BLUEGRASS WATER
Utility Operating Company
A CSWR Managed Utility

March 14, 2023

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

Bluegrass Water Utility Operating Company, Inc.
Brocklyn WWTF
KYPDES Permit No. KY0081299
Agency Interest No. 2809

On behalf of Bluegrass Water Utility Operating Company, LLC, we are submitting this letter to address the current Corrective Action Plan status that was approved January 28, 2020. BWUOC submitted an extension request on September 23, 2022, with a projected completion date of March 31, 2023.

Construction was recently completed at this facility including all the repairs and upgrades proposed by our third-party engineering firm. The facility effluent will be complaint with the operating permit on March 31, 2023

Please let me know if this letter meets the status report requirements of achieving system compliance.

Sincerely,

Enrique Chavez Jr.
Bluegrass Water Utility Operating Company, LLC
Program & Compliance Manager

KPDES

KENTUCKY POLLUTANT DISCHARGE ELIMINATION SYSTEM

FACT SHEET

KPDES No.: KY0044164
AI No.: 2935
Golden Acres WWTP
U.S. Highway 68 Golden Acres Loop
Calvert City, Marshall County, Kentucky

Date: June 3, 2020

Public Notice Information

Public Notice Start Date: February 18, 2020

Comment Due Date: March 19, 2020

General information concerning the public notice process may be obtained on the Division of Water's Public Notice Webpage at the following address:
https://eec.ky.gov/Environmental-Protection/Water/Pages/Water-Public-Notices-and-Hearings.aspx.

Public Notice Comments
Comments must be received by the Division of Water no later than 4:30 PM on the closing date of the comment period. Comments may be submitted by e-mail at: DOWPublicNotice@ky.gov or written comments may be submitted to the Division of Water at 300 Sower Blvd, Frankfort, Kentucky 40601.

Reference Documents
A copy of this proposed fact sheet, proposed permit, the application, other supporting material and the current status of the application may be obtained from the Department for Environmental Protection's Pending Approvals Search Webpage:
http://dep.gateway.ky.gov/eSearch/Search_Pending_Approvals.aspx?Program=Wastewater&NumDaysDoc=30.

Open Records
Copies of publicly-available documents supporting this fact sheet and proposed permit may also be obtained from the Department for Environmental Protection Central Office. Information regarding these materials may be obtained from the Open Records Coordinator at (502) 782-6849 or by e-mail at EEC.KORA@ky.gov.

THIS KPDES FACT SHEET CONSISTS OF THE FOLLOWING SECTIONS:

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SECTION 1

FACILITY SYNOPSIS

1. FACILITY SYNOPSIS

1.1. Name and Address of Applicant

Bluegrass Water Utility Operating Company, LLC
500 Northwest Plaza Drive, Suite 500
St. Ann, Missouri 63074

1.2. Facility Location

Golden Acres WWTP
U.S. Highway 68 Golden Acres Loop
Calvert City, Marshall County, Kentucky

1.3. Description of Applicant's Operation

The applicant operates a domestic wastewater treatment plant serving a subdivision.

1.4. Wastewaters Collected and Treatment

The following table lists the actual average flow reported, the facility's approved long-term average design treatment capacity, the wastewater types collected, and the treatment type for each outfall:

TABLE 1.

Outfall No.	Avg. Flow (MGD)	Design Capacity (MGD)	Wastewater Types Collected	Treatment Type
001	0.019	0.025	Domestic Sanitary	Screening Aeration Basin Sedimentation Chlorine Disinfection Dechlorination Discharge to Surface Water

1.5. Permitting Action

This is a reissuance of a minor KPDES permit for an existing domestic wastewater treatment plant [SIC Code 4952].

SECTION 2

RECEIVING/INTAKE WATERS

2. RECEIVING / INTAKE WATERS

2.1. Receiving Waters

All surface waters of the Commonwealth have been assigned stream use designations consisting of one or more of the following designations: Warmwater Aquatic Habitat (WAH), Primary Contact Recreation (PCR), Secondary Contact Recreation (SCR), Domestic Water Supply (DWS), Coldwater Aquatic Habitat (CAH) or Outstanding State Resource Water (OSRW)[401 KAR 10:026].

All surface waters of the Commonwealth are assigned one of the following antidegradation categories: Outstanding National Resource Water (ONRW), Exceptional Water (EW), Impaired Water (IW) or High Quality Water (HQ)[401 KAR 10:030].

Surface waters categorized as an IW are listed in Kentucky's most recently approved Integrated Report to Congress on the Condition of Water Resources in Kentucky - Volume II. 303(d) List of Surface Waters.

The following table lists the stream use classifications associated with this permit.

TABLE 2.

Receiving Water Name	Use Designation	Antidegradation Category	7Q10 Low Flow (cfs)	Harmonic Mean Flow (cfs)
UT to Clarks River	WAH PCR SCR DWS	HQ	0.0	0.0

2.2. Intake Waters – Nearest Downstream Intake

TABLE 3.

Intake Water Name	Public Water Supply Name	Latitude (N) Decimal Degrees	Longitude (W) Decimal Degrees	Miles Downstream	7Q10 Low Flow (cfs)	Harmonic Mean Flow (cfs)
Ohio River	Paducah Water Works	37.099114°	88.607375°	24.5	51,000	175,000

SECTION 3

OUTFALL 001

3. OUTFALL 001

3.1. Outfall Description

The following table lists the outfall type, location, and description:

TABLE 4.				
Outfall Type	**Latitude (N)**	**Longitude (W)**	**Receiving Water**	**Description of Outfall**
External	36.972741°	88.480964°	UT to Clarks River	Domestic Wastewater

3.2. Reported Values

The following table summarizes the reported values for Outfall 001:

TABLE 5.							
Reported Parameters	**Units**	**EFFLUENT**					
		Loadings (lbs/day)		**Concentrations**			
		Monthly Average	**Maximum Weekly Average**	**Minimum**	**Monthly Average**	**Maximum Weekly Average**	**Maximum**
Flow	MGD	0.019	0.019[1]	N/A	N/A	N/A	N/A
pH	SU	N/A	N/A	6.3	N/A	N/A	8.2
$CBOD_5$[2]	mg/l	1.52	1.58	N/A	11.7	14.8	N/A
Total Suspended Solids	mg/l	1.53	1.53	N/A	10.8	12.4	N/A
Ammonia (as mg/l NH_3N)							
May 1 – October 31	mg/l	0.88	0.88	N/A	7.09	7.09[1]	N/A
November 1 – April 30	mg/l	0.41	0.41	N/A	4.81	6.20[1]	N/A
E. Coli[3]	#/100 ml	N/A	N/A	N/A	3957[4]	3815[5]	N/A
Dissolved Oxygen	mg/l	N/A	N/A	1.8	N/A	N/A	N/A
Total Residual Chlorine	mg/l	N/A	N/A	N/A	0.022	0.022[1]	N/A
[1]Daily Maximum							
[2]$CBOD_5$ – Carbonaceous Biochemical Oxygen Demand, 5-day							
[3]E. Coli – Escherichia Coli Bacteria							
[4]Thirty (30) day Geometric Mean							
[5]Seven (7) day Geometric Mean							

The above values are based off of 5-year DMR averages from 03/31/2015 to 12/31/2019.

3.3. Effluent Limitations and Monitoring Requirements

The following table summarizes the effluent limitations and monitoring requirements for Outfall 001:

TABLE 6.

EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs/day)		Concentrations				Frequency	Sample Type
		Monthly Average	Maximum Weekly Average	Minimum	Monthly Average	Maximum Weekly Average	Maximum		
Flow	MGD	Report	Report[1]	N/A	N/A	N/A	N/A	1/Quarter	Instantaneous
pH	SU	N/A	N/A	6.0	N/A	N/A	9.0	1/Quarter	Grab
$CBOD_5$[2]	mg/l	N/A	N/A	N/A	25	37.5	N/A	1/Quarter	Composite[3]
Total Suspended Solids	mg/l	N/A	N/A	N/A	30	45	N/A	1/Quarter	Composite[3]
Ammonia (as mg/l NH_3N)									
May 1 – October 31	mg/l	N/A	N/A	N/A	4.0	6.0[1]	N/A	1/Quarter	Composite[3]
November 1 – April 30	mg/l	N/A	N/A	N/A	10	15[1]	N/A	1/Quarter	Composite[3]
Dissolved Oxygen	mg/l	N/A	N/A	7.0	N/A	N/A	N/A	1/Quarter	Grab
E. Coli[4]	#/100 ml	N/A	N/A	N/A	130[5]	240[6]	N/A	1/Quarter	Grab
Total Residual Chlorine	mg/l	N/A	N/A	N/A	0.011	0.019[1]	N/A	1/Quarter	Grab

[1]Daily Maximum

[2]$CBOD_5$ – Carbonaceous Biochemical Oxygen Demand, 5-day

[3]A sample composed of four or more equal or flow-proportional aliquots collected over a period of no less than eight and no more than twenty-four hours and aggregated so that the aggregate sample reflects the average water quality of the effluent during the compositing or sample period

[4]E. Coli – Escherichia Coli Bacteria

[5]Thirty (30) day Geometric Mean

[6]Seven (7) day Geometric Mean

3.4. Pertinent Factors

The effluent limitations for this outfall were developed in accordance with DOW's General Procedures for Limitations Development located on DOW's webpage at: https://eec.ky.gov/Environmental-Protection/Forms%20Library/General%20Procedures%20for%20Limitations%20Development.pdf.

3.4.1. Secondary Treatment Standards

Discharges of biochemically degradable wastes are subject to technology-based effluent limitations (TBELs) known as the Secondary Treatment Standards. Both state and federal regulations establish the requirements for secondary treatment. State regulations for secondary treatment only apply to non-POTWs [401 KAR 5:045].

TABLE 7.		
State Defined Secondary Treatment Standards		
Pollutant or Pollutant Characteristic	**30-day average**	**7-day average**
BOD_5 (mg/l)	30	45
TSS (mg/l)	30	45

3.5. Justification of Requirements

Chapters 5 and 10 of Title 401 of the Kentucky Administrative Regulations (KARs), cited in the following, have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes.

At a minimum, all permits shall contain technology-based effluent limitations (TBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)]. When necessary to achieve water quality standards, all permits shall contain water quality-based effluent limitations (WQBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(d)]. Any WQBELs included in this permit are based upon the Kentucky Water Quality Standards (KYWQS) [401 KAR 10:031].

3.5.1. Flow

The monitoring requirements for this parameter are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(ii)] and requirements for recording and reporting of monitoring results [401 KAR 5:050, Section 4 – 40 CFR 122.48].

3.5.2. $CBOD_5$

The limitations for this parameter are consistent with the secondary treatment standards for biochemically degradable wastes as defined in state regulations [401 KAR 5:045, Section 3]. DOW found that it was necessary to impose WQBELs for this parameter in order to achieve water quality standards. [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(d)]. These effluent limitations are also consistent with Kentucky's Water Quality Standards [401 KAR 10:031, Section 4(1)(e) & (i) respectively]. The EPA's River and Stream Water Quality Model (QUAL 2E/K) was used to develop these limitations.

3.5.3. Total Suspended Solids

The limitations for this parameter are consistent with the secondary treatment standards for biochemically degradable wastes as defined in state regulations [401 KAR 5:045, Section 3]. These effluent limitations are also consistent with Kentucky's Water Quality Standards [401 KAR 10:031, Section 4(1)(g)].

3.5.4. Ammonia and Dissolved Oxygen

The limitations for these parameters are WQBELs developed using the EPA's River and Stream Water Quality Model (QUAL 2E/K) [401 KAR 10:031, Section 4(1)(e) & (i)].

3.5.5. E. Coli

The limitations for this parameter are consistent with Kentucky's Water Quality Standards [401 KAR 10:031, Section 7].

3.5.6. pH

The limitations for this parameter are consistent Kentucky's Water Quality Standards [401 KAR 10:031, Section 4(1)(b) and Section 7].

3.5.7. Total Residual Chlorine

The limitations for this parameter are consistent with Kentucky's Water Quality Standards [401 KAR 10:031, Section 4(1)(k)].

SECTION 4

OTHER CONDITIONS

4. OTHER CONDITIONS

4.1. Schedule of Compliance

The permittee is required to comply with all effluent limitations by the effective date of the permit unless a compliance schedule is included with the permit. A schedule of compliance, if included with this permit, is consistent with the regulatory provisions for establishing a schedule of compliance [401 KAR 5:050, Section 4 and 40 CFR 122.47].

4.2. Antidegradation

The conditions of Kentucky's Antidegradation Policy have been satisfied [401 KAR 10:029, Section 1]. This permitting action is a reissuance of a KPDES permit that does not authorize an expanded discharge.

4.3. Standard Conditions

The conditions listed in the Standard Conditions Section of the permit are consistent with the conditions applicable to all permits [401 KAR 5:065, Section 2(1) – 40 CFR 122.41].

4.4. Sufficiently Sensitive Analytical Methods

Analytical methods utilized to demonstrate compliance with the effluent limitations established in this permit shall be sufficiently sensitive to detect pollutant levels at or below the required effluent limit [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)].

4.5. Certified Laboratory

All environmental analysis is to be performed by a certified laboratory is consistent with the certified wastewater laboratory requirements [401 KAR 5:320, Section 1].

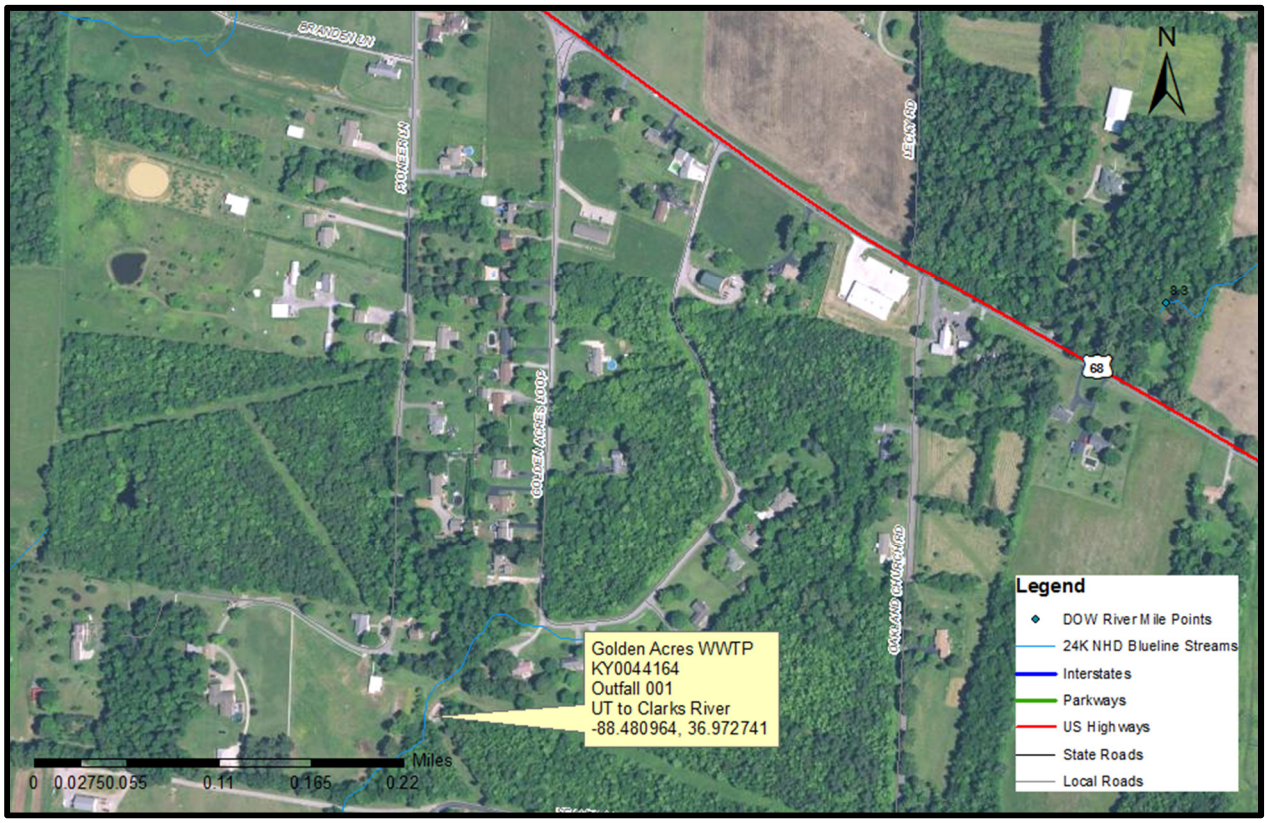
4.6. Connection to Regional Sewer System

In accordance with 401 KAR 5:005, Section 4 if a sewer system served by a regional facility becomes available, the WWTP shall be abandoned and the influent flow shall be diverted to the regional facility.

4.7. Certified Operators

Wastewater treatment plants and wastewater collection systems that accept wastewaters containing domestic sewage are to be operated by a certified operator [401 KAR 5:010].

4.8. Location Map



KPDES

KENTUCKY POLLUTANT DISCHARGE ELIMINATION SYSTEM

FACT SHEET

KPDES No.: KY0045390
AI No.: 1643
Airview Estates Subdivision WWTP
178 West Airview Drive
Elizabethtown, Hardin County, Kentucky

Date: March 9, 2020

Public Notice Information

Public Notice Start Date: November 26, 2019

Comment Due Date: December 26, 2019

General information concerning the public notice process may be obtained on the Division of Water's Public Notice Webpage at the following address:
https://eec.ky.gov/Environmental-Protection/Water/Pages/Water-Public-Notices-and-Hearings.aspx.

Public Notice Comments
Comments must be received by the Division of Water no later than 4:30 PM on the closing date of the comment period. Comments may be submitted by e-mail at: DOWPublicNotice@ky.gov or written comments may be submitted to the Division of Water at 300 Sower Blvd, Frankfort, Kentucky 40601.

Reference Documents
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SECTION 1

FACILITY SYNOPSIS

1. FACILITY SYNOPSIS

1.1. Name and Address of Applicant

Bluegrass Water Utility Operating Company, LLC.
500 Northwest Plaza Dr., Suite 500
St. Ann, Missouri 63074

1.2. Facility Location

Airview Estates Subdivision WWTP
178 West Airview Drive
Elizabethtown, Hardin County, Kentucky

1.3. Description of Applicant's Operation

The applicant operates a domestic wastewater treatment plant serving a subdivision.

1.4. Wastewaters Collected and Treatment

The following table lists the actual average flow reported, the facility's approved long-term average design treatment capacity, the wastewater types collected, and the treatment type for each outfall:

TABLE 1.

Outfall No.	Avg. Flow (MGD)	Design Capacity (MGD)	Wastewater Types Collected	Treatment Type
001	0.057	0.055	Domestic Sanitary	Screening Aeration Sedimentation Chlorine Disinfection Dechloriantion Discharge to Surface Water

1.5. Permitting Action

This is a reissuance of a minor KPDES permit for an existing domestic wastewater treatment plant [SIC Code 4952].

SECTION 2

RECEIVING/INTAKE WATERS

2. RECEIVING / INTAKE WATERS

2.1. Receiving Waters

All surface waters of the Commonwealth have been assigned stream use designations consisting of one or more of the following designations: Warmwater Aquatic Habitat (WAH), Primary Contact Recreation (PCR), Secondary Contact Recreation (SCR), Domestic Water Supply (DWS), Coldwater Aquatic Habitat (CAH) or Outstanding State Resource Water (OSRW)[401 KAR 10:026].

All surface waters of the Commonwealth are assigned one of the following antidegradation categories: Outstanding National Resource Water (ONRW), Exceptional Water (EW), Impaired Water (IW) or High Quality Water (HQ)[401 KAR 10:030].

Surface waters categorized as an IW are listed in Kentucky's most recently approved Integrated Report to Congress on the Condition of Water Resources in Kentucky - Volume II. 303(d) List of Surface Waters.

The following table lists the stream use classifications associated with this permit.

TABLE 2.

Receiving Water Name	Use Designation	Antidegradation Category	7Q10 Low Flow (cfs)	Harmonic Mean Flow (cfs)
UT to Mill Creek Branch	WAH PCR SCR DWS	HQ	0.0	0.0

2.2. Intake Waters – Nearest Downstream Intake

TABLE 3.

Intake Water Name	Public Water Supply Name	Latitude (N) Decimal Degrees	Longitude (W) Decimal Degrees	Miles Downstream	7Q10 Low Flow (cfs)	Harmonic Mean Flow (cfs)
Ohio River	Evansville Water Utility, IN	37.957651°	87.574393°	189.5	12,900	60,900

SECTION 3

OUTFALL 001

3. OUTFALL 001

3.1. Outfall Description

The following table lists the outfall type, location, and description:

TABLE 4.				
Outfall Type	**Latitude (N)**	**Longitude (W)**	**Receiving Water**	**Description of Outfall**
External	37.758472°	85.891817°	UT to Mill Creek Branch	Domestic Wastewater

3.2. Reported Values

The following table summarizes the reported values for Outfall 001:

TABLE 5.							
Reported Parameters	**Units**	**EFFLUENT**					
		Loadings (lbs/day)		**Concentrations**			
		Monthly Average	**Maximum Weekly Average**	**Minimum**	**Monthly Average**	**Maximum Weekly Average**	**Maximum**
Flow	MGD	0.057	0.090[1]	N/A	N/A	N/A	N/A
pH	SU	N/A	N/A	5.80	N/A	N/A	9.68
$CBOD_5$[2]	mg/l	8.07	17.79	N/A	33.14	64.41	N/A
Total Suspended Solids	mg/l	8.67	21.10	N/A	35.57	81.47	N/A
Ammonia (as mg/l NH_3N)							
May 1 – October 31	mg/l	1.77	3.56	N/A	7.55	17.14[1]	N/A
November 1 – April 30	mg/l	1.79	4.11	N/A	7.11	13.10[1]	N/A
E. Coli[3]	#/100 ml	N/A	N/A	N/A	15509[4]	49607[5]	N/A
Dissolved Oxygen	mg/l	N/A	N/A	1.88	N/A	N/A	N/A
Total Residual Chlorine	mg/l	N/A	N/A	N/A	1.10	1.84[1]	N/A
[1]Daily Maximum							
[2]$CBOD_5$ – Carbonaceous Biochemical Oxygen Demand, 5-day							
[3]E. Coli – Escherichia Coli Bacteria							
[4]Thirty (30) day Geometric Mean							
[5]Seven (7) day Geometric Mean							

The above values are based off of 5-year DMR averages from 10/31/2014 to 09/30/2019.

3.3. Effluent Limitations and Monitoring Requirements

The following table summarizes the effluent limitations and monitoring requirements for Outfall 001:

TABLE 6.

EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs/day)		Concentrations				Frequency	Sample Type
		Monthly Average	Maximum Weekly Average	Minimum	Monthly Average	Maximum Weekly Average	Maximum		
Flow	MGD	Report	Report[1]	N/A	N/A	N/A	N/A	1/Month	Instantaneous
pH	SU	N/A	N/A	6.0	N/A	N/A	9.0	1/Month	Grab
$CBOD_5$[2]	mg/l	N/A	N/A	N/A	25.0	37.5	N/A	1/Month	Composite[3]
Total Suspended Solids	mg/l	N/A	N/A	N/A	30	45	N/A	1/Month	Composite[3]
Ammonia (as mg/l NH_3N)									
May 1 – October 31	mg/l	N/A	N/A	N/A	4.0	6.0[1]	N/A	1/Month	Composite[3]
November 1 – April 30	mg/l	N/A	N/A	N/A	10.0	15.0[1]	N/A	1/Month	Composite[3]
Dissolved Oxygen	mg/l	N/A	N/A	7.00	N/A	N/A	N/A	1/Month	Grab
E. Coli[4]	#/100 ml	N/A	N/A	N/A	130[5]	240[6]	N/A	1/Month	Grab
Total Residual Chlorine	mg/l	N/A	N/A	N/A	0.011	0.019[1]	N/A	1/Month	Grab

[1]Daily Maximum

[2]$CBOD_5$ – Carbonaceous Biochemical Oxygen Demand, 5-day

[3]A sample composed of four or more equal or flow-proportional aliquots collected over a period of no less than eight and no more than twenty-four hours and aggregated so that the aggregate sample reflects the average water quality of the effluent during the compositing or sample period

[4]E. Coli – Escherichia Coli Bacteria

[5]Thirty (30) day Geometric Mean

[6]Seven (7) day Geometric Mean

3.4. Pertinent Factors

The effluent limitations for this outfall were developed in accordance with DOW's General Procedures for Limitations Development located on DOW's webpage at: https://eec.ky.gov/Environmental-Protection/Forms%20Library/General%20Procedures%20for%20Limitations%20Development.pdf.

3.4.1. Secondary Treatment Standards

Discharges of biochemically degradable wastes are subject to technology-based effluent limitations (TBELs) known as the Secondary Treatment Standards. Both state and federal regulations establish the requirements for secondary treatment. State regulations for secondary treatment only apply to non-POTWs [401 KAR 5:045].

TABLE 7.		
State Defined Secondary Treatment Standards		
Pollutant or Pollutant Characteristic	**30-day average**	**7-day average**
BOD_5 (mg/l)	30	45
TSS (mg/l)	30	45

3.5. Justification of Requirements

Chapters 5 and 10 of Title 401 of the Kentucky Administrative Regulations (KARs), cited in the following, have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes.

At a minimum, all permits shall contain technology-based effluent limitations (TBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)]. When necessary to achieve water quality standards, all permits shall contain water quality-based effluent limitations (WQBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(d)]. Any WQBELs included in this permit are based upon the Kentucky Water Quality Standards (KYWQS) [401 KAR 10:031].

3.5.1. Flow

The monitoring requirements for this parameter are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(ii)] and requirements for recording and reporting of monitoring results [401 KAR 5:050, Section 4 – 40 CFR 122.48].

3.5.2. $CBOD_5$

The limitations for this parameter are consistent with the secondary treatment standards for biochemically degradable wastes as defined in state regulations [401 KAR 5:045, Section 3]. DOW found that it was necessary to impose WQBELs for this parameter in order to achieve water quality standards. [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(d)]. These effluent limitations are also consistent with Kentucky's Water Quality Standards [401 KAR 10:031, Section 4(1)(e) & (i) respectively]. The EPA's River and Stream Water Quality Model (QUAL 2E/K) was used to develop these limitations.

3.5.3. Total Suspended Solids

The limitations for this parameter are consistent with the secondary treatment standards for biochemically degradable wastes as defined in state regulations [401 KAR 5:045, Section 3]. These effluent limitations are also consistent with Kentucky's Water Quality Standards [401 KAR 10:031, Section 4(1)(g)].

3.5.4. Ammonia and Dissolved Oxygen

The limitations for these parameters are WQBELs developed using the EPA's River and Stream Water Quality Model (QUAL 2E/K) [401 KAR 10:031, Section 4(1)(e) & (i)].

3.5.5. E. Coli

The limitations for this parameter are consistent with Kentucky's Water Quality Standards [401 KAR 10:031, Section 7].

3.5.6. pH

The limitations for this parameter are consistent Kentucky's Water Quality Standards [401 KAR 10:031, Section 4(1)(b) and Section 7].

3.5.7. Total Residual Chlorine

The limitations for this parameter are consistent with Kentucky's Water Quality Standards [401 KAR 10:031, Section 4(1)(k)].

SECTION 4

OTHER CONDITIONS

4. OTHER CONDITIONS

4.1. Schedule of Compliance

The permittee is required to comply with all effluent limitations by the effective date of the permit unless a compliance schedule is included with the permit. A schedule of compliance, if included with this permit, is consistent with the regulatory provisions for establishing a schedule of compliance [401 KAR 5:050, Section 4 and 40 CFR 122.47].

4.2. Antidegradation

The conditions of Kentucky's Antidegradation Policy have been satisfied [401 KAR 10:029, Section 1]. This permitting action is a reissuance of a KPDES permit that does not authorize an expanded discharge.

4.3. Standard Conditions

The conditions listed in the Standard Conditions Section of the permit are consistent with the conditions applicable to all permits [401 KAR 5:065, Section 2(1) – 40 CFR 122.41].

4.4. Sufficiently Sensitive Analytical Methods

Analytical methods utilized to demonstrate compliance with the effluent limitations established in this permit shall be sufficiently sensitive to detect pollutant levels at or below the required effluent limit [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)].

4.5. Certified Laboratory

All environmental analysis is to be performed by a certified laboratory is consistent with the certified wastewater laboratory requirements [401 KAR 5:320, Section 1].

4.6. Connection to Regional Sewer System

In accordance with 401 KAR 5:005, Section 4 if a sewer system served by a regional facility becomes available, the WWTP shall be abandoned and the influent flow shall be diverted to the regional facility.

4.7. Certified Operators

Wastewater treatment plants and wastewater collection systems that accept wastewaters containing domestic sewage are to be operated by a certified operator [401 KAR 5:010].

4.8. Location Map

KPDES

KENTUCKY POLLUTANT DISCHARGE ELIMINATION SYSTEM

FACT SHEET

KPDES No.: KY0080845
AI No.: 3041
Great Oaks Subdivision WWTP
5680 Majestic Oak Dr.
Paducah, McCracken County, Kentucky

Date: March 9, 2020

Public Notice Information

Public Notice Start Date: November 27, 2019

Comment Due Date: December 27, 2019

General information concerning the public notice process may be obtained on the Division of Water's Public Notice Webpage at the following address:
https://eec.ky.gov/Environmental-Protection/Water/Pages/Water-Public-Notices-and-Hearings.aspx.

Public Notice Comments
Comments must be received by the Division of Water no later than 4:30 PM on the closing date of the comment period. Comments may be submitted by e-mail at: DOWPublicNotice@ky.gov or written comments may be submitted to the Division of Water at 300 Sower Blvd, Frankfort, Kentucky 40601.

Reference Documents
A copy of this proposed fact sheet, proposed permit, the application, other supporting material and the current status of the application may be obtained from the Department for Environmental Protection's Pending Approvals Search Webpage:
http://dep.gateway.ky.gov/eSearch/Search_Pending_Approvals.aspx?Program=Wastewater&NumDaysDoc=30.

Open Records
Copies of publicly-available documents supporting this fact sheet and proposed permit may also be obtained from the Department for Environmental Protection Central Office. Information regarding these materials may be obtained from the Open Records Coordinator at (502) 782-6849 or by e-mail at EEC.KORA@ky.gov.

THIS KPDES FACT SHEET CONSISTS OF THE FOLLOWING SECTIONS:

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1.2. Facility Location....4
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SECTION 1

FACILITY SYNOPSIS

1. FACILITY SYNOPSIS

1.1. Name and Address of Applicant

Bluegrass Water Utility Operating Company, LLC.
500 Northwest Plaza Dr., Suite 500
St. Ann, MO 63074

1.2. Facility Location

Great Oaks Subdivision WWTP
5680 Majestic Oak Dr.
Paducah, McCracken County, Kentucky

1.3. Description of Applicant's Operation

The applicant operates a domestic wastewater treatment plant serving a residential subdivision.

1.4. Wastewaters Collected and Treatment

The following table lists the actual average flow reported, the facility's approved long-term average design treatment capacity, the wastewater types collected, and the treatment type for each outfall:

TABLE 1.

Outfall No.	Avg. Flow (MGD)	Design Capacity (MGD)	Wastewater Types Collected	Treatment Type
001	0.035	0.070	Domestic (Sanitary) Wastewater	Activated sludge, Chlorine disinfection and Dechlorination

1.5. Permitting Action

This is a reissuance of a minor KPDES permit for an existing domestic wastewater treatment plant [SIC Code 4952].

SECTION 2

RECEIVING/INTAKE WATERS

2. RECEIVING / INTAKE WATERS

2.1. Receiving Waters

All surface waters of the Commonwealth have been assigned stream use designations consisting of one or more of the following designations: Warmwater Aquatic Habitat (WAH), Primary Contact Recreation (PCR), Secondary Contact Recreation (SCR), Domestic Water Supply (DWS), Coldwater Aquatic Habitat (CAH) or Outstanding State Resource Water (OSRW)[401 KAR 10:026].

All surface waters of the Commonwealth are assigned one of the following antidegradation categories: Outstanding National Resource Water (ONRW), Exceptional Water (EW), Impaired Water (IW) or High Quality Water (HQ)[401 KAR 10:030].

Surface waters categorized as an IW are listed in Kentucky's most recently approved Integrated Report to Congress on the Condition of Water Resources in Kentucky - Volume II. 303(d) List of Surface Waters.

The following table lists the stream use classifications associated with this permit.

TABLE 2.

Receiving Water Name	Use Designation	Antidegradation Category	7Q10 Low Flow (cfs)	Harmonic Mean Flow (cfs)
Blizzard Pond Drainage Canal	WAH, PCR, SCR, DWS	HQ	0.0	0.0

2.2. Intake Waters – Nearest Downstream Intake

TABLE 3.

