

Section D: Summary of Finding/Comments (Attach additional sheets of narrative and checklists as necessary)

Introduction

On 7-30-2015 the Division of Water Resources (DWR), inspected the Town of Maysville WWTP. The inspection was planned and the appropriate people were notified. The DWR Staff present was David May, Robert Tankard, Don Burke, and Justin Davis. The DWR staff arrived at Town Hall at 9:50am and met with the Town Manager, Dave Harvell. Introductions were made and DWR Staff stated we are here today to perform a compliance inspection and take samples. The DWR Staff arrived at the WWTP at 10:10am. The WWTP Operator in Responsible Charge (ORC) Robert Boomer was on-site.

Operations and Maintenance

Justin Davis asked Robert Boomer to pull a sample from the aeration basin. A Settleometer Test was performed by Robert Boomer. The results are as follows, recorded by Justin Davis:

Time	Beaker Level	Supernatant Observation
Start: 10:15	1000mL	unsettled
10:33	650mL	clear
10:48	550mL	clear
10:55	500mL	clear
11:15	450mL	clear

A 1000mL beaker was used to perform the Settleometer Test. The slurry sample was stirred for a few moments. Then it was allowed to settle, approximately 15 minutes was allowed to pass between recordings. The actual time the level was taken was recorded also. As the solids settled in the beaker the levels were read and the supernatant was observed.

Laboratory

The facilities Certified Lab #5031 expires 12-31-2015. The YSI-550A-DO Meter is used to collect Dissolved oxygen readings. Dissolved Oxygen (DO) records were reviewed. DO was checked each weekday, excluding holidays.

The pH buffers on site are as follows:

pH Buffers:	4.00	7.00	10.00
Expire:	MAR/16	MAR/16	JUN/16

The pH-meter is a pH Testr 30, EuTech Instruments OakTON. The pH records were on hand for each week from 2-5-15 to 5-7-15.

Pump Station – Influent

The influent wet well had evidence of grease, trash in the wet well, rust on pipes, and trash on the floats. There is no influent flow meter at this facility. There are four pumps in the influent pump station. The influent pump station was equipped with a telemetry system, Sensaphone 1104. Robert Boomer is on the dialer. The Top Floats were pulled and the audio and visual alarm functioned. The telemetry worked correctly because Robert Boomer was called when alarm was tripped.

Grease Removal

When the systems grease traps were discussed, Robert Boomer stated that the grease traps have not been checked in over one year.

Equalization Basin

There is no equalization basin. What flow comes in the plant must go out of the plant. With this setup, it is very likely that with each rain event, the plant will overload and lose solids out of the effluent. There is no storage in the influent tank, because the influent pipe is in the bottom of the tank. The influent pipe is low because of gravity flow into the plant.

Bar Screens

Technical assistance provided with bar screen setup. Technically the unit on site is not a bar screen, it is more accurate to describe the unit as a "Micro Screen". The Micro Screen does not function correctly, due to a gap between the screen and the debris dump edge. Currently a 5 gallon trash bucket is in place to catch the grit debris, but with the gap leaving an opening above the return flow the bucket does not catch the grit debris as anticipated. It is not known how much debris bypasses the micro screen and continues into the plant. It appears more debris enters the plant than debris enters the trash bucket. Some blinding occurs on sides of screens due to "algae" build up. Screen should be cleaned to remove algae accumulation. Improvements could be made to the screen to improve working effectiveness.

