water is currently pumped from the influent pump station directly to the fine screens. The MBR units require upstream fine screening to protect the membranes from damage. Fine screening consists of two screens, operating in a 1 duty + 1 standby configuration, and each are sized for a 2.6 MGD capacity.

d. Biological Treatment

The screened influent flows by gravity from the fine screens to the influent mixing chamber and aeration tank distribution channel. The influent mixing chamber and aeration tank distribution channel are partially separated by a baffle wall. After the screened influent mixes with the return activated sludge in the influent mixing chamber, the process water flows by gravity past the baffle wall into the aeration tank distribution channel. The aeration tank distribution channel distributes the mixed influent and RAS flow. Process water flows from the aeration tank distribution channel and splits into two process streams that feed the two anoxic tanks.

The biological process consists of one anoxic zone, one swing/anoxic zone ahead of two aerobic zones, followed by a post swing/anoxic zone and the MBR tanks. The swing/anoxic zones can be operated as either an anoxic or an aerobic zone and provide some flexibility in adjusting the aerobic and anoxic Sludge Residence Time (SRT) based on effluent water quality and seasonal temperature variations. A Returned Activated Sludge (RAS) recycle stream is connected to the back of the MBR tanks and is pumped to the RAS splitting chamber which then mixes with influent in the Influent Mixing Chamber and is conveyed via the Aeration Tank Distribution Channel to the first anoxic zone to achieve denitrification of nitrate contained in the return stream using readily biodegradable chemical oxygen demand (COD) in the influent wastewater as well as to maintain the desired biomass in the process. For operational flexibility, an Anoxic Bypass Chamber is available for the purpose of conveying influent flow and RAS flow directly into the first aerobic tank. Figure 3-1 represents the flow schematic of the biological process.

Figure 3-1: Biological Flow Schematic



e. Secondary Treatment

Water flows by gravity through the anoxic tanks, aeration tanks, and MBR tanks to the membrane distribution channel. Permeate is drawn through the membranes within the membrane tanks and additional flows enter the membrane distribution channel via an overflow weir. RAS is pumped from the back of the membrane tanks to the beginning of the process trains. The permeate pumps convey secondary effluent through the UV disinfection system and into the back-pulse tank. The treated water then flows from the back-pulse tank through the plant water tank and to the percolation ponds by gravity. The MBR process meets all effluent requirements for BOD^5, TSS, TN, nitrite and pH under all operating conditions. When needed the addition of supplemental alkalinity and external carbon source is added to achieve desired parameters to remain in compliance.

f. Ultraviolet (UV) Disinfection

After the process water has been treated by the MBR, the permeate is pumped to the UV system. The UV system disinfects water for the production of Title 22 disinfected tertiary recycled water. The minimum performance of the UV system meets the Guidelines for ultraviolet disinfection system design in water reuse applications published in the 2012 Ultraviolet Disinfection Guidelines for Drinking Water and Water Reuse, published by the National Water Research Institute (NWRI). Those guidelines include the following:

- Minimum UV dose of 100 millijoules per centimeter squared (mJ/cm^2)
- Effluent Turbidity equal or less than 0.2 NTU 95 percent of the time, not to exceed 0.5 NTU
- Filtered water UV transmittance (UVT) of 52 percent or greater at 254 nanometers (nm)

The UV system consists of two reactors operated in a duty/standby (1+1) configuration with a capacity of 1.6 MGD each. The UV system can take several minutes to warm up during the plant startup or after a power failure. Once the reactors are warmed up the MBRs will activate and permeate will begin to flow through the reactors. The off-spec valve is manually opened, and flow is diverted until all regulatory compliance parameters are met.

A summary of key UV parameters for 2024 is shown in Table 4. Details of the UV qualities are presented in graphical form in Appendix A.

Table 4: Ultraviolet Disinfection Parameters 2024

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
TURBITITY, S.U.												
Min	.021	.022	.022	.022	.022	.02	.021	.021	.021	.02	.019	.007
Max	.027	.04	.046	.061	.042	.054	.027	.046	.03	.043	.038	.041
Average	.024	.024	.024	.026	.025	.023	.025	.024	.023	.022	.023	.024
UV TRANSMITTANCE												
Min	66.7	67	66	66.3	67	67	69.3	69.1	69.9	70	69.3	64
Max	75.2	75	75	75	75.8	76.9	77.1	77	76.9	77.7	78	76.7
Average	71.4	71	71	70.5	70.7	72	73.1	72.7	73.3	73.6	73.5	72.9
UV DOSE												
Min	144	136	109	100	123	148	130	113	132	104	164	148
Max	381	383	387	381	375	385	375	413	425	489	476	486
Average	200	198	194	195	196	201	201	204	207	201	234	232

g. *Final Effluent Treatment and Quality*

After the effluent has been delivered to the Back-pulse and Plant Water Tank, effluent, meeting the quality requirements for discharge, flows into pipelines for conveyance to onsite percolation ponds on the northern side of the site. Effluent that meets all the requirements of the WDR discharges into the ponds and has an engineered outfall to protect against scouring, and the effluent percolates into the ground within the unlined ponds. As mentioned in the previous section, in the unlikely event that effluent does not meet the specified quality for discharge, "off-spec" water will not be discharged into the percolation ponds, but rather is conveyed by gravity to the Off-Spec Basin where it flows by gravity back into the flow equalization tank and reintroduced to the influent stream for treatment. 795 acre-feet of treated Title 22 effluent was discharged into the aquifer in 2024. A summary of other key final treatment parameters for 2024 is shown in Table 5.

Table 5: Key Treatment Parameters 2024

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
INFLUENT BOD, mg/L												
Max	360	320	270	270	250	260	200	200	250	250	270	260
Mean	236	273	250	252	233	218	174	160	178	193	215	226
Average lbs/day	1389	1586	1526	1439	1359	1279	1063	1237	1116	1187	1328	1347
EFFLUENT BOD, mg/L												
Max	0	0	0	0	0	0	0	0	0	0	0	7
Mean	0	0	0	0	0	0	0	0	0	0	0	1.40
Average lbs/day	0	0	0	0	0	0	0	0	0	0	0	8.25
INFLUENT TSS, mg/L												
Max	320	280	240	240	200	300	230	300	180	250	200	210
Mean	216	233	230	214	180	220	182	169	158	165	175	174
Average lbs/day	1271	1354	1350	1240	1049	1291	1112	1045	991	1015	1081	1037
EFFLUENT TSS, mg/L												
Max	1	0	0	.7	0	0	0	0	0	0	0	0
Mean	0.3	0	0	0.14	0	0	0	0	0	0	0	0
Average lbs/day	1.74	0	0	.811	0	0	0	0	0	0	0	0
INFLUENT FLOW, MGD												
Max	.752	.745	.743	.740	.7448	.740	.778	.795	.808	.779	.789	.756
Mean	.706	.697	.704	.695	.6994	.704	.733	.742	.752	.738	.741	.715
TOTAL(MG)	21.88	20.213	21.824	20.85	21.681	21.12	22.723	23	22.56	22.88	22.23	22.165
EFFLUENT FLOW, MGD												
Max	.732	.732	.748	.727	.729	.744	.767	.778	.811	.776	.794	.75
Mean	.696	.690	.692	.685	.685	.693	.721	.728	.741	.729	.728	.707
TOTAL(MG)	21.576	20.01	21.452	20.55	21.235	20.79	22.35	22.56	22.23	22.6	21.84	21.91
OIL & GREASE, ml/L												
Max	0	0	0	0	0	0	0	0	0	0	0	0
Mean	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL COLIFORM, MPN												
Median	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
Max	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
PH, s.u.												
Max pH	7.3	7.1	7.1	7.3	7.3	7.4	7.2	7.4	7.5	7.4	7.3	7.3
Min pH	6.7	6.5	6.6	6.7	6.4	6.5	6.5	6.4	7	7	7	7.0
TDS, mg/L												
Max	430	430	440	440	440	430	420	420	420	420	410	440
Mean	420	423	423	428	428	423	414	410	412	410	393	416

TOC, mg/L

Max	6.9	7.6	7.8	7.2	6.8	5.9	6.5	5.9	5.7	5.5	6.8	5.8
Mean	6.6	6.9	7	6.9	6.7	5.8	5.6	5.8	5.5	5.5	5.7	5.7

AMMONIA, mg/L

Max	.2	.8	0	.1	0	0	.1	.1	.1	0	0	.1
Mean	.03	.14	0	.02	0	0	.1	.025	.04	0	0	.01

NITRATE, mg/L

Max	.52	0	0	0	0	0	0	.7	.39	.61	.66	.44
Mean	.13	0	0	0	0	0	0	.156	.12	.26	.47	.07

NITRITE, mg/L

Max	0	0	0	0	0	0	0	0	0	0	0	0
Mean	0	0	0	0	0	0	0	0	0	0	0	0

4. GROUNDWATER WELL MONITORING

a. Overview

Prior to construction the District installed four groundwater monitoring wells adjacent to the WRF site location. The purpose of the groundwater monitoring wells network in the area of the proposed recharge basins is to determine the water quality conditions on the first encountered groundwater after discharge has been initiated. Four wells were monitored for pH, Coliform, Total Dissolved Solids, Ammonia, Nitrate, Nitrite and Total Nitrogen. The wells were monitored quarterly. A summary of results for the respective parameters for 2024 is shown in Table 6.

Table 6: Monitoring Well Parameters 2024

	1st Q	2nd Q	3rd Q	4th Q
DEPTH TO GROUNDWATER				
YV-3	401	401	399	398
YVUZ-4	410	410	409	409
YVUZ-5	382	327	323	320
YVUZ-6	296	295	292	290
PH, S.U.				
YV-3	8.5	7.9	8.3	8.0
YVUZ-4	8.4	7.9	7.9	7.8
YVUZ-5	7.7	7.9	7.7	7.7
YVUZ-6	8	8	7.5	7.7
FECAL COLIFORM, MPN				
YV-3	<1.8	<1.8	<1.8	<1.8
YVUZ-4	<1.8	<1.8	<1.8	<1.8
YVUZ-5	<1.8	<1.8	<1.8	<1.8
YVUZ-6	<1.8	220	<1.8	<1.8
TOTAL COLIFORM, MPN				
YV-3	<1.8	<1.8	<1.8	<1.8
YVUZ-4	<1.8	<1.8	<1.8	<1.8
YVUZ-5	<1.8	<1.8	<1.8	<1.8
YVUZ-6	<1.8	1600	<1.8	<1.8

ENTEROCOCCOUS, MPN				
YV-3	<1.8	<1.8	<1.8	<1.8
YVUZ-4	<1.8	<1.8	<1.8	<1.8
YVUZ-5	<1.8	<1.8	3.7	<1.8
YVUZ-6	<1.8	<1.8	<1.8	<1.8

TDS, MG/L				
YV-3	180	210	210	210
YVUZ-4	220	220	210	220
YVUZ-5	440	460	460	440
YVUZ-6	430	430	440	430

AMMONIA AS N, MG/L				
YV-3	0	0	0	0
YVUZ-4	0	0	0	0
YVUZ-5	0	0	0	0
YVUZ-6	0	0	0	0

NITRATE AS N, MG/L				
YV-3	2.7	2.5	2.6	2.5
YVUZ-4	2.3	2.2	2.4	2.3
YVUZ-5	2	1.9	3.3	.8
YVUZ-6	1.1	1	.9	1.3

NITRITE AS N, MG/L				
YV-3	0	0	0	0
YVUZ-4	0	0	0	0
YVUZ-5	0	0	0	0
YVUZ-6	0	0	0	0

TOTAL NITROGEN, MG/L	1st Q	2nd Q	3rd Q	4th Q
YV-3	2.7	2.5	2.6	2.5
YVUZ-4	2.3	2.2	2.4	2.3
YVUZ-5	2	1.9	3.3	.8
YVUZ-6	1.1	1	.9	1.3

5. MAINTENANCE

a. Maintenance Summary

The WRF performed a variety of scheduled, preventative, predictive and breakdown maintenance on a wide variety of equipment. The main goal of maintenance activities is to ensure equipment availability to meet plant process operation requirements.

The WRF work area includes all major and auxiliary processes. Maintenance minimizes callouts, reduces overtime costs, limits potential for discharge violations due to mechanical failure, and costs associated with repairs are significantly lower than replacement costs. In addition to routine lubrication and preventative maintenance activities, the following notable predictive maintenance, and repairs were completed in 2024:

- De-Scaling/chemical cleaning of Screw presses
- Replacement of UV Bulbs
- Influent Pump 2 Replacement

- Airbay B air diffuser repair
- Membrane Fiber Repair on MBR #3
- Replaced MBR #3 Air actuator for flow valve
- Cleaned blow sand and debris from Off-Spec basin

b. Flow Meter Calibration Record

Flow to the plant is measured at the head works. The flow meter at the headworks has never worked properly to give an accurate flow in to the plant. We get a fairly accurate influent flow by calculating the flow from the influent pump station and adding the daily flow from the EQ basin into the influent pump station. The functioning meters are checked annually for accuracy and functionality. Comprehensive calibrations are completed per meter specification.

6. CHEMICALS AND UTILITIES

a. Chemicals

When needed, several chemicals are used for a variety of treatment processes at the plant. Major process chemicals are discussed below and include:

- Magnesium Hydroxide
- Sodium Hypochlorite
- Citric Acid
- MicroC 2000™

i. Magnesium Hydroxide for Nutrient Removal and pH Adjustment

Magnesium hydroxide is added to the screened influent as it enters the aeration tank distribution channel in order to increase the alkalinity to support the biological conversion of ammonia to nitrate. Magnesium hydroxide is delivered as a slurry and the chemical injection point is in the aeration tank distribution channel.

ii. Sodium Hypochlorite/Citric Acid

Sodium hypochlorite is injected at three locations: (1) plant water pipeline downstream of the plant water pumps, (2) MBR permeate line for MBR Clean-In-Place (CIP), and (3) foam/ waste activated sludge (WAS) pipeline downstream of the foam/ WAS blowers. The membrane filters require periodic chemical cleaning to remove foulants from the membrane surface. Sodium hypochlorite and citric acid are used for chemical CIP maintenance and recovery cleanings of the MBR system. The recovery clean soaks the membranes in a chemical solution for several hours and is performed twice per year.

iii. MicroC 2000™

When needed, MicroC 2000™ is added to the anoxic tank in order to supplement the biological oxygen demand (BOD) for the nitrate converting microbes in the biological treatment.

7. HUMAN RESOURCES

a. Staffing

The Wastewater Department includes treatment operations and collection maintenance staff. In 2024, the treatment plant employed 6 employees.

Plant staffing for 2024 is shown in Table 7.

Table 7: Plant Staffing

Chief Plant Operator	1
Lead Operator	1
WRF Operator	2
Collection Maintenance Lead Technician	1
Collection Maintenance Technician[1]	1

b. Safety Training

Safety meetings are conducted on a weekly basis that discuss relevant safety topics, creating a more efficient and safer work environment.

Notable safety training conducted by WRF operating staff:

- Chemical Handling Safety
- Lockout/Tagout Procedures
- Confined Space Safety
- Wastewater Maintenance Safety
- Workplace Fire Safety
- Safety Showers and Eyewash Stations

c. Operator Certification

The WRF functions with two Grade IV and two Grade II operators and operates 7 days a week. While staffed daily only, staff is split into two crews with one crew of two operators working a 4/10 schedule Monday through Thursday and the second two-person crew works the same schedule Tuesday through Friday. All four operators share Standby duties with the operator on duty covering abbreviated operations on Saturday, Sunday and holidays.

Table 8 summarizes the status of operator certification held by WRF operators at the facility during 2024.

Table 8: Wastewater Treatment Certifications

Grade IV	2
Grade II	2
O.I.T.	

Additional certifications held by WRF staff include Laboratory Analyst, Collection System Maintenance, Cross Connection Specialist, Water Treatment and Water Distribution.

8. Certification of Report

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including fine and imprisonment for withholding information regarding permit violations.

If you have any questions or need additional information, please feel free to contact me at mattm@hdwd.com or (760)228-6278.