Intake Water Name	Public Water Supply Name	Latitude (N) Decimal Degrees	Longitude (W) Decimal Degrees	Miles Downstream	7Q10 Low Flow (cfs)	Harmonic Mean Flow (cfs)
Ohio River	Paducah Water Works/Paducah WTP	37.099114°	88.607375°	25.3	51,000	175,000

SECTION 3

OUTFALL 001

3. OUTFALL 001

3.1. Outfall Description

The following table lists the outfall type, location, and description:

TABLE 4.				
Outfall Type	**Latitude (N)**	**Longitude (W)**	**Receiving Water**	**Description of Outfall**
External	36.986278°	88.638003°	Blizzard Pond Drainage Canal	Domestic Wastewater

3.2. Reported Values

The following table summarizes the reported values for Outfall 001:

TABLE 5.							
Reported Parameters	**Units**	**EFFLUENT**					
		Loadings (lbs/day)		**Concentrations**			
		Monthly Average	**Maximum Weekly Average**	**Minimum**	**Monthly Average**	**Maximum Weekly Average**	**Maximum**
Flow	MGD	0.035	0.035[1]	N/A	N/A	N/A	N/A
pH	SU	N/A	N/A	6.40	N/A	N/A	8.30
$CBOD_5$[2]	mg/l	N/A	N/A	N/A	9.81	9.81	N/A
Total Suspended Solids	mg/l	N/A	N/A	N/A	9.13	9.13	N/A
Ammonia (as mg/l NH_3N)							
May 1 – October 31	mg/l	N/A	N/A	N/A	4.09	4.09[1]	N/A
November 1 – April 30	mg/l	N/A	N/A	N/A	3.37	3.37[1]	N/A
E. Coli[3]	#/100 ml	N/A	N/A	N/A	236.60[4]	236.60[5]	N/A
Dissolved Oxygen	mg/l	N/A	N/A	7.0	N/A	N/A	N/A
Total Residual Chlorine	mg/l	N/A	N/A	N/A	0.06	0.06[1]	N/A
[1]Daily Maximum							
[2]$CBOD_5$ – Carbonaceous Biochemical Oxygen Demand, 5-day							
[3]E. Coli – Escherichia Coli Bacteria							
[4]Thirty (30) day Geometric Mean							
[5]Seven (7) day Geometric Mean							

The above values are based off of 5-year DMR averages from 10/31/14 to 09/30/19.

3.3. Effluent Limitations and Monitoring Requirements

The following table summarizes the effluent limitations and monitoring requirements for Outfall 001:

TABLE 6.

EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs/day)		Concentrations				Frequency	Sample Type
		Monthly Average	Maximum Weekly Average	Minimum	Monthly Average	Maximum Weekly Average	Maximum		
Flow	MGD	Report	Report[1]	N/A	N/A	N/A	N/A	1/Month	Instantaneous
pH	SU	N/A	N/A	6.0	N/A	N/A	9.0	1/Month	Grab
$CBOD_5$[2]	mg/l	N/A	N/A	N/A	10	15	N/A	1/Month	Composite[3]
Total Suspended Solids	mg/l	N/A	N/A	N/A	30	45	N/A	1/Month	Composite[3]
Ammonia (as mg/l NH_3N)									
May 1 – October 31	mg/l	N/A	N/A	N/A	4.0	6.0[1]	N/A	1/Month	Composite[3]
November 1 – April 30	mg/l	N/A	N/A	N/A	10	15[1]	N/A	1/Month	Composite[3]
Dissolved Oxygen	mg/l	N/A	N/A	7.0	N/A	N/A	N/A	1/Month	Grab
E. Coli[4]	#/100 ml	N/A	N/A	N/A	130[5]	240[6]	N/A	1/Month	Grab
Total Residual Chlorine	mg/l	N/A	N/A	N/A	0.011	0.019[1]	N/A	1/Month	Grab

[1]Daily Maximum

[2]$CBOD_5$ – Carbonaceous Biochemical Oxygen Demand, 5-day

[3]A sample composed of four or more equal or flow-proportional aliquots collected over a period of no less than eight and no more than twenty-four hours and aggregated so that the aggregate sample reflects the average water quality of the effluent during the compositing or sample period

[4]E. Coli – Escherichia Coli Bacteria

[5]Thirty (30) day Geometric Mean

[6]Seven (7) day Geometric Mean

3.4. Pertinent Factors

The effluent limitations for this outfall were developed in accordance with DOW's General Procedures for Limitations Development located on DOW's webpage at:

https://eec.ky.gov/Environmental-Protection/Forms%20Library/General%20Procedures%20for%20Limitations%20Development.pdf

3.4.1. Secondary Treatment Standards

Discharges of biochemically degradable wastes are subject to technology-based effluent limitations (TBELs) known as the Secondary Treatment Standards. Both state and federal regulations establish the requirements for secondary treatment. State regulations for secondary treatment only apply to non-POTWs [401 KAR 5:045].

TABLE 7.		
State Defined Secondary Treatment Standards		
Pollutant or Pollutant Characteristic	**30-day average**	**7-day average**
BOD_5 (mg/l)	30	45
TSS (mg/l)	30	45

3.5. Justification of Requirements

Chapters 5 and 10 of Title 401 of the Kentucky Administrative Regulations (KARs), cited in the following, have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes.

At a minimum, all permits shall contain technology-based effluent limitations (TBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)]. When necessary to achieve water quality standards, all permits shall contain water quality-based effluent limitations (WQBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(d)]. Any WQBELs included in this permit are based upon the Kentucky Water Quality Standards (KYWQS) [401 KAR 10:031].

3.5.1. Flow

The monitoring requirements for this parameter are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(ii)] and requirements for recording and reporting of monitoring results [401 KAR 5:050, Section 4 – 40 CFR 122.48].

3.5.2. $CBOD_5$

The limitations for this parameter are consistent with the secondary treatment standards for biochemically degradable wastes as defined in state regulations [401 KAR 5:045, Section 3]. DOW found that it was necessary to impose WQBELs for this parameter in order to achieve water quality standards. [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(d)]. These effluent limitations are also consistent with Kentucky's Water Quality Standards [401 KAR 10:031, Section 4(1)(e) & (i) respectively]. The EPA's River and Stream Water Quality Model (QUAL 2E/K) was used to develop these limitations.

3.5.3. Total Suspended Solids

The limitations for this parameter are consistent with the secondary treatment standards for biochemically degradable wastes as defined in state regulations [401 KAR 5:045, Section 3]. These effluent limitations are also consistent with Kentucky's Water Quality Standards [401 KAR 10:031, Section 4(1)(g)].

3.5.4. Ammonia and Dissolved Oxygen

The limitations for these parameters are WQBELs developed using the EPA's River and Stream Water Quality Model (QUAL 2E/K) [401 KAR 10:031, Section 4(1)(e) & (i)].

3.5.5. E. Coli

The limitations for this parameter are consistent with Kentucky's Water Quality Standards [401 KAR 10:031, Section 7].

3.5.6. pH

The limitations for this parameter are consistent Kentucky's Water Quality Standards [401 KAR 10:031, Section 4(1)(b) and Section 7].

3.5.7. Total Residual Chlorine

The limitations for this parameter are consistent with Kentucky's Water Quality Standards [401 KAR 10:031, Section 4(1)(k)].

SECTION 4

OTHER CONDITIONS

4. OTHER CONDITIONS

4.1. Schedule of Compliance

The permittee is required to comply with all effluent limitations by the effective date of the permit unless a compliance schedule is included with the permit. A schedule of compliance, if included with this permit, is consistent with the regulatory provisions for establishing a schedule of compliance [401 KAR 5:050, Section 4 and 40 CFR 122.47].

4.2. Antidegradation

The conditions of Kentucky's Antidegradation Policy have been satisfied [401 KAR 10:029, Section 1]. This permitting action is a reissuance of a KPDES permit that does not authorize an expanded discharge.

4.3. Standard Conditions

The conditions listed in the Standard Conditions Section of the permit are consistent with the conditions applicable to all permits [401 KAR 5:065, Section 2(1) – 40 CFR 122.41].

4.4. Sufficiently Sensitive Analytical Methods

Analytical methods utilized to demonstrate compliance with the effluent limitations established in this permit shall be sufficiently sensitive to detect pollutant levels at or below the required effluent limit [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)].

4.5. Certified Laboratory

All environmental analysis is to be performed by a certified laboratory is consistent with the certified wastewater laboratory requirements [401 KAR 5:320, Section 1].

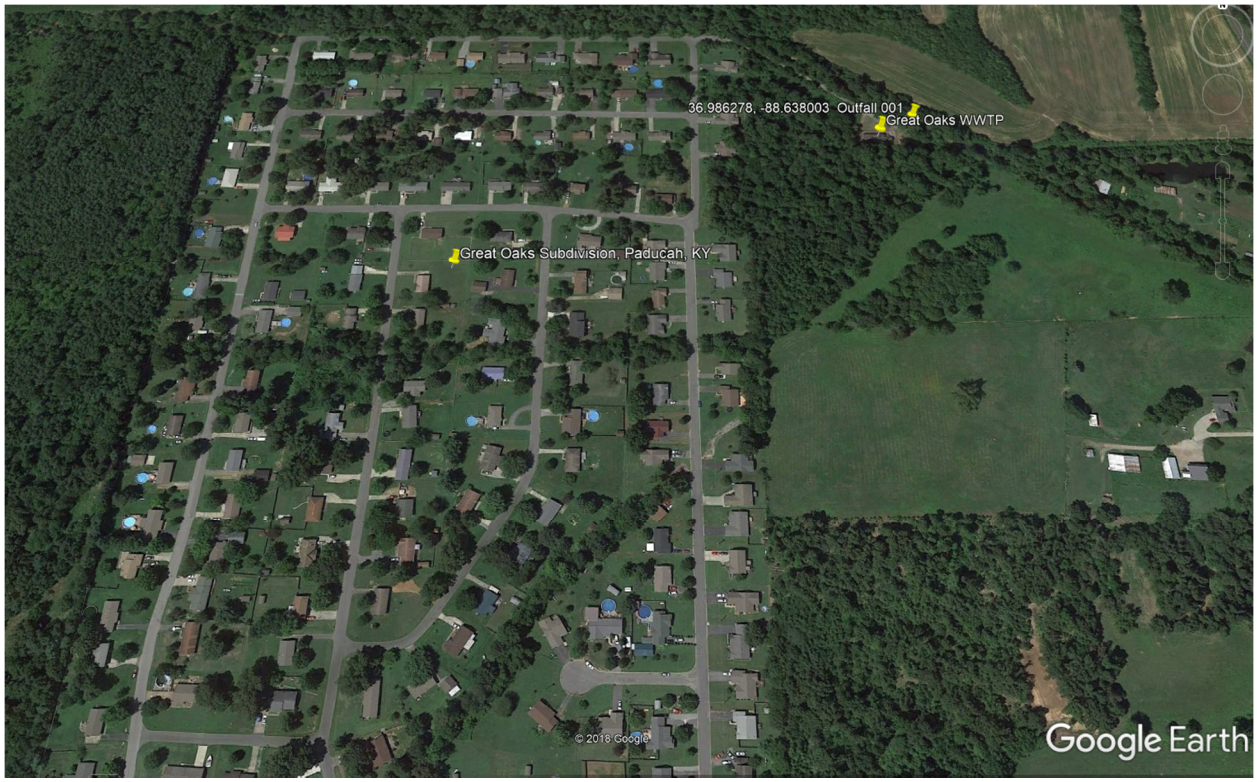
4.6. Connection to Regional Sewer System

In accordance with 401 KAR 5:005, Section 4 if a sewer system served by a regional facility becomes available, the WWTP shall be abandoned and the influent flow shall be diverted to the regional facility.

4.7. Certified Operators

Wastewater treatment plants and wastewater collection systems that accept wastewaters containing domestic sewage are to be operated by a certified operator [401 KAR 5:010].

4.8. Location Map



KPDES

KENTUCKY POLLUTANT DISCHARGE ELIMINATION SYSTEM

FACT SHEET

KPDES No.: KY0083755
AI No.: 3070
Timberland Wastewater Facility
Timberland Drive
Paducah, McCracken County, Kentucky

Date: June 9, 2021

Public Notice Information

Public Notice Start Date: April 22, 2021

Comment Due Date: May 22, 2021

General information concerning the public notice process may be obtained on the Division of Water's Public Notice Webpage at the following address:
https://eec.ky.gov/Environmental-Protection/Water/Pages/Water-Public-Notices-and-Hearings.aspx.

Public Notice Comments
Comments must be received by the Division of Water no later than 4:30 PM on the closing date of the comment period. Comments may be submitted by e-mail at: DOWPublicNotice@ky.gov or written comments may be submitted to the Division of Water at 300 Sower Blvd, Frankfort, Kentucky 40601.

Reference Documents
A copy of this proposed fact sheet, proposed permit, the application, other supporting material and the current status of the application may be obtained from the Department for Environmental Protection's Pending Approvals Search Webpage:
http://dep.gateway.ky.gov/eSearch/Search_Pending_Approvals.aspx?Program=Wastewater&NumDaysDoc=30.

Open Records
Copies of publicly-available documents supporting this fact sheet and proposed permit may also be obtained from the Department for Environmental Protection Central Office. Information regarding these materials may be obtained from the Open Records Coordinator at (502) 782-6849 or by e-mail at EEC.KORA@ky.gov.

THIS KPDES FACT SHEET CONSISTS OF THE FOLLOWING SECTIONS:

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SECTION 1

FACILITY SYNOPSIS

1. FACILITY SYNOPSIS

1.1. Name and Address of Applicant

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

1.2. Facility Location

Timberland Wastewater Facility
Timberland Drive
Paducah, McCracken County, Kentucky

1.3. Description of Applicant's Operation

The applicant operates a domestic wastewater treatment plant serving a subdivision.

1.4. Wastewaters Collected and Treatment

The following table lists the actual average flow reported, the facility's approved long-term average design treatment capacity, the wastewater types collected, and the treatment type for each outfall:

TABLE 1.

Outfall No.	Avg. Flow (MGD)	Design Capacity (MGD)	Wastewater Types Collected	Treatment Type
001	0.01	0.025	Domestic Sanitary Wastewater	Equalization Rotating Biological Contactors Sedimentation Chlorine Disinfection Dechlorination Post Aeration Aerobic Digestion 1 Cell Lagoon Discharge to Surface Water

1.5. Permitting Action

This is a modification of a minor KPDES permit for an existing domestic wastewater treatment plant [SIC Code 4952].

This modification takes into account the upgrading of the package treatment plant with NO change in design capacity.

SECTION 2

RECEIVING/INTAKE WATERS

2. RECEIVING / INTAKE WATERS

2.1. Receiving Waters

All surface waters of the Commonwealth have been assigned stream use designations consisting of one or more of the following designations: Warmwater Aquatic Habitat (WAH), Primary Contact Recreation (PCR), Secondary Contact Recreation (SCR), Domestic Water Supply (DWS), Coldwater Aquatic Habitat (CAH) or Outstanding State Resource Water (OSRW)[401 KAR 10:026].

All surface waters of the Commonwealth are assigned one of the following antidegradation categories: Outstanding National Resource Water (ONRW), Exceptional Water (EW), Impaired Water (IW) or High Quality Water (HQ)[401 KAR 10:030].

Surface waters categorized as an IW are listed for non-support of uses in Kentucky's most recently approved *Integrated Report to Congress on the Condition of Water Resources in Kentucky*. The 305 (b) List identifies stream segments that do not support their use designation. However, Outstanding State Resource Waters, Exceptional Waters, and waters found only as mercury or methylmercury impaired for fish consumption shall not be categorized as impaired *for antidegradation purposes*[401 KAR 10:030].

The following table lists the stream use classifications and antidegradation category associated with this permit.

TABLE 2.

Receiving Water Name	Use Designation	Antidegradation Category	7Q10 Low Flow (cfs)	Harmonic Mean Flow (cfs)
West Fork Massac Creek	WAH, PCR, SCR, DWS	HQ	0.0	1.5

2.2. Intake Waters – Nearest Downstream Intake

TABLE 3.

Intake Water Name	Public Water Supply Name	Latitude (N) Decimal Degrees	Longitude (W) Decimal Degrees	Miles Downstream	7Q10 Low Flow (cfs)	Harmonic Mean Flow (cfs)
Ohio River	Cairo, IL	37.02112°	89.17889°	44.2	51,000	175,000

SECTION 3

OUTFALL 001

3. OUTFALL 001

3.1. Outfall Description

The following table lists the outfall type, location, and description:

TABLE 4.				
Outfall Type	**Latitude (N)**	**Longitude (W)**	**Receiving Water**	**Description of Outfall**
External	37.07917°	88.78111°	West Fork Massac Creek	Domestic Wastewater

3.2. Reported Values

The following table summarizes the reported values for Outfall 001:

TABLE 5.							
Reported Parameters	**Units**	**EFFLUENT**					
		Loadings (lbs/day)		**Concentrations**			
		Monthly Average	**Maximum Weekly Average**	**Minimum**	**Monthly Average**	**Maximum Weekly Average**	**Maximum**
Flow	MGD	0.01	0.01[1]	N/A	N/A	N/A	N/A
pH	SU	N/A	N/A	6.70	N/A	N/A	7.79
$CBOD_5$[2]	mg/l	N/A	N/A	N/A	6.59	6.70	N/A
Total Suspended Solids	mg/l	N/A	N/A	N/A	10.05	10.36	N/A
Nitrogen, Ammonia total [as N]							
May 1 – October 31	mg/l	N/A	N/A	N/A	4.82	4.84[1]	N/A
November 1 – April 30	mg/l	N/A	N/A	N/A	1.99	1.99[1]	N/A
Dissolved Oxygen	mg/l	N/A	N/A	6.02	N/A	N/A	N/A
E. coli[3]	#/100 ml	N/A	N/A	N/A	11445.14[4]	11445.38[5]	N/A
Total Residual Chlorine	mg/l	N/A	N/A	N/A	1.25	1.37[1]	N/A
[1]Daily Maximum							
[2]$CBOD_5$ – Carbonaceous Biochemical Oxygen Demand, 5-day							
[3]E. coli – *Escherichia coli* Bacteria							
[4]Thirty (30) day Geometric Mean							
[5]Seven (7) day Geometric Mean							

The above values are based upon 5-year DMR averages from 02/29/16 to 02/28/21.

3.3. Effluent Limitations and Monitoring Requirements

The following table summarizes the effluent limitations and monitoring requirements for Outfall 001:

TABLE 6.

EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs/day)		Concentrations				Frequency	Sample Type
		Monthly Average	Maximum Weekly Average	Minimum	Monthly Average	Maximum Weekly Average	Maximum		
Flow	MGD	Report	Report[1]	N/A	N/A	N/A	N/A	1/Month	Instantaneous
pH	SU	N/A	N/A	6.0	N/A	N/A	9.0	1/Month	Grab
$CBOD_5$[2]	mg/l	N/A	N/A	N/A	10	15	N/A	1/Month	Composite[3]
Total Suspended Solids	mg/l	N/A	N/A	N/A	30	45	N/A	1/Month	Composite[3]
Nitrogen, Ammonia total [as N]									
May 1 – October 31	mg/l	N/A	N/A	N/A	2.0	3.0[1]	N/A	1/Month	Composite[3]
November 1 – April 30	mg/l	N/A	N/A	N/A	9.0	13.5[1]	N/A	1/Month	Composite[3]
Dissolved Oxygen	mg/l	N/A	N/A	7.0	N/A	N/A	N/A	1/Month	Grab
E. coli[4]	#/100 ml	N/A	N/A	N/A	130[5]	240[6]	N/A	1/Month	Grab
Total Residual Chlorine	mg/l	N/A	N/A	N/A	0.011	0.019[1]	N/A	1/Month	Grab

[1]Daily Maximum

[2]$CBOD_5$ – Carbonaceous Biochemical Oxygen Demand, 5-day

[3]A sample composed of four or more equal or flow-proportional aliquots collected over a period of no less than eight and no more than twenty-four hours and aggregated so that the aggregate sample reflects the average water quality of the effluent during the compositing or sample period

[4]E. coli – *Escherichia coli* Bacteria

[5]Thirty (30) day Geometric Mean

[6]Seven (7) day Geometric Mean

3.4. Pertinent Factors

The effluent limitations for this outfall were developed in accordance with DOW's General Procedures for Limitations Development located on DOW's webpage at: https://eec.ky.gov/Environmental-Protection/Forms%20Library/General%20Procedures%20for%20Limitations%20Development.pdf.

3.4.1. Secondary Treatment Standards

Discharges of biochemically degradable wastes are subject to technology-based effluent limitations (TBELs) known as the Secondary Treatment Standards. Both state and federal regulations establish the requirements for secondary treatment. State regulations for secondary treatment only apply to non-POTWs [401 KAR 5:045].

TABLE 7.		
State Defined Secondary Treatment Standards		
Pollutant or Pollutant Characteristic	**30-day average**	**7-day average**
BOD_5 (mg/l)	30	45
TSS (mg/l)	30	45

3.5. Justification of Requirements

Chapters 5 and 10 of Title 401 of the Kentucky Administrative Regulations (KARs), cited in the following, have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes.

At a minimum, all permits shall contain technology-based effluent limitations (TBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)]. When necessary to achieve water quality standards, all permits shall contain water quality-based effluent limitations (WQBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(d)]. Any WQBELs included in this permit are based upon the Kentucky Water Quality Standards (KYWQS) [401 KAR 10:031].

3.5.1. Flow

The monitoring requirements for this parameter are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(ii)] and requirements for recording and reporting of monitoring results [401 KAR 5:050, Section 4 – 40 CFR 122.48].

3.5.2. $CBOD_5$

The limitations for this parameter are consistent with the secondary treatment standards for biochemically degradable wastes as defined in state regulations [401 KAR 5:045, Section 3]. DOW found that it was necessary to impose WQBELs for this parameter in order to achieve water quality standards. [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(d)]. These effluent limitations are also consistent with Kentucky's Water Quality Standards [401 KAR 10:031, Section 4(1)(e) & (i) respectively]. The EPA's River and Stream Water Quality Model (QUAL 2E/K) was used to develop these limitations.

3.5.3. Total Suspended Solids

The limitations for this parameter are consistent with the secondary treatment standards for biochemically degradable wastes as defined in state regulations [401 KAR 5:045, Section 3]. These effluent limitations are also consistent with Kentucky's Water Quality Standards [401 KAR 10:031, Section 4(1)(g)].

3.5.4. Ammonia and Dissolved Oxygen

The limitations for these parameters are WQBELs developed using the EPA's River and Stream Water Quality Model (QUAL 2E/K) [401 KAR 10:031, Section 4(1)(e) & (i)].

3.5.5. E. coli

The limitations for this parameter are consistent with Kentucky's Water Quality Standards [401 KAR 10:031, Section 7].

3.5.6. pH

The limitations for this parameter are consistent with Kentucky's Water Quality Standards [401 KAR 10:031, Section 4(1)(b) and Section 7].

3.5.7. Total Residual Chlorine

The limitations for this parameter are consistent with Kentucky's Water Quality Standards [401 KAR 10:031, Section 4(1)(k)].

SECTION 4

OTHER CONDITIONS

4. OTHER CONDITIONS

4.1. Schedule of Compliance

The permittee is required to comply with all effluent limitations by the effective date of the permit unless a compliance schedule is included with the permit. A schedule of compliance, if included with this permit, is consistent with the regulatory provisions for establishing a schedule of compliance [401 KAR 5:050, Section 3--40 CFR 122.47].

4.2. Antidegradation

The conditions of Kentucky's Antidegradation Policy have been satisfied [401 KAR 10:029, Section 1]. This permitting action is a reissuance of a KPDES permit that does not authorize an expanded discharge.

4.3. Standard Conditions

The conditions listed in the Standard Conditions Section of the permit are consistent with the conditions applicable to all permits [401 KAR 5:065, Section 2(1) – 40 CFR 122.41].

4.4. Sufficiently Sensitive Analytical Methods

Analytical methods utilized to demonstrate compliance with the effluent limitations established in this permit shall be sufficiently sensitive to detect pollutant levels at or below the required effluent limit [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)].

4.5. Certified Laboratory

All environmental analysis is to be performed by a certified laboratory is consistent with the certified wastewater laboratory requirements [401 KAR 5:320, Section 1].

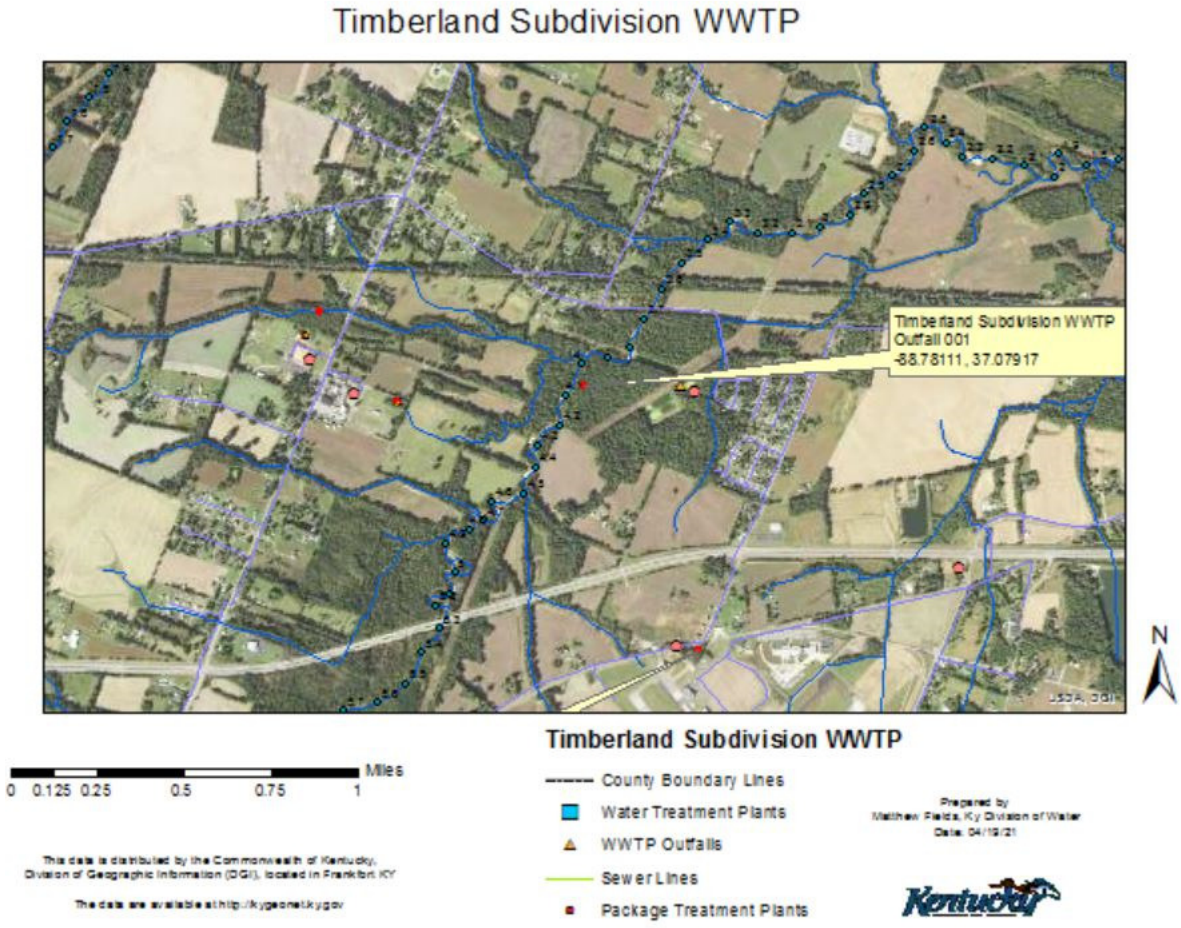
4.6. Connection to Regional Sewer System

In accordance with 401 KAR 5:005, Section 4 if a sewer system served by a regional facility becomes available, the WWTP shall be abandoned and the influent flow shall be diverted to the regional facility.

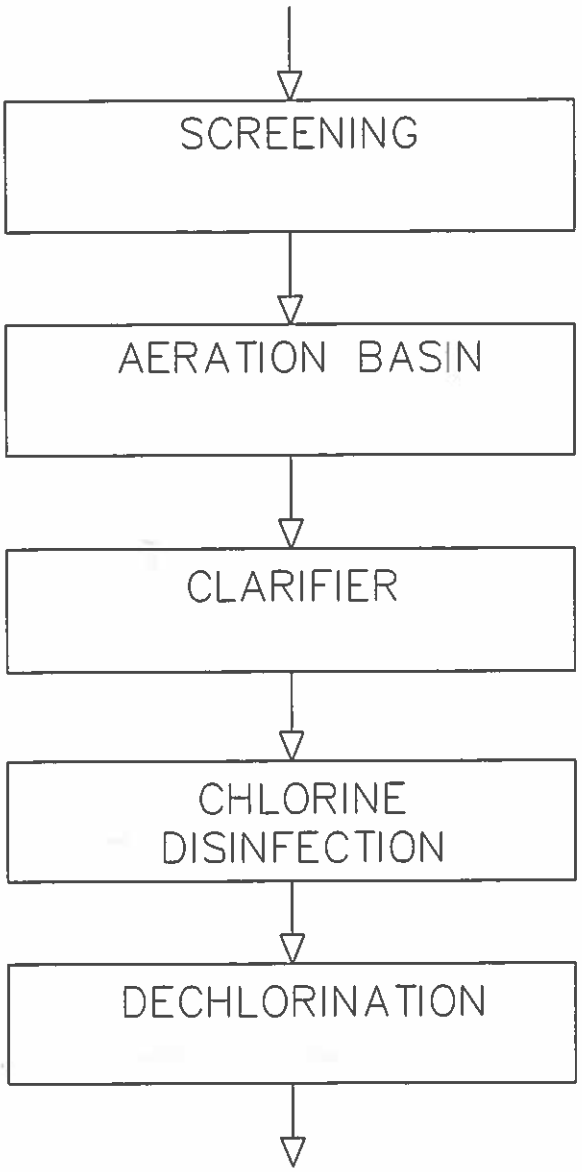
4.7. Certified Operators

Wastewater treatment plants and wastewater collection systems that accept wastewaters containing domestic sewage are to be operated by a certified operator [401 KAR 5:010].