Aeration Basins, Primary Clarifier, and Digesters

The flow goes from the micro screen into a splitter box, diverting the flow into the two identically designed treatment trains. DWR Staff walked through Train # 2 process as the water flowed into 8 aeration basins. The aeration basins were dark brown in color with no dead spots, the water was moving with a consistent roll. The last aeration basin was setup with three channeling pipes designed to divert flow evenly to three clarifier basins. The first clarifier actually received higher flow than the other two clarifiers. Robert Boomer was asked to pull sludge blankets in all clarifiers with a sludge judge, but the sludge judge was not long enough to get to the bottom. Robert Boomer had only been reaching the top of the sludge blanket and no real informative information had been gathered. Robert Boomer added an extension. Justin Davis showed Robert Boomer a slower more reliable way to use the sludge judge. The following sludge blankets in train # 2 were recorded:

Clarifier # 1 - 5'

Clarifier # 2 - 6.5'

Clarifier # 3 - 3.5'

High amounts of pin flock were noticed in the 3rd clarifier. Robert Boomer states that he wastes almost every day when he is at the plant. To waste, a valve is opened above the first digester; the flow comes from the above pipe works. There are three digester tanks in total on each train unit. As the digesters fill up and roll over to the next digester tank, solids are left to settle to the bottom of the tanks. Solids are pumped out of the digesters as needed. Typically the most solids come out of the first digester.

Train # 1 is the same setup as train # 2. Train # 1 was examined in the same pattern as train # 2.

Robert Boomer was asked to pull the sludge depths for the three clarifiers in train # 1. The following sludge blankets in train # 1 were recorded:

Clarifier # 1 - 4'

Clarifier # 2 - 6.5'

Clarifier # 3 - 5'

High amounts of pin flock were noticed in the three clarifiers of train #1. There was an air leak noticed by Aeration Basin # 3 and Digester # 2. Robert Boomer stated this was going to be fixed soon.

Disinfection

Going from the 2 train units the flow continues into a cascading contact chamber, this was formerly used for the addition of liquid chlorine as the disinfection process. Chlorine is not used normally on this site. UV is used to disinfect the wastewater. Robert Boomer has been pumping out and cleaning the contact chamber because solids have been reaching the chamber. Robert Boomer states that he needs hoses for the mud pumper and that they are on order.

Filtration (High Rate Tertiary)

Transfer pump floats were checked and they worked but only the visual alarm was tripped, the audio alarm did not function. Transfer Pumps take the flow from the contact chamber to the tertiary filters. The filter pumps run by hand. Robert Boomer states that the tertiary Filter media is about 5 years old. There are five filter cells. The filters had the following backwash schedule:

Cells	C1	C2	C3	C4	C5
	10am	12pm	2pm	4pm	6pm

However, pumps are often operated in a manual mode.

Robert Boomer performed a backwash of Filter Cell #1 and lots of solids were seen flowing out of the cell chamber and into the clear well. The floats in the clear well did not function. Both floats were submerged in the clear well and NO ALARM, neither visual nor audio was tripped.

Disinfection – UV (Ultraviolet)

Excessive solids had been seen in UV 1 and UV2 from the July 20, 2015 inspection. Solids were noticed in both UV chambers on this inspection as well, however, conditions were much improved over the July 20, 2015 findings.

Flow Measurement – Effluent

The effluent flow meter was checked. The Effluent Flow Meter graph recorder calibrated August 13th, 2014. The effluent flow meter used is an Echo Flow, Ultra Sonic Open Channel, Hunter II C55ONA1OKO16, 60 degree V notch weir, 0-1 MGD, and it was calibrated by Jon Morgan. An effluent composite sampler is on order. Currently a Coleman cooler filled with ice, is used to take the composite samples. On days that samples are taken scheduled timed grab samples are combined to account for the required composite samples. The effluent was clear with some algae buildup around the chamber and on the V-notch weir.

Sampling Event

Samples were taken by DWR at three different sample sites. The three sample sites were at the effluent inside the plant, upstream of the outfall, and downstream of the outfall. The Samples Taken by DWR was Nutrients with Nitrite and Nitrate, Nutrients without, BOD (Biochemical Oxygen Demand), Fecal Coliform and TSS (Total Suspended Solids).

Record Keeping

The Sample Data was viewed at Town Hall. A Paper Trail was Performed, Environment 1 printouts were checked for correspondence to the 2015 Lab/DMR's for the time frame of Jan 15th-21st and April 23rd-28th, both weeks matched. The March 2015 DMR files were missing from the facilities records. Robert Boomer is the ORC. This facility requires an Operator to be certified at the Grade II level.

