by **September 9. 2019,** stating what actions are being taken to address the Referral Notice of Violation #s 1 through 5 and prevent reoccurrences in the future. The written response shall be submitted to the Water Pollution Control Branch (WPCB) Compliance & Enforcement Section by mail at the Missouri Department of Natural Resources, Water Protection Program, ATTN: WPCB Compliance and Enforcement Section, P.O. Box 176, Jefferson City, Missouri 65102. Copy Mr. Oscar Vazquez on the written response by mail at the Missouri Department of Natural Resources, 7545 S. Lindbergh Blvd Suite 210, Saint Louis, Missouri 63125.

Recommendations

1. Sludge Management Plant: The City should prioritize the development and submission to the Department for review of a sludge management plan that details removal and disposal plans when sludge is to be removed from the lagoon, to ensure that an approved plan is in place in time.

2. Three-Cell Aerated Lagoon: More frequent removal and/or control of floating plants in the lagoon is recommended.

3. Aeration System: At the time of the inspection, excessive bubbling, indicative of air leaks, was observed in some areas in the lagoon. Timely checks and repairs of the air distribution lines is recommended.

4. Sampling Procedures: It is recommended that the facility develops a cheat sheet that lists the parameters sampled and monitored under the permit along with the pertinent test methods, maximum hold times, and any preservatives to be used.

Additional Comments/Conclusion

1. Continue to submit monthly, quarterly, and annual reports through the Department's eDMR system by established reporting deadlines.

2. Register for the Department's MoGEM system and report SSO and bypass events online. You can visit our MoGEM splash page for more information: https://dnr.mo.gov/mogem/.

3. Develop and submit a sludge management plan for approval as per the provisions under the permit's fact sheet.

Signatures

SUBMITTED BY:

Oscar Vazquez, P.E.
Environmental Engineer
St. Louis Regional Office

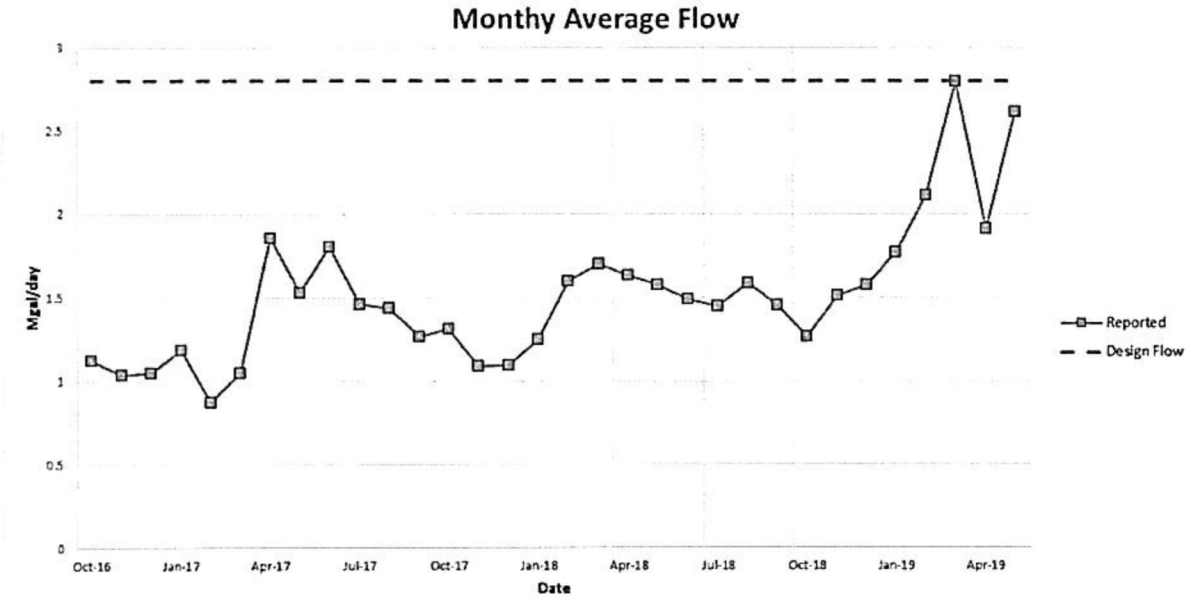
REVIEWED BY:

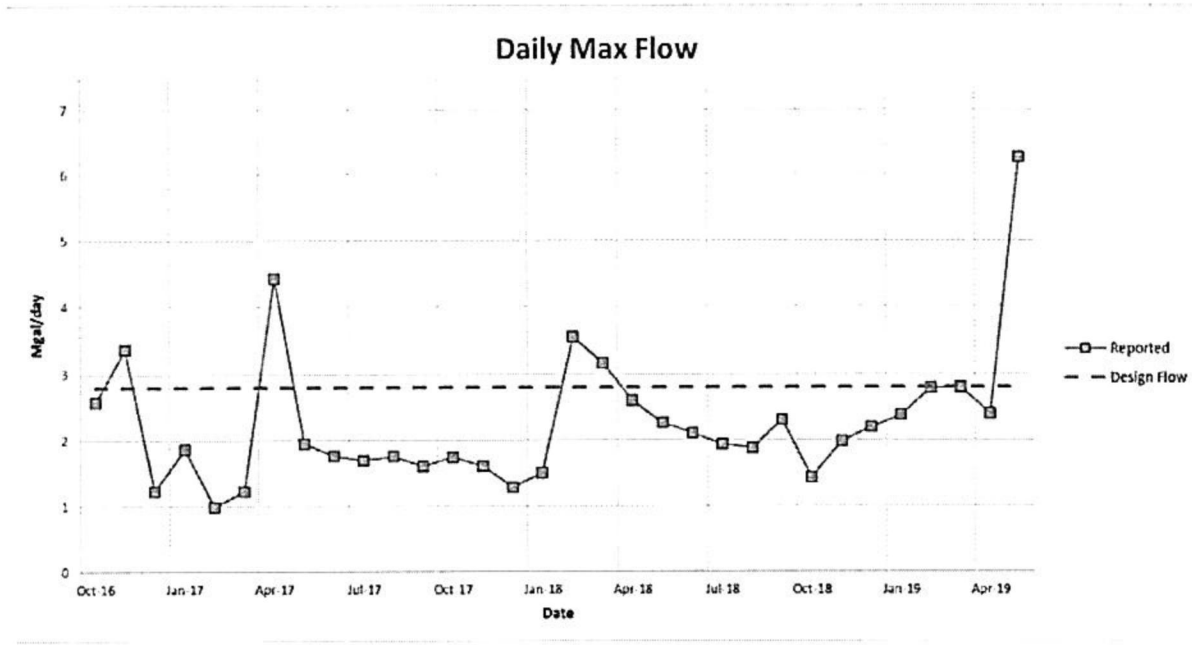
Eric Gilstrap, P.E.
Engineering and Compliance Assistance Unit Chief
St. Louis Regional Office

EJG/OVM/deb

Attachments

Attachment #1 – DMR Data Summary
Attachment #2 – Aerial & Other Maps
Attachment #3 – Photos #1 through #24
Attachment #4 – ESP Report and Sample Results
Attachment #5 – Graphs of Reported Flow vs. Percent Removal
Attachment #6 - Department Annual Inflow and Infiltration Report form [780-2690 (02-17)]


Monthy Average Flow
Mgal/day
3
2.5
2
1.5
1
0.5
0
Oct-16
Jan-17
Apr-17
Jul-17
Oct-17
Jan-18
Apr-18
Jul-18
Oct-18
Jan-19
Apr-19
Date
Reported
Design Flow


Daily Max Flow
Mgal/day
7
6
5
4
3
2
1
0
Oct-16
Jan-17
Apr-17
Jul-17
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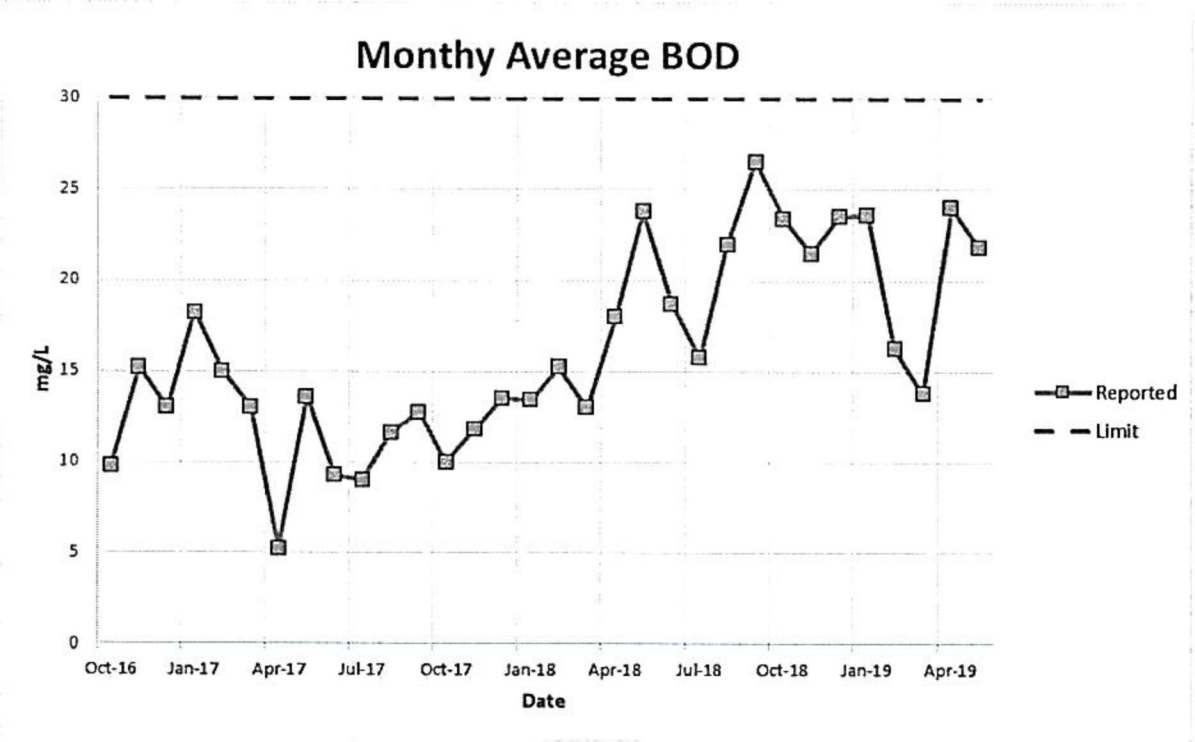
Oct-18
Jan-19
Apr-19
Date
Reported
Design Flow