4.8. Location Map



WASTEWATER FACILITY PROCESS FLOW DIAGRAM FOR GOLDEN ACRES WWTF CALVERT CITY, KENTUCKY



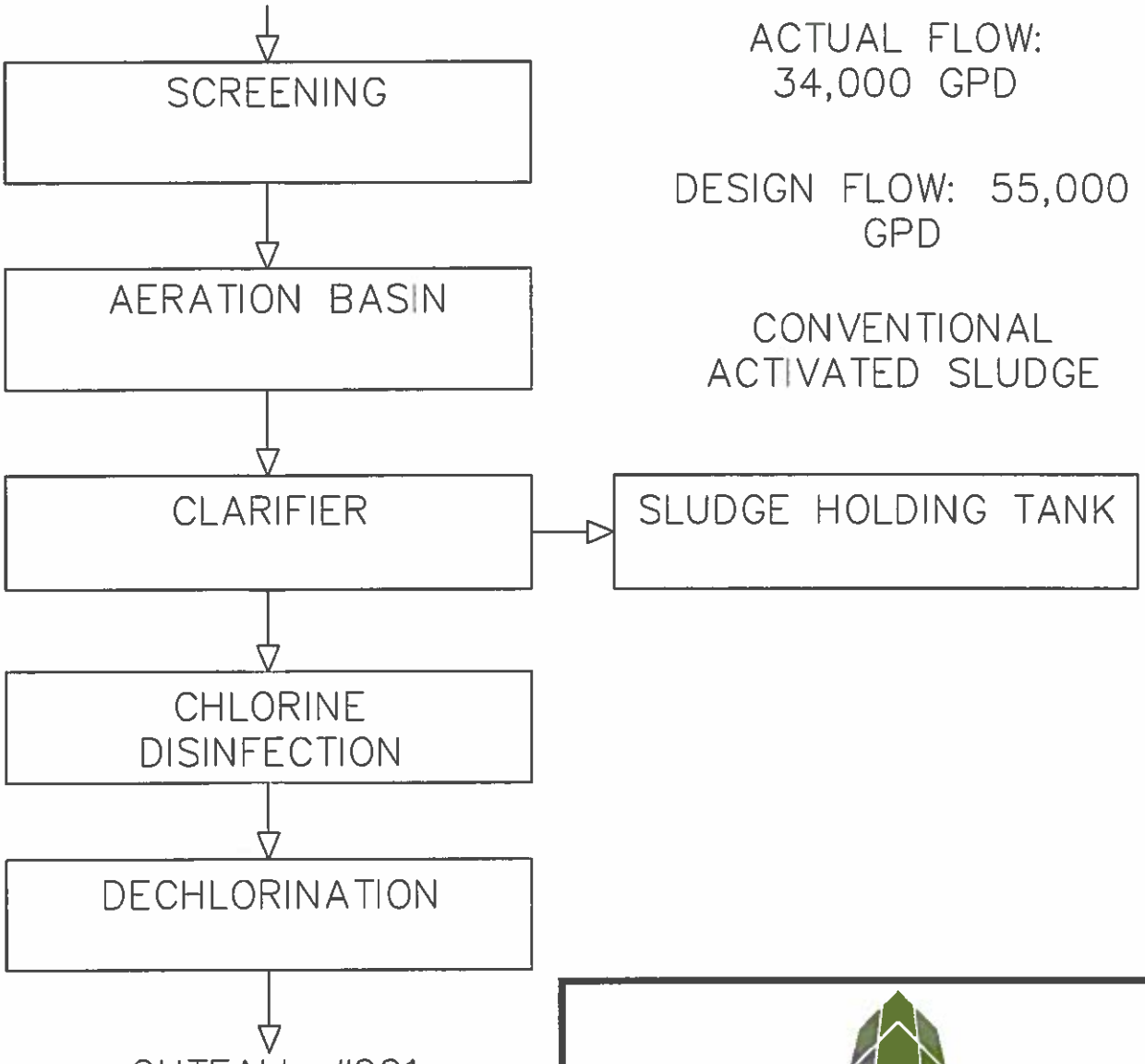
RESIDENTIAL

DESIGN FLOW: 25,000 GPD

CONVENTIONAL ACTIVATED SLUDGE

21 DESIGN GROUP INC.
ENGINEERING & SURVEYING
1351 Jefferson, Suite 301 mail@21designgroup.net
Washington, MO 63090 P: 636-432-5029

WASTEWATER FACILITY PROCESS FLOW DIAGRAM FOR AIRVIEW WWTF ELIZABETHTOWN, KENTUCKY



RESIDENTIAL

ACTUAL FLOW: 34,000 GPD

DESIGN FLOW: 55,000 GPD

CONVENTIONAL ACTIVATED SLUDGE

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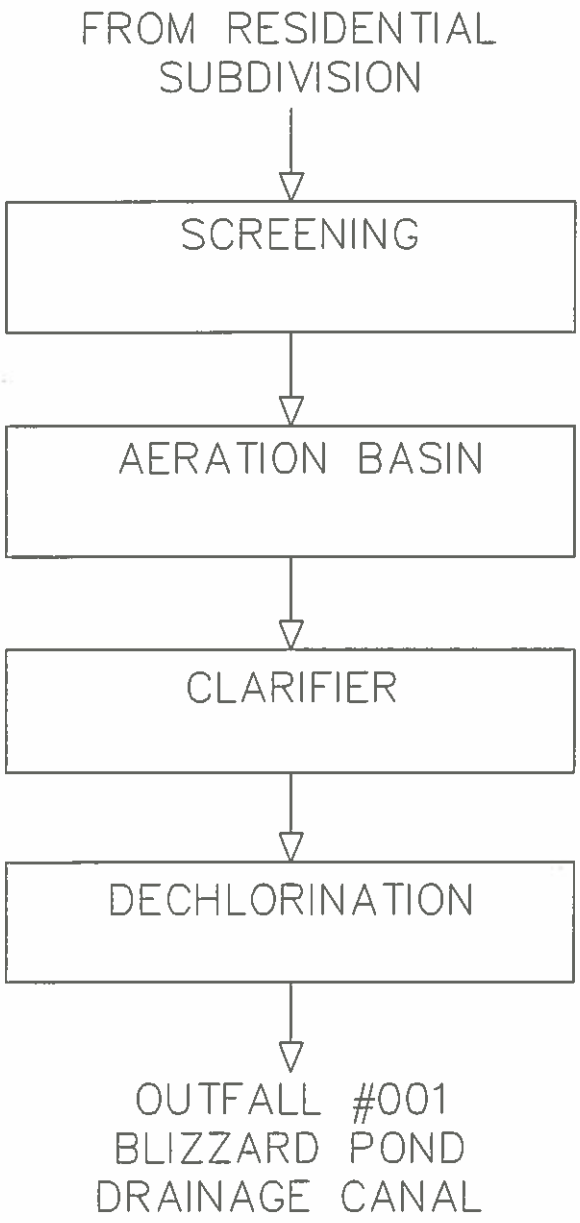
Washington, MO 63090
mail@21designgroup.net
636-283-0621 (tel.)

WASTEWATER FACILITY PROCESS FLOW DIAGRAM FOR GREAT OAKS WWTF PADUCAH, KENTUCKY



RESIDENTIAL

ACTUAL FLOW: 28,000 GPD

DESIGN FLOW: 70,000 GPD

CONVENTIONAL ACTIVATED SLUDGE

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1351 Jefferson St., Suite 301
Washington, MO 63090
mail@21designgroup.net
636-283-0621 (tel.)

Form 1	KENTUCKY POLLUTION DISCHARGE ELIMINATION SYSTEM Permit Application	Division of Water

NAME OF FACILITY: Timberland Wastewater Facility	AGENCY USE ONLY
PERMIT NO.: KY0083755	COUNTY: McCracken

This is an application to: (check one)

☐ Apply for a new permit.

☐ Apply for reissuance of expiring permit.

☑ Modify an existing permit.* (Give reason for modification under Section III)

A complete application consists of this form (Form 1), and one or more of the following: Form A, Form B, Form C, Form F, or Form SC.

I. FACILITY AND CONTACT INFORMATION

Name of business, municipality, company, etc. requesting permit: Bluegrass Water Utility Operating Company

Owner Name (and Title if applicable): Josiah Cox - President

Owner Mailing Address (Street, etc.): 1650 Des Peres Road, Suite 303

Owner City, State, Zip: St. Louis, MO 63131

Owner Telephone Number: (314) 736-4672

Owner Email Address: jcox@cswrgroup.com

Type of Ownership:	☐ Publicly Owned	☑ Privately Owned	☐ State Owned	☐ Both Publicly and Privately Owned	☐ Federally Owned

Contact Name and Title (if different):

Contact Mailing Address (if different):

Contact City, State, Zip (if different):

Contact Telephone Number (if different):

Contact Email Address (if different):

NetDMR Official Contact for Facility: Kaleb Stephens

NetDMR Official Contact Telephone Number: (715) 790-2559

NetDMR Official Contact Email Address: kstephens@cswrgroup.com

II. FACILITY LOCATION

Facility Location (street, road, highway, etc.): Timberland Drive

Facility City, State, Zip: Paducah, KY 42086

Facility Latitude (Decimal Degrees): 27.07938

Facility Longitude (Decimal Degrees): -88.77579

☑ Attach a site location map with the facility and outfalls clearly marked. Provide either an aerial map, topographic map, or other map that identifies the site location and significant features.

III. FACILITY DESCRIPTION	
Provide a brief description of activities, products, etc.: Sanitary waste treatment facility for Timberland Subdivision	
* Reason for modifying existing permit, if applicable: We are currently in the process of upgrading the plant.	
Principal SIC Code and description: 4952 - Sewerage Systems	
Other SIC Codes: N/A	
IV. OPERATOR INFORMATION	
Treatment Plant Operator Name: Stephen Roach	
Operator Mailing Address (Street, etc.): 5625 Warrendale Drive	
Operator City, State, Zip: Paducah, KY 42003	
Operator Telephone Number: 502-744-1856	
Operator Email Address: sroach@midwestwaterop.com	
Operator Certification Class: IV	Operator Certification Number: 63051
V. ENVIRONMENTAL PERMITS/REGISTRATIONS FOR THIS FACILITY	
KPDES Permit Number: KY0083755	Issue Date of Current Permit: February 1, 2020
Expiration Date of Current Permit: January 31, 2025	Date of Original Permit Issuance: Unknown
☐ Other DOW Permits (list):	
☐ Sludge Disposal Permit Number:	
☐ Air Emission Source Control Permit Number:	
☐ Solid Waste or Special Waste Permit Number:	
☐ Hazardous Waste Registration or Permit Number:	
☐ Surface Mine or Underground Mine Permit Number:	
☐ Other (specify):	
VI. PERMIT FEE (See instructions)	
Select the type of permit being requested. See instructions for applicable fees and methods of payment. Additional information can be found in "General Instructions" at Water.Ky.Gov/Permitting/WastewaterDischarge	
☐ Major Industry	☐ Large Non-POTW
☐ Minor Industry	☐ Intermediate Non-POTW
☐ Non-Process Industry	☐ Small Non-POTW
☐ Surface Mining Operation	☐ 501(c)(3)

☐ Total Amount Enclosed $	

IX. CERTIFICATION	
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	
PRINTED NAME AND TITLE: Josiah Cox - President	
SIGNATURE:	DATE: 09/28/2020
TELEPHONE NO. (314) 736-4672	EMAIL: jcox@cswrgroup.com

Return completed application form and attachments to:
Division of Water
Surface Water Permits Branch
300 Sower Boulevard, 3rd Floor
Frankfort, KY 40601

Direct questions to: Surface Water Permits Branch at (502) 564-3410.

Form SC	KENTUCKY POLLUTION DISCHARGE ELIMINATION SYSTEM Permit Application	Division of Water

NAME OF FACILITY: Timberland Wastewater Facility	AGENCY USE ONLY
PERMIT NO.: KY0083755	COUNTY: McCracken

I. OUTFALL LOCATION

☐ For each outfall, list the latitude and longitude of its location to five decimal points.

OUTFALL NUMBER	LATITUDE In Decimal Degrees	LONGITUDE In Decimal Degrees	RECEIVING WATER (name)
001	37.07917	-88.78111	West Fork Massac Creek

II. FLOWS, SOURCES OF POLLUTION, AND TREATMENT TECHNOLOGIES

A. Attach a line drawing showing the water flow through the facility. Indicate sources of intake water, operations contributing wastewater to the effluent, and treatment units labeled to correspond to the more detailed descriptions in Item B.

B. For each outfall, provide a description of:
(1) operations contributing wastewater to the effluent;
(2) the average and/or design flow contributed by each operation; and
(3) the treatment received by the wastewater.

OUTFALL NUMBER	SOURCES OF WASTEWATER		TREATMENT DESCRIPTION (refer to Table SC-1 for description)
	Operations Contributing to Flow	Average / Design Flow (include units)	
001	100%	.0071/.0025 MGD	1-Y, 3-I (MBBR), 1-U, 2-F, 2-E, 3-L, 5-A, 4-A, 3-P

III. FACILITY DISCHARGE

A. Check the appropriate boxes indicating the types of wastewater discharged.

☑ Domestic wastewater (60% or more sanitary sewage)

☐ Non-contact cooling water

☐ Filter backwash

☐ Other non-process wastewaters. Provide description:

B. Does discharge occur all year?

☑ Yes.

How many days per week does discharge occur? 7

What is the average duration of discharge? Specify hours or days. 24

☐ No.

C. Except for stormwater runoff, leaks, or spills, are any of the discharges intermittent or seasonal?

☐ Yes. If yes, provide description of approximate number, duration, and volume of seasonal or intermittent flows.

☑ No.

D. Provide the basis for design and sizing of the wastewater facility.
The documents attached to the construction permit application address this question in detail.

E. If the facility is a new discharger, what is the anticipated discharge date?

Treatment Plants Only to complete Section F & G.

F. Does all water used at facility (except for human consumption) flow to a treatment plant?

☑ Yes.

☐ No. If no, please describe.

G. What is the design capacity of the treatment system .025 MGD

IV. AREA SERVED BY WASTEWATER TREATMENT PLANT

NAME OF AREA OR COMMUNITY	ACTUAL POPULATION SERVED
Timberland Subdivision	210
Total Population Served	210

V. COOLING WATER ADDITIVES

Are cooling water additives used?

☐ Yes. In the table below, list each additive, its composition, concentration, and feed rate. Attach Safety Data Sheets for each.

☑ No

NAME OF ADDITIVE	COMPOSITION	CONCENTRATION	FEED RATE

VI. EFFLUENT CHARACTERISTICS	OUTFALL NO: 001
Complete Sections A, B, and C for each outfall.	
A. What is the frequency and duration of flow? Continuous	
B. In the first part of the table below, provide results of effluent analysis for each pollutant / parameter listed.	
C. Samples below are from the Summer of 2020	

POLLUTANT/PARAMETER	UNITS	MAX DAILY VALUE	AVG DAILY VALUE	NUMBER OF SAMPLES
☐BOD_5 or ☑$CBOD_5$	mg/l	11	8.33	4
Total Suspended Solids	mg/l	29	20.2	5
E.Coli	colonies/ 100 ml	2419.6 with outliers 7.5 without	969.94 with outliers 3.5 without	5 with outliers 3 without
Total Residual Chlorine	mg/l	2.2	.91	5
Oil and Grease	mg/l	N/A	N/A	N/A
Chemical Oxygen Demand	mg/l	N/A	N/A	N/A
Total Organic Carbon	mg/l	N/A	N/A	N/A
Ammonia	mg/l	18	16.5	4
Discharge of Flow	MGD	N/A	N/A	N/A
pH	s.u.	7.79	7.44	5
Temperature (winter)	°C	N/A	N/A	N/A
Temperature (summer)	°C	28.6	26.44	5

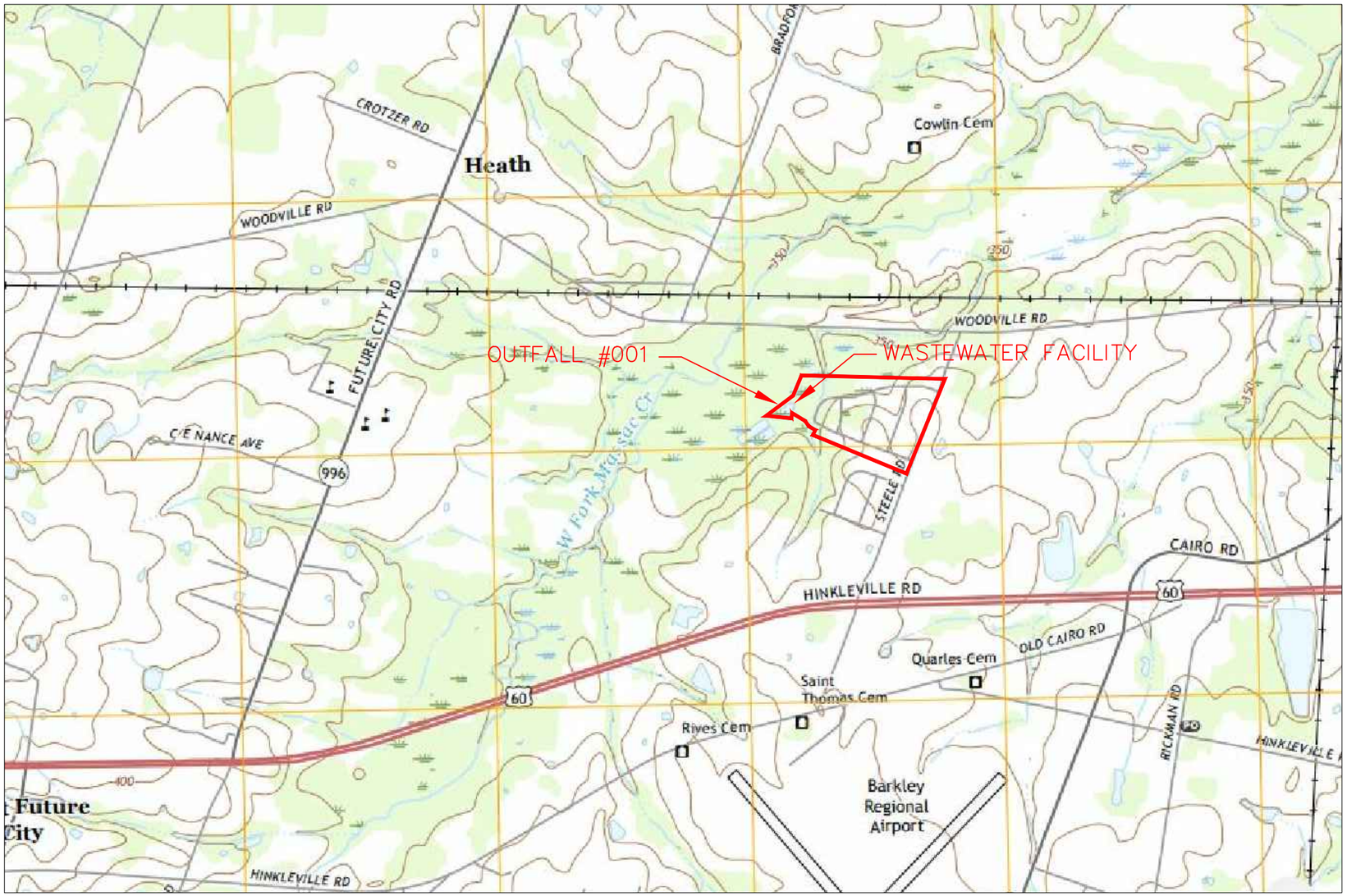
METALS	UNITS	AVG CONCENTRATION
☐ Antimony	µg/l	
☐ Arsenic	µg/l	
☐ Beryllium	µg/l	
☐ Cadmium	µg/l	
☐ Chromium	µg/l	
☐ Copper	µg/l	
☐ Lead	µg/l	
☐ Mercury	µg/l	
☐ Nickel	µg/l	
☐ Selenium	µg/l	
☐ Silver	µg/l	
☐ Thallium	µg/l	
☐ Zinc	µg/l	

VII. CERTIFICATION	
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	
PRINTED NAME AND TITLE: Josiah Cox - President	
SIGNATURE: 	DATE: 09/28/2020
TELEPHONE NO. (314) 736-4672	EMAIL: jcox@cswrgroup.com

Return completed application form and attachments to:
Division of Water
Surface Water Permits Branch
300 Sower Boulevard, 3rd Floor
Frankfort, KY 40601

Direct questions to: Surface Water Permits Branch at (502) 564-3410.

USGS QUAD MAP
FOR TIMBERLAND SUBDIVISION WWTF
PADUCAH, KY
(HEATH QUAD MAP)



N
W 21 E
S

0 1000' 2000'

SCALE: 1" = 1000'

PRELIMINARY

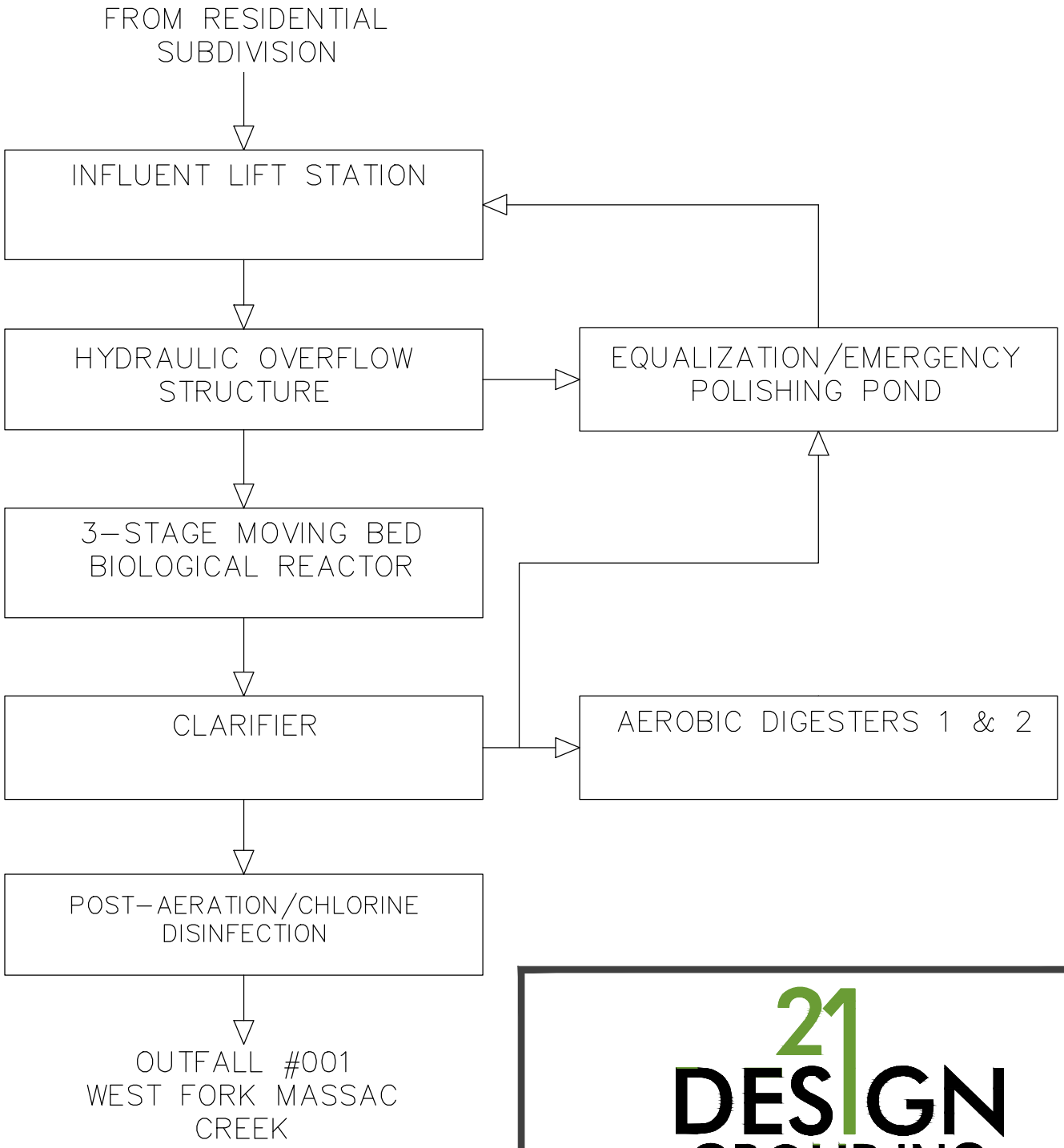
THIS DRAWING IS FOR REVIEW ONLY AND SHALL NOT BE USED FOR CONSTRUCTION

21 DESIGN GROUP INC.

1351 Jefferson, Suite 301
Washington, MO 63090

mail@21designgroup.net
P: 636-432-5029

WASTEWATER FACILITY PROCESS FLOW DIAGRAM FOR TIMBERLAND WWTF PADUCAH, KENTUCKY



21 DESIGN GROUP INC.

1351 Jefferson, Suite 301
Washington, MO 63090
mail@21designgroup.net
P: 636-432-5029

Form 1	KENTUCKY POLLUTION DISCHARGE ELIMINATION SYSTEM Permit Application	Division of Water

NAME OF FACILITY: Golden Acres WWTF	AGENCY USE ONLY A1: 2935
PERMIT NO.: KY0044164	COUNTY: Marshall

RECEIVED
FEB 19 2020
SWPB

This is an application to: (check one)
- ☐ Apply for a new permit.
- ☑ Apply for reissuance of expiring permit.
- ☐ Modify an existing permit.* (Give reason for modification under Section III)

A complete application consists of this form (Form 1), and one or more of the following: Form A, Form B, Form C, Form F, Form SC.

I. FACILITY AND CONTACT INFORMATION

Name of business, municipality, company, etc. requesting permit: Bluegrass Water Utility Operating Company, LLC.

Owner Name (and Title if applicable): Josiah Cox – President

Owner Mailing Address (Street, etc.): 500 Northwest Plaza Dr., Suite 500

Owner City, State, Zip: St. Ann, MO 63074

Owner Telephone Number: (314) 736-4672

Owner Email Address: jcox@cswrgroup.com

Type of Ownership:	☐ Publicly Owned	☑ Privately Owned	☐ State Owned	☐ Both Publicly and Privately Owned	☐ Federally Owned

Contact Name and Title (if different): same

Contact Mailing Address (if different): same

Contact City, State, Zip (if different): same

Contact Telephone Number (if different): same

Contact Email Address (if different): same

NetDMR Official Contact for Facility: Kaleb Stephens

NetDMR Official Contact Telephone Number: (715) 790-2559

NetDMR Official Contact Email Address: kstephens@cswrgroup.com

II. FACILITY LOCATION

Facility Location (street, road, highway, etc.): US Hwy 68 Golden Acres Loop

Facility City, State, Zip: Calvert City, KY 42029

Facility Latitude (Decimal Degrees): 36.972787 deg N

Facility Longitude (Decimal Degrees): 88.481040 deg W

☑ Attach a site location map with the facility and outfalls clearly marked. Provide either an aerial map, topographic map, or other map that identifies the site location and significant features.

III. FACILITY DESCRIPTION	
Provide a brief description of activities, products, etc.: Sanitary waste treatment facility for Golden Acres Subdivision.	
* Reason for modifying existing permit, if applicable: Permit expired under previous ownership. Permit renewal application being submitted by new owner.	
Principal SIC Code and description: 4952 – Sewerage Systems	
Other SIC Codes: n/a	
IV. OPERATOR INFORMATION	
Treatment Plant Operator Name: Stephan Roach	
Operator Mailing Address (Street, etc.): 5625 Warrendale Drive	
Operator City, State, Zip: Paducah, KY 42003	
Operator Telephone Number: (502) 744-1856	
Operator Email Address: sroach@midwestwaterop.com	
Operator Certification Class: III	Operator Certification Number: 25543
V. ENVIRONMENTAL PERMITS/REGISTRATIONS FOR THIS FACILITY	
KPDES Permit Number: KY0044164	Issue Date of Current Permit: 12/9/14, Effective 2/1/15
Expiration Date of Current Permit: 1/31/2020	Date of Original Permit Issuance: unknown
☐ Other DOW Permits (list):	
☐ Sludge Disposal Permit Number:	
☐ Air Emission Source Control Permit Number:	
☐ Solid Waste or Special Waste Permit Number:	
☐ Hazardous Waste Registration or Permit Number:	
☐ Surface Mine or Underground Mine Permit Number:	
☐ Other (specify):	
VI. PERMIT FEE (See instructions)	
Select the type of permit being requested. See instructions for applicable fees and methods of payment. Additional information can be found in "General Instructions" at Water.Ky.Gov/Permitting/WastewaterDischarge	
☐ Major Industry	☐ Large Non-POTW
☐ Minor Industry	☑ Intermediate Non-POTW
☐ Non-Process Industry	☐ Small Non-POTW
☐ Surface Mining Operation	☐ 501(c)(3)
☐ Agriculture	☐ Exempt Publicly Owned Facility

☑ Total Amount Enclosed $3,200.00	

IX. CERTIFICATION	
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	
PRINTED NAME AND TITLE: Josiah Cox – President	
SIGNATURE:	DATE:
TELEPHONE NO. (314) 736-4672	EMAIL: jcox@cswrgroup.com

Return completed application form and attachments to:
Division of Water
Surface Water Permits Branch
300 Sower Boulevard, 3rd Floor
Frankfort, KY 40601

Direct questions to: Surface Water Permits Branch at (502) 564-3410.

KPDES FORM 1 – INSTRUCTIONS

Section A: GENERAL INSTRUCTIONS

The facility name should be the official or legal name by which the facility is commonly known and/or uniquely identified. Do not use a colloquial name. List the county where the facility is located.

With the exceptions described in Section C of these instructions, Federal and State laws prohibit you from the discharge of pollutants into the waters of the United States or waters of the Commonwealth.

Where to File:	Return completed application form and attachments to: Division of Water Surface Water Permits Branch 300 Sower Boulevard, 3rd Floor Frankfort, KY 40601
When to File:	File the application at least 180 days prior to expiration of your current KPDES permit or at least 180 days prior to startup of a new facility.
Fees:	Permit Fees are listed in Section B of these instructions.
Completion of Form:	Unless otherwise specified in the detailed instructions, you must answer each item in the form. To indicate that you have considered each item, enter "NA," for not applicable, if a particular item does not fit the circumstances of your facility or activity. If more space is necessary to answer a question, attach a separate sheet entitled "Additional Information."

Section B: COMPLETING FORM 1

Listed below are explanations of select Form 1 questions. If further information is needed concerning any section, **please contact Division of Water, Surface Water Permits Branch at (502) 564-3410.**

I. Facility and Contact Information

Use the official or legal name of the business, company, municipality, etc. requesting permit. Do not use a colloquial name. Give the name, as it is legally referred to, of the person, firm, public organization, or any other entity that operates the facility described in this application. This may or may not be the same name as the facility. The operator of the facility is the legal entity which controls the facility's operation rather than the plant or site manager. This use of "operator" in many cases is not the same as the treatment plant Certified Operator.

The owner mailing address should be the legal permittee of record and is the address where correspondence regarding the application, permit, etc. for the facility will be sent unless otherwise indicated. This often is not the address used to designate the location of the facility or activity. Give the name, title, and work telephone number of a person who is thoroughly familiar with the operation of the facility and with the facts reported in this application and who can be contacted by reviewing offices if necessary. The contact mailing address is to be provided if different from the owner mailing address. The name, telephone number, and email address of the facility's official contact for netDMR (Discharge Monitoring Reports) is to be provided.

II. Facility Location

The facility location should be for the actual location of the facility (i.e. road name, highway number, not the P.O. Box address). If there is no street address, identify the facility by the most accurate alternative geographic information such as direction and distance to the nearest intersection or permanent landmark (e.g., ½ mile east of intersection of KY 70 and US 127).

List the latitude and longitude for the facility site. The latitude/longitude reading for the site should be taken at the influent to the wastewater treatment plant, if applicable.

Attach a site location map with the facility and outfalls clearly marked. Provide either an aerial map, topographic map, or other map that identifies the site location and significant features including the facility's intake and discharge structures. Also mark the locations of those wells, springs, surface water bodies, and drinking water wells listed in public records or otherwise known to the applicant within one-quarter mile of the facility property boundary.

AI 1469 rcvd 2-9-23 kh

Form 1

KENTUCKY POLLUTION DISCHARGE ELIMINATION SYSTEM

Permit Application

Division of Water

NAME OF FACILITY: Herrington Haven WWTP	AGENCY USE ONLY
PERMIT NO.: KY0053431	COUNTY: Garrard

This is an application to: (check one)

- ☐ Apply for a new permit.
- ☒ Apply for reissuance of expiring permit.
- ☐ Modify an existing permit.* (Give reason for modification under Section III)

A complete application consists of this form (Form 1), and one or more of the following: Form A, Form B, Form C, Form F, or Form SC.

I. FACILITY AND CONTACT INFORMATION

Name of business, municipality, company, etc. requesting permit: Bluegrass Water Utility Operating Company

Owner Name (and Title if applicable): Bluegrass Water Utility Operating Company

Owner Mailing Address (Street, etc.): 1630 Des Peres Road Ste 140

Owner City, State, Zip: Des Peres, Missouri 63131

Owner Telephone Number: 314.464.3976

RECEIVED
FEB 09 2023
SWPB

Owner Email Address: msappington@cswrgroup.com

Type of Ownership:	☐ Publicly Owned	☒ Privately Owned	☐ State Owned	☐ Both Publicly and Privately Owned	☐ Federally Owned

Contact Name and Title (if different): Mandy Sappington, EHS Compliance Manager

Contact Mailing Address (if different): Same as above

Contact City, State, Zip (if different): Same as above

Contact Telephone Number (if different): Same as above

Contact Email Address (if different): Same as above

NetDMR Official Contact for Facility: Jo Anna McMahon

NetDMR Official Contact Telephone Number: 314-736-4743

NetDMR Official Contact Email Address: env.comp@cswrgroup.com

II. FACILITY LOCATION

Facility Location (street, road, highway, etc.): Herrington Haven Subdivision

Facility City, State, Zip: Herrington Haven Road, Herrington Haven Subdivision, Lancaster, Garrard County, Kentucky 40444

Facility Latitude (Decimal Degrees): 37.6613

Facility Longitude (Decimal Degrees): -84.69995

☒ Attach a site location map with the facility and outfalls clearly marked. Provide either an aerial map, topographic map, or other map that identifies the site location and significant features.

