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| Exhibit No.: | |
| Issues: | Eureka Acquisition |
| Witness: | Brian W. Eisenloeffel |
| Exhibit Type: | Surrebuttal |
| Sponsoring Party: | Missouri-American Water Company |
| Case No.: | WA-2021-0376 |
| Date: | December 17, 2021 |

**MISSOURI PUBLIC SERVICE COMMISSION**

**CASE NO. WA-2021-0376**

# SURREBUTTAL TESTIMONY

**OF**

**BRIAN EISENLOEFFEL**

**ON BEHALF OF**

**MISSOURI-AMERICAN WATER COMPANY**

**SURREBUTTAL TESTIMONY**
**BRIAN W. EISENLOEFFEL**
**MISSOURI AMERICAN WATER COMPANY**
**CASE NO.: WA-2021-0376**

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**AFFIDAVIT**

I, [Witness Name], under penalty of perjury, and pursuant to Section 509.030, RSMo, state that I am [Job Title] for [Company Name], that the accompanying testimony has been prepared by me or under my direction and supervision; that if inquiries were made as to the facts in said testimony, I would respond as therein set forth; and that the aforesaid testimony is true and correct to the best of my knowledge and belief.

Brian Eisenloeffel

December 17, 2021
Dated

**SURREBUTTAL TESTIMONY**

**BRIAN W. EISENLOEFFEL**

## I. INTRODUCTION

**Q. Please state your name and business address.**

A. My name is Brian W. Eisenloeffel, and my business address is 727 Craig Road, St. Louis, MO 63141.

**Q. Are you the same Brian W. Eisenloeffel who previously submitted direct testimony in this proceeding?**

A. Yes.

## II. OTHER TOPICS

**Q. On page three of his Rebuttal Testimony, Staff witness Curt Gateley discusses certain records the Staff obtained from the Missouri Department of Natural Resources (MDNR) concerning the Eureka sewer system. Are you familiar with the DNR inspection reports referenced by Staff witness Gateley?**

A. Yes. The referenced MDNR inspection reports and Letters of Warning were obtained by Missouri American Water Company (MAWC) through the same process used by Staff, in in a formal request May 13, 2020. This is a standard part of our due diligence process on all potential acquisitions by MAWC.

**Q. Is the conclusion of Staff witness Gateley regarding the "condition of the sewer collection and treatment systems" based on these records accurate?**

A. No. A review of files from the MDNR does not provide an accurate picture of the condition of the wastewater system. The letters and inspection reports must be considered in full to provide context. It would not be appropriate to pick select events reported to the MDNR

on the operation of the Eureka wastewater system and make a condition assessment.

**Q. In Staff witness Gateley's Rebuttal Testimony (p. 3), he states, "The sewage treatment facility has failed to meet permit effluent limitations since at least October 2016 for biological oxygen demand," and sites a MDNR inspection report, dated August 20, 2019. Is this an accurate statement?**

A. No. The August 20, 2019 letter (attached here as **Schedule BWE-8**) is a Referral Notice of Violation (RNOV) to the City of Eureka summarizing a series of events, actions, and inspections. In the inspection report included with the letter, the MDNR describes the system and its compliance history, makes new observations as part of the inspection, makes an assessment, and identifies permit violations and required actions.

**Q. Did the Eureka system fail to meet permit "effluent limitations," as alleged?**

A. No. "Effluent limitations…biological oxygen demand" refers to biological oxygen demand (BOD) effluent limits found in Table A-1 within the operating permit attached as **Schedule BWE-2** of my Direct Testimony. The MDNR does not reference any findings of biological oxygen demand (BOD) exceedances in the RNOV. The MDNR does cite BOD and total suspended solids (TSS) "removal efficiencies."

**Q. Why is this distinction important?**

A. Limits and efficiencies are two completely different parameters found within the operating permit attached as **Schedule BWE-2** of my direct testimony. On July 10, 2019, the City of Eureka met with MDNR for compliance assistance. A MDNR memorandum documenting the meeting is attached as **Schedule BWE-9**. In this meeting, as well as in the RNOV, the City contends that the problem is a diluted influent or sewage that is too

"clean" to meet a percent removal standard. The MDNR representatives at that meeting agreed with this assessment.

**Q. Is diluted influent to a wastewater plant a good indication of the condition of the sewer collection and treatment system?**

A. No. Diluted influent at the sewer plant is an indication that a large amount of clean water is entering a sewer system. Common sources would be a water main break, a large customer with very clean effluent, or inflow and infiltration (I&I). In the July 10, 2019 compliance meeting (**Schedule BWE-9**) the MDNR suggests that a permit modification could put the City back in compliance. This suggestion was confirmed by MAWC in an email with MDNR Compliance Chief, Kristi Savage-Clarke (see **Schedule BWE-10**). In that email, the calculations and regulations are explained in detail. Part of the calculations are used to quantify inflow and infiltration. The Eureka inflow and infiltration calculations are below "excessive", as established by federal regulation limits, making the system eligible for such a change. A compliance violation that can be fixed with a change to the permit adjusting how BOD is measured does not indicate that a system is in poor condition.

**Q. In his summary of the condition of the wastewater system on p. 4 of his Rebuttal Testimony, Staff witness Gateley makes several comments regarding I&I. Are those statements and assumptions accurate?**

A. No. Staff witness Gateley references the RNOV (**Schedule BWE-8**) incorrectly in drawing a conclusion as to the condition of the wastewater systems. The RNOV cites the City with a reporting violation as a condition of its operating permit (**Schedule BWE-2)** to my Direct Testimony. At no time does the MDNR conclude that I&I is "excessive," as staff witness Gateley states. In fact, MDNR Compliance Chief, Kristi Savage-Clarke comes to the

opposite conclusion. She finds that I&I is not excessive per the federal regulations and her calculations (See **Schedule BWE-10**).

**Q. Also, in his summary of the condition of the wastewater system on p. 4 of his Rebuttal testimony, Staff witness Gateley makes several comments regarding sanitary sewer overflows (SSO). Are those statements and assumptions accurate?**

A. No. Two events were referenced specifically – December of 2015 and April of 2017. These were historic events with flood levels on the Meramec River reaching never before seen levels, according to records from the National Weather Service (See **Schedule BWE-11**). The floods damaged homes and businesses and forced the closure of interstates.

Moreover, the RNOV (**Schedule BWE-8**) is cited as the source and incorrectly used as a condition assessment. In this document, the MDNR again sites the City of Eureka for reporting violations with respect to the December 2015 and April 2017 floods. Historic flooding in the region and the failure to report this to the MDNR is not an indication of a wastewater system in poor condition.

**Q. Staff witness Gateley references five other SSO events; "March of 2015, November of 2016, April, July, and August of 2019" (Reb., p. 4). What is the cause of these events?**

A. The March 2015 event was from a broken force main. The November 2016 event was from an equipment malfunction where grease in a lift station caused a level sensor to malfunction, resulting in a pump not coming on and the lift station overflowed. Neither of these events are indications of a sewer system not in good condition.

The three 2019 events are all reported by the City as events of local flooding within the City due to excessive rain. Flooding is not an indication of a sanitary sewer in a bad

condition. According to the United States Environmental Protection Agency (EPA) website, the EPA estimates that 23,000 – 75,000 SSOs occur annually nationwide. For a couple to occur over a multiyear period in a wastewater system the size of Eureka's is not desirable, but is accepted and must be reported to MDNR to maintain compliance.

**Q. Is the City of Eureka taking measures to address flooding and the impact it has on the wastewater system?**

A. Yes. The City of Eureka is in the process of permitting a levee and other flood control projects to protect the community from future flooding.

**Q. Is the publicly available information used by Staff witness Gateley being properly used to demonstrate the condition of the Eureka sewer collection and treatment systems?**

A. No. MAWC believes that the Eureka sewer collection system and the treatment systems are in good condition. The sewer treatment plant is operating and functioning as it was designed and permitted by the MDNR to do. The BOD information is not properly used by Staff witness Gateley. It is not an indication of plant performance as was implied. The claim by Staff witness Gateley of "excessive I&I" is also inaccurate. The witness fails to cite any sources, data or studies to support this. The MDNR does not make any conclusions that support this in the documents I have reviewed. Staff witness Gateley also uses SSOs associated with historic floods to somehow conclude that the wastewater systems are not in good condition, although five of the seven SSOs referenced are associated with flooding. MAWC believes that the Eureka wastewater system is in good condition.

**Q. The Staff Recommendation attached (Schedule CBG-r2 to Staff witness Gateley's Rebuttal Testimony, p. 19) provides observations of the sewer system. Are those**

**observations accurate today?**

A. No. Since the time Staff observed the wastewater plant, the City has replaced the air lines from the blower building to the lagoon to eliminate several air leaks. In addition, work was done on the basin to address the "large areas of surface boils" included in Staff's observations. MAWC employees noted on a recent visit that the repairs have resulted in reduced air flow requirements, allowing the system to operate on one blower rather than multiple blowers as it had in past visits.

**Q. Does this conclude your surrebuttal testimony?**

A. Yes.

Missouri Department of NATURAL RESOURCES
dnr.mo.gov
Michael L. Parson, Governor
Carol S. Comer, Director

CERTIFIED MAIL 9214 8969 0099 9790 1415 6176 82
RETURN RECEIPT REQUESTED

August 20, 2019

Mr. Craig Sabo, City Administrator
City of Eureka
100 City Hall Drive
P.O. Box 125
Eureka, MO 63025

**REFERRAL NOTICE OF VIOLATION**
**WATER POLLUTION CONTROL BRANCH RNOV SL190028**

Dear Mr. Sabo:

Staff from the Department of Natural Resources (Department) conducted an inspection on July 29, 2019 of the Eureka Wastewater Treatment Facility located at Truitt Drive, Eureka, Missouri in St. Louis County. The entity operates under the authority of Missouri State Operating Permit MO0039659.

The enclosed report documents the serious and significant violations that were identified. A Referral Notice of Violation (RNOV) is being issued for the violations.

This case is being referred to the Department's Water Pollution Control Branch (WPCB) enforcement for further action. If you have any questions regarding the status of the enforcement case or would like to meet with Department staff to discuss compliance requirements, please contact enforcement staff by mail at the Missouri Department of Natural Resources, Water Protection Program, ATTN: WPCB Compliance & Enforcement Section, P.O. Box 176, Jefferson City, Missouri 65102, or by phone at (573) 751-1300.

Sincerely,

ST. LOUIS REGIONAL OFFICE

Dorothy Franklin
Regional Director

EJG/OVM/deb

Enclosures

c:

**Missouri Department of Natural Resources**
**St. Louis Regional Office**
**Report of Inspection**
**Eureka Wastewater Treatment Facility**
**Truitt Drive, Eureka, Missouri 63025**
**St. Louis County**
**MO-0039659**
**August 20, 2019**

## Introduction

Pursuant to Section 644.026.1 of the Missouri Clean Water Law, I, Oscar Vazquez of the Missouri Department of Natural Resources (Department) St. Louis Regional Office (SLRO), conducted a routine water pollution compliance inspection of the Eureka Wastewater Treatment Facility (WWTF) located at Truitt Drive, Eureka, Missouri in St. Louis County on July 29, 2019. The City of Eureka (City or Permittee) is the owner and continuing authority of the Eureka WWTF, a Publicly Owned Treatment Works (POTW) operating under the Missouri State Operating Permit (MSOP) MO-0039659. This water pollution control inspection was conducted to determine the facility's compliance with the Missouri Clean Water Law, Missouri Clean Water Commission Regulations, and the MSOP MO-0039659. The inspection serves also as a follow-up to the Letter of Warning (LOW) issued by the Department on June 25, 2019 for significant violations of MSOP MO-0039659. This report presents the findings and observations made during the compliance inspection of the Eureka WWTF including file review, site visits, and communications with entity representatives.

Participants included:

*Missouri Department of Natural Resources, St. Louis Regional Office*

| | | |
|---|---|---|
| Oscar Vazquez | Environmental Engineer | (314) 416-2460 |
| oscar.vazquez@dnr.mo.gov | | |

*City of Eureka*

| | | |
|---|---|---|
| David Ricks | WWTP Operator | (636) 938-5233 |
| eurekawwtp@yahoo.com | | |

## Entity Description and History

The Eureka WWTF is located at Truitt Drive, Eureka as shown in Figure 1 of Attachment #2 and is permitted with MSOP MO-0039659. The facility's permit was last issued on June 1, 2018. The permit will expire on September 30, 2022. MSOP MO-0039659 authorizes the discharge of treated facility effluent through Outfall #004. The wastewater treatment described under the permit consists of an influent lift station, three-cell aerated lagoon with fine-bubble air diffusers, Aquamats®, and recirculation pumps, ultraviolet (UV) disinfection, and effluent pump station. The sludge is retained in the lagoon. The facility does not have materials stored or conduct operations in a manner that would cause the discharge of pollutants via stormwater.

The facility has a permitted design flow of 2.8 million gallons per day (MGD) and an actual flow of 1.6 MGD and is authorized to discharge through Outfall #004. The facility's average reported monthly average flow between October of 2016 and May of 2019 is 1.52 MGD. The permit lists the receiving stream as the Meramec River which is listed on the 303(d) list of impaired waters. The location of the facility relative to the receiving stream in show in Figure 2 of Attachment #2. MSOP MO-0039659 requires that the use or operation of the Eureka WWTF be under the supervision of a Certified "C" Operator. According to the facility's operating permit renewal application, received on November 21, 2017, the facility's current operator is David W. Ricks.

According to an online MO DNR Operator Certification Information System query on July 16, 2019, Mr. Ricks is certified as a Level "A" wastewater operator under certification number 10232, which will expire on April 30, 2021. Based on the online query, Mr. Ricks has obtained all necessary renewal training credits for renewal of operator certification. According to Department records, the Permittee is not currently required to have a Pretreatment Program or does not have an approved pretreatment program. Department staff last conducted inspections of the operation and maintenance of the wastewater treatment plant and the associated sanitary sewer collection system on September 20, 2017. The following list summarizes relevant issues described in the pertinent Department inspection reports dated October 19, 2017 (Eureka Sanitary Sewer Collection System) and October 20, 2019 (Eureka WWTF).

Eureka Sanitary Sewer Collection System: The October 19, 2017 inspection report was issued with a LOW for the violations identified in the report. Namely:

i. The City failed to submit the 2016 inflow and infiltration (I&I) report detailing efforts to locate and eliminate sources of excessive inflow and infiltration into the collection system, in accordance with Special Condition #11 of MSOP MO-0039659.

ii. The City failed to submit a written five day report for three sanitary sewer overflow events which began on April 28, 2017 and December 30, 2015.

iii. The City failed to develop and implement a program for the repairs and maintenance of the collection system as required by Special Condition #11 of MSOP MO-0039659.

Based on my review of the Department files, the City submitted a response to the October 19, 2017 LOW on or around November 15, 2017. Then the Department mailed a letter to the Permittee on January 9, 2018 where, among other matters, the Department informed the City that the required actions in the October 19, 2017 sanitary sewer collection system inspection report would be evaluated in a separate letter. The Department then issued a Return-to-Compliance letter on November 20, 2018 noting that a sufficient response was received to the required actions in the October 19, 2017 sanitary sewer collection system inspection report. The 2016 I&I report was found in the Department files at the time of review and my comments regarding this submission are provided below. According to Department records, the Permittee provided the Department with a copy of the City of Eureka's draft collection system operation and maintenance manual on or around August 22, 2018.

I executed a search in the DNR SSO/Bypass Event System and reviewed Event ID #s 8477 and 8478 with starting dates on December 30, 2015 and Event ID # 10681 with a starting date on April 28, 2017. I then observed that the pertinent Five Day Report Sections have been completed for the aforesaid three events, as requested. However, Event ID #s 8478 and 10681 are still unsatisfactorily marked as ongoing under the pertinent Event Details Sections (**Referral Notice of Violation #1**).

Eureka WWTF: The October 19, 2017 inspection report was issued with a LOW for the violations identified in the report. Namely:

i. The City was required to submit a completed Form B2 – Application for Operating Permit, regarding renewal of its operating permit.

ii. The facility failed to develop or implement a Stormwater Pollution Prevention Plan (SWPPP) or apply for No Exposure Certification.

The Department issued a return to compliance letter on January 9, 2018 acknowledging receipt on November 20, 2017 of a sufficient response to the required actions in the October 19, 2017 Eureka WWTF inspection report.

