December 17, 2019

Wes Dement
Kentucky Department for Environmental Protection
Division of Enforcement
300 Sower Blvd., 3rd Floor
Frankfort, KY 40601

Bluegrass Water Utility Operating Company, Inc.
Airview WWTF
KPDES Permit No. KY0045390
Agency Interest No. 1643
Corrective Action Plan

In light of the Airview WWTF's failure to meet permitted limits Bluegrass Water Utility Operating Company (BWUOC) submits the following corrective action plan.

BWUOC has recently purchased this treatment plant. With the change of ownership, operational modifications have been implemented and are ongoing. With proper operation, the facility should be capable of meeting permit limits without process modification. Over the next several months, repairs will be made and monitoring will continue to confirm that the existing processes can meet permit limits.

1. Causes of the Effluent Violations

- pH
- Total Suspended Solids (TSS)
- E. Coli
- Total Residual Chlorine (TRC)
- Dissolved Oxygen (DO)

Testing results since the date of acquisition depict several samples violating various effluent limits. At operational startup, it appeared previous ownership had abandoned the facility. The initial analysis showed poor operational process control. The first sample violated DO and pH effluent limits, but we believe initial cleanup work has addressed the issue. Regarding TSS, TRC and E. Coli exceedances, inflow and infiltration (I and I) is a major contributor to these exceedances. The facility cannot treat waste properly due to accelerated flow through the plant resulting from the high levels of I and I. Additionally, the facility has struggled to meet TRC and E. Coli limits due to the poor installation/design of the contact chamber. The chamber is sitting in the flow line of the creek and the current piping configuration does not provide sufficient contact time. Operations personnel have made changes to the piping configuration to make it effective, but additional monitoring is needed to confirm the new arrangement will work when the creek level rises again.

2. System Evaluation and Corrective Actions

The facility should be able to consistently meet permit limits with proper operation, but monitoring will continue through this period of operational improvement to confirm no process changes are required.

While the facility is meeting permit limits, some components must be evaluated for repair or replacement. There are concerns with the integrity of the existing treatment plant steel walls as some portions appear to be reaching the end of their useful life. However, since the plant is meeting limits, current plans are to weld in steel plates to extend the usable life of the steel tankage.

The disinfection process was poorly designed/installed. If the system continues to struggle to meet limits for E. Coli and TRC following the process improvements already implemented, consideration should be given to an alternative disinfection system. With proper operational control, pH and DO will not be an ongoing problem.

The facility does not have a sludge holding tank. For facilities of this size, it is recommended to have a sludge holding tank to allow better control of the facility's mixed liquor and reduce sludge hauling costs.

Inflow and Infiltration is the primary cause for TSS exceedances and a known problem within this system. Flow monitoring will help determine the extents of I and I and will be addressed later in this memo. The collection system will be evaluated using a multi-step process. The first two steps are to smoke test and then to clean and jet the system. These tasks have been completed. The results of these two processes allow problem areas to be identified and targeted for repair/replacement. The evaluation showed two locations where the sanitary sewer had collapsed. Both locations have been repaired and returned to full service. Results are being reviewed further to establish an I and I improvement plan for the collection system. This will improve all aspects of treatment, more specifically it will reduce TSS violations during rain events.

The collection system has one lift station at the southwest corner of the system. This lift station had one operational pump which appeared to have very low flow capabilities. After evaluation, it was found that the functional pump had been wired backwards by the previous owner substantially reducing the pump's capacity. The second pump had a failed impellor. This impellor was ordered and received in the first week of December. It is scheduled to be installed and operational the week of December 16th. During major rain events, the lift station has been known to fall behind, causing sewage to discharge out of the adjacent manhole lid. The previous owner had coordinated with a tenant in an adjacent building to turn on a trash pump and pump the sewage into the adjacent ditch without treatment. The new operational plan does not allow this practice and the repaired pumps will improve the capacity of the station and reduce the potential of a sewer backup.

A Mission remote monitoring system and magnetic flow meter will be installed to provide real time monitoring of the facility. This will improve capabilities to monitor the effect of inflow and infiltration and status of the facility. The monitoring system will improve operations and maintain reliable service for the customers.

3. Project Milestones

- Continue monitoring performance of facility (June 30, 2020)
- Repair second pump in lift station (December 31, 2019)
- Install new magnetic flow meter and Mission monitoring system (May 31, 2020)
- Repair aeration tank by spot welding corroded areas (June 30, 2020)
- Submit status report detailing improvements and whether process changes are required (June 30, 2020)

Sincerely,

Benjamin Kuenzel, PE
Principal of 21 Design Group, Inc.

December 13, 2019

Wes Dement
Kentucky Department for Environmental Protection
Division of Enforcement
300 Sower Blvd., 3rd Floor
Frankfort, KY 40601

Bluegrass Water Utility Operating Company, Inc.
Brocklyn WWTF
KYPDES Permit No. KY0081299
Corrective Action Plan

In light of the Brocklyn WWTF's failure to meet permitted limits Bluegrass Water Utility Operating Company (BWUOC) submits the following corrective action plan.

BWUOC has recently purchased this treatment plant. With the change of ownership, operational modifications have been implemented and are ongoing. With proper operation, the facility should be capable of meeting permit limits without process modification. Over the next several months, repairs will be made, and monitoring will continue to confirm that the existing processes can meet permit limits.

1. Causes of the Effluent Violations

- Ammonia
- Carbonaceous Biological Oxygen Demand (CBOD)
- Total Suspended Solids (TSS)
- E. Coli
- Dissolved Oxygen (DO)

Effluent testing data found on echo.epa.gov shows the plant hasn't consistently met permitted limits. Sporadic permit limit exceedances occurred in the parameters listed above prior to BWUOC ownership transfer. The first sample taken shortly after acquisition failed CBOD, E. Coli, and Ammonia. Dissolved Oxygen and E. Coli test results were slightly over the current permit limits at the second sampling. The third sample met all permit limit parameters. We feel the plant should be capable of regularly meeting permit limits and the previous owner had abandoned full operation of the plant before acquisition. Preliminary review shows that the tankage in place is adequately sized.