Sincerely,

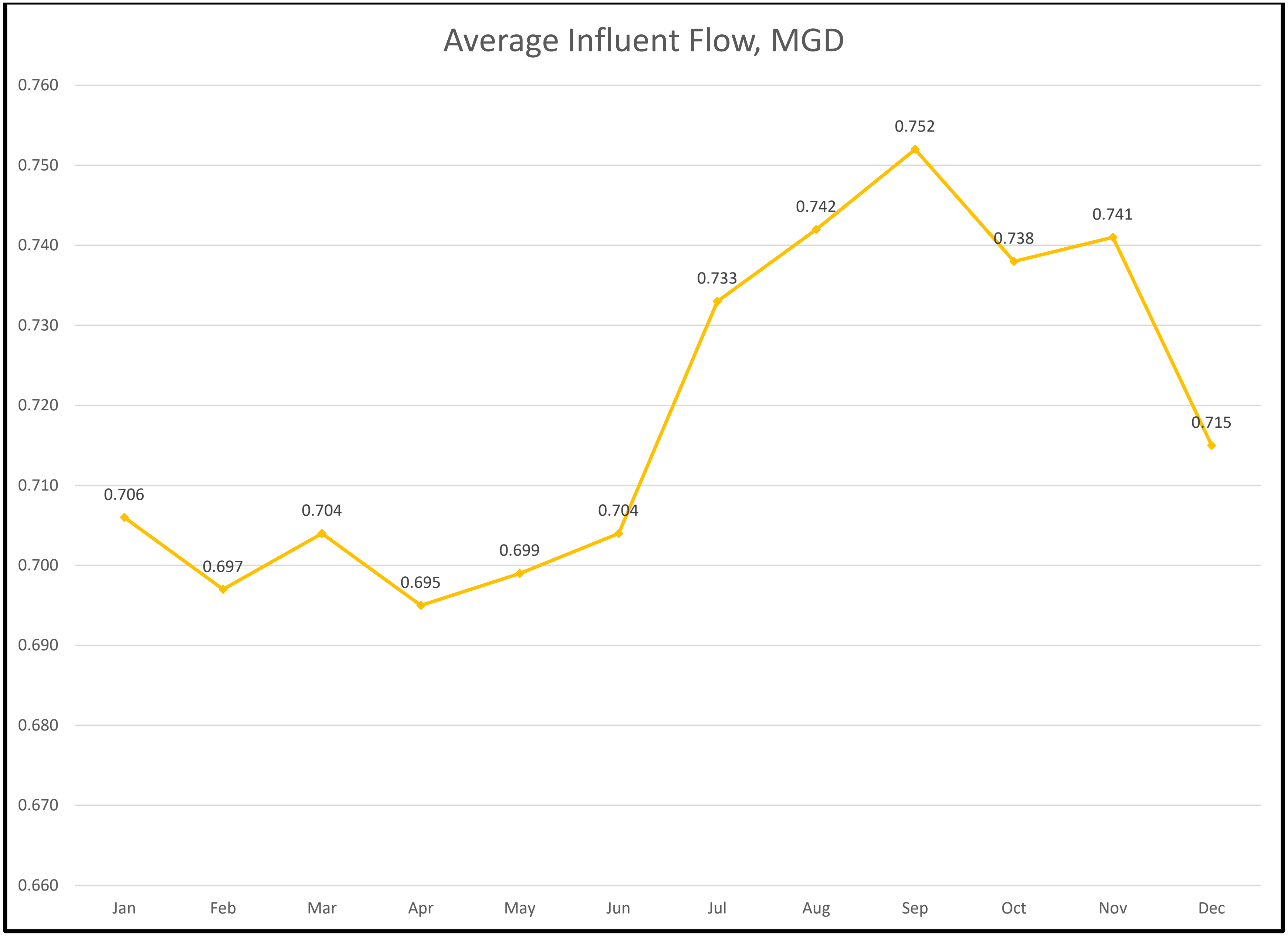
Matt Mayo, WWTPO IV-42824

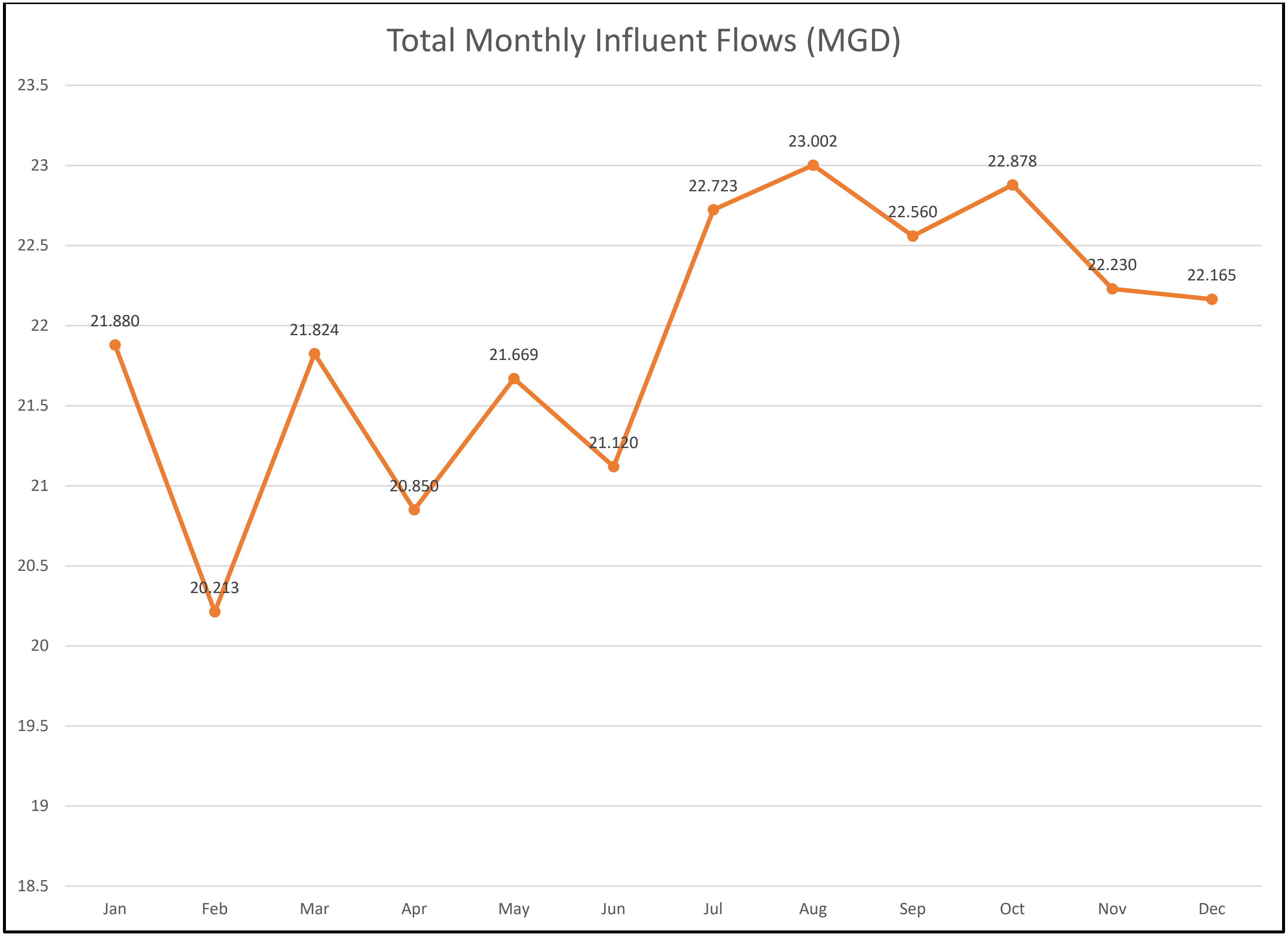
Chief Plant Operator

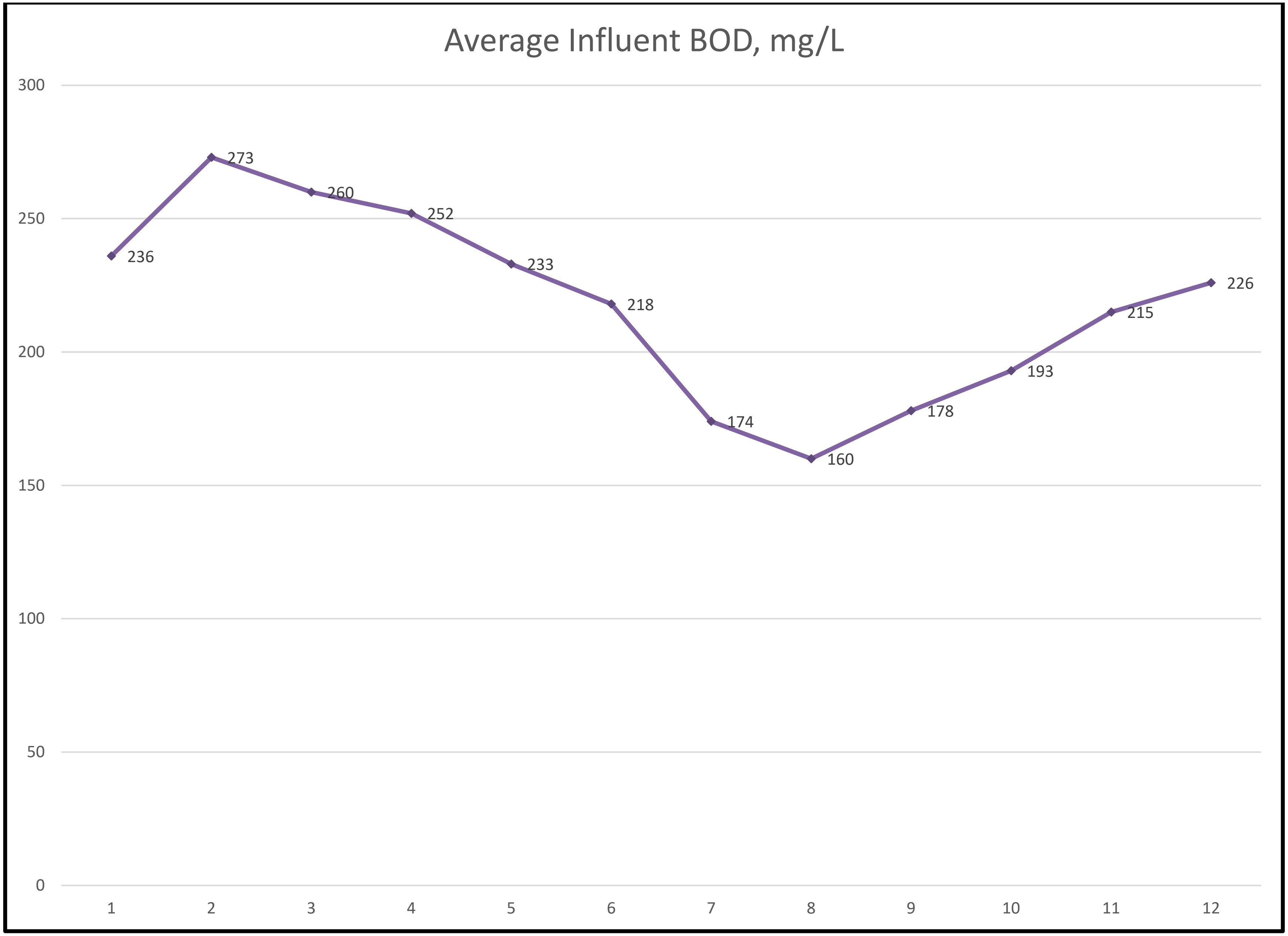
Hi-Desert Water District Water Reclamation Facility

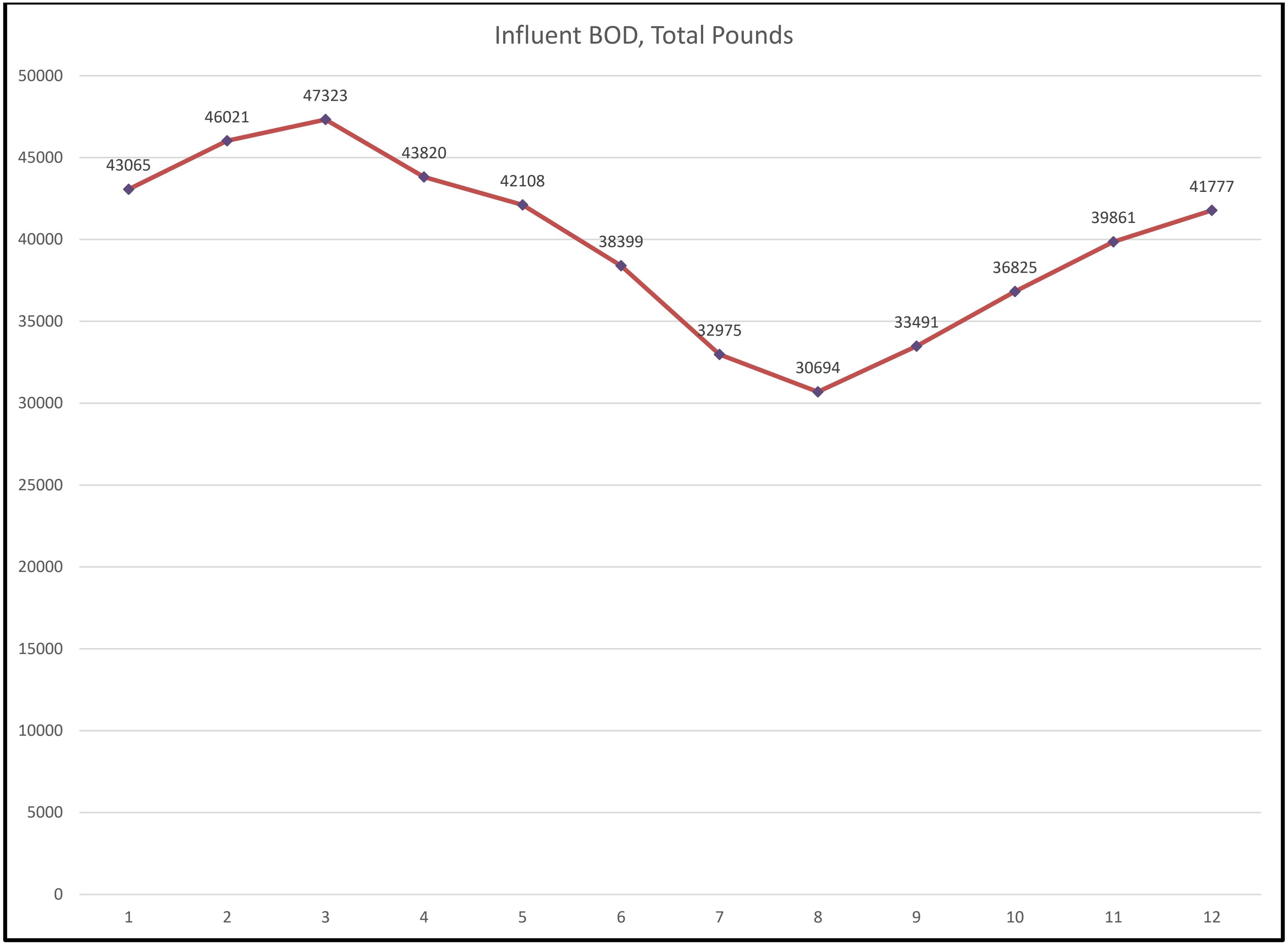
Appendix A

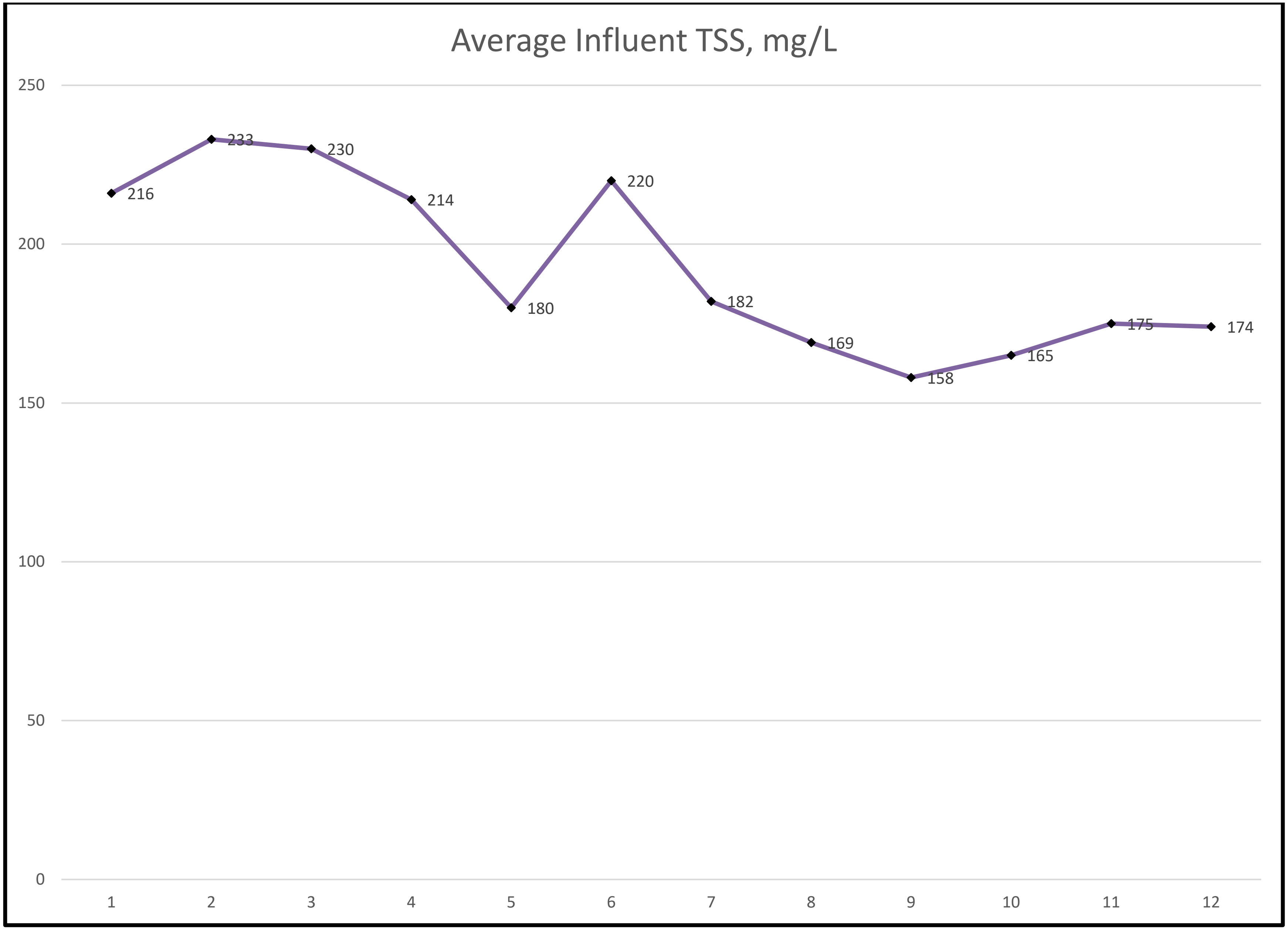
WRF Performance Charts

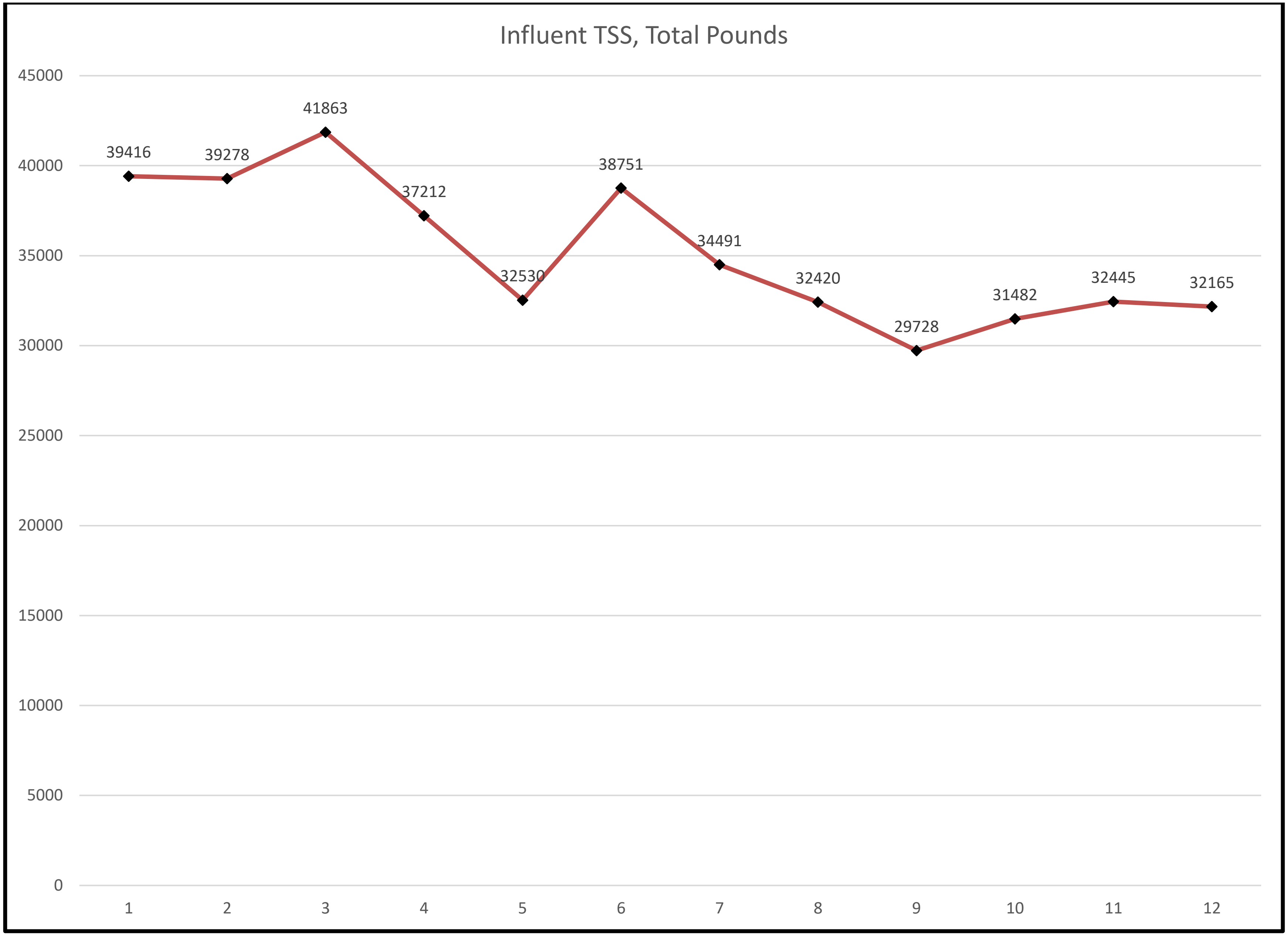

Average Influent Flow, MGD
0.760
0.750
0.740
0.730
0.720
0.710
0.700
0.690
0.680
0.670
0.660
0.706
0.697
0.704
0.695
0.699
0.704
0.733
0.742
0.752
0.738
0.741
0.715
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

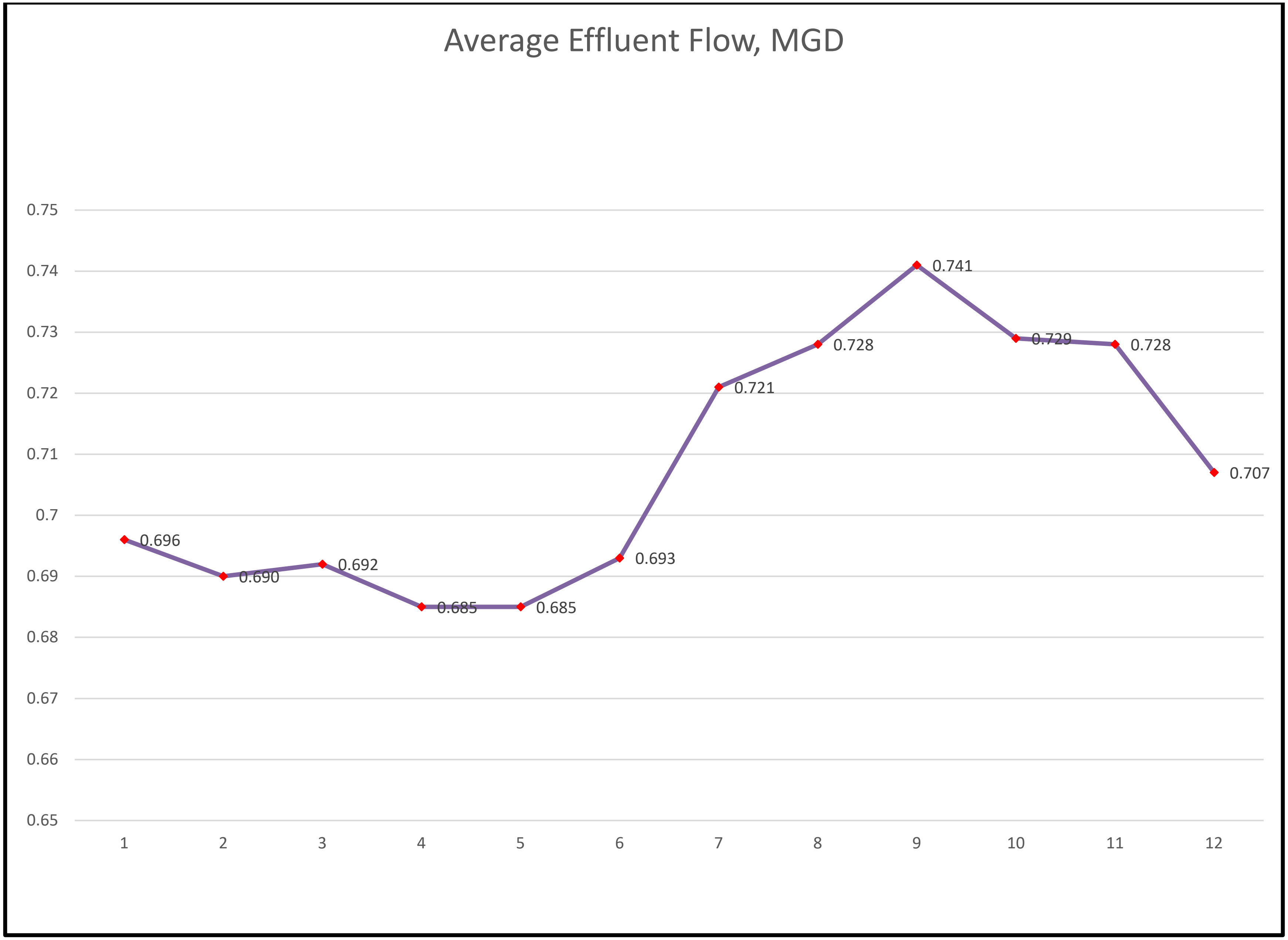

Total Monthly Influent Flows (MGD)
23.5
23
22.5
22
21.5
21
20.5
20
19.5
19
18.5
21.880
20.213
21.824
20.850
21.669
21.120
22.723
23.002
22.560
22.878
22.230
22.165
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

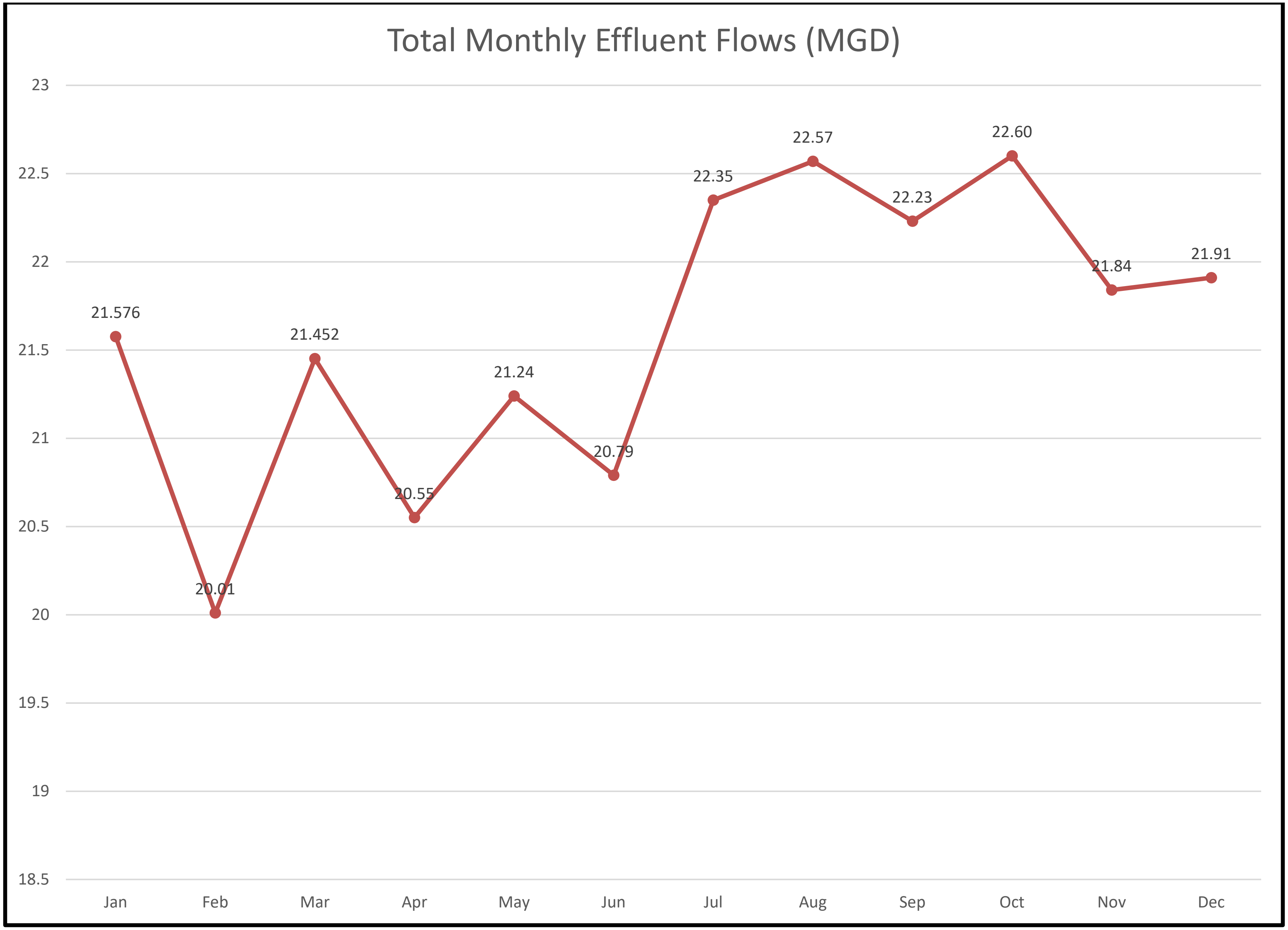

Average Influent BOD, mg/L
300
250
200
150
100
50
0
1
2
3
4
5
6
7
8
9
10
11
12
236
273
260
252
233
218
174
160
178
193
215
226