Robert Boomer is at a Grade I level of certification.

While reviewing the maintenance log written by Robert Boomer, ORC from Saturday July 18, 2015 the following statement was found... "1800 Late Entry- High Flow from earlier washed out some solids for no more than one hour. 1800 secured 4.5 in contact with Dave Harvell". This was a concern to the DWR Staff, to check recorded events against maintenance log.

Improvements

Grease build up on the floats in the influent pump station can be improved by cleaning. There is no equalization basin at this Facility. Addition of an equalization basin would improve operational efficiencies and prevent plant upsets. Heavy pin flock and high sludge blankets in the clarifiers should be addressed through tweaking operational habits. Solids were present in the clear well of the Filter System. When Filter Cell #1 was backwashed during the inspection, even more solids entered the clear well. An overload did not occur, but the solids should be removed and pumped back into the plant as needed. To keep the disinfection system running consistently, spare bulbs are suggested to be kept on site. Solids found in the UV chambers will affect the effluent continue to keep a close watch to prevent any unlawful discharges.

Conclusion

The Facility was found to be non compliant with Permit No. NC0021482. The micro bar screen was not designed and built correctly. The screen had a gap approximately 4 inches which allowed solids to re-enter the wastestream. This should be corrected to allow for the correct operation of the bar screen. Samples were taken on July 30, 2015. The Fecal Coliform sample taken at the effluent read 340 mg/L and the permit allows 400 mg/L on a weekly basis. The May 2015 DMR reports show the plant out of compliance for Fecal Coliform with exceedances of three weekly averages and the monthly average. The facility also exceeded the Ammonia Nitrogen limit. A Notice of Violation will be sent to the permittee for the above violations.

Laboratory

Yes No NA NE

- Are field parameters performed by certified personnel or laboratory?
- Are all other parameters(excluding field parameters) performed by a certified lab?
- # Is the facility using a contract lab?
- # Is proper temperature set for sample storage (kept at less than or equal to 6.0 degrees Celsius)?
- Incubator (Fecal Coliform) set to 44.5 degrees Celsius+/- 0.2 degrees?
- Incubator (BOD) set to 20.0 degrees Celsius +/- 1.0 degrees?

Comment: Certified Lab #5031 expires 12-31-2015
YSI-550A-DO Meter
pH Buffers: 4.00 7.00 10.00
Expire: MAR/16 MAR/16 JUN/16
pH-meter is a pH Testr 30, EuTech Instruments OakTON
pH records weekly from 2-5-15 to 5-7-15

Record Keeping

Yes No NA NE

- Are records kept and maintained as required by the permit?
- Is all required information readily available, complete and current?
- Are all records maintained for 3 years (lab. reg. required 5 years)?
- Are analytical results consistent with data reported on DMRs?
- Is the chain-of-custody complete?
- Dates, times and location of sampling
- Name of individual performing the sampling
- Results of analysis and calibration
- Dates of analysis
- Name of person performing analyses
- Transported COCs
- Are DMRs complete: do they include all permit parameters?
- Has the facility submitted its annual compliance report to users and DWQ?
- (If the facility is = or > 5 MGD permitted flow) Do they operate 24/7 with a certified operator on each shift?
- Is the ORC visitation log available and current?
- Is the ORC certified at grade equal to or higher than the facility classification?
- Is the backup operator certified at one grade less or greater than the facility classification?
- Is a copy of the current NPDES permit available on site?
- Facility has copy of previous year's Annual Report on file for review?

Record Keeping

Yes No NA NE

Comment: The Sample Data was viewed at Town Hall. A Paper Trail was Performed, Environment 1 printouts were checked for correspondence to the 2015 Lab/DMR's for the time frame of Jan 15th-21st and April 23rd-28th, both weeks matched. The March 2015 DMR files were missing from the facilities records.
While reviewing the maintenance log written by Robert Boomer, ORC from Saturday July 18, 2015 the following statement was found... "1800 Late Entry- High Flow from earlier washed out some solids for no more than one hour. 1800 secured 4.5 in contact with Dave Harvell". This was a concern to the DWR Staff, to check recorded events against maintenance log.
No current Primary ORC. Robert Boomer, back-up, operator fulfilling operator duties temporarily per 8 G .201 Operator Rules.