Effluent limitations, monitoring requirements, and permit conditions, both standard and specific, that the Permittee is to follow are set forth in Tables A-1 to A-3 of the facility's MSOP. Monitoring requirements at Outfall #004 include weekly monitoring of flow, biochemical oxygen demand (BOD), total suspended solids (TSS), Escherichia Coliform (E. Coli) and ammonia as N; monthly monitoring of pH and oil and grease; and quarterly monitoring of total phosphorus, total nitrogen, total dissolved chromium VI, and total recoverable cadmium, chromium III, copper, lead, nickel and zinc. Tables A-1 to A-2 of the permit further require monthly influent sampling for BOD and TSS to evaluate the facility's removal efficiency. Tables B-1 and B-2 also presents instream monitoring requirements for total phosphorus and total nitrogen (quarterly, upstream) and total hardness (monthly, downstream). Compliance with the monitoring and reporting requirements as well as effluent limitations from October 2016 to May 2019 were reviewed prior to the inspection.

Regarding the reporting requirements, the Department files include a copy of an email sent by Heather Johnson of the Department on March 15, 2019, informing Mr. Ricks that Eureka WWTF's 2018 fourth quarter metals and instream monitoring reports were overdue. Ms. Johnson arranged a compliance assistance visit (CAV) at the SLRO at the request of the Permittee on April 10, 2019 to further discuss this issue. The Permittee then provided a responsive email on April 10, 2019 regarding the 2018 fourth quarter samples and has submitted a report of "Analysis Not Conducted" via the electronic Discharge Monitoring Report (eDMR) system, as per Ms. Johnson's advice during the CAV. A summary of the DMR data, submitted by the Permittee in accordance with Special Condition E.1 of MSOP MO-0039659, is included in Attachment #1 of this report. The reported levels of BOD, TSS, E. Coli, oil & grease, and pH in the effluent discharge were below the applicable effluent limitations during the period evaluated. A detailed analysis of the BOD and TSS removal efficiencies is provided in the Engineering Assessment Section of this report.

Mr. Ricks was informed during the compliance inspection of a relevant issue observed during my preliminary review of eDMR data and report information from MoCWIS. Namely, the monthly average ammonia total (as N) reported in May 2019 was significantly high, 352 mg/L. However, the daily maximum ammonia total (as N) reported during the same month was just 9.5 mg/L. He then showed me facility records supporting that the monthly average ammonia total (as N) in May 2019 was 3.52 mg/L. Thus, it looks like the ammonia concentration was erroneously entered into eDMR. We discussed the need to correct this issue. If the Permittee needs further assistance on entering data into the eDMR system, they should contact Ms. Heather Johnson, SLRO (**Referral Notice of Violation #2**).

The Eureka WWTF has a design sludge production of 400 dry tons per year. The sludge is retained in the lagoon. The Permittee is required by Section J, Record Keeping and Reporting Requirements, of Standard Conditions Part III dated March 1, 2015, which is adopted in Part D of MSOP MO-0039659, to submit annual sludge reports by January 28th of each year. No sludge reports where found in the Department files at the time of review. As per Standard Conditions Part III, Section J.2 of MSOP MO-0039659, permittees with wastewater treatment lagoons shall submit annual sludge reports only when sludge or biosolids are removed from the lagoon during the reporting period or when the lagoon is closed. Mr. Ricks asserted during a meeting held at the City Hall on July 10, 2019 that no sludge has been removed from the lagoon during its active/operational life. The City is required under Special Condition of MSOP MO-0039659 to receive approval from the Department for the method of sludge disposal prior to removal of sludge from the lagoon. The City then should prioritize the development and submission to the Department for review of a sludge management plan, to ensure that an approved plan is in place in time (**Recommendation #1**).

MSOP MO-0039659 Special Condition #E.10 requires the submittal of annual infiltration and inflow (I&I) reports by January 28th of each year. The report has to summarize among other information, the permittee's efforts to locate and eliminate sources of excessive I&I into the collection system during the previous calendar year. The following list summarizes the relevant issues discussed with Mr. Ricks regarding the I&I reports for the 2016-2018 reporting periods:

i. 2016 and 2018 I&I reports: These reports were not submitted as an attachment to the eDMR system, as required under Special Condition #E.1 of MSOP MO-0039659 and are not properly signed. The reports briefly outline the City's standard procedures for inspection, repairs, and maintenance of its collection system but do not provide a satisfactory summary with a suitable level of detail for the inspection, maintenance, and repairs to the collection system serving the facility for the respective reporting periods as well as planned activities for the upcoming calendar years (**Referral Notice of Violation #3.a**). A completed Department Annual Inflow and Infiltration report form [780-2690 (02-17)] should be included with upcoming I&I report submissions.

ii. 2017 I&I report: The report was not found in the Department files at the time of review (**Referral Notice of Violation #3.b**).

MSOP MO-0039659 Special Condition #E.10 also requires the development and implementation of a program for maintenance and repair of the collection system associated with the Eureka WWTF. According to Department records, the Permittee provided the Department with a copy of the City of Eureka's draft collection system operation and maintenance manual on or around August 22, 2018. During a BOD Removal Efficiency Compliance Assistance meeting between Eureka and Department staff on July 10, 2019 an option to develop a CMOM program and investigate and address sources of inflow and infiltration into the collection system as a means to address ongoing % BOD removal issues was discussed. Such a program should be consistent with US EPA's guidance for Evaluating Capacity, Management, Operation, and Maintenance (CMOM) Program/Model, as described under Special Condition #E.10. Mr. Ricks attended and indicated during the meeting that over 80% of the collection system is maintained and inspected annually by City personnel. At the request of the Permittee, the Department has provided further assistance regarding development of such a program. The I&I report and CMOM Program issues may be further evaluated and discussed, as needed, during the next collection system inspection.

In accordance with Special Condition C.1 of MSOP MO-0039659, the Permittee is to submit interim progress reports every 12 months from October 1, 2016, detailing progress made in attaining compliance with the final effluent limitations for ammonia. The following list summarizes the relevant issues discussed with Mr. Ricks regarding interim progress reports for the 2016-2018 reporting periods.

i. 2016 and 2017 Schedule of Compliance (SOC) reports: The reports were not found in the Department files at the time of review (**Referral Notice of Violation #4**).

ii. 2018 SOC report: The report includes an anticipated general schedule that involves requesting funding and completing a facility plan by October 2019, complete the design by October 2020, obtain a construction permit by March 2021, and complete construction by March 2022.

In accordance with Table A.3 of MSOP MO-0039659, the Eureka WWTF is required to submit acute Whole Effluent Toxicity (WET) test reports annually and one chronic WET test report per permit cycle. The chronic WET test report is due May 28, 2021. The acute WET test reports for the 2016 to 2018 calendar years were reviewed prior to the inspection. Unless mentioned below, these reports consist of a lab report with documentation supporting that the Acute Toxicity Test Methods 2000.0 and 2002.0 were followed for the determination of acute toxic units ($TU_a$) of *Pimephales promelas* (Vertebrate) and *Ceriodaphnia dubia* (Invertebrate) species, respectively, as required under Special Permit Condition E.22 of MSOP MO-0039659. I noticed during a second review of the 2017 WET test that the dilutions series used for the acute WET test in the 2017 report dated June 22, 2017, are indeed consistent with the dilution series required under Special Condition E.25 of the MSOP MO-0039659 issued on October 1, 2017 as modified on April 1, 2017, with expiration date on September 30, 2017. I informed Mr. Stephan during the compliance inspection that I found the 2017 WET test report satisfactory.

**Discussion of Inspection and Observations**

A part of the inspection I reviewed Department files for the Eureka WWTF and its associated collection system including previous inspection reports, correspondence, and the permit conditions of MSOP MO-0039659, to familiarize myself with the requirements specific to the facility. The inspection was conducted during normal business hours. Prior notification of the inspection was provided to ensure timely access to the site. Upon arrival at the facility, I identified myself, presented my credentials and outlined the purpose and scope of the inspection to Mr. David Ricks, Eureka WWTF Operations Supervisor. Mr. Ricks granted permission to access the site and accompanied me throughout the tour of the facility. Following a brief introduction, I briefed Mr. Ricks on the relevant issues that I intended to address during the inspection and identified with his assistance the main WWTF structures and unit operations and processes in facility map(s) (Figure #3 of Attachment #2). We then began with a tour of the facility guided by the facility map(s).

Next to the facility's headworks area, we observed the influent lift station (LS) (Photo #s 1-4 of Attachment #3) located adjacent to the fine screen building. The influent LS consists of a wet well equipped with four submersible pumps operated automatically by means of control floats and a pump control panel with an alarm system. At the time of the inspection when two pumps were operating, no relevant foul odors were noticed. If a high water alarm condition occurs, the high water alarm float activates the pump control panel audible/visual alarm system. The control panel is integrated into a SCADA system and features pump run indicator lights, hand-off-auto selector switches, and elapsed time meters. A tipping bucket rain gauge & sensor, also integrated into the SCADA system, is attached to the control panel as shown in Photo #4. The operator can access the SCADA system to remotely monitor the pump's control system and also receives alarm notifications by smartphone.

The LS pumps the influent to the facility's headworks where the wastewater flows first through a manual bar screen and then through a fine screen (Photo # 5) housed in the fine screen building. The fine screen is equipped with a brush and washer to remove the screenings. The screenings are further compacted and dewatered before being discharged into 300-pound trash containers (Photo #6) and landfilled approximately once a week. The screened effluent is then conveyed and discharged into the aerated lagoon (Photo #s 7-9) via two separate pipelines located along the western shore of the lagoon as shown in Figure 3 of Attachment #2. This configuration promotes a more uniform distribution of the influent. Mr. Ricks indicated that the lagoon's depth is approximately 17 feet. The lagoon is partitioned into three main cells by means of baffle curtains. The approximate location of the baffle curtains is also shown in Figure 3. The lagoon is operated in series with the two baffle curtain openings located at opposite ends of the lagoon to prevent short-circuiting. The baffle curtain openings facilitating flow of wastewater between cells are two-feet by two-feet and approximately six to seven feet deep. At the time of the inspection, the lagoon berm appeared to be well maintained with at least two feet of freeboard and rip-rap around the entire perimeter. It was also observed that the facility was properly surrounded by a fence with signage posted around the perimeter.

The facility description under the permit includes the use of Aquamats® in the treatment of wastewater at the Eureka WWTF. The Aquamats® process technology involves the use of high surface area media designed to promote and optimal environment for microbial communities that inhabit the wastewater environment and thus increase their bio-filtration capability and stability, leading to enhanced removal of BOD, TSS, and ammonia. The Aquamats® installed in the lagoon were observed during the inspection (Photo #8) with Mr. Ricks indicating that they have been discontinued by the manufacturer. He further explained that they have found this technology to not be cost-effective and thus the City has plans to eventually remove them. Mr. Ricks indicated that approximately 6.5 MGD of wastewater are recirculated from cell #3 back to cell #s 1 and 2 by means of a recirculation pump (Photo #10) that is operated manually. He further indicated that recirculation is aiding in decreasing the effluent ammonia concentrations. Mr. Ricks indicated that the recirculation pump drafts wastewater from a suction line about three to four feet deep. The return wastewater discharges into cell #1 by means of an open-pipe discharge while the discharge into cell #2 is manually controlled by means of a valve as shown in Photo #9. The recirculation pump was working with return wastewater being discharged into cell #1 at the time of the inspection.

The presence of different varieties of floating plants were observed mainly in lagoon cell #s 1 and 2 as shown in Photo #s 8 and 9. Mr. Ricks identified the prevalent floating plants in the lagoon as duckweed and water primrose. He further indicated that floating plants are physically removed or controlled (in the case of duckweed) with environment-friendly herbicides routinely. More frequent removal and/or control of floating plants is recommended (**Recommendation #2**). Mr. Ricks indicated that no sludge has been removed from the lagoon since it became operational. He explained that the facility applies a bio-augmentation product to the lagoon to promote degradation of accumulated sludge and optimize lagoon treatment to some extent. Mr. Ricks pointed out the fine bubbles widespread on the lagoon water surface, clarifying that this is nitrogen gas being removed as a product of the bio-augmentation process. He further indicated that the facility conducts sludge profile surveys routinely to monitor reduction efforts.

The lagoon is provided with an aeration system that includes three aeration pumps housed in the blowers building (Photo #s 11-14) and four main headers spanning the lagoon from east to west distributing compressed air and feeding fine-bubble air diffusers in the lagoon. Two of the aeration pumps are turbo blowers installed in 2016 and the third unit is an old blower used mainly as a backup. Mr. Ricks explained that routine maintenance of the old blower includes checking and replacing transmission belts, air filters, and oil. He also explained that the facility operator can access real-time operational data of the turbo blowers through the manufacturer's website. Similarly, the turbo blowers' diagnosis built-in features notify the operator when an air filter replacement is needed. Typically, one turbo pump operates at a time with the second one in stand-by and automatically turning on if the first turbo pump turns off. The facility has a backup generator located near the blowers building. At the time of the inspection, the aeration system was in operation. Mr. Ricks pointed out several areas in the lagoon –some of them next to header lines– where excessive bubbling, indicative of air leaks, was occurring. To some degree, the recent floods may have had an impact on the aeration system. Mr. Ricks further indicated that suitable check and repairs of the air distribution lines will be conducted timely (**Recommendation #3**).

The lagoon's effluent structure (Photo #s 15-16) was designed and constructed to draw cell #3 outflow at three different depths: three feet, nine feet, and fourteen feet below the water surface and into a concrete riser where the wastewater may be blended before overflowing into the influent Parshall flume channel. The operator can manually operate the draw-off pipe valves manually and control to some extent the effluent blend conveyed by gravity thru the Parshall flume and then thru the UV disinfection system (Photo #s 17-21). Prior to flowing through the UV disinfection system, the flow passes through a twelve-inch Parshall flume with a mounted flow meter transducer (Photo #17). The UV disinfection system was designed and constructed to house two UV disinfection banks inside a 28-inch channel. Each UV disinfection bank is to be equipped with six modules and six bulbs per module and to be operated continuously during the recreation season. At the time of the inspection, the UV disinfection system was not fully operational. Mr. Ricks explained that a recent flood had impacted the system and emphasized that a UV technician was expected the day of the inspection to make the repairs needed and bring the unit to fully operational within the coming days. He indicated that the bulbs are cleaned once during the season and the UV unit fully cleaned at the end of the season. Mr. Ricks indicated that the effluent lift station (LS) (Photo #22) is provided with two submersible pumps operated automatically by means of float controls as well as with an alarm system. The effluent is then pumped approximately two miles for discharge into the receiving stream.

After our facility walkthrough, we continued the inspection at the WWTF office/lab building where I inquired about monitoring, sampling, and analytical procedures performed onsite; discussed relevant findings observed during the file review conducted prior to the inspection; and reviewed facility records and documentation. Mr. Ricks explained that all the sampling required under the permit is conducted in-house along with the required operational monitoring, including daily measurements and recording of dissolved oxygen (DO) and pH levels within the lagoon. He showed me a bench sheet with the July 2019 monitoring readings. He further explained that the remaining lab/analytical work is conducted outside of the plant by a contract lab. The facility has a copy of Standard Methods for the Examination of Water and Wastewater.

When inquired about the facility sampling procedures, Mr. Ricks was unsure regarding the use of sample preservatives but indicated that the samples are expeditiously shipped to the contract lab for analysis following sample collection. He will be contacting the contract lab regarding this issue. It may be useful that the facility develops a cheat sheet that lists the parameters monitored under the permit along with the pertinent test methods, maximum hold times, and any preservatives to be used (**Recommendation #4**). Mr. Ricks indicated that the calibration of the pH and DO probes/meters is verified/checked, and performed if necessary, prior to use. He further indicated that manufacturer recommendations are followed for equipment maintenance and calibration. Certified pH buffers of 4, 7, and 10 used to calibrate the pH probe/meter were observed in closed containers. Mr. Ricks showed me copies of recent certificates of calibration for the flow meter (April 5, 2019), DO probe/meter (July 25, 2019), and pH probe/meter (July 25, 2019).

