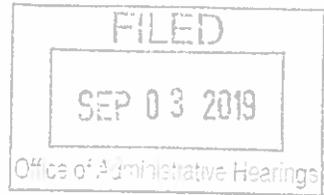


S. Horne



COMMONWEALTH OF KENTUCKY  
ENERGY AND ENVIRONMENT CABINET  
DIVISION OF ENFORCEMENT  
CASE NO. DOW 19-3-0155

IN RE: Bluegrass Water Utility Operating Company, LLC  
Persimmon Ridge Subdivision Wastewater Treatment Plant  
72 Persimmon Ridge Drive  
Louisville, KY 40245  
AI No. 3955  
Activity ID No. ERF20190001

**AGREED ORDER**

\*\*\*\*\*

WHEREAS, the parties to this Agreed Order, the Energy and Environment Cabinet (hereinafter "Cabinet") and Bluegrass Water Utility Operating Company, LLC (hereinafter "BWUOC") state:

**STATEMENTS OF FACT**

1. The Cabinet is charged with the statutory duty of enforcing KRS Chapter 224 and the regulations promulgated pursuant thereto.
2. BWUOC is an active Kentucky Limited Liability Company in good standing that owns and operates utilities and whose principal address, according to the Kentucky Secretary of State is 500 NW Plaza Drive, Suite 500, Saint Ann, Missouri 63074.
3. Persimmon Ridge Subdivision Wastewater Treatment Plant (hereinafter "Persimmon Ridge WWTP" or "facility"), is located at 72 Persimmon Ridge Drive, Louisville, Kentucky 40245. The facility has a design capacity of 0.142 million gallons per day and discharges to Floyds Fork.
4. Persimmon Ridge WWTP is currently owned and operated by PR Wastewater Management, Inc. The facility's discharges are permitted under Kentucky Pollutant Discharge

Elimination Systems (hereinafter "KPDES") permit number KY0090956, issued by the Cabinet's Division of Water (hereinafter "DOW"). The facility's KPDES permit expires on September 30, 2023.

5. PR Wastewater Management, Inc. is an active for-profit Kentucky corporation in good standing, according to the Kentucky Secretary of State.

6. BWUOC has indicated to the Cabinet that it plans to acquire Persimmon Ridge WWTP, provided it receives from the Kentucky Public Service Commission ("Commission") all approvals required to make the acquisition. If the Commission approves the acquisition, BWUOC plans to assume ownership and operation of Persimmon Ridge WWTP on or around September 15, 2019.

7. BWUOC has contracted with a third-party firm to produce an engineering memorandum detailing the status of and repairs needed at Persimmon Ridge WWTP (Exhibit A). This report was submitted to the Cabinet on or about July 29, 2019.

8. If it receives all required Commission approvals, BWUOC has indicated to the Cabinet that it plans to make substantial repairs and/or upgrades to the facility to address the deficiencies noted in Exhibit A.

**NOW THEREFORE**, in the interest of providing corrective actions to Persimmon Ridge WWTP, the parties hereby consent to the entry of this Agreed Order and agree as follows:

**REMEDIAL MEASURES**

9. BWUOC shall notify the Cabinet in writing that it has assumed ownership and operation of Persimmon Ridge WWTP within fifteen (15) days of acquiring the facility.

10. Within fifteen (15) days of assuming ownership and operation of the facility, BWUOC shall submit a "Change in Ownership Certification" to the Cabinet.

11. At all times, commencing with assuming ownership of the facility, BWUOC shall provide for proper operation and maintenance of the facility in accordance with 401 KAR 5.065 Section 2(1).

12. Following the initial ninety (90) days of its operation of the facility, BWUOC shall submit to the Cabinet for review and acceptance, a written Corrective Action Plan (hereinafter "CAP") to bring the facility into compliance with its KPDES permit and correct the deficiencies noted in Exhibit A. The CAP shall include, but not be limited to, an identification of actions BWUOC shall implement to ensure compliance that includes; proper operation and maintenance to its sewage treatment system, collection system, and disinfection unit. The CAP shall also include a list of all actions necessary to ensure the completion of upgrades to its facility including a list of completion dates for each action. Include in the CAP a final compliance date for completion of all remedial measures listed;

A. Upon review of the CAP, the Cabinet may, in whole or in part, (1) accept or (2) decline and provide comments to the BWUOC identifying the deficiencies. Upon receipt of Cabinet comments, the BWUOC shall have ninety (90) days to revise and resubmit the CAP for review and acceptance. Upon resubmittal, the Cabinet may, in whole or in part, (1) accept or (2) disapprove and provide comments to the BWUOC identifying the deficiencies. Upon such resubmittal, if the CAP is disapproved, the Cabinet may deem the BWUOC to be out of compliance with this Agreed Order for failure to timely submit the CAP. The parties to this Agreed Order may also agree in writing to further extend the period in which the BWUOC and the Cabinet accept a revised and resubmitted CAP.

B. The BWUOC may request an amendment of the accepted CAP by writing the Director of the Division of Enforcement at 300 Sower Blvd., Frankfort, Kentucky 40601 and stating the reasons for the request. If granted, the amended CAP shall not affect any provision of this Agreed Order unless expressly provided in the amended CAP. This does not require an amendment request pursuant to paragraph 20 of this Agreed Order.

C. Upon Cabinet acceptance of all or any part of the CAP, the amended CAP or any accepted part thereof (provided that the accepted part is not dependent upon implementation of any part not yet accepted), shall be deemed incorporated into this Agreed Order as an enforceable requirement of this Agreed Order. This does not require an amendment request pursuant to paragraph 20 of this Agreed Order.

13. So long as BWUOC is in compliance with the terms and conditions of this Agreed Order, the Cabinet's Division of Enforcement agrees to hold any formal enforcement action for numeric permit parameter violations for the KPDES permit described in paragraph 4, in abeyance. Should BWUOC fail to comply with the terms and conditions of this Agreed Order, the Cabinet may seek formal enforcement action that would have otherwise been held in abeyance.

14. By the final compliance date in the accepted CAP, BWUOC shall be in full compliance with its KPDES permit.

15. All submittals required by the terms of this Agreed Order shall be submitted to: Division of Enforcement, Attention: Director, 300 Sower Blvd., Frankfort, Kentucky, 40601.

#### **MISCELLANEOUS PROVISIONS**

16. This Agreed Order shall be of no force and effect unless BWUOC assumes

ownership and operations of Persimmon Ridge WWTP.

17. This Agreed Order addresses only the items described above. Other than the matters agreed to by entry of this Agreed Order, nothing contained herein shall be construed to waive or to limit any remedy or cause of action by the Cabinet based on statutes or regulations under its jurisdiction and BWUOC reserves its defenses thereto. The Cabinet expressly reserves its right at any time to issue administrative orders and to take any other action it deems necessary that is not inconsistent with this Agreed Order, including the right to order all necessary remedial measures, assess penalties for violations, or recover all response costs incurred, and BWUOC reserves its defenses thereto.

18. This Agreed Order shall not prevent the Cabinet from issuing, reissuing, renewing, modifying, revoking, suspending, denying, terminating, or reopening any permit to BWUOC. BWUOC reserves its defenses thereto, except that BWUOC shall not use this Agreed Order as a defense.

19. BWUOC waives its right to any hearing on the matters admitted herein. However, failure by BWUOC to comply strictly with any or all of the terms of this Agreed Order shall be grounds for the Cabinet to seek enforcement of this Agreed Order in Franklin Circuit Court and to pursue any other appropriate administrative or judicial action under KRS Chapter 224 and the regulations promulgated pursuant thereto.

20. The Agreed Order may not be amended except by a written order of the Cabinet's Secretary or his designee. BWUOC may request an amendment by writing the Director of the Division of Enforcement at 300 Sower Blvd., Frankfort, Kentucky 40601, and stating the reasons for the request. If granted, the amended Agreed Order shall not affect any provision of this Agreed Order unless expressly provided in the amended Agreed Order.

21. The Cabinet does not, by its consent to the entry of this Agreed Order, warrant or aver in any manner that BWUOC's complete compliance with this Agreed Order will result in compliance with the provisions of KRS Chapter 224 and the regulations promulgated pursuant thereto. Notwithstanding the Cabinet's review and approval of any plans formulated pursuant to this Agreed Order, BWUOC shall remain solely responsible for compliance with the terms of KRS Chapter 224 and the regulations promulgated thereto, this Agreed Order, and any permit and compliance schedule requirements.

22. BWUOC shall give notice of this Agreed Order to any purchaser, lessee or successor in interest prior to the transfer of ownership and/or operation of any part of the facility occurring prior to termination of this Agreed Order, shall notify the Cabinet that such notice has been given, and shall follow all statutory requirements for a transfer.

23. This Agreed Order applies specifically and exclusively to the unique facilities referenced herein and is inapplicable to any other facility.

24. Compliance with this Agreed Order is not conditional on the receipt of any federal, state, or local funds.

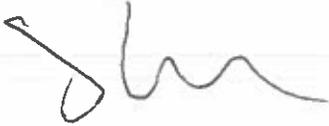
25. This Agreed Order shall be of no force and effect unless and until it is entered by the Secretary or his designee as evidenced by his signature thereon. If this Agreed Order contains any date by which BWUOC is to take any action or cease any activity, and the Secretary enters the Agreed Order after that date, then BWUOC is nonetheless obligated to have taken the action or ceased the activity by the date contained in this Agreed Order.

#### **TERMINATION**

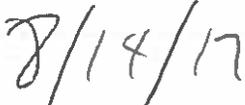
26. This Agreed Order shall terminate upon BWUOC's completion of all requirements described in this Agreed Order. BWUOC may submit written notice to the Cabinet when it believes

all requirements have been performed. The Cabinet shall notify BWUOC in writing whether it concurs that all requirements of this Agreed Order have been completed. The Cabinet reserves its right to enforce this Agreed Order, and BWUOC reserves its right to file a petition for hearing pursuant to KRS 224.10-420(2) contesting the Cabinet's determination.

AGREED TO BY:

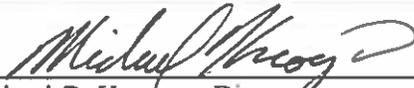


Josiah Cox, President  
Bluegrass Water Utility Operating Company, LLC



Date

APPROVAL RECOMMENDED BY:

  
\_\_\_\_\_  
Michael B. Kroeger, Director  
Division of Enforcement

8/27/19  
Date

  
\_\_\_\_\_  
John G. Home II, Executive Director  
Office of General Counsel  
Energy and Environment Cabinet

8/27/19  
Date

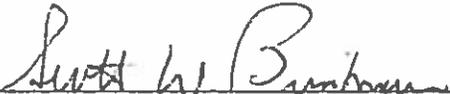
  
\_\_\_\_\_  
R. Bruce Scott, Deputy Secretary  
Energy and Environment Cabinet

8/29/19  
Date

**ORDER**

Wherefore, the foregoing Agreed Order is entered as the final Order of the Energy and Environment Cabinet this 3<sup>rd</sup> day of September, 2019.

ENERGY AND ENVIRONMENT CABINET

  
SCOTT W. BRINKMAN, SECRETARY of the GOVERNOR'S EXECUTIVE CABINET

**CERTIFICATE OF SERVICE**

I hereby certify that a true and accurate copy of the foregoing **AGREED ORDER** was mailed, postage prepaid, to the following this 3<sup>rd</sup> day of September, 2019.

Bluegrass Water Utility Operating Company, LLC  
Attn: Jacon Freeman  
500 NW Plaza Drive, Suite 500  
Saint Ann, MO 63074

And mailed, messenger to:

Michael B. Kroeger, Director  
Division of Enforcement  
300 Sower Blvd.  
Frankfort, Kentucky 40601

John G. Home II, Executive Director  
Office of General Counsel  
Energy and Environment Cabinet  
300 Sower Blvd.  
Frankfort, Kentucky 40601

  
\_\_\_\_\_  
DOCKET COORDINATOR

*Distribution:*

DOW  
BGD  
S:4  
FBT

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# Exhibit A

Civil Engineering  
Surveying & Mapping  
Potable Water  
Wastewater Treatment



Civil Site Design  
Construction Support  
Transportation  
Wastewater Collection

Persimmon Ridge (Wastewater)  
Engineering Memorandum  
Date: December 31, 2018

#### Wastewater Treatment Facility Understanding

The wastewater treatment facility is made up of a two cell aerated lagoon system with chlorine disinfection. It doesn't appear this system has an active permit to operate. However, the proposed permit was on public notice with comment due date of July 26, 2018. I'm not aware if they received any comments from the public on this system. The first cell is fully aerated while the second cell is partially aerated. The second cell also has a baffle spanning the lagoon cell to create a non-aerated or anaerobic zone that can help reduce solids in the effluent. From the anaerobic zone, the lagoon effluent has liquid chlorine added for disinfection prior to the contact chamber. Overall, the appearance of the lagoon looks well maintained. (See Appendix 1 for overall picture)

Various items of concern exist as this facility. However, the main concern for this facility is that it will not be capable of meeting permit limits for ammonia on a consistent basis. The incoming flow enters the system through a pump station with a flow meter. Data was not provided to 21 Design Group, Inc. for review and analysis at the time of drafting this memorandum.