III. FACILITY DESCRIPTION	
Provide a brief description of activities, products, etc.: Domestic wastewater treatment for approximately 24 homes	
* Reason for modifying existing permit, if applicable:	
Principal SIC Code and description: 4952	
Other SIC Codes:	
IV. OPERATOR INFORMATION	
Treatment Plant Operator Name: Zachary C. Wilson	
Operator Mailing Address (Street, etc.): 328 Hunter Road	
Operator City, State, Zip: Taylorsville, KY 40071	
Operator Telephone Number: 502-650-1289	
Operator Email Address:	
Operator Certification Class: WW Treatment I	Operator Certification Number: 70714, Agency interest #166768
V. ENVIRONMENTAL PERMITS/REGISTRATIONS FOR THIS FACILITY	
KPDES Permit Number: KY0053431	Issue Date of Current Permit: August 1, 2018
Expiration Date of Current Permit: July 31, 2023	Date of Original Permit Issuance: Unknown
☒ Other DOW Permits (list): Construction Minor Modification APE20220001	
☐ Sludge Disposal Permit Number:	
☐ Air Emission Source Control Permit Number:	
☐ Solid Waste or Special Waste Permit Number:	
☐ Hazardous Waste Registration or Permit Number:	
☐ Surface Mine or Underground Mine Permit Number:	
☐ Other (specify):	
VI. PERMIT FEE (See instructions)	
Select the type of permit being requested. See instructions for applicable fees and methods of payment. Additional information can be found in "General Instructions" at Water.Ky.Gov/Permitting/WastewaterDischarge	
☐ Major Industry	☐ Large Non-POTW
☐ Minor Industry	☐ Intermediate Non-POTW
☐ Non-Process Industry	☒ Small Non-POTW
☐ Surface Mining Operation	☐ 501(c)(3)
☐ Agriculture	☐ Exempt Publicly Owned Facility

☒ Total Amount Enclosed $	$2,200

IX. CERTIFICATION	
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	
PRINTED NAME AND TITLE: Mandy Sappington, EHS Compliance Manager	
SIGNATURE: Mandy Sappington	DATE: 1/30/23
TELEPHONE NO. 314-464-3976	EMAIL: msappington@cswrgroup.com

Return completed application form and attachments to:
Division of Water
Surface Water Permits Branch
300 Sower Boulevard, 3rd Floor
Frankfort, KY 40601

Direct questions to: Surface Water Permits Branch at (502) 564-3410.

BLUEGRASS WATER
Utility Operating Company
A CSWR Managed Utility

FORM 1, A

Division of Water
Surface Water Permits Branch
Kentucky Energy and Environment Cabinet
300 Sower Blvd, 3rd Floor
Frankfort, KY 40601

RECEIVED
FEB 09 2023
SWPB

January 20, 2023

Subject: NPDES Permit Renewal: Herrington Haven – KY0053431

Surface Water Permits Representative –

Bluegrass Water Utility Operating Company is pleased to submit the attached application for renewal of NPDES permit KY0053431 for its Herrington Haven Subdivision Water Treatment Plant located at within Herrington Haven Subdivision, Lancaster, Garrard County, Kentucky 40444.

Please note Bluegrass Water took ownership of this facility in February 2021. Effluent data prior to this date was available only through DMR records, which were FOIA requested from Kentucky Energy and Environment Cabinet. The flow data reported on Form A was filled in using this information. Information obtained prior to the transfer of ownership was unclear, as measurements were reported in varying units, making the interpretation of the data difficult. It is anticipated that improved flow data will be obtained in the coming months and years.

We thank you for your attention to this matter. Please do not hesitate to contact us at msappington@cswrgroup.com or (314) 464-3976 or Amberly Schulz at aschulz@trccompanies.com or (573) 214-1075.

Sincerely,

Mandy Sappington

Central States Water Resources
~~EHS~~ Compliance Manger

Submitted $2200 fee on 1/23/23 Check #2100

KPDES FORM 1 – INSTRUCTIONS

Section A: GENERAL INSTRUCTIONS

The facility name should be the official or legal name by which the facility is commonly known and/or uniquely identified. Do not use a colloquial name. List the county where the facility is located.

With the exceptions described in Section C of these instructions, Federal and State laws prohibit you from the discharge of pollutants into the waters of the United States or waters of the Commonwealth.

Where to File:	Return completed application form and attachments to: Division of Water Surface Water Permits Branch 300 Sower Boulevard, 3rd Floor Frankfort, KY 40601
When to File:	File the application at least 180 days prior to expiration of your current KPDES permit or at least 180 days prior to startup of a new facility.
Fees:	Permit Fees are listed in Section B of these instructions.
Completion of Form:	Unless otherwise specified in the detailed instructions, you must answer each item in the form. To indicate that you have considered each item, enter "NA," for not applicable, if a particular item does not fit the circumstances of your facility or activity. If more space is necessary to answer a question, attach a separate sheet entitled "Additional Information."

Section B: COMPLETING FORM 1

Listed below are explanations of select Form 1 questions. If further information is needed concerning any section, **please contact Division of Water, Surface Water Permits Branch at (502) 564-3410.**

I. Facility and Contact Information

Use the official or legal name of the business, company, municipality, etc. requesting permit. Do not use a colloquial name. Give the name, as it is legally referred to, of the person, firm, public organization, or any other entity that operates the facility described in this application. This may or may not be the same name as the facility. The operator of the facility is the legal entity which controls the facility's operation rather than the plant or site manager. This use of "operator" in many cases is not the same as the treatment plant Certified Operator.

The owner mailing address should be the legal permittee of record and is the address where correspondence regarding the application, permit, etc. for the facility will be sent unless otherwise indicated. This often is not the address used to designate the location of the facility or activity. Give the name, title, and work telephone number of a person who is thoroughly familiar with the operation of the facility and with the facts reported in this application and who can be contacted by reviewing offices if necessary. The contact mailing address is to be provided if different from the owner mailing address. The name, telephone number, and email address of the facility's official contact for netDMR (Discharge Monitoring Reports) is to be provided.

II. Facility Location

The facility location should be for the actual location of the facility (i.e. road name, highway number, not the P.O. Box address). If there is no street address, identify the facility by the most accurate alternative geographic information such as direction and distance to the nearest intersection or permanent landmark (e.g., ½ mile east of intersection of KY 70 and US 127).

List the latitude and longitude for the facility site. The latitude/longitude reading for the site should be taken at the influent to the wastewater treatment plant, if applicable.

Attach a site location map with the facility and outfalls clearly marked. Provide either an aerial map, topographic map, or other map that identifies the site location and significant features including the facility's intake and discharge structures. Also mark the locations of those wells, springs, surface water bodies, and drinking water wells listed in public records or otherwise known to the applicant within one-quarter mile of the facility property boundary.

III. Facility Description

Briefly describe the nature of the business and the activities being conducted that require a KPDES permit.

Identify the principal 4-digit standard industrial classification (SIC) code and other applicable SIC codes that best describe your facility in terms of the principal products or services you produce or provide. Also, specify each classification in words. These classifications may differ from the SIC codes describing the operation generating the discharge. The SIC codes are numbers and descriptions of activities classified by the Executive Office of the President, Office of Management and Budget. These are found in the latest edition of the Standard Industrial Classification (SIC) Manual.

If the application is for the modification of an existing permit, please provide the specific reason(s) for modifying the existing permit.

IV. Operator Information

For those facilities that require a Certified Operator, enter the name of a Certified Operator who will operate the treatment plant, or enter the name of an operator who will be certified before commencement of discharge. The operator of the treatment plant is often someone other than the operator of the facility identified in Section I.

List the Certified Operator's mailing address, telephone number, and email address. Also, provide the Certified Operator's Certification Class and Certification Number.

The operator must be currently certified with the Division of Water. For information concerning those requirements, please contact the Division of Compliance Assistance at (502) 564-0323.

V. Environmental Permits/Registrations for This Facility

List any existing environmental permits for this facility and identify any permits for which the facility will apply. KPDES permits use an NPDES generated number.

VI. Permit Fee

The payment of the permit fee, as listed below, must accompany the application for a new KPDES Permit or for reissuance of an expiring KPDES Permit in order for the permit application to be processed. For an application to modify an existing permit, the Division of Water will notify the applicant of the required permit fee to be paid prior to issuance of the permit modification. Your check must be made payable to "Kentucky State Treasurer." For permit renewals, to ensure proper credit to your account, please include the KPDES permit number on the check. The permit fee is not refundable if the application is withdrawn or the permit is denied. Listed below are the facility categories and associated base five-year permit fees. (See the separate "General Instructions" for definitions of facility categories.)

Facility Category	Five-Year Permit Fee
Major Industry	$7,000
Minor Industry	$4,500
Non-Process Industry	$2,200
Large Non-POTW	$3,700
Intermediate Non-POTW	$3,200
Small Non-POTW	$2,200
Agriculture	$1,200
Surface Mining Operation	$3,300
501(c)(3)	$100

If this application is for a new project, see separate General Instructions for the applicable Construction Permit fee.

VII. Certification

The permit application must be signed as follows:

- **Corporation:** by a principal executive officer of at least the level of vice president.
- **Partnership or sole proprietorship:** by a general partner or the proprietor respectively.
- **Municipality, state, federal, or other public agency:** by either a principal executive officer or ranking elected official.

Section C: ACTIVITIES WHICH DO NOT REQUIRE KPDES PERMITS

You are not required to obtain a KPDES permit if your discharge is one of the following categories, as provided by the Clean Water Act (CWA) and KPDES regulations (401 KAR Chapter 5).

1. Dredged or Fill Material: Discharges of dredged or fill material as defined at 33 CFR 323.2 into waters of the Commonwealth do not need KPDES permits if the dredging or filling is authorized by a permit issued by the U.S. Army Corp of Engineers.

2. Discharges into Publicly Owned Treatment Works (POTW): The introduction of sewage, industrial wastes, or other pollutants into a POTW does not need a KPDES permit. You must comply with all applicable pretreatment standards promulgated under Section 307 (b) of the CWA, which may be included in the permit issued to the POTW. If you have a plan or an agreement to switch to a POTW in the future, this does not relieve you of the obligation to apply for and receive a KPDES permit until you have stopped discharging pollutants into waters of the Commonwealth.

3. Dischargers into Privately Owned Treatment Works: Dischargers into privately owned treatment works do not have to apply for or obtain KPDES permits except as otherwise required by the Cabinet. The owner or operator of the treatment works itself, however, must apply for a permit and identify all users in its application.

4. Discharges from Agricultural and Silvicultural Activities: Most discharges from agricultural and silvicultural activities to waters of the Commonwealth do not require KPDES permits. These include runoff from orchards, cultivated crops, pastures, range lands, and forest lands. However, the discharge listed below DO require KPDES permits.
    a. Discharges from Concentrated Animal Feeding Operations.
    b. Discharges from Concentrated Aquatic Animal Production Facilities.
    c. Discharges associated with approved Aquaculture Projects.
    d. Discharges from Silvicultural Point Sources. Nonpoint source silvicultural activities are excluded from KPDES permit requirements. However, some of these activities, such as stream crossings for roads, may involve point source discharge of dredged or fill material which may require a Section 404 permit. See 33 CFR 209.120.

5. Underground Injection Control Permits Under the Safe Drinking Water Act

Form 1

KENTUCKY POLLUTION DISCHARGE ELIMINATION SYSTEM

Permit Application

Division of Water

NAME OF FACILITY: Great Oaks Subdivision WWTP	AGENCY USE ONLY AI: 3041
PERMIT NO.: KY0080845	COUNTY: McCracken

This is an application to: (check one)

- ☐ Apply for a new permit.
- ☑ Apply for reissuance of expiring permit.
- ☐ Modify an existing permit.* (Give reason for modification under Section III)

A complete application consists of this form (Form 1), and one or more of the following: Form A, Form B, Form C, Form F, or Form SC.

I. FACILITY AND CONTACT INFORMATION

Name of business, municipality, company, etc. requesting permit: Bluegrass Water Utility Operating Company, LLC.

Owner Name (and Title if applicable): Josiah Cox – President

Owner Mailing Address (Street, etc.): 500 Northwest Plaza Dr., Suite 500

Owner City, State, Zip: St. Ann, MO 63074

Owner Telephone Number: (314) 736-4672

Owner Email Address: jcox@cswrgroup.com

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Type of Ownership:	☐ Publicly Owned	☑ Privately Owned	☐ State Owned	☐ Both Publicly and Privately Owned	☐ Federally Owned

Contact Name and Title (if different): Same

Contact Mailing Address (if different): Same

Contact City, State, Zip (if different): Same

Contact Telephone Number (if different): Same

Contact Email Address (if different): Same

NetDMR Official Contact for Facility: Kaleb Stephens

NetDMR Official Contact Telephone Number: (715) 790-2559

NetDMR Official Contact Email Address: kstephens@cswrgroup.com

II. FACILITY LOCATION

Facility Location (street, road, highway, etc.): 5680 Majestic Oak Dr.

Facility City, State, Zip: Paducah, KY 42003

Facility Latitude (Decimal Degrees): 36.986192

Facility Longitude (Decimal Degrees): -88.638359

☑ Attach a site location map with the facility and outfalls clearly marked. Provide either an aerial map, topographic map, or other map that identifies the site location and significant features.

III. FACILITY DESCRIPTION	
Provide a brief description of activities, products, etc.: Sanitary waste treatment facility for Great Oaks Subdivision	
* Reason for modifying existing permit, if applicable: Permit expired under previous ownership. Permit renewal application being submitted by new owner.	
Principal SIC Code and description: 4952 – Sewerage Systems	
Other SIC Codes: n/a	
IV. OPERATOR INFORMATION	
Treatment Plant Operator Name: Terry Merritt	
Operator Mailing Address (Street, etc.): 12706 South Easley River Road	
Operator City, State, Zip: Columbia, MO 65203	
Operator Telephone Number: 573-476-9836	
Operator Email Address: tmerritt@midwestwaterop.com	
Operator Certification Class: III	Operator Certification Number: 61568
V. ENVIRONMENTAL PERMITS/REGISTRATIONS FOR THIS FACILITY	
KPDES Permit Number: KY0080845	Issue Date of Current Permit: May 1, 2012
Expiration Date of Current Permit: April 30, 2017	Date of Original Permit Issuance: unknown
☐ Other DOW Permits (list):	
☐ Sludge Disposal Permit Number:	
☐ Air Emission Source Control Permit Number:	
☐ Solid Waste or Special Waste Permit Number:	
☐ Hazardous Waste Registration or Permit Number:	
☐ Surface Mine or Underground Mine Permit Number:	
☐ Other (specify):	
VI. PERMIT FEE (See instructions)	
Select the type of permit being requested. See instructions for applicable fees and methods of payment. Additional information can be found in "General Instructions" at Water.Ky.Gov/Permitting/WastewaterDischarge	
☐ Major Industry	☑ Large Non-POTW
☐ Minor Industry	☐ Intermediate Non-POTW
☐ Non-Process Industry	☐ Small Non-POTW
☐ Surface Mining Operation	☐ 501(c)(3)
☐ Agriculture	☐ Exempt Publicly Owned Facility

☑ Total Amount Enclosed $3,700.00	

IX. CERTIFICATION	
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	
PRINTED NAME AND TITLE: Josiah Cox – President	
SIGNATURE:	DATE: 11/12/19
TELEPHONE NO. (314) 736-4672	EMAIL: jcox@cswrgroup.com

Return completed application form and attachments to:
Division of Water
Surface Water Permits Branch
300 Sower Boulevard, 3rd Floor
Frankfort, KY 40601

Direct questions to: Surface Water Permits Branch at (502) 564-3410.

KPDES FORM 1 – INSTRUCTIONS

Section A: GENERAL INSTRUCTIONS

The facility name should be the official or legal name by which the facility is commonly known and/or uniquely identified. Do not use a colloquial name. List the county where the facility is located.

With the exceptions described in Section C of these instructions, Federal and State laws prohibit you from the discharge of pollutants into the waters of the United States or waters of the Commonwealth.

Where to File:	Return completed application form and attachments to: Division of Water Surface Water Permits Branch 300 Sower Boulevard, 3rd Floor Frankfort, KY 40601
When to File:	File the application at least 180 days prior to expiration of your current KPDES permit or at least 180 days prior to startup of a new facility.
Fees:	Permit Fees are listed in Section B of these instructions.
Completion of Form:	Unless otherwise specified in the detailed instructions, you must answer each item in the form. To indicate that you have considered each item, enter "NA," for not applicable, if a particular item does not fit the circumstances of your facility or activity. If more space is necessary to answer a question, attach a separate sheet entitled "Additional Information."

Section B: COMPLETING FORM 1

Listed below are explanations of select Form 1 questions. If further information is needed concerning any section, **please contact Division of Water, Surface Water Permits Branch at (502) 564-3410.**

I. Facility and Contact Information

Use the official or legal name of the business, company, municipality, etc. requesting permit. Do not use a colloquial name. Give the name, as it is legally referred to, of the person, firm, public organization, or any other entity that operates the facility described in this application. This may or may not be the same name as the facility. The operator of the facility is the legal entity which controls the facility's operation rather than the plant or site manager. This use of "operator" in many cases is not the same as the treatment plant Certified Operator.

The owner mailing address should be the legal permittee of record and is the address where correspondence regarding the application, permit, etc. for the facility will be sent unless otherwise indicated. This often is not the address used to designate the location of the facility or activity. Give the name, title, and work telephone number of a person who is thoroughly familiar with the operation of the facility and with the facts reported in this application and who can be contacted by reviewing offices if necessary. The contact mailing address is to be provided if different from the owner mailing address. The name, telephone number, and email address of the facility's official contact for netDMR (Discharge Monitoring Reports) is to be provided.

II. Facility Location

The facility location should be for the actual location of the facility (i.e. road name, highway number, not the P.O. Box address). If there is no street address, identify the facility by the most accurate alternative geographic information such as direction and distance to the nearest intersection or permanent landmark (e.g., ½ mile east of intersection of KY 70 and US 127).

List the latitude and longitude for the facility site. The latitude/longitude reading for the site should be taken at the influent to the wastewater treatment plant, if applicable.

Attach a site location map with the facility and outfalls clearly marked. Provide either an aerial map, topographic map, or other map that identifies the site location and significant features including the facility's intake and discharge structures. Also mark the locations of those wells, springs, surface water bodies, and drinking water wells listed in public records or otherwise known to the applicant within one-quarter mile of the facility property boundary.

AI: 1643

Form 1

KENTUCKY POLLUTION DISCHARGE ELIMINATION SYSTEM

Permit Application

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Division of Water

AGENCY USE ONLY SWPB

NAME OF FACILITY: Airview Estates Subdivision WWTP

PERMIT NO.: KY0045390

COUNTY: Hardin

AI: 1643

This is an application to: (check one)

- ☐ Apply for a new permit.
- ☑ Apply for reissuance of expiring permit.
- ☐ Modify an existing permit.* (Give reason for modification under Section III)

A complete application consists of this form (Form 1), and one or more of the following: Form A, Form B, Form C, Form F, or Form SC.

I. FACILITY AND CONTACT INFORMATION

Name of business, municipality, company, etc. requesting permit: Bluegrass Water Utility Operating Company, LLC.

Owner Name (and Title if applicable): Josiah Cox – President

Owner Mailing Address (Street, etc.): 500 Northwest Plaza Dr., Suite 500

Owner City, State, Zip: St. Ann, MO 63074

Owner Telephone Number: (314) 736-4672

Owner Email Address: jcox@cswrgroup.com

Type of Ownership:	☐ Publicly Owned	☑ Privately Owned	☐ State Owned	☐ Both Publicly and Privately Owned	☐ Federally Owned

Contact Name and Title (if different): same

Contact Mailing Address (if different): same

Contact City, State, Zip (if different): same

Contact Telephone Number (if different): same

Contact Email Address (if different): same

NetDMR Official Contact for Facility: Kaleb Stephens

NetDMR Official Contact Telephone Number: (715) 790-2559

NetDMR Official Contact Email Address: kstephens@cswrgroup.com

II. FACILITY LOCATION

Facility Location (street, road, highway, etc.): 178 W. Airview Dr.

Facility City, State, Zip: Elizabethtown, KY 42701

Facility Latitude (Decimal Degrees): 37.758472222 deg N

Facility Longitude (Decimal Degrees): 85.891816667 deg W

☑ Attach a site location map with the facility and outfalls clearly marked. Provide either an aerial map, topographic map, or other map that identifies the site location and significant features.

III. FACILITY DESCRIPTION	
Provide a brief description of activities, products, etc.: Sanitary waste treatment facility for Airview Estates Subdivision.	
* Reason for modifying existing permit, if applicable: Permit expired under previous ownership. Permit renewal application being submitted by new owner.	
Principal SIC Code and description: 4952 – Sewerage Systems	
Other SIC Codes: n/a	
IV. OPERATOR INFORMATION	
Treatment Plant Operator Name: Kathy Carey	
Operator Mailing Address (Street, etc.): 3734 Shelbyville Rd	
Operator City, State, Zip: Shelbyville, KY 40065	
Operator Telephone Number: 502-650-5124	
Operator Email Address: carey.kathy@rocketmail.com	
Operator Certification Class: II	Operator Certification Number: 31228
V. ENVIRONMENTAL PERMITS/REGISTRATIONS FOR THIS FACILITY	
KPDES Permit Number: KY0045390	Issue Date of Current Permit: 5/8/13, Effective 7/1/13
Expiration Date of Current Permit: 6/30/18	Date of Original Permit Issuance: unknown
☐ Other DOW Permits (list):	
☐ Sludge Disposal Permit Number:	
☐ Air Emission Source Control Permit Number:	
☐ Solid Waste or Special Waste Permit Number:	
☐ Hazardous Waste Registration or Permit Number:	
☐ Surface Mine or Underground Mine Permit Number:	
☐ Other (specify):	
VI. PERMIT FEE (See instructions)	
Select the type of permit being requested. See instructions for applicable fees and methods of payment. Additional information can be found in "General Instructions" at Water.Ky.Gov/Permitting/WastewaterDischarge	
☐ Major Industry	☑ Large Non-POTW
☐ Minor Industry	☐ Intermediate Non-POTW
☐ Non-Process Industry	☐ Small Non-POTW
☐ Surface Mining Operation	☐ 501(c)(3)
☐ Agriculture	☐ Exempt Publicly Owned Facility

☑ Total Amount Enclosed $3,700.00	

IX. CERTIFICATION	
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	
PRINTED NAME AND TITLE: Josiah Cox – President	
SIGNATURE:	DATE: 11/12/19
TELEPHONE NO. (314) 736-4672	EMAIL: jcox@cswrgroup.com

Return completed application form and attachments to:
Division of Water
Surface Water Permits Branch
300 Sower Boulevard, 3rd Floor
Frankfort, KY 40601

Direct questions to: Surface Water Permits Branch at (502) 564-3410.

KPDES FORM 1 – INSTRUCTIONS

Section A: GENERAL INSTRUCTIONS

The facility name should be the official or legal name by which the facility is commonly known and/or uniquely identified. Do not use a colloquial name. List the county where the facility is located.

With the exceptions described in Section C of these instructions, Federal and State laws prohibit you from the discharge of pollutants into the waters of the United States or waters of the Commonwealth.

Where to File:	Return completed application form and attachments to: Division of Water Surface Water Permits Branch 300 Sower Boulevard, 3rd Floor Frankfort, KY 40601
When to File:	File the application at least 180 days prior to expiration of your current KPDES permit or at least 180 days prior to startup of a new facility.
Fees:	Permit Fees are listed in Section B of these instructions.
Completion of Form:	Unless otherwise specified in the detailed instructions, you must answer each item in the form. To indicate that you have considered each item, enter "NA," for not applicable, if a particular item does not fit the circumstances of your facility or activity. If more space is necessary to answer a question, attach a separate sheet entitled "Additional Information."

Section B: COMPLETING FORM 1

Listed below are explanations of select Form 1 questions. If further information is needed concerning any section, **please contact Division of Water, Surface Water Permits Branch at (502) 564-3410.**

I. Facility and Contact Information

Use the official or legal name of the business, company, municipality, etc. requesting permit. Do not use a colloquial name. Give the name, as it is legally referred to, of the person, firm, public organization, or any other entity that operates the facility described in this application. This may or may not be the same name as the facility. The operator of the facility is the legal entity which controls the facility's operation rather than the plant or site manager. This use of "operator" in many cases is not the same as the treatment plant Certified Operator.

The owner mailing address should be the legal permittee of record and is the address where correspondence regarding the application, permit, etc. for the facility will be sent unless otherwise indicated. This often is not the address used to designate the location of the facility or activity. Give the name, title, and work telephone number of a person who is thoroughly familiar with the operation of the facility and with the facts reported in this application and who can be contacted by reviewing offices if necessary. The contact mailing address is to be provided if different from the owner mailing address. The name, telephone number, and email address of the facility's official contact for netDMR (Discharge Monitoring Reports) is to be provided.

II. Facility Location

The facility location should be for the actual location of the facility (i.e. road name, highway number, not the P.O. Box address). If there is no street address, identify the facility by the most accurate alternative geographic information such as direction and distance to the nearest intersection or permanent landmark (e.g., ½ mile east of intersection of KY 70 and US 127).

List the latitude and longitude for the facility site. The latitude/longitude reading for the site should be taken at the influent to the wastewater treatment plant, if applicable.

Attach a site location map with the facility and outfalls clearly marked. Provide either an aerial map, topographic map, or other map that identifies the site location and significant features including the facility's intake and discharge structures. Also mark the locations of those wells, springs, surface water bodies, and drinking water wells listed in public records or otherwise known to the applicant within one-quarter mile of the facility property boundary.

Form A	KENTUCKY POLLUTION DISCHARGE ELIMINATION SYSTEM Permit Application	Division of Water

NAME OF FACILITY: Herrington Haven WWTP	AGENCY USE ONLY
PERMIT NO.: KY0053431	COUNTY: Garrard

Form A consists of a "Basic Application Information" packet and a "Supplemental Application Information" packet.

The Basic Application Information packet is divided into three parts. All applicants must complete Parts A and C. Applicants with a design flow greater than or equal to 100,000 gallons per day (0.10 million gallons per day or MGD) must also complete Part B.

The Supplemental Application Information packet is divided into four parts and applicants may also need to complete these if they meet the criteria.

BASIC APPLICATION INFORMATION

Part A. Information for All Applicants.

All applicants must complete questions A.1 through A.4. A treatment works that discharges effluent to waters of the Commonwealth must also answer questions A.5 through A.7.

Part B. Additional Information for Applicants with a Design Flow ≥ 100,000 gallons per day (0.10 MGD).

All treatment works that have design flows greater than or equal to 100,000 gallons per day (0.10 MGD) must complete questions B.1 through B.5.

Part C. Certification for All Applicants.

All applicants must complete *Part C. Certification for All Applicants.*

SUPPLEMENTAL APPLICATION INFORMATION

Part D. Expanded Effluent Testing Data.

A treatment works that discharges effluent to waters of the Commonwealth and meets one or more of the following criteria must complete *Part D. Expanded Effluent Testing Data*:

1. Has a design flow rate greater than or equal to 1 MGD,
2. Is required to have a pretreatment program (or has one in place), or
3. Is otherwise required by the permitting authority to provide the information.

Part E. Toxicity Testing Data.

A treatment works that meets one or more of the following criteria must complete *Part E. Toxicity Testing Data*:

1. Has a design flow rate greater than or equal to 1 MGD,
2. Is required to have a pretreatment program (or has one in place), or
3. Is otherwise required by the permitting authority to submit results of toxicity testing.

Part F. Industrial User Discharges.

A treatment works that accepts process wastewater from any significant industrial users (SIUs) or receives RCRA or CERCLA wastes must complete *Part F. Industrial User Discharges*. SIUs are defined as:

1. All industrial users subject to Categorical Pretreatment Standards under the Code of Federal Regulations, 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N (see instructions); and
2. Any other industrial user that:
   a. Discharges an average of 25,000 gallons per day (0.025 MGD) or more of process wastewater to the treatment works (with certain exclusions); or
   b. Contributes a process wastestream that makes up 5% or more of the average dry weather hydraulic or organic capacity of the treatment plant; or
   c. Is designated as an SIU by the control authority.

Part G. Combined Sewer Systems.

A treatment works that has a combined sewer system must complete *Part G. Combined Sewer Systems.*

PART A
BASIC APPLICATION INFORMATION PACKET

INFORMATION FOR ALL APPLICANTS. All applicants must complete questions A.1 through A.4

A.1. FACILITY INFORMATION

Name of Facility: Herrington Haven WWTP

Permit No.: KY0053431 | County: Garrard

A.2. COLLECTION SYSTEM INFORMATION

Provide information on municipalities and areas served by the facility.

Name of Municipality or Area Served	Type of Collection System and Percent Contributed by Miles	Ownership (Municipal or Private)	Population Served
Harrington Haven Subdivision	☐ Combined Sanitary & Sewer %	Private	~24 homes
	☒ Separate Sanitary %		
	☐ Combined Sanitary & Sewer %		
	☐ Separate Sanitary %		
	☐ Combined Sanitary & Sewer %		
	☐ Separate Sanitary %		
	☐ Combined Sanitary & Sewer %		
	☐ Separate Sanitary %		
		Total population served:	~24 homes

A.3. FLOW

Indicate the design flow rate of the treatment plant (i.e., the wastewater flow rate that the plant was built to handle). Also provide the average daily flow rate and maximum daily flow rate for each of the last three years. Each year's data must be based on a 12-month time period with the 12th month of "this year" occurring no more than three months prior to this application submittal.

Design flow rate 0.04 MGD

	Two Years Ago	Last year	This Year
Annual average daily flow rate	0.000313 MGD	0.0561 MGD	0.058 MGD
Maximum daily flow rate	0.0005 MGD	0.191 MGD	0.105 MGD

A.4. DISCHARGES AND OTHER DISPOSAL METHODS

a. Does the treatment works discharge effluent to waters of the Commonwealth? Yes ☒ No ☐

If yes, list how many of each of the following types of discharge points the treatment works uses:

i.	Discharges of treated effluent	1
ii.	Discharges of untreated or partially treated effluent	0
iii.	Combined sewer overflow points	0
iv.	Constructed emergency overflows (prior to the headworks)	0
v.	Other (specify)	0

b. Does the treatment works discharge effluent to basins, ponds, or other surface impoundments that do not have outlets for discharge to waters of the Commonwealth? Yes ☐ No ☒

If yes, provide the following for each surface impoundment:

Location	Annual Average Daily Volume Discharged to Surface Impoundment (MGD)	Type of Discharge
		☐ Continuous ☐ Intermittent
		☐ Continuous ☐ Intermittent
		☐ Continuous ☐ Intermittent
		☐ Continuous ☐ Intermittent

c. Does the treatment works land-apply treated wastewater? Yes ☐ No ☒

If yes, provide the following for each land application site:

Location	Number of Acres	Annual Average Daily Volume Discharged to Surface Impoundment (MGD)	Type of Discharge
			☐ Continuous ☐ Intermittent
			☐ Continuous ☐ Intermittent
			☐ Continuous ☐ Intermittent
			☐ Continuous ☐ Intermittent

d. Does the treatment works discharge or transport treated or untreated wastewater to another treatment works?

Yes ☐ No ☒

If yes, provide the name and location of the treatment works receiving the wastewater:

WASTEWATER DISCHARGES

If you answered yes to question A.4.a, then complete questions A.5 through A.7 for each outfall through which effluent is discharged.

Do not include information on combined sewer overflows in this section.

If you answered **no** to question A.4.a, then go to *Part B. Additional Information for Applicants with a Design Flow ≥ 100,000 gallons per day (0.10 MGD)*

A.5. DESCRIPTION OF OUTFALL

a.	Outfall Number: 001	
b.	Outfall Latitude (Decimal Degrees): 37.6612	Outfall Longitude (Decimal Degrees): -84.6904
c.	Average Daily Flow Rate: MGD	
d.	Does this outfall have either an intermittent or a periodic discharge? Yes ☐ No ☒ If yes, provide the following information:	
	i. Number of times per year discharge occurs:	
	ii. Average duration of each discharge:	
	iii. Average flow per discharge in million gallons per day:	MGD
	iv. Month in which discharge occurs:	
e.	Is outfall equipped with a diffuser? Yes ☐ No ☒	
f.	Name of receiving water: Dix River	

A.6. DESCRIPTION OF TREATMENT

a.	What levels of treatment are provided? Check all that apply.		
	☒ Primary	☒	Secondary
	☐ Advanced	☐	Other (specify):
b.	Indicate the following percent removal rates (as applicable):		
	Design BOD_5 removal or Design $CBOD_5$ removal	97 %	
	Design Suspended Solids removal	86 %	
	Design Phosphorus removal	____ %	
	Design Nitrogen removal	____ %	
c.	What type of disinfection is used for the effluent from this outfall? : Peracetic Acid		
	If disinfection varies by season, please describe: ____		
	If disinfection is by chlorination, is dechlorination used for this outfall? Yes ☐ No ☐ N/A		

A.7. EFFLUENT TESTING INFORMATION

All applicants that discharge to waters of the Commonwealth must provide effluent testing data for the parameters shown in the table below. Complete once for each outfall discharging effluent to waters of the Commonwealth

Provide the indicated effluent testing results for each outfall through which effluent is discharged.

At a minimum, effluent testing data must be based on at least three samples and must be no more than four and one-half years apart.