When inquired about the use of backflow preventers to protect potable water supplies, Mr. Ricks explained that the facility has three backflow preventers installed. We observed one of the plant's

backflow preventers installed in the WWTF office/lab building (Photo #s 23-24). A test tag dated July 2019 was fastened onto the backflow preventer plumbing fixture. To conclude the inspection, I inquired about the WWTF Operations & Maintenance (O&M) Manual available to the operator. Mr. Ricks showed me two reference documents with key operating procedures and summaries of facility operations: a wastewater lagoon troubleshooting document prepared by H&S Environmental and dated 2003 used by the operator as a guide to solving problems and optimizing the lagoon system; and a O&M manual prepared for the City by air diffusions system (A John Hinde Company).

**Sampling and Monitoring**

Sampling and monitoring were not conducted at the time of inspection. The last sampling event conducted by the Department's Environmental Services Program (ESP) was on June 14, 2017. A copy of the analytical report prepared by ESP, dated July 3, 2017 is included in Attachment #4. The analytical results reported by ESP for Outfall #4 samples collected and tested for selected parameters were below the permitted effluent limits. I informed Mr. Ricks during the compliance inspection that additional sampling may be conducted at a later date.

**Engineering Assessment**

In accordance with Table A-1 of MSOP MO-0039659, the Eureka WWTF is required to meet BOD and TSS removal efficiencies of 85 percent or more as a monthly average. An analysis of percent removal for both BOD and TSS between October 2016 and May 2019 is included in Attachment #5 of this inspection report. Attachment #5 shows that the facility has failed to satisfy the required 85 percent BOD and 85 percent TSS removal efficiencies several times during the October 2016 through May 2019 period evaluated. Further, the Permittee has consistently failed to meet the required BOD removal efficiencies since approximately June 2018 (**Referral Notice of Violation #5.a**). The lowest reported percent removals were 65 percent for BOD in August of 2018 and 7.9 percent for TSS in January of 2019.

The lowest percent removal of TSS in January 2019 warranted further investigation during the compliance inspection. Mr. Ricks was informed during the compliance inspection of this relevant issue. He showed me facility records supporting that the influent and effluent monthly average TSS in January was 72 and 17.4 respectively, which translates to a TSS percent removal of 76. Therefore, it looks like the TSS removal efficiency was erroneously entered into eDMR. We discussed the need to correct this issue (**Referral Notice of Violation #5.b**). If the Permittee needs further assistance entering data into the eDMR system they should contact Ms. Heather Johnson, SLRO. The percent removals were plotted against reported daily maximum flows for comparison and are included in Attachment #5 of this report for reference.

A compliance assistance visit (CAV) was held at the DNR SLRO on April 10, 2019 to further discuss the facility's failure to satisfy the required BOD and TSS removal efficiencies described above. During the CAV, Mr. Ricks indicated to Ms. Heather Johnson with DNR, that they do not anticipate seeing and end to these exceedances until the City completes major upgrades at the plant

to comply with their schedule of compliance (compliance with the final effluent limits for ammonia under the permit must be achieved by October 2022). The failure to meet removal efficiencies as required under the permit was further acknowledged by Mr. Ricks on February 1, 2019 via email to Ms. Johnson. Mr. Ricks further outlined in the 2/1/2019 email the steps that have been taken so far towards resolving the issue, including: examining and making repairs to the collection system to prevent I&I, looking at dilutions of wastewater from businesses and recreation parks, and further researching the treatment process of the lagoon involving the effect of algae, duckweed, and other aquatic plants on the treatment of the lagoon system. As a side note, Mr. Ricks also indicated that, in compliance with future ammonia removal, the City is also researching treatment processes to help remove and filter BOD and TSS, in addition to ammonia.

The Department issued a Letter of Warning (LOW) on June 25, 2019 for significant violations of MSOP MO-0039659 involving failure to meet the BOD 85% removal efficiency for the monitoring periods between 7/31/2018 and 12/31/2018. A meeting was held at the City Hall on July 10, 2019 between DNR and City staff to provide further BOD Removal Efficiency Compliance Assistance. Three (3) options were discussed towards addressing ongoing % removal exceedances:

i. Develop a CMOM program and investigate and address sources of inflow and infiltration into the collection system.

ii. Demonstrate justification for a permit modification, namely that excessive I&I is not the cause of dilute influent.

iii. Enter into an administrative order of consent (AOC) with Enforcement to implement a long-term plan to address % removal issues and upcoming final ammonia limits.

The Department recommended entering into an AOC.

The Department received on around July 31, 2019 a response to the 6/25/2019 LOW. This response summarizes the steps that the facility will take towards resolving the significant violations outlined in the 6/25/2019 LOW, as follows. The City is confident that simply relocating the sampling station will lead to compliance:

i. The City has determined that the sampling station is incorrectly located after the wastetech filter screen. The City will move the sampling station before the screen and manhole structure to collect samples prior to any treatment processes. Also, the City will conduct wastewater quality control testing by an independent lab to verify current lab results.

ii. The City will obtain wastewater quality and flows from that which Six Flags discharges to the City's collection system to determine the extent to which their waterpark backwash is diluting the City's influent. Additionally, the City will collect samples throughout the collection system to verify concentrations of wastewater being dispensed to the WWTP.

Mr. Jeff Crannick with DNR SLRO conducted a site visit on August 2, 2019 and followed up with an email on the same day acknowledging that collecting influent samples at the manhole located right before the influent pump station will satisfy the permit requirement of collecting the sample before any treatment process. Mr. Crannick also provided further details regarding the City's plans to better characterize the Six Flag discharge. Namely, the City plans to take weekly samples for a period of a month or more to establish a trend of the BOD and TSS content to help determine if this is a source of low solids content in the WWTP influent. If it is determined that this is not the source, then the City will investigate other potential I&I issues that could be contributing to this. The City is showing commitment to continue their work efforts towards resolving this issue satisfactorily. However, this significant non-compliance is still an ongoing and substantial concern that needs to be resolved in a timely manner.

**Compliance Determination, Violations, and Required Actions**

A CAV was held at the SLRO on April 10, 2019 to discuss the facility's failure to consistently satisfy the required BOD and TSS removal efficiencies since approximately June 2018. The City then indicated that they do not anticipate seeing an end to these exceedances until the major plant upgrades to comply with their schedule of compliance under Special Condition #C of MSOP MO-0039659 are completed. The Department issued a LOW on June 25, 2019 for significant violations of MSOP MO-0039659 involving failure to meet the BOD 85 percent removal efficiency for the monitoring periods between July 31, 2018 and December 31, 2018. A meeting was held at the City Hall on July 10, 2019 between Department and City staff to provide further BOD Removal Efficiency Compliance Assistance.

The Department received on around July 31, 2019 a response to the June 25, 2019 LOW. The July 31, 2019 response was received after the subject compliance inspection conducted on July 29, 2019. The City is showing commitment to continue their work efforts towards resolving this issue satisfactorily. However, the aforesaid significant non-compliance is still an ongoing and substantial concern that needs to be resolved in a timely manner [10 CSR 20-3.010(2)(B)8.I]. The facility has been found to remain in significant non-compliance with the Missouri Clean Water Law, the Clean Water Commission Regulations, and Missouri State Operating Permit MO-0039659, based upon the violations and observations documented in this inspection report, and a **Referral Notice of Violation (RNOV)** is being issued for the violations identified below.

**Referral Notice of Violation (RNOV) SL190028**

1. Sanitary Sewer Overflow (SSO) Events: Event ID #s 8478 and 10681 are unsatisfactorily marked as ongoing under the pertinent Event Details Sections in the DNR SSO/Bypass Event System [Special Condition #E.11 of MSOP MO-0039659, Standard Conditions Part I, Section B, subsection 2 of MSOP MO-0039659].

2. eDMR: The ammonia total (as N) data entered into the eDMR system for May 2019 was 352 mg/L (monthly average) and 9.5 mg/L (daily maximum). Facility records reviewed during the compliance inspection on August 29, 2019 support that the monthly average

ammonia total (as N) was 3.52 mg/L. The Permittee shall correct this issue and update the data in the eDMR system accordingly [Special Condition #E.1 of MSOP MO-0039659]. For assistance on entering data into the eDMR system the Permittee should contact Ms. Heather Johnson with DNR SLRO.

3. Inflow and Infiltration (I&I) Reports:

    a. 2016 and 2018 I&I reports: These reports were not submitted as an attachment to the eDMR system and are not properly signed. The reports briefly outline the City's standard procedures for inspection, repairs, and maintenance of its collection system but do not provide a satisfactory summary with a suitable level of detail for the inspection, maintenance, and repairs to the collection system serving the facility for the respective reporting periods as well as planned activities for the upcoming calendar year [Special Condition #s E.1 and E.10 of MSOP MO-0039659]. A completed Department Annual Inflow and Infiltration Report form [780-2690 (02-17)] should be included with upcoming I&I report submissions. A copy of this form is included as Attachment #6.

    b. 2017 I&I report: The report was not found in the Department files at the time of review [Special Condition #E.10 of MSOP MO-0039659].

4. Schedule of Compliance (SOC) reports: The 2016 and 2017 SOC reports were not found in the Department files at the time of review [Special Condition C.1 of MSOP MO-0039659].

5. BOD and TSS Removal Efficiencies: [40 CFR Part 133.102(a)(3) & (b)(3), Table A-1 (Interim Effluent Limitations and Monitoring Requirements) of MSOP MO-0039659]:

    a. The facility has failed to satisfy the required percent BOD and percent TSS removal efficiencies of 85 several times during the October 2016 through May 2019 period evaluated. Further, the Permittee has consistently failed to meet the required BOD removal efficiencies since approximately June 2018. The City is showing commitment to continue its work efforts towards satisfactorily resolving this issue. However, non-compliance is still an ongoing and substantial concern that needs to be resolved in a timely manner.

    b. The January 2019 TSS removal efficiency entered in the eDMR system was just 7.9 percent. This data was presumably entered in error in the eDMR system and needs to be corrected accordingly.

REQUIRED ACTION: The facility owner/Permittee shall make appropriate modifications to the facility to meet the permitted removal efficiencies and also to resolve the Referral Notice of Violation #s 1 through 5 listed above. The facility owner/Permittee shall submit a written response

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**

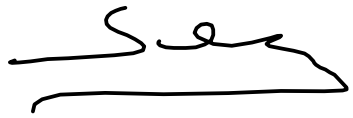
1. Continue to submit monthly, quarterly, and annual reports through the Department's eDMR system by established reporting deadlines.

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.

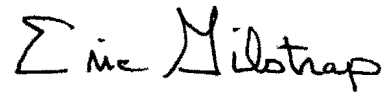
**Signatures**

SUBMITTED BY:



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

REVIEWED BY:

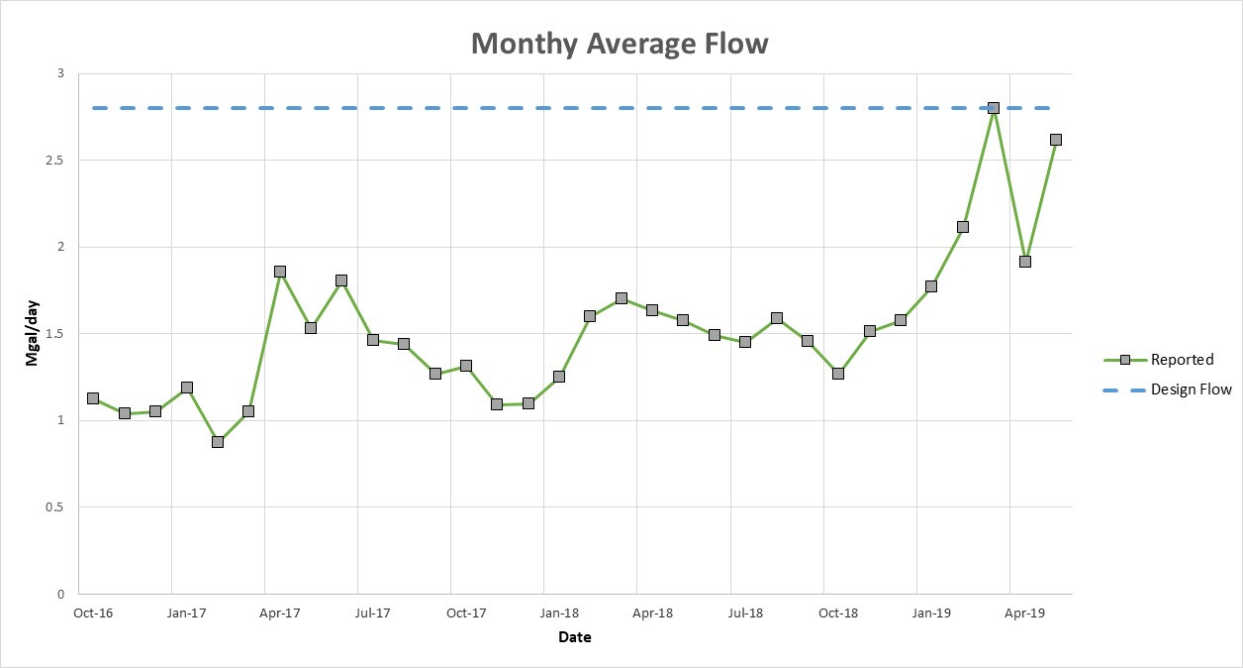


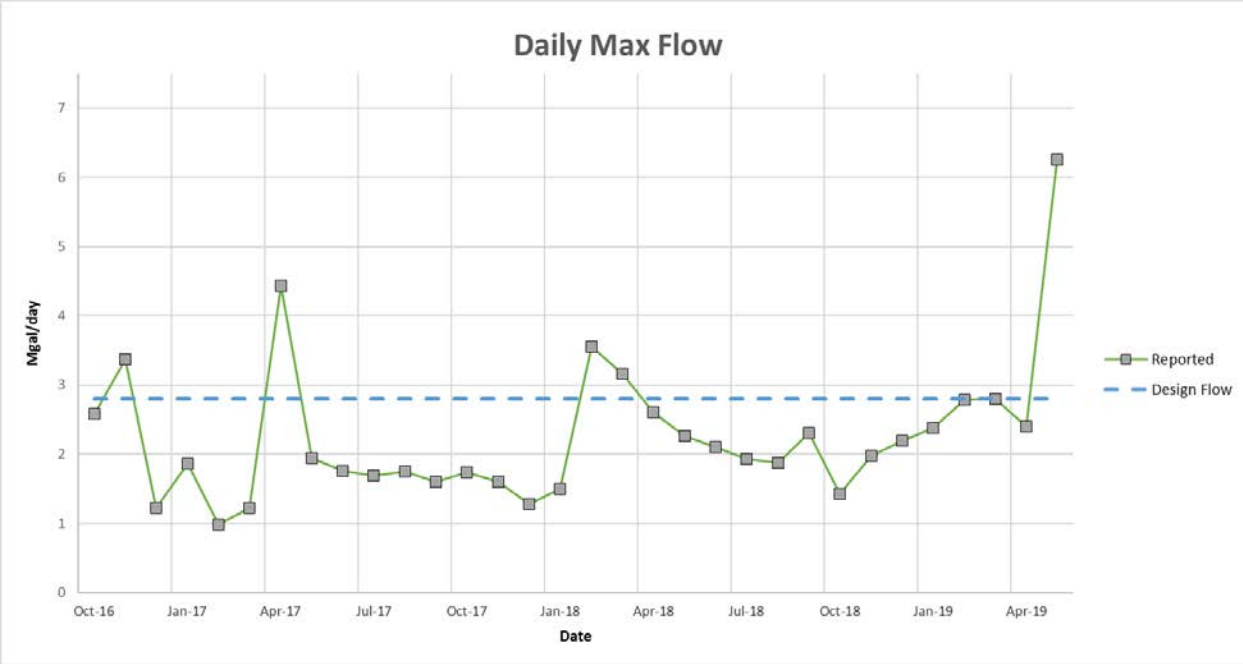
Eric Gilstrap, P.E.
Engineering and Compliance Assistance Unit Chief
St. Louis Regional Office