The first lagoon cell had four aerators functioning upon the site visit. One additional aerator was removed from the lagoon cell and sitting on the lagoon bank. Lagoon systems are typically designed to have all equipment functioning. This aerator needs to be repaired and placed back into service. Additionally, I reached out to the operator and they do have issues with the first aerator which gets pulled every other month due to being fouled up with rags. Operational changes should be made to reduce the fouling up of the aerator. (Appendix Picture 2, 3, & 4)

The second lagoon cell has 3 aerators in the cell. However, none of them were running during the site visit. Lagoon systems are typically designed to have all equipment functioning. Additionally, the lagoon cell is mostly covered with duckweed. Duckweed does have pros and cons for existing within a lagoon. It can help remove nutrients and keep algae blooms. Alternatively, duckweed will reduce dissolved oxygen levels and will die off returning some of the nutrients to the lagoon as sludge at the bottom of the cell. As duckweed breaks down on the bottom of the cell, it could release ammonia to cause problems with sampling. Duckweed prefers stagnant water and does not like surface aeration. Therefore, if the aerators were all functioning, the amount of duckweed would be less. If the aerators were all functioning, the duckweed would be reduced and make it easier to control. Additionally, aeration can also reduce algae blooms as well. The owner should evaluate the existence of the duckweed and decide if it is beneficial at this facility. In review of the aerator layout, one of the aerators in the final cell is downstream of the baffle. The owner should evaluate the design and effluent quality to determine if this aerator should be up stream of the baffle. (Appendix Picture 5)

21 Design Group, Inc.  
1351 Jefferson St, Suite 301  
Washington, MO 63090

CONFIDENTIAL TO CSWR

Ph: 636-432-5029

Civil Engineering  
Surveying & Mapping  
Potable Water  
Wastewater Treatment

# 21 DESIGN

Civil Site Design  
Construction Support  
Transportation  
Wastewater Collection

Next to the contact chamber, the liquid chlorine is housed in a small equipment shed. The contact chamber should be evaluated for capacity to provide contact time. In conversations with the operator after the site visit, they stated she is constantly adjusting the chlorine feed pump flow rate based on lagoon effluent flow. Chemical usage is either wasted or under chlorinated. The system should be modified to either utilize ultraviolet disinfection or setup to automatically adjust chlorine pump. The operator stated that they have struggled to meet disinfection requirements in the past and feel it was due to the chlorine dosage levels not being sufficient for disinfection. Additionally, the blower was operating providing some re-aeration in the contact chamber prior to discharging. (Appendix Picture 6)

The discharge pipe was recently installed that removed the irrigation lake from being a part of the treatment process. This is consistent with the proposed permit that has yet to be issued by the state. In conversations with the operator, the owner/operator had concerns that the lagoon wildlife and overland flow coming into the irrigation lake may have been causing contamination issues on their DMRs. Therefore, they felt direct discharge would help bring the effluent quality closer to consistently meeting limits. At the time of the visit, the effluent discharge was almost directly on soil and should have some type of erosion protection. Additionally, the effluent appeared to have an algae problem. The owner should look to have the aeration operating in the final cell to reduce the potential for algae blooms in the wastewater prior to discharging. (Appendix Picture 7)

The system aeration appears to be having issues with keeping aerators in operation. Additionally, over time, equipment becomes less efficient. The owner should replace the aerators to provide better treatment within the lagoon systems. This will improve the effluent quality while reducing sludge build up. Lagoon sludge levels were not provided at the time of the site visit.

**Improvements:** Replace surface aerators with a more efficient system, evaluate sludge levels within the lagoon, evaluate electrical service for any aeration modifications, modify programming and electrical to either install an ultraviolet unit or auto-adjusting chlorine pump, and install rip-rap protection at effluent into creek.

#### Wastewater Collection System Understanding

Per records provided by the owner, the system has approximately 355 customers. These customers are served by a gravity sewer system that includes five pump stations. A gravity collection system will have inflow and infiltration issues. The extent is unknown and data wasn't provided to 21 Design Group, Inc. at the time of the inspection. The treatment facility being a lagoon system has a large volume of storage that reduces peaks that wastewater facilities struggle to treat. However, funds should be invested into the collection system. If the collection system continues to degrade, I and I from the collection system can become excessive and does increase the equipment size and costs on future treatment. General system mapping was provided. The data should be evaluated for accuracy and made more accessible to the operator for ease of use. The system should also be smoke tested. Video inspection is anticipated on parts of the system as well.

**Improvements Required:** Review system mapping for accuracy. Smoke test and video inspect the collection system.

21 Design Group, Inc.  
1351 Jefferson St, Suite 301  
Washington, MO 63090

CONFIDENTIAL TO CSWR

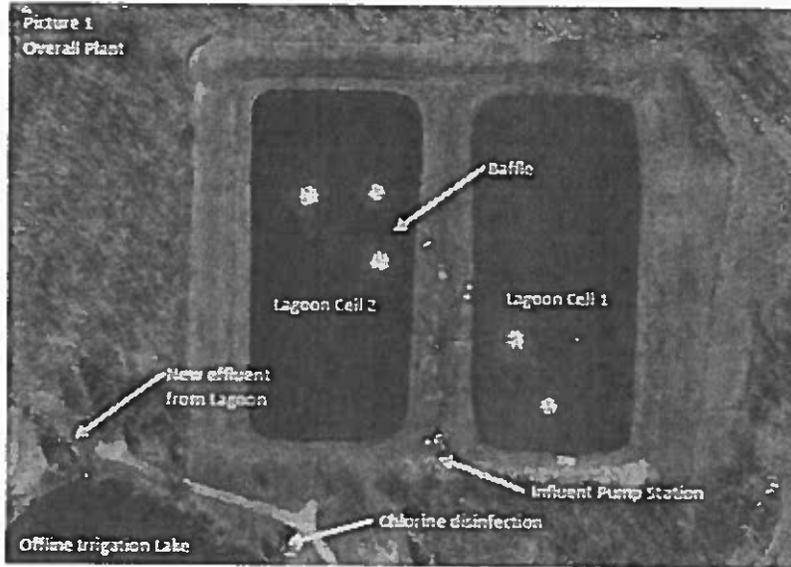
Ph: 636-432-5029

Civil Engineering  
Surveying & Mapping  
Potable Water  
Wastewater Treatment

# 21 DESIGN

Civil Site Design  
Construction Support  
Transportation  
Wastewater Collection

## APPENDIX



21 Design Group, Inc.  
1351 Jefferson St, Suite 301  
Washington, MO 63090

CONFIDENTIAL TO CSWR

Ph: 636-432-5029

Civil Engineering  
Surveying & Mapping  
Potable Water  
Wastewater Treatment

# 21 DESIGN

Civil Site Design  
Construction Support  
Transportation  
Wastewater Collection



Picture 2  
Cell 1



Picture 3  
Cell 1 at influent



Picture 4  
Aerator on bank



Picture 5  
Cell 2



21 Design Group, Inc.  
1351 Jefferson St, Suite 301  
Washington, MO 63090

CONFIDENTIAL TO CSWR

Ph 636-432-5029

COMMONWEALTH OF KENTUCKY  
ENERGY AND ENVIRONMENT CABINET  
DIVISION OF ENFORCEMENT  
CASE NO. DOW 21-3-0028

IN RE: Delaplain Disposal Company  
Delaplain Disposal WWTP  
249 West Yusen Drive.  
Georgetown, KY 40324  
AI No. 3901  
Activity ID No. ERF20210001

**AGREED ORDER**

\*\*\*\*\*

WHEREAS, the parties to this Agreed Order, the Energy and Environment Cabinet (hereinafter "Cabinet") and Bluegrass Water Utility Operating Company, LLC (hereinafter "BWUOC") state:

**STATEMENTS OF FACT**

1. The Cabinet is charged with the statutory duty of enforcing KRS Chapter 224 and the regulations promulgated pursuant thereto.
2. BWUOC is an active Kentucky Limited Liability Company in good standing that owns and operates utilities and whose principal address according to the Kentucky Secretary of State, is 1650 Des Peres Road, Suite 303, St. Louis, Missouri 63131.
3. Delaplain Disposal Wastewater Treatment Plant (hereinafter "Delaplain," "Delaplain WWTP" or "facility"), is located at 249 West Yusen Drive, Georgetown, Kentucky 40324. The facility has a design capacity of 0.24 million gallons per day and discharges to an unnamed tributary of Dry Run.
4. Delaplain WWTP is currently owned and operated by Delaplain Disposal Company. The facility's discharges are permitted under Kentucky Pollutant Discharge Elimination

Systems (hereinafter “KPDES”) permit number KY0079049, issued by the Cabinet’s Division of Water (hereinafter “DOW”). The facility’s KPDES permit expires on January 31, 2026.

5. Delaplain Disposal Company is an active for-profit Kentucky corporation in good standing, according to the Kentucky Secretary of State.

6. BWUOC has indicated to the Cabinet that it plans to acquire Delaplain WWTP, provided it receives from the Kentucky Public Service Commission (“Commission”) all approvals required to make the acquisition. If the Commission approves the acquisition, BWUOC plans to assume ownership and operation of Delaplain WWTP on or around March 1, 2021.

7. BWUOC has contracted with a third-party firm to produce an engineering memorandum detailing the status of and repairs needed at Delaplain WWTP (Exhibit A). This report was submitted to the Cabinet on or about January 26, 2021.

8. If it receives all required Commission approvals, BWUOC has indicated to the Cabinet that it plans to make substantial repairs and/or upgrades to the facility to address the deficiencies noted in Exhibit A.

**NOW THEREFORE**, in the interest of providing corrective actions to Delaplain WWTP, the parties hereby consent to the entry of this Agreed Order and agree as follows:

**REMEDIAL MEASURES**

9. BWUOC shall notify the Cabinet in writing that it has assumed ownership and operation of Delaplain WWTP within fifteen (15) days of acquiring the facility.

10. Within fifteen (15) days of assuming ownership and operation of the facility, BWUOC shall submit a “Change in Ownership Certification” to the Cabinet.

11. At all times, commencing with assuming ownership of the facility, BWUOC shall provide for proper operation and maintenance of the facility in accordance with 401 KAR 5:065

Section 2(1).

12. Within thirty (30) days of execution of this Agreed Order, BWUOC shall submit to the Cabinet for review and acceptance, a written Corrective Action Plan (hereinafter "CAP") to bring the facility into compliance with its KPDES permit and correct the deficiencies noted in Exhibit A. The CAP shall include, but not be limited to, an identification of actions BWUOC shall implement to ensure compliance that includes; proper operation and maintenance to its sewage treatment system, collection system, and disinfection unit. The CAP shall also include a list of all actions necessary to ensure the completion of upgrades to its facility including a list of completion dates for each action. Include in the CAP a final compliance date for completion of all remedial measures listed;

- A. Upon review of the CAP, the Cabinet may, in whole or in part, (1) accept or (2) decline and provide comments to BWUOC identifying the deficiencies. Upon receipt of Cabinet comments, BWUOC shall have ninety (90) days to revise and resubmit the CAP for review and acceptance. Upon resubmittal, the Cabinet may, in whole or in part, (1) accept or (2) disapprove and provide comments to BWUOC identifying the deficiencies. Upon such resubmittal, if the CAP is disapproved, the Cabinet may deem BWUOC to be out of compliance with this Agreed Order for failure to timely submit the CAP. The parties to this Agreed Order may also agree in writing to further extend the period in which BWUOC and the Cabinet accept a revised and resubmitted CAP.
- B. BWUOC may request an amendment of the accepted CAP by writing the Director of the Division of Enforcement at 300 Sower Blvd., Frankfort,

Kentucky 40601 and stating the reasons for the request. If granted, the amended CAP shall not affect any provision of this Agreed Order unless expressly provided in the amended CAP. This does not require an amendment request pursuant to paragraph 20 of this Agreed Order.

C. Upon Cabinet acceptance of all or any part of the CAP, the amended CAP or any accepted part thereof (provided that the accepted part is not dependent upon implementation of any part not yet accepted), shall be deemed incorporated into this Agreed Order as an enforceable requirement of this Agreed Order. This does not require an amendment request pursuant to paragraph 20 of this Agreed Order.

13. So long as BWUOC is in compliance with the terms and conditions of this Agreed Order, the Cabinet's Division of Enforcement agrees to hold any formal enforcement action for numeric permit parameter violations for the KPDES permit described in paragraph 4, in abeyance. Should BWUOC fail to comply with the terms and conditions of this Agreed Order, the Cabinet may seek formal enforcement action that would have otherwise been held in abeyance.

14. By the final compliance date in the accepted CAP, BWUOC shall be in full compliance with its KPDES permit.

15. All submittals required by the terms of this Agreed Order shall be submitted to: Division of Enforcement, Attention: Director, 300 Sower Blvd., Frankfort, Kentucky, 40601.

#### **MISCELLANEOUS PROVISIONS**

16. This Agreed Order shall be of no force and effect unless BWUOC assumes ownership and operations of Delaplain WWTP.

17. This Agreed Order addresses only the items described above. Other than the matters agreed to by entry of this Agreed Order, nothing contained herein shall be construed to waive or to limit any remedy or cause of action by the Cabinet based on statutes or regulations under its jurisdiction and BWUOC reserves its defenses thereto. The Cabinet expressly reserves its right at any time to issue administrative orders and to take any other action it deems necessary that is not inconsistent with this Agreed Order, including the right to order all necessary remedial measures, assess penalties for violations, or recover all response costs incurred, and BWUOC reserves its defenses thereto.

18. This Agreed Order shall not prevent the Cabinet from issuing, reissuing, renewing, modifying, revoking, suspending, denying, terminating, or reopening any permit to BWUOC. BWUOC reserves its defenses thereto, except that BWUOC shall not use this Agreed Order as a defense.