The CBOD and Ammonia exceedances can be caused by several conditions, such as poor process control, possible release of sludge during a rain event or lagoon turn over. If one of these conditions occurs, the lagoon can also have high TSS. Continual monitoring will be necessary to determine if further process improvement is needed.

E. Coli and DO exceedances are typically caused by failed components in the system. If the diffuser system that is installed in the contact chamber is designed appropriately, it should be able to meet DO levels of the permit. E. Coli would also be tied to adequate design of the disinfection system and maintenance along with having adequate contact time prior to discharge. The second sample taken under new ownership was slightly over the permit limit, but the third sample was below limit levels. It is assumed that E. Coli and DO exceedances under previous ownership were due to improper operation.

2. System Evaluation and Corrective Actions

The facility should be able to consistently meet permit limits with proper operation, but monitoring will continue through this period of operational improvement to confirm no process changes are required.

While the facility is meeting permit limits, many components are reaching the end of their useful life. The disinfection process and equipment are in poor shape. This site is unique in that the subdivision stormwater drainage is routed through the wastewater facility between the activated sludge plant and polishing cell. Issues related to elevation of the chlorine contact chamber relative to the stormwater drainage culvert cause backup of stormwater into the chlorine contact chamber during large rain events. Gravel has been discovered and cleaned out of the chlorine contact chamber, showing that overflow of stormwater is commonplace. The stormwater routing, creek channel and contact chamber are currently being evaluated to remedy the issue. Considering the poor condition of the chlorine contact chamber, this component should be replaced and the new chlorine contact chamber will have walls that extend above the overflow of the culvert to reduce the chances of being inundated with the subdivision rainwater.

In addition to the chlorine contact chamber, the chlorination and dechlorination tablet feeders need to be replaced. The new tablet feeders will also be installed to avoid issues with stormwater flow.

There are concerns with the integrity of the existing treatment plant steel walls as some portions look to be reaching the end of their useful life. With the plant meeting limits, the option of welding in steel to repair the worn portions is being considered.

The aeration drop pipes are showing notable corrosion and will need to be replaced. During replacement, the condition of the diffusers will be evaluated as well.

A Mission remote monitoring system and magnetic flow meter will be installed to provide real time monitoring of the facility. This will improve capabilities to monitor the effect of inflow and infiltration and status of the facility. The monitoring system will improve operations and maintain reliable service for the customers.

In addition to flow monitoring, a multi-step process is employed on the collection system to determine the extent of inflow and infiltration. The first step involves smoke testing the system, which is already complete. Next, the sanitary sewers will be cleaned and jetted. Analysis of the information obtained from these processes will be used to create a plan to address inflow and infiltration issues. Approximately 25% of Brocklyn's sanitary sewers are in customer's back yards, therefore jetting work will need to be scheduled around the weather to prevent damage to customer's yards. The jetting work is currently planned for summer 2020 unless the ground adequately dries prior to that time in which the jetting will be performed earlier.

3. Project Milestones

- Continue monitoring performance of facility (July 31, 2020)
- Replace aeration drop pipes and inspect diffusers (March 31, 2020)
- Install new magnetic flow meters and mission alarms (April 30, 2020)
- Repair aeration tank by spot welding corroded areas (May 31, 2020)
- Replace existing chlorine contact chamber and both tablet feeders (May 31, 2020)
- Clean and jet the collection system (August 31, 2020)
- Submit status report detailing improvements and whether process changes are required (August 31, 2020)

Sincerely

Benjamin Kuenzel, PE
Principal of 21 Design Group, Inc.

December 23, 2019

Wes Dement
Kentucky Department for Environmental Protection
Division of Enforcement
300 Sower Blvd., 3rd Floor
Frankfort, KY 40601

Bluegrass Water Utility Operating Company, Inc.
Fox Run WWTF
KYPDES Permit No. KY0086967
Agency Interest No. 1388
Corrective Action Plan

In light of the Fox Run WWTF's failure to meet permitted limits we submit the following corrective action plan.

BWUOC has recently purchased this treatment plant. With the change of ownership, operational modifications have been implemented and are ongoing. With proper operation, the facility should be capable of meeting permit limits without process modification. Over the next several months, repairs will be made and monitoring will continue in order to confirm that the existing processes can meet permit limits.

1. Causes of the Effluent Violations

- Ammonia
- Carbonaceous Biological Oxygen Demand (CBOD)
- Total Suspended Solids (TSS)
- E. Coli
- Total Residual Chlorine (TRC)
- Dissolved Oxygen (DO)

A review was performed of EPA's Echo compliance website which lists violations. The last eight quarters revealed missing DMRs. Due to the website's format for presenting results, it is unknown exactly how many DMRs were not submitted but it appears previous ownership missed approximately 16 of the last 24 DMRs. Looking at the DMRs that were submitted reveals that previous ownership all but abandoned this facility.

Testing results since the date of acquisition depict two violations on E. Coli. Inflow and infiltration is a known problem in the system and causes problems in the disinfection process in two ways. The current system uses a pump to inject liquid chlorine for disinfection. When I and I surges occur during high rainfall events, the pump can't provide enough chlorine to get the necessary concentration for disinfection. Secondly, when the surges occur, the contact chamber is not be capable of providing sufficient contact time to disinfect. I and I needs to be evaluated and reduced to resolve this issue.

2. System Evaluation and Corrective Actions

The facility should be able to consistently meet permit limits with proper operation, but monitoring will continue through this period of operational improvement to confirm no process changes are required.