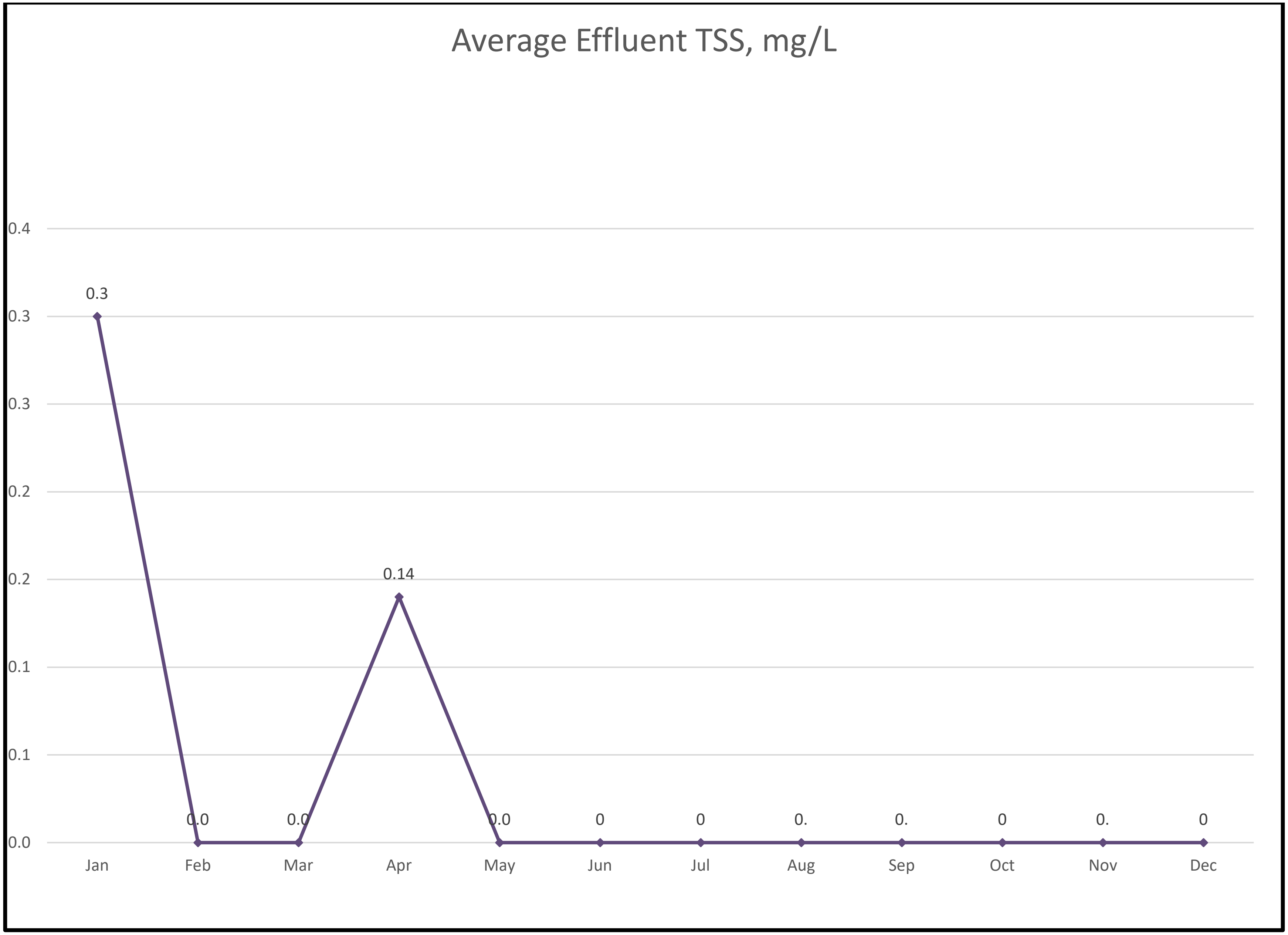

Influent BOD, Total Pounds
50000
45000
40000
35000
30000
25000
20000
15000
10000
5000
0
43065
46021
47323
43820
42108
38399
32975
30694
33491
36825
39861
41777
1
2
3
4
5
6
7
8
9
10
11
12

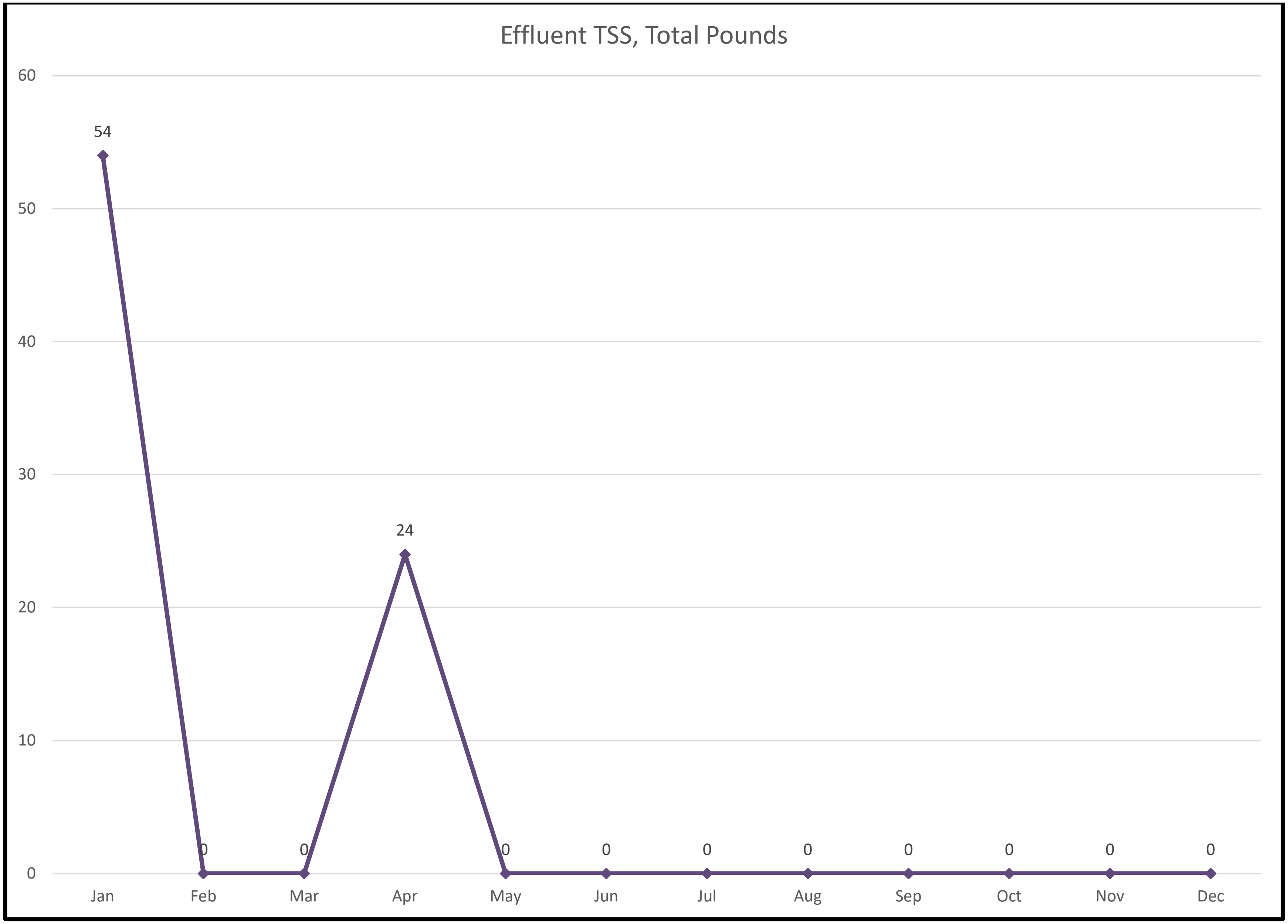

Average Influent TSS, mg/L
250
200
150
100
50
0
1
2
3
4
5
6
7
8
9
10
11
12
216
233
230
214
180
220
182
169
158
165
175
174

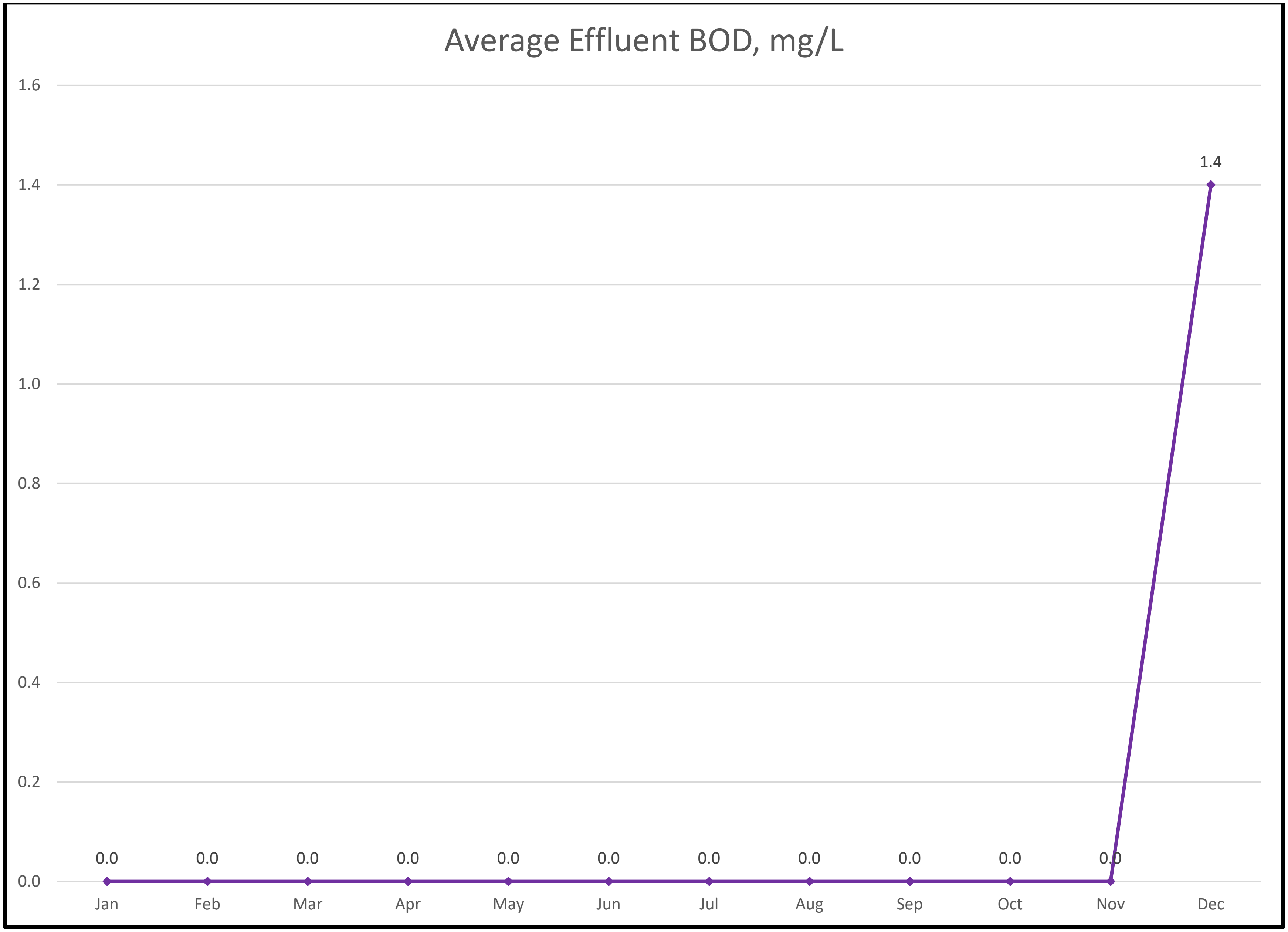

Influent TSS, Total Pounds
45000
40000
35000
30000
25000
20000
15000
10000
5000
0
39416
39278
41863
37212
32530
38751
34491
32420
29728
31482
32445
32165
1
2
3
4
5
6
7
8
9
10
11
12


Average Effluent Flow, MGD
0.75
0.74
0.73
0.72
0.71
0.7
0.69
0.68
0.67
0.66
0.65
1
2
3
4
5
6
7
8
9
10
11
12
0.696
0.690
0.692
0.685
0.685
0.693
0.721
0.728
0.741
0.729
0.728
0.707

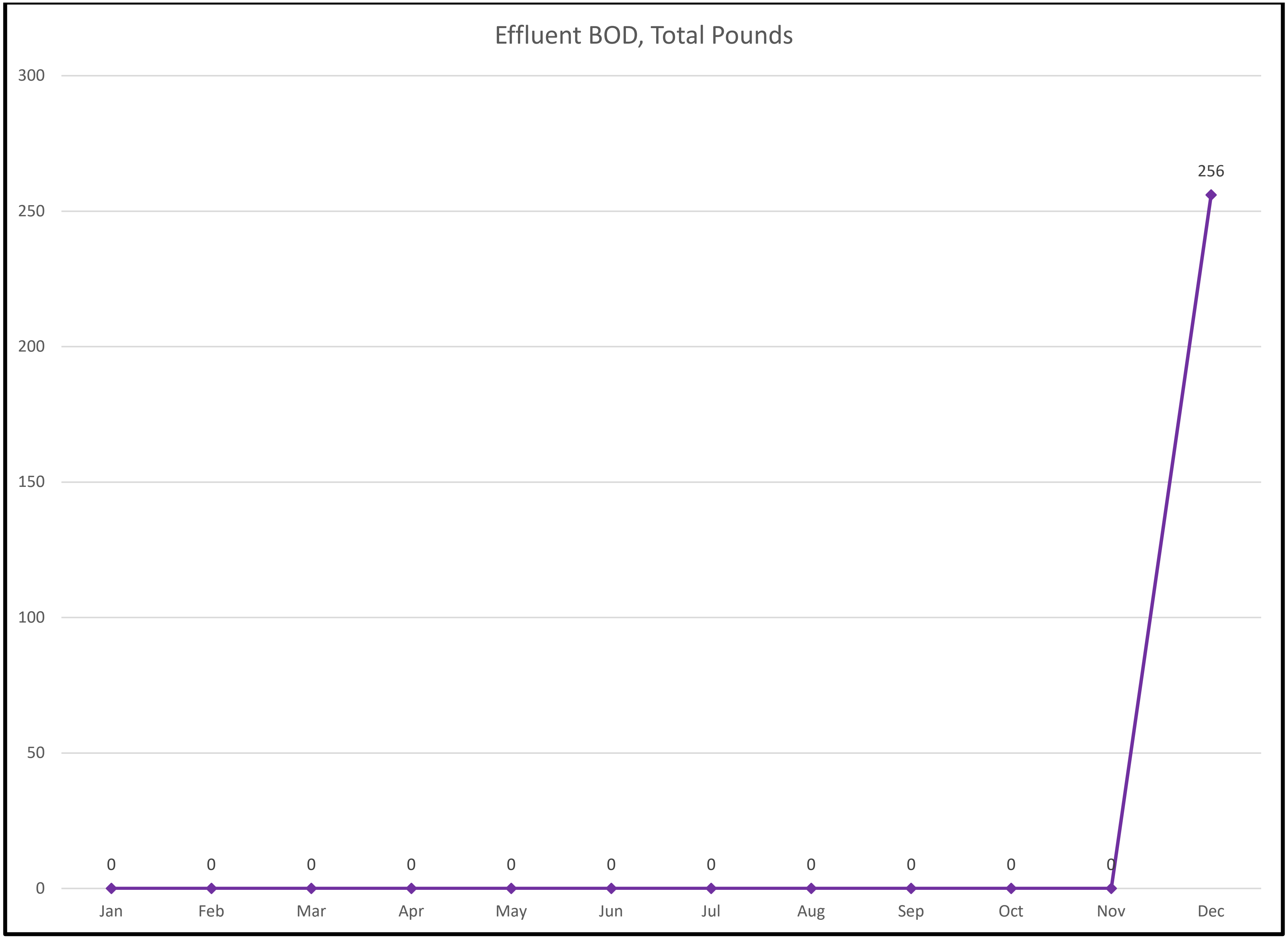

Total Monthly Effluent Flows (MGD)
23
22.5
22
21.5
21
20.5
20
19.5
19
18.5
21.576
20.01
21.452
20.55
21.24
20.79
22.35
22.57
22.23
22.60
21.84
21.91
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

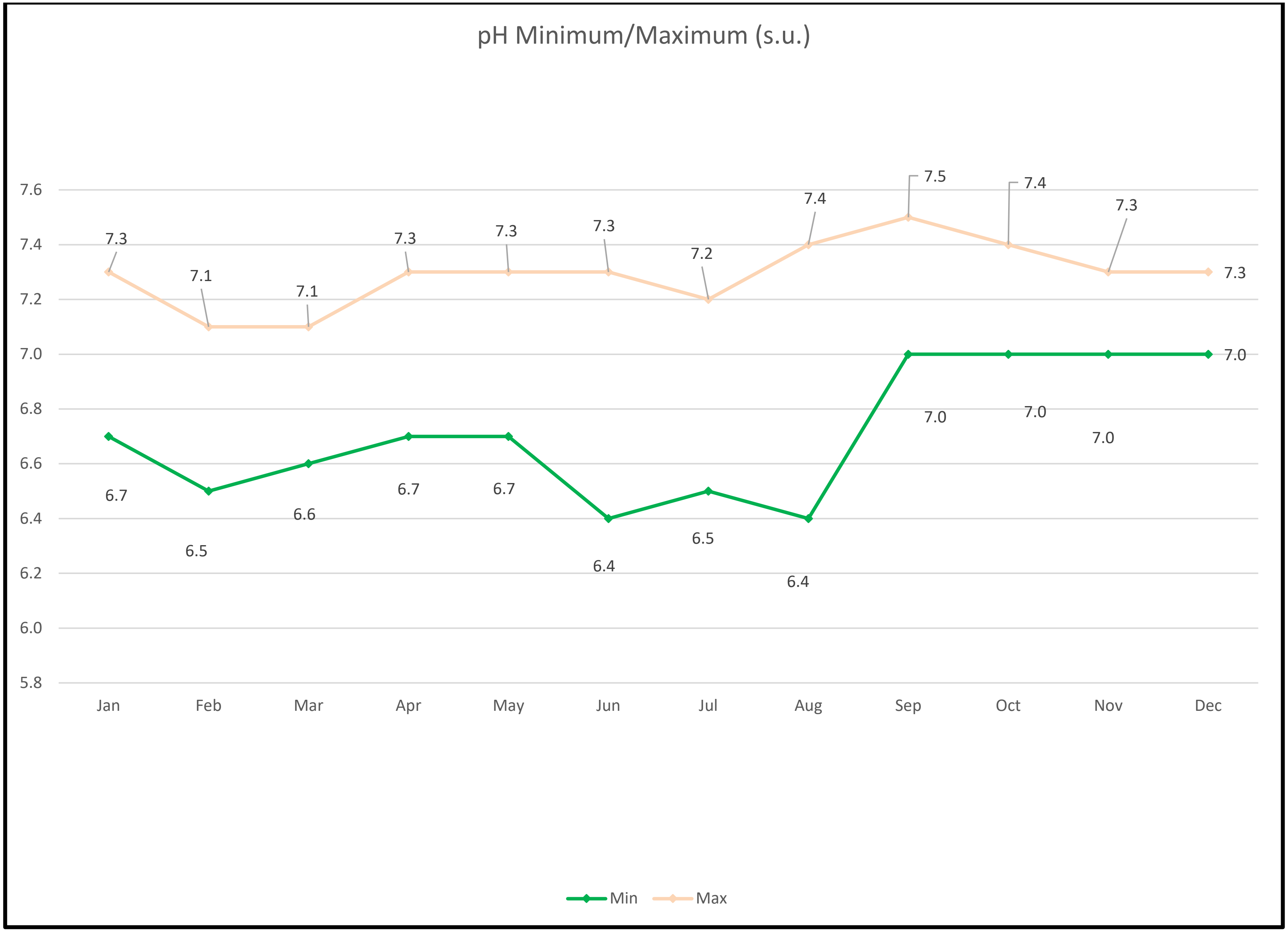

Average Effluent TSS, mg/L
0.4
0.3
0.3
0.2
0.2
0.1
0.1
0.0
0.3
0.0
0.0
0.14
0.0
0
0
0.
0.
0
0.
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

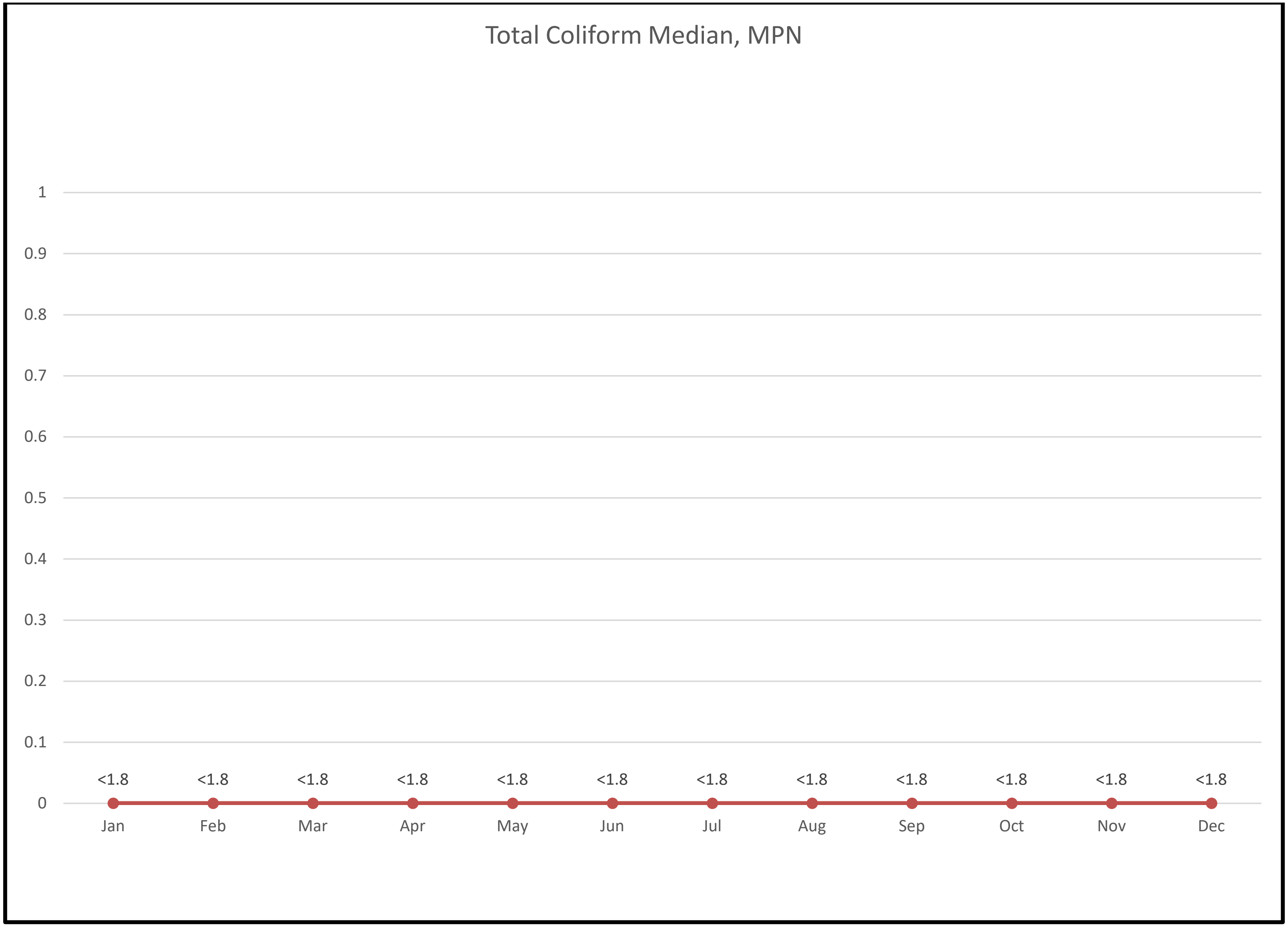

Effluent TSS, Total Pounds
60
50
40
30
20
10
0
54
24
0
0
0
0
0
0
0
0
0
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