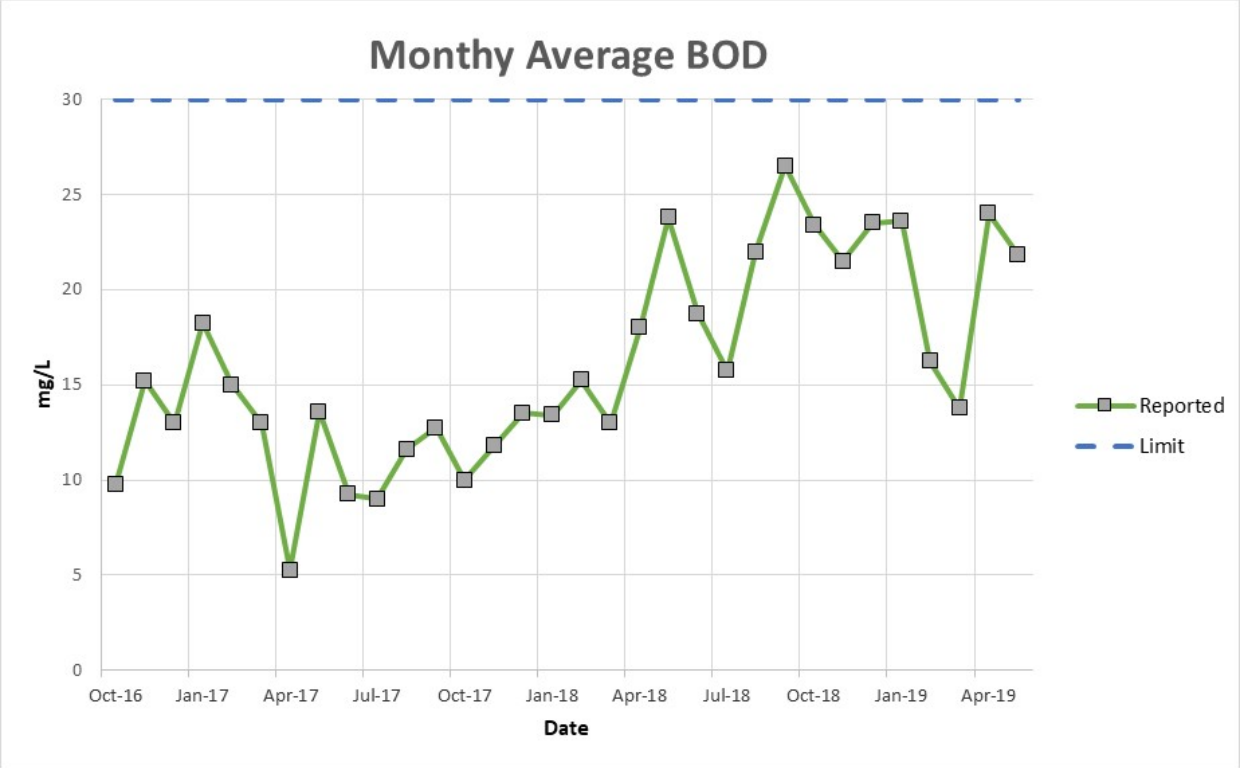
EJG/OVM/deb

**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
Oct-17
Jan-18
Apr-18
Jul-18
Oct-18
Jan-19
Apr-19
Date
Reported
Design Flow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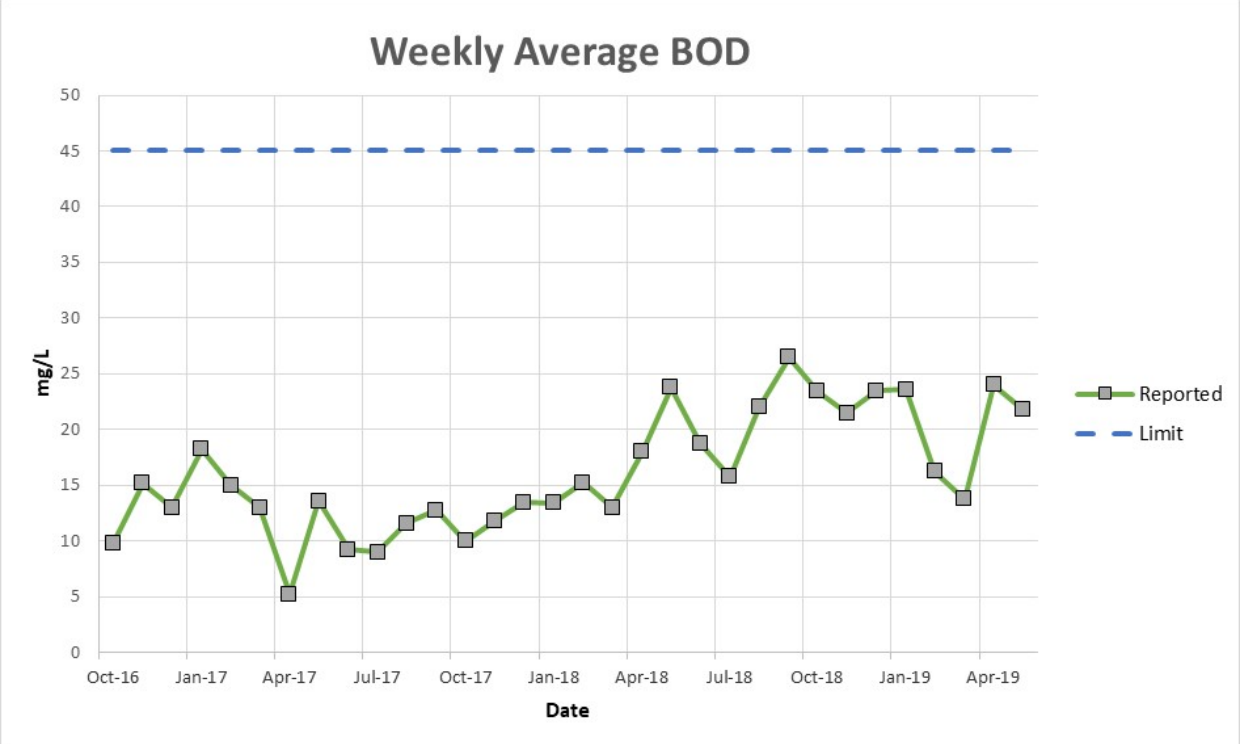
20
15
10
5
0
mg/L
Oct-16
Jan-17
Apr-17
Jul-17
Oct-17
Jan-18
Apr-18
Jul-18
Oct-18
Jan-19
Apr-19
Date
Reported
Limit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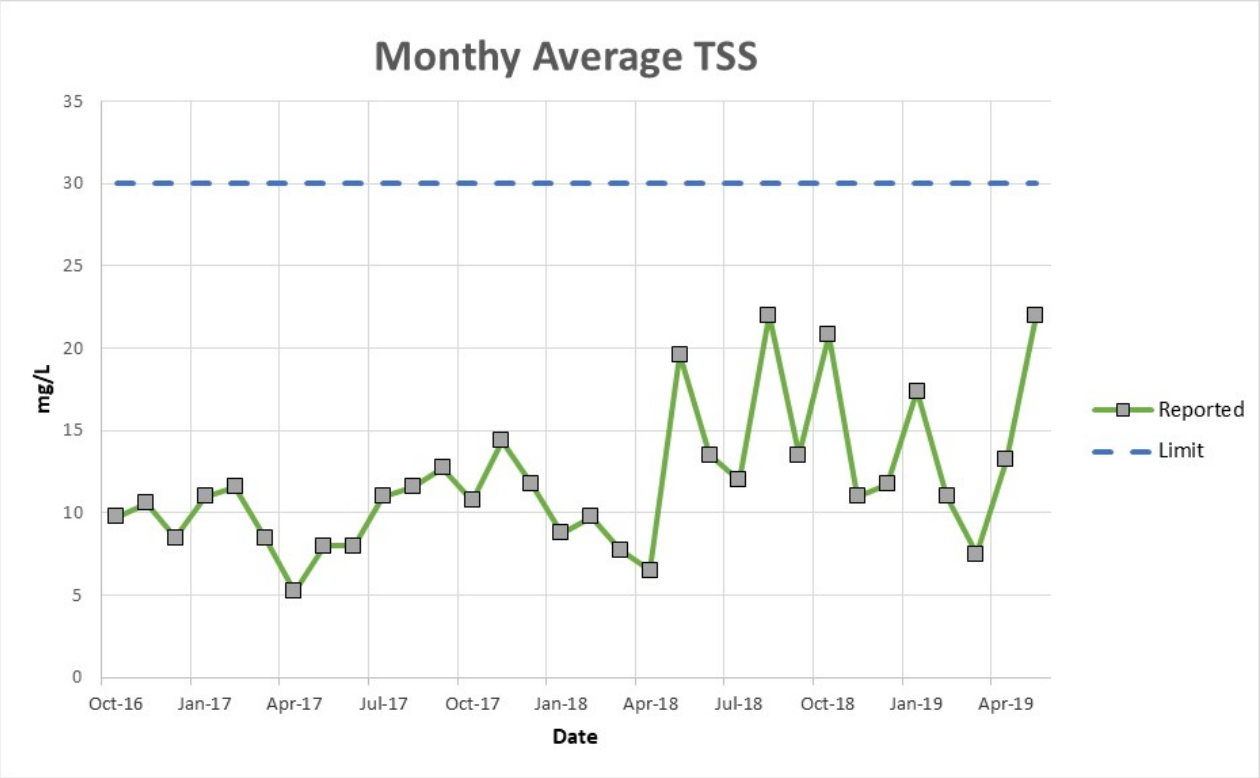
30
25
20
15
10
5
0
mg/L
Oct-16
Jan-17
Apr-17
Jul-17
Oct-17
Jan-18
Apr-18
Jul-18
Oct-18
Jan-19
Apr-19
Date
Reported
Limit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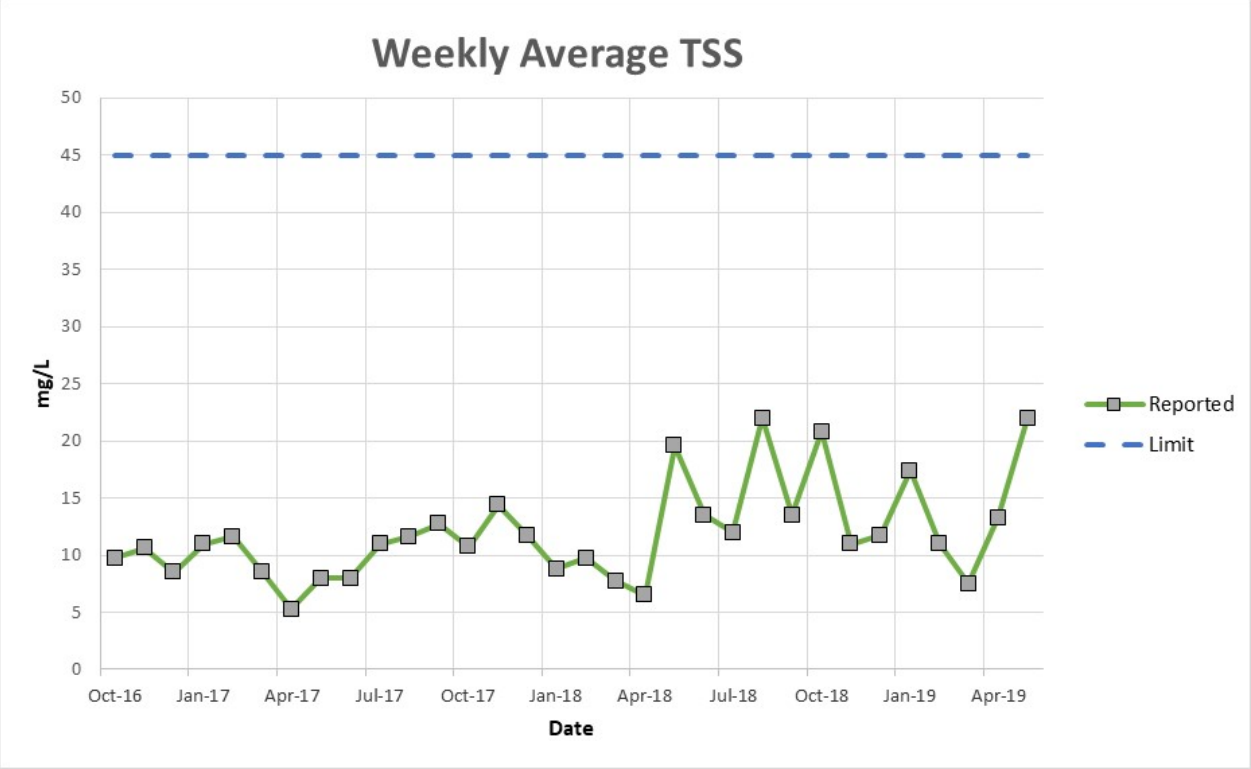
30
25
20
15
10
5
0
mg/L
Oct-16
Jan-17
Apr-17
Jul-17
Oct-17
Jan-18
Apr-18
Jul-18
Oct-18
Jan-19
Apr-19
Date
Reported
Limit


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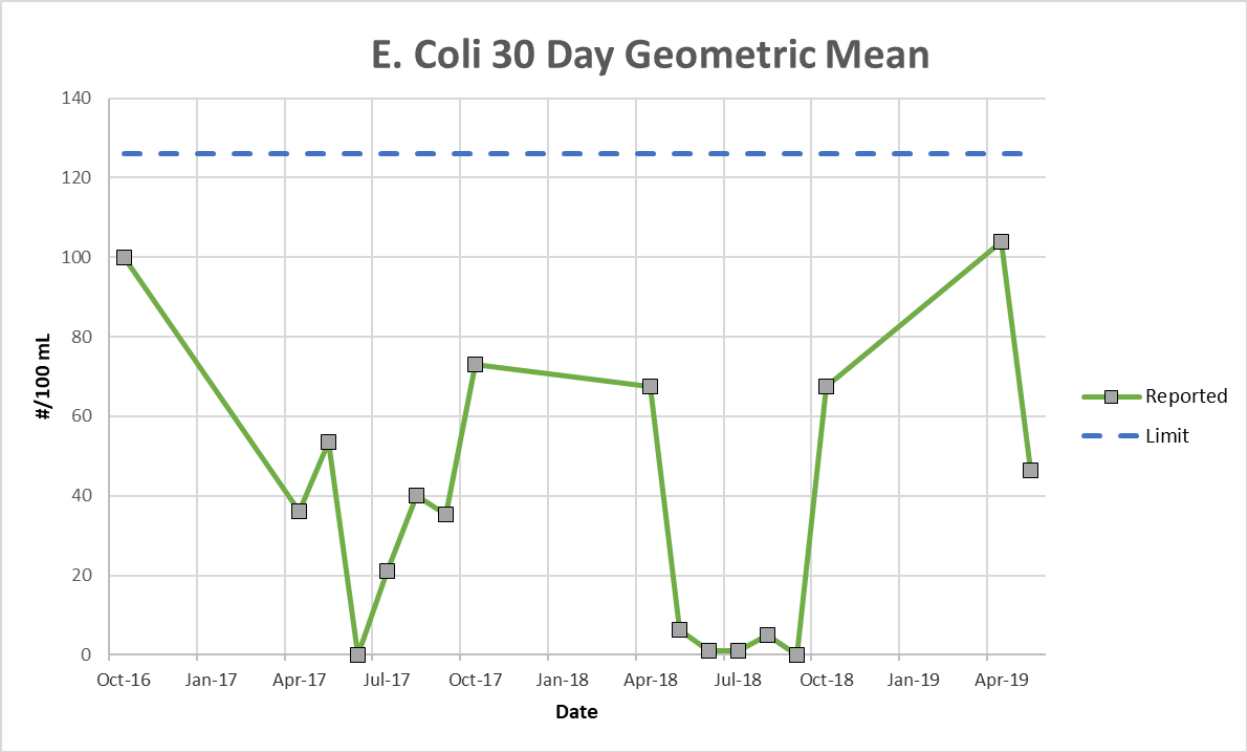
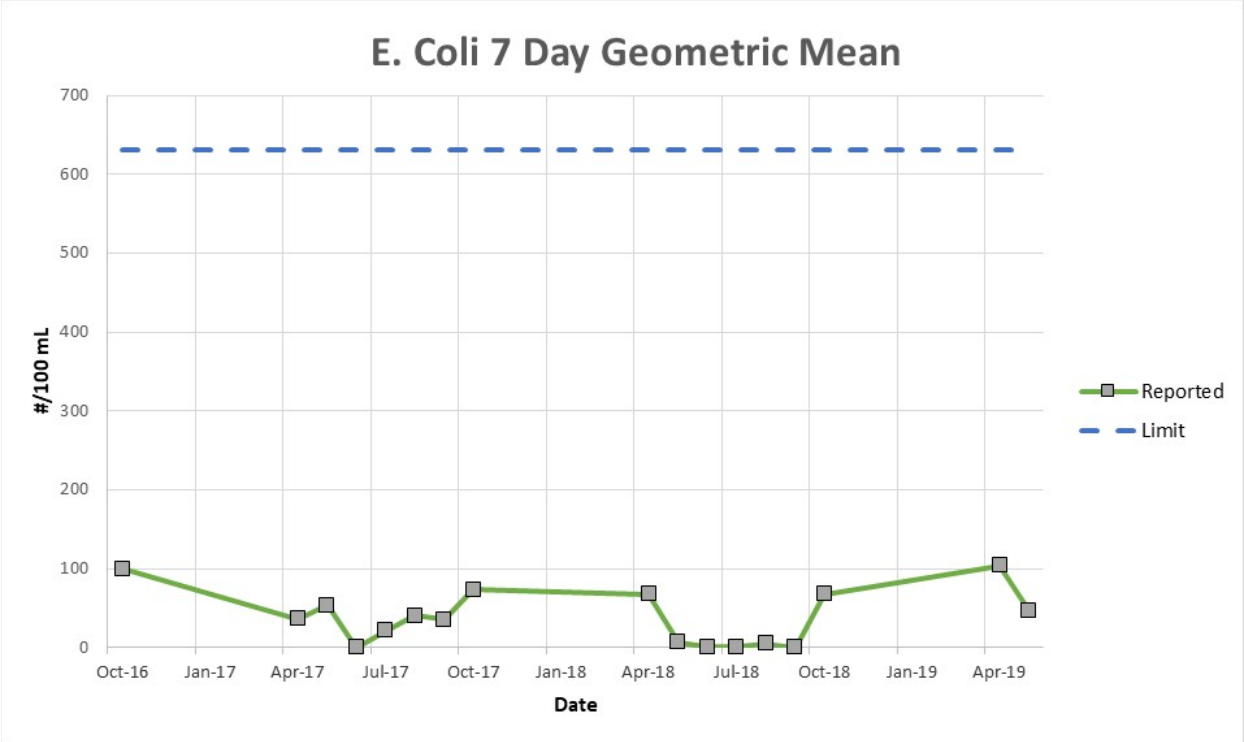
Jul-18
Oct-18
Jan-19
Apr-19
Date
Reported
Limit


