



## 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

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### Person or Persons Involved:

<b>Name/Title:</b>	<b>Representing:</b>	<b>Telephone:</b>
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 discussed 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.

### Closing

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 reprotng 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**

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

FYI

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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.

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**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

**EXTERNAL EMAIL:** The Actual Sender of this email is [Kristi.Savage-Clarke@dnr.mo.gov](mailto:Kristi.Savage-Clarke@dnr.mo.gov) "Think before you click!".

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.

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**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

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Traci Lichtenberg

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

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

**EXTERNAL EMAIL:** The Actual Sender of this email is [Kristi.Savage-Clarke@dnr.mo.gov](mailto:Kristi.Savage-Clarke@dnr.mo.gov) "Think before you click!".

I came across this the other day and thought of Eureka and their issues with meeting. I am not sure it 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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# National Weather Service Advanced Hydrologic Prediction Service



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National Observations WFO Observations **Hydrograph**

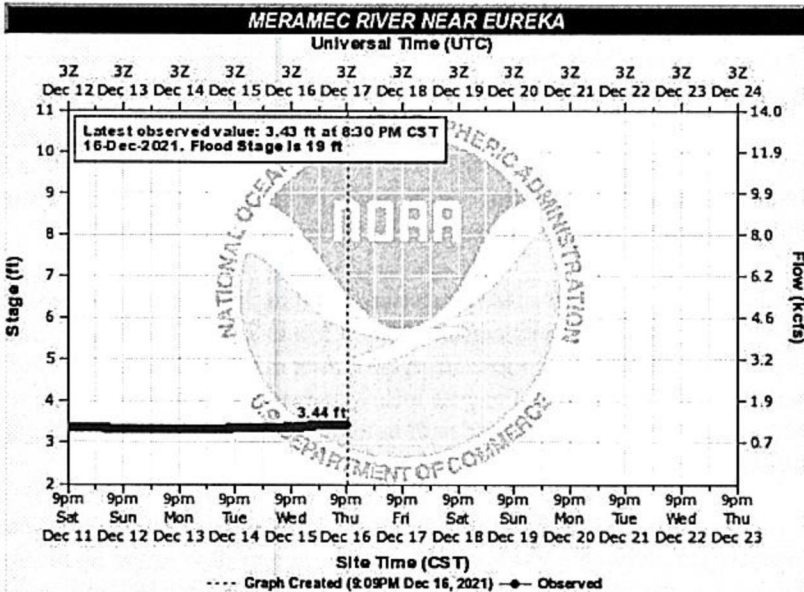
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ERKM7(plotting HGIRG) "Gage 0" Datum: 404.18' Observations courtesy of US Geological Survey

Printable Image  
 About this graph  
 Tabular Data (UTC)  
 Tabular Data (CST)  
  
  
 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

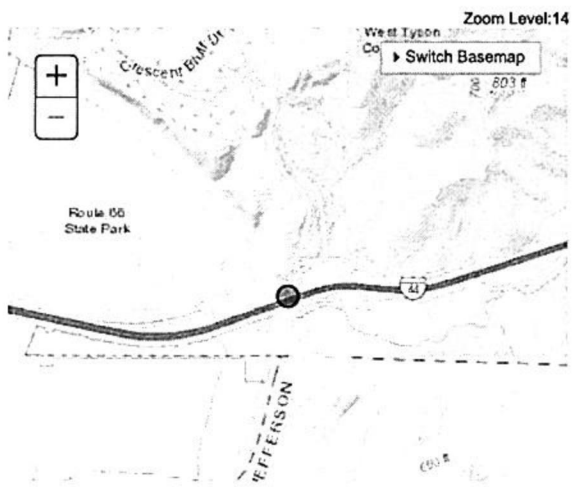
**Flood Categories (in feet)**  
 Major Flood Stage: 31  
 Moderate Flood Stage: 26  
 Flood Stage: 19  
 Action Stage: 17

**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

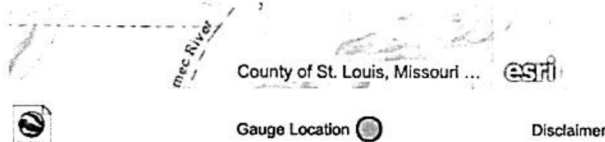
(P): Preliminary values subject to further review.

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

← Upstream Gauge Downstream Gauge →



- (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](#)



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.

(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](#)



For more information on your flood risk go to [www.floodsmart.gov](http://www.floodsmart.gov).

Show FEMA's National Flood Hazard Layers

[Flood Impacts & Photos](#)

[Collapse](#)

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

- 46.5 The Rainier 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 Homecker 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](#).

NWS Information

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