19. BWUOC waives its right to any hearing on the matters admitted herein. However, failure by BWUOC to comply strictly with any or all of the terms of this Agreed Order shall be grounds for the Cabinet to seek enforcement of this Agreed Order in Franklin Circuit Court and to pursue any other appropriate administrative or judicial action under KRS Chapter 224 and the regulations promulgated pursuant thereto.

20. The Agreed Order may not be amended except by a written order of the Cabinet's Secretary or a designee thereof. BWUOC may request an amendment by writing the Director of the Division of Enforcement at 300 Sower Blvd., Frankfort, Kentucky 40601, and stating the reasons for the request. If granted, the amended Agreed Order shall not affect any provision of this Agreed Order unless expressly provided in the amended Agreed Order.

21. The Cabinet does not, by its consent to the entry of this Agreed Order, warrant or aver in any manner that BWUOC's complete compliance with this Agreed Order will result in compliance with the provisions of KRS Chapter 224 and the regulations promulgated pursuant thereto. Notwithstanding the Cabinet's review and approval of any plans formulated pursuant to this Agreed Order, BWUOC shall remain solely responsible for compliance with the terms of KRS Chapter 224 and the regulations promulgated thereto, this Agreed Order, and any permit and compliance schedule requirements.

22. BWUOC shall give notice of this Agreed Order to any purchaser, lessee or successor in interest prior to the transfer of ownership and/or operation of any part of the facility occurring prior to termination of this Agreed Order, shall notify the Cabinet that such notice has been given, and shall follow all statutory requirements for a transfer.

23. This Agreed Order applies specifically and exclusively to the unique facilities referenced herein and is inapplicable to any other facility.

24. Compliance with this Agreed Order is not conditional on the receipt of any federal, state, or local funds.

25. This Agreed Order shall be of no force and effect unless and until it is entered by the Secretary or a designee thereof as evidenced by his or her signature thereon. If this Agreed Order contains any date by which BWUOC is to take any action or cease any activity, and the Secretary enters the Agreed Order after that date, then BWUOC is nonetheless obligated to have taken the action or ceased the activity by the date contained in this Agreed Order.

#### **TERMINATION**

26. This Agreed Order shall terminate upon BWUOC's completion of all requirements described in this Agreed Order. BWUOC may submit written notice to the Cabinet when it believes

all requirements have been performed. The Cabinet shall notify BWUOC in writing whether it concurs that all requirements of this Agreed Order have been completed. The Cabinet reserves its right to enforce this Agreed Order, and BWUOC reserves its right to file a petition for hearing pursuant to KRS 224.10-420(2) contesting the Cabinet's determination.

**AGREED TO BY:**

  
Josiah Cox (Aug 10, 2021 11:18 CDT)

Josiah Cox, President  
Bluegrass Water Utility Operating Company, LLC

Aug 10, 2021

Date

**CASE NO. DOW 21-3-0028**

**APPROVAL RECOMMENDED BY:**



Michael B. Kroeger, Director (Assistant)  
Division of Enforcement

9/9/2021  
Date

Elizabeth U. Natter  
Elizabeth U. Natter, Executive Director  
Office of General Counsel

9/24/2021  
Date

**ORDER**

Wherefore, the foregoing Agreed Order is entered as the final Order of the Energy and Environment Cabinet this 27th day of September, 2021.

ENERGY AND ENVIRONMENT CABINET



---

**John S. Lyons, Deputy Secretary**  
Authorized Designee, Rebecca W. Goodman,  
Secretary Energy & Environment Cabinet

**CERTIFICATE OF SERVICE**

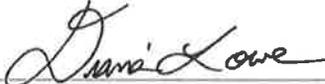
I hereby certify that a true and accurate copy of the foregoing **AGREED ORDER** was mailed, postage prepaid, to the following this 27th day of September, 2021.

Bluegrass Water Utility Operating Company, LLC  
Attn: Jacob Freeman  
1650 Des Peres Road, Suite 303  
St. Louis, MO 63131

And ~~mailed, messenger~~ to: Electronically mailed to:

Michael B. Kroeger, Director  
Division of Enforcement  
300 Sower Blvd.  
Frankfort, Kentucky 40601

Elizabeth U. Natter, Executive Director  
Office of General Counsel  
Energy and Environment Cabinet  
300 Sower Blvd.  
Frankfort, Kentucky 40601

  
\_\_\_\_\_  
DOCKET COORDINATOR

Distribution:  
DOW-email  
S&H  
DBG

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# Exhibit A

Civil Engineering  
Surveying & Mapping  
Potable Water  
Wastewater Treatment



Civil Site Design  
Construction Support  
Transportation  
Wastewater Collection

The Delaplain Disposal – Delaplain WWTP KY0079049

Kentucky

Engineering Memorandum

Date: September 11, 2020

### Introduction

The Delaplain wastewater treatment facility is located north of Georgetown, Kentucky approximately 19 miles north of Lexington, Kentucky. This facility services 290 residences and 33 commercial or industrial contributors. The system operates under Kentucky DEP Permit number KY0079049 and Agency ID number 3901.

### Existing Flows and Loadings and Projections

The existing facility is authorized to treat up to 240,000 gpd.

According to the permit application submitted by Delaplain Disposal Co., the flow contribution is 55% commercial and 45% industrial. According to data available on EPA's Echo site and data submitted to 21 Design Group, Inc. by current ownership, the flows to the facility for 2020 are very roughly approximated below:

- Annual Average Daily Flow – 240,000 – 260,000 gpd
- Maximum Monthly Average Daily Flow – 360,000 gpd
- Maximum Weekly Average Daily Flow – 475,000 gpd
- Maximum Daily Average Daily Flow – 910,000 gpd
- Peak Hourly Flow – 1,200,000 gpd

The maximum monthly average daily flow and peak flows are concerning relative to the existing rated capacity and plant size. The plant has a clarifier that is  $\frac{1}{3}$  of the required size at this time. This is consistent with the current ownership's believe that I&I is a problem and flow equalization would be helpful, and it also makes some sense of the excursions in TSS (during wet weather).

The flow peaking factor for the facility is clearly significant, and because of the significant commercial contribution, it's very likely that there's significant variability and spikes in BOD, TSS and ammonia loadings. During excursions in the past, BOD levels were significantly higher than TSS levels, indicating incomplete treatment. We know that one of the original 50-hp centrifugal blowers was replaced recently (to maintain current capacity rating, not to increase aeration capacity), and it's likely that this improvement was made to address the high BOD events observed. It is unclear at this time if the improvement to blower capacity will meet demands from the flow and loading spikes, but it would seem likely that the blower capacity is inadequate based on current vs design flows.

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Based on what we've seen and heard to date, the significant industrial contributor has not historically become an issue in operation or in permit compliance.

Based on discussions with current Ownership, the local region is growing rapidly, the area serviced is growing, and they anticipate growth in flows and loadings.

#### Permit Limitations and Historical Compliance Performance

The plant is authorized to discharge up to 240,000 gallons per day (gpd) by the KDEP per the operating permit. As discussed above, the facility has discharged flows significantly in excess of this value a number of months this year and is likely to exceed this annual flow rate in 2020.

A summary of the existing permit limits is described below:

- BOD5 – 10/15 mg/L (Monthly average/Maximum Weekly Average)
- TSS – 30/45 mg/L
- NH3-N – 2/3 mg/L
- NH3-N – 5/7.5 mg/L
- E-Coli – 130/240 mpn/100 ml
- Total Residual Chlorine – 0.011/0.019 mg/L
- Total Phosphorus – Report Only
- Total Nitrogen – Report Only
- Dissolved Oxygen – No limit



A review was performed of EPA's Echo compliance website which lists violations of wastewater treatment plants across the country. The Delaplain

wastewater treatment plant has exceeded permit limitations several times in recent months and years for Total Suspended Solids, Ammonia Nitrogen, Total Residual Chlorine, E-Coli, and CBOD5.

#### Wastewater Treatment Facility Existing Conditions

The original facility included the following features:

- Two influent lines; one comes by gravity from the east side of the facility, and the other enters via forcemain from the west side of the facility.
- Comminutor to grind and remove influent solids
- Manually cleaned bar screen
- Aeration tank
- Two 50 hp centrifugal blowers used to aerate the aeration tank

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- Circular clarifier with scum collection and air lift of scum to digester
- RAS/WAS box
- Surge Chamber and transfer pump to convey stored wastewater into the aeration tank
- Aerobic Digester
- Chlorine feed point and chlorine contact tanks
- Dechlorination feed point and dechlorination contact tanks
- Control panels for various subcomponents in the system including the controls for the clarifier, blowers, and surge tank transfer pumps.
- PD blower that appears to serve the aerobic:

The existing facility has aged, showing the need for fresh coatings, protection from exposed wires, and spot welding repairs, but it is in relatively good working order.

The comminutor is no longer utilized, and the manual bar screen appears to result in overflows periodically from the uncleaned bar screen rack. The air pattern in the aeration tank indicates relatively turbulent mixing conditions using coarse bubble diffuser design that would likely not be improved significantly with diffuser replacement. It was unclear whether the surge tank is utilized or if the surge tank transfer pumps are in working condition. The existing gaseous chlorine and gaseous sulfur dioxide systems were in working condition according to the operators (however the chemical solution feed lines were not evident).

#### Functionality of the Existing System

The functionality of the existing plant is similar to other activated sludge systems. However, this system is challenged by:

- The system is seeing flows (and most likely loadings) significantly in excess of original capacity. This results in the need to carry very high mixed liquor concentrations and to maintain a very healthy sludge age in a limited range or face challenges during wet weather to retain biomass. (Based on effluent results, it appears this is a real problem here).
- The existing clarifier has a 10' depth and a 25' diameter. Because the 10-State Standards require 12' deep clarifiers, this tank is not acceptable as a secondary clarifier for activated sludge systems. At the maximum 10-State Standards surface overflow rate of 1,000 gpd/sf, the 25' diameter clarifier can only handle peak flows up to about 490,000 gpd. The peak daily flow and peak hourly flows to the plant significantly exceed this flow rate at this time, so the clarifier is very undersized for use in an activated sludge application.
- There is only 1-large zone of treatment, and it's difficult to make system repairs without multiple tanks to allow the system to be taken off line.
- There are no provisions evident for using the surge tank beyond overflowing the bar screen. It is currently not convenient to use the surge tank.
- There is only 1-operating blower for the aeration tank, and because it's centrifugal and there's no modulating inlet suction valve or VFD, it's either on or off.

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- It doesn't appear to include provisions for decanting supernatant from the digester (which is most likely undersized now).
- The contact time for disinfection appears to be limited.
- The current ownership believes the previous operator did not perform well; a new, effective operator has taken over recently.
- The use of gaseous chlorine and gaseous sulfur dioxide poses additional risks to operators and the neighboring community, and it's somewhat uncommon to many operators.
- Currently no remote monitoring is in place at the site. This makes it difficult for the operators to know when the facility is failing. Operational monitoring should be completed to monitor the quality of effluent, which should then be compared to the operating permit.

#### Wastewater Treatment Facility Recommended Improvements

- Because the facility receives flows and loadings in excess of current capacity (by roughly 40-50%), we believe there will be a need to upgrade the system BOD, TSS and NH<sub>3</sub>-N reduction capacity. We also believe the facility faces excessive I&I, so flow equalization and an influent pump station will be helpful to reduce demands on the final clarifier.
- The failure of the original comminutor results in the need to collect significant screenings in multiple 5-gallon buckets. We recommend the addition of a mechanically cleaned screen for this application.
- The improvements proposed to integrate the above two recommendations includes the addition of a "roughing" MBBR (targeting 70% BOD reduction in a 40 minute hydraulic retention time or 10,000 gallons); the addition of equalization with 4-hours of hydraulic retention time or 60,000 gallons and an influent pump station with variable frequency drives with an influent flow meter; the addition of metal salt addition in the EQ and clarifier to improve solids capture during wet weather, and the addition of a tertiary auto-strainer for solids separation downstream of the existing clarifier.
  - Note that a variance will be required for acceptance of the secondary clarifier due to the 10' deep tank height and the high surface overflow rate.
  - This improvement is expected to reduce peak flows to the clarifier by up to 25%
  - This improvement is expected to reduce the required mixed liquor concentration by as much as 70% without requiring modifications to the existing aeration header or blowers.
  - This improvement is expected to minimize solids carry over into the clarifier during peak flow events relative to existing conditions.
- We recommend the addition of current density baffles to the side wall of the clarifier (in addition to the above described roughing MBBR and EQ tank improvements) to improve clarifier performance and to allow for regulatory acceptance of surface overflow rates in excess of the typically allowable surface overflow rates. The new roughing MBBR could be used in conjunction with the use of the new EQ tank for temporary clarification to achieve temporary treatment during installation of the current density baffles.

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- The addition of a tertiary automatic straining system will add protection for the system from BOD and TSS excursions during wet weather events.
- The use of an in-line UV disinfection system will be used to achieve compliance with the disinfection requirements. (Note that the industrial contribution could impact UVT transmittance and this should be checked over a period of several samples prior to ordering equipment).
- While the above improvements should allow a good operator to significantly improve performance, the addition of an alum feed system to promote improved solids capture during wet weather events (in both the equalization tank and in the clarifier) will provide a margin of error to allow the system to achieve considerably improved permit compliance.
- There is a potential that a second clarifier will be required at some point in the future if I/I issues increase.