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
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Jan-18
Apr-18
Jul-18
Oct-18
Jan-19
Apr-19
Date
Reported
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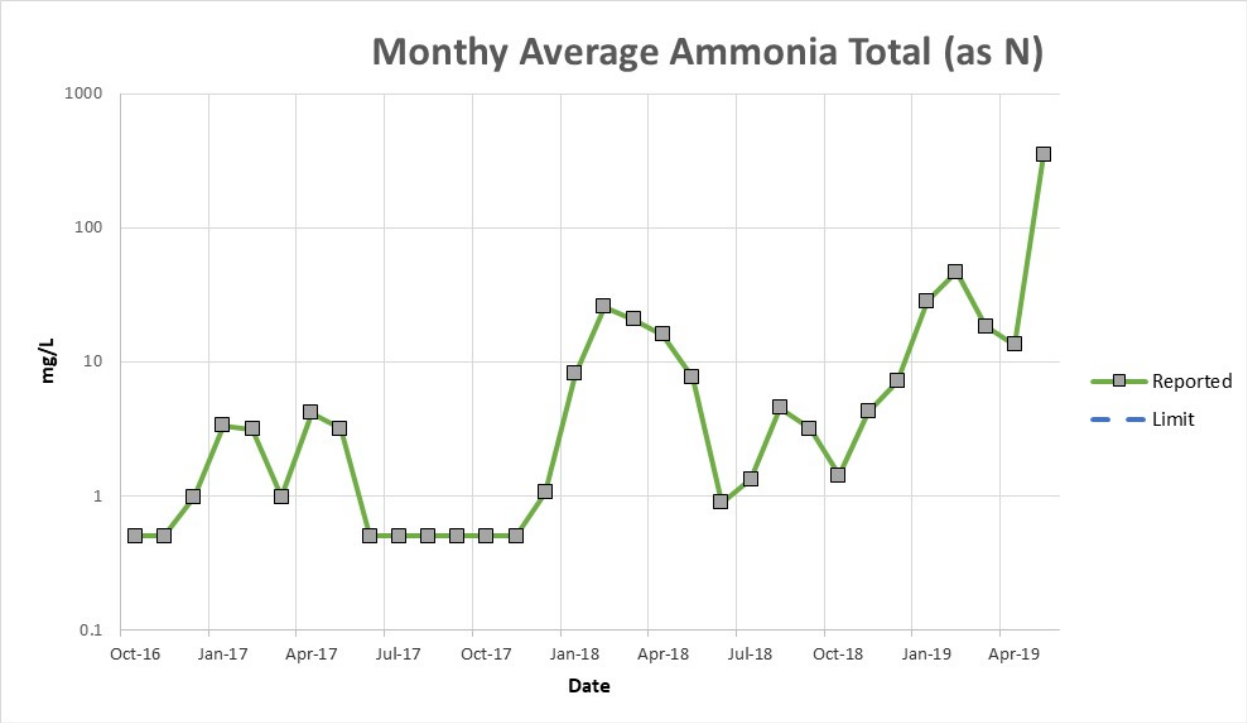
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100
10
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0.1
mg/L
Oct-16
Jan-17
Apr-17
Jul-17
Oct-17
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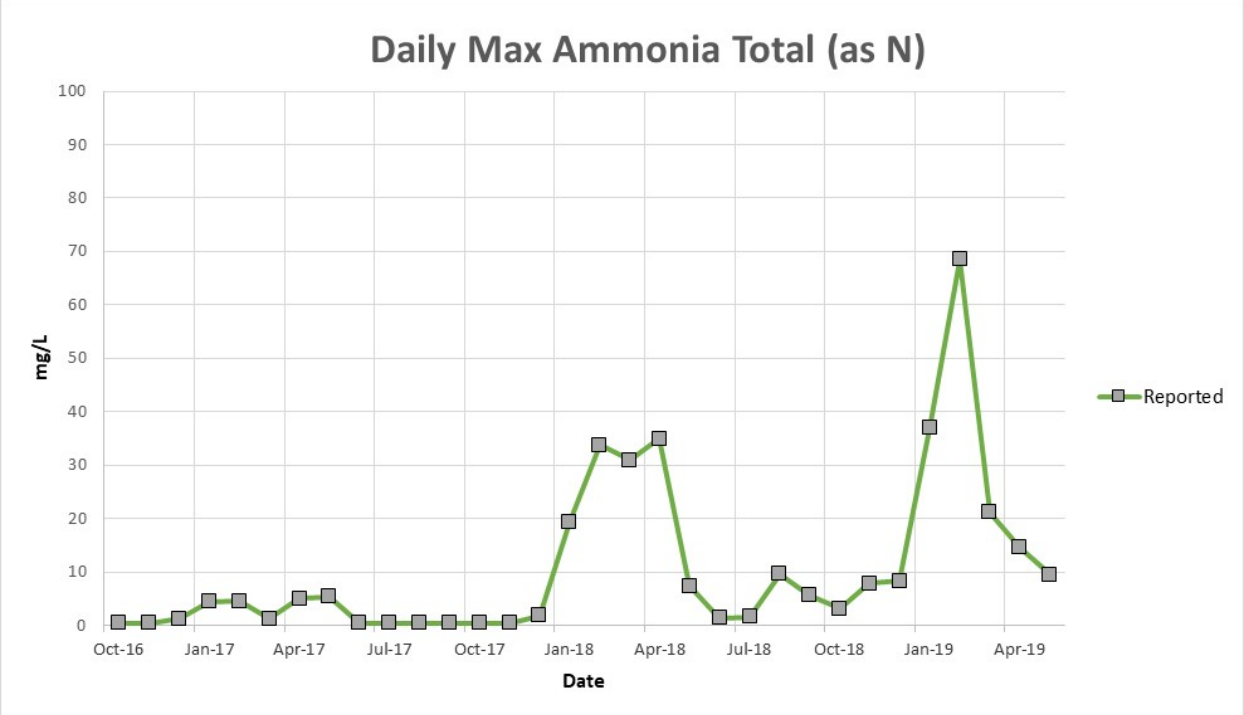
Jul-18
Oct-18
Jan-19
Apr-19
Date
Reported
Limit


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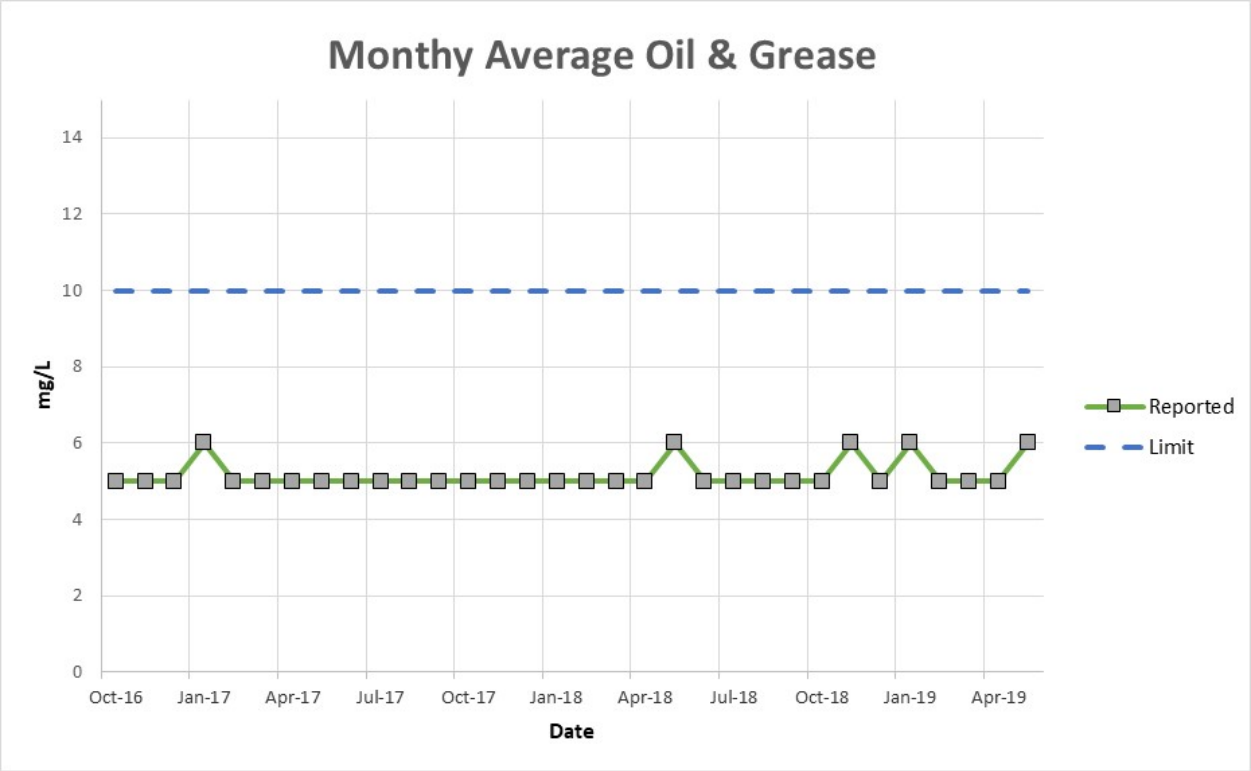
90
80
70
60
50
40
30
20
10
0
mg/L
Oct-16
Jan-17
Apr-17
Jul-17
Oct-17
Jan-18
Apr-18
Jul-18
Oct-18
Jan-19
Apr-19
Date
Reported


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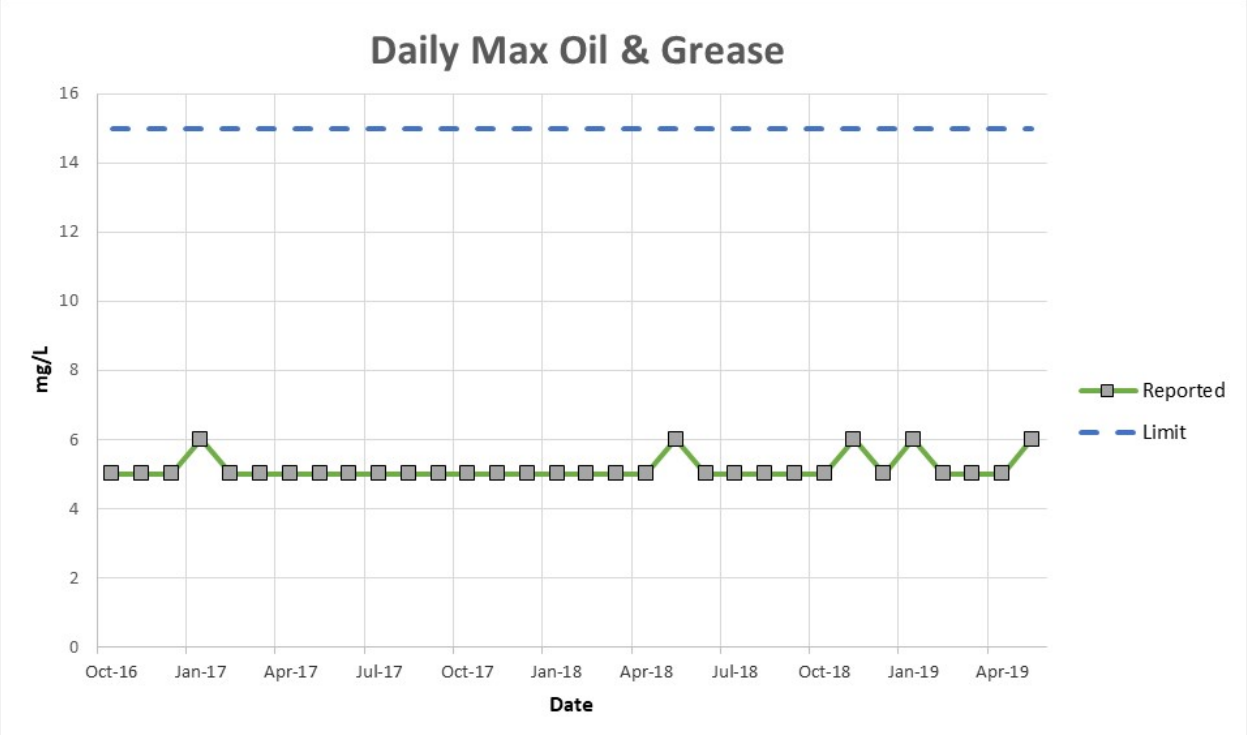
Jul-18
Oct-18
Jan-19
Apr-19
Date
Reported
Limit


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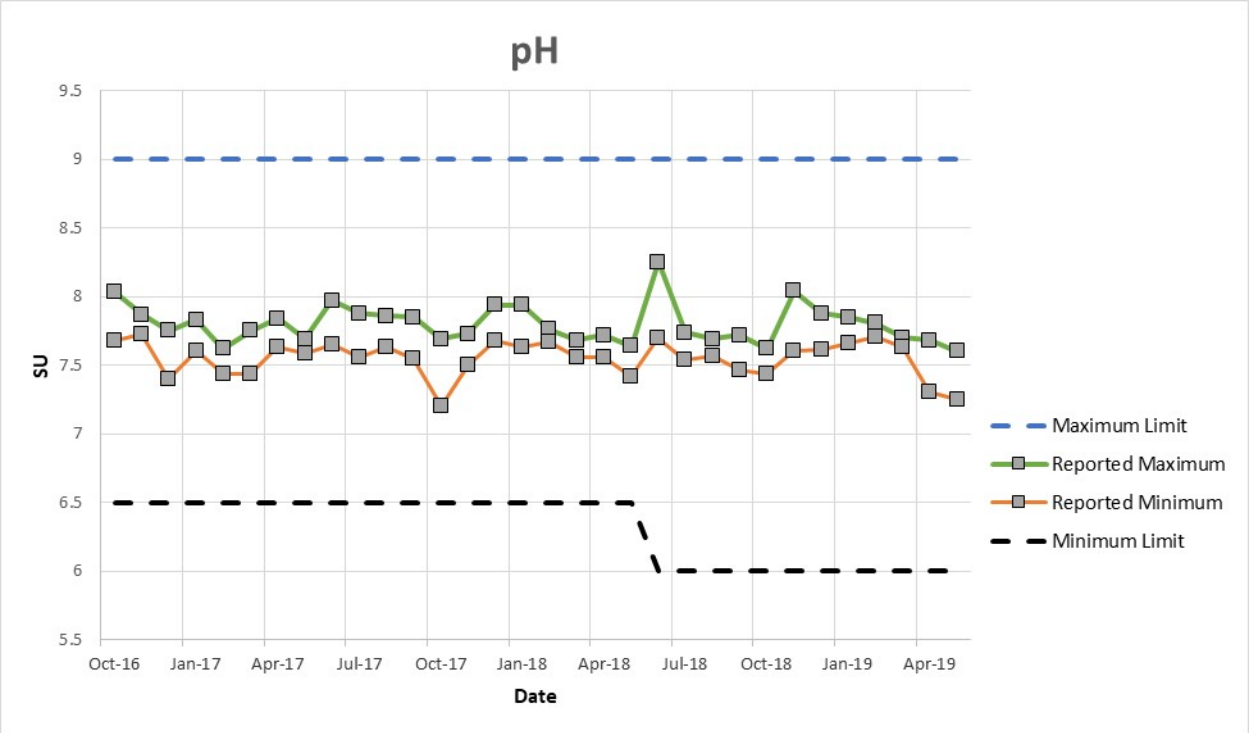
Jul-18
Oct-18
Jan-19
Apr-19
Date
Reported
Limit