Monthy Average BOD
mg/L
30
25
20
15
10
5
0
Oct-16
Jan-17
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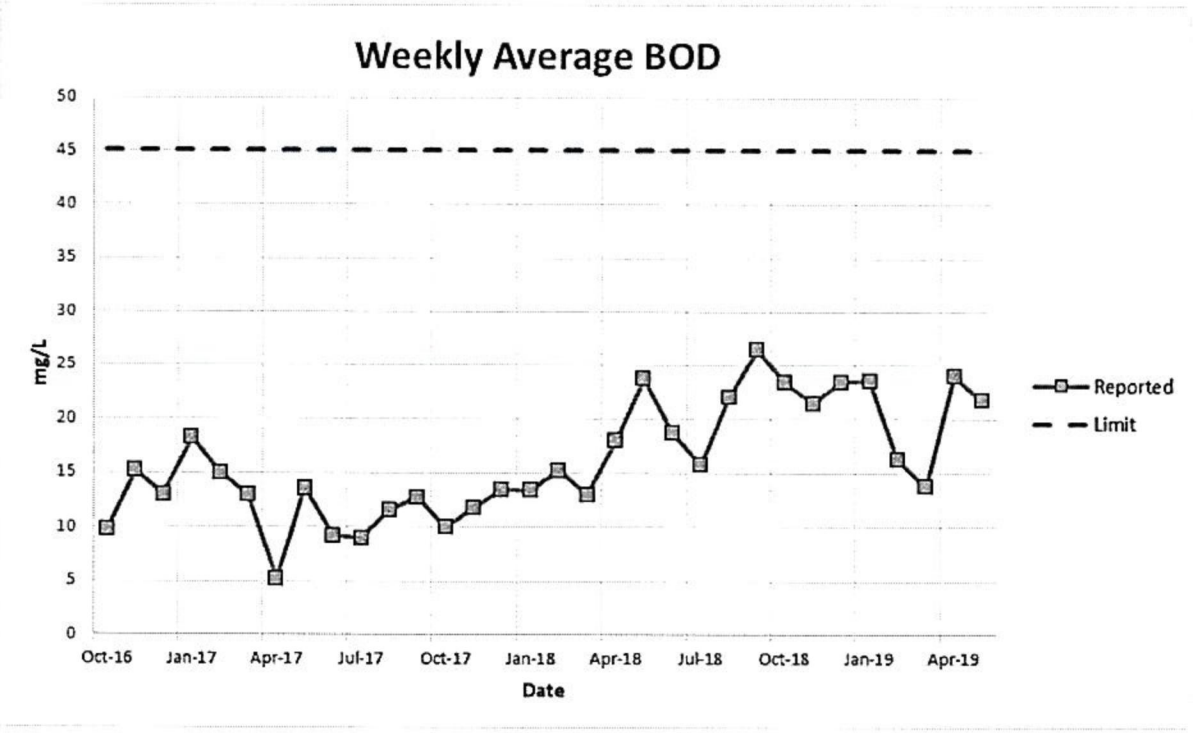
Apr-18
Jul-18
Oct-18
Jan-19
Apr-19
Date
Reported
Limit


Weekly Average BOD
mg/L
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45
40
35
30
25
20
15
10
5
0
Oct-16
Jan-17
Apr-17
Jul-17
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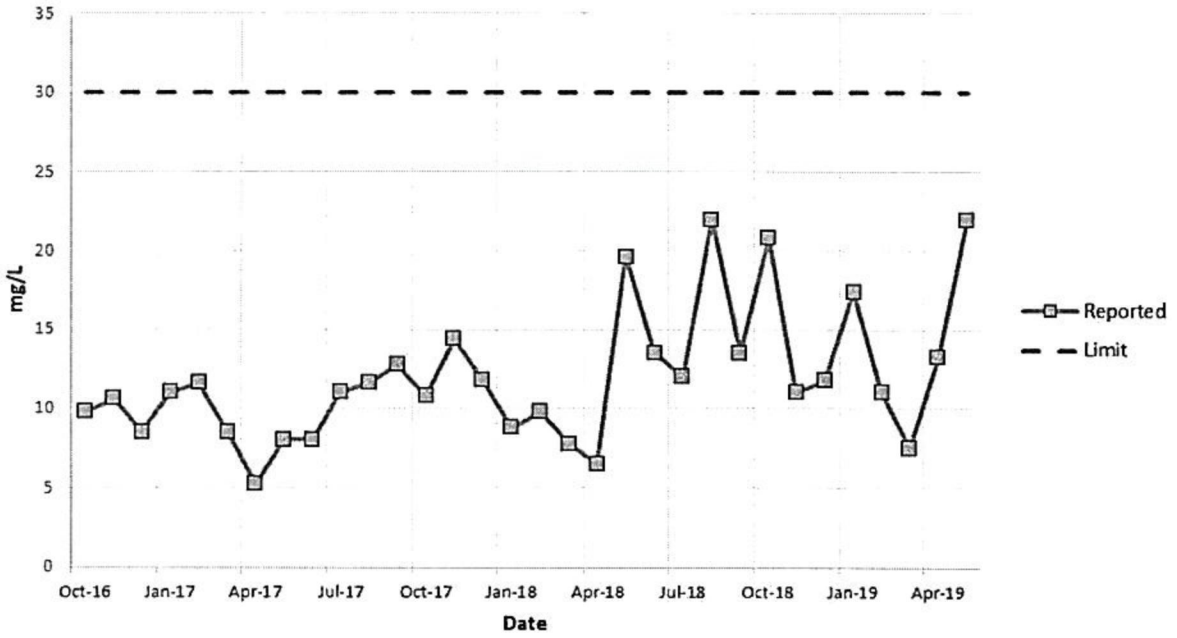
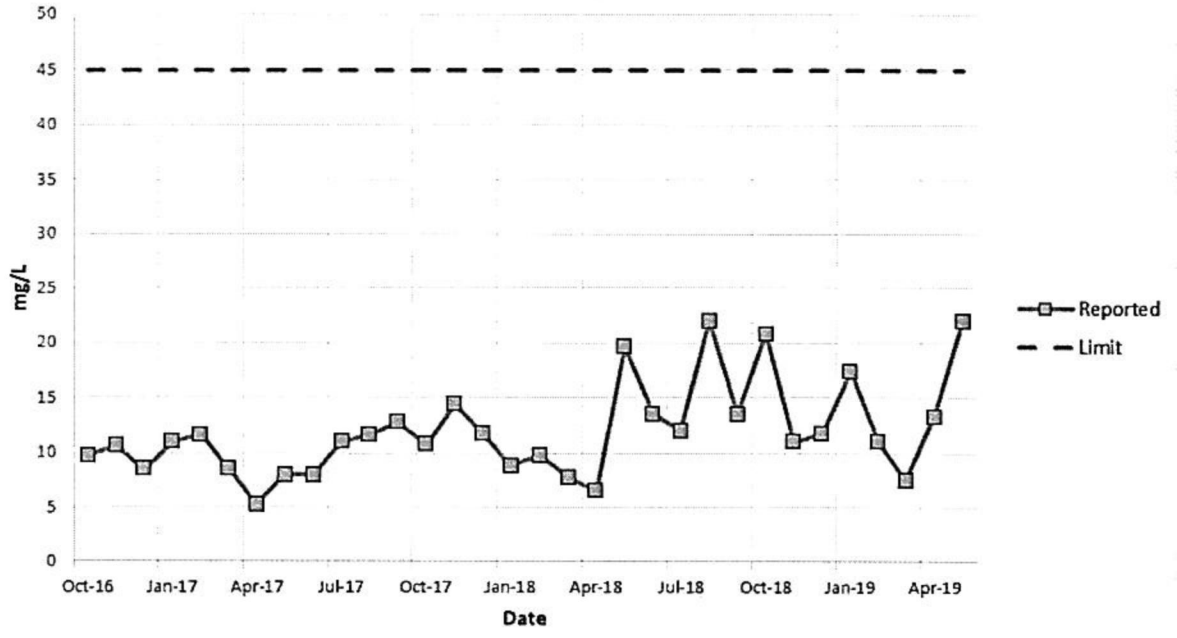
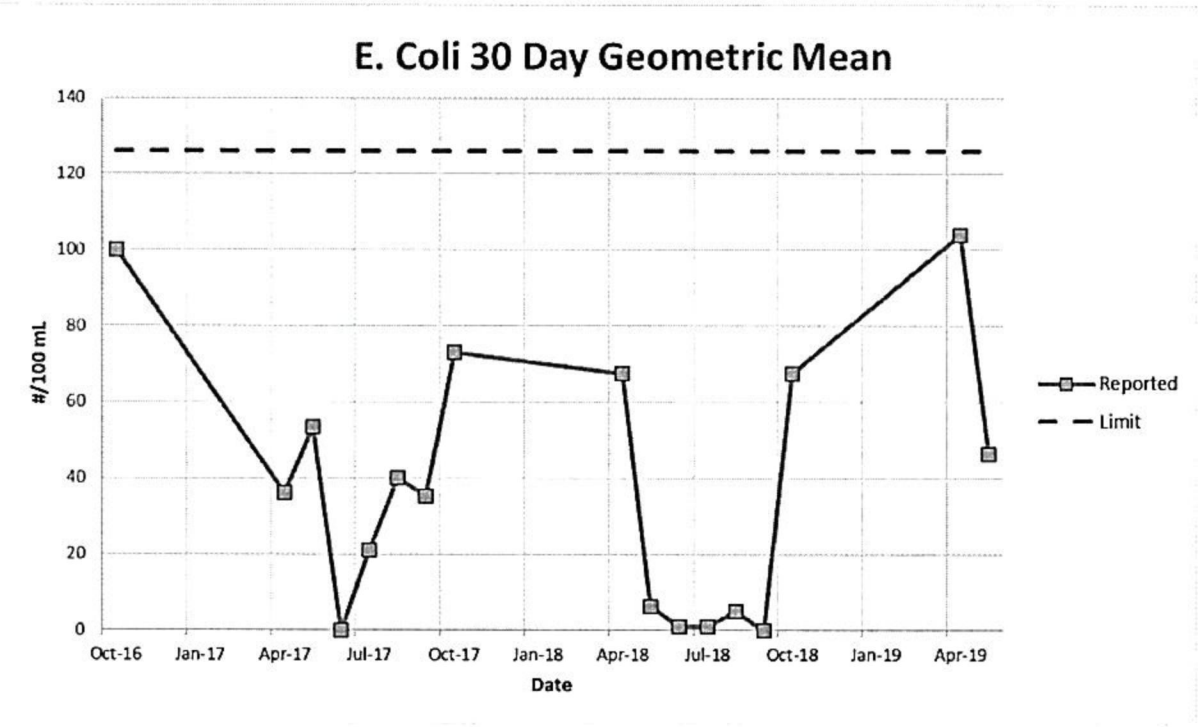
Jan-18
Apr-18
Jul-18
Oct-18
Jan-19
Apr-19
Date
Reported
Limit