#### Wastewater Collection System Understanding

The collection system consists of gravity sewer as well as five separate lift stations. The plant has an hourly peak flow factor of almost 6:1, so I and I is considered a large issue for the collection system and should be dealt with sooner rather than later as it is negatively affecting the plants ability to meet the effluent discharge limits enforced by Kentucky. (Note however that while the 4:1 peak day: average day flow peaking factor and the 6:1 peak hour: average day ratios cause problems within this plant, they aren't large peaking factors relative to many plants. Some degree of I/I reduction can be expected, but we are not likely to achieve 2:1 or even 3:1 peaking factors with I/I reductions).

Industrial Pump Station 1 is located directly south of the wastewater facility along Interstate 75 and conveys all of the systems wastewater to the treatment plant. The wet well is outfitted with dual 20 hp non-clog pumps from Myers and has a discharge force main diameter of 6". Moonlake Pump Station 1 conveys wastewater through 4" force main across Interstate 75 directly to Industrial Park Pump Station 1 and is outfitted with dual 25 hp pumps from Myers. The station is poorly located in terms of ease of access, which will make maintenance and upgrades difficult to perform. A list of Pump Stations with specifications for each pump is located in the Appendix.

#### Wastewater Collection System Recommended Improvements

- GIS shapefiles should be developed for future maintenance. System mapping at the fingertips of the operators will enhance the level of service and timing of responses to emergency and customer issues.
- Install flow monitoring, perform smoke testing, perform video inspection at selected locations, evaluate systems and create GIS based maintenance priority list to help understand and reduce the effect of I and I on the system.
- A manual transfer switch should be installed at each lift station to allow for the use of a portable generator during emergencies.

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APPENDIX



Aeration Tank



Circular Clarifier

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Bar Screen



Gaseous Chlorine Storage

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**Industrial Pump Station #1 (INPS1)**

#1 Pump - 9/11/13: Myers 9" non-clog pump, 20 hp, 230 volt, 3 phase, 10" impeller Model #4VC200M4-23, SN 10013516

#2 Pump - 5/29/18: Myers 4" non-clog pump, 20 hp, 230 volt, 3 phase, w/50' cord, upper & lower T.C. seals and 10" oversized impeller SN 10554284

**Industrial Pump Station #2 (INPS2)**

#1 Pump - 12/14/12: Meyers 4VH75M4-23, 7.5 hp, 230 volt, 26 amps, 60 hertz, 3 phase, SN 00165030.  
11/2018 - extensive rebuild - Clark Electric.

#2 Pump 12/28/2018: Meyers MV 4VH75M4-23, 7.5 hp, 230 volt, 3 phase, 35' cord, 8" oversize impeller. SN 10582019.

**Moon Lake Pump Station #1 (ML1)**

#1 pump - 2/18/15: 4RCX250M2-43-35, 25 hp 3/460 volt with 35' cable. Lower TX seal, 5.88" oversized impeller. SN 10080201

#2 pump - 5/19/14: 4RCX250M2-43-35 25HP 3/460 volt with 35' cable. SN 10246932

**Moon Lake Pump Station #2 (ML2)**

#1 Pump - 10/2016: Myers 4V75M4-23-35 4" sewage pump 7.5 hp, 230 volt 3 phase w/standard seals and 35' cord serial 7.5" std impeller, SN10365415.

# 2 Pump - 8/2017 Myers 4V75M4-23 7 1/2 hp, 3 ph, 230 volt, SN 10519205

**Riffton Meadows Pump Station (RM)**

#1 Pump - 2007: WGX30H-21-25, 3 hp, 3450 RPM, 230 volt, 1 phase, impeller 5" SN GX304-4-25

#2 Pump - 2007: WGX30H-21-25, 3 hp, 3450 RPM, 230 volt, 1 phase, impeller 5"

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# DOW 21-3-0028 - Delaplain Disposal Company AO

Final Audit Report

2021-08-10

Created:	2021-08-09
By:	Mandy Keubler (mkeubler@cswrgroup.com)
Status:	Signed
Transaction ID:	CBJCHBCAABAAgjmcUz75rg0q87iMyBXrQysNU0ZpewV3

## "DOW 21-3-0028 - Delaplain Disposal Company AO" History

-  Document created by Mandy Keubler (mkeubler@cswrgroup.com)  
2021-08-09 - 9:20:50 PM GMT - IP address: 71.10.211.134
-  Document emailed to Josiah Cox (jcox@cswrgroup.com) for signature  
2021-08-09 - 9:21:27 PM GMT
-  Email viewed by Josiah Cox (jcox@cswrgroup.com)  
2021-08-10 - 4:18:35 PM GMT - IP address: 12.127.143.250
-  Document e-signed by Josiah Cox (jcox@cswrgroup.com)  
Signature Date: 2021-08-10 - 4:18:47 PM GMT - Time Source: server- IP address: 12.127.143.250
-  Agreement completed.  
2021-08-10 - 4:18:47 PM GMT

COMMONWEALTH OF KENTUCKY  
ENERGY AND ENVIRONMENT CABINET  
DIVISION OF ENFORCEMENT  
CASE NO. DOW 24-3-0002

IN RE: Bluegrass Water Utility Operating Company, LLC  
Yung Farm Estates HOA  
5600 Cutters Trace  
Melbourne, KY 41059  
AI No. 675  
Activity ID No. ERF20240001

**AGREED ORDER**

\*\*\*\*\*

WHEREAS, the parties to this Agreed Order, the Energy and Environment Cabinet (hereinafter “Cabinet”) and Bluegrass Water Utility Operating Company, LLC (hereinafter “BWUOC”) state:

**STATEMENTS OF FACT**

1. The Cabinet is charged with the statutory duty of enforcing KRS Chapter 224 and the regulations promulgated pursuant thereto.
2. BWUOC is an active Kentucky Limited Liability Company in good standing that owns and operates utilities and whose principal address, according to the Kentucky Secretary of State is 1650 Des Peres Road, Suite 303, St. Louis, Missouri 63131.
3. The Yung Farm Estates Home Owners Association (HOA) Wastewater Treatment Plant (hereinafter “Yung Farm Estates HOA WWTP” or “facility”), is located at Eight Mile Road, Melbourne, Kentucky 41059. The facility has a design capacity of 0.0025 million gallons per day and discharges to an unnamed tributary of Fourmile Creek.
4. The facility is currently owned and operated by the Yung Farm Estates HOA. The facility’s discharges are permitted under Kentucky Pollutant Discharge Elimination Systems

(hereinafter “KPDES”) permit number KY0092843, issued by the Cabinet’s Division of Water (hereinafter “DOW”).

5. BWUOC has indicated to the Cabinet that it will acquire the facility, provided it receives from the Kentucky Public Service Commission (“Commission”) all approvals required to make the acquisition. Upon approval from the Commission, BWUOC plans to assume ownership and operation of the facility on or around January 2024.

6. BWUOC has contracted with a third-party firm to produce an engineering memorandum detailing the status of and repairs needed at the facility (Exhibit A).

7. Upon Commission approval, BWUOC has indicated to the Cabinet that it plans to make substantial repairs and/or upgrades to the facility to address the deficiencies noted in Exhibit A.

**NOW THEREFORE**, in the interest of providing corrective actions to the facility, the parties hereby consent to the entry of this Agreed Order and agree as follows:

**REMEDIAL MEASURES**

8. BWUOC shall notify the Cabinet in writing that it has assumed ownership and operation within fifteen (15) days of acquiring the facility.

9. Within fifteen (15) days of assuming ownership and operation of the facility, BWUOC shall submit a “Change in Ownership Certification” to the Cabinet.

10. At all times, commencing with assuming ownership of the facility, BWUOC shall provide for proper operation and maintenance of the facility in accordance with 401 KAR 5:065 Section 2(1).

11. Following the initial ninety (90) days of its operation of the facility, BWUOC shall submit to the Cabinet for review and acceptance, a written Corrective Action Plan (hereinafter

“CAP”) to bring the facility into compliance with its KPDES permit and correct the deficiencies noted in Exhibit A. The CAP shall include, but not be limited to, an identification of actions BWUOC shall implement to ensure compliance that includes; proper operation and maintenance to its sewage treatment system, collection system, and disinfection unit. The CAP shall also include a list of all actions necessary to ensure the completion of upgrades to its facility including a list of completion dates for each action. Include in the CAP a final compliance date for completion of all remedial measures listed;

- A. Upon review of the CAP, the Cabinet may, in whole or in part, (1) accept or (2) decline and provide comments to the BWUOC identifying the deficiencies. Upon receipt of Cabinet comments, the BWUOC shall have ninety (90) days to revise and resubmit the CAP for review and acceptance. Upon resubmittal, the Cabinet may, in whole or in part, (1) accept or (2) disapprove and provide comments to the BWUOC identifying the deficiencies. Upon such resubmittal, if the CAP is disapproved, the Cabinet may deem the BWUOC to be out of compliance with this Agreed Order for failure to timely submit the CAP. The parties to this Agreed Order may also agree in writing to further extend the period in which the BWUOC and the Cabinet accept a revised and resubmitted CAP.
- B. The BWUOC may request an amendment of the accepted CAP by writing the Assistant Director of the Division of Enforcement at 300 Sower Blvd., Frankfort, Kentucky 40601 and stating the reasons for the request. If granted, the amended CAP shall not affect any provision of this Agreed Order unless expressly provided in the amended CAP. This does not require an amendment

request pursuant to paragraph 19 of this Agreed Order.

- C. Upon Cabinet acceptance of all or any part of the CAP, the amended CAP or any accepted part thereof (provided that the accepted part is not dependent upon implementation of any part not yet accepted), shall be deemed incorporated into this Agreed Order as an enforceable requirement of this Agreed Order. This does not require an amendment request pursuant to paragraph 19 of this Agreed Order.

12. So long as BWUOC is in compliance with the terms and conditions of this Agreed Order, the Cabinet's Division of Enforcement agrees to hold any formal enforcement action for numeric permit parameter violations for the KPDES permit described in paragraph 4, in abeyance. However, in the event that such numeric permit parameter violation results in immediate and irreparable harm to human health or the environment, the Cabinet may issue an Abate and Alleviate Order or seek a temporary injunction from a court. Should BWUOC fail to comply with the terms and conditions of this Agreed Order or if conditions warrant immediate relief as specified above, the Cabinet may seek formal enforcement action that would have otherwise been held in abeyance.

13. By the final compliance date in the accepted CAP, BWUOC shall be in full compliance with its KPDES permit.

14. All submittals required by the terms of this Agreed Order shall be submitted to: Division of Enforcement, Attention: Assistant Director, 300 Sower Blvd., Frankfort, Kentucky, 40601.

#### **MISCELLANEOUS PROVISIONS**

15. This Agreed Order shall be of no force and effect unless BWUOC assumes ownership and operations of the facility.

16. This Agreed Order addresses only the items described above. Other than the matters agreed to by entry of this Agreed Order, nothing contained herein shall be construed to waive or to limit any remedy or cause of action by the Cabinet based on statutes or regulations under its jurisdiction and BWUOC reserves its defenses thereto. The Cabinet expressly reserves its right at any time to issue administrative orders and to take any other action it deems necessary that is not inconsistent with this Agreed Order, including the right to order all necessary remedial measures, assess penalties for violations, or recover all response costs incurred, and BWUOC reserves its defenses thereto.

17. This Agreed Order shall not prevent the Cabinet from issuing, reissuing, renewing, modifying, revoking, suspending, denying, terminating, or reopening any permit to BWUOC. BWUOC reserves its defenses thereto, except that BWUOC shall not use this Agreed Order as a defense.

18. BWUOC waives its right to any hearing on the matters admitted herein. However, failure by BWUOC to comply strictly with any or all of the terms of this Agreed Order shall be grounds for the Cabinet to seek enforcement of this Agreed Order in Franklin Circuit Court and to pursue any other appropriate administrative or judicial action under KRS Chapter 224 and the regulations promulgated pursuant thereto.

19. The Agreed Order may not be amended except by a written order of the Cabinet's Secretary or her designee. BWUOC may request an amendment by writing the Assistant Director of the Division of Enforcement at 300 Sower Blvd., Frankfort, Kentucky 40601, and stating the reasons for the request. If granted, the amended Agreed Order shall not affect any provision of this Agreed Order unless expressly provided in the amended Agreed Order.

20. The Cabinet does not, by its consent to the entry of this Agreed Order, warrant or

aver in any manner that BWUOC's complete compliance with this Agreed Order will result in compliance with the provisions of KRS Chapter 224 and the regulations promulgated pursuant thereto. Notwithstanding the Cabinet's review and approval of any plans formulated pursuant to this Agreed Order, BWUOC shall remain solely responsible for compliance with the terms of KRS Chapter 224 and the regulations promulgated thereto, this Agreed Order, and any permit and compliance schedule requirements.

21. BWUOC shall give notice of this Agreed Order to any purchaser, lessee or successor in interest prior to the transfer of ownership and/or operation of any part of the facility occurring prior to termination of this Agreed Order, shall notify the Cabinet that such notice has been given, and shall follow all statutory requirements for a transfer.

22. This Agreed Order applies specifically and exclusively to the unique facilities referenced herein and is inapplicable to any other facility.

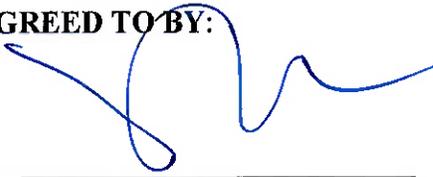
23. Compliance with this Agreed Order is not conditional on the receipt of any federal, state, or local funds.