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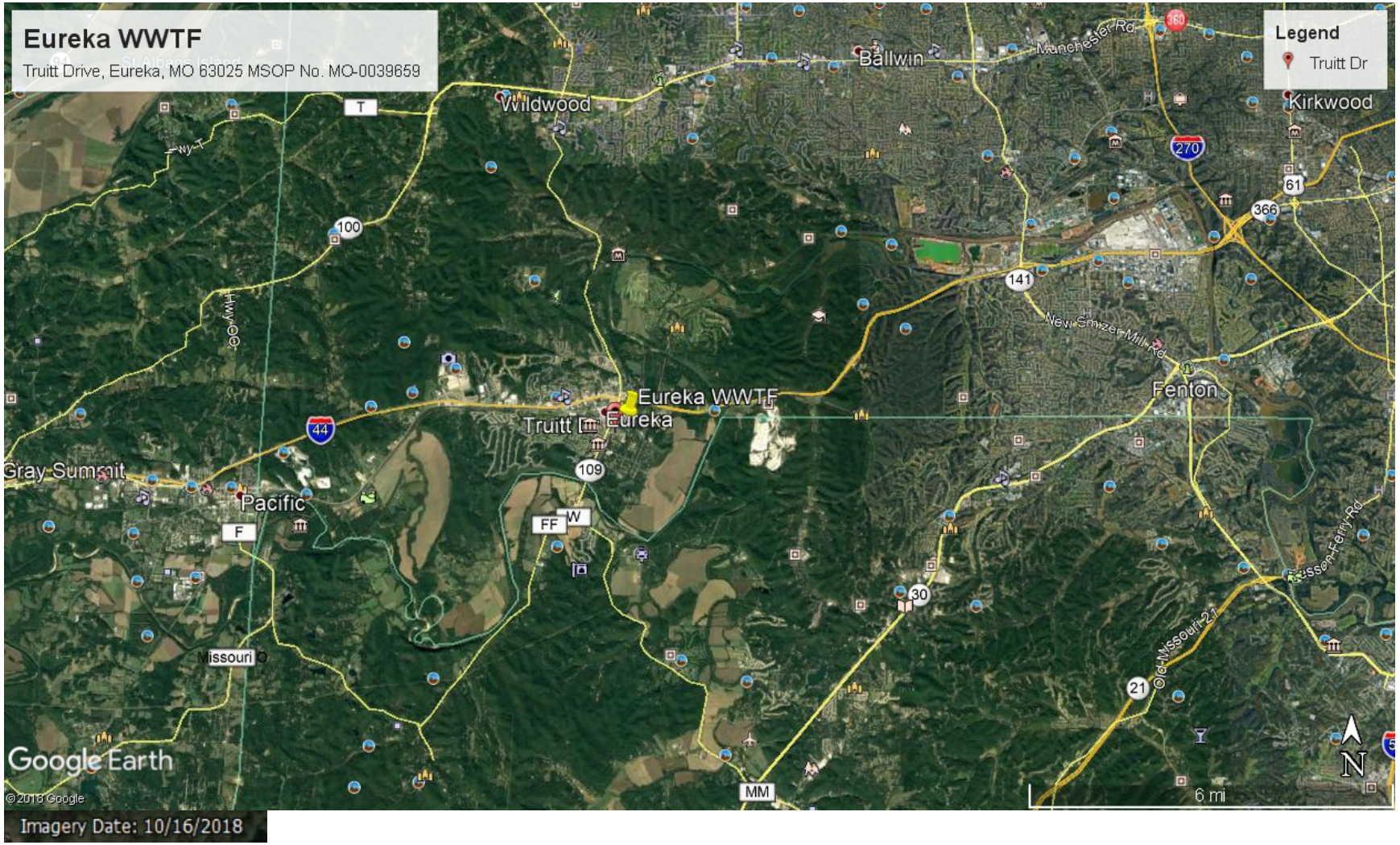
Jan-19
Apr-19
Date
Maximum Limit
Reported Maximum
Reported Minimum
Minimum Limit


Eureka WWTF
Truitt Drive, Eureka, MO 63025 MSOP No. MO-0039659
Legend
Truitt Dr
Eureka WWTF
Truitt
Eureka
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Ballwin
Manchester Rd
Kirkwood
Fenton
New Ennzer Mill Rd
Gray Summit
Pacific
Missouri
Hwy OO
Russell Ferry Rd
Old Missouri 21
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© 2018 Google
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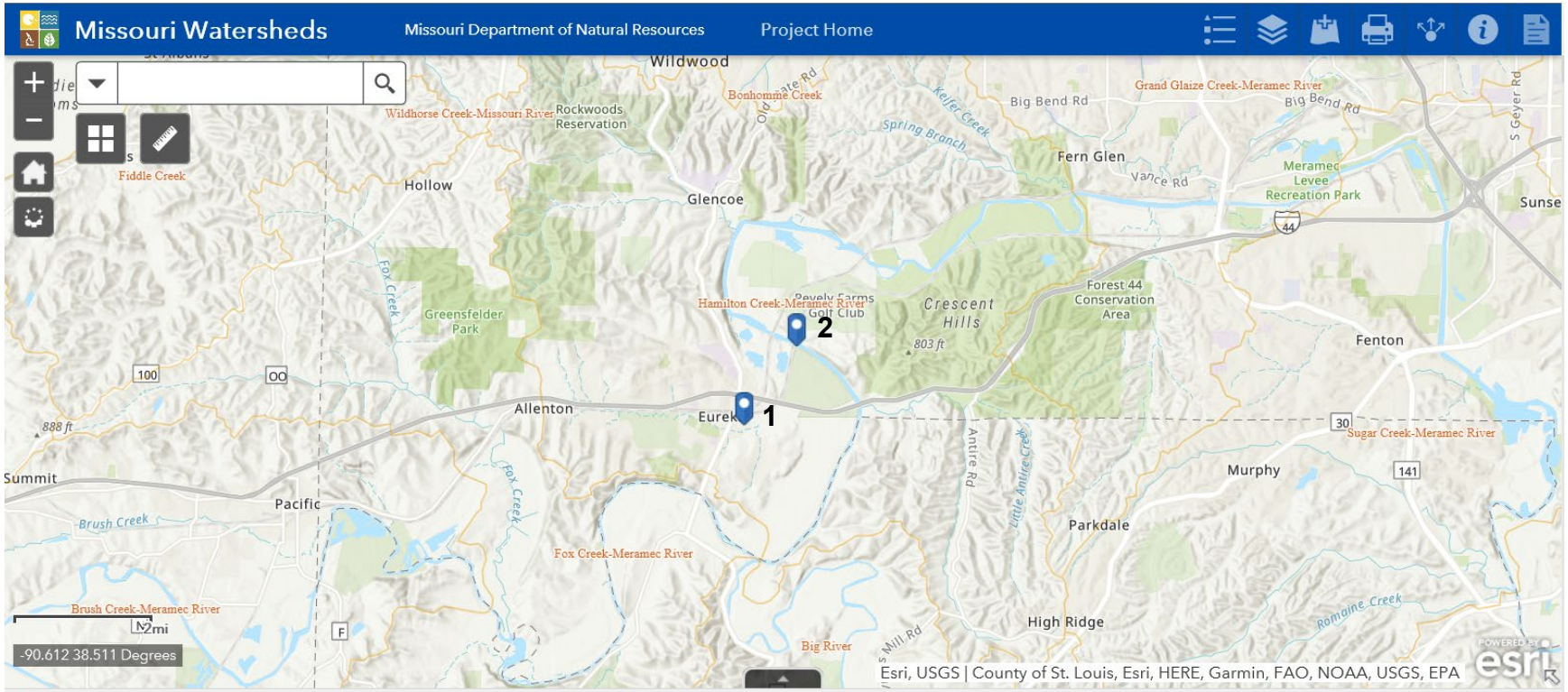
6 mi
N




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

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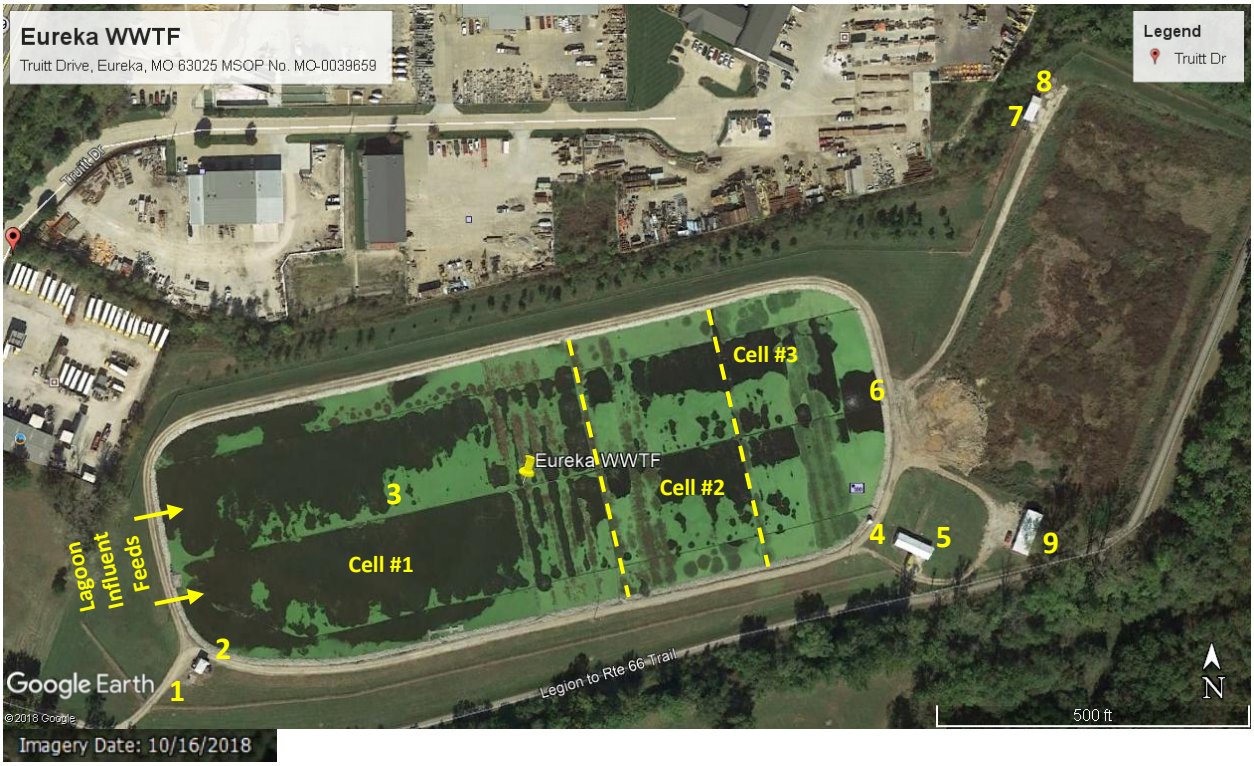


| Map Key Number | WWTF Building/Area |
|---|---|
| 1 | Influent Lift Station Area (Photo #s 1-4) |
| 2 | Fine Screen Building (Photo #s 5-6) |
| 3 | Aerated Lagoon (Photo #s 7-9) |
| 4 | Recirculation Pump (Photo # 10) |
| 5 | Blowers Building (Photo #s 11-14) |
| 6 | Effluent Structure (Photo #s 15-16) |
| 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) |

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

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

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

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

| | |
|---|---|
|  | **Photograph:** # 9.<br>**Taken By:** Oscar Vazquez<br>**Date Taken:** July 29, 2019<br>**Program:** ECA Unit<br><br>**Entity:** Eureka WWTF<br>**Permit:** MO-0039569<br>**Location:** Three-Cell Aerated Lagoon<br>**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.<br>**Taken By:** Oscar Vazquez<br>**Date Taken:** July 29, 2019<br>**Program:** ECA Unit<br><br>**Entity:** Eureka WWTF<br>**Permit:** MO-0039569<br>**Location:** Recirculation Pump Shed<br>**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.<br>**Taken By:** Oscar Vazquez<br>**Date Taken:** July 29, 2019<br>**Program:** ECA Unit<br><br>**Entity:** Eureka WWTF<br>**Permit:** MO-0039569<br>**Location:** Blowers Building<br>**Description:** Old aeration pump used as backup. |
|  | **Photograph:** # 12.<br>**Taken By:** Oscar Vazquez<br>**Date Taken:** July 29, 2019<br>**Program:** ECA Unit<br><br>**Entity:** Eureka WWTF<br>**Permit:** MO-0039569<br>**Location:** Blowers Building<br>**Description:** Aeration pump panels. |

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

| | |
|---|---|
|  | **Photograph:** # 15.<br>**Taken By:** Oscar Vazquez<br>**Date Taken:** July 29, 2019<br>**Program:** ECA Unit<br><br>**Entity:** Eureka WWTF<br>**Permit:** MO-0039569<br>**Location:** Effluent Structure<br>**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.<br>**Taken By:** Oscar Vazquez<br>**Date Taken:** July 29, 2019<br>**Program:** ECA Unit<br><br>**Entity:** Eureka WWTF<br>**Permit:** MO-0039569<br>**Location:** Effluent Structure<br>**Description:** The effluent blend overflows and is conveyed by gravity to the UV disinfection unit. |

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

| | |
|---|---|
|  | **Photograph:** # 19.<br>**Taken By:** Oscar Vazquez<br>**Date Taken:** July 29, 2019<br>**Program:** ECA Unit<br><br>**Entity:** Eureka WWTF<br>**Permit:** MO-0039569<br>**Location:** UV Disinfection System Building<br>**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.<br>**Taken By:** Oscar Vazquez<br>**Date Taken:** July 29, 2019<br>**Program:** ECA Unit<br><br>**Entity:** Eureka WWTF<br>**Permit:** MO-0039569<br>**Location:** UV Disinfection System Building<br>**Description:** Out-of-service bulb module is shown in the photo. |