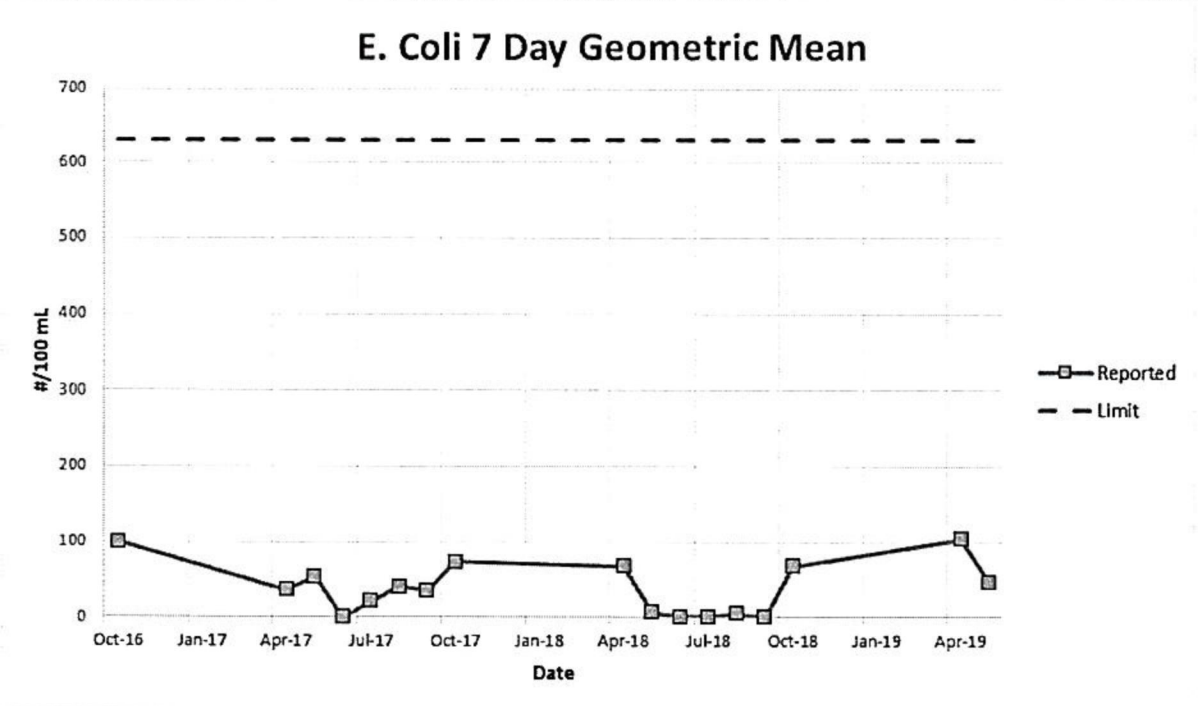
Monthy Average TSS

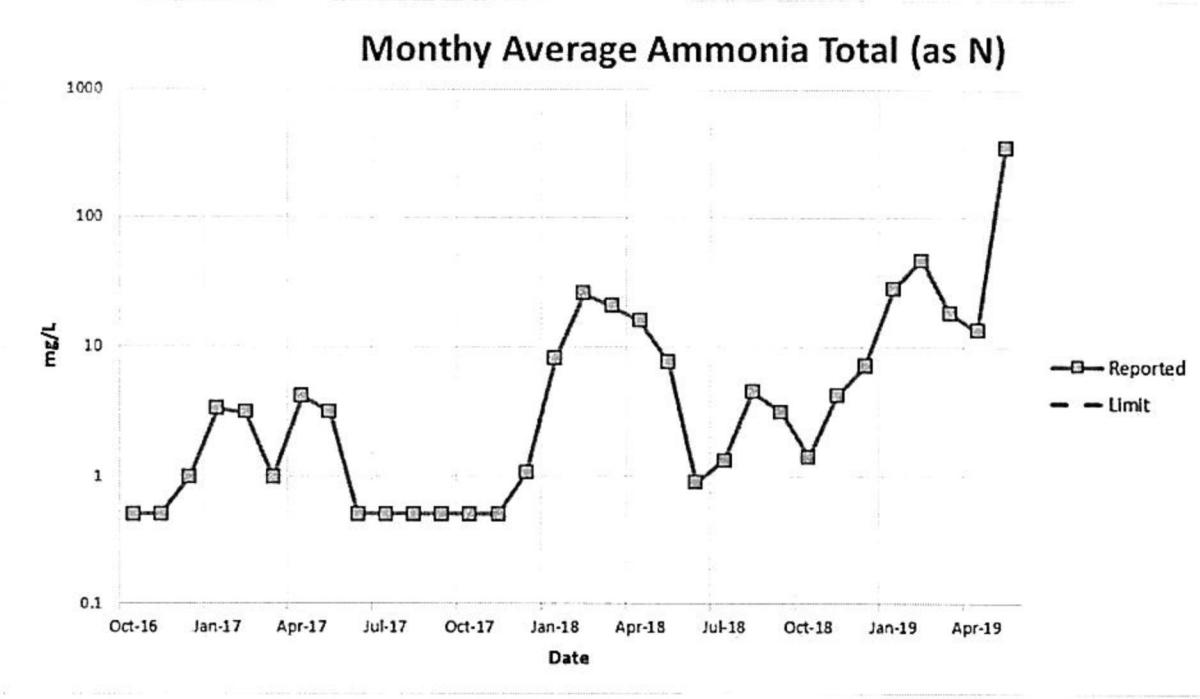


Weekly Average TSS




E. Coli 30 Day Geometric Mean
#/100 mL
140
120
100
80
60
40
20
0
Oct-16
Jan-17
Apr-17
Jul-17
Oct-17
Jan-18
Apr-18
Jul-18
Oct-18
Jan-19
Apr-19
Date
Reported
Limit


E. Coli 7 Day Geometric Mean
#/100 mL
700
600
500
400
300
200
100
0
Oct-16
Jan-17
Apr-17
Jul-17
Oct-17
Jan-18
Apr-18
Jul-18
Oct-18
Jan-19
Apr-19
Date
Reported
Limit