24. This Agreed Order shall be of no force and effect unless and until it is entered by the Secretary or his designee as evidenced by his signature thereon. If this Agreed Order contains any date by which BWUOC is to take any action or cease any activity, and the Secretary enters the Agreed Order after that date, then BWUOC is nonetheless obligated to have taken the action or ceased the activity by the date contained in this Agreed Order.

## **TERMINATION**

25. This Agreed Order shall terminate upon BWUOC's completion of all requirements described in this Agreed Order. BWUOC may submit written notice to the Cabinet when it believes all requirements have been performed. The Cabinet shall notify BWUOC in writing whether it concurs that all requirements of this Agreed Order have been completed. The Cabinet reserves its right to enforce this Agreed Order, and BWUOC reserves its right to file a petition for hearing pursuant to KRS 224.10-420(2) contesting the Cabinet's determination.

**AGREED TO BY:**



\_\_\_\_\_  
Josiah Cox, President  
Bluegrass Water Utility Operating Company, LLC

2-9-24

\_\_\_\_\_  
Date

**APPROVAL RECOMMENDED BY:**

Philip E. Kejzlar  
Philip Kejzlar, Assistant Director  
Division of Enforcement

2/13/24  
Date

Sarah E. Noble for jn  
Joseph A. Newberg, General Counsel  
Office of Legal Services

02.13.24  
Date

**ORDER**

Wherefore, the foregoing Agreed Order is entered as the final Order of the Energy and Environment Cabinet this 14<sup>th</sup> day of February, 2024 .

ENERGY AND ENVIRONMENT CABINET



\_\_\_\_\_  
John S. Lyons, Deputy Secretary  
Authorized Designee, Rebecca W. Goodman, Secretary  
Energy & Environment Cabinet

**CERTIFICATE OF SERVICE**

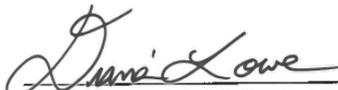
I hereby certify that a true and accurate copy of the foregoing **AGREED ORDER** was mailed, postage prepaid, to the following this 14th day of February, 2024.

Bluegrass Water Utility Operating Company, LLC  
1650 Des Peres Road, Suite 303  
St. Louis, MO 63131

And ~~mailed, messenger to~~: Electronically mailed to:

Philip Kejzlar, Assistant Director  
Division of Enforcement  
300 Sower Blvd.  
Frankfort, Kentucky 40601

Joseph A. Newberg, General Counsel  
Office of General Counsel  
Energy and Environment Cabinet  
300 Sower Blvd.  
Frankfort, Kentucky 40601

  
\_\_\_\_\_  
DOCKET COORDINATOR

Distribution:  
DOW

# Exhibit A

## Yung Farm Estates WWTP KY0092843

### Kentucky

### Engineering Memorandum

Date: March 11, 2021

#### Introduction

The Yung Farm Estates wastewater treatment facility is located in Camp Springs, Kentucky approximately 10 miles southeast of Cincinnati. This facility services 21 single family residences and operates under NPDES Permit number KY0092843 and Agency Identification Number 675.

#### Existing Flows and Loadings and Projections

There is no data on wastewater flow available, however, the existing facility has a design capacity of 8,400 gpd according to the NPDES permit. The subdivision serviced by the plant is fully built out. There is no flow data available for the system, but based on the total number of residential connections, the average daily flow for the Yung Farm Estates wastewater facility is estimated to be approximately 6,000-8,000 gpd on average. We believe the extended aeration package plant has excess capacity to handle existing flows and is oversized.

#### Permit Limitations and Historical Compliance Performance

A summary of the permitted effluent limits is described below:

- CBOD5 – 25/37.5 mg/L (Monthly Average/Daily Maximum)
- TSS – 30/45 mg/L
- NH<sub>3</sub>-N – 4/6 mg/L (May 1 – Oct 31)
- NH<sub>3</sub>-N – 10/15 mg/L (Nov 1 – Apr 30)
- E. Coli – 130/240 #/100 mL
- Dissolved Oxygen – 7 mg/L (Nov-Apr)
- Total Residual Chlorine – 0.011/0.019 mg/L

According to the Echo EPA Online Database, the facility has had no violations identified within the past twelve quarters.

#### Wastewater Treatment Facility Existing Conditions

The facility includes the following features:



- One 8" PVC gravity influent line entering the plant downstream from the manhole south of Lakewood Drive.
- 23,000 Gal. Aeration tank, 9.5-foot depth
- There is a single 3 HP 230 V, 45 URAIH Roots Rotary Positive Displacement Blower (second one is out of order) to provide oxygen. The blower is currently running via a timer mechanism located on the control panel. The timer settings are 30 minutes on and 30 minutes off during the day; 45 minutes on and 30 minutes off at night.
- 140 S.F. dual hopper clarifier with a weir trough, air lifts for RAS and scum return, 9.5-foot depth
- A 950 Gal. Chlorine Contact Tank with a dechlorination tablet feeder downstream
- The site is equipped with single phase power.
- There is currently no means of wasting or digesting sludge at the plant. According to the operator, sludge is wasted via a vac truck twice a year.

## Functionality of the Existing System

The functionality of the existing plant is similar to other extended aeration activated sludge systems. Raw sewage is conveyed by gravity into the extended aeration basin for biological treatment. The plant is oversized for the expected daily flow values which can cause difficulty in terms of maintaining the treatment conditions necessary for the removal of constituents, such as MLSS concentration and Food to Microorganism Ratio. This can cause settleability issues that stem from bulking sludge, and the starvation of healthy floc forming bacteria.

Additionally, the lack of sludge wasting capabilities can amplify the issues caused by the aeration basin being oversized. With a dedicated digester, the operator will have the capability to adjust the solids concentration in the system, preventing the overpopulation that causes issues with settleability and biological treatment. With no digester, the operators will have a difficult time maintaining the proper balance of incoming constituents and microorganisms.

Following biological treatment in the aeration basin, wastewater flows by gravity into the dual hopper clarifier for solids removal. Although not as much of an issue as the aeration basin being oversized, the clarifier is also oversized relative to incoming flows. The retention time during even peak hourly flow conditions is excessively high, which can cause the sludge blanket below the supernatant layer to become anaerobic/anoxic. A major issue that arises from this is the existence of denitrification in the sludge, causing carbon dioxide gas to form and allowing solids to rise to the surface and float over the effluent weir into the tertiary treatment processes downstream. This causes increased BOD and TSS concentrations in the effluent and increases chlorine demand in the contact tank, inhibiting the removal of harmful infectious agents such as coliform bacteria.

- The plant was initially equipped with a bar screen below the invert of the influent line; however, it has since rotted away. The absence of a bar screen could cause issues involving rags or plastics clogging portions of the treatment process.
- Currently there is only one operating blower, and because there is no VFD, it is either on or off and its speed does not vary. Additionally, the current location of the blower enclosures on the

top of the tank does not give adequate space for maintenance. The walkways placed over the top of the tank are unsafe and forming rust, and their proximity to the surface of the wastewater could cause them to fail over time due to corrosion caused by hydrogen sulfide gas.

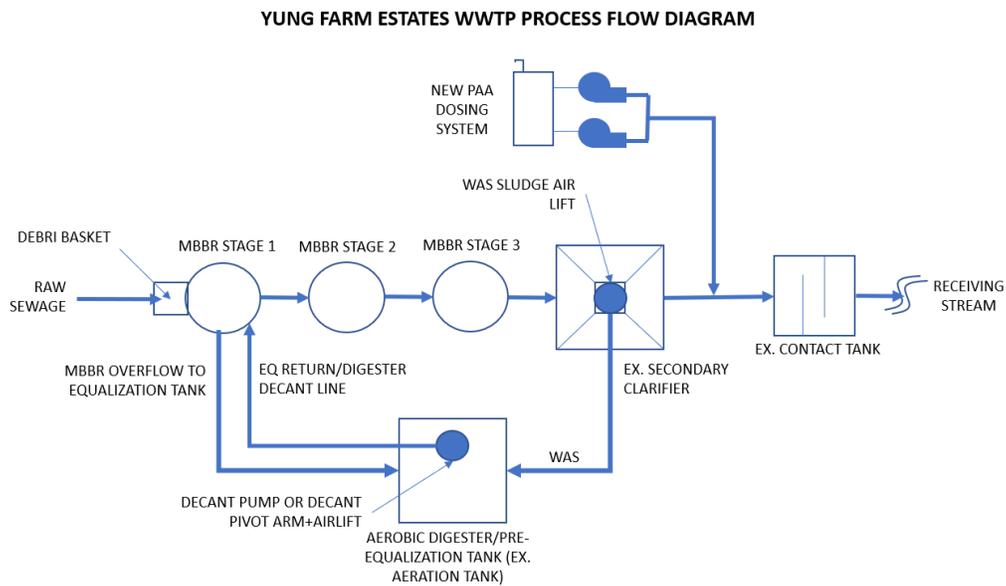
## Initial Triage Improvements Proposed

- Install an ultrasonic level transducer and V-Notch Weir for flow measurement in the chlorine contact tank, as well as a remote monitoring system to record flow data prior to system improvements.
- Install a new electrical distribution panel and a manual transfer switch to allow for the use of a portable generator for use in emergency situations.
- Gravel access road grading and construction is needed off 8 Mile Road.
- The top of the existing plant is approximately 2-3 feet above grade, and there is no means of safe access. A ships ladder should be added to the side of the tank, and new walkway will need to be installed at the top of the tank to allow for proper maintenance access.

## Wastewater Treatment Facility Recommended Improvements

- Due to the aeration basin being oversized, we recommend the installation of a 3 stage MBBR for biological treatment and converting the existing aeration basin into a combination flow equalization/aerobic digestion tank. A decant pump should be installed in the converted tank for conveying equalized flow back into the MBBR and decanting the supernatant from the top layer of the tank. The first stage of the MBBR will include an overflow line to feed the EQ/Digester tank when the water level is high enough. The new MBBR will be routed to the existing clarifier.
- A new standby blower will be necessary to provide redundancy in the converted tank. Additionally, a new control panel with a VFD should be installed, allowing the blowers to be throttled downwards or upwards as necessary to increase energy efficiency. This will help to reduce operational costs over time.
- New blowers and control panels for the MBBR, as well as the existing blower and new standby blower/control panel for the converted tank, should be installed on a concrete pad on grade next to the plant.
- We recommend the addition of new density current baffles in the clarifier to inhibit the release of floating solids into the effluent.
- A 3/4" flex cap diffuser should be installed in the existing chlorine contact tank to allow the plant to consistently meet its dissolved oxygen minimum of 7.0 mg/L.
- A peroxyacetic acid (PAA) disinfection system should be used in lieu of the existing chlorine/dechlorination system.

The preliminary process flow diagram for the proposed process is illustrated below:



Civil Engineering  
 GIS Mapping  
 Potable Water  
 Wastewater Treatment



Civil Site Design  
 Construction Support  
 Transportation  
 Wastewater Collection

## Wastewater Collection System Understanding

The collection system consists solely of gravity sewer. The plant is fed via the manhole on Lakewood Drive just north of the package plant.

## Wastewater Collection System Recommended Improvements

- GIS shapefiles should be developed for future maintenance. System mapping at the fingertips of the operators will enhance the level of service and timing of responses to emergency and customer issues.
- Install flow monitoring, perform smoke testing, perform video inspection at selected locations, evaluate systems and create GIS based maintenance priority list to help understand and reduce the effect of I and I on the system.

## Total Project Cost Estimate

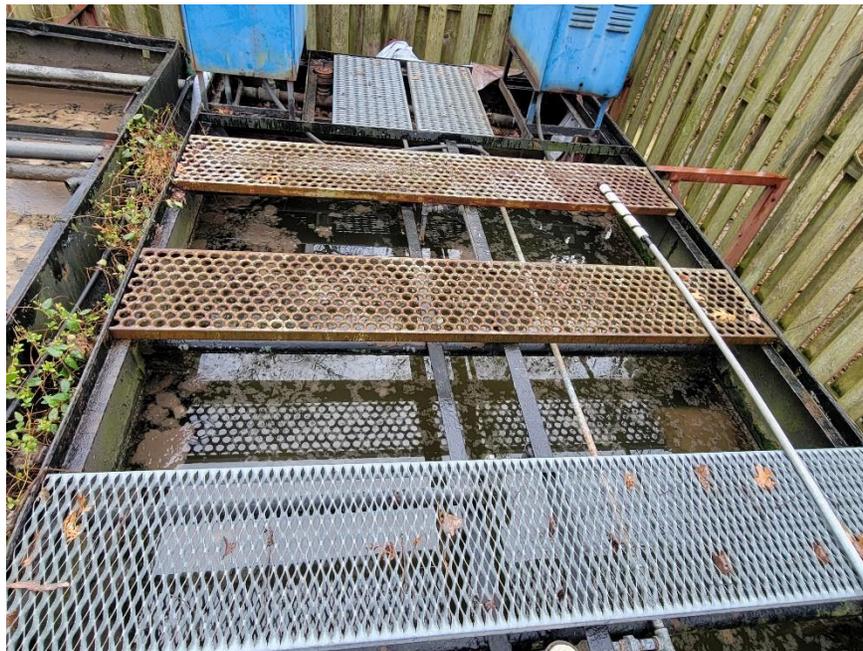
YUNG FARM ESTATES WWTF NARUC COST ESTIMATE SPREADSHEET

Item	NARUC Category	EXPENSES	FIXED ASSETS	TOTAL
Install New Manual Transfer Switch and Electrical Distribution Panel	Sewer - General Plant	\$0	\$36,000	\$36,000
Install Mission Monitoring (Plant)	Sewer - General Plant	\$0	\$18,000	\$18,000
Move Blowers and Install Them on Concrete Slab	Sewer - General Plant	\$0	\$12,000	\$12,000
Access Road Grading and Construction	Sewer - General Plant	\$0	\$24,000	\$24,000
Clear and Grub Site	Sewer - General Plant	\$0	\$12,000	\$12,000
Fence Replacement	Sewer - General Plant	\$0	\$6,000	\$6,000
MBBR Installation	Sewer - Treatment and Disposal	\$0	\$60,000	\$60,000
Additional Process Piping	Sewer - Treatment and Disposal	\$0	\$24,000	\$24,000
Install Debris Basket	Sewer - Treatment and Disposal	\$0	\$6,000	\$6,000
Decant Pump or Decanting Pivot Arm with Airlift	Sewer - Treatment and Disposal	\$0	\$9,000	\$9,000
New Blowers and Control Panels with VFDs	Sewer - Treatment and Disposal	\$0	\$48,000	\$48,000
Clarifier Density Current Baffles	Sewer - Treatment and Disposal	\$0	\$6,000	\$6,000
New PAA Disinfection System	Sewer - Treatment and Disposal	\$0	\$18,000	\$18,000
<b>TOTAL</b>		<b>\$0</b>	<b>\$279,000</b>	<b>\$279,000</b>