All information reported must be based on data collected through analysis conducted using 40 CFR Part 136 methods. In addition, this data must comply with QA/QC requirements of 40 CFR Part 136 and other appropriate QA/QC requirements for standard methods for analytes not addressed by 40 CFR Part 136.

Do not include information on combined sewer overflows in this section.

OUTFALL NUMBER 001

PARAMETER	MAXIMUM DAILY VALUE		AVERAGE DAILY VALUE		
	Value	Units	Value	Units	Number of Samples
pH (Minimum)*	6.6	s.u.			
pH (Maximum)*	8.77	s.u.			
Flow Rate	0.191	MGD	0.0323	MGD	DMR data
Temperature (Winter)	N/A				
Temperature (Summer)	N/A				

* For pH, report a minimum and a maximum daily value

Pollutant	MAXIMUM DAILY DISCHARGE		AVERAGE DAILY DISCHARGE			Analytical Method	ML / MDL
	Concentration	Units	Concentration	Units	Number of Samples		
Biochemical Oxygen Demand (BOD_5)*	19	mg/L	6.25	mg/L	8	24 hr comp.	
or							
Carbonaceous Biochemical Oxygen Demand* ($CBOD_5$)							
Escherichia coli (E. coli)	145	#/100 mL	15.73	#/100 mL	11	30 day geo mean	
Total Suspended Solids (TSS)	97	mg/L	16	mg/L	11	24 hr. comp.	

* Report only one: either BOD_5 or $CBOD_5$

END OF PART A.

Refer to the general overview on Page 1 or the instructions to determine which other parts of this form you must complete.

N/A

PART B

APPLICATION INFORMATION FOR DESIGN FLOW ≥ 100,000 GPD (0.10 MGD)

ADDITIONAL APPLICATION INFORMATION FOR APPLICANTS WITH A DESIGN FLOW GREAT THAN OR EQUALTO 100,000 GALLONS PER DAY (0.10 MGD):

Applicants with a facility design flow ≥ 100,000 gallons per day (0.10 MGD) must complete questions B.1 through B.5. All others go to Part C.

B.1. INFLOW AND INFILTRATION.

Estimate the average number of gallons per day that flow into the treatment works from inflow and/or infiltration. gpd

Briefly explain any steps underway or planned to minimize inflow and infiltration.

B.2. TOPOGRAPHIC MAP

Attach to this application a site location map of the area extending at least one mile beyond facility property boundaries. Provide a topographic map, aerial map, or other map that identifies the site location, and shows the outline of the facility, significant features, and the following information.

You may submit more than one map if one map does not show the entire area.

a. The area surrounding the treatment plant, including all unit processes.

b. The major pipes or other structures through which wastewater enters the treatment works and the pipes or other structures through which treated wastewater is discharged from the treatment plant. Include outfalls from bypass piping, if applicable.

c. Each well where wastewater from the treatment plant is injected underground.

d. Wells, springs, other surface water bodies, and drinking water wells that are: 1) within 1/4 mile of the property boundaries of the treatment works, and 2) listed in public record or otherwise known to the applicant.

e. Any areas where the sewage sludge produced by the treatment works is stored, treated, or disposed

f. If the treatment works receives waste that is classified as hazardous under the Resource Conservation and Recovery Act (RCRA) by truck, rail, or special pipe, show on the map where that hazardous waste enters the treatment works and where it is treated, stored, and/or disposed.

B.3. PROCESS FLOW DIAGRAM OR SCHEMATIC.

a. Provide a diagram showing the processes of the treatment plant, including all bypass piping and all backup power sources or redundancy in the system.

b. Provide a water balance showing all treatment units, including disinfection (e.g., chlorination and dechlorination). The water balance must show daily average flow rates at influent and discharge points and approximate daily flow rates between treatment units.

c. Include a brief narrative description of the diagram. _____

N/A

B.4. SCHEDULED IMPROVEMENTS AND SCHEDULES OF IMPLEMENTATION.

Provide information on any uncompleted implementation schedule or uncompleted plans for improvements that will affect the wastewater treatment, effluent quality, or design capacity of the treatment works. If the treatment works has several different implementation schedules or is planning several improvements, submit separate responses for each.

If none, go to question B.5.

a. List the number that was assigned in question A.7 for each outfall that is covered by this implementation schedule.

OUTFALL NUMBER ____	OUTFALL NUMBER ____
OUTFALL NUMBER ____	OUTFALL NUMBER ____

b. Are the planned improvements or implementation schedule required by local, State or Federal agencies? Yes ☐ No ☐

If Yes, briefly describe, including new maximum daily inflow rate (if applicable).

c. Provide dates imposed by any compliance schedule or any actual dates of completion for the implementation steps listed below, as applicable. For improvements planned independently of local, State, or Federal agencies, indicate planned or actual completion dates, as applicable. Indicate dates as accurately as possible.

Implementation Stage	Required by Local, State, or Federal agency, or Independent	Schedule MM/DD/YYY	Actual Completion Date MM/DD/YYY
Begin construction			
End construction			
Begin discharge			
Attain operational level			

d. Have appropriate permits/clearances concerning other Federal/State requirements been obtained? Yes ☐ No ☐

If Yes, briefly describe.

N/A

B.5. EFFLUENT TESTING DATA (For applicants with design flow greater than or equal to 100,000 gallons per day (0.10 mgd) only.)

Applicants that discharge to waters of the Commonwealth must provide effluent testing data for the parameters shown in the table below.

Provide the indicated effluent testing for each outfall through which effluent is discharged. At a minimum, effluent testing data must be based on at least three pollutant scans and must be no more than four and one-half years old.

All information reported must be based on data collected through analysis conducted using 40 CFR Part 136 methods. In addition, this data must comply with QA/QC requirements of 40 CFR Part 136 and other appropriate QA/QC requirements for standard methods for analytes not addressed by 40 CFR Part 136.

Do not include information on combined sewer overflows in this section.

OUTFALL NUMBER ____

Pollutant	MAXIMUM DAILY DISCHARGE		AVERAGE DAILY DISCHARGE			Analytical Method	ML / MDL
	Concentration	Units	Concentration	Units	Number of Samples		
Ammonia (as N)							
Chlorine (Total Residual, TRC)							
Dissolved Oxygen (DO)							
Total Kjeldahl Nitrogen (TKN)							
Nitrate Plus Nitrite Nitrogen							
Oil and Grease (O&G)							
Phosphorus (Total P)							
Total Dissolved Solids (TDS)							
Other							

END OF PART B.

Refer to the general overview on Page 1 or the instructions to determine which other parts of this form you must complete.

PART C

CERTIFICATION FOR ALL APPLICANTS

CERTIFICATION. All applicants must complete Part C. Refer to instructions to determine who is an officer for the purposes of signing this certification.

Indicate below which parts of Form A you completed and are submitting.

By signing this certification statement, applicants confirm that they have reviewed Form A and have completed all sections that apply to the facility for which this application is submitted.

Indicate which parts of FORM A you have completed and are submitting.

Basic Application Information packet. Check all that apply.

- ☒ Part A. Information for All Applicants.
- ☐ Part B. Additional Information for Applicants with a Design Flow ≥ 100,000 gallons per day (0.10 MGD).
- ☒ Part C. Certification for All Applicants.

Supplemental Application Information packet Check all that apply

- ☐ Part D. Expanded Effluent Testing Data.
- ☐ Part E. Toxicity Testing Data.
- ☐ Part F. Industrial User Discharges and RCRA/CERCLA Wastes.
- ☐ Part G. Combined Sewer Systems

CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

PRINTED NAME AND TITLE: Amanda Sappington EHS Program Manager	
SIGNATURE: Mandy Sappington	DATE: 1/30/23
TELEPHONE NO. 314-464-3976	EMAIL: MSappington@cswrgroup.com

Return completed application form and attachments to:
Division of Water
Surface Water Permits Branch
300 Sower Boulevard, 3rd Floor
Frankfort, KY 40601

Direct questions to: Surface Water Permits Branch at (502) 564-3410.

END OF BASIC APPLICATION PACKET.

Proceed to Supplemental Application Information packet.
Refer to the general overview on Page 1 or the instructions to determine which parts of Supplemental Application Information packet (Parts D, E, F, and G) you must complete.

Form SC

KENTUCKY POLLUTION DISCHARGE ELIMINATION SYSTEM

Permit Application

Division of Water

NAME OF FACILITY: Golden Acres WWTF	AGENCY USE ONLY A1: 2935
PERMIT NO.: KY0044164	COUNTY: Marshall

I. OUTFALL LOCATION

☑ For each outfall, list the latitude and longitude of its location to five decimal points.

OUTFALL NUMBER	LATITUDE In Decimal Degrees	LONGITUDE In Decimal Degrees	RECEIVING WATER (name)
001	36.97361	88.48055	Unnamed Tributary to Clarks River

II. FLOWS, SOURCES OF POLLUTION, AND TREATMENT TECHNOLOGIES

A. Attach a line drawing showing the water flow through the facility. Indicate sources of intake water, operations contributing wastewater to the effluent, and treatment units labeled to correspond to the more detailed descriptions in Item B.

B. For each outfall, provide a description of:
(1) operations contributing wastewater to the effluent;
(2) the average and/or design flow contributed by each operation; and
(3) the treatment received by the wastewater.

OUTFALL NUMBER	SOURCES OF WASTEWATER		TREATMENT DESCRIPTION (refer to Table SC-1 for description)
	Operations Contributing to Flow	Average / Design Flow (include units)	
001	100%	0.003 / 0.025 MGD	3-A

III. FACILITY DISCHARGE

A. Check the appropriate boxes indicating the types of wastewater discharged.

☑ Domestic wastewater (60% or more sanitary sewage)

☐ Non-contact cooling water

☐ Filter backwash

☐ Other non-process wastewaters. Provide description:

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B. Does discharge occur all year?

☑ Yes.

How many days per week does discharge occur? 7

What is the average duration of discharge? Specify hours or days. 24

☐ No.

C. Except for stormwater runoff, leaks, or spills, are any of the discharges intermittent or seasonal?

☐ Yes. If yes, provide description of approximate number, duration, and volume of seasonal or intermittent flows.

☑ No.

D. Provide the basis for design and sizing of the wastewater facility.
Previous permit. Estimated from population.

E. If the facility is a new discharger, what is the anticipated discharge date?

Treatment Plants Only to complete Section F & G.

F. Does all water used at facility (except for human consumption) flow to a treatment plant?

☑ Yes.

☐ No. If no, please describe.

G. What is the design capacity of the treatment system? 0.025 MGD

IV. AREA SERVED BY WASTEWATER TREATMENT PLANT

NAME OF AREA OR COMMUNITY	ACTUAL POPULATION SERVED
Golden Acres Subdivision	112 (estimated)
Total Population Served	112 (estimated)

V. COOLING WATER ADDITIVES

Are cooling water additives used?

☐ Yes. In the table below, list each additive, its composition, concentration, and feed rate. Attach Safety Data Sheets for each.

☑ No

NAME OF ADDITIVE	COMPOSITION	CONCENTRATION	FEED RATE

VI. EFFLUENT CHARACTERISTICS	OUTFALL NO: 001
Complete Sections A, B, and C for each outfall.	
A. What is the frequency and duration of flow? Continuous	
B. In the first part of the table below, provide results of effluent analysis for each pollutant / parameter listed.	
C.	

POLLUTANT/PARAMETER	UNITS	MAX DAILY VALUE	AVG DAILY VALUE	NUMBER OF SAMPLES
☐BOD_5 or ☑$CBOD_5$	mg/l	14	14	1
Total Suspended Solids	mg/l	22	22	1
E.Coli	colonies/ 100 ml	>2419.6	>2419.6	1
Total Residual Chlorine	mg/l	0.02	0.02	1
Oil and Grease	mg/l	n/a	n/a	n/a
Chemical Oxygen Demand	mg/l	n/a	n/a	n/a
Total Organic Carbon	mg/l	n/a	n/a	n/a
Ammonia	mg/l	11	11	1
Discharge of Flow	MGD	0.003	0.003	1
pH	s.u.	7.15	7.15	1
Temperature (winter)	°F	56.48	56.48	1
Temperature (summer)	°F	n/a	n/a	n/a

METALS	UNITS	AVG CONCENTRATION
☐ Antimony	µg/l	n/a
☐ Arsenic	µg/l	n/a
☐ Beryllium	µg/l	n/a
☐ Cadmium	µg/l	n/a
☐ Chromium	µg/l	n/a
☐ Copper	µg/l	n/a
☐ Lead	µg/l	n/a
☐ Mercury	µg/l	n/a
☐ Nickel	µg/l	n/a
☐ Selenium	µg/l	n/a
☐ Silver	µg/l	n/a
☐ Thallium	µg/l	n/a
☐ Zinc	µg/l	n/a

VII. CERTIFICATION	
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	
PRINTED NAME AND TITLE: Josiah Cox – President	
SIGNATURE:	DATE:
TELEPHONE NO. (314) 736-4672	EMAIL: jcox@cswrgroup.com

Return completed application form and attachments to:
Division of Water
Surface Water Permits Branch
300 Sower Boulevard, 3rd Floor
Frankfort, KY 40601

Direct questions to: Surface Water Permits Branch at (502) 564-3410.

AI: 1643

Form SC

KENTUCKY POLLUTION DISCHARGE ELIMINATION SYSTEM

Permit Application

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Division of Water

NAME OF FACILITY: Airview Estates Subdivision WWTP

AGENCY USE ONLY SWPB

PERMIT NO.: KY0045390

COUNTY: Hardin

I. OUTFALL LOCATION

☐ For each outfall, list the latitude and longitude of its location to five decimal points.

OUTFALL NUMBER	LATITUDE In Decimal Degrees	LONGITUDE In Decimal Degrees	RECEIVING WATER (name)
001	37.758472222	-85.891816667	Unnamed tributary at mile point 0.4 to Mill Creek Branch at mile point 0.78

II. FLOWS, SOURCES OF POLLUTION, AND TREATMENT TECHNOLOGIES

A. Attach a line drawing showing the water flow through the facility. Indicate sources of intake water, operations contributing wastewater to the effluent, and treatment units labeled to correspond to the more detailed descriptions in Item B.

B. For each outfall, provide a description of:
(1) operations contributing wastewater to the effluent;
(2) the average and/or design flow contributed by each operation; and
(3) the treatment received by the wastewater.

OUTFALL NUMBER	SOURCES OF WASTEWATER		TREATMENT DESCRIPTION (refer to Table SC-1 for description)
	Operations Contributing to Flow	Average / Design Flow (include units)	
001	100%	0.034 / 0.055 MGD	3-A

III. FACILITY DISCHARGE

A. Check the appropriate boxes indicating the types of wastewater discharged.

☑ Domestic wastewater (60% or more sanitary sewage)

☐ Non-contact cooling water

☐ Filter backwash

☐ Other non-process wastewaters. Provide description:

B. Does discharge occur all year?

☑ Yes.

How many days per week does discharge occur? 7

What is the average duration of discharge? Specify hours or days. 24

☐ No.

C. Except for stormwater runoff, leaks, or spills, are any of the discharges intermittent or seasonal?

☐ Yes. If yes, provide description of approximate number, duration, and volume of seasonal or intermittent flows.

☑ No.

D. Provide the basis for design and sizing of the wastewater facility.
Previous permit. Estimated from population.

E. If the facility is a new discharger, what is the anticipated discharge date?

Treatment Plants Only to complete Section F & G.

F. Does all water used at facility (except for human consumption) flow to a treatment plant?

☑ Yes.

☐ No. If no, please describe.

G. What is the design capacity of the treatment system 0.055 MGD

IV. AREA SERVED BY WASTEWATER TREATMENT PLANT

NAME OF AREA OR COMMUNITY	ACTUAL POPULATION SERVED
Airview Estates Subdivision	366 (Estimated)
Total Population Served	366 (Estimated)

V. COOLING WATER ADDITIVES

Are cooling water additives used?

☐ Yes. In the table below, list each additive, its composition, concentration, and feed rate. Attach Safety Data Sheets for each.

☑ No

NAME OF ADDITIVE	COMPOSITION	CONCENTRATION	FEED RATE

VI. EFFLUENT CHARACTERISTICS	OUTFALL NO: 001
Complete Sections A, B, and C for each outfall.	
A. What is the frequency and duration of flow? Continuous	
B. In the first part of the table below, provide results of effluent analysis for each pollutant / parameter listed.	
C.	

POLLUTANT/PARAMETER	UNITS	MAX DAILY VALUE	AVG DAILY VALUE	NUMBER OF SAMPLES
☐BOD_5 or ☑$CBOD_5$	mg/l	18	18	1
Total Suspended Solids	mg/l	20	20	1
E.Coli	colonies/ 100 ml	980	980	1
Total Residual Chlorine	mg/l	0.07	0.07	1
Oil and Grease	mg/l	n/a	n/a	n/a
Chemical Oxygen Demand	mg/l	n/a	n/a	n/a
Total Organic Carbon	mg/l	n/a	n/a	n/a
Ammonia	mg/l	0.09	0.09	1
Discharge of Flow	MGD	0.010	0.010	1
pH	s.u.	7.4	7.4	1
Temperature (winter)	°F	21.6	21.6	1
Temperature (summer)	°F	-	-	-

METALS	UNITS	AVG CONCENTRATION
☐ Antimony	µg/l	n/a
☐ Arsenic	µg/l	n/a
☐ Beryllium	µg/l	n/a
☐ Cadmium	µg/l	n/a
☐ Chromium	µg/l	n/a
☐ Copper	µg/l	n/a
☐ Lead	µg/l	n/a
☐ Mercury	µg/l	n/a
☐ Nickel	µg/l	n/a
☐ Selenium	µg/l	n/a
☐ Silver	µg/l	n/a
☐ Thallium	µg/l	n/a
☐ Zinc	µg/l	n/a

VII. CERTIFICATION	
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	
PRINTED NAME AND TITLE: Josiah Cox – President	
SIGNATURE:	DATE: 11/12/19
TELEPHONE NO. (314) 736-4672	EMAIL: jcox@cswrgroup.com

Return completed application form and attachments to:
Division of Water
Surface Water Permits Branch
300 Sower Boulevard, 3rd Floor
Frankfort, KY 40601

Direct questions to: Surface Water Permits Branch at (502) 564-3410.

Form SC

KENTUCKY POLLUTION DISCHARGE ELIMINATION SYSTEM

Permit Application

Division of Water

NAME OF FACILITY: Great Oaks Subdivision WWTP	AGENCY USE ONLY AI : 3041
PERMIT NO.: KY0080845	COUNTY: McCracken

I. OUTFALL LOCATION

☑ For each outfall, list the latitude and longitude of its location to five decimal points.

OUTFALL NUMBER	LATITUDE In Decimal Degrees	LONGITUDE In Decimal Degrees	RECEIVING WATER (name)
001	36.986278	-88.638003	Blizzard Pond Drainage Canal

II. FLOWS, SOURCES OF POLLUTION, AND TREATMENT TECHNOLOGIES

A. Attach a line drawing showing the water flow through the facility. Indicate sources of intake water, operations contributing wastewater to the effluent, and treatment units labeled to correspond to the more detailed descriptions in Item B.

B. For each outfall, provide a description of:
(1) operations contributing wastewater to the effluent;
(2) the average and/or design flow contributed by each operation; and
(3) the treatment received by the wastewater.

OUTFALL NUMBER	SOURCES OF WASTEWATER		TREATMENT DESCRIPTION (refer to Table SC-1 for description)
	Operations Contributing to Flow	Average / Design Flow (include units)	
001	100%	0.028 / 0.070 MGD	3-A

III. FACILITY DISCHARGE

A. Check the appropriate boxes indicating the types of wastewater discharged.

☑ Domestic wastewater (60% or more sanitary sewage)

☐ Non-contact cooling water

☐ Filter backwash

☐ Other non-process wastewaters. Provide description:

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B. Does discharge occur all year?

☑ Yes.

How many days per week does discharge occur? 7

What is the average duration of discharge? Specify hours or days. 24

☐ No.

C. Except for stormwater runoff, leaks, or spills, are any of the discharges intermittent or seasonal?

☐ Yes. If yes, provide description of approximate number, duration, and volume of seasonal or intermittent flows.

☑ No.

D. Provide the basis for design and sizing of the wastewater facility.
Previous permit. Estimated from population.

E. If the facility is a new discharger, what is the anticipated discharge date?

Treatment Plants Only to complete Section F & G.

F. Does all water used at facility (except for human consumption) flow to a treatment plant?

☑ Yes.

☐ No. If no, please describe.

G. What is the design capacity of the treatment system MGD

IV. AREA SERVED BY WASTEWATER TREATMENT PLANT

NAME OF AREA OR COMMUNITY	ACTUAL POPULATION SERVED
Great Oaks Subdivision WWTP	368 (estimated)
Total Population Served	368 (estimated)

V. COOLING WATER ADDITIVES

Are cooling water additives used?

☐ Yes. In the table below, list each additive, its composition, concentration, and feed rate. Attach Safety Data Sheets for each.

☑ No

NAME OF ADDITIVE	COMPOSITION	CONCENTRATION	FEED RATE

VI. EFFLUENT CHARACTERISTICS	OUTFALL NO: 001
Complete Sections A, B, and C for each outfall.	
A. What is the frequency and duration of flow? Continuous	
B. In the first part of the table below, provide results of effluent analysis for each pollutant / parameter listed.	
C.	

POLLUTANT/PARAMETER	UNITS	MAX DAILY VALUE	AVG DAILY VALUE	NUMBER OF SAMPLES
☐BOD_5 or ☑$CBOD_5$	mg/l	4	4	1
Total Suspended Solids	mg/l	3	3	1
E.Coli	colonies/ 100 ml	9	9	1
Total Residual Chlorine	mg/l	<0.02	<0.02	1
Oil and Grease	mg/l	n/a	n/a	n/a
Chemical Oxygen Demand	mg/l	n/a	n/a	n/a
Total Organic Carbon	mg/l	n/a	n/a	n/a
Ammonia	mg/l	0.52	0.52	1
Discharge of Flow	MGD	0.030	0.030	1
pH	s.u.	7.8	7.8	1
Temperature (winter)	°F	75.2	75.2	1
Temperature (summer)	°F	n/a	n/a	n/a

METALS	UNITS	AVG CONCENTRATION
☐ Antimony	µg/l	n/a
☐ Arsenic	µg/l	n/a
☐ Beryllium	µg/l	n/a
☐ Cadmium	µg/l	n/a
☐ Chromium	µg/l	n/a
☐ Copper	µg/l	n/a
☐ Lead	µg/l	n/a
☐ Mercury	µg/l	n/a
☐ Nickel	µg/l	n/a
☐ Selenium	µg/l	n/a
☐ Silver	µg/l	n/a
☐ Thallium	µg/l	n/a
☐ Zinc	µg/l	n/a

VII. CERTIFICATION	
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	
PRINTED NAME AND TITLE: Josiah Cox – President	
SIGNATURE:	DATE: 11/12/19
TELEPHONE NO. (314) 736-4672	EMAIL: jcox@cswrgroup.com

Return completed application form and attachments to:
Division of Water
Surface Water Permits Branch
300 Sower Boulevard, 3rd Floor
Frankfort, KY 40601

Direct questions to: Surface Water Permits Branch at (502) 564-3410.

419

Kentucky
UNBRIDLED SPIRIT

ENERGY AND ENVIRONMENT CABINET

Department for Environmental Protection
300 Sower Boulevard
Frankfort, KY 40601

10/02/20

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APR - 6 2021

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Golden Acres WWTP
Josiah Cox
500 Northwest Plaza Dr Ste 500

Saint Ann, MO 63074

-R-T-S- 630744235-1N

RETURN TO SENDER
UNABLE TO FORWAR
UNABLE TO FORWAR
RETURN TO SEND

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BLUEGRASS WATER
Utility Operating Company
A CSWR Managed Utility

July 29, 2020

Michael Kroeger (CC. Wesley Dement)
Kentucky Department for Environmental Protection
Division of Enforcement
300 Sower Blvd., 3rd Floor
Frankfort, KY 40601

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

Corrective Action Plan Revision:

I am pleased to submit this update to the Corrective Action Plan for the Golden Acres WWTF approved by EEC/DEP on 2/17/2020. The scope of the original CAP was completed within the projected schedule of the CAP. Triage and repair work has been completed and the main aeration plant is in better shape than it was at acquisition. Many improvements have been made to the Golden Acres system including repairs and replacement to damaged components, removal of accumulated solids from the plant and effluent line, improvements to control systems, etc.

The primary issue this facility continues to face is a poorly designed and improperly sized effluent line leading to regular backups at the plant. The original plant was designed for a 4" effluent line which goes from the plant, makes about a 30° turn and eventually makes another turn of about 120°. These turns in the line cause accumulation of solids in the effluent pipe and backup into the plant during high flow periods, leading to flooding and improper flow through the plant. This improper flow leads to additional wash-through of solids, compounding the problem. At acquisition this had resulted in the effluent pipe being nearly completely blocked with rags, toilet paper and debris, with these items visibly discoloring effluent and the receiving waters. In clearing the pipe and investigating the problem it was discovered that while the design had called for 4" effluent pipe, the pipe actually only started and ended at 4", but in fact had been installed with smaller pipe in the underground sections presumedly to save money during installation, further exaggerating the problems caused by the pipe.

Per the original CAP, our evaluation following triage improvements has determined that the facility does require a construction permit to complete improvements. A construction permit has been submitted to replace the effluent chamber and effluent line. The replaced line will move the discharge point a short distance downstream from the original discharge, eliminating the turns in the line. The line will also be upsized to 10". It seems that all the plant's issues result from the backups disrupting proper operation of the plant.

The permit will also facilitate conversion to peroxyacetic acid disinfection with post aeration to replace the current disinfection system. We believe that work will proceed quickly following approval of the permit and expect to complete the improvements at Golden Acres Run by February 18, 2022, assuming the permit is issued in the near future. Following the improvements included in the construction permit the facility should be able to consistently comply with permitted limits

Sincerely,

JON MEANY
Utility Engineer

(314) 380-8537 Ext. 215
(314) 482-0342
(314) 736-4759
jmeany@cswrgroup.com
1650 Des Peres Rd., Suite 303,
Des Peres, MO 63131

December 26, 2019

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

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

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

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

1. Causes of the Effluent Violations

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

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

2. System Evaluation and Corrective Actions

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

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

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

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

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

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

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

3. Project Milestones

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

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

Sincerely,

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

BLUEGRASS WATER
Utility Operating Company
A CSWR Managed Utility

March 14, 2023

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

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

On behalf of Bluegrass Water Utility Operating Company, LLC, we are submitting this letter to address the current Corrective Action Plan status that was approved February 17, 2020. BWUOC submitted an extension request on September 23, 2022, with a projected completion date of March 31, 2023.

Construction was recently completed at this facility including all the repairs and upgrades proposed by our third-party engineering firm. The facility effluent will be complaint with the operating permit on March 31, 2023

Please let me know if this letter meets the status report requirements of achieving system compliance.

Sincerely,

Enrique Chavez Jr.
Bluegrass Water Utility Operating Company, LLC
Program & Compliance Manager

ANDY BESHEAR
GOVERNOR

REBECCA W. GOODMAN
SECRETARY

ENERGY AND ENVIRONMENT CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION

ANTHONY R. HATTON
COMMISSIONER

300 SOWER BOULEVARD
FRANKFORT, KENTUCKY 40601

April 6, 2021

Mr. Jacob Freeman
1650 Des Peres Rd Ste 303
Saint Louis, MO 63131

Re: Golden Acres WWTF Improvements
Marshall County, Kentucky
Golden Acres WWTP
Activity ID #: 2935, APE20200004
Receiving Treatment Plant KPDES #: KY0044964

Dear Mr. Freeman:

We have reviewed the plans and specifications for the above referenced project. The plans include the addition of post aeration and replacement of chlorine disinfection with PAA. This is to advise that plans and specifications for the above referenced project are APPROVED with respect to sanitary features of design, as of this date with the requirements contained in the attached construction permit.

If we can be of any further assistance or should you wish to discuss this correspondence, please do not hesitate to contact Mr. Mohammed Mohiuddin at 502-782-7020.

Sincerely,

Terry Humphries, P.E.
Supervisor, Engineering Section
Water Infrastructure Branch
Division of Water

TH / MM
Enclosures
C: Marshall County Health Department
21 Design Group
Division of Plumbing
Paducah Regional Office

ANDY BESMEAR
GOVERNOR

REBECCA W. GOODMAN
SECRETARY

ENERGY AND ENVIRONMENT CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION

ANTHONY R. HATTON
COMMISSIONER

300 SOWER BOULEVARD
FRANKFORT, KENTUCKY 40601

February 12, 2021

Mr. Jacob Freeman
Bluegrass Water Utility Operating Company
1650 Des Peres Rd Ste 303
Saint Louis, MO 63131

Re: Golden Acres WWTF Improvements – Effluent Line Replacement
Marshall County, Kentucky
Golden Acres WWTP
Activity ID #: 2935, APE20200003
Receiving Treatment Plant KPDES #: KY0044164

Dear Mr. Freeman:

We have reviewed the plans and specifications for the above referenced project. The plans include replacing the existing 4-inch effluent gravity sewer with 311 feet of 10-inch PVC effluent sewer pipe. This is to advise that plans and specifications for the above referenced project are APPROVED with respect to sanitary features of design, as of this date with the requirements contained in the attached construction permit.

If we can be of any further assistance or should you wish to discuss this correspondence, please do not hesitate to contact Mr. Mohammed Mohiuddin at 502-782-7020.

Sincerely,

Terry Humphries, P.E.
Supervisor, Engineering Section
Water Infrastructure Branch
Division of Water

TH / MM
Enclosures
C: Marshall County Health Department
21 Design Group
Division of Plumbing
Paducah Regional Office

BLUEGRASS WATER
Utility Operating Company
A CSWR Managed Utility

July 29, 2020

Michael Kroeger (CC. Wesley Dement)
Kentucky Department for Environmental Protection
Division of Enforcement
300 Sower Blvd., 3rd Floor
Frankfort, KY 40601

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

Corrective Action Plan Revision:

I am pleased to submit this update to the Corrective Action Plan for the Great Oaks WWTF approved by EEC/DEP on 2/17/2020. The scope of the original CAP was completed within the projected schedule of the CAP. Triage and repair work has been completed and the main aeration plant is in better shape than it was at acquisition. The aeration system has had many parts repaired and/or replaced where they had been allowed to fall not disrepair by previous ownership. The influent line had been damaged and abandoned in favor of flex pipes. The influent lift station was repaired, and the proper influent line repaired and brought back into use. Steel walkways, handrails, and tanks have been sanded, patched, and painted to halt deterioration. Solids have been removed from the plant and it was discovered that the previous ownership had made a practice of dumping sections of piping and other materials into the clarifier. Many pipes, several cell phones and radios, and other debris were removed from the clarifier, restoring proper function. It was found that the damaged steel tank was allowing the digestor to leak into the contact chamber, resulting in increased BOD, TSS, and ineffective disinfection. The digestor has been removed from service as a result. Effluent quality has improved significantly with occasional exceedances of BOD and TRC; performance is being optimized. At acquisition, the effluent was an opaque grey color, and since our improvements the effluent is now very clear. The facility still struggles during rain events, and with the leak in the existing digestor and having had to remove it from service, the facility struggles to handle solids without regular solids removal.

Per the original CAP, our evaluation following triage improvements has determined that the facility does require a construction permit to complete improvements. A construction permit has been submitted to install a new digestor and wet weather storage basin. The construction permit has been issued and we have begun to order parts and materials. We believe that work will proceed fairly quickly expect to complete the improvements at Great Oaks by February 18, 2022. Following the improvements included in the construction permit the facility should be able to consistently comply with permitted limits.

Sincerely,

JON MEANY
Utility Engineer

(314) 380-8537 Ext. 215
(314) 482-0342
(314) 736-4759
jmeany@cswrgroup.com
1650 Des Peres Rd., Suite 303,
Des Peres, MO 63131

December 26, 2019

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

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

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

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

1. Causes of the Effluent Violations

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

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

2. System Evaluation and Corrective Actions

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

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

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

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

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

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

3. Project Milestones

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

Sincerely,

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

ANDY BESHEAR
GOVERNOR

REBECCA W. GOODMAN
SECRETARY

ENERGY AND ENVIRONMENT CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION

ANTHONY R. HATTON
COMMISSIONER

300 SOWER BOULEVARD
FRANKFORT, KENTUCKY 40601

February 11, 2021

Jacob Freeman
1650 Des Peres Rd Ste 303
Saint Louis, MO 63131

Re: Great Oaks WW Facility Improvements
McCracken County, Kentucky
Great Oaks WWTP
Activity ID: 3041, APE20200001
Receiving Treatment Plant KPDES #: KY0080845

Dear Jacob Freeman:

We have reviewed the plans and specifications for the above referenced project. The plans include the construction of two aerobic digesters, two digester blowers and controls, diffusers, modifications to the existing influent pump station discharge piping, modifications to the existing return activated sludge piping, appurtenant piping, valves, metal fabrications, protective coatings, electrical improvements, fencing improvements, concrete pads for the tank additions, and other work as shown and as described. This is to advise that plans and specifications for the above referenced project are APPROVED with respect to sanitary features of design, as of this date with the requirements contained in the attached construction permit.