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

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

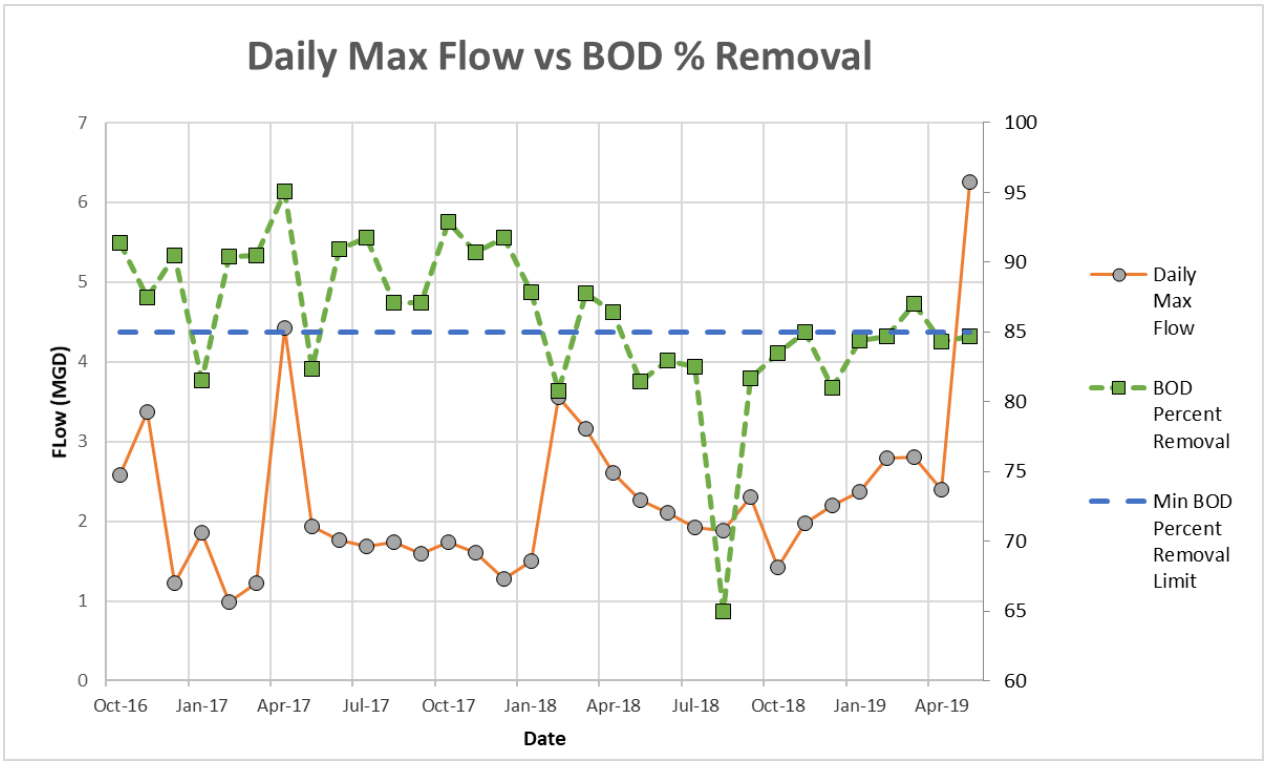
| | | | |
|---|---|---|---|
| 06 | Estimated value, QC data outside limits | ND | Not detected at reported value |

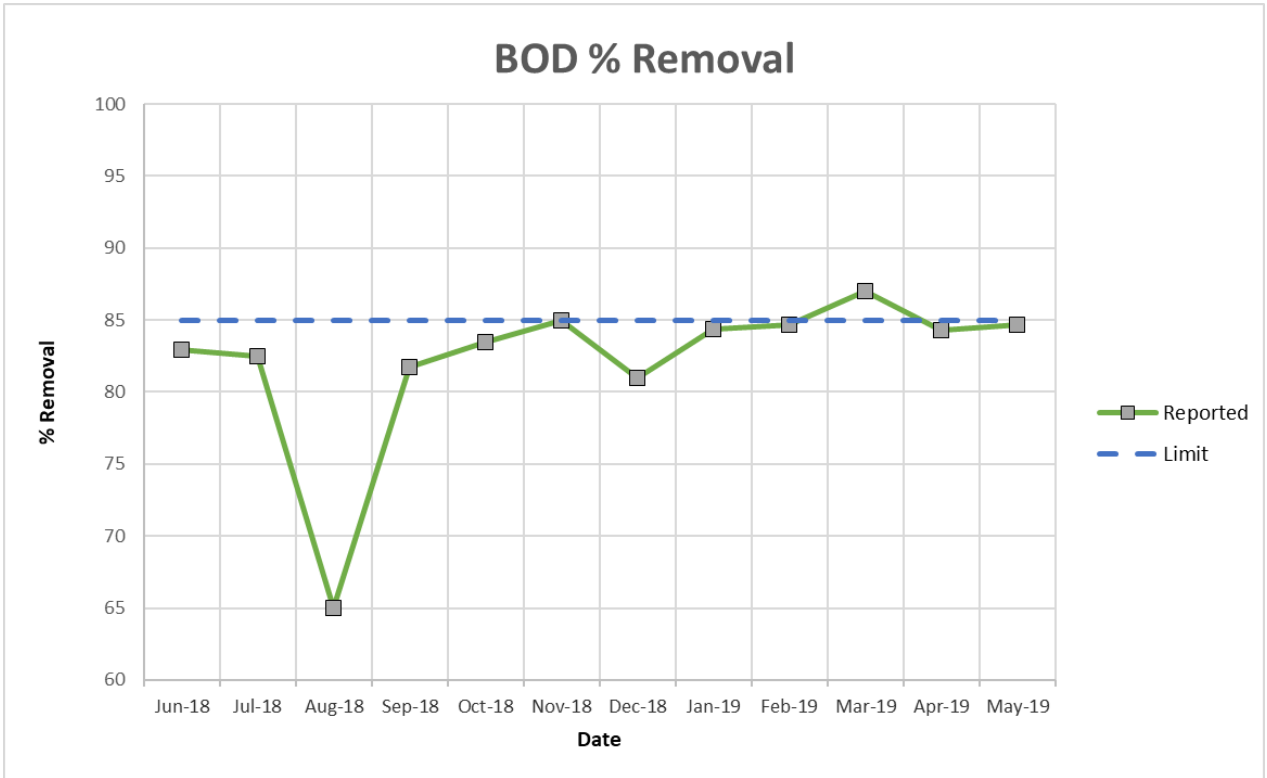
**Kevin Thoenen,**
**Laboratory Manager**
**Environmental Services Program**
**Division of Environmental Quality**

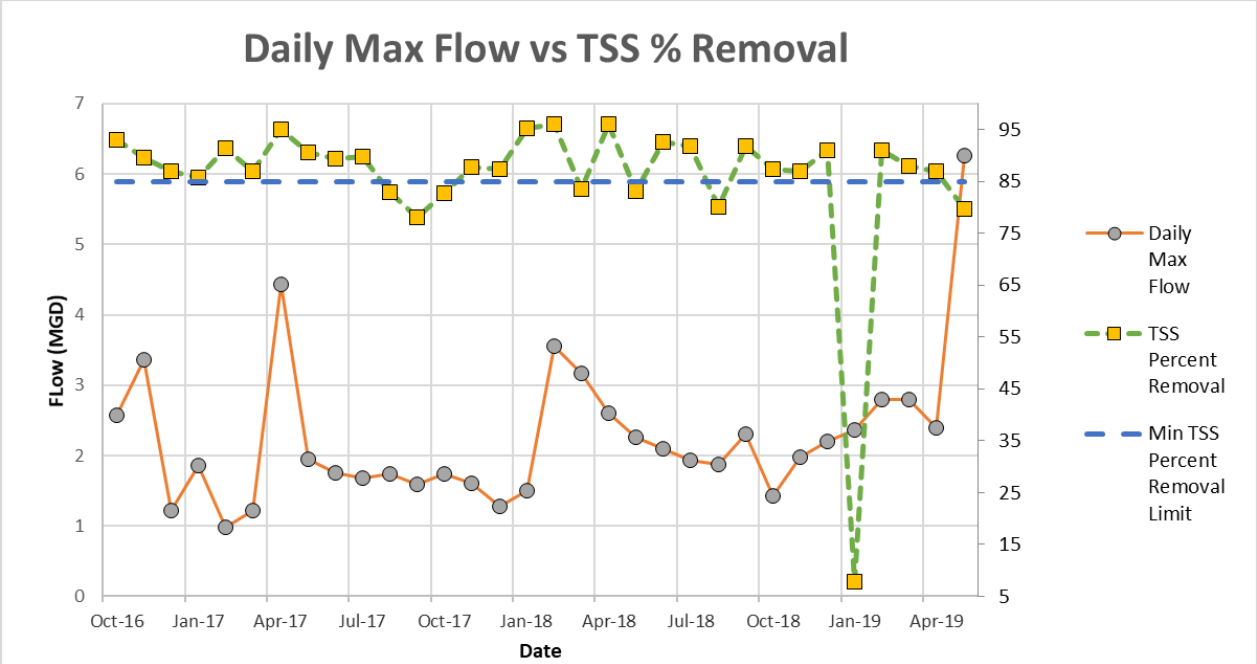
| Monitoring Period | BOD, 5-day, 20 deg. C | | | Total Suspended Solids (TSS) | | |
|---|---|---|---|---|---|---|
| | Influent (mg/L) | Effluent (mg/L) | Percent Removal (%) | Influent (mg/L) | Effluent (mg/L) | Percent Removal (%) |
| 5/31/2019 | -- | 21.8 | **84.7** | -- | 22 | **79.7** |
| 4/30/2019 | -- | 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 |

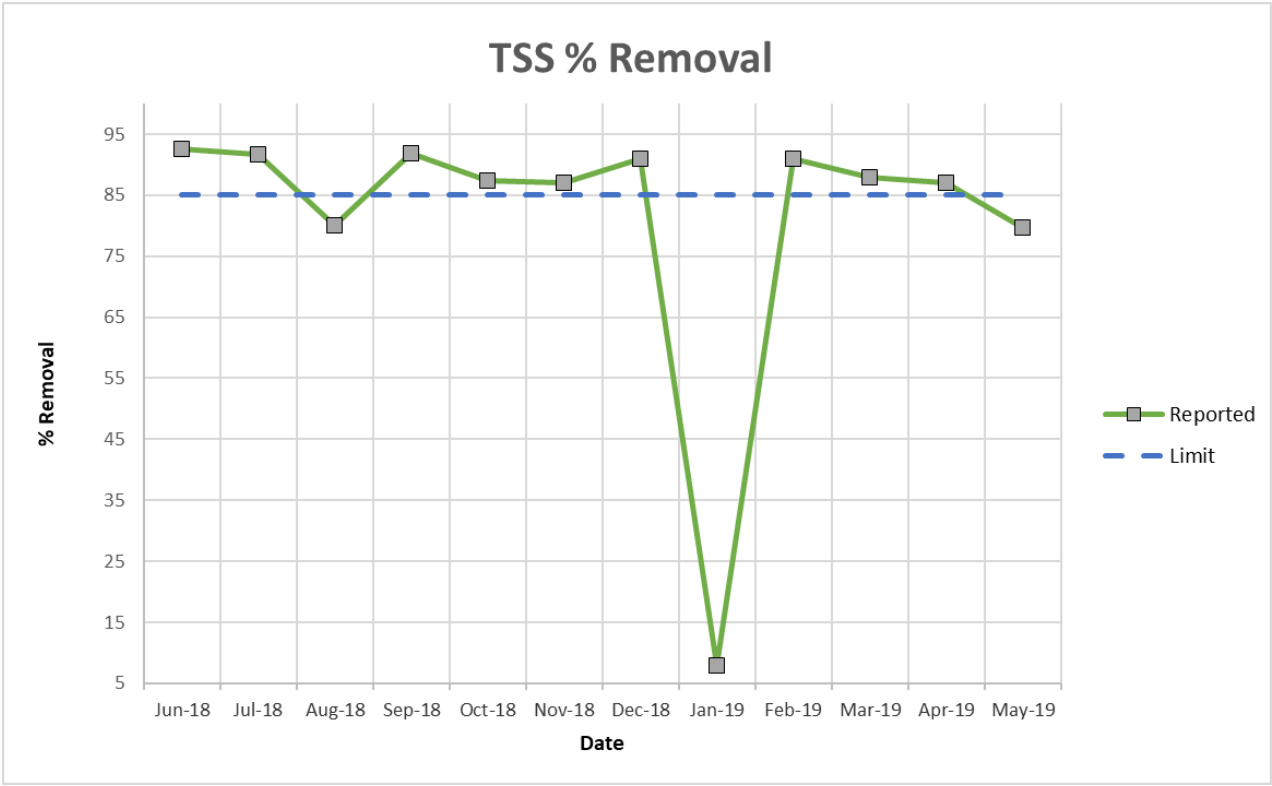
In red, the values imported directly from the eDMR system

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
100
95
90
85
80
75
70
65
60
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
100
95
90
85
80
75
70
65
60
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
95
85
75
65
55
45
35
25
15
5
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
95
85
75
65
55
45
35
25
15
5
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<br>WATER PROTECTION PROGRAM<br>OPERATING PERMITS SECTION<br>P.O. BOX 176<br>JEFFERSON CITY, MO 65102-0176 |

MISSOURI DEPARTMENT OF NATURAL RESOURCES

# MEMORANDUM TO FILE

**Facility Name:** Eureka Wastewater Treatment Facility

**Facility Permit Number:** MO0039659

**Date:** July 10, 2019

**Subject:** BOD Removal Efficiency Compliance Assistance

**Type of Communication:** Meeting **Location of Meeting:** Eureka City Hall

---

## Person or Persons Involved:

| Name/Title: | Representing: | Telephone: |
|---|---|---|
| Craig Sabo, City Administrator | City of Eureka | 636-938-5233 |
| David Ricks, Operator | City of Eureka | 636-938-5233 |
| Dorothy Franklin, Regional Director | MoDNR – SLRO | 314-416-2960 |
| Oscar Vazquez, Env. Engineer | MoDNR – SLRO | 314-416-2960 |
| Heather Johnson, Technical Assistant | MoDNR – SLRO | 314-416-2960 |
| Amanda Rodell, Env. Intern | MoDNR – SLRO | 314-416-2960 |

**Eureka WWTF- Compliance Assistance Meeting Summary:**

*Areas of Concern*

Ms. Franklin explained the purpose of the meeting, which is to discuss chronic exceedances of the BOD % removal limit that went into effect June 1, 2018. Ms. Johnson summarized a report of the facility's compliance history that was prepared by SLRO staff prior to the meeting (attached).

Mr.Sabo said it sounds like the problem is the plant is treating influent that is too "clean." Ms. Franklin said yes, the influent is considered too dilute, which is not a good thing. She said we will discuss this issue in the report.

Mr. Vazquez said the facility was doing a better job of meeting BOD and TSS % removal limits before June of 2018. He asked if Eureka has changed their treatment process since that time. Mr. Ricks said yes. He said the permit issued June 1, 2018 has a schedule of compliance to meet final ammonia limits, and he has changed the "blend" that is going out in the winter to see what they need to do to meet ammonia requirements.

Mr. Ricks disscused different options for treatment upgrades. He expressed concern that they may receive tighter future limits to accommodate mussel beds or other water quality issues. He said that there is only so much that can be done, and questioned how far ahead should they plan. Ms. Franklin said there is always a cost/benefit analysis when making these decisions. Nationwide, permits contain interim limits to give facilities time to plan ahead.

Mr. Ricks said BOD loading might help them to be in compliance with the current % removal limits. Ms. Rodell had already calculated this before the meeting. She confirmed her calculations show Eureka would be in compliance if they measured this way.

Mr. Vazquez summarized the facility's recent history of submitting required annual reports, including Inflow and Infiltration (I&I) reports. There had been no sludge reports submitted. Mr. Ricks stated they do not remove sludge from the lagoon, so they are not required to submit these reports. Mr. Vazquez mentioned the 2017 WET Test was not run with the dilution factors required in the permit but that other WET Tests looked fine, including the 2018 test.

Mr. Ricks addressed the different dilution factors in the 2017 WET Test. He said the City got three permit modifications in an 18-month timeframe. He said he asked SLRO staff when they did the 2017 test if they would have to redo it when the factors changed. SLRO said Eureka could use the test they already had. Ms. Franklin and Mr. Vazquez advised always providing their contract lab with the most current permit so they can run tests according to the requirements.

Mr. Vazquez next explained MoDNR's expectations for the I&I reports. The reports submitted each year have not contained enough detail. Mr. Vazquez said they should include exactly what has been done each year with the collection system and what the plan is for the next year. Mr. Ricks said they get through 85% of the collection system every year. A large amount of the work gets done in the winter. Mr. Ricks said that they have the required records, including camera studies of the line. He said the City has not reported it all because they did not know what the report needed or how to report it. Mr. Ricks said when they asked MoDNR what to do they received only very basic guidance. Mr. Vazquez said he can email a report template and guidance that will help.

There was a general discussion about how I&I may be diluting the plant's influent. Ms. Johnson provided Mr. Sabo with a letter the MoDNR Water Protection Program Permits Section sent to the City in May 2018, responding to a request for lower BOD and TSS % removal limits in the upcoming permit. The letter explained that the City of Eureka must demonstrate that their dilute influent is not caused by excessive I&I. This involves increased monitoring of the plant's influent. Mr. Ricks said they have the SCATUS system in place and can check run times on pumps. They do not have a flow meter on influent but can calculate data from the pump logs. They compare pumping to rainfall to get an idea of how inflow is affected.