While the facility is meeting permit limits, some components must be evaluated for repair or replacement. There are concerns with the integrity of the existing treatment plant steel walls as some portions appear to be reaching the end of their useful life. However, since the plant is meeting limits, current plans are to weld in steel plates to extend the usable life of the steel tankage.

The disinfection system needs to be further evaluated to determine if there are any ways to improve the disinfection process. However, the current setup appears to be adequate to handle the current loading if I and I problems are addressed.

The facility does not have a sludge holding tank. For facilities of this size, it is recommended to have a sludge holding tank, allowing the operator more operational control of the facility's mixed liquor and reducing sludge hauling costs. Depending on priority of system needs and upgrades, a sludge holding tank may be considered for a future capital project rather than being included in initial plant improvements.

E. Coli violations are primarily due to the system's excessive inflow and infiltration. I and I is a known problem within this system. Flow monitoring will help determine the extents of I and I and will be addressed later in this memo. A multi-step process is employed on the collection system to determine the extent of inflow and infiltration. The first step involves smoke testing the system, which is already complete. Next, the sanitary sewers will be cleaned and jetted. Analysis of the information obtained from these processes will be used to create a plan to address inflow and infiltration issues. Most of the Fox Run sanitary sewers are in customer's back yards, therefore jetting work will need to be scheduled around the weather to prevent damage to customer's yards. The jetting work is currently planned for summer 2020 unless the ground adequately dries prior to that time in which the jetting will be performed earlier.

The collection system has two lift stations. The lift station located at the northern edge of the system has been in a state of disrepair for an extended period. This is evident from a tree that has fallen over on the lift station making it inaccessible and the electric provider has disconnected the power. This lift station requires major repair. There is currently no truck access to the lift station to perform the necessary repairs. Surveying and engineering work has begun to identify and acquire property or an easement to design an access road to the lift station. The other lift station is operating properly.

The treatment facility has an influent lift station that requires repair. The influent lift station does not have pumps, rails or brackets typical of a finished lift station. The previous owner utilized a trash pump to feed the plant from the lift station wet well. This pump conveyed the incoming sewage through a black flexible pipe instead of the existing influent pipe. An investigation is underway to determine if the original piping feeding the plant is still useful or if it will require repair or replacement.

A Mission remote monitoring system and magnetic flow meter will be installed to provide real time monitoring of the facility. This will improve capabilities to monitor the effect of inflow and infiltration and status of the facility. The monitoring system will improve operations and maintain reliable service for the customers.

3. Project Milestones

- Continue monitoring the facility for performance (July 31, 2020)
- Repair wastewater facility influent pump station (March 31, 2020)
- Install new magnetic flow meters and mission alarms (April 30, 2020)
- Repair aeration tank by spot welding corroded areas (May 31, 2020)
- Evaluate disinfection system (May 31, 2020)
- Repair collection system lift station at north end of system (TBD due to access issues)
- Clean and jet the collection system (August 31, 2020)
- Submit status report detailing improvements and whether process changes are required (August 31, 2020)

Sincerely,

Benjamin Kuenzel, PE
Principal of 21 Design Group, Inc.

December 26, 2019

Wes Dement
Kentucky Department for Environmental Protection
Division of Enforcement
300 Sower Blvd., 3rd Floor
Frankfort, KY 40601

Bluegrass Water Utility Operating Company, Inc.
Golden Acres WWTF
KYPDES Permit No. KY0044164
Agency Interest No. 2935
Corrective Action Plan

In light of the Golden Acres WWTF's failure to meet permitted limits, Bluegrass Water Utility Operating Company (BWOC) submits the following corrective action plan.

BWUOC has recently purchased this treatment plant. With the change of ownership, operational modifications have been implemented and are ongoing. With the repairs noted below and proper operation, the facility may be capable of meeting permit limits consistently without process modification. Over the next several months, repairs will be made and monitoring will continue in order to determine if existing processes can meet permit limits.

1. Causes of the Effluent Violations

- Ammonia
- Carbonaceous Biological Oxygen Demand (CBOD)
- Total Suspended Solids (TSS)
- E. Coli
- Total Residual Chlorine (TRC)
- Dissolved Oxygen (DO)

At operational startup, it appeared previous ownership had abandoned the facility. On multiple site visits prior to acquisition, the plant was not operating and appeared to have the power turned off. After acquisition, the initial analysis showed poor operational process control. The first sample violated Ammonia, CBOD, TSS, TRC, and DO. The blowers installed are undersized and can't supply the required air to provide treatment. Not having adequate aeration will hinder the operator's capabilities to maintain a quality mixed liquor and remove Ammonia, CBOD, TSS and maintain DO. It is also apparent that inflow and infiltration are causing issues in regard to TSS, TRC and E. Coli. The facility cannot treat waste properly due to accelerated flow through the plant with this I and I issue.

2. System Evaluation and Corrective Actions

New blowers have been ordered that will be adequately sized for this treatment facility. The aeration drop pipes and diffusers are also being pulled for inspection, repair and/or replacement. Additionally, the returns are not working properly and are under evaluation. They may need to be repaired or replaced as well. After the blowers are onsite and operating with proper aeration and process control, it will then be possible to determine if the facility is capable of meeting limits, or an expansion is needed.

While the permitted sampling requirement for this facility are quarterly, in order to expedite the evaluation of any necessary improvements for this facility samples will temporarily be taken on a monthly basis for data gathering purposes.

Various components of the system must be evaluated for repair or replacement. There are concerns with the integrity of the existing treatment plant steel wall as some portions look to be reaching the end of their useful life. Current plans are to weld in steel plates to extend life in areas that are hindering performance. If the facility can be salvaged for the treatment process, the remaining portions of the tank that are in poor shape will be repaired to further extend the life of the facility.

The facility does not have a sludge holding tank. For facilities of this size, it is recommended to have a sludge holding tank, allowing the operator more operational control of the facility's mixed liquor and reducing sludge hauling costs. Depending on priority of system needs and upgrades, a sludge holding tank may be considered for a future capital project rather than being included in initial plant improvements.