Monthy Average Ammonia Total (as N)
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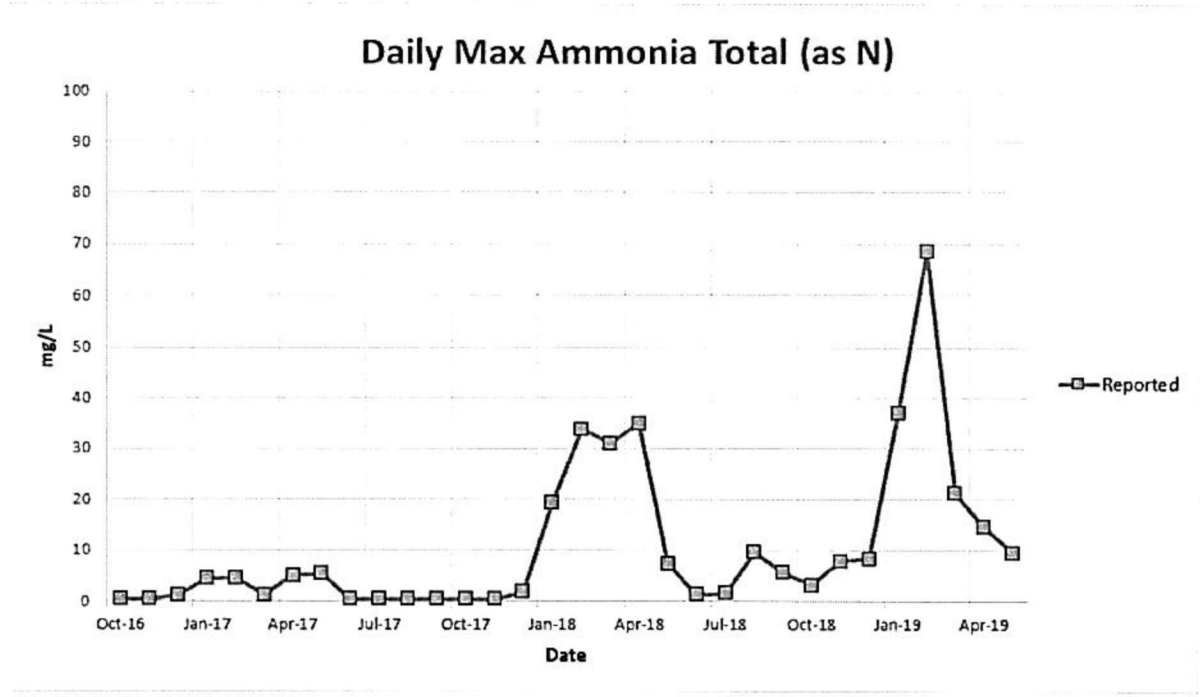
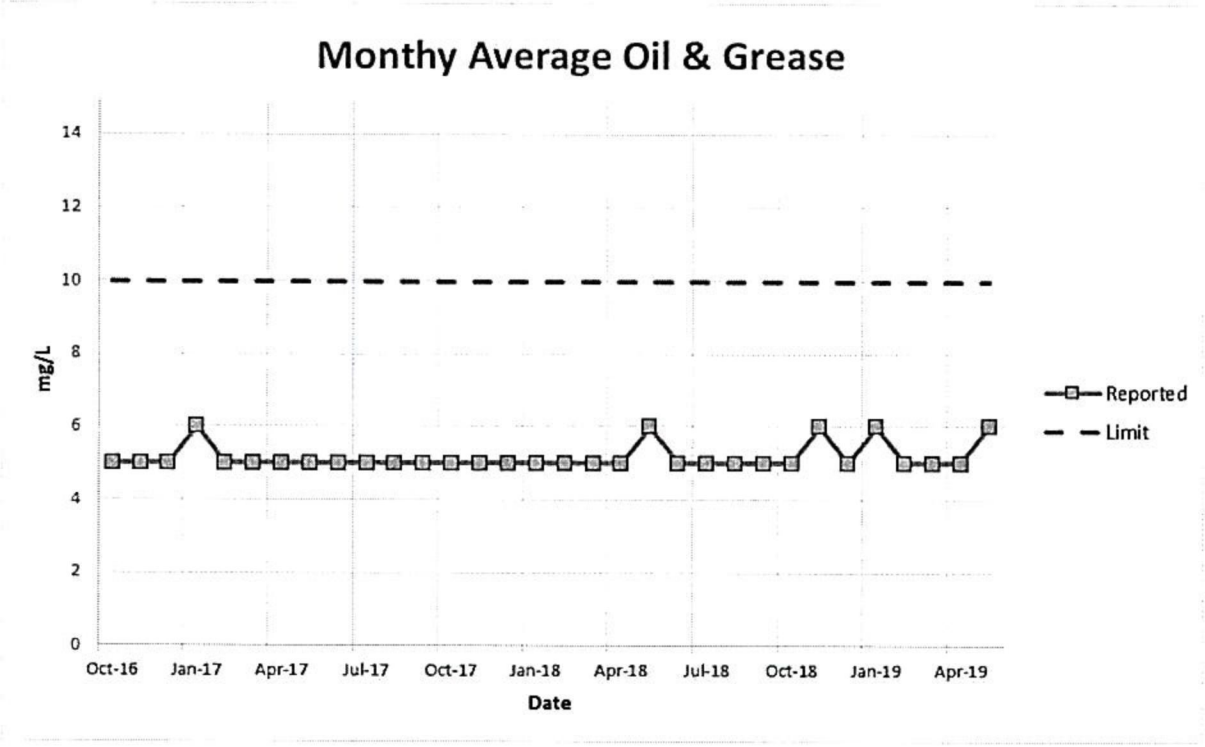
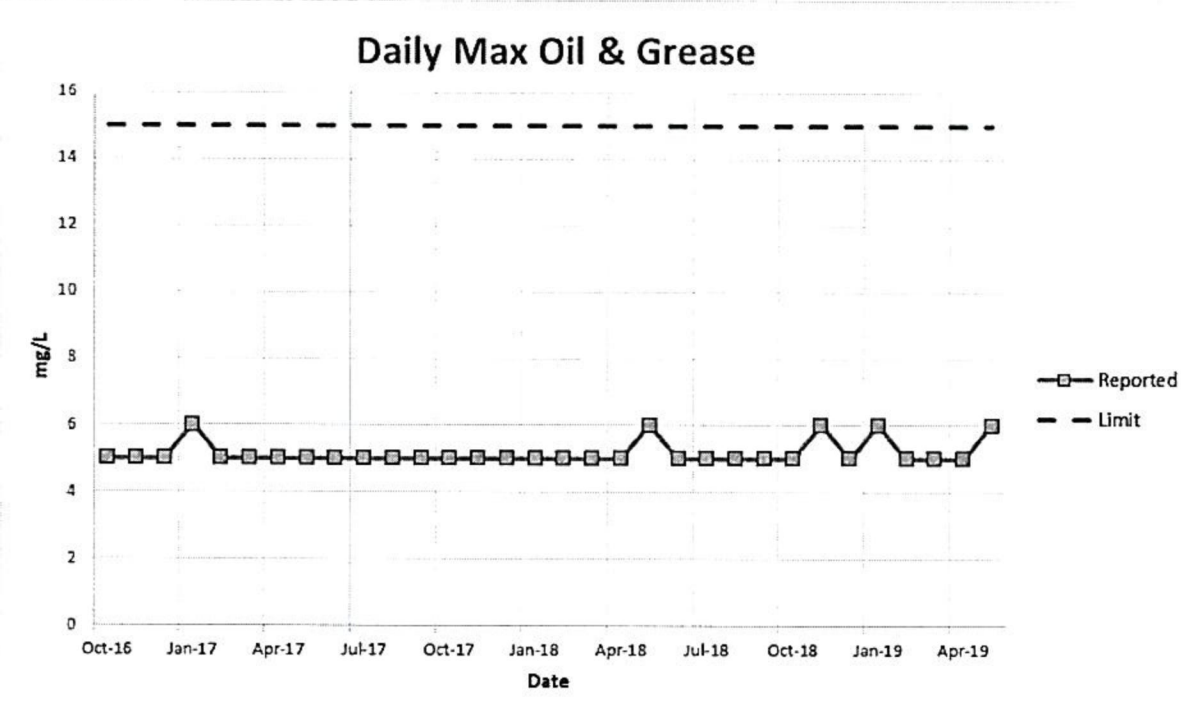
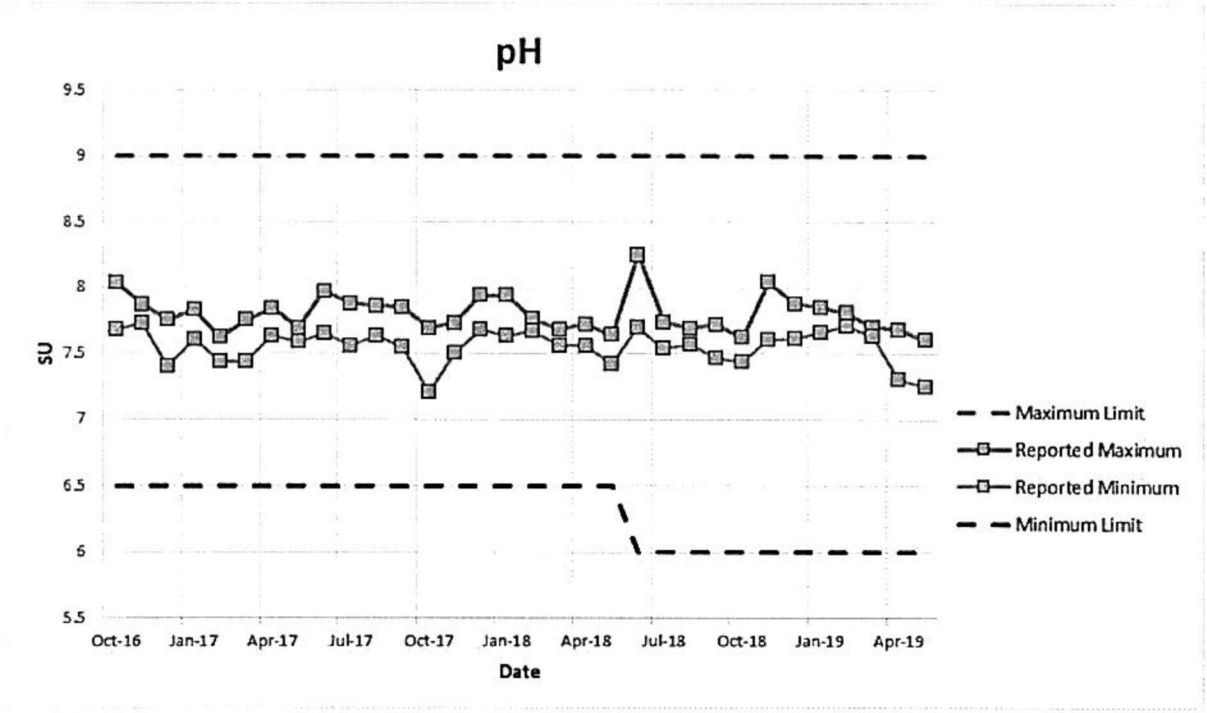
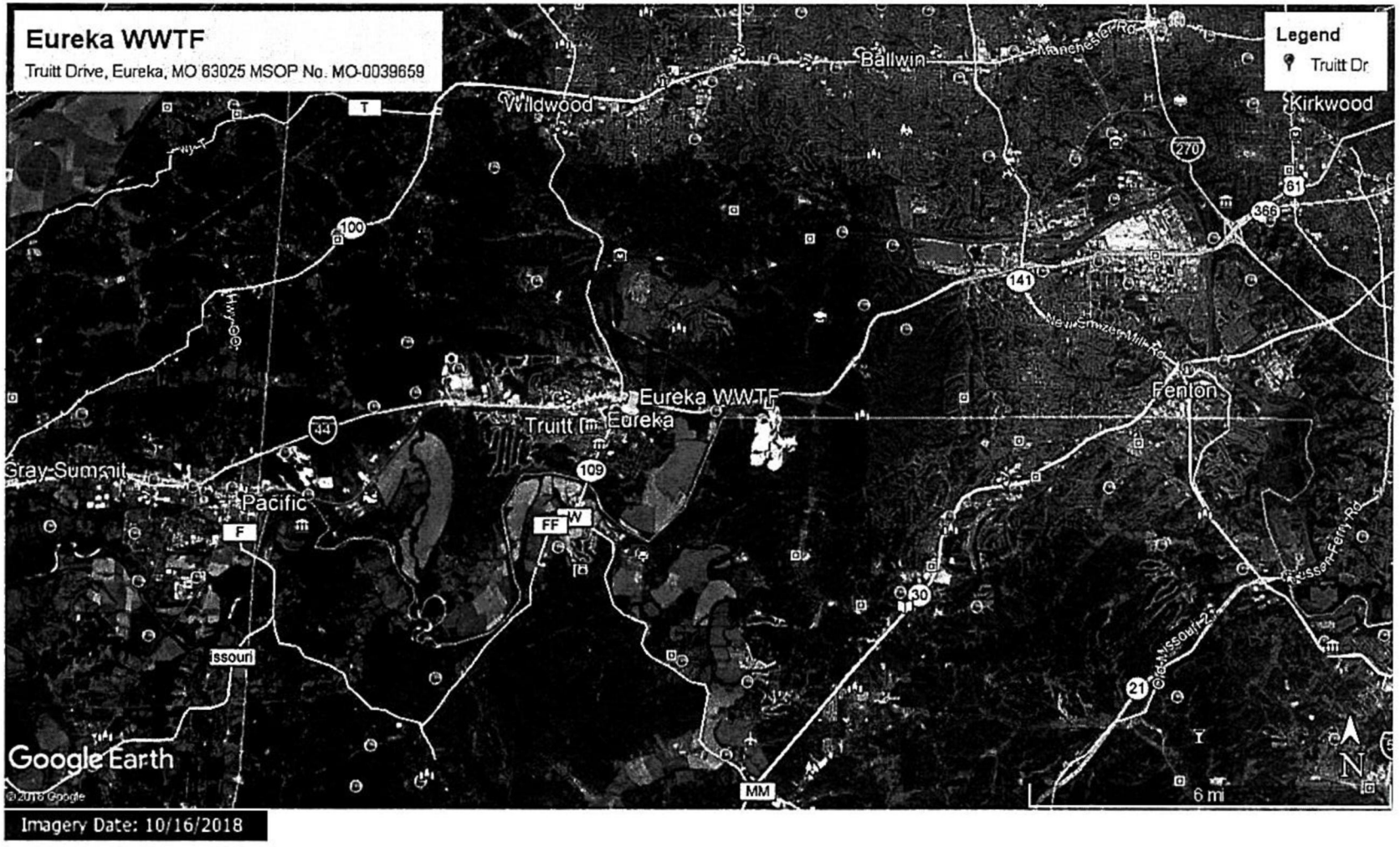
100
10
1
0.1
mg/L
Oct-16
Jan-17
Apr-17
Jul-17
Oct-17
Jan-18
Apr-18
Jul-18
Oct-18
Jan-19
Apr-19
Date
Reported
Limit

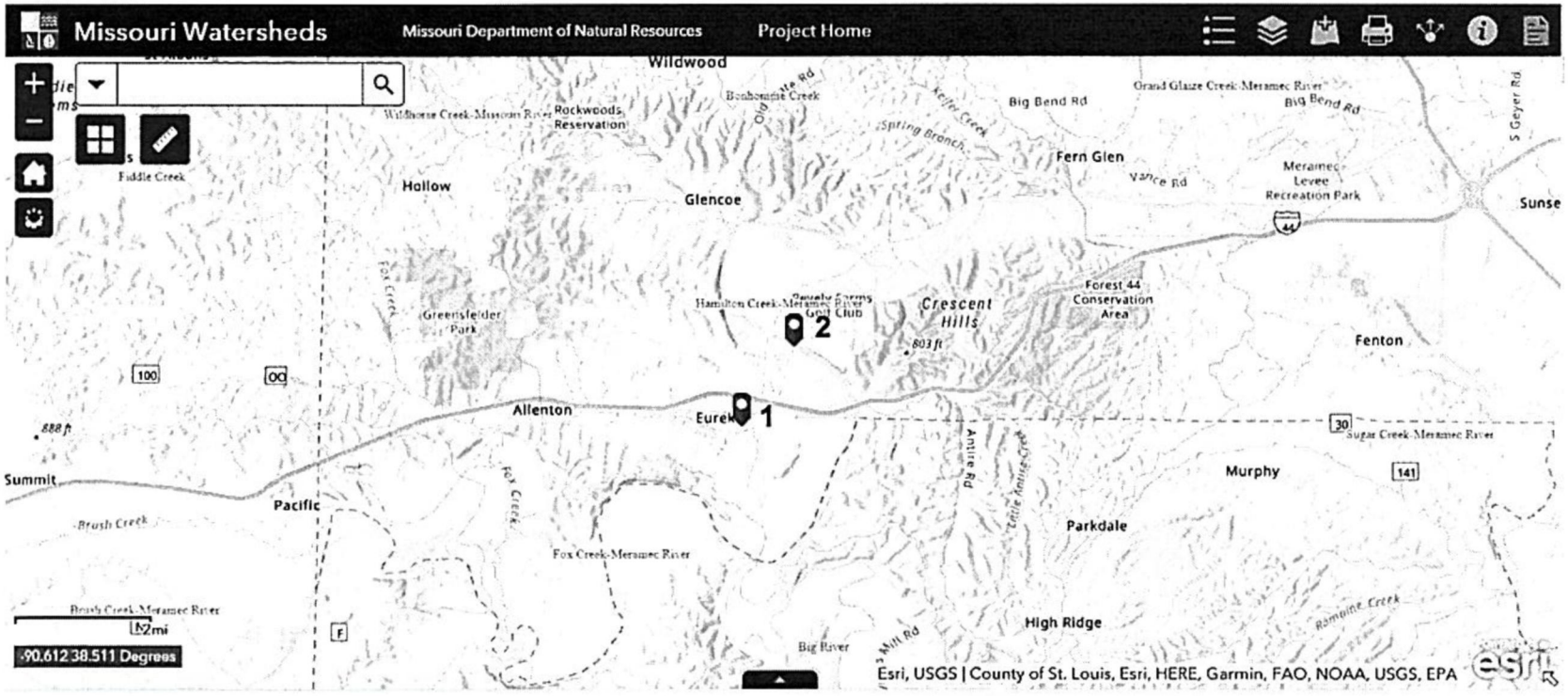

Daily Max Ammonia Total (as N)
100
90
80
70
60
50
40
30
20
10
0
mg/L
Oct-16
Jan-17
Apr-17
Jul-17
Oct-17
Jan-18
Apr-18
Jul-18
Oct-18
Jan-19
Apr-19
Date
Reported