If we can be of any further assistance or should you wish to discuss this correspondence, please do not hesitate to contact Mollye Malone at 502-782-0148.

Sincerely,

Terry Humphries, P.E.
Supervisor, Engineering Section
Water Infrastructure Branch
Division of Water

TH / MM
Enclosures
c: McCracken County Health Department
21 Design Group
Division of Plumbing
Great Oaks WWTP

NIXIE 631 4C 1 2211/19/20

RETURN TO SENDER
NO SUCH STREET
UNABLE TO FORWARD

BC: 40601657100 *1116-02769-19-24

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ENTERED

Great Oaks WWTP
Josiah Cox
500 Northwest Plaza Dr Ste 500

Saint Ann, MO 63074

FWD

DEC - 3 2020

[redacted]

AI:3041
DP

Additional Flow to WWTP	0 GPD	
Approval Date	1/12/2021	
1st NOD Response Description:	12/30/2020 1/11/2021	
2nd NOD Response Description:		
3rd NOD Response Description		
4th NOD Response Description		

Required Item	Check	Notes
Admin: Construction Application submitted.	x	
Admin: Number of plans submitted.	x	
Admin: Fee submitted.	x	
Plans signed, dated and stamped by professional engineer.	x	
Admin: The application indicates who will inspect and certify the project.	N/A	
Admin: An estimate for the cost of the project is included.	x	
A copy of a 7.5 minute topographic map with the project identified has been provided.	x	
Admin:An estimate for avg. daily flow added by the project and the estimate basis has been provided.	x	
A closure plan is provided.	N/A	
Application is signed by the appropriate person.	x	
Plans are accompanied by engineering calculations for the understanding of basis and design.	x	
Does any proposed bypass or overflow structure have specific approval in writing.	N/A	
Facility is not on sanction list, or sewer sanction exemption request has been approved.	x	
If straight pipes eliminated, reviewer has documented.	N/A	
Facilities are designed in accordance with Ten States Standards or other acceptable basis.	x	
Admin: The application includes the applicant's name and address.	x	
Admin: The application includes the design engineer's name and address.	x	
Admin: Plans and Specifications Review Checklists are included for MCDS projects.	N/A	
Site Certificate forms are included for grant or loan projects.	N/A	
Detailed Project Performance standards are included for grant projects.	N/A	
A Preliminary Plan of Operation is included for grant or loan projects.	N/A	
A preliminary submittal was previously approved.	N/A	

A copy of a 7.5 minute topographic map with the WWTP, discharge and service area is provided.	x	
A letter from the regional planning authority that project is compatible has been submitted.	x	
A demonstration that the proposed users cannot be served by a regional facility has been submitted.	N/A	
A demonstration that the connection to a regional facility is not available has been submitted.	N/A	
The applicant provided a 20 year present worth cost analysis of connection alternatives.	N/A	
WWTP design values for avg. and peak daily Q, peak hourly Q, influent BOD, SS, NH3-N submitted.	x	
If a WWTP is eliminated, the applicant knows he has 30 days to send a No discharge certification.	N/A	
The discharge is to a blue line stream.	N/A	
A copy of the plat or survey with the property boundaries, wwtp and dwellings has been submitted.	x	
Applicant submitted a copy of sludge management plan.	x	
The applicant identified laboratory services for self-monitoring and process control.	x	
The applicant submitted a schematic drawing and a detailed explanation of the operation.	x	
The applicant demonstrated how facility complies with reliability requirements.	x	
The applicant submitted the design criteria used to size the unit processes.	x	
Facility does not discharge into well head protection area or within 5 miles of water intake.	x	
Applicant provided a groundwater tracer study, if WWTP discharges into a sinkhole or sinking stream.	N/A	
Site survey indicates proposed site is acceptable.	N/A	
Facility is not located within 200 feet of a dwelling.	N/A	
The facility has a flow measuring device with an accuracy of ten (10) percent.	x	

The facility is large and contains an indicating, recording, and totalizing flow measuring device.	x	
The flow measuring devices meets the requirements of Section 12.	x	

BLUEGRASS WATER
Utility Operating Company
A CSWR Managed Utility

October 21, 2021

Nicholas Fields
Kentucky Department of Environmental Protection
Division of Enforcement
300 Sower Blvd., 3rd Floor
Frankfort, KY 40601

Bluegrass Water Utility Operating Company, LLC
Herington Haven WWTP
KYPDES Permit No. KY0053431
Agency No. 1469

Corrective Action Plan

In light of the Herrington WWTP's failure to meet permitted limits, Bluegrass Water submits the following corrective action plan.

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

1. Causes of Effluent Violations
   - Ammonia
   - Total Suspended Solids (TSS)
   - Carbonaceous Biological Oxygen Demand (CBOD)
   - E. Coli

A review was performed of EPA's Echo compliance website which lists violations. The Woodland Crossing WWTF has been in "Significant noncompliance" for all of the last 12 quarters with numerous effluent exceedances as well as notices for improper maintenance and operations of the facility. The package plant portion of the facility has not been maintained by the previous ownership and is severely rusted and structurally unsound. Several electrical safety concerns exist, the return activated sludge piping has fallen in the basin, and other piping within the plant is constructed of PVC which can degrade in sunlight. The raw sewage pumps and the blowers are reaching the end of their useful lives and are not likely producing the pumping rate or air supply rate they were designed to produce.

The facility has aged and the existing blowers are in need of replacement.
The system receives close to the average daily flow capacity of the facility at this time, and it receives more peak flow than the clarifier is designed to handle when used purely as an activated sludge system.
The facility does not include aerobic digestion or sludge storage, so operationally it's difficult to maintain desired range of biomass in the aeration tanks.

The existing system does not have effective means of chlorine addition at this time. The flow meter does not function properly, and the existing contact tank is installed off of the property and in a flood zone.

2. System Evaluation and Corrective Actions

The improvements will include the addition of a moving bed biological reactor (cage with diffusers and media), the addition of an aerobic digester, the addition of a of a residential grinder pump station (to convey waste activated sludge to the new digester), the addition of a new peroxyacetic acid storage and feed system, the addition of a Mission monitoring system, and the relocation of the effluent V-notch weir and post-aeration basin onto the Owner's property.

The improvements will allow the mixed liquor to be operated at a lower concentration range to avoid loss of solids during wet weather, and the improvements will allow the operators to maintain mixed liquor in the desired range by adding sludge storage / aerobic digestion facilities. The improvements will also allow the disinfection system to meet effluent objectives without violating total residual chlorine limits. In addition, the Mission monitoring system and properly installed flow meter will allow operations to continuously monitor flows and alarm conditions.

3. Project Milestones

a. Continue monitoring performance of facility (June 30, 2023)
b. Submit construction permit application for major modifications (January 15, 2022)
c. Procure equipment (May 15, 2022)
d. Receive construction permit (August 30, 2022)
e. Complete construction (June 30, 2023)

Sincerely,

ENRIQUE CHAVEZ JR.
Utility Project Manager

(314) 380-8043
(314) 437-5714
(314) 736-4743
echavez@cswrgroup.com
1650 Des Peres Rd., Suite 303
Des Peres, MO 63131
centralstateswaterresources.com

AI 14609

HERRINGTON HAVEN WASTEWATER CO., INC.

P. O. BOX 546

LANCASTER, KY 40444

April 13,2021

Michael B Kroeger, Assistant Director

REF: NOV, 2-19-21

Issue- Phosphorus Limits

Response- This has been and ongoing problem since it was placed on permit. I have been using aluminum sulfate however the hand feeding method has not been effective not knowing amount and proper amount to feed.

During winter pool 728 the effluent from plant does not enter the water on Dix River unless there is a highwater event. The river is approximately 200 feet from discharge point. This occurs from the end of October thru March. The effluent is absorbed into the ground. Attached is a photo to illustrate this, highlighted area of absorption.

On February 23, 2021 the plant and permit were transferred to Bluegrass Water, it is my understanding they will rehab this plant including mechanical feeder.

Respectfully

Mervin Price

Mervin Price

DP

ANDY BESHEAR
GOVERNOR

REBECCA W. GOODMAN
SECRETARY

ENERGY AND ENVIRONMENT CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION

ANTHONY R. HATTON
COMMISSIONER

300 SOWER BOULEVARD
FRANKFORT, KENTUCKY 40601
TELEPHONE: 502-564-2150
TELEFAX: 502-564-4245

September 28, 2022

Josiah Cox
1650 Des Peres Rd Ste 303
Saint Louis, MO 63131

Re: Herrington Haven WWTP System Upgrades
Garrard County, Kentucky
Herrington Haven Subd
Activity ID #: 1469, APE20220001
Receiving Treatment Plant KPDES #: KY0053431

Dear Mr. Cox:

We have reviewed the plans and specifications for the above referenced project. The plans WWTP system upgrades include an IFAS Cage (4 ft. x 6 ft. x 10 ft.), 625 gal. aerobic digestor tank, new blowers and disinfection conversion to peracetic acid (PAA) (55-gallon PAA tank with 132-gallon secondary containment). This is to advise that plans and specifications for the above referenced project are APPROVED with respect to sanitary features of design, as of this date with the requirements contained in the attached construction permit. We understand that you have chosen to convert disinfection at the WWTP without first conducting a PAA trial to test disinfection efficacy.

If we can be of any further assistance or should you wish to discuss this correspondence, please do not hesitate to contact Michael Snyder at 502-782-1235.

Sincerely,

Terry Humphries, P.E.
Supervisor, Engineering Section
Water Infrastructure Branch
Division of Water

c: 21 Design Group
Division of Plumbing
Garrard County Health Department

ANDY BESHEAR
GOVERNOR

REBECCA W. GOODMAN
SECRETARY

ENERGY AND ENVIRONMENT CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION

ANTHONY R. HATTON
COMMISSIONER

300 SOWER BOULEVARD
FRANKFORT, KENTUCKY 40601
TELEPHONE: 502-564-2150
TELEFAX: 502-564-4245

September 28, 2022

Josiah Cox
1650 Des Peres Rd Ste 303
Saint Louis, MO 63131

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Garrard County, Kentucky
Herrington Haven Subd
Activity ID #: 1469, APE20220001
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Dear Mr. Cox:

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If we can be of any further assistance or should you wish to discuss this correspondence, please do not hesitate to contact Michael Snyder at 502-782-1235.

Sincerely,

Terry Humphries, P.E.
Supervisor, Engineering Section
Water Infrastructure Branch
Division of Water

c: 21 Design Group
Division of Plumbing
Garrard County Health Department

Form 1

KENTUCKY POLLUTION DISCHARGE ELIMINATION SYSTEM

Permit Application

Division of Water

NAME OF FACILITY: Brocklyn Utilities LLC	AGENCY USE ONLY
PERMIT NO.: KY0081299	COUNTY: Madison

This is an application to: (check one)

☐ Apply for a new permit.

☐ Apply for reissuance of expiring permit.

☑ Modify an existing permit.* (Give reason for modification under Section III)

A complete application consists of this form (Form 1), and one or more of the following: Form A, Form B, Form C, Form F, or Form SC.

I. FACILITY AND CONTACT INFORMATION

Name of business, municipality, company, etc. requesting permit: Bluegrass Water Utility Operating Company

Owner Name (and Title if applicable): Josiah Cox - President

Owner Mailing Address (Street, etc.): 1650 Des Peres Road, Suite 303

Owner City, State, Zip: St. Louis, MO 63131

Owner Telephone Number: (314) 736-4672

Owner Email Address: jcox@cswrgroup.com

Type of Ownership:	☐ Publicly Owned	☑ Privately Owned	☐ State Owned	☐ Both Publicly and Privately Owned	☐ Federally Owned

Contact Name and Title (if different): Same

Contact Mailing Address (if different): Same

Contact City, State, Zip (if different): Same

Contact Telephone Number (if different): Same

Contact Email Address (if different): Same

NetDMR Official Contact for Facility: Kaleb Stephens

NetDMR Official Contact Telephone Number: (715) 790-2559

NetDMR Official Contact Email Address: kstephens@cswrgroup.com

II. FACILITY LOCATION

Facility Location (street, road, highway, etc.): 142 Hager Ave

Facility City, State, Zip: Richmond, KY 40475

Facility Latitude (Decimal Degrees): 37.731389 deg N

Facility Longitude (Decimal Degrees): -84.342694 deg W

☑ Attach a site location map with the facility and outfalls clearly marked. Provide either an aerial map, topographic map, or other map that identifies the site location and significant features.

III. FACILITY DESCRIPTION	
Provide a brief description of activities, products, etc.: Sanitary waste treatment facility for Brocklyn Subdivision	
* Reason for modifying existing permit, if applicable: We are currently in the process of upgrading the plant	
Principal SIC Code and description: 4952 - Sewerage Systems	
Other SIC Codes: N/A	
IV. OPERATOR INFORMATION	
Treatment Plant Operator Name: Joe Arnold	
Operator Mailing Address (Street, etc.): 4714 Iron Works Road	
Operator City, State, Zip: Georgetown, KY 40324	
Operator Telephone Number: 502-715-7197	
Operator Email Address: joarnold1961@gmail.com	
Operator Certification Class: II	Operator Certification Number: 14466
V. ENVIRONMENTAL PERMITS/REGISTRATIONS FOR THIS FACILITY	
KPDES Permit Number: KY0081299	Issue Date of Current Permit: November 1, 2019
Expiration Date of Current Permit: October 31, 2024	Date of Original Permit Issuance: Unknown
☐ Other DOW Permits (list):	
☐ Sludge Disposal Permit Number:	
☐ Air Emission Source Control Permit Number:	
☐ Solid Waste or Special Waste Permit Number:	
☐ Hazardous Waste Registration or Permit Number:	
☐ Surface Mine or Underground Mine Permit Number:	
☐ Other (specify):	
VI. PERMIT FEE (See instructions)	
Select the type of permit being requested. See instructions for applicable fees and methods of payment. Additional information can be found in "General Instructions" at Water.Ky.Gov/Permitting/WastewaterDischarge	
☐ Major Industry	☐ Large Non-POTW
☐ Minor Industry	☐ Intermediate Non-POTW
☐ Non-Process Industry	☐ Small Non-POTW
☐ Surface Mining Operation	☐ 501(c)(3)
☐ Agriculture	☐ Exempt Publicly Owned Facility

☐ Total Amount Enclosed $	

IX. CERTIFICATION	
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	
PRINTED NAME AND TITLE: Josiah Cox - President	
SIGNATURE:	DATE: 08/04/2020
TELEPHONE NO. (314) 736-4672	EMAIL: jcox@cswrgroup.com

Return completed application form and attachments to:
Division of Water
Surface Water Permits Branch
300 Sower Boulevard, 3rd Floor
Frankfort, KY 40601

Direct questions to: Surface Water Permits Branch at (502) 564-3410.

Form SC

KENTUCKY POLLUTION DISCHARGE ELIMINATION SYSTEM

Permit Application

Division of Water

NAME OF FACILITY: Brocklyn Utilities LLC	AGENCY USE ONLY
PERMIT NO.: KY0081299	COUNTY: Madison

I. OUTFALL LOCATION

☑ For each outfall, list the latitude and longitude of its location to five decimal points.

OUTFALL NUMBER	LATITUDE In Decimal Degrees	LONGITUDE In Decimal Degrees	RECEIVING WATER (name)
001	37.731389	-84.342694	UT to Taylor Fork at milepost 3.0

II. FLOWS, SOURCES OF POLLUTION, AND TREATMENT TECHNOLOGIES

A. Attach a line drawing showing the water flow through the facility. Indicate sources of intake water, operations contributing wastewater to the effluent, and treatment units labeled to correspond to the more detailed descriptions in Item B.

B. For each outfall, provide a description of:
(1) operations contributing wastewater to the effluent;
(2) the average and/or design flow contributed by each operation; and
(3) the treatment received by the wastewater.

OUTFALL NUMBER	SOURCES OF WASTEWATER		TREATMENT DESCRIPTION (refer to Table SC-1 for description)
	Operations Contributing to Flow	Average / Design Flow (include units)	
001	100%	.019/0.40 MGD	3-E, 1-Y, 1-T, 3-I* (MBBR), 1-U, 3-L, 2-H, 5-A

III. FACILITY DISCHARGE

A. Check the appropriate boxes indicating the types of wastewater discharged.

☑ Domestic wastewater (60% or more sanitary sewage)

☐ Non-contact cooling water

☐ Filter backwash

☐ Other non-process wastewaters. Provide description:

B. Does discharge occur all year?

☑ Yes.

How many days per week does discharge occur? 7

What is the average duration of discharge? Specify hours or days. 24

☐ No.

C. Except for stormwater runoff, leaks, or spills, are any of the discharges intermittent or seasonal?

☐ Yes. If yes, provide description of approximate number, duration, and volume of seasonal or intermittent flows.

☑ No.

D. Provide the basis for design and sizing of the wastewater facility.

The documents attached to the construction permit application address this question in detail.

E. If the facility is a new discharger, what is the anticipated discharge date?

Treatment Plants Only to complete Section F & G.

F. Does all water used at facility (except for human consumption) flow to a treatment plant?

☑ Yes.

☐ No. If no, please describe.

G. What is the design capacity of the treatment system .040 MGD

IV. AREA SERVED BY WASTEWATER TREATMENT PLANT

NAME OF AREA OR COMMUNITY	ACTUAL POPULATION SERVED
Brocklyn Subdivision	150
Total Population Served	150

V. COOLING WATER ADDITIVES

Are cooling water additives used?

☐ Yes. In the table below, list each additive, its composition, concentration, and feed rate. Attach Safety Data Sheets for each.

☑ No

NAME OF ADDITIVE	COMPOSITION	CONCENTRATION	FEED RATE

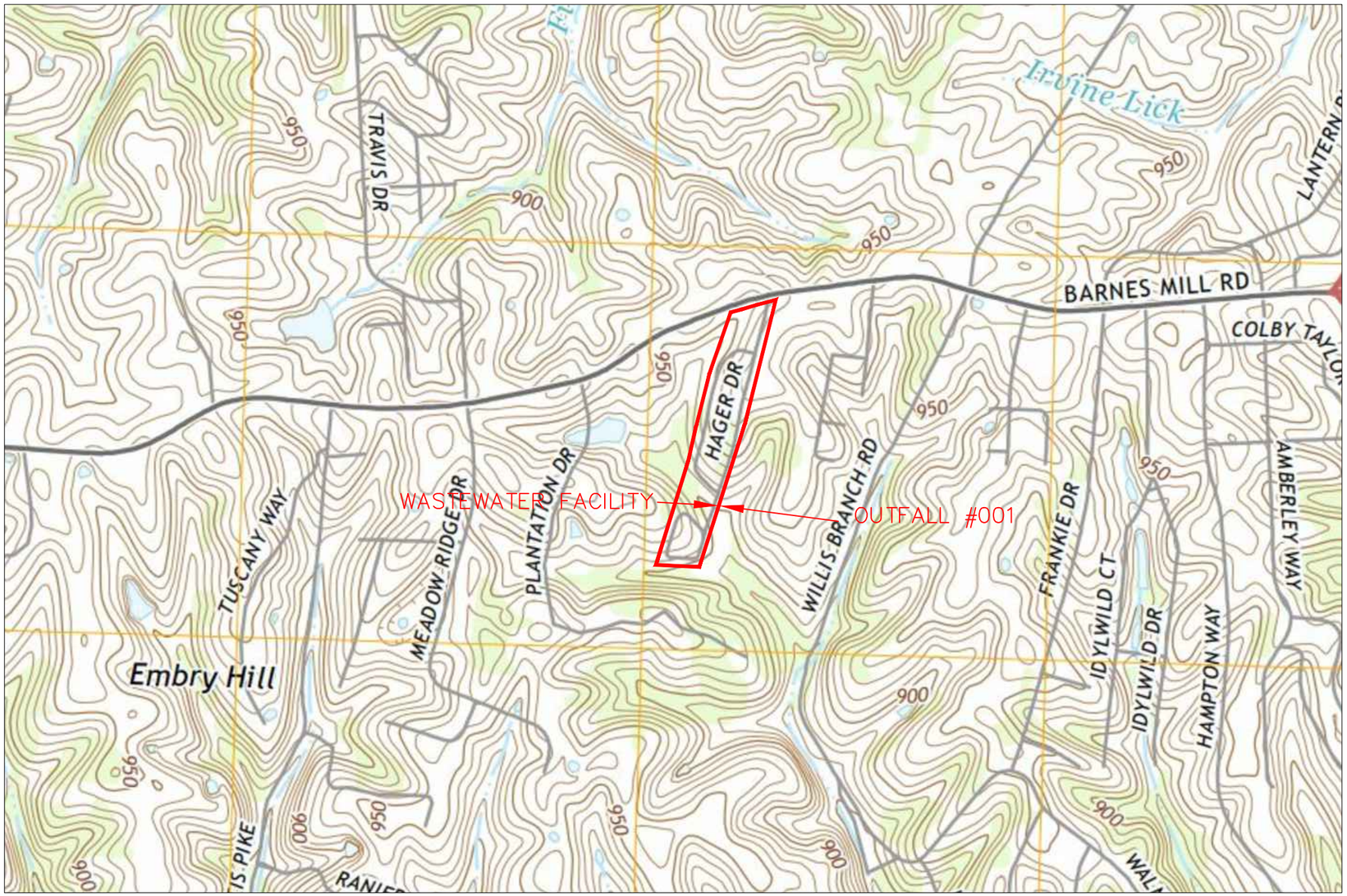
VI. EFFLUENT CHARACTERISTICS	OUTFALL NO: 001			
Complete Sections A, B, and C for each outfall.				
A. What is the frequency and duration of flow? Continuous				
B. In the first part of the table below, provide results of effluent analysis for each pollutant / parameter listed.				
C.				
POLLUTANT/PARAMETER	**UNITS**	**MAX DAILY VALUE**	**AVG DAILY VALUE**	**NUMBER OF SAMPLES**
☐BOD_5 or ☑$CBOD_5$	mg/l	11	11	1
Total Suspended Solids	mg/l	8	8	1
E.Coli	colonies/ 100 ml	291	291	1
Total Residual Chlorine	mg/l	<0.01	<0.01	1
Oil and Grease	mg/l	n/a	n/a	n/a
Chemical Oxygen Demand	mg/l	n/a	n/a	n/a
Total Organic Carbon	mg/l	n/a	n/a	n/a
Ammonia	mg/l	<0.2	<0.2	1
Discharge of Flow	MGD	0.0072	0.0072	1
pH	s.u.	7.14	7.14	1
Temperature (winter)	°F	68	68	1
Temperature (summer)	°F	n/a	n/a	n/a
METALS	**UNITS**	**AVG CONCENTRATION**		
☐ Antimony	µg/l	n/a		
☐ Arsenic	µg/l	n/a		
☐ Beryllium	µg/l	n/a		
☐ Cadmium	µg/l	n/a		
☐ Chromium	µg/l	n/a		
☐ Copper	µg/l	n/a		
☐ Lead	µg/l	n/a		
☐ Mercury	µg/l	n/a		
☐ Nickel	µg/l	n/a		
☐ Selenium	µg/l	n/a		
☐ Silver	µg/l	n/a		
☐ Thallium	µg/l	n/a		
☐ Zinc	µg/l	n/a		

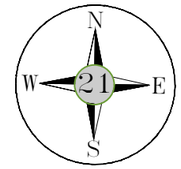
VII. CERTIFICATION	
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	
PRINTED NAME AND TITLE: Josiah Cox - President	
SIGNATURE: 	DATE: 08/04/2020
TELEPHONE NO. (314) 736-4672	EMAIL: jcox@cswrgroup.com

Return completed application form and attachments to:
Division of Water
Surface Water Permits Branch
300 Sower Boulevard, 3rd Floor
Frankfort, KY 40601

Direct questions to: Surface Water Permits Branch at (502) 564-3410.

USGS QUAD MAP
FOR BROCKLYN SUBDIVISION WWTF
RICHMOND, KY
(RICHMOND SOUTH QUAD MAP)





0 1000' 2000'

SCALE: 1" = 1000'

PRELIMINARY

THIS DRAWING IS FOR REVIEW ONLY AND SHALL NOT BE USED FOR CONSTRUCTION

21 DESIGN GROUP INC.

1351 Jefferson, Suite 301
Washington, MO 63090

mail@21designgroup.net
P: 636-432-5029

DESIGN CRITERIA:

PLANT INFLUENT FLOW	MBBR INFLUENT FLOW
Q_{ADF} = 40,000 GPD	140,000 GPD
Q_{PDF} = 160,000 GPD	140,000 GPD
Q_{PHF} = 240,000 GPD	200,000 GPD

INF. PS/EQ

DIMENSIONS: 10'X10'X9'
TOTAL VOLUME: 6,732 GAL.
HRT @ ADF: 4 HRS.
HRT @ PDF: 1.2 HRS
MIXING AIR: 20 SCFM/1,000 CF
P–111 – 30 GPM @ 20–FT TDH
P–112 – 110 GPM @ 20–FT TDH
P–113 – 110 GPM @ 20–FT TDH

MBBRS

DIMENSIONS: 8'X8'X12.17' (AVG WATER DEPTH)
TOTAL VOLUME: 17.478 GAL.
HRT @ADF: 10.5 HRS.
HRT @ PDF: 3.0 HRS
MEDIA FILL: 43%
TOTAL SURF AEREA: 13,894 M^2

CLARIFIERS:

DIMENSIONS: 10'X 20' X 12'–10"
SURFACE AREA: 200 SF
SOR @ PDF: 700 GPD/SF
SOR @ PHF: 1,000 GPD/SF
WEIR LENGTH: 20 FT.
WEIR OVERFLOW RATE: @ PHF: 10,000 GPD/FT.

CONTACT TANK/POST AERATION

DIMENSIONS: 10'X6'X8.83'
TOTAL VOLUME: 3,964 GAL.
HRT @ PDF: 41– MINUTES
(W/OUT INCLUDING EFFLUENT PIPE HRT.)

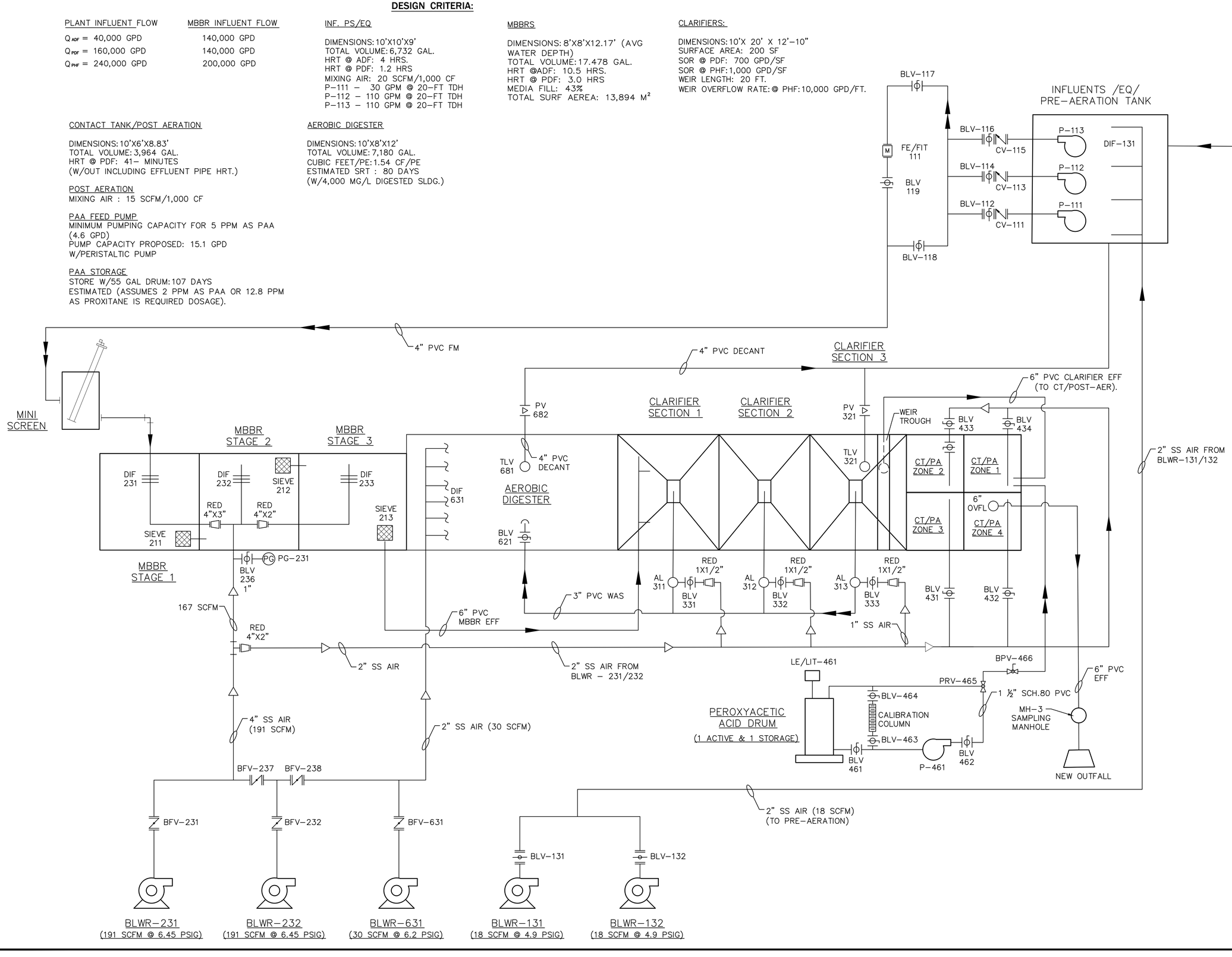
POST AERATION
MIXING AIR : 15 SCFM/1,000 CF

PAA FEED PUMP
MINIMUM PUMPING CAPACITY FOR 5 PPM AS PAA (4.6 GPD)
PUMP CAPACITY PROPOSED: 15.1 GPD
W/PERISTALTIC PUMP

PAA STORAGE
STORE W/55 GAL DRUM: 107 DAYS
ESTIMATED (ASSUMES 2 PPM AS PAA OR 12.8 PPM AS PROXITANE IS REQUIRED DOSAGE).

AEROBIC DIGESTER

DIMENSIONS: 10'X8'X12'
TOTAL VOLUME: 7,180 GAL.
CUBIC FEET/PE: 1.54 CF/PE
ESTIMATED SRT : 80 DAYS
(W/4,000 MG/L DIGESTED SLDG.)



#	DATE	REVISION	BY
A	07/30/2020	PERMIT SET	BT

21 DESIGN GROUP INC.
1351 Jefferson, Suite 301
Washington, MO 63090
mail@21designgroup.net
P: 636-432-5029

PROCESS FLOW DIAGRAM

BROCKLYN WWTF
HAGER DRIVE
RICHMOND, KY

ENGINEERING CERTIFICATE OF AUTHORITY NO. 4808
ENGINEERING LICENSE: BENJAMIN J. KUENZEL, PE33716

STATE OF KENTUCKY · BENJAMIN J. KUENZEL · 33716 · LICENSED PROFESSIONAL ENGINEER

SEAL DATE:	07/30/2020
DRAWN BY:	MZ
PROJ NUMBER:	0542-19
DATE:	07/30/2020
DRAWING NO:	P2

Form 1	KENTUCKY POLLUTION DISCHARGE ELIMINATION SYSTEM Permit Application	Division of Water

NAME OF FACILITY: Timberland Wastewater Facility	AGENCY USE ONLY
PERMIT NO.: KY0083755	COUNTY: McCracken

This is an application to: (check one)

☐ Apply for a new permit.

☐ Apply for reissuance of expiring permit.

☑ Modify an existing permit.* (Give reason for modification under Section III)

A complete application consists of this form (Form 1), and one or more of the following: Form A, Form B, Form C, Form F, or Form SC.