Inflow and infiltration is a known problem within this system. Flow monitoring will help determine the extents of I and I and will be addressed later in this memo. A multi-step process is employed on the collection system to determine the extent of inflow and infiltration. The first step involves smoke testing the system, which is already complete. Next, the sanitary sewers will be cleaned and jetted. Analysis of the information obtained from these processes will be used to create a plan to address inflow and infiltration issues. A contractor is currently being engaged to schedule the sanitary sewer jetting and cleaning.

The collection system has one lift station. This lift station is in poor shape. This facility requires new pumps, a control panel and likely rails in order to make the station more reliable.

A Mission remote monitoring system and magnetic flow meter will be installed to provide real time monitoring of the facility. This will improve capabilities to monitor the effect of inflow and infiltration and status of the facility. The monitoring system will improve operations and maintain reliable service for the customers. A mission monitoring system will also be installed at the lift station.

3. Project Milestones

- Continue monitoring the facility for performance (July 31, 2020)

- Blower, aeration piping and diffuser replacement (March 31, 2020)
- Sludge return piping repairs/replacement (March 31, 2020)
- Install new magnetic flow meters and mission alarms (April 30, 2020)
- Repair aeration tank by spot welding corroded areas (May 31, 2020)
- Evaluate disinfection system (May 31, 2020)
- Repair collection system lift station (May 31, 2020)
- Clean and jet the collection system (August 31, 2020)
- Submit status report detailing improvements and whether process changes are required (August 31, 2020)

Sincerely,

Benjamin Kuenzel, PE
Principal of 21 Design Group, Inc.

December 26, 2019

Wes Dement
Kentucky Department for Environmental Protection
Division of Enforcement
300 Sower Blvd., 3rd Floor
Frankfort, KY 40601

Bluegrass Water Utility Operating Company, Inc.
Great Oaks WWTF
KYPDES Permit No. KY0080845
Agency Interest No. 3041
Corrective Action Plan

In light of the Great Oaks WWTF's failure to meet permitted limits, Bluegrass Water Utility Operating Company (BWUOC) submits the following corrective action plan.

BWUOC has recently purchased this treatment plant. With the change of ownership, operational modifications have been implemented and are ongoing. With proper operation, the facility should be capable of meeting permit limits without process modification. Over the next several months, repairs will be made and monitoring will continue to confirm that the existing processes can meet permit limits.

1. Causes of the Effluent Violations

- Total Suspended Solids (TSS)
- Carbonaceous Biological Oxygen Demand (CBOD)
- Ammonia
- E. Coli
- Total Residual Chlorine (TRC)
- Dissolved Oxygen (DO)

Testing results since the date of acquisition depict several samples violating various effluent limits. This facility was recently placed into receivership prior to BWUOC acquisition. Operations were taken over by a local sanitary sewer district, Paducah-McCracken County Joint Sewer Agency. The state elected to do this based on poor management of the system by the previous owner. The sewer agency improved operations and made a few initial equipment repairs, but they were too restricted on funds to return the facility to a reliable state. At operational startup after acquisition by BWUOC, it was determined that the system still requires improvements in order to meet permit limits on a consistent basis. Prior to acquisition by BWUOC, the facility was regularly exceeding permit limits on CBOD, TRC, E. Coli, Ammonia, DO, and TSS. After acquisition by BWUOC and through two months of sampling, effluent exceedances have been reduced to one test each on CBOD, Ammonia and TRC. Most of these exceedances are due to failed aeration headers/diffusers and possibly an undersized blower. Improvements are necessary to consistently meet operating permit limits.

2. System Evaluation and Corrective Actions

An analysis of sample results since acquisition shows the facility will struggle to consistently meet permit limits in its current condition. A redundant blower is being ordered and will be installed. Aeration drop pipes and diffusers are also being pulled for inspection and replacement. The sludge returns are not working properly and are currently being evaluated for repairs or improvements to make them fully operational. After the new blower is installed and all aeration components operating properly, the capabilities of the facility will be re-evaluated to determine if additional improvements or process changes will be necessary.

There are concerns with the integrity of the existing treatment plant steel wall as some portions are reaching the end of their useful life. Current plans are to weld in steel plates to extend life in areas that are hindering performance. If the facility can be salvaged and is capable of providing acceptable treatment, the remaining portions of the tank that are in poor shape will be repaired to further extend the life of the facility.

The facility does have a sludge holding tank, but it has been decommissioned. For facilities of this size, it is recommended to have a sludge holding tank to allow better control of the facility's mixed liquor and reduce sludge hauling costs. The sludge holding tank should be returned to service to reduce future operational costs.

The system does have an influent lift station. A crane is being installed for pump maintenance and is almost complete. Additionally, this facility had only one working pump so a redundant pump has been ordered. Installation of this redundant pump will be completed within 10 working days of delivery, pending weather.

Inflow and infiltration is a known problem within this system. Flow monitoring will help determine the extents of I and I. The collection system will be evaluated using a multi-step process. The first step involves smoke testing the system, which is already complete. Next, the collection system will be cleaned and jetted. The results of these two processes allow problem areas to be identified and targeted for repair/replacement. Cleaning and jetting is being scheduled currently and will be completed soon.

Mission remote monitoring systems will be installed at the plant and influent lift stations for active monitoring. A flow meter will also be installed at the plant. This will improve capabilities to monitor the effect of inflow and infiltration and status of the facility. The monitoring system will improve operations and maintain reliable service for the customers.