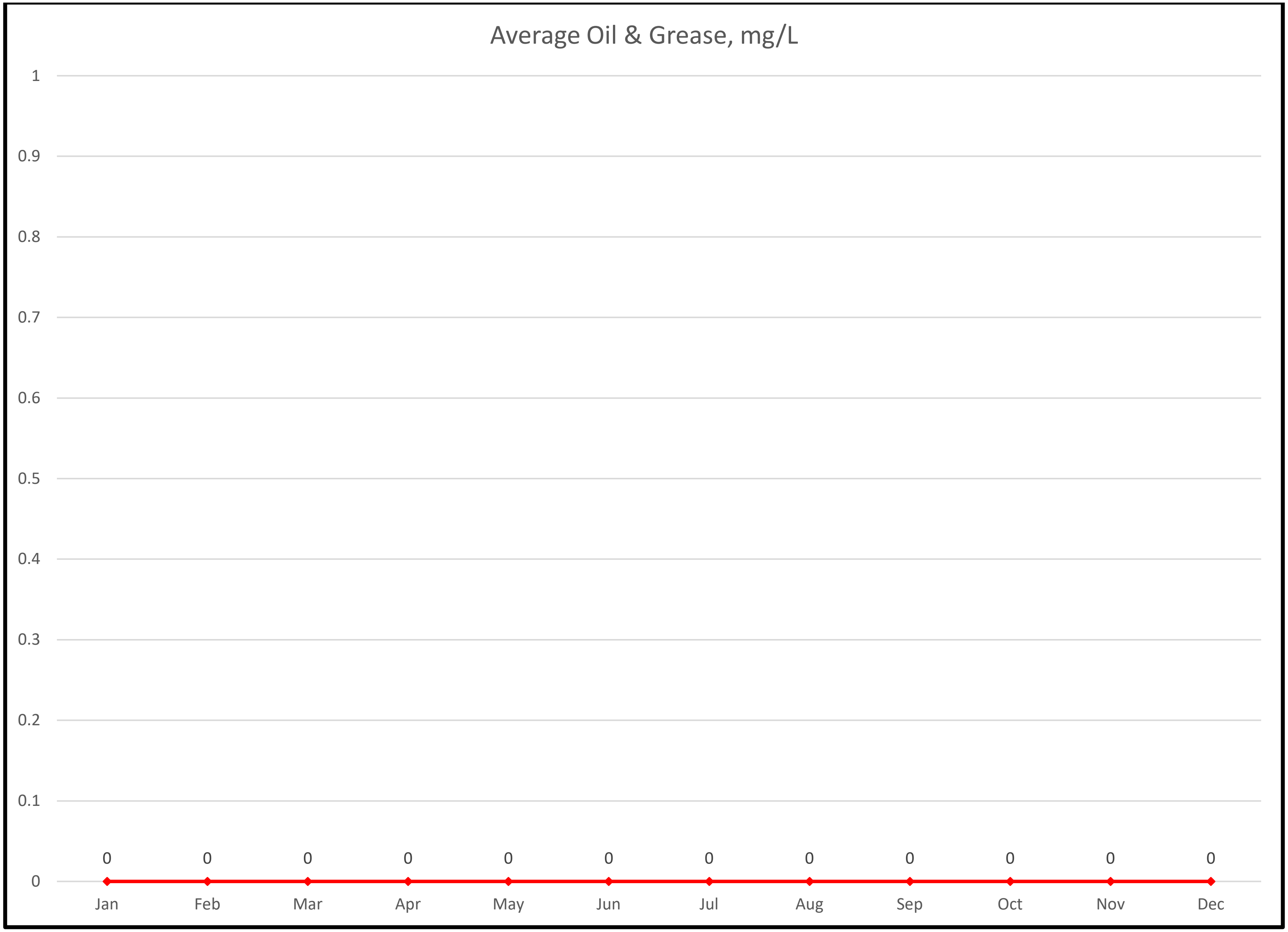


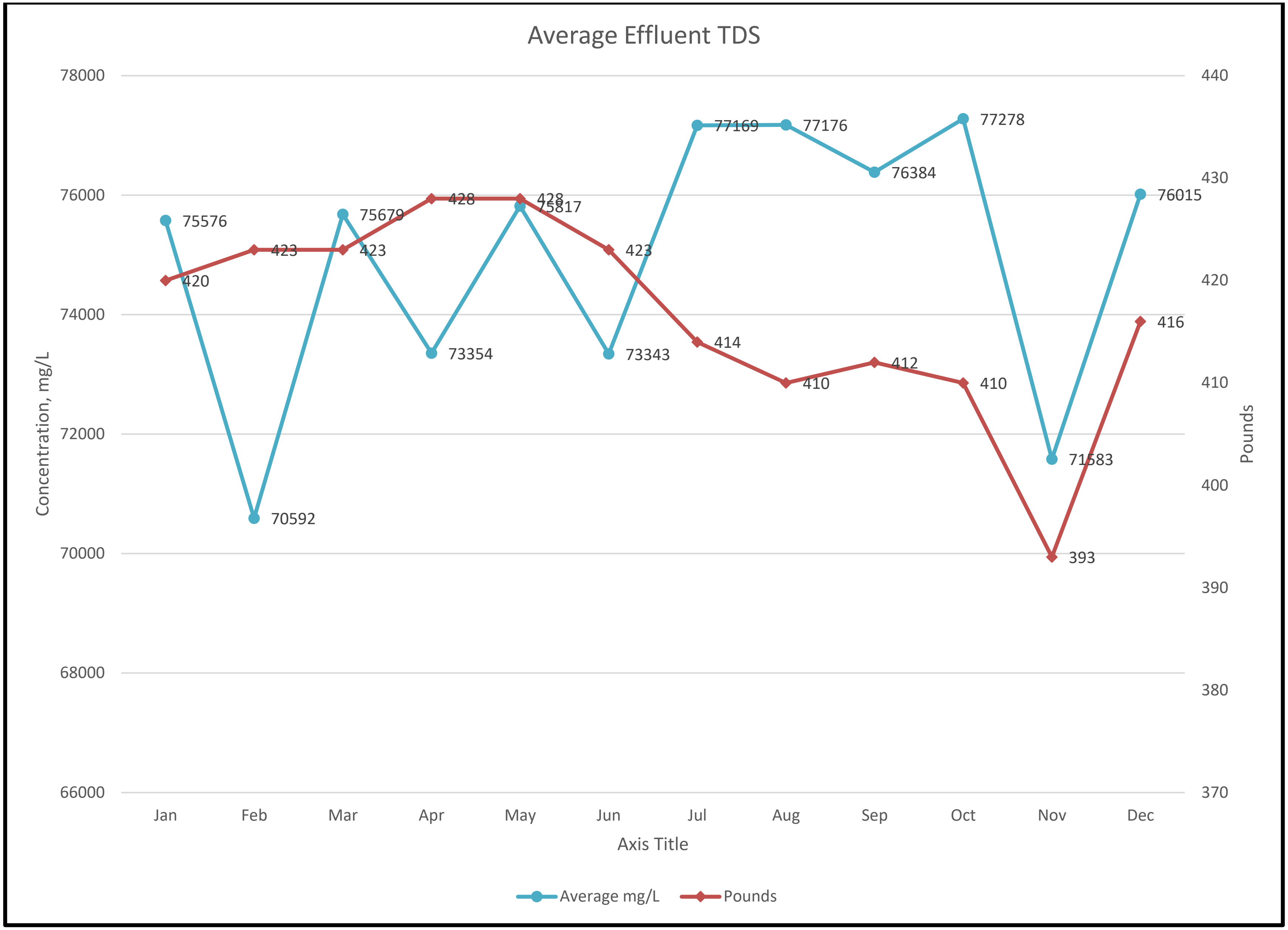
Average Effluent BOD, mg/L
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
1.4
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

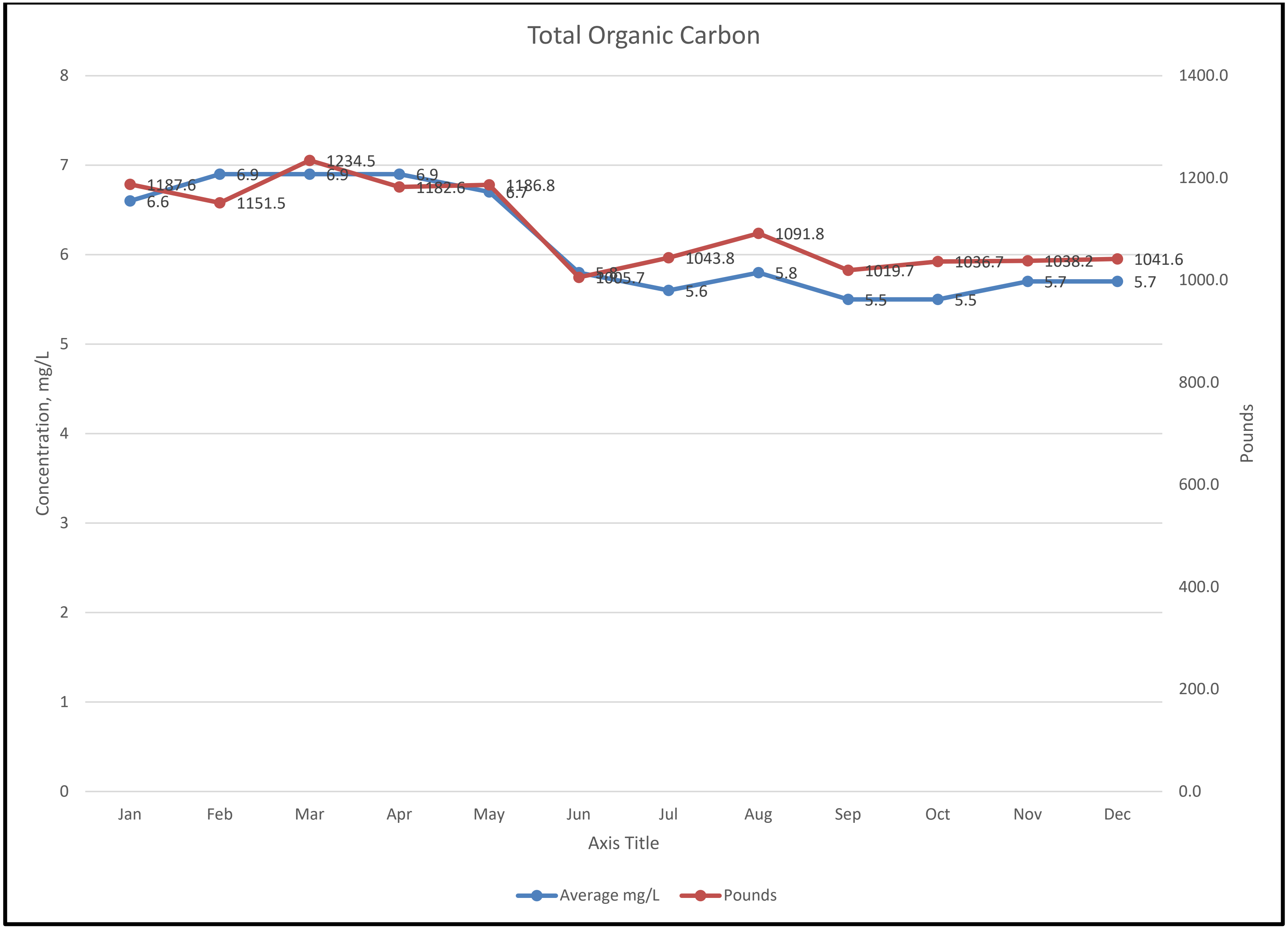

Effluent BOD, Total Pounds
300
250
200
150
100
50
0
256
0 0 0 0 0 0 0 0 0 0 0
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec


pH Minimum/Maximum (s.u.)
7.6
7.4
7.2
7.0
6.8
6.6
6.4
6.2
6.0
5.8
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
7.3
7.1
7.1
7.3
7.3
7.3
7.2
7.4
7.5
7.4
7.3
7.3
6.7
6.5
6.6
6.7
6.7
6.4
6.5
6.4
7.0
7.0
7.0
7.0
Min
Max

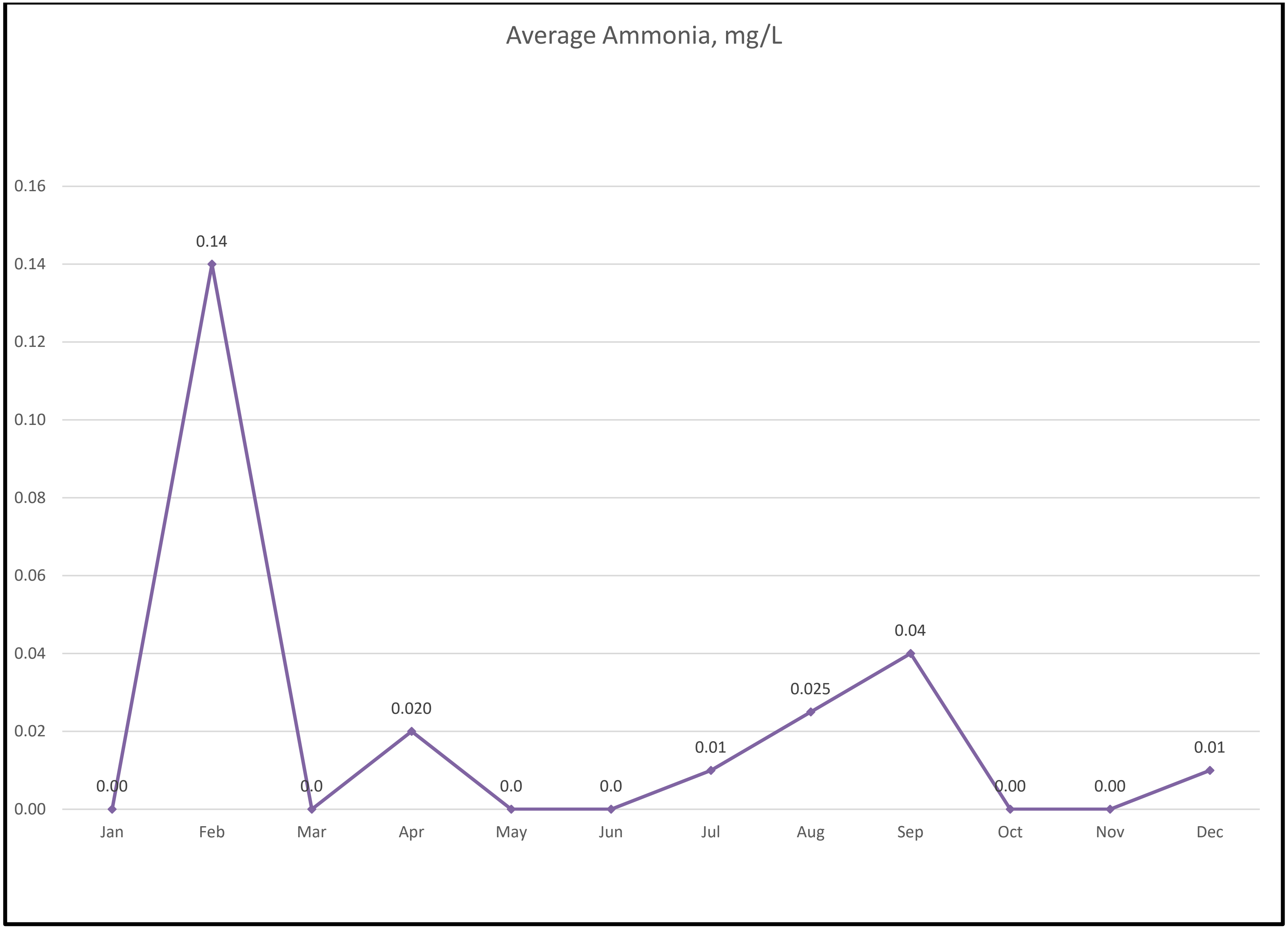

Total Coliform Median, MPN
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
<1.8
<1.8
<1.8
<1.8
<1.8
<1.8
<1.8
<1.8
<1.8
<1.8
<1.8
<1.8
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

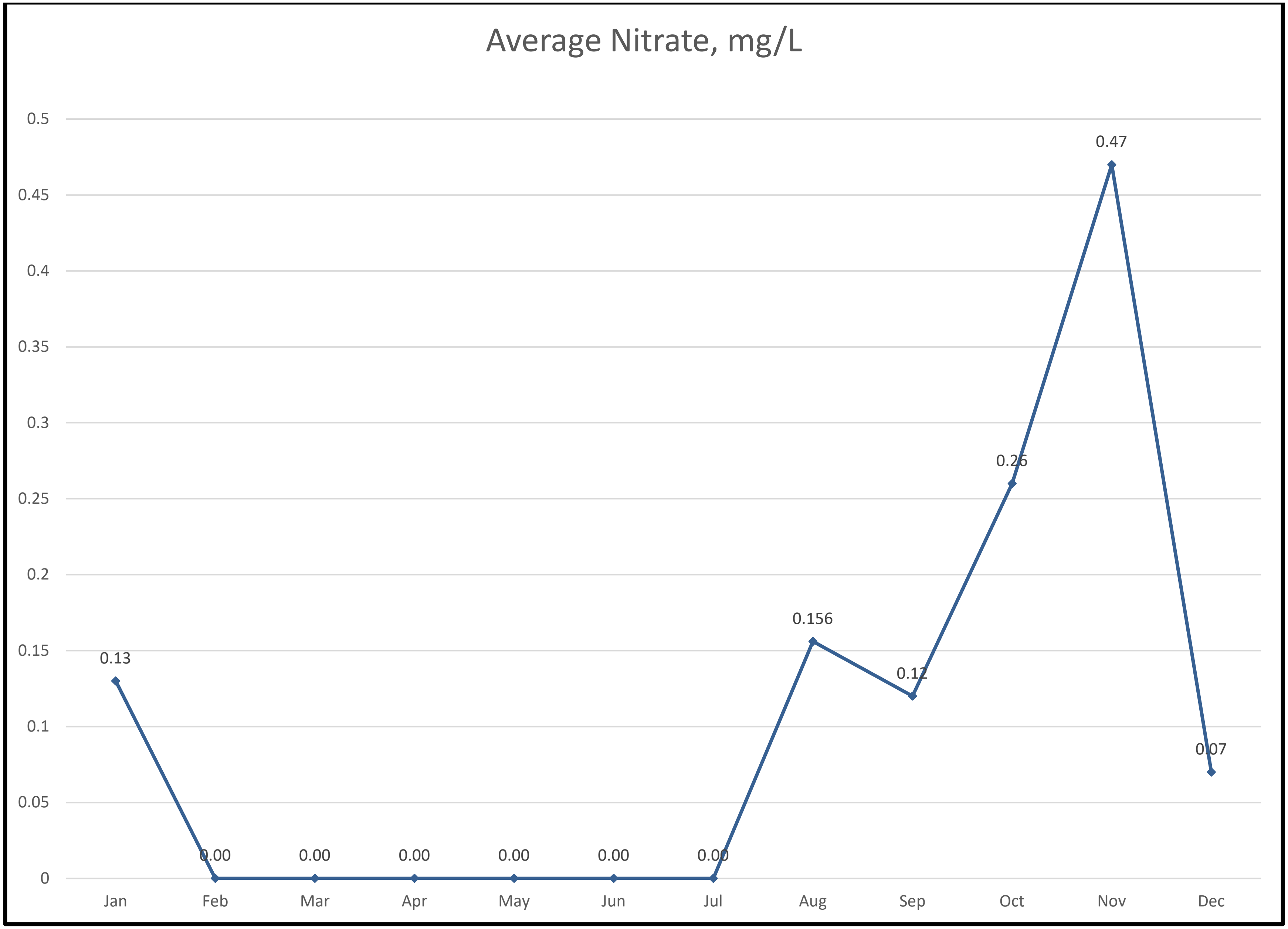

Average Oil & Grease, mg/L
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0 0 0 0 0 0 0 0 0 0 0 0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec


Average Effluent TDS
78000
76000
74000
72000
70000
68000
66000
440
430
420
410
400
390
380
370
Concentration, mg/L
Pounds
75576
70592
75679
73354
75817
73343
77169
77176
76384
77278
71583
76015
420
423
423
428
428
423
414
410
412
410
393
416
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Axis Title
Average mg/L
Pounds