**APPENDIX**



**Aeration Tank**



**Clarifier**



**RAS, Scum, and Air Header Lines**



**RAS and Influent Lines**



**Chlorine Disinfection**



**Access Road**

COMMONWEALTH OF KENTUCKY  
ENERGY AND ENVIRONMENT CABINET  
DIVISION OF ENFORCEMENT  
CASE NO. DOW 24-3-0001

IN RE: Bluegrass Water Utility Operating Company, LLC  
Magruder Village Water Corporation  
4625 Magruder Village  
Kevil, KY 42053  
AI No. 44397  
Activity ID No. ERF20240001

**AGREED ORDER**

\*\*\*\*\*

WHEREAS, the parties to this Agreed Order, the Energy and Environment Cabinet (hereinafter "Cabinet") and Bluegrass Water Utility Operating Company, LLC (hereinafter "BWUOC") state:

**STATEMENTS OF FACT**

1. The Cabinet is charged with the statutory duty of enforcing KRS Chapter 224 and the regulations promulgated pursuant thereto.
2. BWUOC is an active Kentucky Limited Liability Company in good standing that owns and operates utilities and whose principal address, according to the Kentucky Secretary of State is 1650 Des Peres Road, Suite 303, St. Louis, Missouri 63131.
3. The Magruder Village Water Corporation Wastewater Treatment Plant (hereinafter "Magruder Village Water WWTP" or "facility"), is located at 4625 Magruder Village, Kevil, Kentucky 42053. The facility has a design capacity of 0.0086 million gallons per day and discharges to an unnamed tributary of Bayou Creek.
4. The facility was recently acquired in January 2024 by BWUOC. The facility's discharges are permitted under Kentucky Pollutant Discharge Elimination Systems (hereinafter

“KPDES”) permit number KY0083577, issued by the Cabinet’s Division of Water (hereinafter “DOW”).

5. On or about October 20, 2023, the Kentucky Public Service Commission issued an order in case number 2023-00218 approving the joint application to transfer the facility to BWUOC subject to certain conditions, which the entry of an agreed order with the Cabinet requiring the repair and/or upgrading of the Magruder Village Water WWTP.

6. BWUOC has contracted with a third-party firm to produce an engineering memorandum detailing the status of and repairs needed at the facility (Exhibit A). Upon Commission approval, BWUOC has indicated to the Cabinet that it plans to make substantial repairs and/or upgrades to the facility to address the deficiencies noted in Exhibit A.

7. Upon the successful transfer pursuant to the Commission's order, BWUOC has indicated to the Cabinet that it plans to make substantial repairs and/or upgrades to the facility to address the deficiencies noted in Exhibit A.

**NOW THEREFORE**, in the interest of providing corrective actions to the facility, the parties hereby consent to the entry of this Agreed Order and agree as follows:

**REMEDIAL MEASURES**

8. BWUOC shall notify the Cabinet in writing that it has assumed ownership and operation within fifteen (15) days of acquiring the facility.

9. Within fifteen (15) days of assuming ownership and operation of the facility, BWUOC shall submit a “Change in Ownership Certification” to the Cabinet.

10. At all times, commencing with assuming ownership of the facility, BWUOC shall provide for proper operation and maintenance of the facility in accordance with 401 KAR 5:065 Section 2(1).

11. Following the initial ninety (90) days of its operation of the facility, BWUOC shall submit to the Cabinet for review and acceptance, a written Corrective Action Plan (hereinafter "CAP") to bring the facility into compliance with its KPDES permit and correct the deficiencies noted in Exhibit A. The CAP shall include, but not be limited to, an identification of actions BWUOC shall implement to ensure compliance that includes; proper operation and maintenance to its sewage treatment system, collection system, and disinfection unit. The CAP shall also include a list of all actions necessary to ensure the completion of upgrades to its facility including a list of completion dates for each action. Include in the CAP a final compliance date for completion of all remedial measures listed;

- A. Upon review of the CAP, the Cabinet may, in whole or in part, (1) accept or (2) decline and provide comments to the BWUOC identifying the deficiencies. Upon receipt of Cabinet comments, the BWUOC shall have ninety (90) days to revise and resubmit the CAP for review and acceptance. Upon resubmittal, the Cabinet may, in whole or in part, (1) accept or (2) disapprove and provide comments to the BWUOC identifying the deficiencies. Upon such resubmittal, if the CAP is disapproved, the Cabinet may deem the BWUOC to be out of compliance with this Agreed Order for failure to timely submit the CAP. The parties to this Agreed Order may also agree in writing to further extend the period in which the BWUOC and the Cabinet accept a revised and resubmitted CAP.
- B. The BWUOC may request an amendment of the accepted CAP by writing the Director of the Division of Enforcement at 300 Sower Blvd., Frankfort, Kentucky 40601 and stating the reasons for the request. If granted, the amended

CAP shall not affect any provision of this Agreed Order unless expressly provided in the amended CAP. This does not require an amendment request pursuant to paragraph 19 of this Agreed Order.

- C. Upon Cabinet acceptance of all or any part of the CAP, the amended CAP or any accepted part thereof (provided that the accepted part is not dependent upon implementation of any part not yet accepted), shall be deemed incorporated into this Agreed Order as an enforceable requirement of this Agreed Order. This does not require an amendment request pursuant to paragraph 19 of this Agreed Order.

12. So long as BWUOC is in compliance with the terms and conditions of this Agreed Order, the Cabinet's Division of Enforcement agrees to hold any formal enforcement action for numeric permit parameter violations for the KPDES permit described in paragraph 4, in abeyance. However, in the event that such numeric permit parameter violation results in immediate and irreparable harm to human health or the environment, the Cabinet may issue an Abate and Alleviate Order or seek a temporary injunction from a court. Should BWUOC fail to comply with the terms and conditions of this Agreed Order or if conditions warrant immediate relief as specified above, the Cabinet may seek formal enforcement action that would have otherwise been held in abeyance.

13. By the final compliance date in the accepted CAP, BWUOC shall be in full compliance with its KPDES permit.

14. All submittals required by the terms of this Agreed Order shall be submitted to: Division of Enforcement, Attention: Director, 300 Sower Blvd., Frankfort, Kentucky, 40601.

#### **MISCELLANEOUS PROVISIONS**

15. This Agreed Order shall be of no force and effect unless BWUOC assumes

ownership and operations of the facility.

16. This Agreed Order addresses only the items described above. Other than the matters agreed to by entry of this Agreed Order, nothing contained herein shall be construed to waive or to limit any remedy or cause of action by the Cabinet based on statutes or regulations under its jurisdiction and BWUOC reserves its defenses thereto. The Cabinet expressly reserves its right at any time to issue administrative orders and to take any other action it deems necessary that is not inconsistent with this Agreed Order, including the right to order all necessary remedial measures, assess penalties for violations, or recover all response costs incurred, and BWUOC reserves its defenses thereto.

17. This Agreed Order shall not prevent the Cabinet from issuing, reissuing, renewing, modifying, revoking, suspending, denying, terminating, or reopening any permit to BWUOC. BWUOC reserves its defenses thereto, except that BWUOC shall not use this Agreed Order as a defense.

18. BWUOC waives its right to any hearing on the matters admitted herein. However, failure by BWUOC to comply strictly with any or all of the terms of this Agreed Order shall be grounds for the Cabinet to seek enforcement of this Agreed Order in Franklin Circuit Court and to pursue any other appropriate administrative or judicial action under KRS Chapter 224 and the regulations promulgated pursuant thereto.

19. The Agreed Order may not be amended except by a written order of the Cabinet's Secretary or her designee. BWUOC may request an amendment by writing the Director of the Division of Enforcement at 300 Sower Blvd., Frankfort, Kentucky 40601, and stating the reasons for the request. If granted, the amended Agreed Order shall not affect any provision of this Agreed Order unless expressly provided in the amended Agreed Order.

20. The Cabinet does not, by its consent to the entry of this Agreed Order, warrant or aver in any manner that BWUOC's complete compliance with this Agreed Order will result in compliance with the provisions of KRS Chapter 224 and the regulations promulgated pursuant thereto. Notwithstanding the Cabinet's review and approval of any plans formulated pursuant to this Agreed Order, BWUOC shall remain solely responsible for compliance with the terms of KRS Chapter 224 and the regulations promulgated thereto, this Agreed Order, and any permit and compliance schedule requirements.

21. BWUOC shall give notice of this Agreed Order to any purchaser, lessee or successor in interest prior to the transfer of ownership and/or operation of any part of the facility occurring prior to termination of this Agreed Order, shall notify the Cabinet that such notice has been given, and shall follow all statutory requirements for a transfer.

22. This Agreed Order applies specifically and exclusively to the unique facilities referenced herein and is inapplicable to any other facility.

23. Compliance with this Agreed Order is not conditional on the receipt of any federal, state, or local funds.

24. This Agreed Order shall be of no force and effect unless and until it is entered by the Secretary or his designee as evidenced by his signature thereon. If this Agreed Order contains any date by which BWUOC is to take any action or cease any activity, and the Secretary enters the Agreed Order after that date, then BWUOC is nonetheless obligated to have taken the action or ceased the activity by the date contained in this Agreed Order.

## TERMINATION

25. This Agreed Order shall terminate upon BWUOC's completion of all requirements described in this Agreed Order. BWUOC may submit written notice to the Cabinet when it believes all requirements have been performed. The Cabinet shall notify BWUOC in writing whether it concurs that all requirements of this Agreed Order have been completed. The Cabinet reserves its right to enforce this Agreed Order, and BWUOC reserves its right to file a petition for hearing pursuant to KRS 224.10-420(2) contesting the Cabinet's determination.

**AGREED TO BY:**

  
Josiah Cox (Feb 15, 2024 11:08 CST)  
\_\_\_\_\_  
**Josiah Cox, President**  
**Bluegrass Water Utility Operating Company, LLC**

**15/02/2024**

\_\_\_\_\_  
**Date**

**APPROVAL RECOMMENDED BY:**



\_\_\_\_\_  
Brian Osterman, Director  
Division of Enforcement

2/19/24

\_\_\_\_\_  
Date



for jn

\_\_\_\_\_  
Joseph A. Newberg, General Counsel  
Office of Legal Services

02.19.24

\_\_\_\_\_  
Date

**ORDER**

Wherefore, the foregoing Agreed Order is entered as the final Order of the Energy and Environment Cabinet this 19th day of February, 2024.

ENERGY AND ENVIRONMENT CABINET



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John S. Lyons, Deputy Secretary  
Authorized Designee, Rebecca W. Goodman, Secretary  
Energy & Environment Cabinet

**CERTIFICATE OF SERVICE**

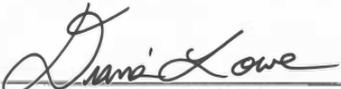
I hereby certify that a true and accurate copy of the foregoing **AGREED ORDER** was mailed, postage prepaid, to the following this 19th day of February, 2024 .

Bluegrass Water Utility Operating Company, LLC  
1650 Des Peres Road, Suite 303  
St. Louis, MO 63131

And ~~mailed, messenger to~~: Electronically mailed to:

Brian Osterman, Director  
Division of Enforcement  
300 Sower Blvd.  
Frankfort, Kentucky 40601

Joseph A. Newberg, General Counsel  
Office of General Counsel  
Energy and Environment Cabinet  
300 Sower Blvd.  
Frankfort, Kentucky 40601

  
\_\_\_\_\_  
DOCKET COORDINATOR

Distribution:  
DOW

# Exhibit A

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## Magruder Village – Wastewater (KY-0083577)

Woodville, KY

Engineering Memorandum

Date: April 18, 2023

### Introduction

The Magruder Village Wastewater Treatment Facility is in McCracken County, KY approximately one mile east of Woodville. The facility serves a 20-home subdivision within a 50-acre service area. The site is owned by Magruder Village Water Corporation and operates under KYPDES number KY-0083577.

### Existing Flow Loadings and Projections

There is no available data for wastewater flow, however, the existing facility has a design capacity of 7,500 gpd with an average daily flow of 8,600 gpd according to the KPDES permit. The subdivision is fully built out, per the owner. Based on the total number of residential connections, the average daily flow for the Magruder Village wastewater facility is estimated to be approximately 6,000-7,500 gpd on average. We believe the extended aeration package plant has adequate capacity to handle existing flows based on its dimensions but will require structural repairs, process upgrades and operational improvements to consistently meet its KPDES effluent limits.