3. Project Milestones

- Continue monitoring performance of facility (June 30, 2020)
- Install new blower and repair/replace aeration piping and diffusers (March 31, 2020)
- Repair existing lift station pump after new redundant pump is installed (March 31, 2020)
- Return sludge holding tank to operational service (April 30, 2020)
- Install new magnetic flow meter and Mission monitoring systems (May 31, 2020)
- Repair aeration tank by spot welding corroded areas (June 30, 2020)
- Submit status report detailing improvements and whether process changes are required (June 30, 2020)

Sincerely,

Benjamin Kuenzel, PE
Principal of 21 Design Group, Inc.

December 12, 2019

Wes Dement
Kentucky Department for Environmental Protection
Division of Enforcement
300 Sower Blvd., 3rd Floor
Frankfort, KY 40601

Bluegrass Water Utility Operating Company, Inc.
Kingswood WWTF
KYPDES Permit No. KY0101419
Corrective Action Plan

In light of the Kingswood WWTF's failure to meet permitted limits, Bluegrass Water Utility Operating Company (BWOC) submits the following corrective action plan.

BWUOC has recently purchased this treatment plant. With the change of ownership, operational modifications have been implemented and are ongoing. With proper operation, the facility should be capable of meeting permit limits without process modification. Over the next several months, repairs will be made and monitoring will continue to confirm that the existing processes can meet permit limits.

1. Causes of Effluent Violations

- Ammonia (Intermittent)
- Total Suspended Solids (TSS) (Intermittent)
- E. Coli

Recent effluent testing data shows the plant exceeded permit limits for Ammonia, TSS, and E. Coli. Ammonia levels were just slightly over the current limit. With further operational modifications, the facility should be capable of meeting ammonia limits without permit modification. The TSS violation is in large part due to several failed and/or missing clarifier components which are planned to be repaired or replaced. These items consist of failing valving on returns and skimmers, a missing skimmer and the existing skimmer is improperly installed. Finally, E. Coli levels have consistently exceeded permit limits. This is due to the UV system having an inoperable ballast and the UV sensor has failed. These components will be replaced to return the UV system to full operational capacity.

2. System Evaluation and Corrective Actions
Recent testing shows the facility should be able to meet Ammonia limits and we will continue to monitor ammonia levels to confirm. Further monitoring is recommended at this time.

The TSS violation is due to failed clarifier components. BWUOC plans to install new valving on the returns and skimmer lines. This will improve operational control of the clarifier. Additionally, a new skimmer will be

installed and the existing skimmer will be repaired in place. These repairs and improvements will reduce TSS levels.

The E. Coli exceedances have occurred as a result of failed UV components. The manufacturer is currently working to price a new style sensor since they no longer make the existing style. The manufacturer no longer makes the ballast currently installed. However, a new style ballast will be modified to work with the current system. It is unknown what the longevity of the modified parts will be, therefore the UV system will be closely monitored to ensure it is functioning properly. If the UV system struggles to perform with the modified parts, a new disinfection system will need to be installed.

A Mission remote monitoring system and magnetic flow meter will be installed to provide real time monitoring of the facility. This will improve capabilities to monitor the effect of inflow and infiltration and status of the facility. The monitoring system will improve operations and maintain reliable service for the customers.

In addition to flow monitoring, a multi-step process is employed on the collection system to determine the extent of inflow and infiltration. The first step involves smoke testing the system, which is already complete. Next, the sanitary sewers will be cleaned and jetted. Analysis of the information obtained from these processes will be used to create a plan to address inflow and infiltration issues. With the sanitary sewers predominately in customer's back yards, jetting work will need to be scheduled around the weather to prevent damage to customer's yards. The jetting work is currently planned for summer 2020 unless the ground adequately dries prior to that time in which the jetting will be performed earlier.

3. Project Milestones

- Continue monitoring performance of facility. (July 31, 2020)
- Replace valving on clarifier returns and skimmers (April 30, 2020)
- Repair existing skimmer and install a new skimmer(April 30, 2020)
- Replace UV system ballast and sensor (April 30, 2020)
- Install new magnetic flow meter and Mission monitoring system (April 30, 2020)
- Clean and jet the collection system (July 31, 2020)
- Submit status report detailing improvements and whether process changes are required (July 31, 2020)

Sincerely,

Benjamin J Kuenzel

Benjamin Kuenzel, PE
Principal of 21 Design Group, Inc.

December 20, 2019

Wes Dement
Kentucky Department for Environmental Protection
Division of Enforcement
300 Sower Blvd., 3rd Floor
Frankfort, KY 40601

Bluegrass Utility Operating Company, Inc.
Lake Columbia WWTF
KYPDES Permit No. KY0077674
Agency Interest No. 458
Corrective Action Plan

In light of the Lake Columbia WWTF's failure to meet permitted limits we submit the following corrective action plan.

BWUOC has recently purchased this treatment plant. With the change of ownership, operational modifications have been implemented and are ongoing. With proper operation, the facility should be capable of meeting permit limits without process modification. Over the next several months, repairs will be made and monitoring will continue in order to confirm that the existing processes can meet permit limits.

1. Causes of the Effluent Violations

- Total Suspended Solids (TSS)
- E. Coli

Testing results since the date of acquisition depict several samples violating various effluent limits. At operational startup, it appeared previous ownership had abandoned the facility. The initial analysis showed no wastewater treatment process was occurring and most of the facility was filled with sludge and rags. On multiple site visits prior to acquisition, the plant was not operating. The first sample failed to meet effluent limits for E. Coli due to excessive sludge in the contact chamber. The second sample failed TSS and the third failed E. Coli due to excessive I and I, detrimental to the system process. Inflow and infiltration interrupts normal treatment by reducing the treatment time in each process component. E. Coli exceedances have also occurred due to a lack of chlorine dosing at the facility. The process for dosing observed during prior site visits with the previous operator was to place chlorine tablets directly into the contact chamber. This is not the correct tablet feeding procedure.

2. System Evaluation and Corrective Actions

The facility should be able to consistently meet permit limits with proper operation, but monitoring will continue through this period of operational improvement to confirm no process changes are required.