I. FACILITY AND CONTACT INFORMATION

Name of business, municipality, company, etc. requesting permit: Bluegrass Water Utility Operating Company

Owner Name (and Title if applicable): Josiah Cox - President

Owner Mailing Address (Street, etc.): 1650 Des Peres Road, Suite 303

Owner City, State, Zip: St. Louis, MO 63131

Owner Telephone Number: (314) 736-4672

Owner Email Address: jcox@cswrgroup.com

Type of Ownership:	☐ Publicly Owned	☑ Privately Owned	☐ State Owned	☐ Both Publicly and Privately Owned	☐ Federally Owned

Contact Name and Title (if different):

Contact Mailing Address (if different):

Contact City, State, Zip (if different):

Contact Telephone Number (if different):

Contact Email Address (if different):

NetDMR Official Contact for Facility: Kaleb Stephens

NetDMR Official Contact Telephone Number: (715) 790-2559

NetDMR Official Contact Email Address: kstephens@cswrgroup.com

II. FACILITY LOCATION

Facility Location (street, road, highway, etc.): Timberland Drive

Facility City, State, Zip: Paducah, KY 42086

Facility Latitude (Decimal Degrees): 27.07938

Facility Longitude (Decimal Degrees): -88.77579

☑ Attach a site location map with the facility and outfalls clearly marked. Provide either an aerial map, topographic map, or other map that identifies the site location and significant features.

III. FACILITY DESCRIPTION	
Provide a brief description of activities, products, etc.: Sanitary waste treatment facility for Timberland Subdivision	
* Reason for modifying existing permit, if applicable: We are currently in the process of upgrading the plant.	
Principal SIC Code and description: 4952 - Sewerage Systems	
Other SIC Codes: N/A	
IV. OPERATOR INFORMATION	
Treatment Plant Operator Name: Stephen Roach	
Operator Mailing Address (Street, etc.): 5625 Warrendale Drive	
Operator City, State, Zip: Paducah, KY 42003	
Operator Telephone Number: 502-744-1856	
Operator Email Address: sroach@midwestwaterop.com	
Operator Certification Class: IV	Operator Certification Number: 63051
V. ENVIRONMENTAL PERMITS/REGISTRATIONS FOR THIS FACILITY	
KPDES Permit Number: KY0083755	Issue Date of Current Permit: February 1, 2020
Expiration Date of Current Permit: January 31, 2025	Date of Original Permit Issuance: Unknown
☐ Other DOW Permits (list):	
☐ Sludge Disposal Permit Number:	
☐ Air Emission Source Control Permit Number:	
☐ Solid Waste or Special Waste Permit Number:	
☐ Hazardous Waste Registration or Permit Number:	
☐ Surface Mine or Underground Mine Permit Number:	
☐ Other (specify):	
VI. PERMIT FEE (See instructions)	
Select the type of permit being requested. See instructions for applicable fees and methods of payment. Additional information can be found in "General Instructions" at Water.Ky.Gov/Permitting/WastewaterDischarge	
☐ Major Industry	☐ Large Non-POTW
☐ Minor Industry	☐ Intermediate Non-POTW
☐ Non-Process Industry	☐ Small Non-POTW
☐ Surface Mining Operation	☐ 501(c)(3)

☐ Total Amount Enclosed $	

IX. CERTIFICATION	
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	
PRINTED NAME AND TITLE: Josiah Cox - President	
SIGNATURE:	DATE: 09/28/2020
TELEPHONE NO. (314) 736-4672	EMAIL: jcox@cswrgroup.com

Return completed application form and attachments to:
Division of Water
Surface Water Permits Branch
300 Sower Boulevard, 3rd Floor
Frankfort, KY 40601

Direct questions to: Surface Water Permits Branch at (502) 564-3410.

Form SC	KENTUCKY POLLUTION DISCHARGE ELIMINATION SYSTEM Permit Application	Division of Water

NAME OF FACILITY: Timberland Wastewater Facility	AGENCY USE ONLY
PERMIT NO.: KY0083755	COUNTY: McCracken

I. OUTFALL LOCATION

☐ For each outfall, list the latitude and longitude of its location to five decimal points.

OUTFALL NUMBER	LATITUDE In Decimal Degrees	LONGITUDE In Decimal Degrees	RECEIVING WATER (name)
001	37.07917	-88.78111	West Fork Massac Creek

II. FLOWS, SOURCES OF POLLUTION, AND TREATMENT TECHNOLOGIES

A. Attach a line drawing showing the water flow through the facility. Indicate sources of intake water, operations contributing wastewater to the effluent, and treatment units labeled to correspond to the more detailed descriptions in Item B.

B. For each outfall, provide a description of:
(1) operations contributing wastewater to the effluent;
(2) the average and/or design flow contributed by each operation; and
(3) the treatment received by the wastewater.

OUTFALL NUMBER	SOURCES OF WASTEWATER		TREATMENT DESCRIPTION (refer to Table SC-1 for description)
	Operations Contributing to Flow	Average / Design Flow (include units)	
001	100%	.0071/.0025 MGD	1-Y, 3-I (MBBR), 1-U, 2-F, 2-E, 3-L, 5-A, 4-A, 3-P

III. FACILITY DISCHARGE

A. Check the appropriate boxes indicating the types of wastewater discharged.

☑ Domestic wastewater (60% or more sanitary sewage)

☐ Non-contact cooling water

☐ Filter backwash

☐ Other non-process wastewaters. Provide description:

B. Does discharge occur all year?

☑ Yes.

How many days per week does discharge occur? 7

What is the average duration of discharge? Specify hours or days. 24

☐ No.

C. Except for stormwater runoff, leaks, or spills, are any of the discharges intermittent or seasonal?

☐ Yes. If yes, provide description of approximate number, duration, and volume of seasonal or intermittent flows.

☑ No.

D. Provide the basis for design and sizing of the wastewater facility.
The documents attached to the construction permit application address this question in detail.

E. If the facility is a new discharger, what is the anticipated discharge date?

Treatment Plants Only to complete Section F & G.

F. Does all water used at facility (except for human consumption) flow to a treatment plant?

☑ Yes.

☐ No. If no, please describe.

G. What is the design capacity of the treatment system .025 MGD

IV. AREA SERVED BY WASTEWATER TREATMENT PLANT

NAME OF AREA OR COMMUNITY	ACTUAL POPULATION SERVED
Timberland Subdivision	210
Total Population Served	210

V. COOLING WATER ADDITIVES

Are cooling water additives used?

☐ Yes. In the table below, list each additive, its composition, concentration, and feed rate. Attach Safety Data Sheets for each.

☑ No

NAME OF ADDITIVE	COMPOSITION	CONCENTRATION	FEED RATE

VI. EFFLUENT CHARACTERISTICS	OUTFALL NO: 001
Complete Sections A, B, and C for each outfall.	
A. What is the frequency and duration of flow? Continuous	
B. In the first part of the table below, provide results of effluent analysis for each pollutant / parameter listed.	
C. Samples below are from the Summer of 2020	

POLLUTANT/PARAMETER	UNITS	MAX DAILY VALUE	AVG DAILY VALUE	NUMBER OF SAMPLES
☐BOD_5 or ☑$CBOD_5$	mg/l	11	8.33	4
Total Suspended Solids	mg/l	29	20.2	5
E.Coli	colonies/ 100 ml	2419.6 with outliers 7.5 without	969.94 with outliers 3.5 without	5 with outliers 3 without
Total Residual Chlorine	mg/l	2.2	.91	5
Oil and Grease	mg/l	N/A	N/A	N/A
Chemical Oxygen Demand	mg/l	N/A	N/A	N/A
Total Organic Carbon	mg/l	N/A	N/A	N/A
Ammonia	mg/l	18	16.5	4
Discharge of Flow	MGD	N/A	N/A	N/A
pH	s.u.	7.79	7.44	5
Temperature (winter)	°C	N/A	N/A	N/A
Temperature (summer)	°C	28.6	26.44	5

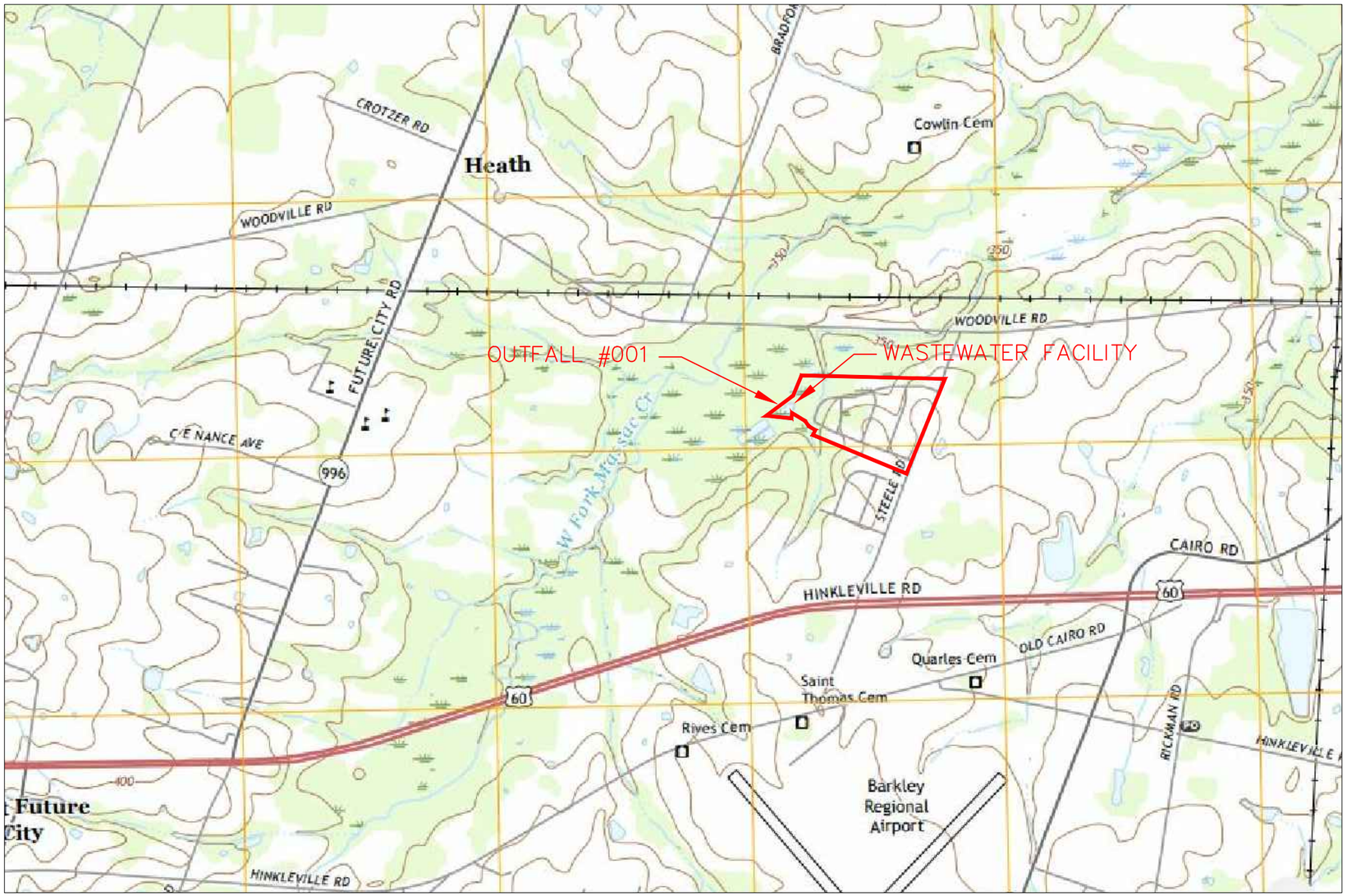
METALS	UNITS	AVG CONCENTRATION
☐ Antimony	µg/l	
☐ Arsenic	µg/l	
☐ Beryllium	µg/l	
☐ Cadmium	µg/l	
☐ Chromium	µg/l	
☐ Copper	µg/l	
☐ Lead	µg/l	
☐ Mercury	µg/l	
☐ Nickel	µg/l	
☐ Selenium	µg/l	
☐ Silver	µg/l	
☐ Thallium	µg/l	
☐ Zinc	µg/l	

VII. CERTIFICATION	
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	
PRINTED NAME AND TITLE: Josiah Cox - President	
SIGNATURE: 	DATE: 09/28/2020
TELEPHONE NO. (314) 736-4672	EMAIL: jcox@cswrgroup.com

Return completed application form and attachments to:
Division of Water
Surface Water Permits Branch
300 Sower Boulevard, 3rd Floor
Frankfort, KY 40601

Direct questions to: Surface Water Permits Branch at (502) 564-3410.

USGS QUAD MAP
FOR TIMBERLAND SUBDIVISION WWTF
PADUCAH, KY
(HEATH QUAD MAP)



N
W 21 E
S

0 1000' 2000'

SCALE: 1" = 1000'

PRELIMINARY

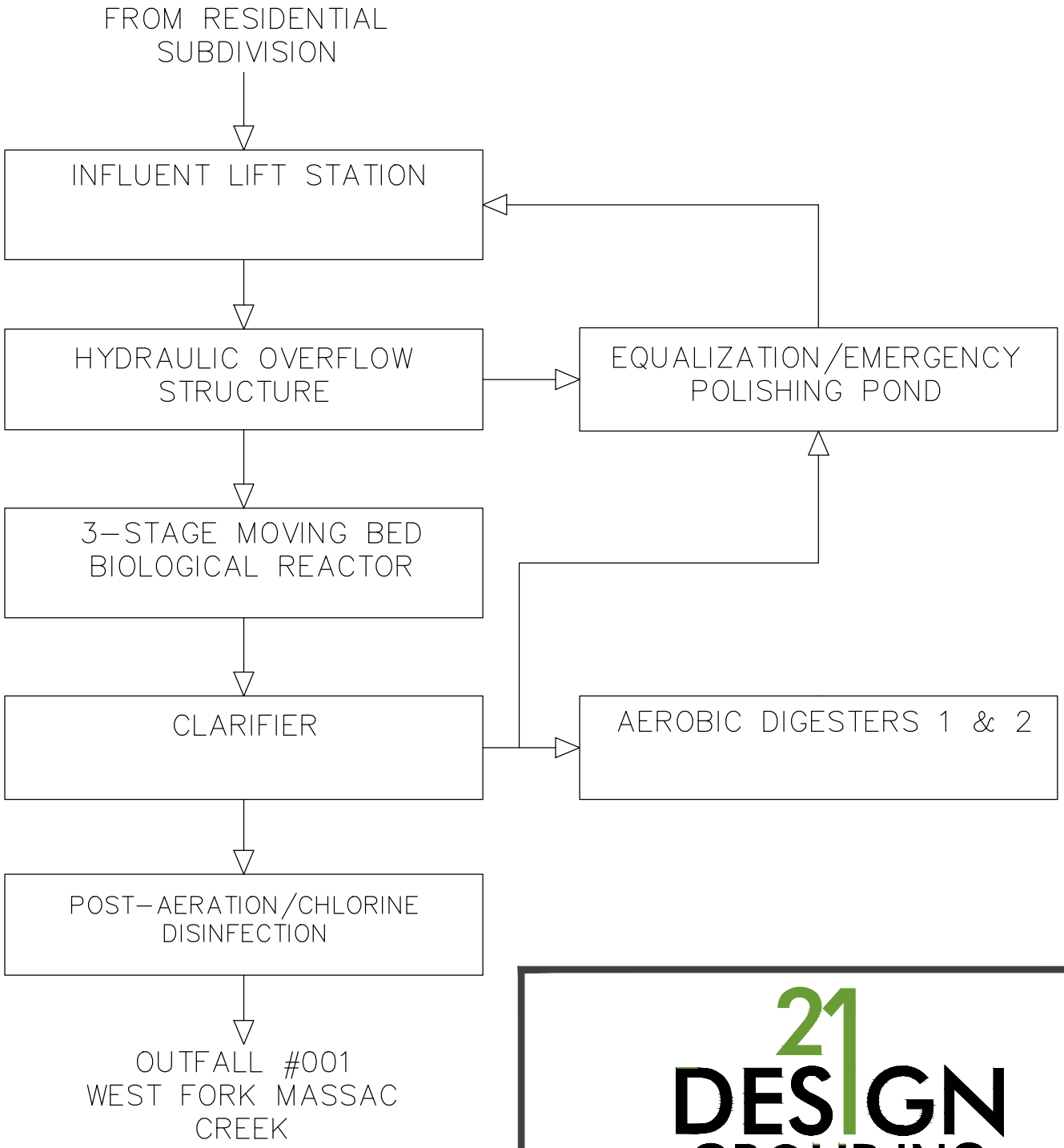
THIS DRAWING IS FOR REVIEW ONLY AND SHALL NOT BE USED FOR CONSTRUCTION

21 DESIGN GROUP INC.

1351 Jefferson, Suite 301
Washington, MO 63090

mail@21designgroup.net
P: 636-432-5029

WASTEWATER FACILITY PROCESS FLOW DIAGRAM FOR TIMBERLAND WWTF PADUCAH, KENTUCKY



21 DESIGN GROUP INC.

1351 Jefferson, Suite 301
Washington, MO 63090
mail@21designgroup.net
P: 636-432-5029

Form TPR	TRANSFER OF PERMIT REQUEST Kentucky Pollutant Discharge Elimination System (KPDES)	Division of Water

NAME OF FACILITY: Golden Acres Subdivision	AGENCY USE ONLY	AI: 2935
PERMIT NO.: KY0044164	COUNTY: Marshall	

I. CURRENT PERMITTEE INFORMATION (Existing permit holder)

Name of Current Permittee: Marshall County Environmental Services

Facility Location Address (Street, road, etc.): US Hwy 68 Golden Acres Loop

Facility City, State, Zip Code: Calvert City, KY, 42029

II. PROPOSED OWNER OR OPERATOR INFORMATION

Name of Proposed Permittee and Official Title: Josiah Cox, President

NEW Name of Facility (if applicable): Golden Acres WWTF

NEW Name of Company (if applicable): Bluegrass Water Utility Operating Company, LLC

Proposed Permittee Mailing Address: 500 Northwest Plaza Dr.

Proposed Permittee City, State, Zip Code: St. Ann, MO, 63074

Proposed Permittee Telephone Number: (314)-736-4672

Proposed Permittee Email Address: jcox@cswrgroup.com

NetDMR Official Contact for Proposed Permittee: Kaleb Stephens

NetDMR Official Contact Telephone Number: (715)-790-2559

NetDMR Official Contact Email Address: kstephens@cswrgroup.com

III. NOTIFICATION BY CURRENT PERMITTEE

☐ Effective Date of Transfer of Permit Ownership:

☐ *Attach a signed copy of the contractual written agreement between the existing permittee and new proposed permittee containing a specific date for transfer of the permit responsibility, coverage, and liability between them.*

PRINTED NAME AND TITLE:

SIGNATURE: | DATE:

IV. ACKNOWLEDGEMENT BY NEW PERMITTEE

I hereby certify that I agree to the transfer of the permit, and I will assume ownership and all responsibility for meeting the permit conditions relating to water quality at the permitted facility listed above on the effective date of transfer indicated.

PRINTED NAME AND TITLE: JOSIAH COX - PRESIDENT

SIGNATURE: | DATE: 9/30/19

Return completed application form and attachments to: Division of Water, Surface Water Permits Branch, 300 Sower Boulevard, 3rd Floor, Frankfort, KY 40601. Direct questions to: Surface Water Permits Branch at (502) 564-3410.

MATTHEW G. BEVIN
GOVERNOR

CHARLES G. SNAVELY
SECRETARY

ENERGY AND ENVIRONMENT CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION

ANTHONY R. HATTON
COMMISSIONER

300 SOWER BOULEVARD
FRANKFORT, KENTUCKY 40601

October 1, 2019

Bluegrass Water Utility Operating Company LLC
Golden Acres WWTF
500 Northwest Plaza Dr Ste 500
Saint Ann, MO 63074

RE: **Change of Ownership**
Agency Interest # 2935
KPDES Permit #: KY0044164
Location: Marshall County, Kentucky

Dear Mr. Cox:

The Division of Water received your request for modification of the Kentucky Pollutant Discharge Elimination System (KPDES) coverage for the above-referenced facility. The KPDES permit has been modified to reflect the change of ownership.

If you have any questions, please contact me at (502) 564-3410, or via e-mail at Joy.Haden@ky.gov.

Sincerely,

Joy Haden
Surface Water Permits Branch
Division of Water

JH: jh

C: ARM

KPDES

KENTUCKY POLLUTANT DISCHARGE ELIMINATION SYSTEM

PERMIT TRANSFER

TRANSFER OF

AUTHORIZATION TO DISCHARGE UNDER THE
KENTUCKY POLLUTANT DISCHARGE ELIMINATION SYSTEM

PERMIT NO.: KY0044164

AGENCY INTEREST NO.: 2935

Pursuant to Authority in KRS 224, this permit for:

New Facility Name:	Golden Acres WWT
Facility Address:	US 68 Sharpe, Marshall County, Kentucky
Prior Owner:	Marshall County Environmental Services
Address:	US Hwy 68 Golden Acres Loop Calvert City, KY 42029

is hereby transferred to:

New Owner:	Bluegrass Water Utility Operating Company LLC
Mailing Address:	500 Northwest Plaza Dr Ste 500 Saint Ann, MO 63074

in accordance with effluent limitations, monitoring requirements and other conditions set forth in this permit.

The effective date of this permit transfer is October 1, 2019.

Sara J Anderson

October 1, 2019

Date Signed

Peter T. Goodmann, Director

Division of Water

Golden Acres Wastewater Facility Effluent Sewer Improvements - KY0044164

Design Considerations – Construction Permit Application

Date: September 28, 2020

Introduction

The purpose of this document is to specifically address the criteria used for the design of the Golden Acres Wastewater Facility Effluent Sewer Improvements , and to describe pertinent information required in Section IV - "Design Considerations" of the Construction Permit Application for said improvements.

E. Design Criteria

The design improvements proposed for this project simply includes the replacement of the existing gravity sewer from the existing package plant effluent to the proposed effluent discharge location (roughly 42 feet from the existing discharge location).

The existing 4" gravity sewer has proven to be inadequate given the existing pipe slope conditions. The existing profile of the sewer has minimal slope overall, and it is believed that there may be a flat segment in the sewer profile. The inadequate effluent sewer has resulted in overflows of the existing plant, impacting performance and reliability in wet weather.

CSWR has considered the addition of either 8" or 10" PVC gravity sewer. The use of 8" at minimum slope would result in the sewer being in the flow line of the creek at high water levels; the use of a 10" at minimum slope (0.28%) allows the profile to stay above the creek flow line. For that reason, a 10" PVC SDR-35 effluent sewer is proposed.

The Golden Acres wastewater facility is rated for 25,000 gpd and it is believe that peak flows are in excess of 125,000 gpd during wet weather (or 87 gpm). A 10" sewer at minimum slope provides greater than 2 feet per second when flowing full, or greater than 489 gpm, so the use of a 10" sewer provides significantly greater capacity than what is required in this application.

According to the FEMA Firmette panel 21157C0055E, the discharge location is not in the vicinity of a flood zone.

FORM W-1

Commonwealth of Kentucky
Energy and Environment Cabinet
Division of Water

CONSTRUCTION PERMIT APPLICATION for WASTEWATER TREATMENT PLANT

See the INSTRUCTIONS for more information about selected portions of this application.
Questions on completing this application? Contact the Water Infrastructure Branch at 502/564-3410 or visit our website at http://water.ky.gov for more information.

I. CONSTRUCTION PROJECT INFORMATION

Project Name: Golden Acres WWTF Improvements

Project City/County: Calvert City, Marshall County

Name of WWTP: Golden Acres Subdivision WWTF

KPDES Number of WWTP, if known (for modifications to an existing plant): **KY** 0044164

Estimated cost of WWTP improvements and sewer line extension: $ 184,000.00

Project is: ☐ **WWTP Only** ☐ **WWTP with sewer lines**

☒ **Minor Modification to WWTP (Complete only Sections I, II, IV A, B, C, E3, H1, VII, VIII)**

II. APPLICANT INFORMATION

Applicant (Entity paying for construction): Bluegrass Water Utility Operating Company LLC E-mail: jfreemann@cswrgroup.com

Street Address: 1650 Des Peres Rd, Suite 303

City, State, Zip: St. Louis, MO, 63131

Will ownership be transferred? ☐ Yes. Name of new owner: _____ ☒ No

III. PRELIMINARY SUBMITTAL

Has a Preliminary Submittal been made with all the information in this section? [See 401 KAR 5:005, Section 3]

☐ Yes. Name of project: _____

County and Location of project, then skip to next section: _____

☒ No. Provide the information below that has not been previously submitted (use additional pages, as necessary). Place a **check** (✓) by the items included in the application or an **N/A** if the item is not applicable to the project.

N/A A. A copy of a 7½ minute USGS topographic map, with the WWTP, any proposed sewer lines, service area, and discharge location identified.

N/A B. For a WWTP located within a planning area, a letter from the regional or facility planning agency stating the proposed WWTP is compatible with the regional facility plan or the water quality management plan.

N/A C. For a WWTP located within a planning area, a demonstration that a connection to the regional facility is not available.

N/A D. For a regional WWTP, a water quality management plan that is in compliance with **401 KAR 5:006**.

IV. DESIGN CONSIDERATIONS

A. PLANS AND SPECIFICATIONS.

Design plans and specifications shall comply with 401 KAR 5:005 and "Recommended Standards for Wastewater Facilities" ("Ten States' Standards") 2014 edition. If engineering practices, other than those contained in "Ten States' Standards", were used in the design, indicate the source and the corresponding portion of the design. **[See 401 KAR 5:005, Section 7]**

Plans and specifications submittals shall meet on of the following options:

☐ Submit at least one paper printed set of detailed plans (no larger than 24" x 36") and a PDF copy of the plans and specifications on a data storage device such as a USB flash drive. Both copies shall be dated with a stamp, signature of a licensed professional engineer in Kentucky which complies with the requirements of 201 KAR 18:104. The digital plans shall consist of a single pdf file and be in a folder called "Engineering Plans" and the specifications manual shall be in a folder called "Specifications".

4 Submit a PDF copy of the plans and specifications digitally via the electronic form on the KY One Stop Business Portal website. The PDF copy shall be dated with stamp and signature of a licensed engineer in Kentucky which complies with the requirements of 201 KAR 18:104 Section 3. The plans shall be submitted as a single pdf file.

B. DESIGN ENGINEER, if the WWTP design capacity is greater than 10,000 gpd or if the sewer lines associated with the WWTP will become part of a sewer system served by a regional facility. **[Section 6]**

P.E.'s Name: Benjamin Kuenzel Firm: 21 Design Group

Street Address: 1351 Jefferson Street Suite 301

City, State, Zip: Washington, MO 63090

Phone: 636-432-5029 Fax: N/A E-mail: ben@21designgroup.net

C. CONFORMITY TO PLANS AND SPECIFICATIONS. Provide name of person who will inspect and certify that the constructed facility conforms to the approved plans and specifications. If the WWTP's design capacity is greater than 10,000 gpd, or if the sewer lines will become part of a sewer system served by a regional facility, this person must be a professional engineer (P.E.). **[Section 3]**

Name: Benjamin Kuenzel Firm: 21 Design Group

Street Address: 1351 Jefferson Street Suite 301

City, State, Zip: Washington, MO 63090

Phone: 636-432-5029 Fax: N/A E-mail: ben@21designgroup.net

D. DESIGN CAPACITIES. Provide the following design capacities, in million gallons per day or pounds per day. **[Section 3]**

Average Daily Flow: _____ MGD Influent BOD: _____ lb/day

Peak Daily Flow: _____ MGD Influent SS: _____ lb/day

Peak Hourly Flow: _____ MGD Influent NH_3-N: _____ lb/day

E. Design Criteria. Provide the following information (use additional pages, as necessary). Place a **check (✓)** by the items included in the application or an **N/A** if the item is not applicable to the project.

N/A 1. A schematic drawing of the facility layout and explanation of the proposed facility and method of operation. **[Section 3]**

N/A 2. WWTP's Reliability Category, Grade A, B, or C: _____. Include a detailed description of the reliability measures that will be used for the WWTP. **[Sections 3 and 13]**

✓ 3. A discussion of the design criteria used to size the unit processes. **[Section 3]**

F. LABORATORY SERVICES. Give name of laboratory that will provide services for self-monitoring and process control. **[Section 3]**

Firm Name: _____

Street Address: _____

City, State, Zip: _____

G. SITE LOCATION. Place a **check (✓)** by the items that are included in this application or an **N/A** if the item is not applicable to the project.

N/A 1. Include a plat or survey clearly indicating the site's boundaries, position of proposed facility in reference to the boundaries, and position of dwellings within 200 feet of the WWTP. **[Section 3]**

N/A 2. If an open-top WWTP is closer than 200 feet to the closest dwelling, include what structure or other measures will be used for noise and odor control. **[Section 4]**

N/A 3. For a WWTP with a spray irrigation system, if the distance from the spray field to the property boundary is less than 20 feet, include what protective measures will be used to inhibit spray from crossing property boundary. **[Section 21]**

H. OTHER INFORMATION TO BE SUBMITTED WITH APPLICATION. Place a **check (✓)** by the items that are included in this application or an **N/A** if the item is not applicable to the project.

✓ 1. If modifying or replacing an existing WWTP or sewer line, a closure plan indicating how the new facility will be constructed without a by-pass to a stream and the procedures that will be used for abandoning the existing facility. **[Section 3]**

N/A 2. A Sludge Management Plan for WWTPs, including the sludge processing method and how sludge will be ultimately disposed. **[Section 3]**

N/A 3. If the discharge point does not coincide with a blue line on a USGS map, a copy of a recorded deed, recorded other right of ownership, or recorded right of easement for a corridor to the nearest blue line stream. **[Section 3]**

N/A 4. A description of and detailed specifications for the flow measuring device. **[Section 7]**

N/A 5. If the WWTP discharges to a sinkhole or sinking stream, a plan for a groundwater tracer study (or a previously conducted groundwater tracer study). **[Section 4]**

V. SEWER LINES

Include the following items for projects that include sewer lines. If project is for only a WWTP, skip to next section. Place a **check (✓)** by the items that are included in this application or **N/A** if the item is not applicable to the project.

N/A A. If the project includes a pump station, the pump performance curve. **[Section 8]**

✓ B. If the project includes gravity sewer lines or force mains, a plan view and profile view for each. **[Section 6]**

N/A C. A demonstration that the sewer system has adequate capacity to treat the current and the anticipated flow to the WWTP and that the sewer system is not subject to excessive infiltration or excessive inflow. **[Section 8]**

N/A D. A demonstration that the WWTP has adequate capacity to transport the anticipated flow to the WWTP and the WWTP is not subject to excessive infiltration or excessive inflow. **[Section 8]**

VI. OTHER REQUIRED APPLICATIONS

___ A. If the WWTP has a discharge, complete and file with this application: KPDES Application (KPDES Form 1); and Form A, B, C, or Short Form C, as applicable.

___ B. If the WWTP does not have a discharge, complete and file with this application the "No Discharge Operating Permit Application, Form ND."

VII. FEES

Fees. Check or money order must be made payable to "**Kentucky State Treasurer**" for the total amount. **Fees do not apply** for a municipality, sanitation district, or other publicly owned facility. **[Section 5]**

WWTP Category: Minor Modification to a WWTP Amount: $ 200

Sewer Line Category: _____ Amount: $ _____

Total Amount: $ 200

VIII. CERTIFICATION

I, the applicant, certify under penalty of law that this document and all attachments were prepared under my direction or supervision. The information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment or both for known violations. **[Section 2]**

Applicant's Name and Official Title (Type or Print)	**Phone Number (Include area code)**
Jacob Freeman	(314)-550-1167
Signature 	**Date** 09/28/2020

ERNIE FLETCHER
GOVERNOR

ENVIRONMENTAL AND PUBLIC PROTECTION CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
DIVISION OF WATER
14 REILLY ROAD
FRANKFORT, KENTUCKY 40601-1190
www.kentucky.gov

LAJUANA S. WILCHER
SECRETARY

April 2, 2004

Mr. Mark Davis
Golden Acres Subdivision
1002 Medical Dr
Mayfield, KY 42066

Re: Public Notice of Draft KPDES Permit
KPDES No.: KY0044164
Golden Acres Subdivision
AI ID: 2935 Activity ID: APE20030001
Marshall County, Kentucky

Dear Mr. Davis:

A draft Kentucky Pollutant Discharge Elimination System (KPDES) permit for the above-referenced facility has been completed and the information sent to public notice as per Regulation 401 KAR 5:075, Sections 3 and 5. Enclosed for your review are copies of the public notice, draft permit, and fact sheet or statement of basis. Comments on the draft permit must be received by the comment due date on the enclosed public notice.

Your facility is being issued a permit that is shorter than the normal five-year term in order to synchronize permit issuance by watershed. Implementation of watershed permitting will begin in the year 2002 and your targeted permit issuance date is based upon your location in the watershed basin.

If you have any questions concerning this matter, feel free to contact the permit writer (referenced in the public notice) or me at (502) 564-2225, extension 528.