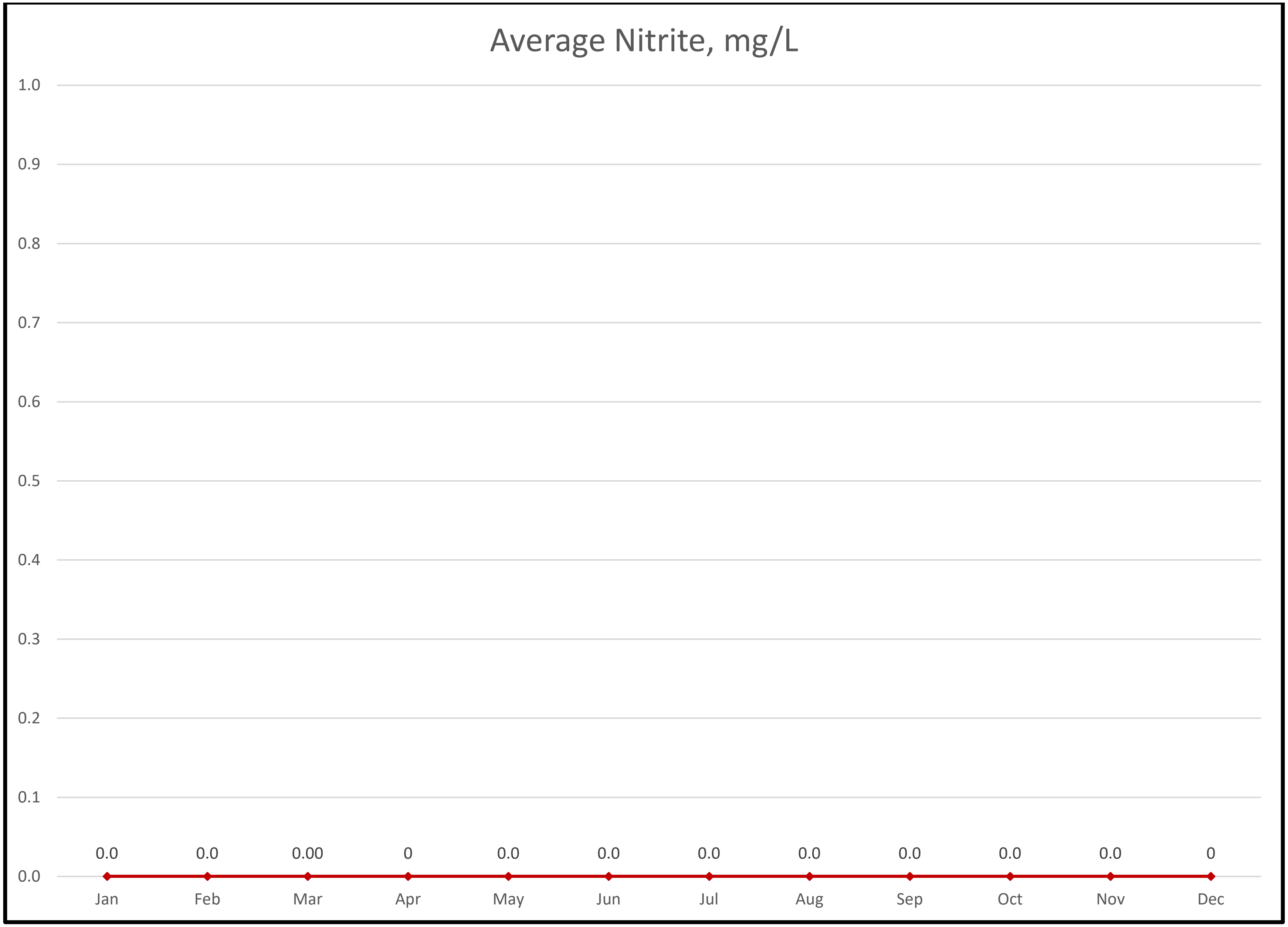


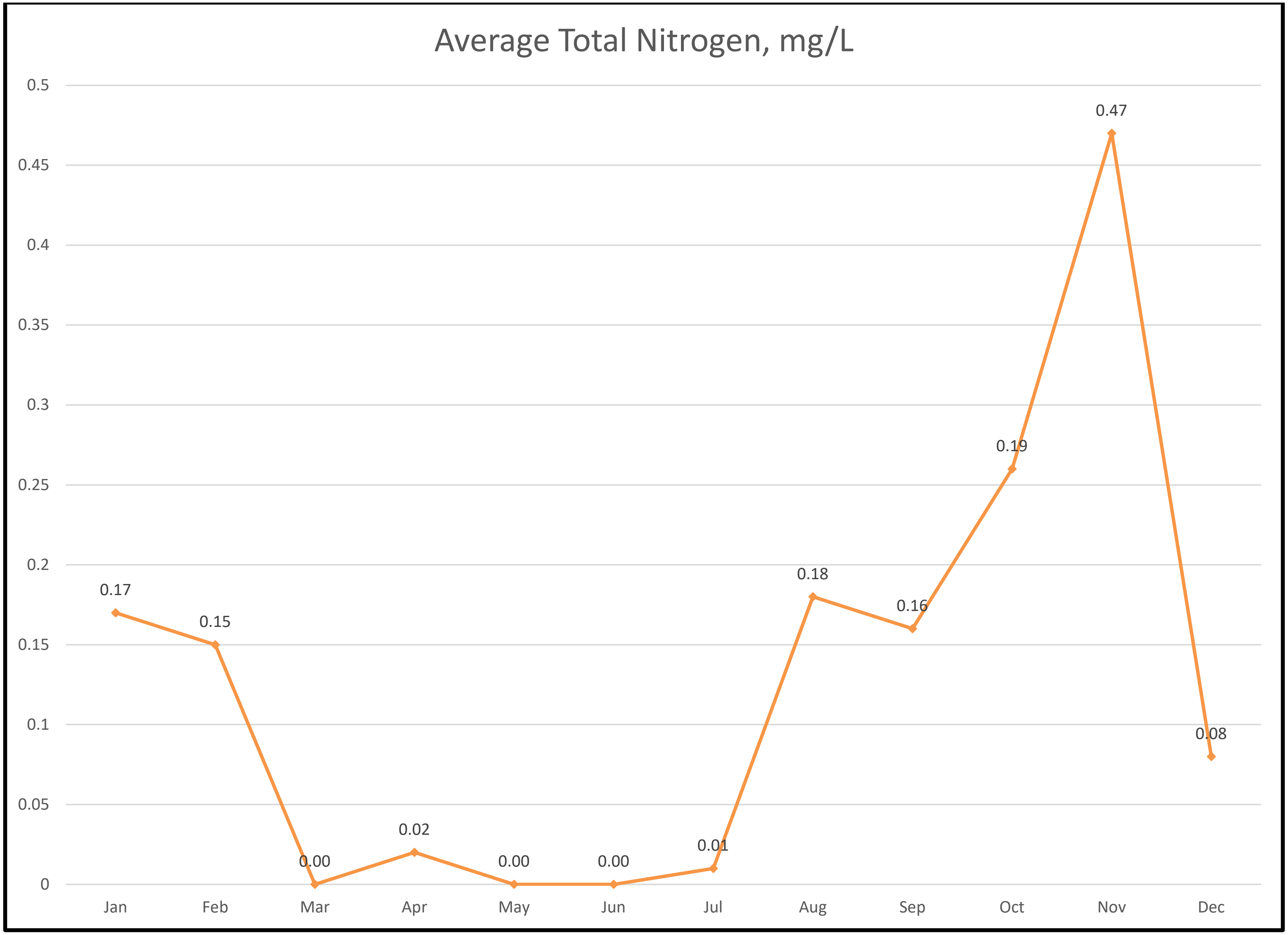
Total Organic Carbon
Concentration, mg/L
Pounds
Axis Title
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
1187.6
1151.5
1234.5
1182.6
1186.8
1005.7
1043.8
1091.8
1019.7
1036.7
1038.2
1041.6
6.6
6.9
6.9
6.9
6.7
5.8
5.6
5.8
5.5
5.5
5.7
5.7
Average mg/L
Pounds

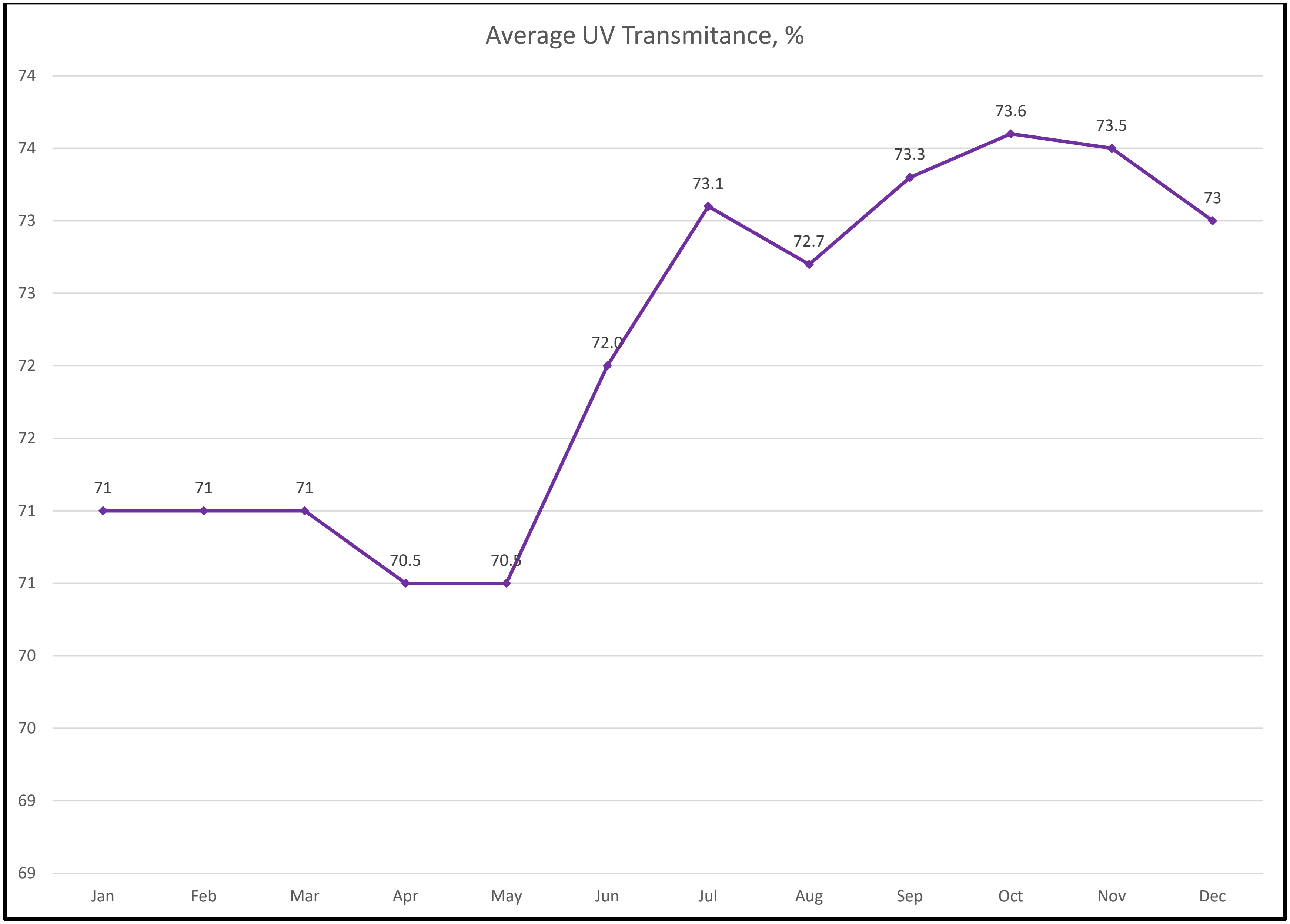

Average Ammonia, mg/L
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
0.00
0.14
0.0
0.020
0.0
0.0
0.01
0.025
0.04
0.00
0.00
0.01
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

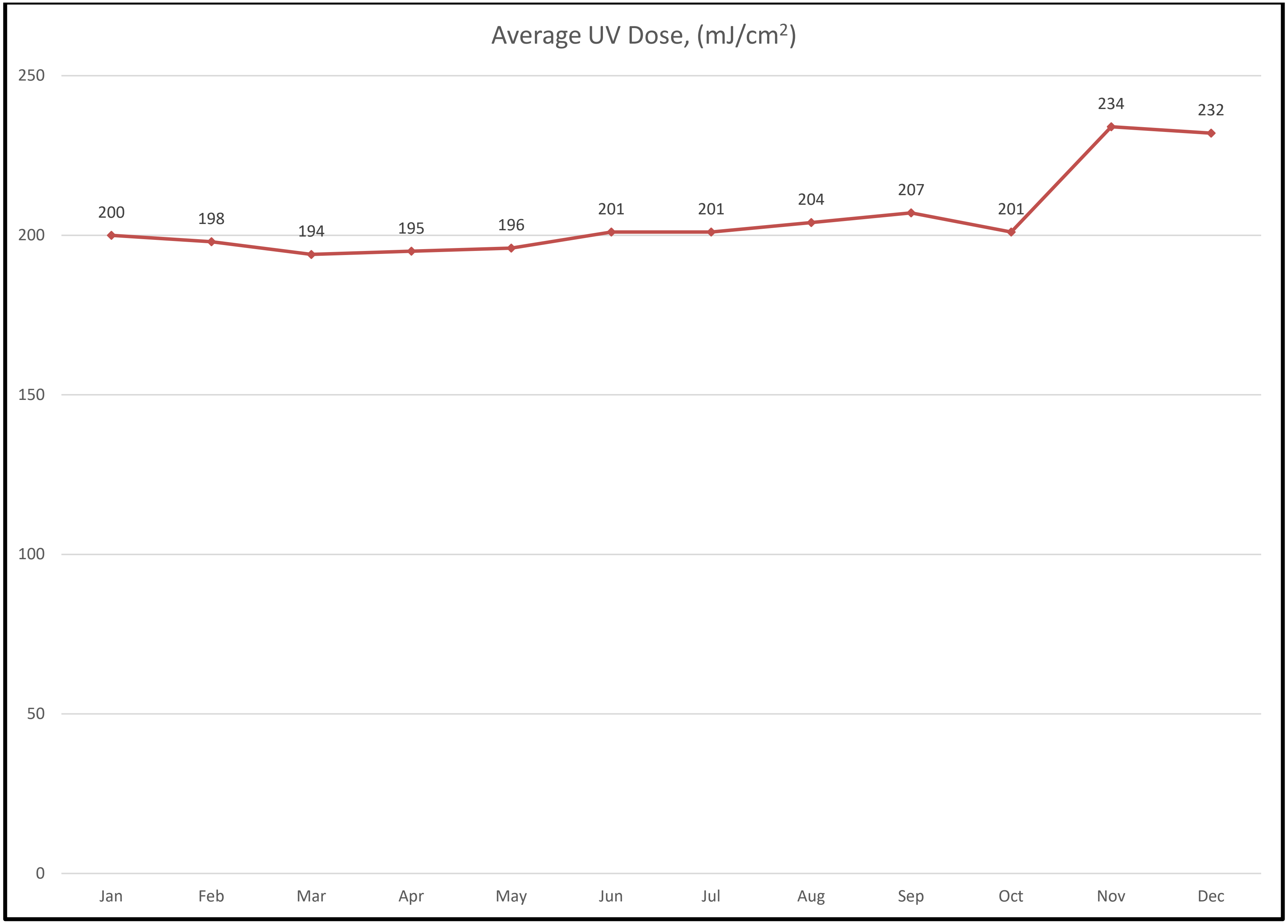


Average Nitrate, mg/L
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
0.13
0.00
0.00
0.00
0.00
0.00
0.00
0.156
0.12
0.26
0.47
0.07
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

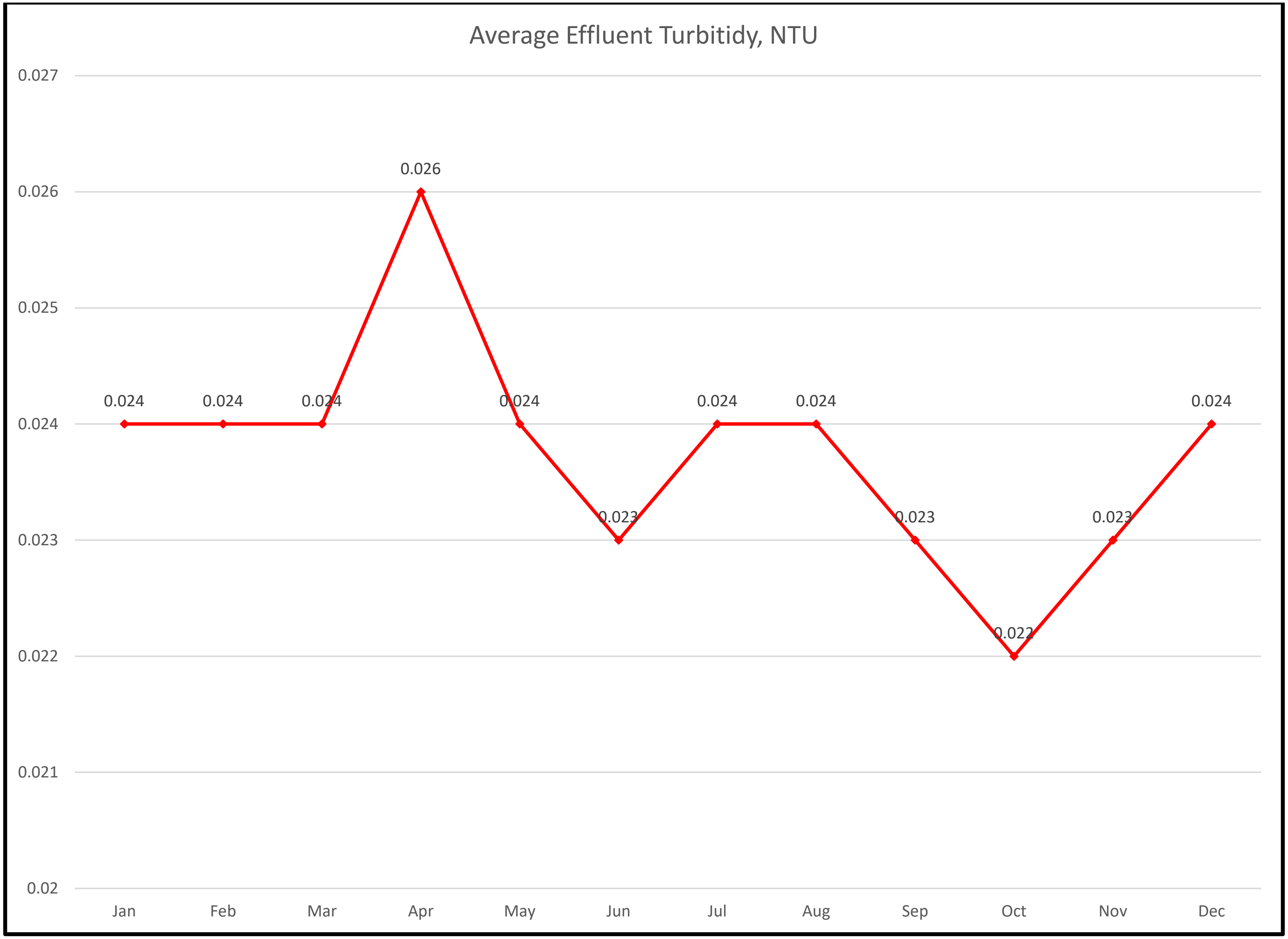

Average Nitrite, mg/L
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0.0
0.0
0.00
0
0.0
0.0
0.0
0.0
0.0
0.0
0.0
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

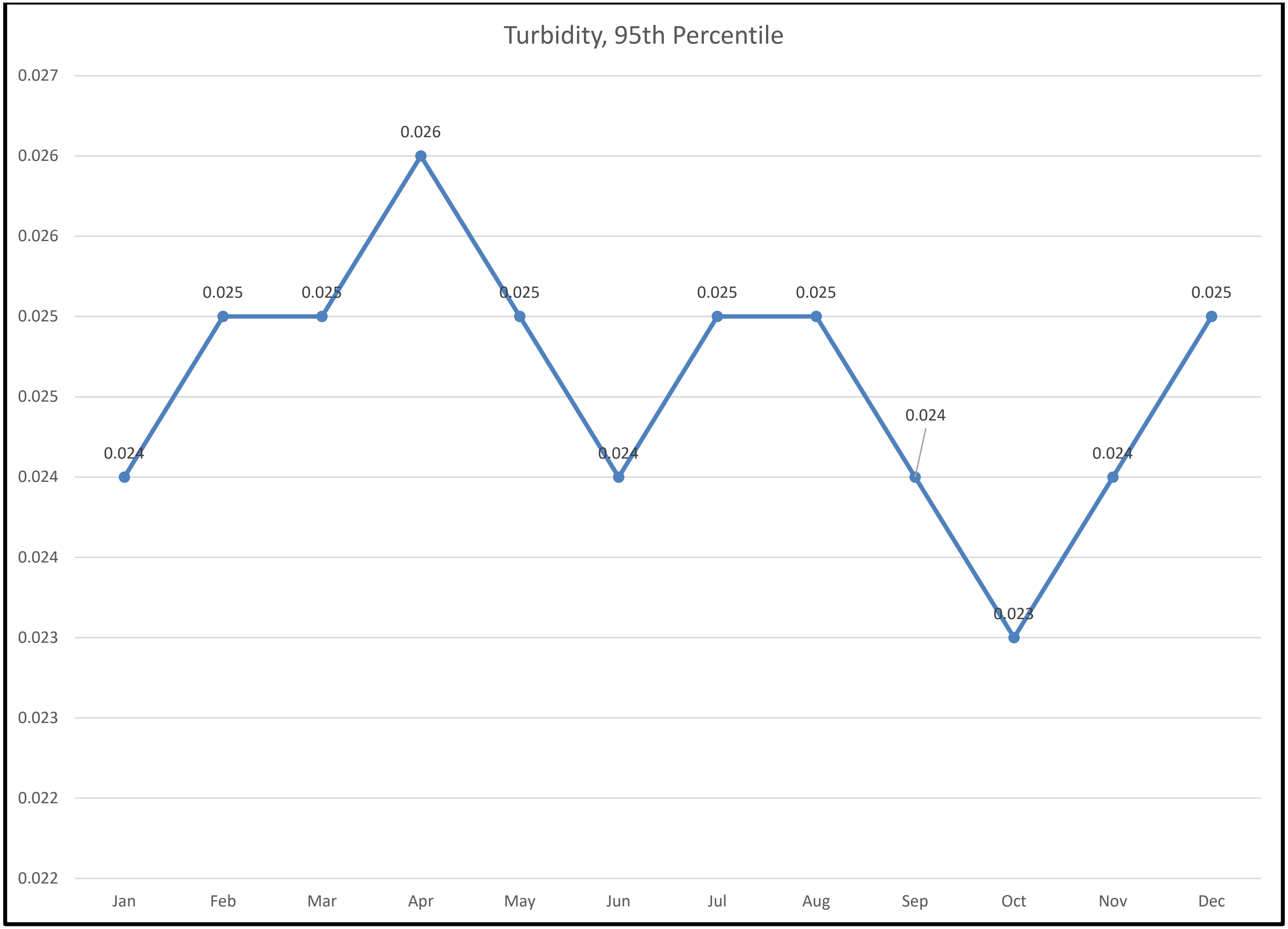

Average Total Nitrogen, mg/L
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
0.17
0.15
0.00
0.02
0.00
0.00
0.01
0.18
0.16
0.19
0.47
0.08
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

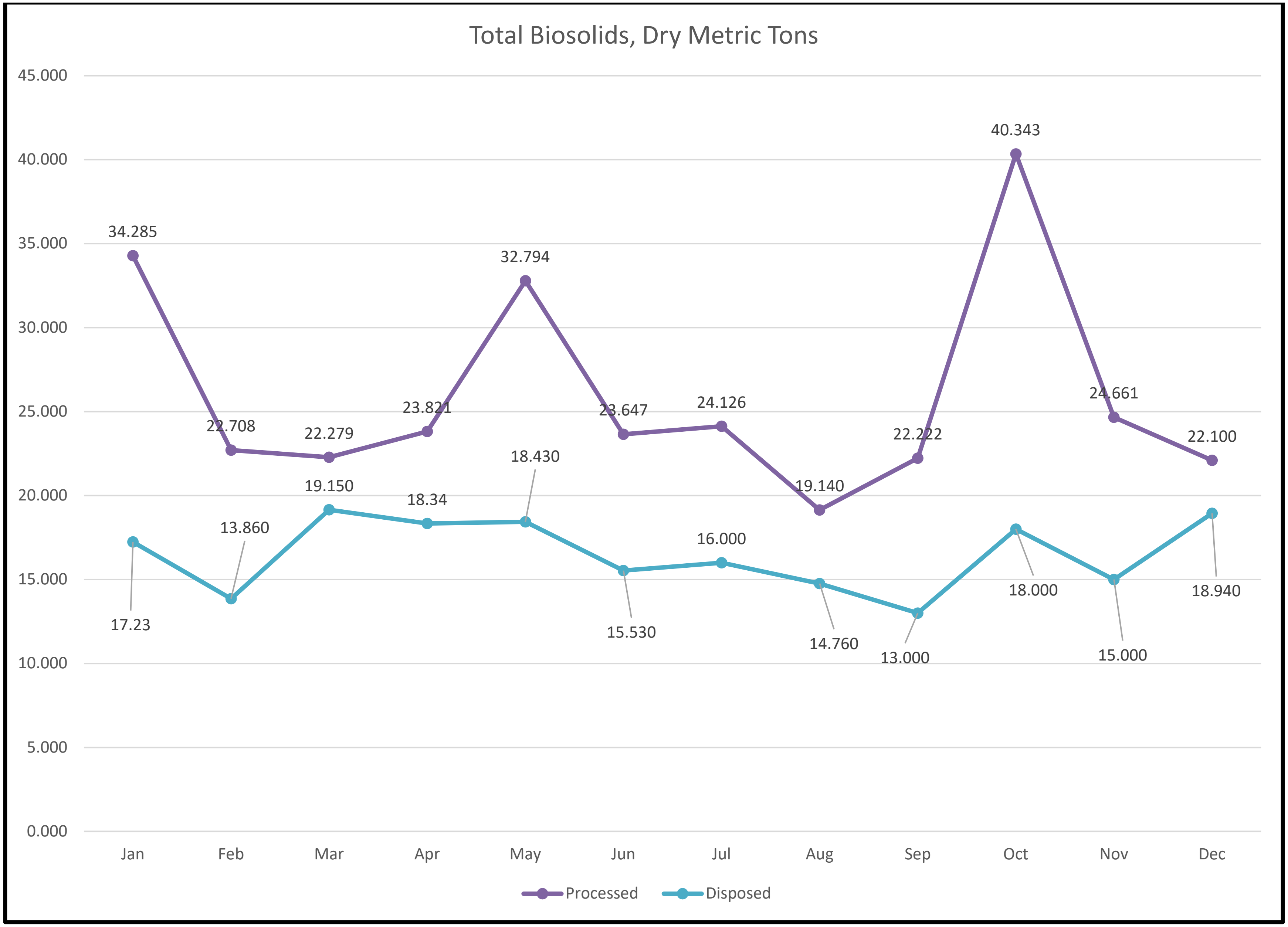

Average UV Transmitance, %
74
74
73
73
72
72
71
71
70
70
69
69
71
71
71
70.5
70.5
72.0
73.1
72.7
73.3
73.6
73.5
73
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec



Average UV Dose, (mJ/cm2)
250
200
150
100
50
0
200
198
194
195
196
201
201
204
207
201
234
232
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec


Average Effluent Turbitidy, NTU
0.027
0.026
0.025
0.024
0.023
0.022
0.021
0.02
0.024
0.024
0.024
0.026
0.024
0.023
0.024
0.024
0.023
0.022
0.023
0.024
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

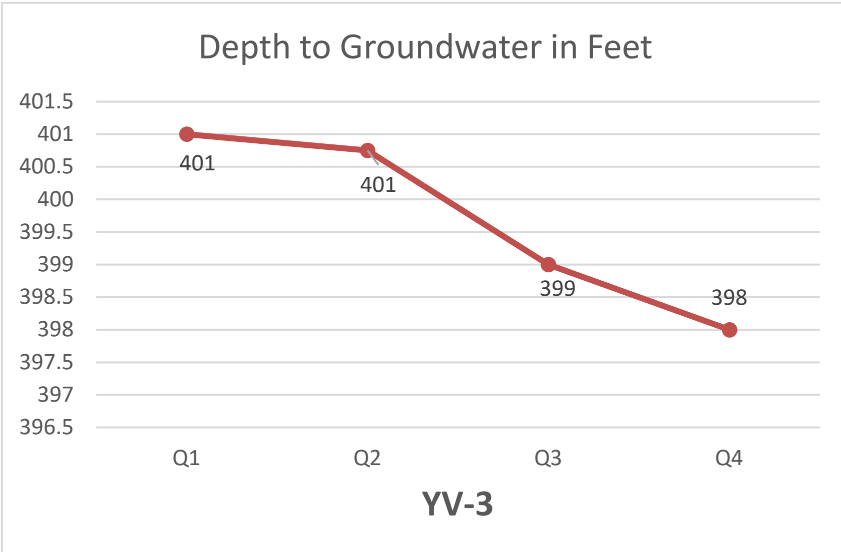

Turbidity, 95th Percentile
0.027
0.026
0.026
0.025
0.025
0.024
0.024
0.023
0.023
0.022
0.022
0.024
0.025
0.025
0.026
0.025
0.024
0.025
0.025
0.024
0.023
0.024
0.025
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

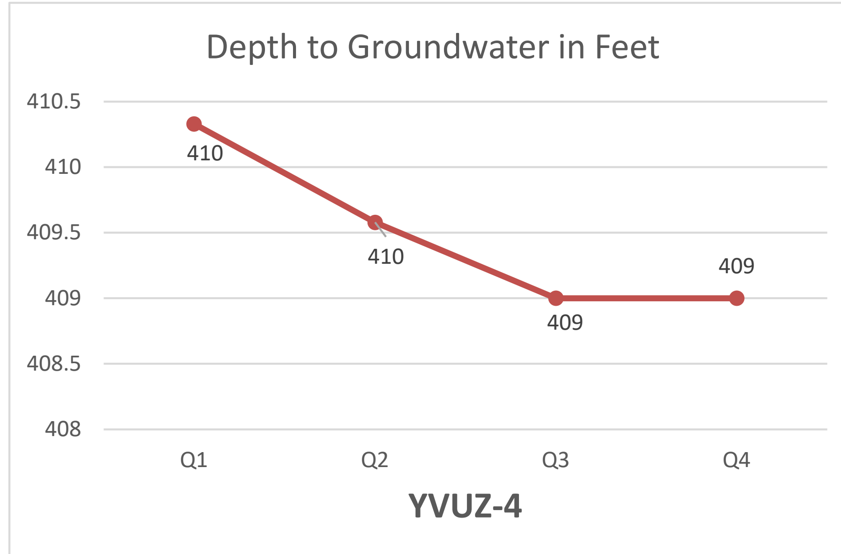


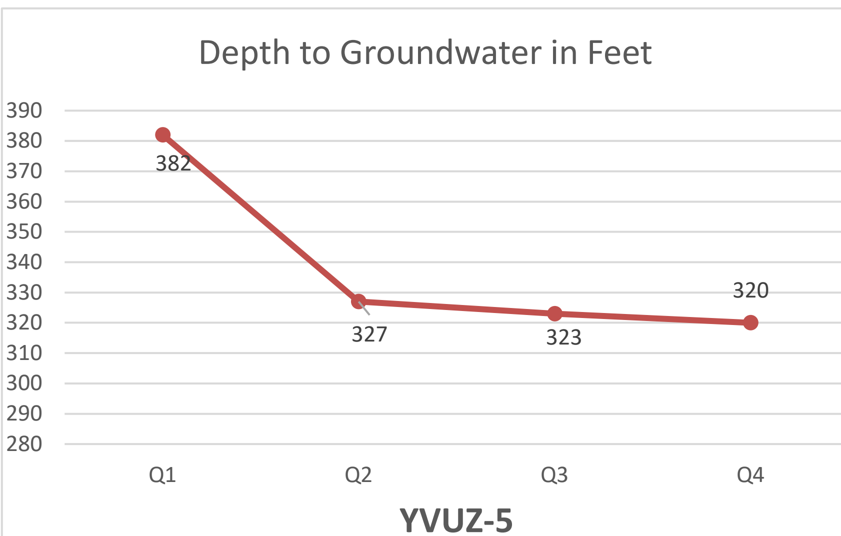
Total Biosolids, Dry Metric Tons
45.000
40.000
35.000
30.000
25.000
20.000
15.000
10.000
5.000
0.000
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
34.285
22.708
22.279
23.821
32.794
23.647
24.126
19.140
22.222
40.343
24.661
22.100
17.23
13.860
19.150
18.34
18.430
15.530
16.000
14.760
13.000
18.000
15.000
18.940
Processed
Disposed

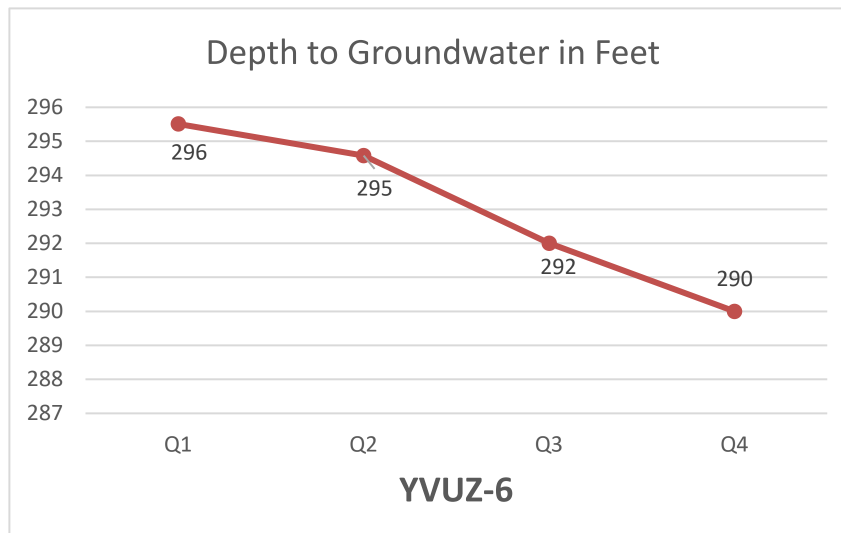
Appendix B

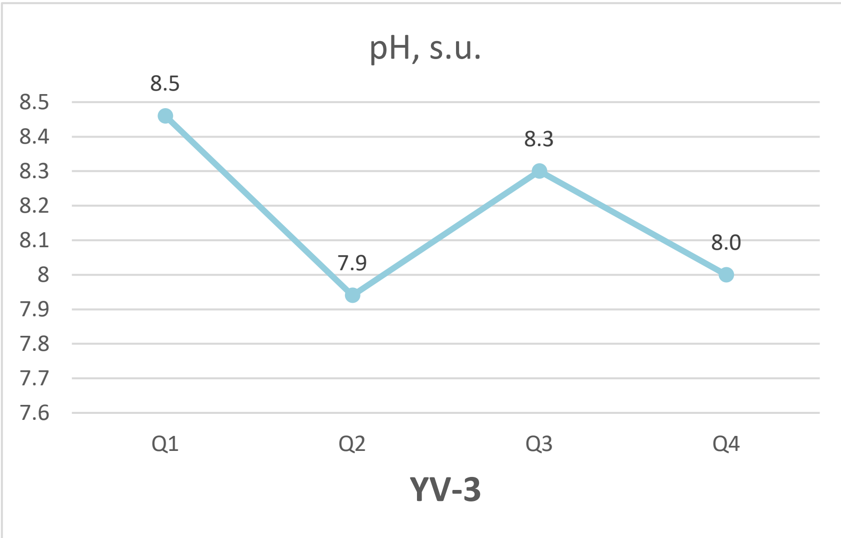
Monitoring Well Performance Charts

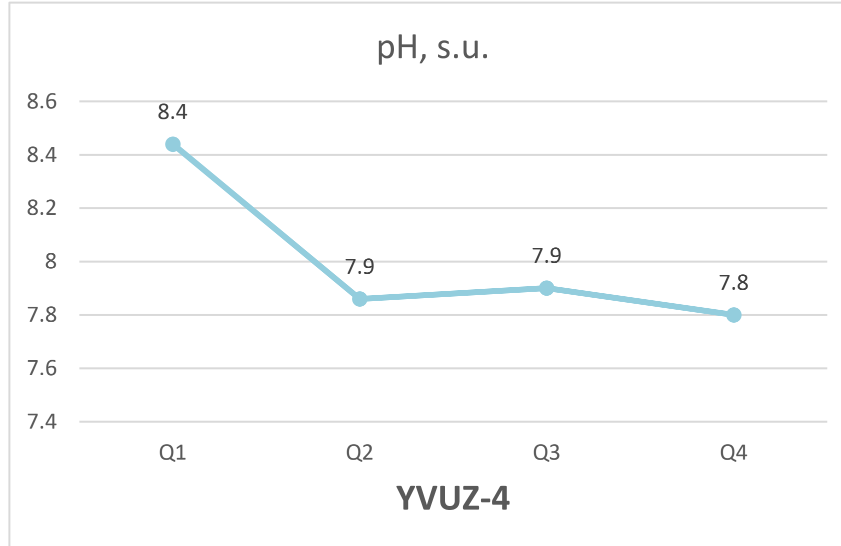

Depth to Groundwater in Feet
401.5
401
400.5
400
399.5
399
398.5
398
397.5
397
396.5
401
401
399
398
Q1
Q2
Q3
Q4
YV-3

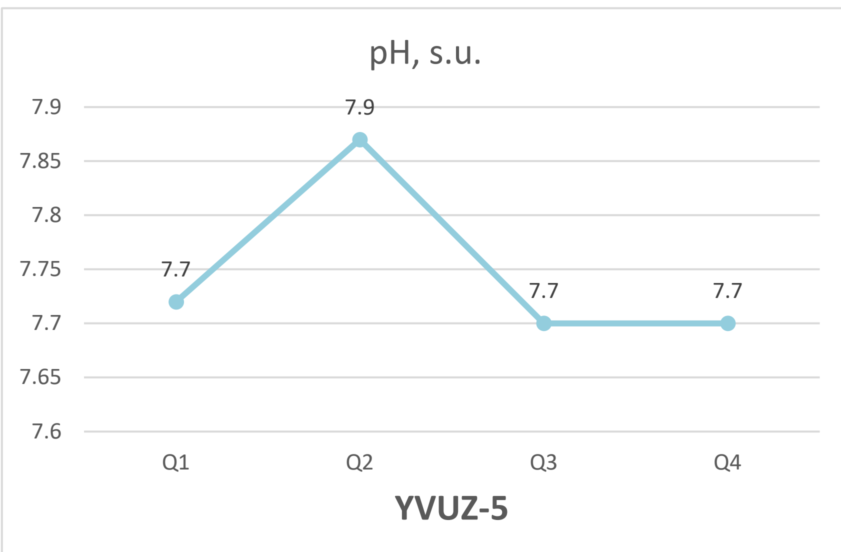

Depth to Groundwater in Feet
410.5
410
409.5
409
408.5
408
410
410
409
409
Q1
Q2
Q3
Q4
YVUZ-4

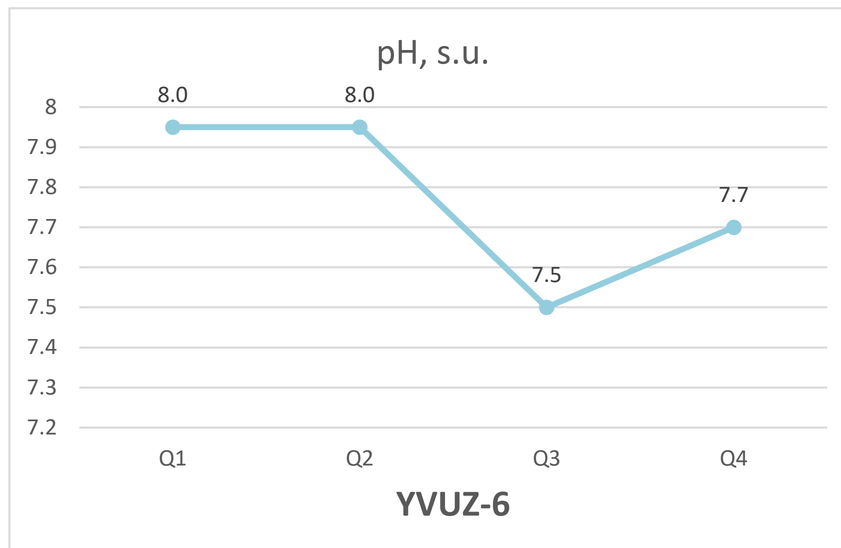

Depth to Groundwater in Feet
390
380
370
360
350
340
330
320
310
300
290
280
382
327
323
320
Q1
Q2
Q3
Q4
YVUZ-5

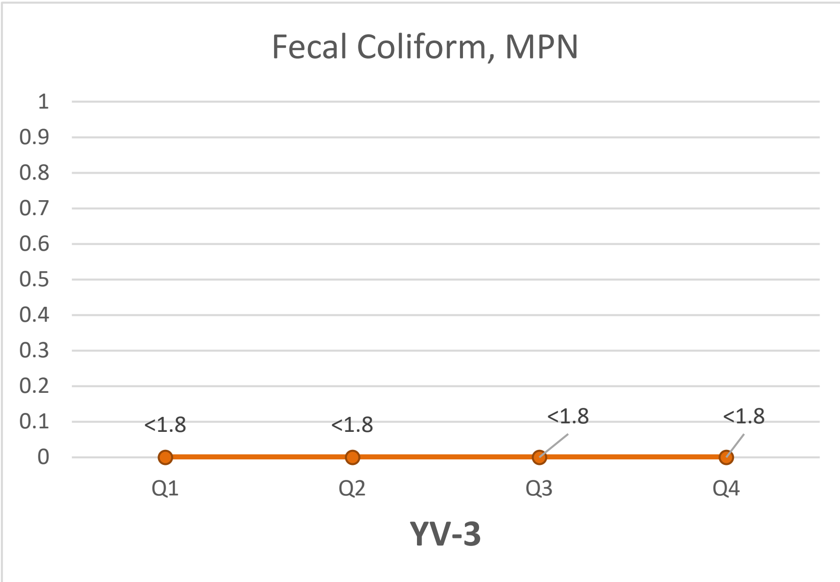

Depth to Groundwater in Feet
296
295
294
293
292
291
290
289
288
287
296
295
292
290
Q1
Q2
Q3
Q4
YVUZ-6

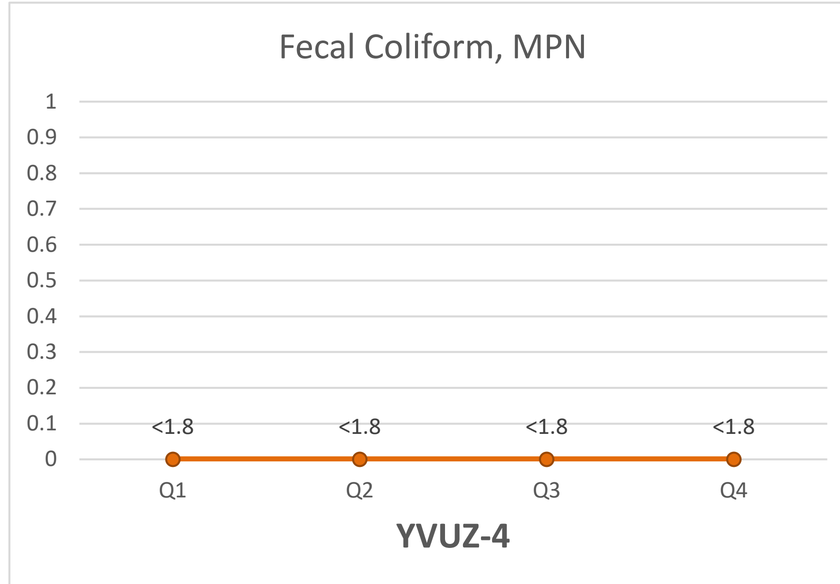

pH, s.u.
8.5
8.4
8.3
8.2
8.1
8
7.9
7.8
7.7
7.6
8.5
7.9
8.3
8.0
Q1
Q2
Q3
Q4
YV-3

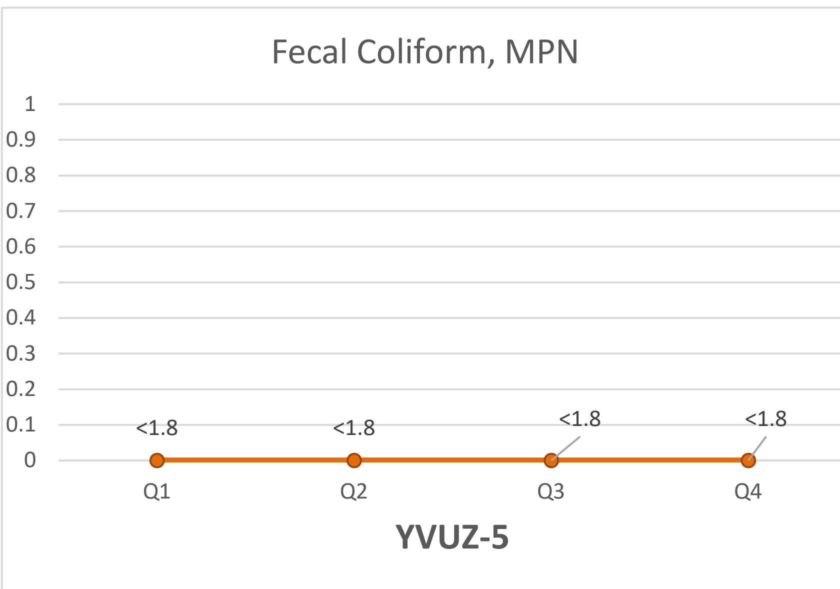

pH, s.u.
8.6
8.4
8.2
8
7.8
7.6
7.4
8.4
7.9
7.9
7.8
Q1
Q2
Q3
Q4
YVUZ-4

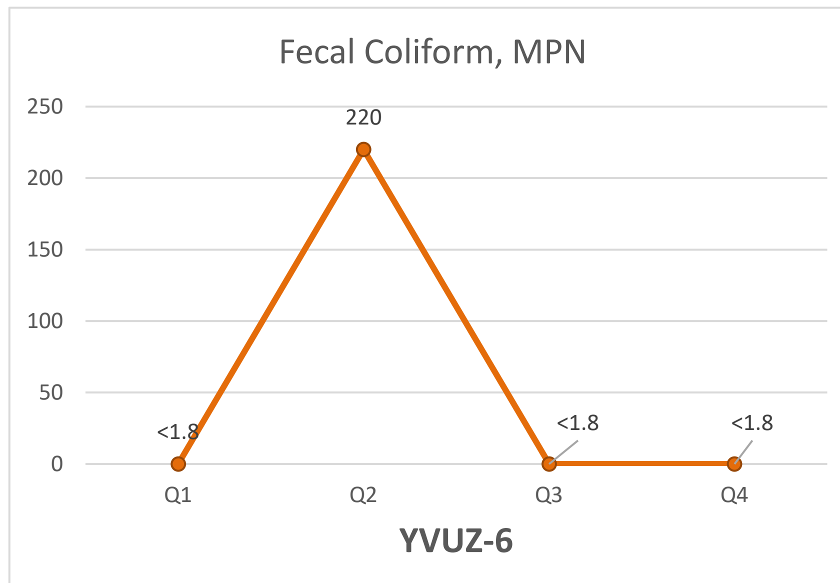

pH, s.u.
7.9
7.85
7.8
7.75
7.7
7.65
7.6
7.7
7.9
7.7
7.7
Q1
Q2
Q3
Q4
YVUZ-5

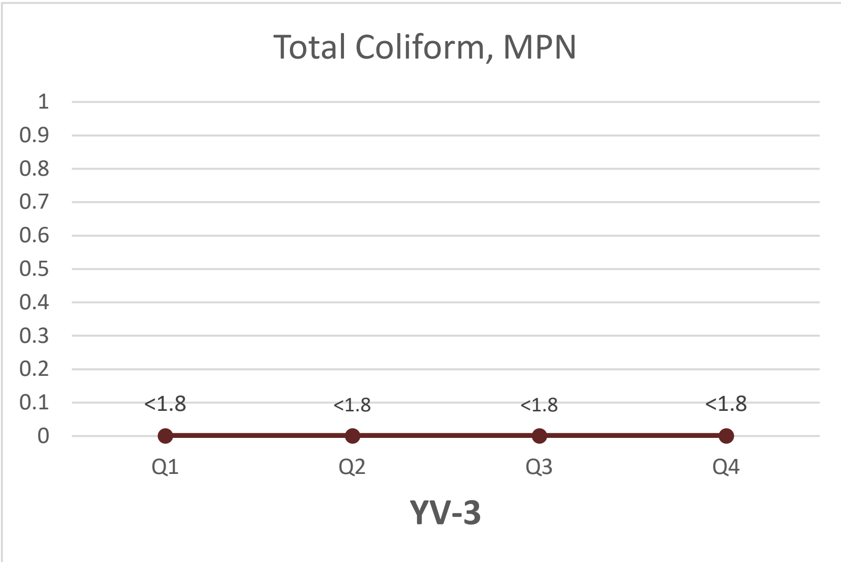

pH, s.u.
8
7.9
7.8
7.7
7.6
7.5
7.4
7.3
7.2
8.0
8.0
7.5
7.7
Q1
Q2
Q3
Q4
YVUZ-6

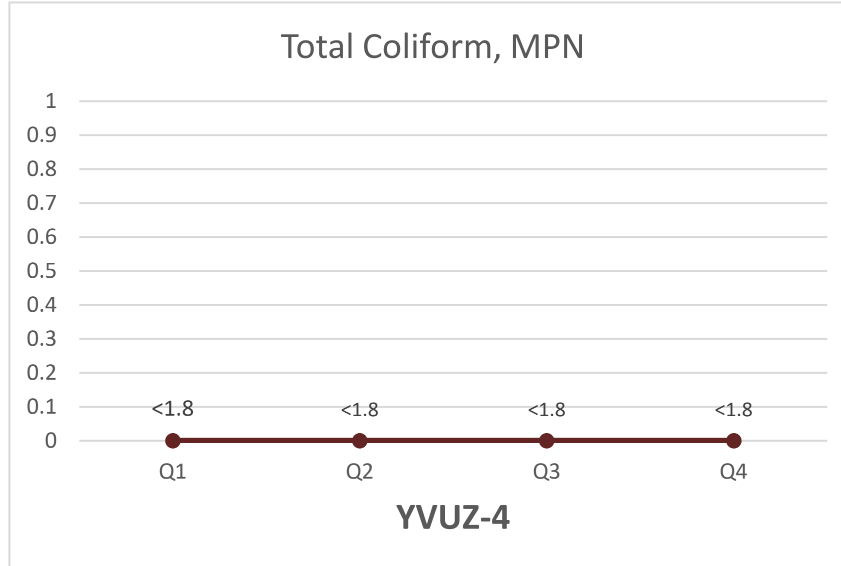

Fecal Coliform, MPN
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
<1.8
<1.8
<1.8
<1.8
Q1
Q2
Q3
Q4
YV-3