While the facility is meeting limits, some components are reaching the end of their useful life. There are concerns with the integrity of the existing treatment plant steel walls, the disassembled bar screen and disinfection contact chamber. However, since the plant is meeting limits, steel plates will be welded in where possible to extend the useful life of the steel tankage.

The inlet bar screen box appears to have been disassembled. This structure should be rebuilt to reduce fouling in the aeration and clarifier with rags that reach this facility.

The disinfection process was installed without proper means of dosing. The only way to dose is to place the tablets in the clarifier effluent weir and then place dechlorination tablets near the discharge of the contact chamber. As part of the disinfection system upgrade, separate tablet feeders for both chlorination and dechlorination processes will be installed.

Inflow and Infiltration is the primary cause for TSS exceedances and a known problem within this system. Flow monitoring will help determine the extents of I and I and will be addressed later in this memo. The collection system will be evaluated using a multi-step process. The first two steps are to smoke test and then to clean and jet the system. These tasks have been completed. The results of these two processes allow problem areas to be identified and targeted for repair/replacement. Results are being reviewed to establish an I and I improvement plan for the collection system. This will improve all aspects of treatment, more specifically it will reduce TSS violations during rain events.

A Mission remote monitoring system and magnetic flow meter will be installed to provide real time monitoring of the facility. This will improve capabilities to monitor the effect of inflow and infiltration and status of the facility. The monitoring system will improve operations and maintain reliable service for the customers.

3. Project Milestones

- Continue monitoring performance of facility (June 30, 2020)
- Rebuild influent bar screen (March 31, 2020)
- Install tablet feeders for chlorination and dechlorination (March 31, 2020)
- Install new magnetic flow meter and Mission monitoring system (May 31, 2020)
- Repair aeration tank by spot welding corroded areas (June 30, 2020)
- Submit status report detailing improvements and whether process changes are required (June 30, 2020)

Sincerely,

Benjamin J Kuenzel

Benjamin Kuenzel, PE
Principal of 21 Design Group, Inc.

December 20, 2019

Wes Dement
Kentucky Department for Environmental Protection
Division of Enforcement
300 Sower Blvd., 3rd Floor
Frankfort, KY 40601

Bluegrass Water Utility Operating Company, Inc.
LH WWTF
KYPDES Permit No. KY0081591
Agency Interest No. 8083
Corrective Action Plan

In light of the LH WWTF's failure to meet permitted limits we submit the following corrective action plan.

BWUOC has recently purchased this treatment plant. With the change of ownership, operational modifications have been implemented and are ongoing. With proper operation, the facility should be capable of meeting permit limits without process modification. Over the next several months, repairs will be made and monitoring will continue in order to confirm that the existing processes can meet permit limits.

1. Causes of the Effluent Violations

- Ammonia (Intermittent)
- Carbonaceous Biological Oxygen Demand (CBOD)
- Total Suspended Solids (TSS) (Intermittent)
- Dissolved Oxygen (DO)
- E. Coli

A review was performed of EPA's Echo compliance website which lists violations. Prior to July 1, 2017, the facility regularly exceeded most of its NPDES permit effluent limits. Improvements were made to the plant by the previous owner to correct the process deficiencies, however the system continued to occasionally exceed limits. In 2018, the facility exceeded limits for CBOD, TRC, E. Coli, Ammonia, DO and TSS at least once for each parameter. The tankage and piping of this facility appears to be efficiently laid out and in good condition with adequate capacity. This would imply that the system exceedances were due to operational issues rather than capacity of the facility. Since acquisition by BWUOC the facility has been meeting permit limits.

2. System Evaluation and Corrective Actions

The facility is currently meeting permit limits. As mentioned above, previous ownership had made improvements to the facility and now BWUOC has improved operations, allowing the plant to meet limits it

previously violated. Operations staff will continue to make adjustments and monitor the plant to ensure a quality effluent is maintained.

A Mission remote monitoring system and magnetic flow meter will be installed to provide real time monitoring of the facility. This will improve capabilities to monitor the effect of inflow and infiltration and status of the facility. A Mission monitoring system will also be installed on the lift station. The monitoring system will improve operations and maintain reliable service for the customers.

Inflow and Infiltration is a known problem within this system. Flow monitoring will help determine the extents of I and I, but further investigation is needed. The collection system will be evaluated using a multi-step process. The first two steps are to smoke test and then to clean and jet the system. These tasks have been completed. The results of these two processes allow problem areas to be identified and targeted for repair/replacement. Results are being reviewed to establish an I and I improvement plan for the collection system. This will improve all aspects of the treatment process.

3. Project Milestones

- Continue monitoring performance of facility (May 31, 2020)
- Install new magnetic flow meter and Mission monitoring systems (March 31, 2020)
- Submit status report detailing improvements and whether process changes are required (May 31, 2020)

Sincerely

Benjamin J Kuenzel

Benjamin Kuenzel, PE
Principal of 21 Design Group, Inc.

December 13, 2019

Wes Dement
Kentucky Department for Environmental Protection
Division of Enforcement
300 Sower Blvd., 3rd Floor
Frankfort, KY 40601

Bluegrass Water Utility Operating Company, Inc.
Persimmon Ridge WWTF
KYPDES Permit No. KY0090956
Corrective Action Plan

In light of the Persimmon Ridge WWTF's failure to meet permitted limits Bluegrass Water Utility Operating Company (BWUOC) submits the following corrective action plan.

BWUOC has recently purchased this treatment plant. With the change of ownership, operational modifications have been implemented and are ongoing. With proper operation, the facility should be capable of meeting permit limits without process modification. Over the next several months, repairs will be made, and monitoring will continue to confirm that the existing processes can meet permit limits.