Monthy Average Oil & Grease
mg/L
14
12
10
8
6
4
2
0
Oct-16
Jan-17
Apr-17
Jul-17
Oct-17
Jan-18
Apr-18
Jul-18
Oct-18
Jan-19
Apr-19
Date
Reported
Limit


Daily Max Oil & Grease
mg/L
16
14
12
10
8
6
4
2
0
Oct-16
Jan-17
Apr-17
Jul-17
Oct-17
Jan-18
Apr-18
Jul-18
Oct-18
Jan-19
Apr-19
Date
Reported
Limit

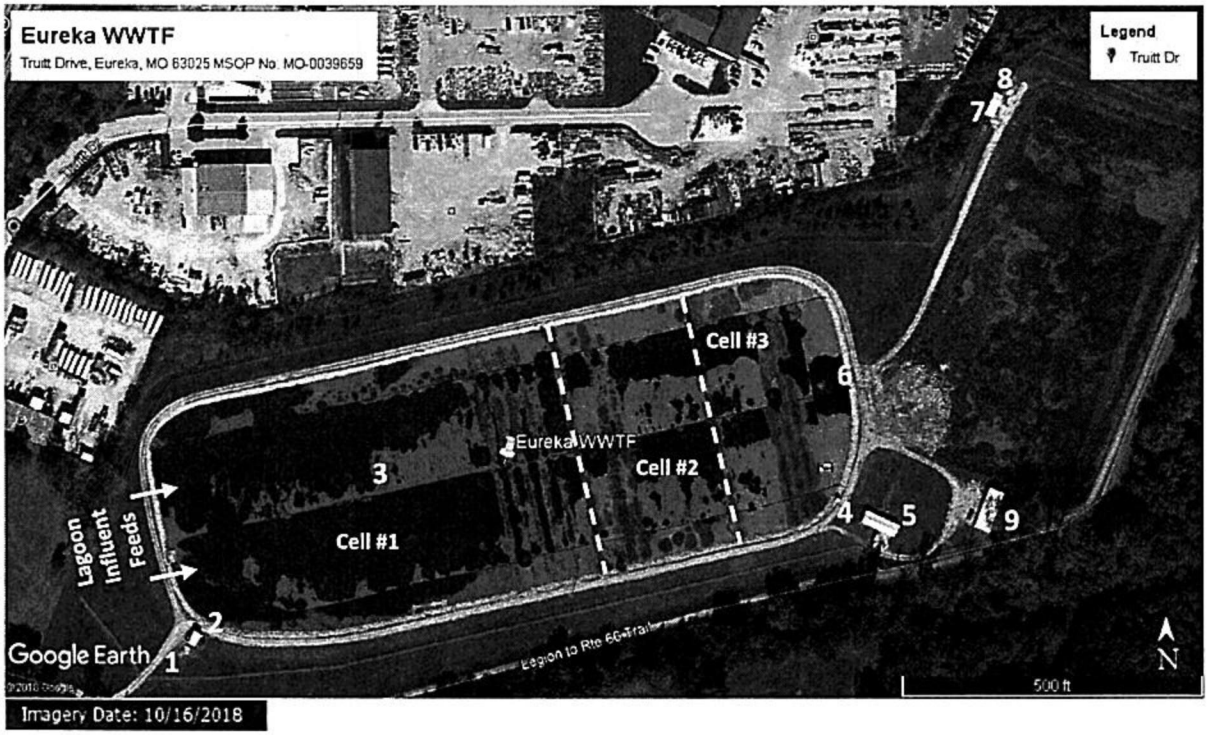

pH
9.5
9
8.5
8
7.5
7
6.5
6
5.5
SU
Oct-16
Jan-17
Apr-17
Jul-17
Oct-17
Jan-18
Apr-18
Jul-18
Oct-18
Jan-19
Apr-19
Date
Maximum Limit
Reported Maximum
Reported Minimum
Minimum Limit


Eureka WWTF
Truitt Drive, Eureka, MO 63025 MSOP No. MO-0039659
Legend
Truitt Dr
Ballwin
Manchester Rd
Wildwood
Kirkwood
T
270
61
366
100
141
Eureka WWTF
Truitt Dr
Eureka
Fenton
44
Gray Summit
109
Pacific
F
FF
W
30
Meramec Ferry Rd
Old Missouri 21
21
MM
Google Earth
© 2018 Google
6 mi
N
Imagery Date: 10/16/2018



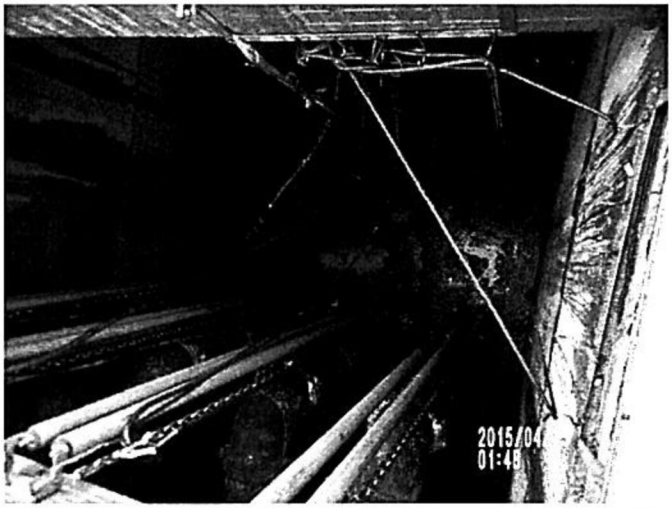
1 - Eureka WWTF 2 – Outfall #004 12-digit·Watershed·Boundaries¶

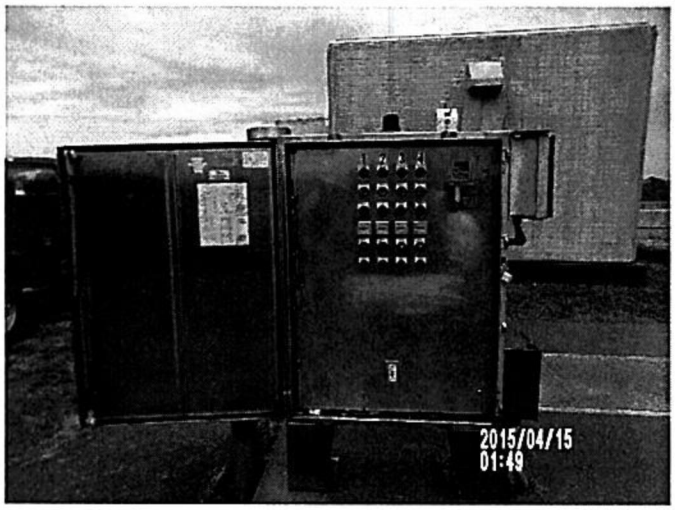
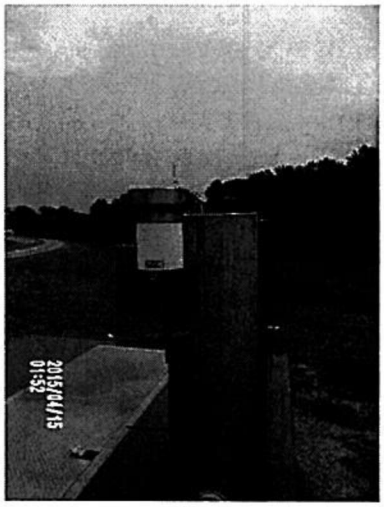
DISCLAIMER: Although this map has been compiled by the Missouri Department of Natural Resources, no warranty, expressed or implied, is made by the department as to the data and related materials. The act of distribution shall not constitute any such warranty, and no responsibility is assumed by the department in the use of these data or related materials.

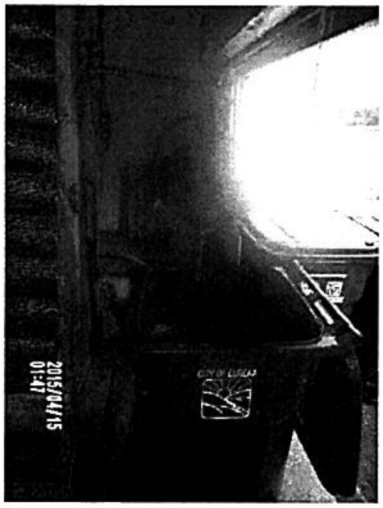


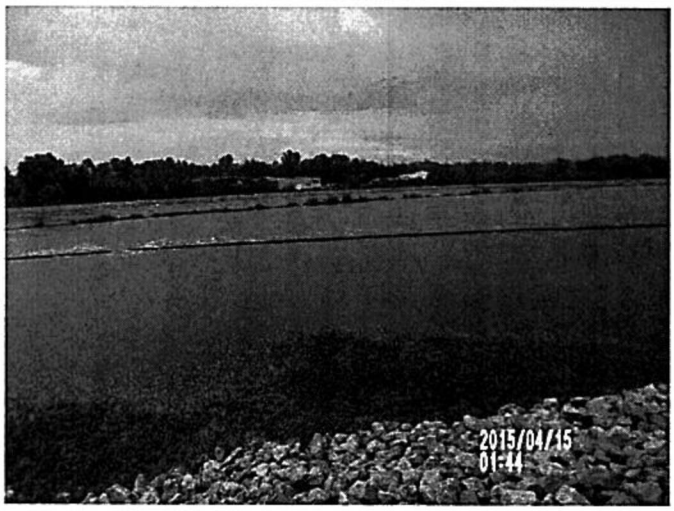
Map Key Number	WWTF Building/Area
1	Influent Lift Station Area (Photo #s 1-4)
2	Fine Screen Building (Photo #s 5-6)
3	Aerated Lagoon (Photo #s 7-9)
4	Recirculation Pump (Photo # 10)
5	Blowers Building (Photo #s 11-14)
6	Effluent Structure (Photo #s 15-16)
7	UV Disinfection System Building (Photo #s 17-21)
8	Effluent Lift Station Pumps (Photo # 22)
9	WWTF Office/Lab Building (Photo #s 23-24)

DISCLAIMER: The Department makes no warranty, expressed or implied as to the information shown in this figure. The act or distribution shall not constitute any such warranty, and no responsibility is assumed by the Department in the use of this information.

	**Photograph:** # 1. **Taken By:** Oscar Vazquez **Date Taken:** July 29, 2019 **Program:** ECA Unit **Entity:** Eureka WWTF **Permit:** MO-0039569 **Location:** Influent Lift Station **Description:** Wet well and pump control panel.
	**Photograph:** # 2. **Taken By:** Oscar Vazquez **Date Taken:** July 29, 2019 **Program:** ECA Unit **Entity:** Eureka WWTF **Permit:** MO-0039569 **Location:** Influent Lift Station **Description:** Wet well with four pump discharge lines.