### Permit Limitations and Historical Compliance

A review was performed of EPA's Echo compliance website which lists violations of wastewater treatment plants across the country. In the last 12 quarters, the Magruder Village Wastewater Treatment Facility has had multiple violations due to exceedances of monthly effluent limitations, including BOD, chlorine, E. coli, ammonia nitrogen, DO, and TSS.

A summary of the permitted final effluent limitations for the discharge from Magruder Village Wastewater Treatment Facility to an unnamed tributary to Bayou Creek is shown below:

- CBOD<sub>5</sub> – 30/20 mg/L (Weekly Average/Monthly Average)
- TSS – 45/30 mg/L (Weekly Average/Monthly Average)
- E. coli – 240/130 #/100mL (7-day Geometric Mean/30-day Geometric Mean)
- Ammonia as NH<sub>3</sub>-N (May 1 – Oct 31) – 6.0/4.0 mg/L (Weekly Average/Monthly Average)
- Ammonia as NH<sub>3</sub>-N (Nov 1 – Apr 30) – 15.0/10.0 mg/L (Weekly Average/Monthly Average)
- Total Residual Chlorine – 0.19/0.011 mg/L (Weekly Average/Monthly Average)

## Wastewater Treatment Facility Existing Conditions

The existing wastewater treatment system consists of a package extended aeration activated sludge treatment facility. The facility lies in a 1,000 ft<sup>2</sup> fenced in area on the eastern border of the park.

Per the permit, discharge from the wastewater treatment plant will flow into a tributary to Bayou Creek.

The facility includes the following features:

- An influent septic tank with an unknown volume
- Approximately 12,700 Gal. of aeration volume (22'-0" x 11'-0" x 7'-0" depth steel tank)
- Approximately 1,250 Gal. of digester volume (3'-0" x 8'-0" x 7'-0" depth steel tank)
- (1) 11'-0" x 6'-0" x 7'-0" depth steel secondary clarifier tank (66 S.F.)
- Duplex 3 HP Roots 24 U-RAI Rotary Lobe Blower to supply air to the aeration basin and the clarifier airlifts, (only 1 is operational currently)
- The site is equipped with three phase power.

## Functionality of the Existing System

The functionality of the existing plant is similar to other extended aeration activated sludge systems. Sewage flows by gravity from the western end of the service area to a septic tank located next to the treatment facility for preliminary BOD and TSS removal upstream from the extended aeration process. There are mobile homes in the service area, but each is equipped with their own septic tank and is independent of the collection system associated with the treatment plant. From the septic tank, primary treated wastewater flows by gravity into the aeration basin. The aeration basin influent invert is equipped with a bar screen intended for the removal of rags, plastics, and stringy material that are not retained in the septic tank. The spacing between bars on the screen is not effective as installed and should be replaced. Considering the current expected average daily flow, the aeration basin is relatively oversized, which can cause difficulty in terms of maintaining optimal treatment conditions necessary for proper treatment, such as MLSS concentration and Food to Microorganism Ratio. In addition, the sludge age is likely higher than the ideal range for an extended aeration plant. These conditions can cause settleability issues that stem from bulking sludge, and the starvation of healthy floc forming bacteria.

HRT in the aeration basin at the average expected daily flow (7,500 gpd) is approximately 40 hours, which is higher than typical design parameters for extended aeration plants. Based on the existence of a septic tank at the upstream portion of the process that is likely removing a large portion of the organic content from the waste stream through anaerobic digestion, the plant is likely seeing much lower BOD and TSS influent concentrations than typical. Based on the size of the plant, expected BOD influent loading, and assuming the septic tank is removing approximately 50% of incoming BOD from the raw sewage waste stream, the MLSS concentration in the extended aeration plant should be maintained at approximately 1,000 mg/L. The RAS and WAS rates will need to be adjusted to reflect this.

It appears that the aeration basin is being fed air through two separate headers leading to two separate shear tubes that split the width of the tank evenly, approximately 10-15 feet apart along the length of the aeration basin. The shear tube closest to the secondary clarifier was the only operable one at the

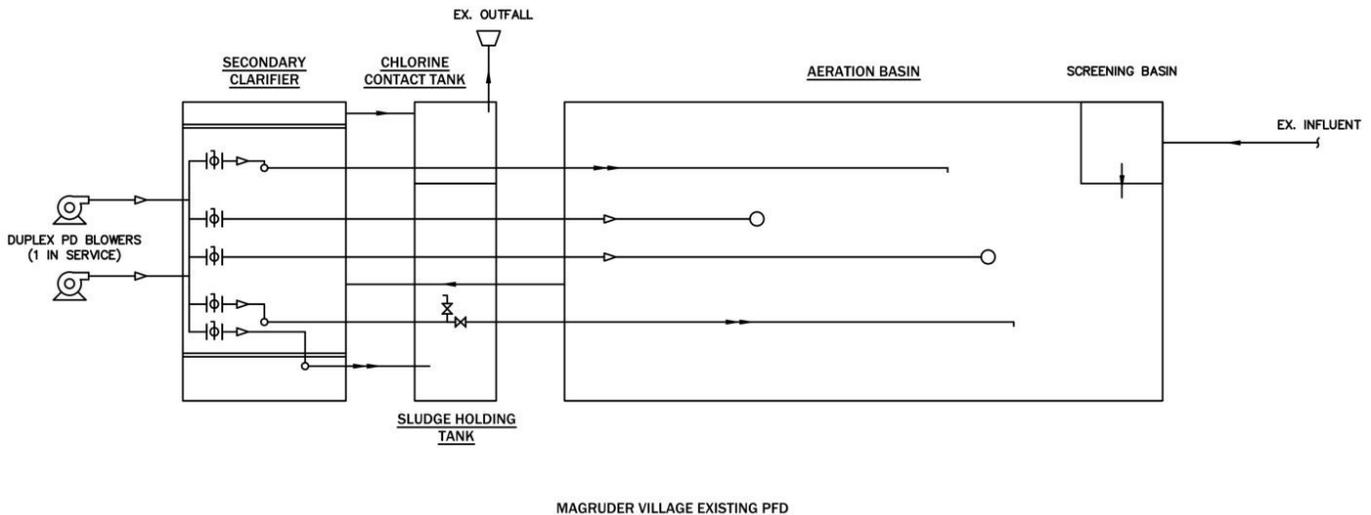
time of the site visit. Based on the relatively shallow tank depth (only 7'-0"), the use of shear tubes is likely more efficient than a typical aeration grid layout involving fine or coarse bubble diffusers alone. However, the existing shear tubes are not distributed properly throughout the length of the tank. At least one additional tube will be necessary based on the oxygen demand for BOD, nitrification, mixing, and to implement a more acceptable layout that will allow the distribution of air throughout the entire tank. The existing shear tubes and diffusers should be replaced, and a third should be installed approximately halfway between the two existing locations to achieve adequate mixing conditions. The existence of a poor mixing environment could be resulting in anaerobic treatment in the unmixed portions of the tank, lowering the pH through souring caused by a lack of mixing within the anaerobic environment and inhibiting the plants ability to nitrify to the necessary extent.

The size of the secondary clarifier is also large relative to the design capacity of the plant, which based on the existence of some floating sludge in the clarifier, it could possibly mean denitrification is occurring in the sludge blanket. This can be caused if the solids retention time is too high and will cause problems such as high constituent concentrations in the effluent, while also harming the ability for disinfection to properly occur by increasing disinfectant demand. In the process of denitrification, the nitrate that is formed via the oxidation of ammonia is reduced to gaseous nitrogen by facultative anaerobes which thrive in anoxic conditions. Denitrification can occur in the secondary clarifier if retention time is too high, allowing nitrogen gas to form and causing sludge to rise over the clarifier weir. This issue can be minimized if dissolved oxygen concentrations are maintained in the aeration basin within a range where simultaneous nitrification and denitrification can occur in the aeration basin (0.3 – 1.5 mg/L), and if RAS rates are increased to minimize SRT. The existence of denitrification in the aeration basin would also recover some alkalinity lost in the process of nitrification.

In addition to the issues associated with biological treatment, the plant is assigned stringent limits for total residual chlorine but there are no tablet feeders or pumps installed for dosing chlorination or dechlorination tablets. Based on the difficulty of effectively achieving the assigned TRC limits, we recommend installing a peroxyacetic acid disinfection dosing system while continuing to utilize the existing chlorine contact tank.

In addition to unoptimized process parameters, many difficulties surrounding the operation of the current plant are likely due to its age. The owner and operator of the treatment facility do not know when it was constructed but believe it could have been finished in the 1960s or 1970s. Much of the system is rusted due to its old age and will need to be repaired or possibly even replaced. The grates placed over the tanks to provide maintenance access are unsafe and should not be used under any circumstances. All air headers, sludge return lines and wastewater process pipes are in poor condition and will need to be replaced, as well as the blowers and blower control panels.

A process flow diagram for the existing process is illustrated below:



### Initial Triage Improvements Proposed

- A testing period should be completed to determine BOD, TKN, and TSS concentrations in the raw sewage influent, as well as the extended aeration plant influent downstream from the septic tank.
- An investigation should be performed to determine if the existing steel tank should be replaced, or if the tank can continue to be used following repair. Steel grating over the treatment components will need to be replaced if the existing tank is repaired, and a handrail will need to be installed around it for safety reasons.
- An investigation should be performed to determine total storage volume in the existing septic tank, as well as to monitor inventory of the sludge within. Solids may need to be pumped out of the septic tank pending the investigation.
- Installation of new fencing surrounding the site.
- Install a new electrical distribution panel and a manual transfer switch to allow for the use of a portable generator for use in emergency situations.
- Installation of an ultrasonic level transducer and V-Notch Weir for flow measurement in the chlorine contact tank if practical, as well as a remote monitoring system to record flow data prior to additional system improvements.
- The existing blower shed will need to be renovated.

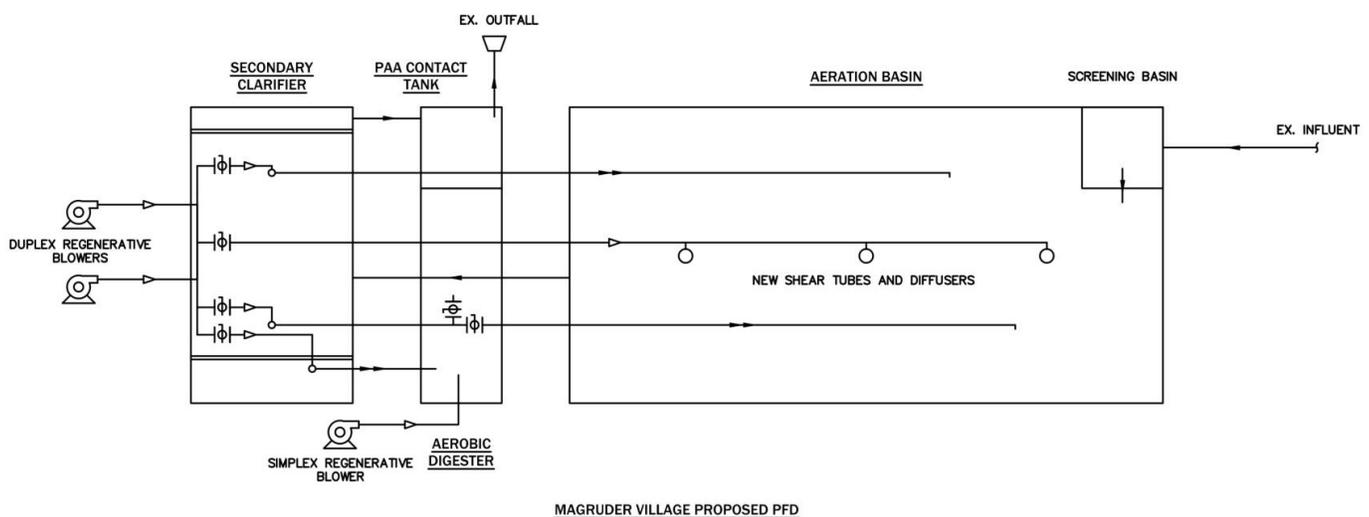
### Initial Wastewater Treatment Facility Recommended Improvements

- Install new duplex blower system for extended aeration (including WAS/RAS & Scum Airlifts).
- Install new simplex blower system for the digester.
- New control panels with VFDs should be installed for blowers, allowing them to be throttled downwards or upwards as necessary to increase energy efficiency. This will help to reduce

operational costs over time. And will allow optimization of dissolved oxygen concentration in the aeration basin to assist in achieving simultaneous nitrification and denitrification.

- Install a new bar screen upstream from the aeration basin.
- All process air, sludge, wastewater piping and valving should be replaced and upsized if necessary pending aeration calculations.
- Existing shear tubes and diffusers will need to be replaced, and an additional one installed in between.
- Install new peroxyacetic acid disinfection system to feed the existing contact tank including redundant peristaltic pumps, a dual walled container, and all other necessary appurtenances. Dosage can be paced based on a 4-20 mA signal transmitted from the level transducer.
- We recommend the addition of new density current baffle in the clarifier to inhibit the release of floating solids into the effluent.

The process flow diagram for the proposed process is shown below.



## Wastewater Collection System Understanding

The collection system consists solely of gravity sewer. The mobile homes in the subdivision are equipped with their own septic tanks that are separate from the collection system.