Permit

Yes No NA NE

- (If the present permit expires in 6 months or less). Has the permittee submitted a new application?
- Is the facility as described in the permit?
- # Are there any special conditions for the permit?
- Is access to the plant site restricted to the general public?
- Is the inspector granted access to all areas for inspection?

Comment: Permit on file.

Operations & Maintenance

Yes No NA NE

- Is the plant generally clean with acceptable housekeeping?
- Does the facility analyze process control parameters, for ex: MLSS, MCRT, Settleable Solids, pH, DO, Sludge Judge, and other that are applicable?

Comment: Settleometer Test Performed by Robert Boomer during inspection. Results are in summary. The plant appeared to have good housekeeping practices in place.

Pump Station - Influent

Yes No NA NE

- Is the pump wet well free of bypass lines or structures?
- Is the wet well free of excessive grease?
- Are all pumps present?
- Are all pumps operable?
- Are float controls operable?
- Is SCADA telemetry available and operational?
- Is audible and visual alarm available and operational?

Pump Station - Influent

Yes No NA NE

Comment: Influent Wet Well – evidence of grease, Trash in wet well, rust on pipes, and trash on floats
Grease Traps have not been checked in over one year for the collection system.
Telemetry – Sensaphone 1104
Robert Boomer is on dialer
Top Floats pulled: Audio and Visual Alarm function. Telemetry is functioning; Robert
Boomer was called when alarm was tripped.
No equalization basin. What comes in the plant must go out.
No storage with float setup. Influent pipe is low because of gravity flow from Town.

Standby Power

Yes No NA NE

- Is automatically activated standby power available?
- Is the generator tested by interrupting primary power source?
- Is the generator tested under load?
- Was generator tested & operational during the inspection?
- Do the generator(s) have adequate capacity to operate the entire wastewater site?
- Is there an emergency agreement with a fuel vendor for extended run on back-up power?
- Is the generator fuel level monitored?

Comment: Generator on site. Due to rain event, generator operation was not tested during inspection.

Bar Screens

Yes No NA NE

- Type of bar screen
 - a.Manual
 - b.Mechanical
- Are the bars adequately screening debris?
- Is the screen free of excessive debris?
- Is disposal of screening in compliance?
- Is the unit in good condition?

Comment: Not a bar screen. The micro screen on site is not functioning properly. A flaw in the design
allows the grit and debris to fall right back into the water flow. Sides of screens also blinded
due to algae build up. Improvement to screen design would increase screen effectiveness.

Grit Removal

Yes No NA NE

- Type of grit removal
 - a.Manual
 - b.Mechanical
- Is the grit free of excessive organic matter?
- Is the grit free of excessive odor?

Grit Removal

Yes No NA NE

Is disposal of grit in compliance?

Comment: Not Functioning, see summary.

Grease Removal

Yes No NA NE

Is automatic grease removal present?

Is grease removal operating properly?

Comment: Influent Wet Well – evidence of grease, Trash in wet well, rust on pipes, and trash on floats Grease Traps in the Town have not been checked in over one year, according to Robert Boomer.

Equalization Basins

Yes No NA NE

Is the basin aerated?

Is the basin free of bypass lines or structures to the natural environment?

Is the basin free of excessive grease?

Are all pumps present?

Are all pumps operable?

Are float controls operable?

Are audible and visual alarms operable?

Is basin size/volume adequate?

Comment: There is no equalization basin. An equalization basin is viewed as necessary to address high flows during rain events to minimize WWTP upsets.

Aeration Basins

Yes No NA NE

Mode of operation

Ext. Air

Type of aeration system

Diffused

Is the basin free of dead spots?