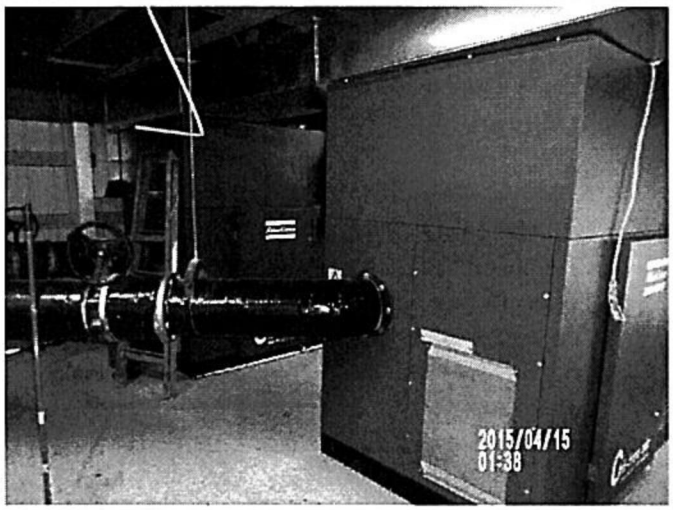
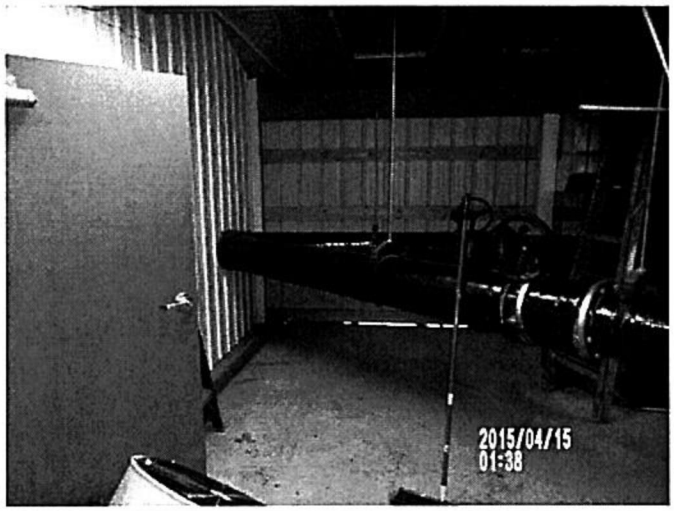
	**Photograph:** # 3. **Taken By:** Oscar Vazquez **Date Taken:** July 29, 2019 **Program:** ECA Unit **Entity:** Eureka WWTF **Permit:** MO-0039569 **Location:** Influent Lift Station **Description:** LS control panel features include pump run indicator lights, hand-off-auto selector switches, and elapse time meters.
	**Photograph:** # 4. **Taken By:** Oscar Vazquez **Date Taken:** July 29, 2019 **Program:** ECA Unit **Entity:** Eureka WWTF **Permit:** MO-0039569 **Location:** Influent Lift Station **Description:** Rain gauge attached to LS control panel is integrated into a SCADA system.

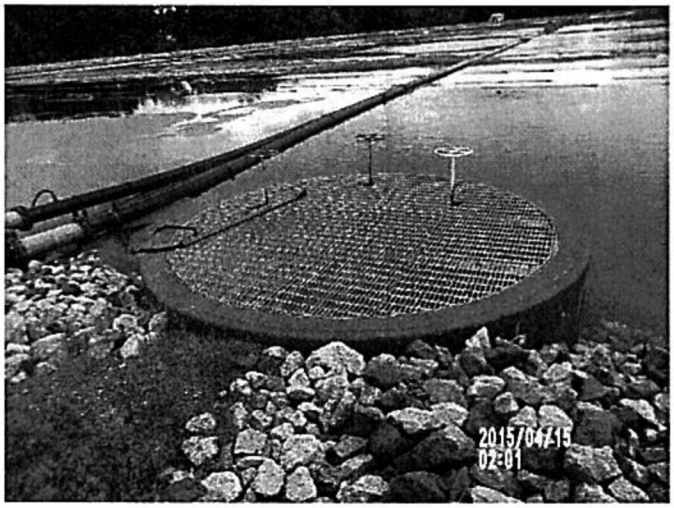
	**Photograph:** # 5. **Taken By:** Oscar Vazquez **Date Taken:** July 29, 2019 **Program:** ECA Unit **Entity:** Eureka WWTF **Permit:** MO-0039569 **Location:** Fine Screen Building **Description:** Fine Screen.
	**Photograph:** # 6. **Taken By:** Oscar Vazquez **Date Taken:** July 29, 2019 **Program:** ECA Unit **Entity:** Eureka WWTF **Permit:** MO-0039569 **Location:** Fine Screen Building **Description:** Compacted and dewatered screenings are dumped into 300-pound trash containers.

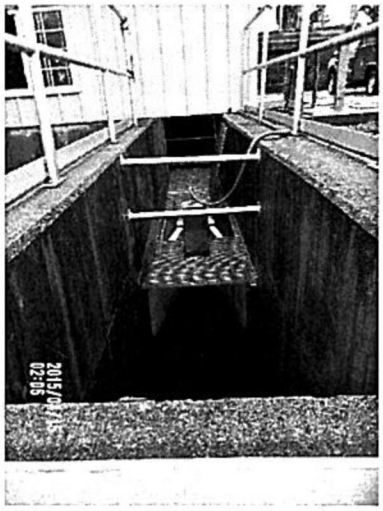
	**Photograph:** # 7. **Taken By:** Oscar Vazquez **Date Taken:** July 29, 2019 **Program:** ECA Unit **Entity:** Eureka WWTF **Permit:** MO-0039569 **Location:** Three-Cell Aerated Lagoon **Description:** Looking northeast from the southern shore of lagoon cell #1, near the bar screen building.
	**Photograph:** # 8. **Taken By:** Oscar Vazquez **Date Taken:** July 29, 2019 **Program:** ECA Unit **Entity:** Eureka WWTF **Permit:** MO-0039569 **Location:** Three-Cell Aerated Lagoon **Description:** Looking south from the northern shore of lagoon. A line of Aquamats® is shown here.

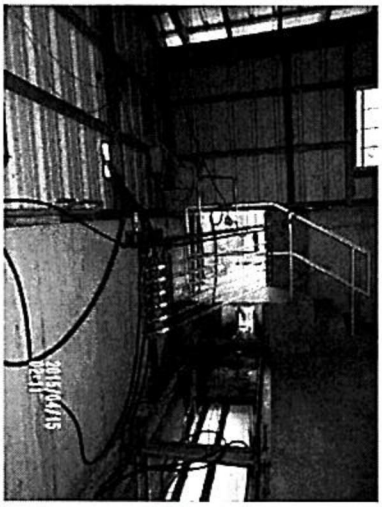
	**Photograph:** # 9. **Taken By:** Oscar Vazquez **Date Taken:** July 29, 2019 **Program:** ECA Unit **Entity:** Eureka WWTF **Permit:** MO-0039569 **Location:** Three-Cell Aerated Lagoon **Description:** Looking north from the southern shore of lagoon cell #2. The photo shows the valve operated to control the discharge of return wastewater into cell #2.
	**Photograph:** # 10. **Taken By:** Oscar Vazquez **Date Taken:** July 29, 2019 **Program:** ECA Unit **Entity:** Eureka WWTF **Permit:** MO-0039569 **Location:** Recirculation Pump Shed **Description:** The recirculation pump shown here is operated manually to recirculate approximately 6.5 MGD of wastewater from lagoon cell #3 back to lagoon cell #s 1 and 2.

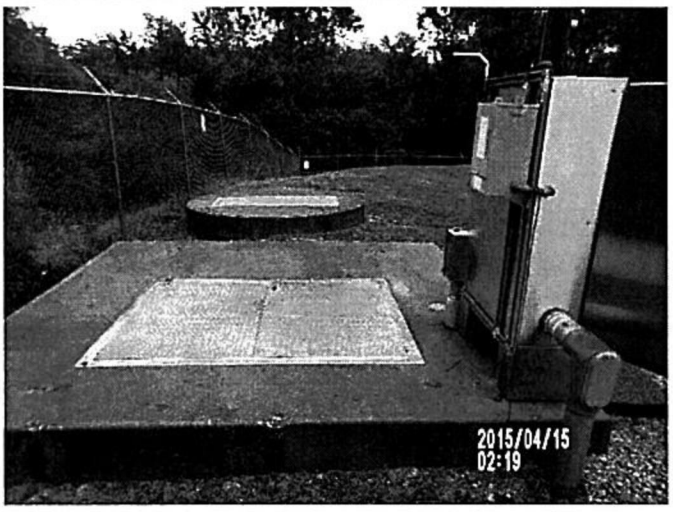
	**Photograph:** # 11. **Taken By:** Oscar Vazquez **Date Taken:** July 29, 2019 **Program:** ECA Unit **Entity:** Eureka WWTF **Permit:** MO-0039569 **Location:** Blowers Building **Description:** Old aeration pump used as backup.
	**Photograph:** # 12. **Taken By:** Oscar Vazquez **Date Taken:** July 29, 2019 **Program:** ECA Unit **Entity:** Eureka WWTF **Permit:** MO-0039569 **Location:** Blowers Building **Description:** Aeration pump panels.

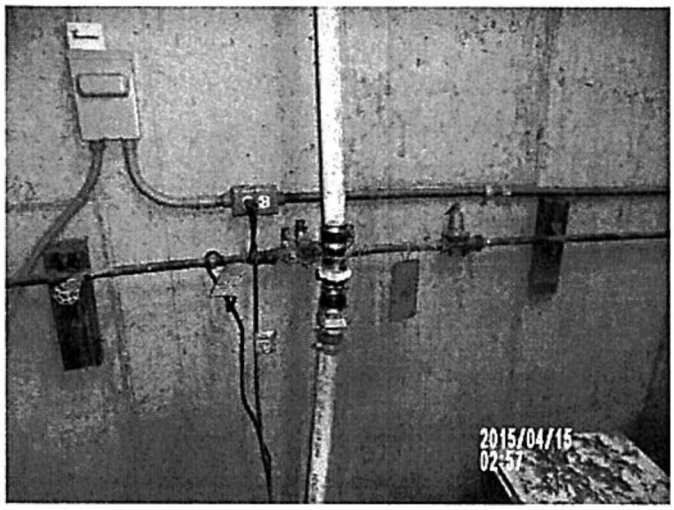
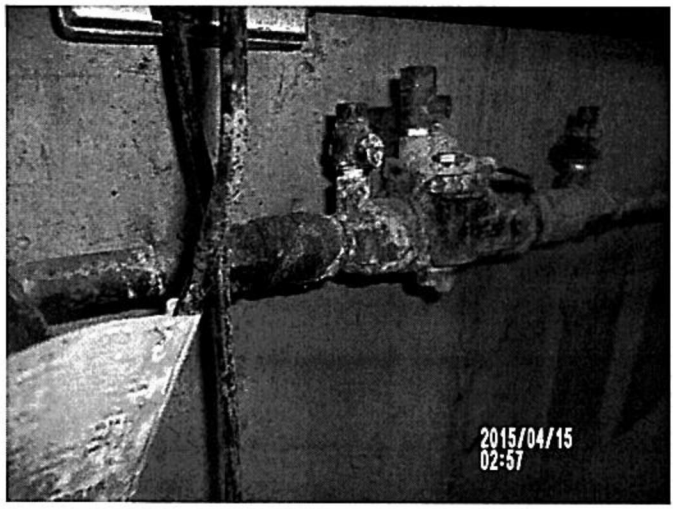
	**Photograph:** # 13. **Taken By:** Oscar Vazquez **Date Taken:** July 29, 2019 **Program:** ECA Unit **Entity:** Eureka WWTF **Permit:** MO-0039569 **Location:** Blowers Building **Description:** Turbo blowers.
	**Photograph:** # 14. **Taken By:** Oscar Vazquez **Date Taken:** July 29, 2019 **Program:** ECA Unit **Entity:** Eureka WWTF **Permit:** MO-0039569 **Location:** Blowers Building **Description:** Turbo blower ducts system.