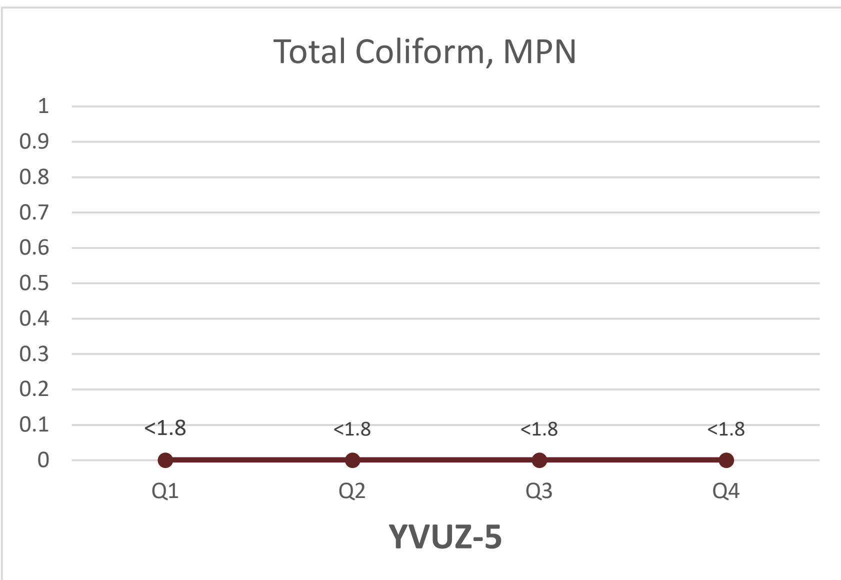

Fecal Coliform, MPN
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
<1.8
<1.8
<1.8
<1.8
Q1
Q2
Q3
Q4
YVUZ-4

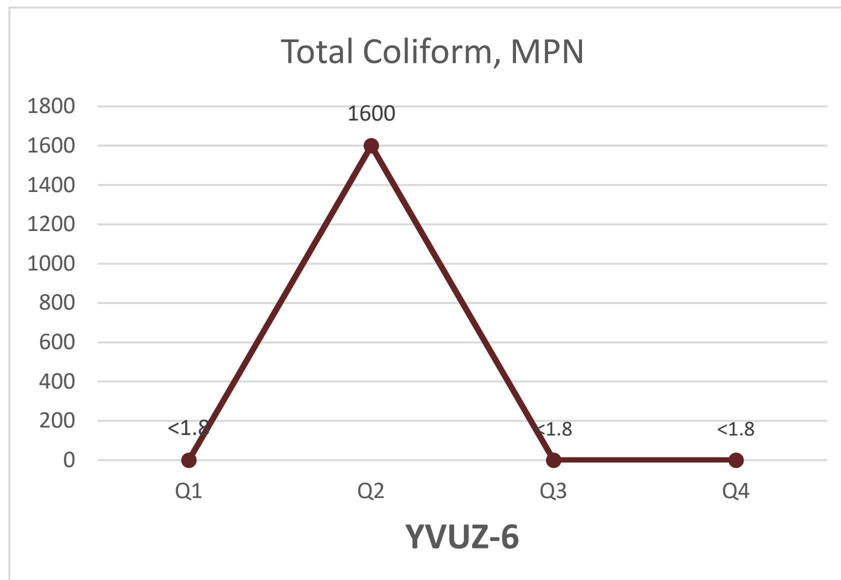

Fecal Coliform, MPN
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
<1.8
<1.8
<1.8
<1.8
Q1
Q2
Q3
Q4
YVUZ-5

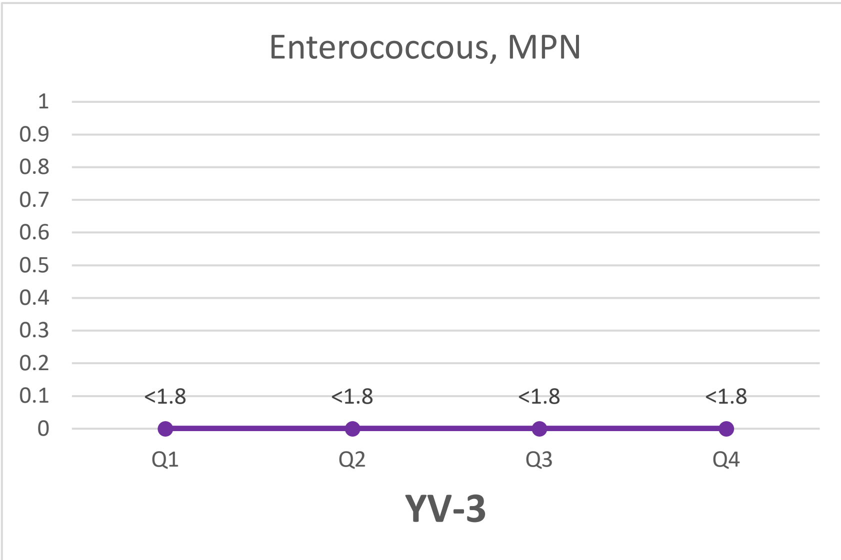

Fecal Coliform, MPN
250
200
150
100
50
0
<1.8
220
<1.8
<1.8
Q1
Q2
Q3
Q4
YVUZ-6

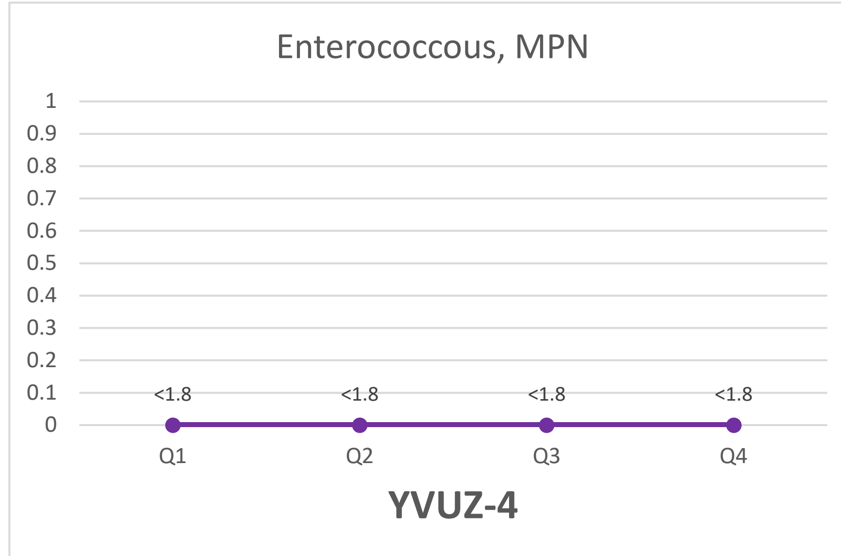

Total Coliform, MPN
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
<1.8
<1.8
<1.8
<1.8
Q1
Q2
Q3
Q4
YV-3

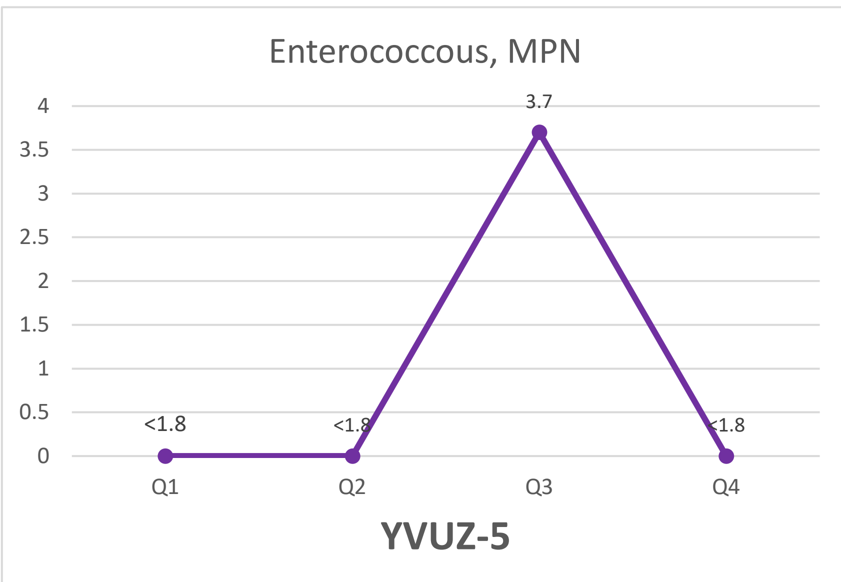

Total Coliform, MPN
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
<1.8
<1.8
<1.8
<1.8
Q1
Q2
Q3
Q4
YVUZ-4

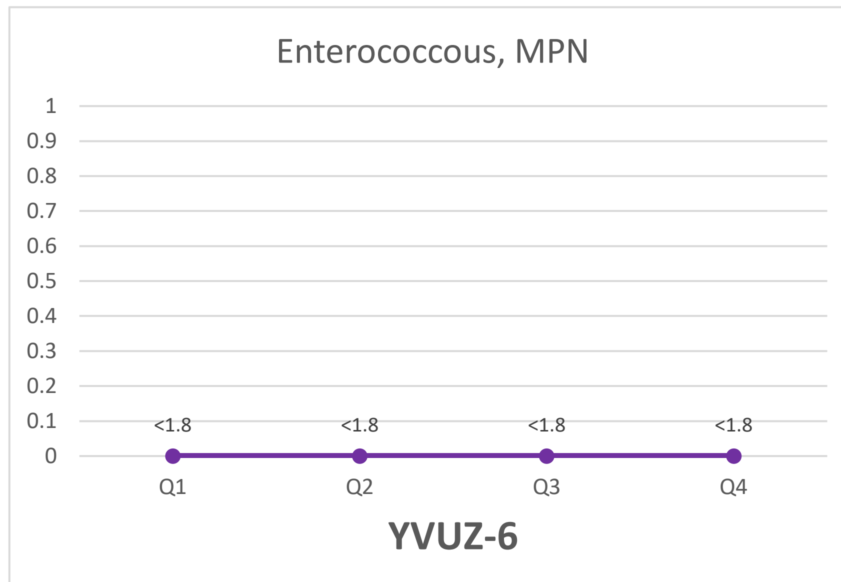

Total Coliform, MPN
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
<1.8
<1.8
<1.8
<1.8
Q1
Q2
Q3
Q4
YVUZ-5

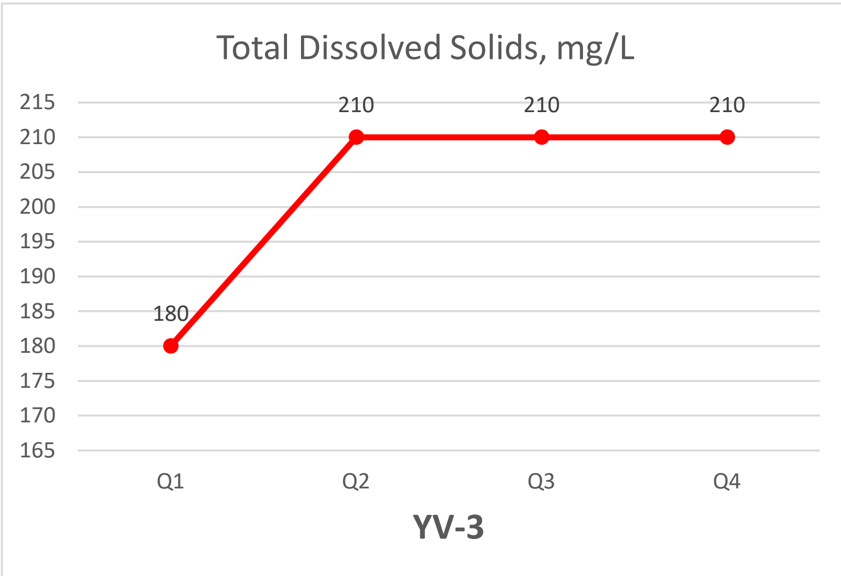

Total Coliform, MPN
1800
1600
1400
1200
1000
800
600
400
200
0
<1.8
1600
<1.8
<1.8
Q1
Q2
Q3
Q4
YVUZ-6

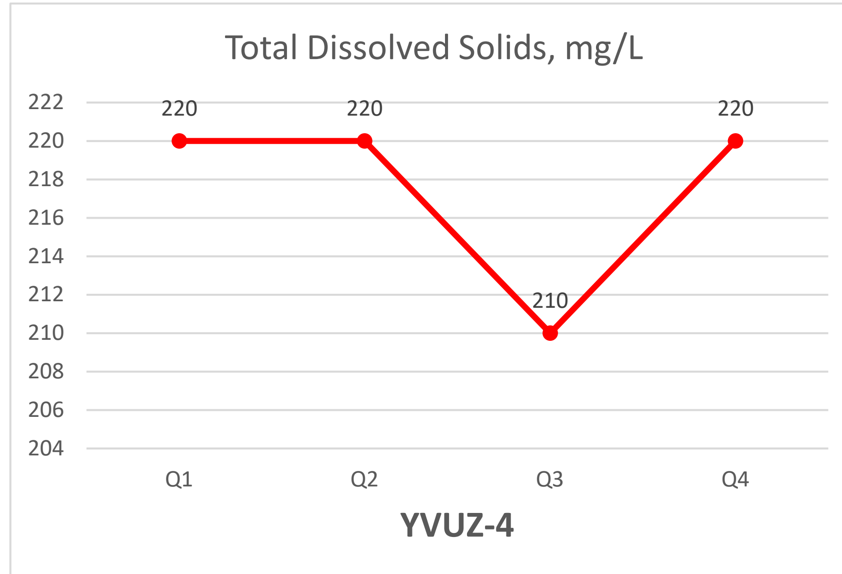

Enterococcous, MPN
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
<1.8
<1.8
<1.8
<1.8
Q1
Q2
Q3
Q4
YV-3

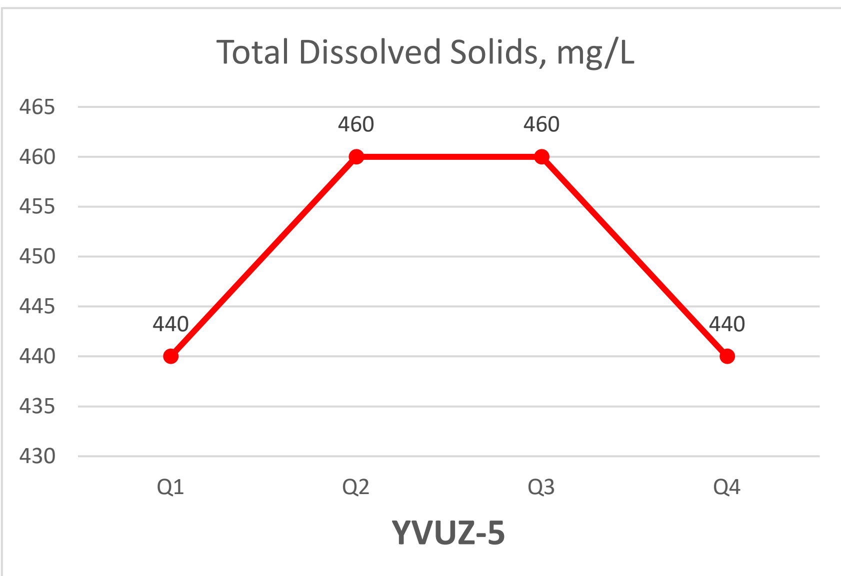

Enterococcous, MPN
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
<1.8
<1.8
<1.8
<1.8
Q1
Q2
Q3
Q4
YVUZ-4

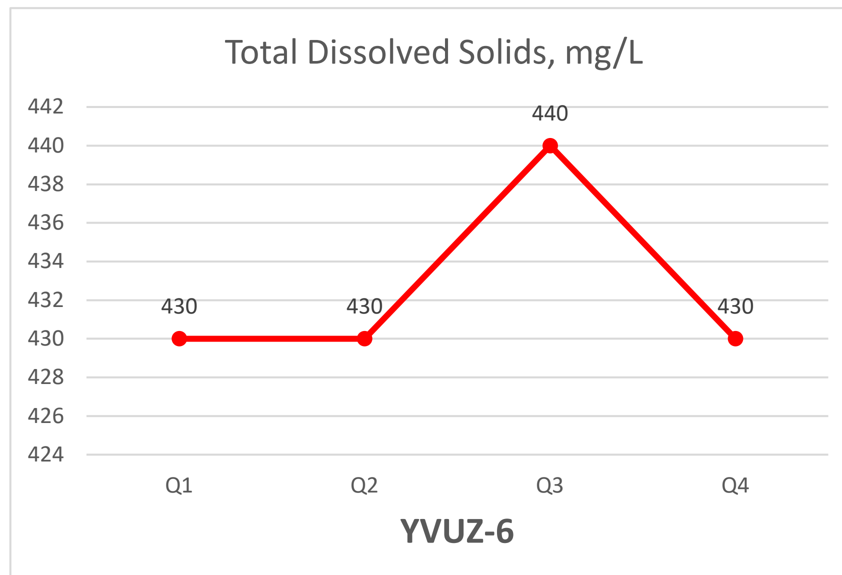

Enterococcous, MPN
4
3.5
3
2.5
2
1.5
1
0.5
0
<1.8
<1.8
3.7
<1.8
Q1
Q2
Q3
Q4
YVUZ-5

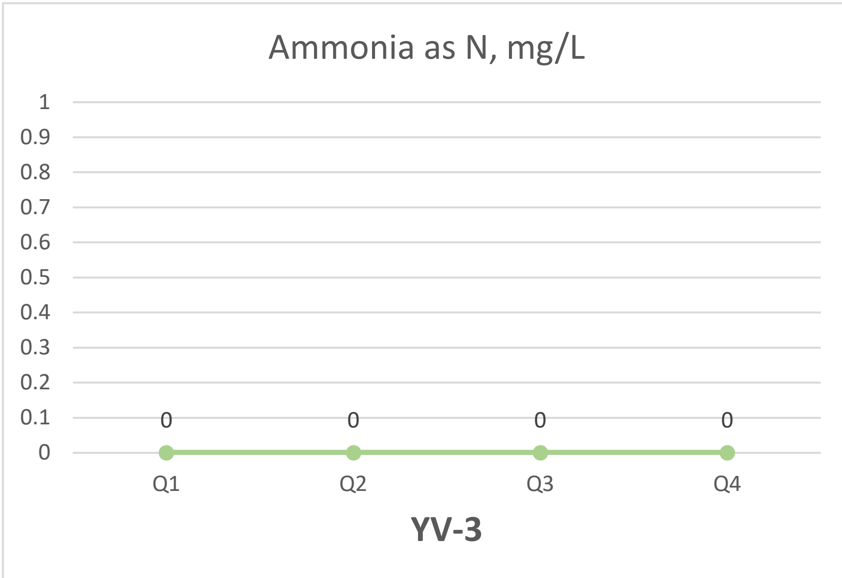

Enterococcous, MPN
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
<1.8
<1.8
<1.8
<1.8
Q1
Q2
Q3
Q4
YVUZ-6

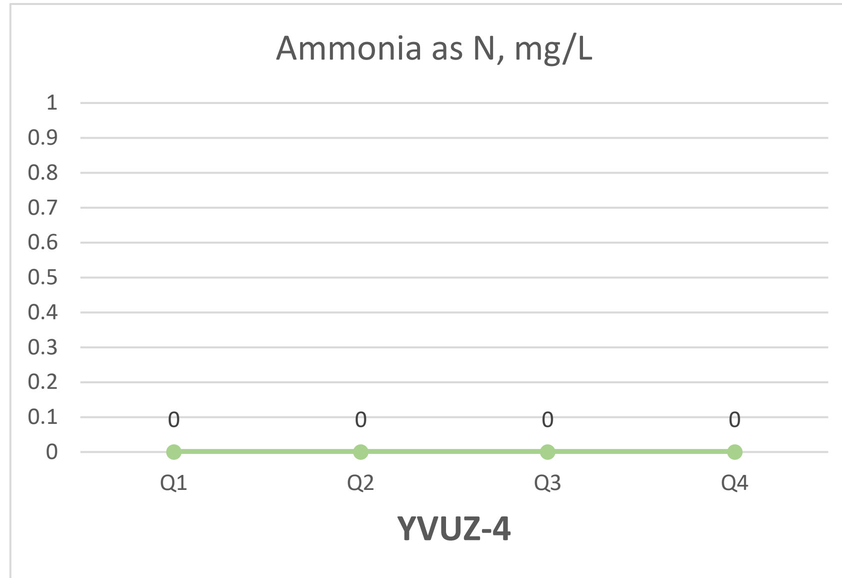

Total Dissolved Solids, mg/L
215
210
205
200
195
190
185
180
175
170
165
180
210
210
210
Q1
Q2
Q3
Q4
YV-3

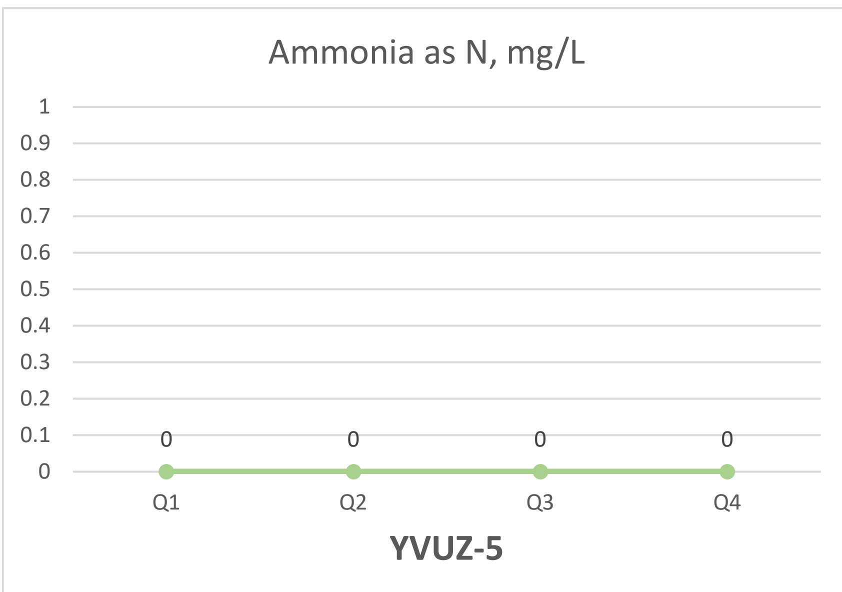

Total Dissolved Solids, mg/L
222
220
218
216
214
212
210
208
206
204
220
220
210
220
Q1
Q2
Q3
Q4
YVUZ-4