Mr. Sabo asked if there are systems identical to Eureka's who are in compliance while using the same type of treatment. SLRO staff present at the meeting did not know enough details off-hand to answer this question. Ms. Rodell had already prepared some data to analyze concerning several municipalities that use lagoons for their treatment and have populations similar to Eureka's. Mr. Ricks mentioned Kenneth MO, Chaffee MO, and Pacific MO as good cities for comparison.

Mr. Ricks asked Mr. Vazquez to sit down with him at a later date to discuss the CMOM. Mr. Vazquez agreed to this plan, and also suggested Eureka submit a Sunshine request for file review of other municipalities' CMOM programs. Ms. Franklin suggested Springfield, MO as a city with a good program.

*Solutions*

Ms. Franklin discussed three options Eureka can pursue to address ongoing % removal exceedances:

1. Develop CMOM program and investigate and address sources of inflow and infiltration into the collection system
2. Demonstrate justification for a permit modification; namely that excessive I&I is not the cause of dilute influent
3. Enter into an administrative order of consent (AOC) with Enforcement to implement a long-term plan to address % removal issues and upcoming final ammonia limits

Ms. Franklin recommended referral and the AOC. She said otherwise we may have to issue violations continuously, and finally refer them anyway. She said an AOC will protect the City. She also mentioned this will prevent EPA from possibly imposing financial penalties for chronic violations. Mr. Sabo listened to the proposal and agreed an AOC is the best course of action.

Ms. Franklin said we will need to schedule an inspection of the treatment plant. Mr. Ricks asked if, once they have an AOC in place, they should continue maintaining the plant to meet current standards or try changes to the treatment to meet future limits. Ms. Franklin said they should wait for AOC discussions and a final determination before making that decision.

Mr. Ricks next asked if we can investigate the industry requirements for Six Flags. Do they need to do pretreatment? Are they permitted correctly? Ms. Franklin recommended getting an engineering assessment of what Six Flags can do about their discharge. Ms. Franklin asked Mr. Vazquez to look into this and talk with Refaat Mefrakis in the WPP Engineering Section.

Mr. Ricks proposed a method of introducing septage to "dirty up" the influent. Mr. Vazquez will explore this option with Mr. Mefrakis. Mr. Ricks said the sludge is "fluffy" from gasification. He compared it to pudding with the top solidifying. He said they drag chains across the top to break up the sludge. Before the meeting started, Mr. Ricks was discussing the plant's sludge blanket with Ms. Franklin. He said he uses a bioaugmentation product that was recommended by Steve Harris, a consultant.

<u>Closing</u>

Ms. Franklin asked if there were any additional questions or concerns. Mr. Ricks asked how to respond to the LOW. Ms. Franklin said to respond that we had a meeting and the City is requesting an AOC. Ms. Franklin closed by discussing use of eDMR and the lack of internet at the plant. She explained having a computer and internet would help Mr. Ricks with monthly and other reproting requirements. Mr. Sabo asked how often the City needs to report and Ms. Johnson said the permit requires monthly reporting, with the addition of quarterly and annual reports. Ms. Johnson then discussed electronic SSO reporting through MoGEM and the need for

Eureka to get registered in this system ASAP. Electronic reporting of all SSO and bypass events is a requirement in the permit, and the City has not submitted an SSO report since April, 2017. Mr. Sabo said he can get a computer at the plant, but maybe not in time for the next monthly reporting deadline. He said Mr. Ricks can submit reports at City Hall in the interim, if needed.

## Brian W Eisenloeffel

**From:** Traci L Lichtenberg
**Sent:** Wednesday, December 8, 2021 9:43 AM
**To:** Brian W Eisenloeffel
**Subject:** FW: interesting idea

FYI

---

Traci Lichtenberg
*Manager, Water Quality &*
*Environmental Compliance*
Missouri American Water
314-341-1458

Click here to watch a short video about what you can do at home to protect your drinking water.

---

**From:** Savage-Clarke, Kristi <Kristi.Savage-Clarke@dnr.mo.gov>
**Sent:** Saturday, July 17, 2021 8:32 AM
**To:** Traci L Lichtenberg <Traci.Lichtenberg@amwater.com>
**Subject:** Re: interesting idea



I believe so, I learned about the option from one of the permit writers who had a facility with this problem. Let me discuss with the new domestic Unit Chief to see for sure how she would like this to be handled.

---

**From:** Traci L Lichtenberg <Traci.Lichtenberg@amwater.com>
**Sent:** Friday, July 16, 2021 1:24:48 PM
**To:** Savage-Clarke, Kristi
**Subject:** RE: interesting idea

This is really cool! I didn't know this option existed, but it makes sense that a system shouldn't be penalized for a dilute influent that isn't the result of I&I. I did a quick eDMR query and the system consistently meets BOD limits of < 30 mg/L, so it should meet the mass loading limit too. To pursue this option would we just talk with our permit writer and submit a permit modification after we take ownership?

Happy Friday!
Traci

---

Traci Lichtenberg

*Manager, Water Quality &*
*Environmental Compliance*
Missouri American Water
314-341-1458

Click here to watch a short video about what you can do at home to protect your drinking water.

---

**From:** Savage-Clarke, Kristi <Kristi.Savage-Clarke@dnr.mo.gov>
**Sent:** Friday, July 16, 2021 12:20 PM
**To:** Traci L Lichtenberg <Traci.Lichtenberg@amwater.com>
**Subject:** interesting idea



I came across this the other day and thought of Eureka and their issues with meeting. I am not sur eit is appropriate, but thought it was certainly worth consideration. Let me know if this is of interest or if more explanation is needed. I am just wrapping my head around it myself, but plan to explore this as an idea for some other facilities.

Per 40 CFR 133.103(d), the Department has the authority to substitute a mass loading limit for the percent removal requirements provided 1) the facility is consistently meeting its permit effluent limits 2) to meet the percent removal requirements, the facility would have to achieve significantly more stringent limits than would otherwise be required; and (3) the less concentrated influent wastewater is not the result of excess inflow and infiltration. The federal regulations define non-excessive inflow and infiltration as flows which do not result in a total flow of more than 275 gallons per capita per day (gpcd) for inflow and 120 gpcd for infiltration.

The PE for this facility is 7500, so I did some math. 7500*275=2,062,500 gpd; 7500*120=900,000 gpd. I calculated the average actual flow of the facility to be approximately 861,800 gpd. Because the actual flow of the facility is less than the calculated value for excessive I&I, I can say the facility does not meet the definition of excess I&I and qualifies for the mass loading limits modification per 40 CFR 133.103(d).

I calculated the mass loading limits for BOD with the following equation: chronic limit (30 mg/L) * design flow in cubic feet per second (1.1625) * a conversion factor (5.39) = **188.0 lbs/day.** This value is tied to the concentration limit, so if the facility is able to meet 30 mg/L, it will be able to meet 188.0 lbs/day.

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Hydrograph | River at a Glance | Download | Probability Information

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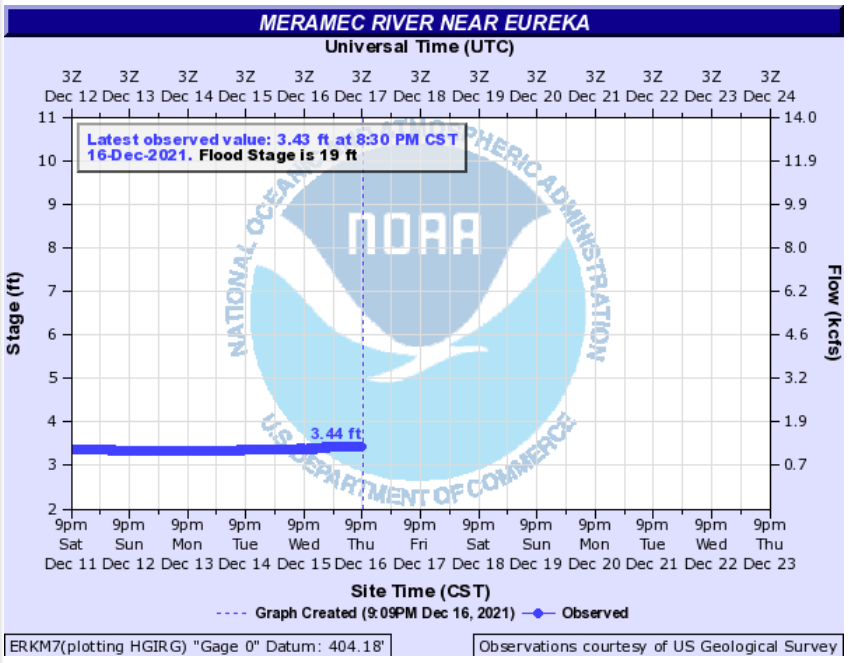



Printable Image
About this graph
Tabular Data (UTC)
Tabular Data (CST)
XML
RSS
Datum: NAVD88
Metadata

**NOTE: River forecasts for this location take into account past precipitation and the precipitation amounts expected approximately 48 hours into the future from the forecast issuance time.**

**NOTE:** Forecasts for the Meramec River near Eureka are issued routinely during the warm season, and as needed at other times of the year.

Default Hydrograph

Return to Area Map

Upstream Gauge
Downstream Gauge

**Flood Categories (in feet)**

| | |
|---|---|
| Major Flood Stage: | 31 |
| Moderate Flood Stage: | 26 |
| Flood Stage: | 19 |
| Action Stage: | 17 |

**Historic Crests**
(1) 46.11 ft on 05/03/2017
(2) 46.06 ft on 12/30/2015
(3) 42.89 ft on 12/06/1982
(4) 42.20 ft on 08/22/1915
(5) 40.90 ft on 04/14/1994
(6) 40.06 ft on 03/22/2008
(7) 39.00 ft on 02/01/1916
(8) 38.90 ft on 06/11/1945
(9) 36.72 ft on 09/26/1993
(10) 36.60 ft on 05/03/1983
Show More Historic Crests

**(P)**: Preliminary values subject to further review.

**Recent Crests**
(1) 25.94 ft on 01/14/2020

Zoom Level:14

(2) 20.79 ft on 03/31/2018
(3) 20.79 ft on 03/31/2018
(4) 25.70 ft on 02/27/2018
(5) 46.11 ft on 05/03/2017
(6) 46.06 ft on 12/30/2015
(7) 24.12 ft on 04/21/2013
(8) 27.93 ft on 04/29/2011
(9) 29.12 ft on 11/02/2009
(10) 18.75 ft on 06/20/2009
Show More Recent Crests

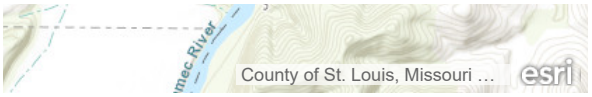
**(P)**: Preliminary values subject to further review.

**Low Water Records**
(1) 0.10 ft on 09/15/1971
(2) 1.66 ft on 07/29/2012
(3) 1.70 ft on 09/16/2000
Show More Low Water Records

FEMA

For more information on your flood risk go to www.floodsmart.gov.

Show FEMA's National Flood Hazard Layers




KML

Gauge Location

Disclaimer

Latitude/Longitude Disclaimer: The gauge location shown in the above map is the approximate location based on the latitude/longitude coordinates provided to the NWS by the gauge owner.

Flood Impacts & Photos

Collapse

**If you notice any errors in the below information, please contact our Webmaster**

46.5 The Raineri Construction Products building on Truitt Drive begins flooding near this height.

46.3 The Shell station between south Central Avenue and Highway 109 building and the Eureka Post Office building will both begin flooding near this height.

46 Midwest Motors dealership's office building begins flooding at this height.

45.7 Gershenson Construction on Truitt Drive begins flooding at this height.

45.3 The Legion Park Community Center will begin flooding near this height.

45 Three businesses along Truitt Drive, Earthbound Recycling Center, J.M. Mersheutz Construction, and Sellenriek Grading, begin flooding near this height.

44.5 The intersection of Highway 109 with highways W and FF will begin flooding near this height.

44 Cotton's Ace Hardware between South Central Avenue and Highway 109 begins flooding near this height.

43.5 Near this height, floodwaters will reach the top of the rim around the wastewater treatment plant lagoon.

43 Near this height, numerous businesses along Central Avenue in old town Eureka, Rockwood Bank, and the sewage treatment plant will begin flooding.

42.8 Missouri State Route 109 in the older business section of Eureka is closed near this height.

42 Missouri State Route 109 near Old State Road is flooded and closed near this height. Also, Lions Park ball fields will begin flooding near this height.

41.5 Near this height, floodwaters will reach the floors of the utility buildings at the wastewater treatment plant, including the generator shelter.

40.2 Highway 109 at Eureka Senior High School is closed.

40 The right bank begins to overflow.

35 Lighthouse Storage property begins to flood. Shelters and roads within Route 66 State Park are also flooded at this level.

34 Numerous homes on West Spring River Ranch Road begin flooding at or slightly above this level.

32.9 Near this height, the parking lot, restrooms, and smaller pavilion along Williams Road at Kircher Park in Eureka begin flooding.

32.5 At this height, about 12 houses on Willman Road start flooding the main floors. On the river's north side, another 8 homes along West Spring River Ranch Road begin flooding.

29.7 Near this height, the large pavilion floor and gazebo along Williams Road at Kircher Park in Eureka begin flooding.

28 The lowest house on West Spring River Ranch Road begins flooding on the lower level.

27 The Route 66 State Park road to the equestrian trailhead and to the boat ramp is flooded.

25.5 Hornecker Road is closed near this height.

24.5 The athletic fields at Eureka Senior High School begin flooding near this height.

23.8 Spring River Ranch Road begins flooding near this height on the east end.

22 Willman Road near the Highway 109 bridge becomes inundated and impassable.

21.2 Hunters Ford Road is closed near this height.

21 West Spring River Road becomes inundated at this height.

**Photos**
(1) Highway 109 near Old State Road on March 22, 2008 at a stage near 39.4 feet.
(2) Highway 109 near Eureka High School on March 22, 2008 with a stage near 39.3 ft.
(3) Residence on Willman Road off Highway 109 on March 22, 2008 with a stage near 37.3 feet.
(4) Residence on West Spring River Ranch Road on March 22, 2008 at a stage near 37.3 feet.
(5) Residence on West Spring River Ranch Road on March 22, 2008 at a stage near 37.3 feet.
(6) Residence on East Spring River Ranch Road on March 22, 2008 at a stage near 37.3 feet.
(7) Residences along Willman Road just west of Highway 109 on March 20, 2008 with a stage near 33.8 ft.
(8) Eureka High School parking lot and athletic fields on March 22, 2008 at a stage near 39.3 feet.
(9) Eureka Looking Upstream
(10) Eureka Looking Downstream
(11) Gage well near the Route 66 bridge

## About This Location

Collapse

Latitude: 38.504681° N, Longitude: 90.590747° W, Horizontal Datum: NAD83/WGS84

| River Stage Reference Frame | Gauge Height | Flood Stage | Uses |
|---|---|---|---|
| NWS stage | 0 ft | 19 ft | Interpreting hydrographs and NWS watch, warnings, and forecasts, and inundation maps |
| **Vertical Datum** | **Elevation (gauge height = 0)** | **Elevation (gauge height = flood stage)** | **Elevation information source** |
| NAVD88 | 403.94 ft | 422.94 ft | Survey grade GPS equipment, FEMA flood plain maps, newer USGS topographic maps |
| NGVD 29 | 404.18 ft | 423.18 ft | Older USGS topographic maps, NGVD29 benchmarks |
| MSL | Not Available | Not Available | Older USGS topographic maps, MSL benchmarks |
| Other | Not Available | Not Available | |

**Current/Historical Observations:**

- U.S. Geological Survey (USGS) Data and Site Info for Eureka

## Additional Information

Collapse

How low could the river get?

## Resources

Collapse

**Hydrologic Resources**

- Text Products
- Past Precipitation
- Forecast Precipitation
- River Forecast Centers
- River Stage Summary
- Inundation Mapping Locations
- NWS Alert Messaging
- USGS Alert Messaging

**Additional Resources**

- Area Hydrographs
- NWS Precipitation and River Forecasting
- AHPS Iframes for Developers
- Mobile iNWS for emergency management
- Snow Information

## Collaborative Agencies

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The National Weather Service prepares its forecasts and other services in collaboration with agencies like the US Geological Survey,

US Bureau of Reclamation, US Army Corps of Engineers, Natural Resource Conservation Service, National Park Service, ALERT Users Group, Bureau of Indian Affairs, and many state and local emergency managers across the country. For details, please click here.

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St. Charles, MO 63304
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