	**Photograph:** # 15. **Taken By:** Oscar Vazquez **Date Taken:** July 29, 2019 **Program:** ECA Unit **Entity:** Eureka WWTF **Permit:** MO-0039569 **Location:** Effluent Structure **Description:** The three valves are manually operated to draw and control lagoon cell #3 outflows at three different depths. To some extent, the effluent structure design allows the operator to control the lagoon effluent blend.
	**Photograph:** # 16. **Taken By:** Oscar Vazquez **Date Taken:** July 29, 2019 **Program:** ECA Unit **Entity:** Eureka WWTF **Permit:** MO-0039569 **Location:** Effluent Structure **Description:** The effluent blend overflows and is conveyed by gravity to the UV disinfection unit.

	**Photograph:** # 17. **Taken By:** Oscar Vazquez **Date Taken:** July 29, 2019 **Program:** ECA Unit **Entity:** Eureka WWTF **Permit:** MO-0039569 **Location:** UV Disinfection System Building **Description:** Looking downstream: Parshall channel with mounted ultrasonic flow meter.
	**Photograph:** # 18. **Taken By:** Oscar Vazquez **Date Taken:** July 29, 2019 **Program:** ECA Unit **Entity:** Eureka WWTF **Permit:** MO-0039569 **Location:** UV Disinfection System Building **Description:** UV Disinfection Unit Control Panels are raised to the 100-year floodplain.

	**Photograph:** # 19. **Taken By:** Oscar Vazquez **Date Taken:** July 29, 2019 **Program:** ECA Unit **Entity:** Eureka WWTF **Permit:** MO-0039569 **Location:** UV Disinfection System Building **Description:** Looking upstream, after the Parshall channel, it can be observed that one of the UV disinfection banks and some modules were out of service at the time of inspection.
	**Photograph:** # 20. **Taken By:** Oscar Vazquez **Date Taken:** July 29, 2019 **Program:** ECA Unit **Entity:** Eureka WWTF **Permit:** MO-0039569 **Location:** UV Disinfection System Building **Description:** Out-of-service bulb module is shown in the photo.

	**Photograph:** # 21. **Taken By:** Oscar Vazquez **Date Taken:** July 29, 2019 **Program:** ECA Unit **Entity:** Eureka WWTF **Permit:** MO-0039569 **Location:** UV Disinfection System Building **Description:** Flow meter controller.
	**Photograph:** # 22. **Taken By:** Oscar Vazquez **Date Taken:** July 29, 2019 **Program:** ECA Unit **Entity:** Eureka WWTF **Permit:** MO-0039569 **Location:** Effluent Lift Station (LS) **Description:** In the foreground, the effluent LS and LS control panel. In the background, effluent check valves vault.

	**Photograph:** # 23. **Taken By:** Oscar Vazquez **Date Taken:** July 29, 2019 **Program:** ECA Unit **Entity:** Eureka WWTF **Permit:** MO-0039569 **Location:** WWTF Office/Lab Building **Description:** Backflow preventer.
	**Photograph:** # 24. **Taken By:** Oscar Vazquez **Date Taken:** July 29, 2019 **Program:** ECA Unit **Entity:** Eureka WWTF **Permit:** MO-0039569 **Location:** WWTF Office/Lab Building **Description:** Backflow preventer.

Attachment #4 – ESP Report and Sample Results
Eureka WWTF
August 20, 2019
Page 1 of 1

DNR ESP Report dated July 3, 2017 (Collect Date June 14, 2017)					
Parameter	Units	2017 ESP Report Results	Permitted Interim Effluent Limitations (Daily Maximum)	Permitted Interim Effluent Limitations (Weekly Average)	Permitted Interim Effluent Limitations (Monthly Average)
BOD	mg/L	3.96*	--	45	30
TSS	mg/L	<5*	--	45	30
E. Coli	mpn/100 ml	103.9	--	630	126
Oil & Grease	mg/L	<2	15	--	10
Field pH	SU	7.72**	--	--	--
Field Temperature	°C	27.8	--	--	--

*Sample collected before UV disinfection
**Permit requires a minimum pH of 6 and a maximum pH of 9

Missouri Department of Natural Resources
Environmental Services Program
PO Box 176 Jefferson City MO 65102-0176

RESULTS OF SAMPLE ANALYSES

LDPR/Job Code: FECMP
Program, Contact: WPC Chelsey Bodenstab

Order ID: 170615001

Chelsey Bodenstab
Water Pollution Control Branch

Report Date: 7/3/2017

Sample: AC99652

Facility ID: MO0039659 **Customer #:** 172004
Site: Eureka Wastewater Treatment Facility **County:** St. Louis
Collect Date: 6/14/2017 9:08:00 AM **Collector:** CHRIS RADCLIFFE **Affiliation:** ESP

Comments: Outfall #004. Automated sampler collected ~ 22 hrs of 24-hr composite. Collected before UV disinfection.

Test	Parameter/Method	Result	Units	Qualifier(s)
Biochemical Oxygen Demand	Biochemical Oxygen Demand/SM 5210-B	3.96	mg/L	
Total Suspended Solids (TSS) / NFR	Total Suspended Solids (TSS) / NFR/SM 2540-D	<5	mg/L	06, ND

Sample: AC99653

Facility ID: MO0039659 **Customer #:** 172005
Site: Eureka Wastewater Treatment Facility **County:** St. Louis
Collect Date: 6/14/2017 11:50:00 AM **Collector:** CHRIS RADCLIFFE **Affiliation:** ESP

Comments: Grab: Outfall #004.

Test	Parameter/Method	Result	Units	Qualifier(s)
E. coli - IDEXX	E. coli - IDEXX/SM 9223B	103.9	mpn/100ml	
Field pH	Field pH/EPA 150.1	7.72	pH Units	
Field Temperature	Field Temperature/EPA 170.1	27.8 C		
Oil And Grease	Oil And Grease/1664B	<2	mg/L	ND

The analysis of this sample was performed in accordance with procedures approved or recognized by the U. S. Environmental Protection Agency.

Data Qualifier(s)

06	Estimated value, QC data outside limits	ND	Not detected at reported value

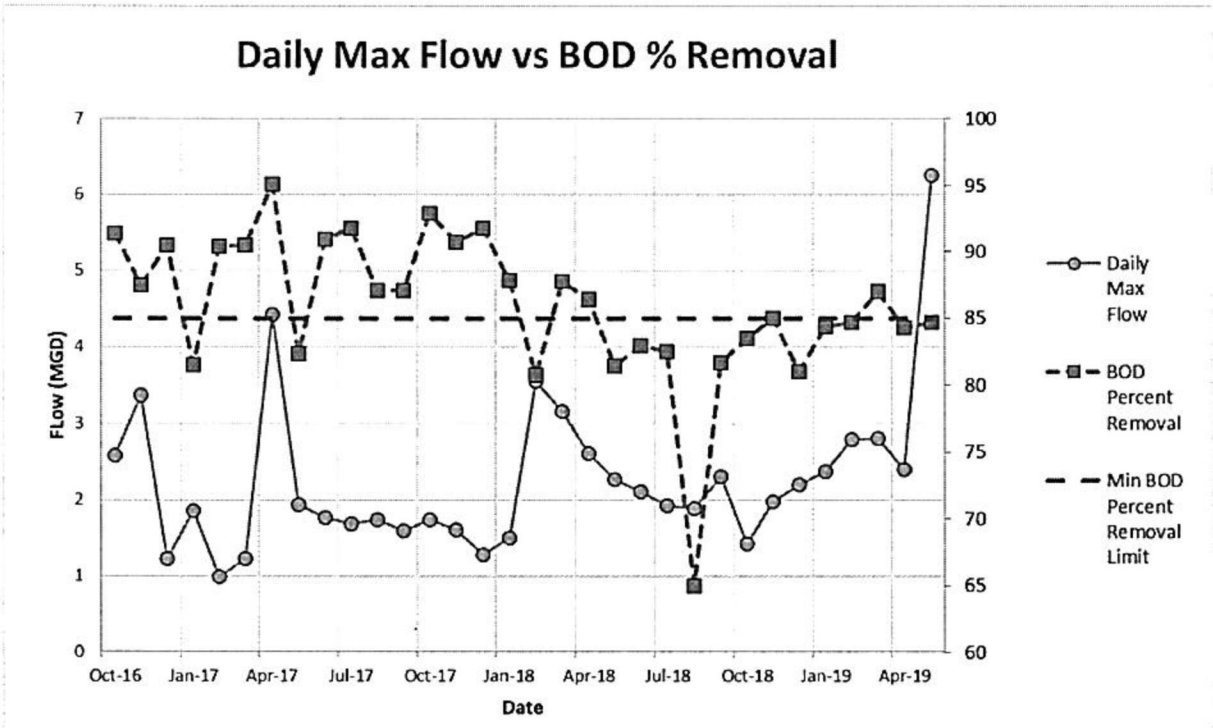
Kevin Thoenen

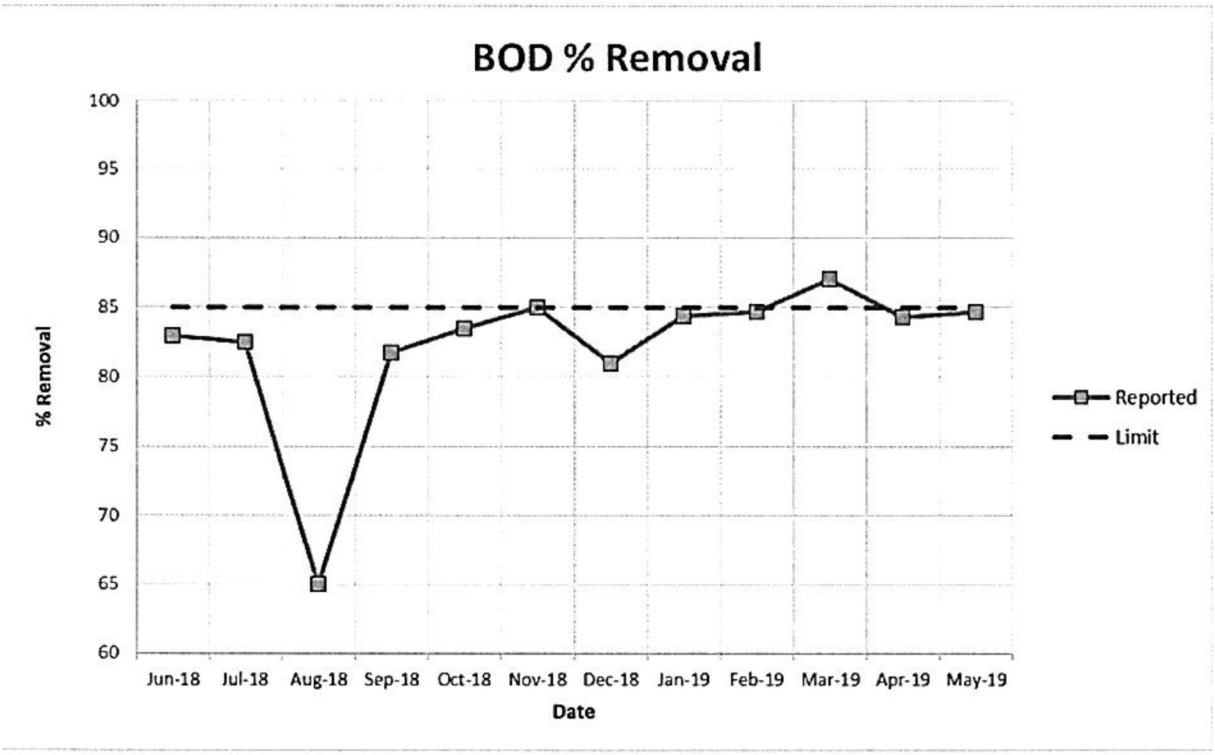
Kevin Thoenen,
Laboratory Manager
Environmental Services Program
Division of Environmental Quality