1. Causes of the Effluent Violations

- Ammonia
- Carbonaceous Biological Oxygen Demand (CBOD)
- Chlorine Residual
- Total Suspended Solids (TSS)
- E. Coli

Effluent testing data found on echo.epa.gov shows the plant hasn't consistently met permitted limits. Sporadic permit limit exceedances occurred in the parameters listed above prior to BWUOC ownership transfer. During a site visit, several aerators were not in service providing treatment. Additionally, the last cell includes a curtain style baffle that is not installed correctly. When the aerators and baffle are not functioning as designed, the plant will struggle to meet limits on a consistent basis. Sporadic exceedances of E. Coli and chlorine residual at this facility would have been the failure of previous ownership to maintain the necessary supply of chemicals on hand and available for feeding into the process.

2. System Evaluation and Corrective Actions
Repairs have been under way since BWUOC acquisition. The aerators have been returned to service, but the baffle is not properly installed. This will cause short circuiting of the last lagoon cell and the wastewater will not be capable of receiving full treatment as designed. While the system has been meeting limits since acquisition, the baffle needs to be repaired and properly installed.

Previous chlorine residual and E. Coli exceedances were the result of a lack of chemical supply. Both chemicals are liquid and are pumped into the wastewater. Therefore, a scale should be installed and setup with real time monitoring and an alarm system that can notify the operator when chemicals on hand start to get low.

The influent lift station was evaluated and it was determined that one of the influent pumps is nearing failure. Operations staff are obtaining pricing for both rebuilding the 5 Hp influent pump as well as replacement. This is a priority in order to maintain redundancy at the influent of the lagoon.

A Mission remote monitoring system will be installed for active monitoring. The system already has an influent flow meter and effluent flow meter, which can be hooked up to the Mission system. The recommended scales can also be hooked up to the Mission system to notify the operator when chemical supply is low. The monitoring system will improve operations and maintain reliable service for the customers.

I and I is a problem within this system. Flow monitoring will help determine the extents of the I and I issue. A three-step process has begun to evaluate the collection system. The first step was smoke testing the system, which is already complete. Next the system will be cleaned and jetted. Finally, the results of these two processes will allow problem areas to be identified and targeted for repair/replacement. The sanitary sewers at Persimmon are predominately located in the back yards of properties. Currently saturated ground conditions make jetting and repair work difficult to complete without considerable damage to the homeowners' properties. As a result, this evaluation will be completed next summer unless conditions become significantly dryer sooner.

3. Project Milestones

- Continue monitoring performance of facility (July 31, 2020)
- Repair existing lagoon baffle in second cell (July 31, 2020)
- Install scales for both chlorine and dechlorination chemicals in use (April 30, 2020)
- Install mission alarms (July 31, 2020)
- Clean and jet the collection system (July 31, 2020)
- Submit status report detailing improvements and whether process changes are required (August 31, 2020)

Sincerely,

Benjamin Kuenzel, PE
Principal of 21 Design Group, Inc.

BLUEGRASS WATER
Utility Operating Company
A CSWR Managed Utility

July 30, 2020

Wes Dement
Kentucky Department for Environmental Protection
Division of Enforcement
300 Sower Blvd., 3rd Floor
Frankfort, KY 40601

Bluegrass Water Utility Operating Company, Inc.
River Bluffs Subdivision WWTF
KYPDES Permit No. KY0043150
Agency Interest No. 3367

Corrective Action Plan:

In light of the River Bluffs WWTF's failure to meet permitted limits we submit the following corrective action plan.

BWUOC has recently purchased this treatment plant. With the change of ownership, operational modifications have been implemented and are ongoing. With proper operation, the facility should be capable of meeting permit limits without process modification. Over the next several months, repairs will be made and monitoring will continue in order to confirm that the existing processes can meet permit limits.

1. Causes of the Effluent Violations

- Ammonia
- Total Suspended Solids (TSS)

A review was performed of EPA's Echo compliance website which lists violations. The River Bluffs WWTF has been in a state of noncompliance for 6 of the last 12 quarters with repeated exceedances of the ammonia facilities ammonia limits as well as an exceedance of the Total Suspended Solids limit. It is noteworthy that while the ammonia exceedances have recurred, the exceedances do not appear to be severe and operational/maintenance improvements will likely be adequate to bring the facility into consistent compliance.

The facility is an activated sludge system, with grinding, chlorination, and dechlorination. The plant has a canopy installed over all plan structures. The facility consists of an influent lift station that flows into a splitter box that divides the flow evenly between two separate plants, which then flow together into an older plant which has been converted for use as the chlorine contact chamber, and into what was the influent lift station for the older plant and has since been converted for dechlorination and a weir ahead of the discharge point. The entire structure of the two activated sludge plants and the older plant exhibit severe rust to both the tank structure and all piping and treatment components. In some places, the piping has been replaced with PVC, which may or may not be adequate as a long-term piping solution given that the canopy offers some protection from UV, which will be evaluated in this initial period. In places where the piping hasn't been replaced, steel piping is severely corroded, and returns are not functioning properly. The older steel pipes that have been replaced with pvc were never properly removed, so corroding pipe is present throughout the plant.

Given the condition of the rest of the plant and apparent lack of maintenance by previous ownership, it is likely that the air lines and diffusers are in similar states of disrepair, potentially compromising the efficacy of the aeration process and leading to the ammonia exceedances. When Bluegrass acquired the plant, the influent line was a PVC main that was strung over and hanging on the fencing around the facility, compressing the 3 strands of barbed wire at the top of the fence. This has already been properly reinstalled underground where it won't be damaged by UV and the fencing repaired. The TSS exceedance may point to improper operation of the facility, or issues with inflow and infiltration causing excessively high flow through the facility.

2. System Evaluation and Corrective Actions

Due to the poor maintenance of the facility by previous ownership, it is not currently clear if the facility is able to consistently meet permit limits with proper operation. To make this determination, it is necessary to begin a period of operational improvement, evaluation and repairs of existing facilities, and observation of plant performance.