## Wastewater Collection System Recommended Improvements

- GIS shapefiles should be developed for future maintenance. System mapping at the fingertips of the operators will enhance the level of service and timing of responses to emergency and customer issues.
- Install flow monitoring, perform smoke testing, perform video inspection at selected locations, evaluate systems and create GIS based maintenance priority list to help understand and reduce the effect of I and I on the system.

Civil Engineering  
 GIS Mapping  
 Potable Water  
 Wastewater Treatment



Civil Site Design  
 Construction Support  
 Transportation  
 Wastewater Collection

NARUC Capital Cost Estimate

MAGRUDER VILLAGE WWTF NARUC COST ESTIMATE SPREADSHEET

Item	NARUC Category	EXPENSES	FIXED ASSETS	TOTAL
<b>Initial Improvements</b>				
Install New Manual Transfer Switch with a Quick Connect and Electric Distribution Panel	Sewer - General Plant	\$0	\$25,000	\$25,000
Miscellaneous Electrical Cleanup	Sewer - General Plant	\$0	\$10,000	\$10,000
Install Mission Monitoring (Plant)	Sewer - General Plant	\$0	\$15,000	\$15,000
Replace Site Fencing	Sewer - General Plant	\$0	\$5,000	\$5,000
Blower Shed Maintenance	Sewer - General Plant	\$0	\$20,000	\$20,000
Pump out Septic Tank	Sewer - Treatment and Disposal	\$0	\$10,000	\$10,000
Level Transducer and V-Notch Weir Installation	Sewer - Treatment and Disposal	\$0	\$20,000	\$20,000
Steel Grating Installation	Sewer - Treatment and Disposal	\$0	\$20,000	\$20,000
Existing Steel Tank Repair (Option)	Sewer - Treatment and Disposal	\$0	\$75,000	\$75,000
<i>* Replacing the steel tank would add approximately \$25,000 to the total</i>				
<b>Secondary Improvements</b>				
Extended Aeration Duplex Regenerative Blower System and Control Panel with VFD	Sewer - Treatment and Disposal	\$0	\$10,000	\$10,000
Aerobic Digester Simplex Regenerative Blower and Control Panel with VFD	Sewer - Treatment and Disposal	\$0	\$10,000	\$10,000
Replace Wastewater Process Piping and Valving	Sewer - Treatment and Disposal	\$0	\$20,000	\$20,000
Replace Air Headers, Shear Tubes and Diffusers	Sewer - Treatment and Disposal	\$0	\$20,000	\$30,000
Clarifier Weir and Density Current Baffle	Sewer - Treatment and Disposal	\$0	\$12,000	\$12,000
Install Peracetic Acid Disinfection System	Sewer - Treatment and Disposal	\$0	\$25,000	\$25,000
<b>TOTAL (INCLUDING TANK REPAIR OPTION)</b>		<b>\$0</b>	<b>\$297,000</b>	<b>\$297,000</b>

Photographs



**View of Existing Wastewater Treatment Facility**



**Secondary Clarifier and Air Header from Blower Shed**



**Digester Tank**



**Aeration Basin**



**Secondary Clarifier with Return Lines**





**Blower Shed**



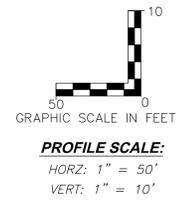
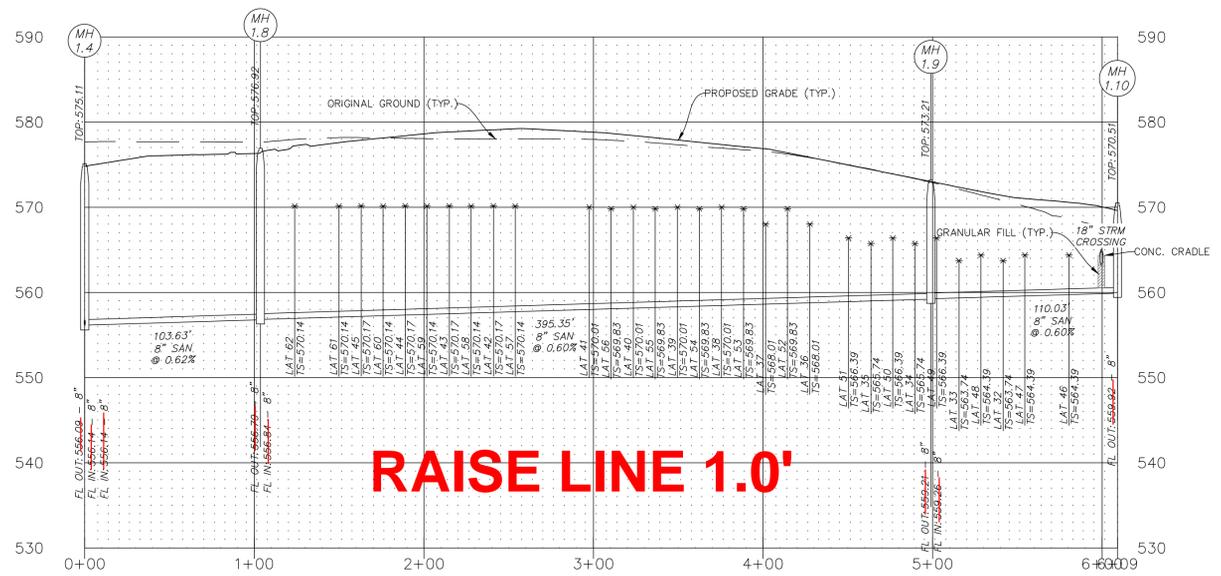
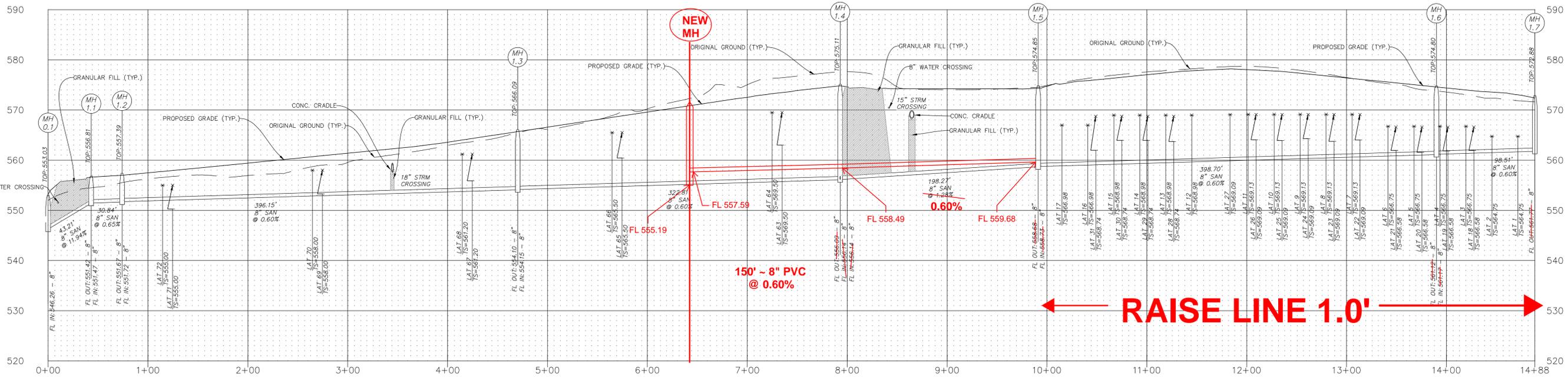
**View Inside Blower Shed**



**Disinfection Basin with Baffle Wall**



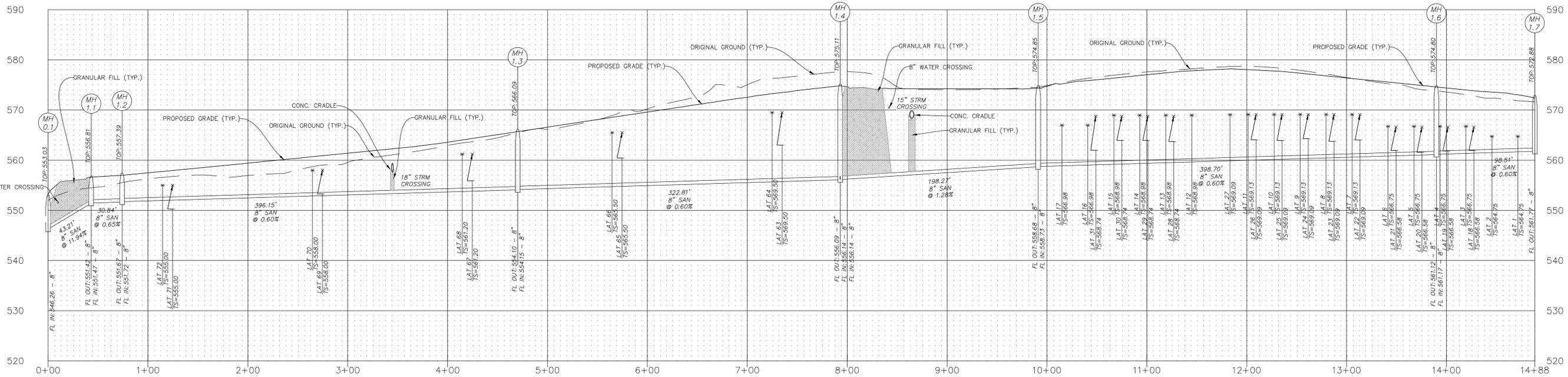
**Influent Screening Basin**



NO.	DATE	DESCRIPTION
1	10-25-18	18" SANITARY TOP ELEV. REVISED

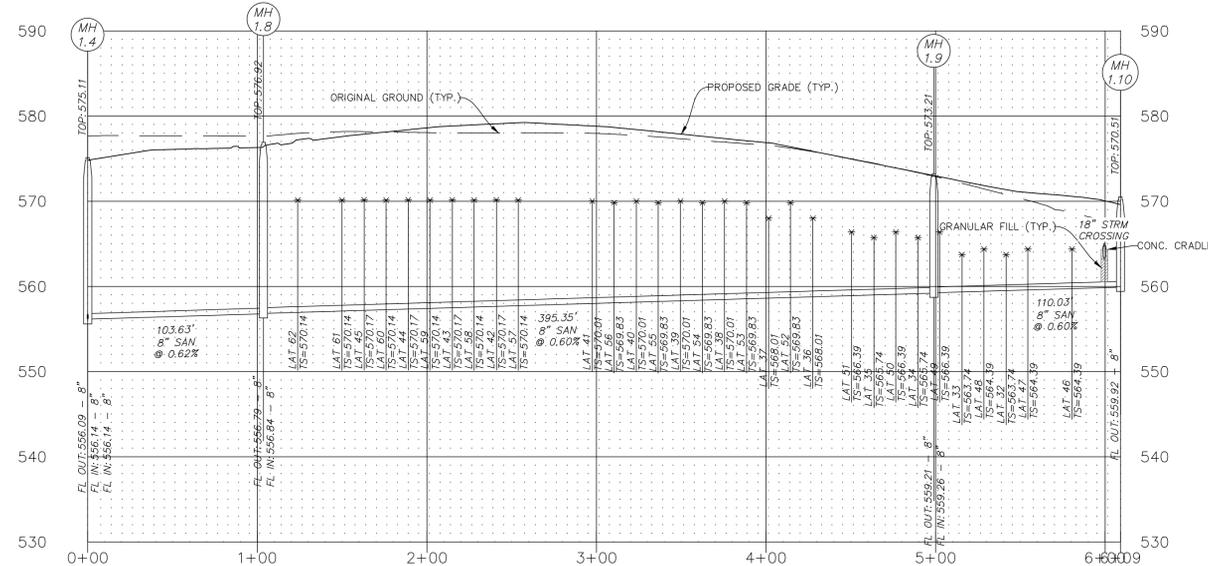
**ENGINEER'S AUTHENTICATION**  
 The responsibility for professional engineering liability on this project is hereby limited to the seal, signature, and date hereunder attached. Responsibility is disclaimed for all other engineering plans involved in this project and specifically excludes revisions after this date unless reauthenticated.  
**PICKETT, RAY & SILVER, INC.**

DRAWN	W.T.S.	DATE	10/16/18
CHECKED	D.S.T.	DATE	10/16/18
PROJECT #	00076.09PL.09R		
TASK #	X	FIELD BOOK	X

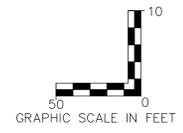


PR SAN 1

**SEE REVISED SHEET 10**



PR SAN 2



**PROFILE SCALE:**  
 HORIZ: 1" = 50'  
 VERT: 1" = 10'

**IMPROVEMENT PLANS  
 QUAIL RUN DEVELOPMENT  
 PHASE II**

Prepared For:  
 Quail Run Properties, LLC  
 161 Killdeer Circle  
 Moscow Mills, Missouri 63062

NO.	DATE	DESCRIPTION
1	10-25-18	18" SANITARY TOP ELEV. REVISED

**ENGINEER'S AUTHENTICATION**  
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William Schubert  
 License # PE-0318007848

DRAWN	W.T.S.	DATE	10/16/18
CHECKED	D.S.T.	DATE	10/16/18
PROJECT #	00076.0RPL.09R		
TASK #	X	FIELD BOOK	X

IMPROVEMENT PLANS  
 QUAIL RUN DEVELOPMENT  
 PHASE II  
 SHEET 10 OF 17

\*\*2018-10-23 QUAIL RUN PHASE II\*\*