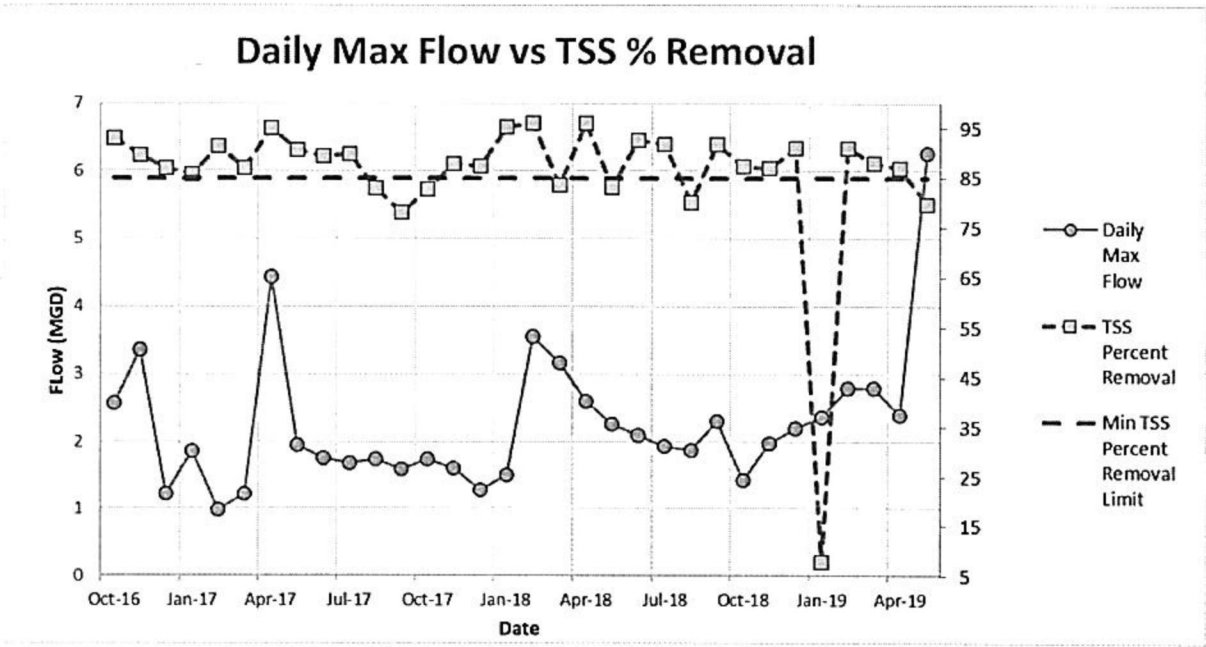
Monitoring Period	BOD, 5-day, 20 deg. C			Total Suspended Solids (TSS)		
	Influent (mg/L)	Effluent (mg/L)	Percent Removal (%)	Influent (mg/L)	Effluent (mg/L)	Percent Removal (%)
5/31/2019	--	21.8	**84.7**	--	22	**79.7**
4/30/2019	--	24	**84.3**	--	13.25	87.0
3/31/2019	--	13.75	87.0	--	7.5	88.0
2/28/2019	--	16.25	**84.7**	--	11	90.9
1/31/2019	--	23.6	**84.4**	--	17.4	**7.9**
12/31/2018	--	23.5	**81.0**	--	11.75	91.0
11/30/2018	--	21.5	85.0	--	11	87.0
10/31/2018	--	23.4	**83.5**	--	20.8	87.4
9/30/2018	--	26.5	**81.7**	--	13.5	91.8
8/31/2018	--	22	**65.0**	--	22	**80.0**
7/31/2018	--	15.75	**82.5**	--	12	91.7
6/30/2018	--	18.75	**83.0**	--	13.5	92.5
5/31/2018	128.4	23.8	**81.5**	116.6	19.6	**83.2**
4/30/2018	132.5	18	86.4	161	6.5	96.0
3/31/2018	106	13	87.7	47	7.75	**83.5**
2/28/2018	79.25	15.25	**80.8**	246.5	9.75	96.0
1/31/2018	110.4	13.4	87.9	185.8	8.8	95.3
12/31/2017	163.5	13.5	91.7	92.75	11.75	87.3
11/30/2017	126.46	11.8	90.7	116.72	14.4	87.7
10/31/2017	140.5	10	92.9	62.25	10.75	**82.7**
9/30/2017	98.5	12.75	87.1	58.25	12.75	**78.1**
8/31/2017	89.8	11.6	87.1	67.8	11.6	**82.9**
7/31/2017	109.5	9	91.8	108	11	89.8
6/30/2017	101.75	9.25	90.9	75.25	8	89.4
5/31/2017	77	13.6	**82.3**	84.2	8	90.5
4/30/2017	106.25	5.25	95.1	103.75	5.25	94.9
3/31/2017	136.25	13	90.5	65.5	8.5	87.0
2/28/2017	156.2	15	90.4	136.2	11.6	91.5
1/31/2017	98.75	18.25	**81.5**	77.25	11	85.8
12/31/2016	136.25	13	90.5	65.5	8.5	87.0
11/30/2016	121	15.2	87.4	100.8	10.6	89.5
10/31/2016	113.5	9.75	91.4	139.5	9.75	93.0

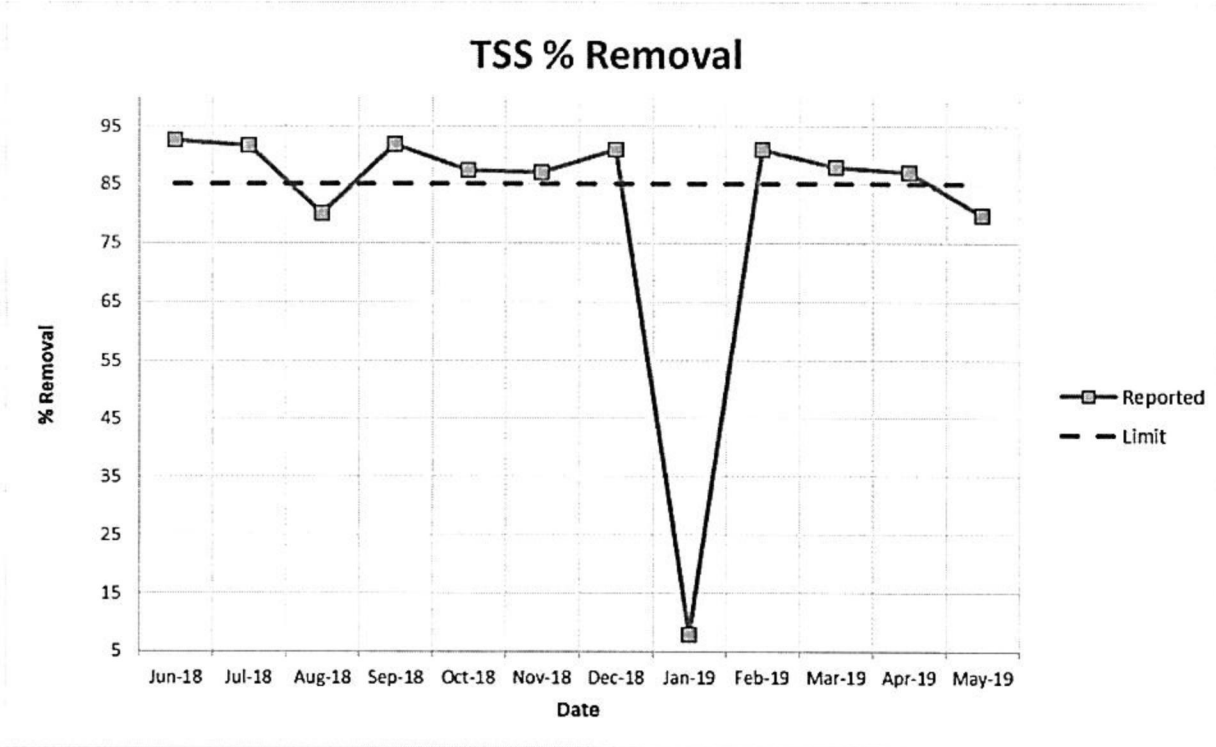
In red, the values imported directly from the eDMR system

In **bold/bold**, removal efficiencies below the required 85%


Daily Max Flow vs BOD % Removal
FLow (MGD)
0
1
2
3
4
5
6
7
60
65
70
75
80
85
90
95
100
Oct-16
Jan-17
Apr-17
Jul-17
Oct-17
Jan-18
Apr-18
Jul-18
Oct-18
Jan-19
Apr-19
Date
Daily Max Flow
BOD Percent Removal
Min BOD Percent Removal Limit


BOD % Removal
% Removal
60
65
70
75
80
85
90
95
100
Jun-18
Jul-18
Aug-18
Sep-18
Oct-18
Nov-18
Dec-18
Jan-19
Feb-19
Mar-19
Apr-19
May-19
Date
Reported
Limit


Daily Max Flow vs TSS % Removal
FLow (MGD)
0
1
2
3
4
5
6
7
5
15
25
35
45
55
65
75
85
95
Oct-16
Jan-17
Apr-17
Jul-17
Oct-17
Jan-18
Apr-18
Jul-18
Oct-18
Jan-19
Apr-19
Date
Daily Max Flow
TSS Percent Removal
Min TSS Percent Removal Limit


TSS % Removal
% Removal
5
15
25
35
45
55
65
75
85
95
Jun-18
Jul-18
Aug-18
Sep-18
Oct-18
Nov-18
Dec-18
Jan-19
Feb-19
Mar-19
Apr-19
May-19
Date
Reported
Limit

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM

ANNUAL INFLOW AND INFILTRATION REPORT

This report covers the period of:
January 1, 20____ to December 31, 20____

GENERAL INFORMATION

FACILITY NAME		
PERMIT NUMBER	COUNTY	
MILES OF COLLECTION SYSTEM (INCLUDING FORCEMAINS)	PEAK EFFLUENT FLOW RATE (MGD)	AVERAGE EFFLUENT FLOW RATE (MGD)

MANHOLE OBSERVATION

Number of manholes observed:

Dates observed:

RESULTS – MANHOLES REPLACED

Number of manholes replaced:

Types of manholes replaced:

Dates of replacement:

RESULTS – MANHOLES REHABBED

Number of number of manholes rehabbed:

Types of manholes rehabbed:

Dates of rehabilitation:

SMOKE TESTING

Linear feet of lines tested:

Dates observed:

SMOKE TESTING RESULTS – LINES CLEANED

Linear feet of lines cleaned:

Date and method used to clean lines (jet, pig, auger):

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM

ANNUAL INFLOW AND INFILTRATION REPORT

This report covers the period of:
January 1, 20____ to December 31, 20____

SMOKE TESTING RESULTS – LINES REPLACED
Linear feet of lines replaced:
Date, type of line replaced, and type of new line:
SMOKE TESTING RESULTS – LINES REHABBED
Linear feet of lines rehabbed:
Date, type of line rehabbed, and rehab material:
CCTV (CLOSED-CIRCUIT TELEVISION)
Linear feet viewed:
Dated observed:
LAMPHOLE OBSERVATION
Number observed:
Dates observed:
RESULTS – LAMPHOLES REPLACED
Number replaced:
Dates replaced:
SANITARY SEWER OVERFLOWS (SSOs)
Number of dry weather SSOs:
Number of wet weather SSOs:
BASEMENT/BUILDING BACKUPS
Number of dry weather basement/building backups:
Number of wet weather basement/building backups:
Mail completed copy to: MISSOURI DEPARTMENT OF NATURAL RESOURCES WATER PROTECTION PROGRAM OPERATING PERMITS SECTION P.O. BOX 176 JEFFERSON CITY, MO 65102-0176