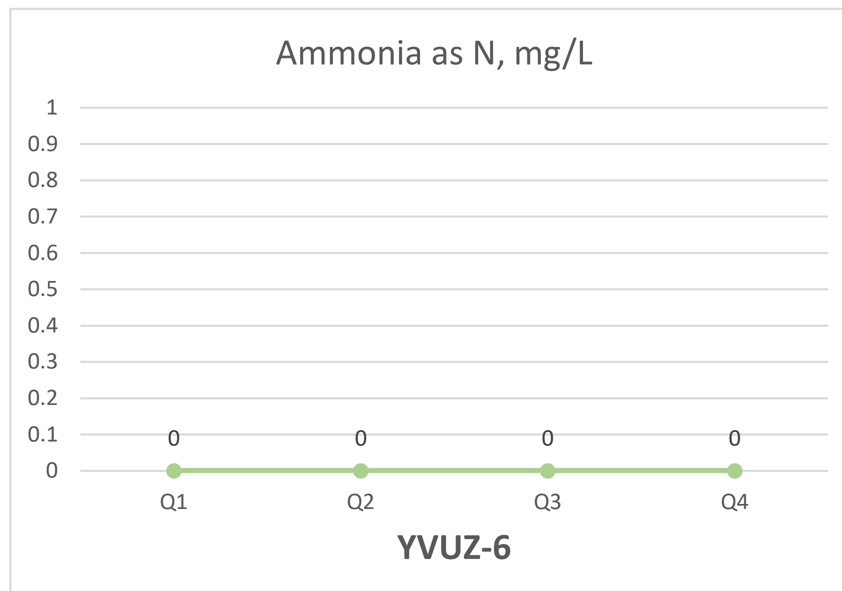

Total Dissolved Solids, mg/L
465
460
455
450
445
440
435
430
440
460
460
440
Q1
Q2
Q3
Q4
YVUZ-5

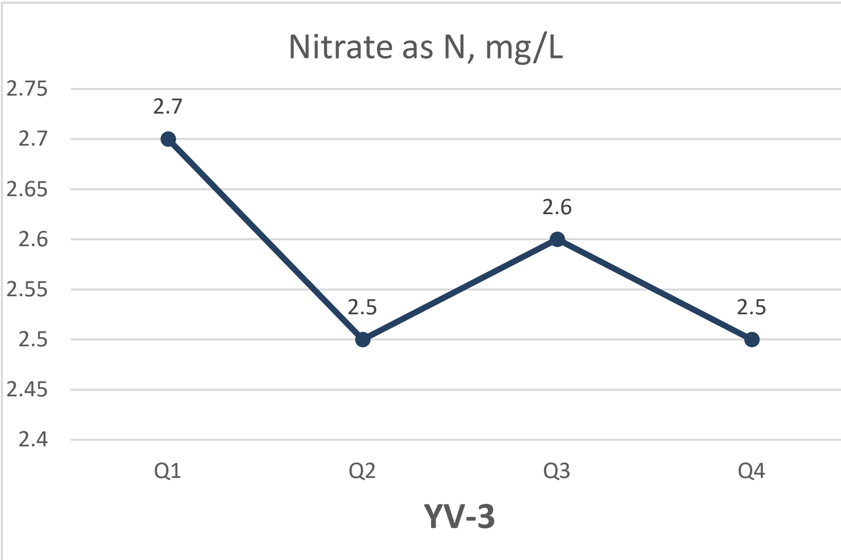

Total Dissolved Solids, mg/L
442
440
438
436
434
432
430
428
426
424
430
430
440
430
Q1
Q2
Q3
Q4
YVUZ-6

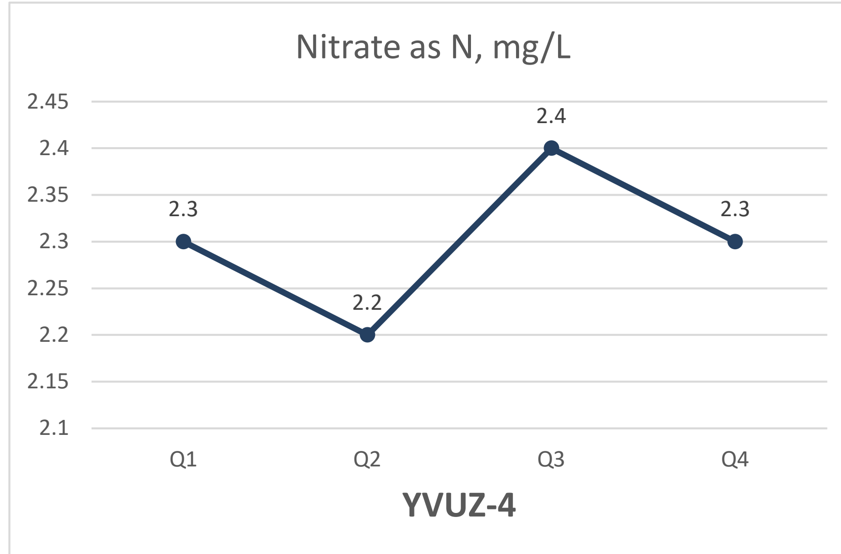

Ammonia as N, mg/L
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0 0 0 0
Q1 Q2 Q3 Q4
YV-3

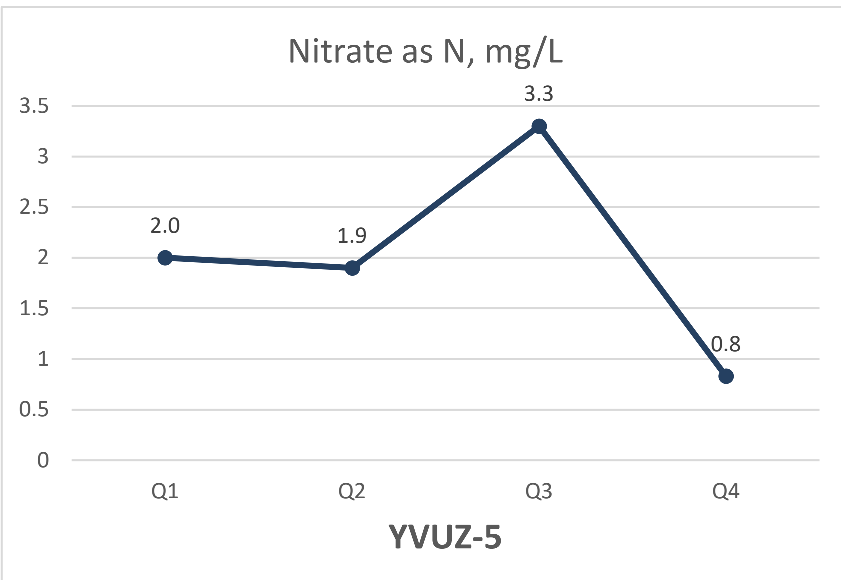

Ammonia as N, mg/L
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0 0 0 0
Q1 Q2 Q3 Q4
YVUZ-4

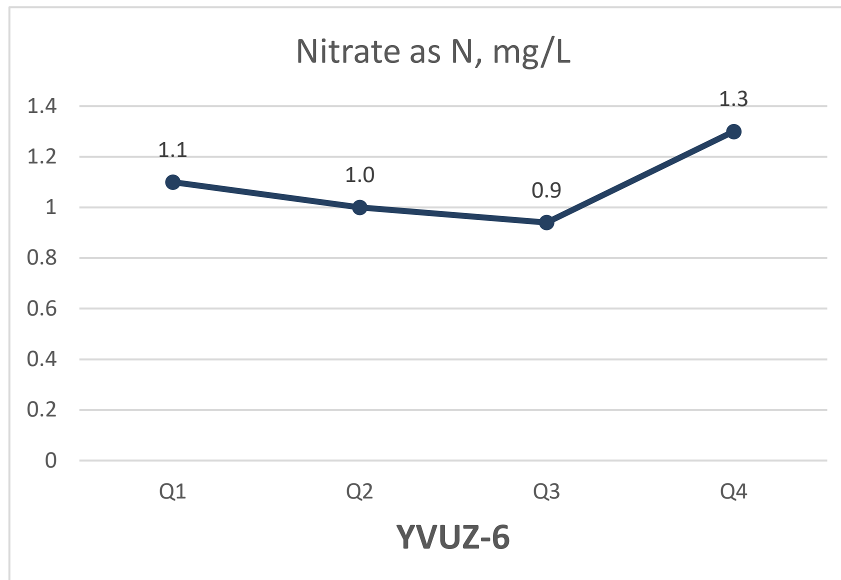

Ammonia as N, mg/L
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0 0 0 0
Q1 Q2 Q3 Q4
YVUZ-5

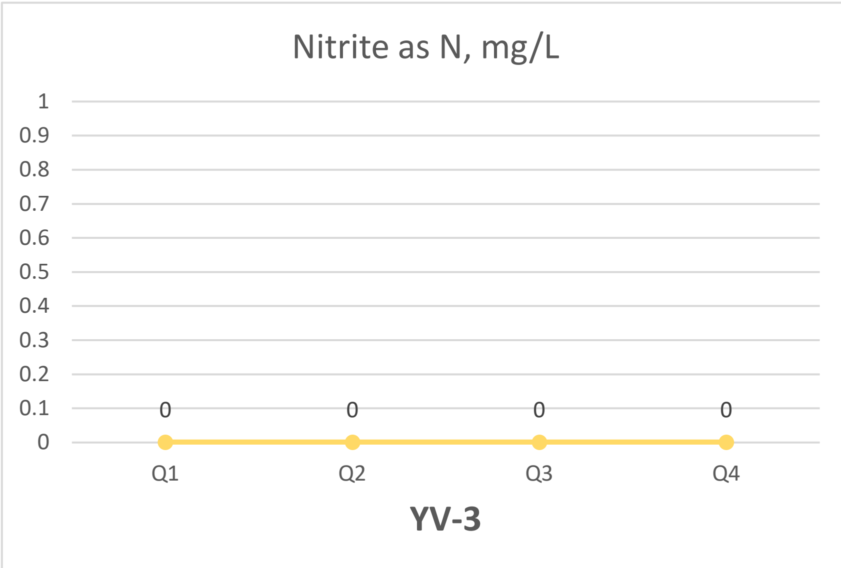

Ammonia as N, mg/L
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0 0 0 0
Q1 Q2 Q3 Q4
YVUZ-6

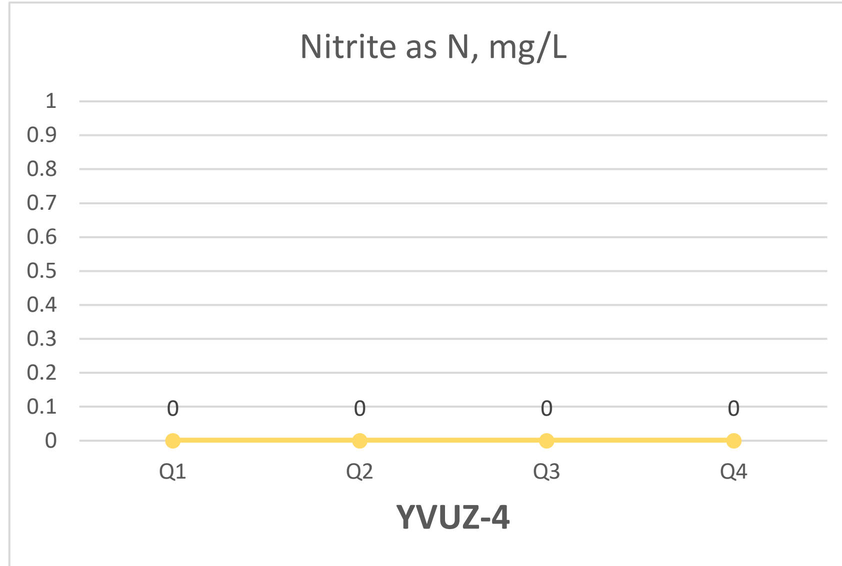

Nitrate as N, mg/L
2.75
2.7
2.65
2.6
2.55
2.5
2.45
2.4
2.7
2.5
2.6
2.5
Q1
Q2
Q3
Q4
YV-3

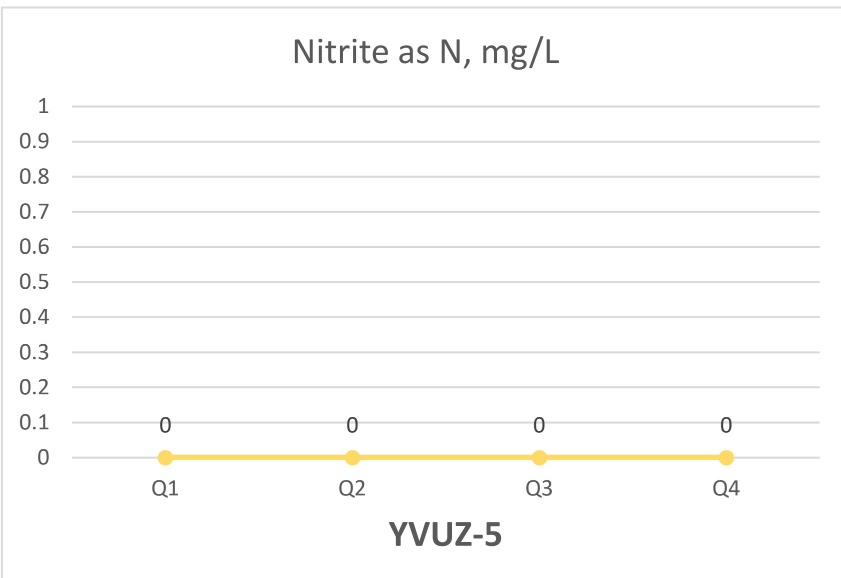

Nitrate as N, mg/L
2.45
2.4
2.35
2.3
2.25
2.2
2.15
2.1
2.3
2.2
2.4
2.3
Q1
Q2
Q3
Q4
YVUZ-4

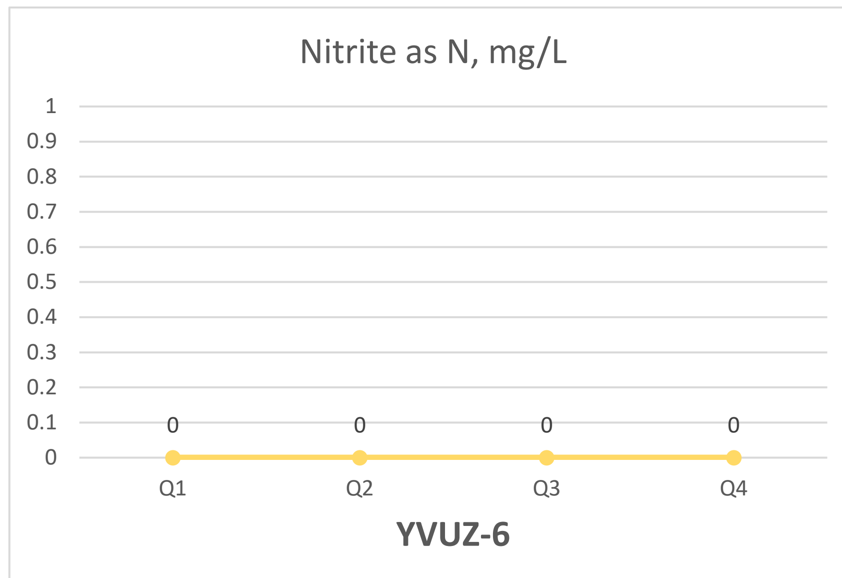

Nitrate as N, mg/L
3.5
3
2.5
2
1.5
1
0.5
0
2.0
1.9
3.3
0.8
Q1
Q2
Q3
Q4
YVUZ-5

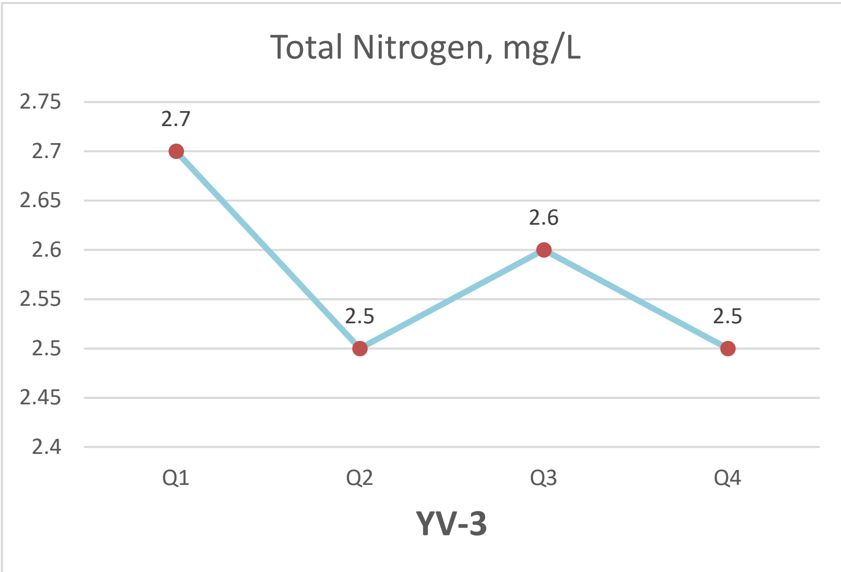

Nitrate as N, mg/L
1.4
1.2
1
0.8
0.6
0.4
0.2
0
1.1
1.0
0.9
1.3
Q1
Q2
Q3
Q4
YVUZ-6

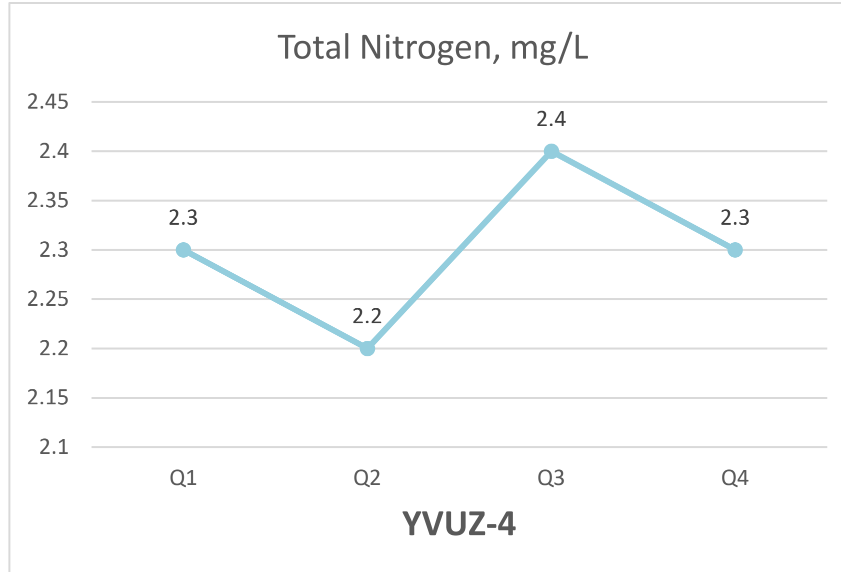

Nitrite as N, mg/L
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0 0 0 0
Q1 Q2 Q3 Q4
YV-3

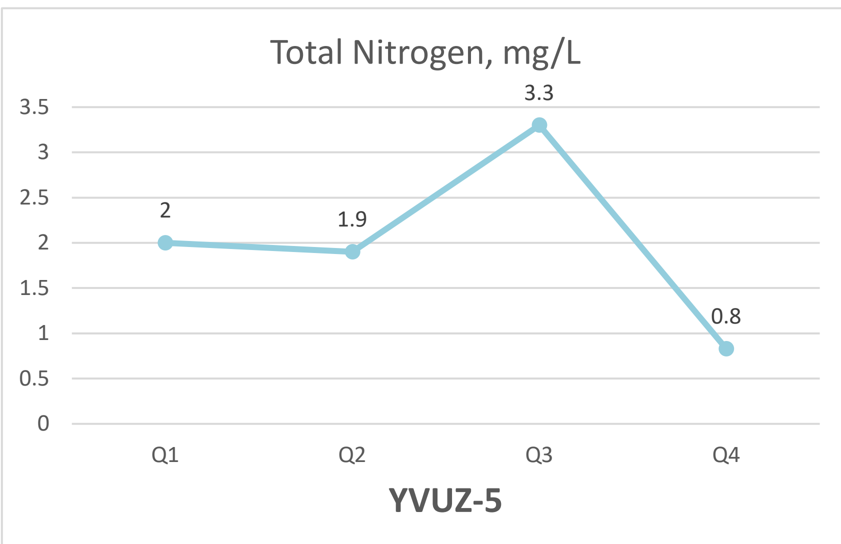

Nitrite as N, mg/L
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0 0 0 0
Q1 Q2 Q3 Q4
YVUZ-4

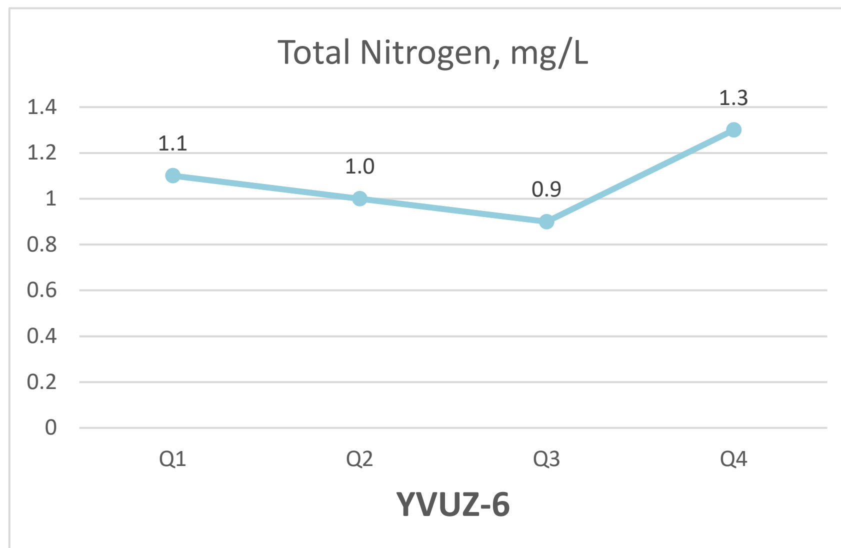

Nitrite as N, mg/L
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0 0 0 0
Q1 Q2 Q3 Q4
YVUZ-5


Nitrite as N, mg/L
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0 0 0 0
Q1 Q2 Q3 Q4
YVUZ-6


Total Nitrogen, mg/L
2.75
2.7
2.65
2.6
2.55
2.5
2.45
2.4
2.7
2.5
2.6
2.5
Q1
Q2
Q3
Q4
YV-3


Total Nitrogen, mg/L
2.45
2.4
2.35
2.3
2.25
2.2
2.15
2.1
2.3
2.2
2.4
2.3
Q1
Q2
Q3
Q4
YVUZ-4


Total Nitrogen, mg/L
3.5
3
2.5
2
1.5
1
0.5
0
2
1.9
3.3
0.8
Q1
Q2
Q3
Q4
YVUZ-5


Total Nitrogen, mg/L
1.4
1.2
1
0.8
0.6
0.4
0.2
0
1.1
1.0
0.9
1.3
Q1
Q2
Q3
Q4
YVUZ-6