Are surface aerators and mixers operational?

Are the diffusers operational?

Is the foam the proper color for the treatment process?

Does the foam cover less than 25% of the basin's surface?

Is the DO level acceptable?

Is the DO level acceptable?(1.0 to 3.0 mg/l)

Comment: Walked through Train #2 flows into 8 aeration basins, dark color with good roll in tanks On last Aeration Basin, 3 pipes channel flow to clarifiers

Primary Clarifier

Yes No NA NE

Is the clarifier free of black and odorous wastewater?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the site free of excessive buildup of solids in center well of circular clarifier?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are weirs level?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is the site free of weir blockage?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the site free of evidence of short-circuiting?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is scum removal adequate?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the site free of excessive floating sludge?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the drive unit operational?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the sludge blanket level acceptable?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the sludge blanket level acceptable? (Approximately 1/4 of the sidewall depth)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comment: C1-5'
C2-6.5'
C3-3.5'
Solids in 3rd clarifier
Train 1 same setup.
Clarifiers in train 1 sludge depths.
C1-4'
C2-6.5'
C3-5'
Heavy pin flock in clarifiers.
Wasting of some level of sludge may improve operations.

Filtration (High Rate Tertiary)

Yes No NA NE

Type of operation:	Down flow			
Is the filter media present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the filter surface free of clogging?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the filter free of growth?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the air scour operational?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the scouring acceptable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the clear well free of excessive solids and filter media?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comment: Tertiary Filter media is about 5 years old
Tertiary filters set on Auto Timer/Floats
Cells C1 C2 C3 C4 C5
10am 12pm 2pm 4pm 6pm
However, filter are often operated manually.
Backwashed Filter Cell #1 and lots of solids evident
Floats are not functioning.
Both floats submerged and NO ALARM.

Disinfection - UV

Yes No NA NE

- Are extra UV bulbs available on site?
- Are UV bulbs clean?
- Is UV intensity adequate?
- Is transmittance at or above designed level?
- Is there a backup system on site?
- Is effluent clear and free of solids?

Comment: Solids still seen in UV 1 and UV 2. In past overload events, chlorine tablets have been used when UV chambers have been blinded by solids. No dechlorination is ever performed. Sampling every time chlorine tablets are used, is HIGHLY RECOMMENDED.

Disinfection-Tablet

Yes No NA NE

- Are tablet chlorinators operational?
- Are the tablets the proper size and type?
- Number of tubes in use?
- Is the level of chlorine residual acceptable?
- Is the contact chamber free of growth, or sludge buildup?
- Is there chlorine residual prior to de-chlorination?

Comment: No tablets were in Contact Chamber or Effluent.

De-chlorination

Yes No NA NE

- Type of system ?
- Is the feed ratio proportional to chlorine amount (1 to 1)?
- Is storage appropriate for cylinders?
- # Is de-chlorination substance stored away from chlorine containers?
- Are the tablets the proper size and type?

Comment: No de-chlorination on site.

- Are tablet de-chlorinators operational?
- Number of tubes in use?

Comment: No de-chlorination on site.

Effluent Pipe

Yes No NA NE

- Is right of way to the outfall properly maintained?

Effluent Pipe

Yes No NA NE

Are the receiving water free of foam other than trace amounts and other debris?

If effluent (diffuser pipes are required) are they operating properly?

Comment: Drove down path by effluent pipe, took samples upstream of effluent pipe. Everything appeared operational.

Flow Measurement - Effluent

Yes No NA NE

Is flow meter used for reporting?

Is flow meter calibrated annually?

Is the flow meter operational?

(If units are separated) Does the chart recorder match the flow meter?

Comment: Effluent Flow Meter graph recorder calibrated August 13th, 2014.
Echo Flow, Ultra Sonic Open Channel, Hunter II C55ONA1OKO16, 60 degree V notch weir,
0-1 MGD, Calibrated by Jon Morgan
No influent flow meter

Other

Yes No NA NE

Comment: -NA-