In light of this improvements will be staged. The phase of initial improvements should include the inspection and replacement of blowers/service filters as needed, lift station pump inspection and repair/replacement, installation of Mission monitoring/generator quick connect/flow meter, inspection and replacement/repair of control panels, inspection and replacement of diffusers that have failed, evaluation and repair of corrosion/damaged steel components at the facility (patch welding, painting, etc), removal/replacement of corroded piping at the facility, and evaluation of the disinfection system.

The repair/replacement of the existing blowers, diffusers, and piping at the facility should greatly improve the effectiveness of the treatment process. This should aid in reducing ammonia levels.

Installation of Mission Remote Monitoring and the flow meter at the facility will allow for greater operational control, as well as real time information on the flow through the facility. This provides invaluable data for accurately evaluating the facilities performance, and the potential need for further improvements. The flow data will also allow for accurate evaluation of the level of Inflow and Infiltration in the system during rain events. I&I can significantly compromise treatment process, and measure of the increased flow will help to determine if collection system repairs are needed.

The initial evaluation and repairs at the facility will also allow the plant to be brought into a state where regular maintenance and inspections can be implemented to prevent the facility from falling back into the sort of disrepair that is evident from previous ownership.

Following these initial improvements, a period of observation and evaluation will be conducted to determine if a process change is needed at the facility to consistently meet limits that the facility has struggled with in the past.

3. Project Milestones

- Continue monitoring the facility for performance (10/31/20)
- Implement initial improvements detailed above (10/31/20)
- Submit status report detailing improvements and whether process changes are required (11/30/20)

BLUEGRASS WATER
Utility Operating Company
A CSWR Managed Utility

July 29, 2020

Wes Dement
Kentucky Department for Environmental Protection
Division of Enforcement
300 Sower Blvd., 3rd Floor
Frankfort, KY 40601

Bluegrass Water Utility Operating Company, Inc.
Timberland Subdivision WWTF
KYPDES Permit No. KY0083755
Agency Interest No. 3070

Corrective Action Plan:

In light of the Timberland Subdivision WWTF's failure to meet permitted limits we submit the following corrective action plan.

BWUOC has recently purchased this treatment plant. With the change of ownership, operational modifications have been implemented and are ongoing. Due to the poor maintenance of the facility by previous ownership, the current plant is not capable of consistently meeting limits.

1. Causes of the Effluent Violations

- Ammonia
- Carbonaceous Biological Oxygen Demand (CBOD)
- Total Suspended Solids (TSS)
- E. Coli
- Total Residual Chlorine (TRC)
- Dissolved Oxygen (DO)

A review was performed of EPA's Echo compliance website which lists violations. The Timberland WWTF has been in "Significant noncompliance" for all of the last 12 quarters with numerous effluent exceedances as well as notices for improper maintenance and operations of the facility. The package plant portion of the facility has not been maintained by the previous ownership and is severely rusted with several locations that appear to have leaked at some point in the plant's recent history. Piping for the plant is constructed of PVC which can degrade in sunlight and the blowers and pumps at the facility appear to be struggling to operate the plant, implying they are either undersized or reaching the end of their useful lives. Additionally, the contact chamber at the back of the lagoon is poorly constructed, undersized, and deteriorating. This would reduce the contact time with chlorine in the treatment process and not produce effective disinfection, leading to both E.Coli exceedances, and exceedances of Total Residual Chlorine. These point to the poor maintenance practices of the previous ownership. In light of the poor maintenance of these portions of the plant, it is also probable that the diffusers in the aeration plant are in poor condition and not properly aerating the wastewater being treated. This compromises the treatment process and can result in exceedances in any of the above limits.

Previous ownership allowed the plant to fall into such a state of disrepair that it is realistic to expect that the package plant would need to be totally replaced to consistently meet limits using the current process. This is especially evident in the condition of the tankage itself that would require either massive patching or replacement.

2. System Evaluation and Corrective Actions

Due to the poor maintenance of the facility by previous ownership, the current plant is not capable of consistently meeting limits. The cost to totally retrofit the facility or replace the package plant has caused us to consider the alternative of modifying the treatment process for more reliable performance than the package plant could offer. As a result, improvements will be staged with some initial repairs followed improvements that will be completed under a construction permit.

The initial phase of improvements should include clearing the berms of the lagoon of vegetation and making repairs where needed, inspection and repair of blowers/service filters as needed, lift station pump inspection and repair/replacement, installation of Mission monitoring/generator quick connect/flow meter, inspection and repair of control panels, inspection and repairs of aeration piping system components, evaluation of the disinfection system, and potential patching of the steel tank structure.

Installation of Mission Remote Monitoring and the flow meter, as well as repair of the control panels at the facility will allow for greater operational control, as well as real time information on the flow through the facility. This provides invaluable data for accurately evaluating the facilities performance, and the potential need for further improvements. The flow data will also allow for accurate evaluation of the level of Inflow and Infiltration in the system during rain events. I&I can significantly compromise treatment process, and measure of the increased flow will help to determine if collection system repairs are needed.

The initial repairs will temporarily improve the function of the facility, while improvements implemented under a construction permit are approved and then built out. Currently, the plans for the construction permit are to add an MBBR to the plant. Any tankage that can be salvaged from the existing package plant will be converted to sludge holding/digestor for sludge breakdown. Additionally, given the history of TRC and E. Coli violations, conversion to peracetic acid disinfection is being considered which would include installation of a tank for contact time at the outfall. We anticipate the construction permit for this facility will be submitted by the end of August.

3. Project Milestones

- Continue monitoring the facility for performance (10/31/20)
- Implement initial improvements detailed above (10/31/20)
- Submit status report detailing process improvements included in the Major Mod Construction Permit application submitted (9/30/20)

Sincerely,

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Utility Engineer

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