Sincerely,

Ann S. Workman

Ann S. Workman
Inventory and Data Management Section
KPDES Branch
Division of Water

AW:aw
Enclosures
c: Paducah Regional Office
Division of Water Files

ERNIE FLETCHER
GOVERNOR

ENVIRONMENTAL AND PUBLIC PROTECTION CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
DIVISION OF WATER
14 REILLY ROAD
FRANKFORT, KENTUCKY 40601-1190
www.kentucky.gov

LAJUANA S. WILCHER
SECRETARY

STATEMENT OF BASIS

KPDES No.: KY0044164 **Permit Writer:** Paul L. Beckley **Date:** March 24, 2004
AI No.: 2935

Facility Name: Golden Acres Subdivision

Facility Location: Golden Acres Loop, west of Sharpe, Marshall County, Kentucky

Permitting Action: This is a reissuance of a permit for a subdivision.

Permit Duration: Expires March 31, 2009. This expiration date will place the facility in the correct 5-year cycle as per the Kentucky Watershed Management Framework. In this instance, the permit is scheduled for re-issuance in April 2009 for the Tennessee/Mississippi/Cumberland Basin Management Unit.

Description of Discharge: Sanitary wastewater with an average daily design flow of 0.025 million gallons per day

Stream Segment Use Classification: Warmwater Aquatic Habitat, Primary/Secondary Contact Recreation, and Domestic Water Supply

Stream Low Flow Condition: 0.00 cfs

Regional Facility Plan: The plant is not located within a regional facility planning area.

Justification of Permit Conditions:

The following regulations are pursuant to KRS 224.10-100, KRS 224.70-100, and KRS 224.70-110.

Biochemical Oxygen Demand (5-day), Total Suspended Solids, Fecal Coliform, and pH
The effluent limitations for the above permit parameters are consistent with 401 KAR 5:045.

Ammonia Nitrogen and Dissolved Oxygen
The effluent limitations for the above permit parameters are consistent with 401 KAR 5:031.

Antidegradation:

The conditions of 401 KAR 5:029, Section 1(1) have been satisfied by this permit action. A review under Section 1(2), (3), and (4) is not applicable.

KPDES

KENTUCKY POLLUTANT DISCHARGE ELIMINATION SYSTEM

PERMIT

PERMIT NO.: KY0044164

AUTHORIZATION TO DISCHARGE UNDER THE KENTUCKY POLLUTANT DISCHARGE ELIMINATION SYSTEM

Pursuant to Authority in KRS 224,

Purchase Public Service Corporation
Post Office Box 5100
Mayfield, Kentucky 42066

is authorized to discharge from a facility located at

Golden Acres Subdivision
Golden Acres Loop, west of
Sharpe, Marshall County, Kentucky

to receiving waters named

Unnamed tributary at mile point 1.0 to unnamed tributary at mile point 0.36 to Clarks River at mile point 17.17

in accordance with effluent limitations, monitoring requirements and other conditions set forth in this permit. The permit consists of this Cover Sheet, a Subject Item Inventory Sheet, Effluent Limitations and Monitoring Requirements, and Facility Requirements.

This permit shall become effective on September 1, 2004.

This permit and the authorization to discharge shall expire at midnight, March 31, 2009.

July 30, 2004
Date Signed

Jeffrey W. Pratt, Director
Division of Water

Lloyd R. Cress
Commissioner

Authorization to Discharge Under the Kentucky Pollutant Discharge Elimination System

Golden Acres Subd

Subject Item Inventory

Permit Number:KY0044164

Activity ID No.: APE20030001

Subject Item Inventory:

ID	Designation	Description
AIOO2935		
MNPT1	KY0044164 001	Sanitary discharge

Receiving Stream Relationships:

Subject Item	Relationship	Receiving Stream
AIOO2935	Discharges Into	East Fork Clarks River
MNPT1 Sanitary discharge	Discharges Into	Unnamed Tributary 1
	Then Into	Unnamed Tributary 2
	Then Into	Clarks River

KEY

ACTV = Activity	AIOO = Agency Interest
AREA = Area	COMB = Combustion
EQPT = Equipment	MNPT = Monitoring Point
PERS = Personnel	PORT = Transport
STOR = Storage	STRC = Structure
TRMT = Treatment	

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

Subject Item: **Sanitary discharge**

MNPT0000000001: KY0044164 001

Such discharges shall be limited and monitored by the permittee as specified below:

Parameter	Discharge Limitations							Monitoring Requirements		
	Quantity / Loading Average	Quantity / Loading Maximum	Quantity / Loading Units	Conc. / Quality Minimum	Conc. / Quality Average	Conc. / Quality Maximum	Conc. / Quality Units	Frequency	Sample Type	Which Months
Ammonia Nitrogen, Total (as N) ***effluent gross value***	0.83 Monthly average (AV)	1.67 Daily maximum (MX)	lbs/day	******	4 Monthly average (AV)	8 Daily maximum (MX)	mg/L	monthly	composite sample	May - October
Ammonia Nitrogen, Total (as N) ***effluent gross value***	2.09 Monthly average (AV)	4.17 Daily maximum (MX)	lbs/day	******	10 Monthly average (AV)	20 Daily maximum (MX)	mg/L	monthly	composite sample	November - April
BOD, Carbonaceous 05 Day, 20C ***effluent gross value***	5.21 Monthly average (AV)	10.4 Daily maximum (MX)	lbs/day	******	25 Monthly average (AV)	50 Daily maximum (MX)	mg/L	monthly	composite sample	All Year
Fecal Coliform, General ***effluent gross value***	******	******	******	******	200 Monthly geometric mean	400 Maximum weekly geometric mean	#/100 mL	monthly	grab sampling	All Year
Flow, In Conduit Or Thru Treatment Plant ***effluent gross value***	Report Monthly average (AV)	Report Daily maximum (MX)	MGD (MA)	******	******	******	******	five times per week	instantaneous measurement	All Year
Oxygen, Dissolved ***effluent gross value***	******	******	******	7 Instantaneous minimum	******	******	mg/L	monthly	grab sampling	All Year
pH ***effluent gross value***	******	******	******	6.0 Minimum	******	9.0 Maximum	standard units	monthly	grab sampling	All Year
Solids, Total Suspended (TSS) ***effluent gross value***	6.26 Monthly average (AV)	12.5 Daily maximum (MX)	lbs/day	******	30 Monthly average (AV)	60 Daily maximum (MX)	mg/L	monthly	composite sample	All Year

Authorization to Discharge Under the Kentucky Pollutant Discharge Elimination System

Golden Acres Subd

Facility Requirements

Permit Number:KY0044164

Activity ID No.: APE20030001

MNPT1 (KY0044164 001) Sanitary discharge:

Submittal/Action Requirements:

Condition No.	Condition
S-1	Duty to reapply: Any permittee with a currently effective permit shall submit permit application for renewal: Due 180 calendar days before permit expiration date of the existing permit, unless permission for a later date has been granted by the cabinet. The cabinet shall not grant permission for applications to be submitted later than the expiration date of the existing permit. [401 KAR 5:060 Section 1(5)]
S-2	Discharge Monitoring Report (DMR): The permitee shall submit analytical results on monthly Discharge Monitoring Report (DMR) : Due monthly, by the 28th of the following month to the Division of Water. [401 KAR 5:065 Section 1(12)(d)]

Narrative Requirements:

Part I A Effluent Limitations and Monitoring Requirements:

Condition No.	Condition
T-1	Part I A Effluent Limitations and Monitoring Requirements: The average daily design capacity for this treatment plant is 0.025 mgd. [401 KAR 5:005 Section 24(4)(a)]
T-2	Part I A Effluent Limitations and Monitoring Requirements: There shall be no discharge of floating solids or visible foam in other than trace amounts. [401 KAR 5:031 Section 2]
T-3	Part I A Effluent Limitations and Monitoring Requirements: Effluent samples shall be taken at the following location: nearest accessible point after final treatment, but prior to actual discharge or mixing with receiving waters. [401 KAR 5:070 Section 3(1)]

Narrative Requirements:

Part I B Schedule of Compliance:

Condition No.	Condition
T-4	Part I B Schedule of Compliance: The permittee shall achieve compliance with all requirements on the effective date of this permit. [401 KAR 5:070 Section 2]

Part II Standard Conditions for KPDES Permit:

Condition No.	Condition
T-5	Part II Standard Conditions for KPDES Permit: The permittee is also advised that all KPDES permit conditions in KPDES Regulation 401 KAR 5:065, Section 1, will apply to all discharges authorized by this permit. This permit has been issued under the provisions of KRS Chapter 224 and regulations promulgated pursuant thereto. Issuance of this permit does not relieve the permittee from the responsibility of obtaining any other permits or licenses required by this Cabinet and other state, federal, and local agencies. It is the responsibility of the permittee to demonstrate compliance with permit parameter limitations by utilization of sufficiently sensitive analytical methods. [401 KAR 5:055 Section 1]
T-6	Part II Standard Conditions for KPDES Permit: Surface waters shall not be aesthetically or otherwise degraded by substances that: (a) Settle to form objectionable deposits; (b) Float as debris, scum, oil, or other matter to form a nuisance; (c) Produce objectionable color, odor, taste, or turbidity; (d) Injure, are chronically or acutely toxic to or produce adverse physiological or behavioral responses in humans, animals, fish and other aquatic life; or (e) Produce undesirable aquatic life or result in the dominance of nuisance species. [401 KAR 5:031 Section 2]
T-7	Part II Standard Conditions for KPDES Permit: Each wastewater system shall be operated under the supervision of an individual holding a Kentucky operator's certificate for at least the class of system supervised. [401 KAR 5:010 Section 2(1)]
T-8	Part II Standard Conditions for KPDES Permit: This treatment unit is temporary and in no way supersedes the need of a regional sewer system. The permittee will eliminate the discharge and treatment unit by connection to a regional sewer system when it becomes available as defined in 401 KAR 5:002. [401 KAR 5:005 Section 4(6)]
T-9	Part II Standard Conditions for KPDES Permit: Duty to Comply, General Requirement: The permittee shall comply with all conditions of this permit. Any permit noncompliance constitutes a violation of KRS Chapter 224, among which are the following remedies: enforcement action, permit revocation, revocation and reissuance, or modification; or denial of a permit renewal application. [401 KAR 5:065 Section 1(1)(a)]
T-10	Part II Standard Conditions for KPDES Permit: Duty to Reapply: If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee shall apply for and obtain a new permit as required in 401 KAR 5:060, Section 1. [401 KAR 5:065 Section 1(2)]

Narrative Requirements:

Part II Standard Conditions for KPDES Permit:

Condition No.	Condition
T-11	Part II Standard Conditions for KPDES Permit: Duty to Mitigate: The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment. [401 KAR 5:065 Section 1(4)]
T-12	Part II Standard Conditions for KPDES Permit: Proper Operation and Maintenance: The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control and related appurtenances which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls, and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems that are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit. [401 KAR 5:065 Section 1(5)]
T-13	Part II Standard Conditions for KPDES Permit: Permit Actions: The permit may be modified, revoked and reissued, or revoked for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or revocation, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition. [401 KAR 5:065 Section 1(6)]
T-14	Part II Standard Conditions for KPDES Permit: Duty to Provide Information: The permittee shall furnish to the cabinet, within a reasonable time, any information which the cabinet may request to determine whether cause exists for modifying, revoking and reissuing, or revoking this permit, or to determine compliance with this permit. The permittee shall also furnish to the cabinet, upon request, copies of records required to be kept by this permit. [401 KAR 5:065 Section 1(8)]
T-15	Part II Standard Conditions for KPDES Permit: Inspection and Entry: The permittee shall allow the cabinet, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to: (a) Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records pertinent to the KPDES program are or may be kept; (b) Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit; (c) Inspect at reasonable times any facilities, equipment, including monitoring and control equipment, practices, or operations regulated or required under this permit; and (d) Sample or monitor at reasonable times, for the purposes of assuring KPDES program compliance or as otherwise authorized by KRS Chapter 224, any substances or parameters at any location. [401 KAR 5:065 Section 1(9)]
T-16	Part II Standard Conditions for KPDES Permit: Monitoring and records: Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. [401 KAR 5:065 Section 1(10)(a)]

Narrative Requirements:

Part II Standard Conditions for KPDES Permit:

Condition No.	Condition
T-17	Part II Standard Conditions for KPDES Permit: Monitoring and records: The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three (3) years from the date of the sample, measurement, report, or application. This period may be extended by request of the cabinet at any time. [401 KAR 5:065 Section 1(10)(b)]
T-18	Part II Standard Conditions for KPDES Permit: Monitoring and records: Records of monitoring information shall include: 1. The date, exact place, and time of sampling or measurements; 2. The individuals who performed the sampling or measurements; 3. The dates analyses were performed; 4. The individuals who performed the analyses; 5. The analytical techniques or methods used; and 6. The results of the analyses. [401 KAR 5:065 Section 1(10)(c)]
T-19	Part II Standard Conditions for KPDES Permit: Monitoring and records: Monitoring shall be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in the permit. [401 KAR 5:065 Section 1(10)(d)]
T-20	Part II Standard Conditions for KPDES Permit: Monitoring and records: Any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under the permit shall, upon conviction, be subject to penalties under KRS 224.99-010(4). [401 KAR 5:065 Section 1(10)(e)]
T-21	Part II Standard Conditions for KPDES Permit: Signatory Requirement: All applications, reports, or information submitted to the cabinet shall be signed and certified as indicated in 401 KAR 5:060, Section 9. Any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be subject to penalties under KRS 224.99-010(4). [401 KAR 5:065 Section 1(11)]

Narrative Requirements:

Part II Standard Conditions for KPDES Permit:

Condition No.	Condition
T-22	Part II Standard Conditions for KPDES Permit: Reporting Requirements - Planned changes: The permittee shall give notice to the cabinet as soon as possible of any physical alteration or additions to the permitted facility. Notice is required only when: 1. The alteration or addition to a permitted facility may meet one (1) of the criteria for determining whether a facility is a new source in 401 KAR 5:080, Section 5; or 2. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject either to effluent limitations in the permit, or to notification requirements under 401 KAR 5:080, Section 5. [401 KAR 5:065 Section 1(12)(a)]
T-23	Part II Standard Conditions for KPDES Permit: Reporting Requirements - Anticipated Noncompliance: The permittee shall give advance notice to the cabinet of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements. [401 KAR 5:065 Section 1(12)(b)]
T-24	Part II Standard Conditions for KPDES Permit: Reporting Requirements - Transfers: The permit is not transferable to any person except after notice to the Cabinet. The cabinet may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under KRS Chapter 224. [401 KAR 5:065 Section 1(12)(c)]
T-25	Part II Standard Conditions for KPDES Permit: Reporting Requirements - Monitoring Reports: Monitoring results shall be reported at the intervals specified in the permit. [401 KAR 5:065 Section 1(12)(d)]
T-26	Part II Standard Conditions for KPDES Permit: Reporting Requirements - Monitoring Reports: Monitoring results shall be reported as follows: Monitoring results shall be reported on a Discharge Monitoring Report (DMR). [401 KAR 5:065 Section 1(12)(d)1]
T-27	Part II Standard Conditions for KPDES Permit: Reporting Requirements - Monitoring Reports: Monitoring results shall be reported as follows: If the permittee monitors any pollutant more frequently than required by the permit, using test procedures approved under 40 CFR Part 136 or as specified in the permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR. [401 KAR 5:065 Section 1(12)(d)2]
T-28	Part II Standard Conditions for KPDES Permit: Reporting Requirements - Monitoring Reports: Monitoring results shall be reported as follows: Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified by the Cabinet in the permit. [401 KAR 5:065 Section 1(12)(d)3]

Narrative Requirements:

Part II Standard Conditions for KPDES Permit:

Condition No.	Condition
T-29	Part II Standard Conditions for KPDES Permit: Reporting Requirements - Compliance Schedules: Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than fourteen (14) days following each schedule date. [401 KAR 5:065 Section 1(12)(e)]
T-30	Part II Standard Conditions for KPDES Permit: Twenty-four (24) hour reporting. The permittee shall follow the provisions of 401 KAR 5:015 and shall orally report any noncompliance which may endanger health or the environment, within 24 hours from the time the permittee becomes aware of the circumstances. This report shall be in addition to and not in lieu of any other reporting requirement applicable to the noncompliance. [401 KAR 5:065 Section 1(12)(f)]
T-31	Part II Standard Conditions for KPDES Permit: Twenty-four (24) hour reporting. A written submission shall also be provided within five (5) days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance. The cabinet may waive the written report on a case-by-case basis if the oral report has been received within 24 hours. [401 KAR 5:065 Section 1(12)(f)]
T-32	Part II Standard Conditions for KPDES Permit: Twenty-four (24) hour reporting. The following shall be included as events which shall be reported within 24 hours: 1. Any unanticipated bypass which exceeds any effluent limitation in the permit, as indicated in subsection (13) of this section; 2. Any upset which exceeds any effluent limitation in the permit; or 3. Violation of a maximum daily discharge limitation for any of the pollutants listed by the cabinet in the permit to be reported within 24 hours, as indicated in Section 2(7) of this administrative regulation. [401 KAR 5:065 Section 1(12)(f)]
T-33	Part II Standard Conditions for KPDES Permit: Any person having knowledge in advance of the necessity to bypass a sewage system shall notify the Division of Water before such bypass is commenced. Notification shall be given as far in advance as possible. [401 KAR 5:015 Section 1]
T-34	Part II Standard Conditions for KPDES Permit: Whenever by reason of emergency or accident a spill or discharge occurs from a sewage system or from a container or pipeline used to transport or store substances which would result in or contribute to the pollution of the waters, the person in charge of such activity shall immediately notify the Division of Water by the most rapid means available at 1-800-928-2380. [401 KAR 5:015 Section 2]
T-35	Part II Standard Conditions for KPDES Permit: Reporting Requirements - Other Noncompliance: The permittee shall report all instances of noncompliance not reported under paragraphs (d), (e), and (f) of 401 KAR 5:065, Section 1 (12), (Monitoring Reports, Compliance Schedules, and Twenty-four (24) hour reporting) when monitoring reports are submitted. The reports shall contain the information listed under Compliance Schedules. [401 KAR 5:065 Section 1(12)(g)]

Narrative Requirements:

Part II Standard Conditions for KPDES Permit:

Condition No.	Condition
T-36	Part II Standard Conditions for KPDES Permit: Reporting Requirements - Other information: Where the permittee becomes aware that it failed to submit any relevant fact in a permit application, or submitted incorrect information in a permit application or in any report to the Cabinet, it shall promptly submit these facts or information. [401 KAR 5:065 Section 1(12)(h)]
T-37	Part II Standard Conditions for KPDES Permit: Occurrence of a Bypass - Notice: Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten (10) days before the date of the bypass. Compliance with this requirement constitutes compliance with 401 KAR 5:015, Section 1. [401 KAR 5:065 Section 1(13)(b)1]
T-38	Part II Standard Conditions for KPDES Permit: No person shall construct, modify, or operate a facility without having received a permit from the cabinet. A construction or modification permit is not required for maintenance replacement for components of an existing facility or for changes which do not affect the treatment processes of the facility, but is required for replacement of an entire wastewater treatment plant. The operational permit provisions of 401 KAR 5:005, Section 27, shall be satisfied by those facilities which have a valid KPDES permit issued pursuant to 401 KAR 5:050 to 5:080. [401 KAR 5:005 Section 1]

Part III Other Requirements:

Condition No.	Condition
T-39	Part III Other Requirements: KPDES Permit Reopener Clause: This permit shall be modified, or alternatively revoked and reissued, to comply with any applicable effluent standard or limitation issued or approved under 401 KAR 5:050 through 5:080 and KRS 224.70-120, if the effluent standard or limitation so issued or approved: Contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or Controls any pollutant not limited in the permit. The permit as modified or reissued under this paragraph shall also contain any other requirements of KRS Chapter 224 when applicable. [401 KAR 5:070 Section 6]
T-40	Part III Other Requirements: A permit to construct a facility shall be effective upon issuance unless otherwise conditioned. Construction shall be completed within twelve (12) months unless additional time is requested. If construction is not commenced within the twelve (12) months following a permit's issuance, a new permit shall be obtained before construction may begin. The cabinet may allow a single twelve (12) month extension to begin construction if site conditions have not changed. [401 KAR 5:005 Section 24(1)]

Narrative Requirements:

Part III Other Requirements:

Condition No.	Condition
T-41	Part III Other Requirements: Applicability. Any person responsible for conducting any of the following activities shall prepare and implement a groundwater protection plan: [List 1 of 2] storing or related handling of bulk quantities of pesticides or fertilizers for commercial purposes or distribution to a retail sales outlet; applying of pesticides or fertilizers for commercial purposes or for public right-of-way maintenance or institutional lawn care; land treatment or land disposal of a pollutant; storing, treating, disposing, or handling of hazardous waste, solid waste, or special waste in landfills, incinerators, surface impoundments, tanks, drums, other containers, or in piles; commercial or industrial storing or related handling in bulk quantities of raw materials, intermediate substances or products, finished products, substances held for recycling, or other pollutants held in tanks, drums, other containers, or in piles; transmission in pipelines of raw materials, intermediate substances or products, finished products, or other pollutants; installation or operation of on-site sewage disposal systems. [401 KAR 5:037 Section 2(2)]
T-42	Part III Other Requirements: Applicability. Any person responsible for conducting any of the following activities shall prepare and implement a groundwater protection plan: [List 2 of 2] storing or related handling of road oils, dust suppressants, or deicing agents at a central location; application or related handling of road oils, dust suppressants or deicing materials; mining and associated activities; installation, construction, operation, or abandonment of wells, bore holes, or core holes; collection or disposal of pollutants in an industrial or commercial facility through the use of floor drains which are not connected to on-site sewage disposal systems, closed-loop collection or recovery systems, or a waste treatment system permitted under KPDES; impoundment or containment of pollutants in surface impoundments, lagoons, pits, or ditches; or commercial or industrial transfer, including loading and unloading, in bulk quantities of raw materials, intermediate substances or products, finished products, substances held for recycling, or other pollutants. [401 KAR 5:037 Section 2(2)]
T-43	Part III Other Requirements: The permit is issued to the applicant and the permittee shall remain the responsible party for compliance with all applicable statutes and administrative regulations until a notarized applicable change in ownership certification is submitted and the transfer of ownership is acknowledged by the cabinet. [401 KAR 5:005 Section 24(3)]
T-44	Part III Other Requirements: The permittee shall ensure that the effluent is of satisfactory quality to prevent violations of the standards in 401 KAR Chapter 5. If violations of the standards of 401 KAR Chapter 5 result from the discharge of the treated effluent, the owner shall provide additional treatment or an extension of the effluent line. [401 KAR 5:005 Section 24(4)(c)1]

Narrative Requirements:

Part III Other Requirements:

Condition No.	Condition
T-45	Part III Other Requirements: Applicants shall keep records of all data used to complete permit applications and any supplemental information submitted under this section for a period of at least three (3) years from the date the application is signed. [401 KAR 5:060 Section 6]
T-46	Part III Other Requirements: All wastewater treatment plants shall have a disinfection process which meets one of the four following requirements: (a) An ultraviolet disinfection system designed to treat the anticipated peak hourly flow; (b) a chlorination system with a flow or demand proportional feed system. The chlorine contact tank shall have a minimum detention time of thirty (30) minutes based on the average flow, or fifteen (15) minutes based on the peak hourly flow, whichever requires the larger tank size. Wastewater treatment plants shall also have a dechlorination system with a flow or demand proportional feed system if necessary to meet the effluent limits; or (c) a chlorination system with a manually controlled feed system and a flow equalization basin designed to eliminate the diurnal flow variations. (d) Other disinfection processes providing equivalent treatment as approved by the cabinet. [401 KAR 5:005 Section 11(1), 401 KAR 5:065 Section 1(5)]
T-47	Part III Other Requirements: The flow measuring device shall measure all flow received at the wastewater treatment plant. An indicating, recording, and totalizing flow measuring device shall be installed at each large wastewater treatment plant. [401 KAR 5:005 Section 12, 401 KAR 5:065 Section 1(5)]
T-48	Part III Other Requirements: For a slow sand filter, the distribution piping shall be designed to drain properly. [401 KAR 5:005 Section 15(6), 401 KAR 5:065 Section 1(5)]
T-49	Part III Other Requirements: Flow equalization basins shall have an emergency overflow to an appropriate point in the treatment scheme. [401 KAR 5:005 Section 17(1)(c), 401 KAR 5:065 Section 1(5)]
T-50	Part III Other Requirements: Wastewater treatment lagoons shall be at least 200 feet from any present or future residence. [401 KAR 5:005 Section 18(3), 401 KAR 5:065 Section 1(5)]
T-51	Part III Other Requirements: A water supply shall be provided to facilitate cleaning and maintenance of the wastewater treatment plant. If a potable source is provided, backflow preventers shall be installed to protect the water supply. [401 KAR 5:005 Section 10(6), 401 KAR 5:065 Section 1(5)]
T-52	Part III Other Requirements: Fencing and/or other adequate protection shall be provided around the wastewater treatment plant. [401 KAR 5:005 Section 10(7), 401 KAR 5:065 Section 1(5)]
T-53	Part III Other Requirements: An all-weather access road shall be provided to the wastewater treatment plant. [401 KAR 5:005 Section 10(8), 401 KAR 5:065 Section 1(5)]
T-54	Part III Other Requirements: No bypass or overflow structure of any type shall be constructed in any sewer line or pump station or at any wastewater treatment plant unless specifically approved by the cabinet in writing. [401 KAR 5:005 Section 7(5), 401 KAR 5:065 Section 1(5)]

Narrative Requirements:

Part III Other Requirements:

Condition No.	Condition
T-55	Part III Other Requirements: Sharp crested weirs shall be used for measuring effluent flow only and shall have the following characteristics: the weir shall be installed perpendicular to the axis of flow and there shall be no leakage at the weir edges or bottom; the weir plate shall be level and adjustable; the sides of a rectangular contracted weir shall be vertical; the angles of V-notch weirs shall be cut precisely; the thickness of the weir crest shall be less than one-tenth (0.1) of an inch; the distance from the weir crest to the bottom of the approach channel shall be more than one foot or two times the maximum weir head, whichever is greater; the distance from the sides of the weir to the sides of the approach channel shall be more than one foot or two times the maximum weir head, whichever is greater. This does not apply to suppressed rectangular weirs; air shall circulate freely under, and on both sides of, the nappe; the measurement of head on the weir shall be made at least four times the maximum weir head upstream from the weir crest; the cross-sectional area of the approach channel shall be at least eight times the area of the nappe. The approach channel shall be straight and uniform upstream from the weir for a distance of fifteen times the maximum weir head; the minimum acceptable weir head is two-tenths (0.2) foot; the maximum downstream pool level shall be at least two-tenths (0.2) foot below the crest elevation; the weir length for a rectangular, suppressed, or cipolletti weir shall be at least three times the maximum weir head; and a reference staff gauge shall be provided. [401 KAR 5:005 Section 12(2), 401 KAR 5:065 Section 1(5)]
T-56	Part III Other Requirements: Parshall flumes may be used to measure influent or effluent flows and shall have the following characteristics: the approach channel upstream of the flume shall be straight and have a width uniform for the length required by the following: if the flume throat width is less than one-half (½) the width of the approach channel, the straight upstream channel length shall be twenty times the throat width; if the flume throat width is equal to or larger than one-half (½) the width of the approach channel, the straight upstream length shall be greater than ten times the approach channel width; and if the cross-sectional area of the inlet to the approach channel is smaller than the cross-sectional area of the approach channel, additional straight upstream channel length may be required to dissipate the velocity; the throat section walls shall be vertical; the head measuring point shall be at two-thirds (2/3) the length of the converging sidewall; the flow shall be evenly distributed across the channel, shall be free of turbulence or waves, and shall not be located after transition sections; the longitudinal and lateral axes of the converging crest floor shall be level; free flow conditions shall be maintained; and a reference staff gauge shall be provided for Ha and Hb to determine if submergence occurs. [401 KAR 5:005 Section 12(3), 401 KAR 5:065 Section 1(5)]
T-57	Part III Other Requirements: A positive sludge return shall be provided for the extended aeration package wastewater treatment plant. [401 KAR 5:005 Section 10(5), 401 KAR 5:065 Section 1(5)]
T-58	Part III Other Requirements: Tablet type chlorination equipment shall not be used in intermediate or large wastewater treatment plants. [401 KAR 5:005 Section 11(2), 401 KAR 5:065 Section 1(5)]
T-59	Part III Other Requirements: An audible and visible alarm shall be provided at the wastewater pump station. [Ten States (WW) 45, 401 KAR 5:065 Section 1(5)]
T-60	Part III Other Requirements: If the discharge from the wastewater treatment plant enters a sinkhole directly or enters a disappearing stream, the applicant shall submit a proposal for a groundwater tracer study or results from a previously conducted study to the cabinet for approval. [401 KAR 5:005 Section 4(5)]

Narrative Requirements:

Part III Other Requirements:

Condition No.	Condition
T-61	Part III Other Requirements: The permittee shall comply with Requirements for Recording and Reporting of Monitoring Results: (1) Requirements concerning the proper use, maintenance, and installation, when appropriate, of monitoring equipment or methods, including biological monitoring methods when appropriate; (2) Required monitoring including type, intervals, and frequency sufficient to yield data which are representative of the monitored activity including, when appropriate, continuous monitoring; and (3) Applicable reporting requirements based upon the impact of the regulated activity and as specified in 401 KAR 5:065, Sections 1 and 2. Reporting shall be no less frequent than specified in 401 5:070, Section 2, Schedules of Compliance. [401 KAR 5:070 Section 3]

ANDY BESHEAR
GOVERNOR

REBECCA W. GOODMAN
SECRETARY

ANTHONY R. HATTON
COMMISSIONER

ENERGY AND ENVIRONMENT CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION

300 SOWER BOULEVARD
FRANKFORT, KENTUCKY 40601

February 18, 2020

Mr. Josiah Cox
Bluegrass Water Utility Operating Company, LLC
500 Northwest Plaza Dr., Suite 500
St. Ann, MO 63074

RE: **Public Notice of Draft KPDES Permit Notification**
Agency Interest Number (AI #): 2935
KPDES Permit #: KY0044164 – Golden Acres WWTP
Location: Marshall

Dear Mr. Cox:

A draft Kentucky Pollutant Discharge Elimination System (KPDES) permit for the above-referenced facility has been completed and the information sent to public notice, as per Regulation 401 KAR 5:075, Sections 3 and 5. Copies of the public notice, draft permit, and fact sheet and application can be found at: http://dep.gateway.ky.gov/eSearch/Search_Pending_Approvals.aspx?NumDaysDoc=30&Program=Wastewater. Comments on the draft permit must be received by the comment due date on the public notice.

The close of the public notice period is March 19, 2020.

If you have any questions, please contact me at 502-782-7137.

Sincerely,

Ann S. Workman

Ann S. Workman
Surface Water Permits Branch
Division of Water

ANDY BESHEAR
GOVERNOR

REBECCA W. GOODMAN
SECRETARY

ANTHONY R. HATTON
COMMISSIONER

ENERGY AND ENVIRONMENT CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION

300 SOWER BOULEVARD
FRANKFORT, KENTUCKY 40601

January 13, 2020

Josiah Cox
500 Northwest Plaza Dr., Ste. 500
Saint Ann, MO 63074

RE: **Permit Expiration Notification and Solicitation for New Permit Application**
Agency Interest Number (AI #): 2935
KPDES Permit #: KY0044164 - Golden Acres WWTP
Location: Marshall

Dear Mr. Cox:

Our records indicate that your Kentucky Pollutant Discharge Elimination System (KPDES) permit is due to expire January 31, 2020. Pursuant to KPDES Regulation 401 KAR 5:060, Section 2, any POTW or permittee with a currently effective permit shall submit a new application at least **180 days** before the expiration of the existing permit. In accordance with 401 KAR 5:060, Section 2(4) the conditions of an expired permit shall continue in force until the effective date of a new permit if a complete and timely application has been submitted. A complete and timely application shall include all elements required by 401 KAR 5:060, Section 2 Applying for a KPDES Permit and 5:310 Surface Water Permit Fees which is deemed complete on or before 180 days prior to the expiration of your permit. Pursuant to 401 KAR 5:075, Section 1 the cabinet shall not begin processing of a permit until the applicant has fully complied with the requirements of 401 KAR 5:060. **Please note that beginning June 28, 2017, an application will not be considered complete without submittal of 100% of the permit fee.**

Copies of the application forms for obtaining a new permit may be found by using this link; https://eec.ky.gov/Environmental-Protection/Water/PermitCert/KPDES/Pages/default.aspx. **Please note that the application forms were revised and you are required to utilize these new forms which are available on the provided link beginning April 1, 2019.** You will need a copy of **Form 1,** the **appropriate additional form** as listed in Table 1 of 401 KAR 5:060, Section 2(2) and the General Instructions. Please use the word version as the PDF will not allow you to make changes. Please note that completion of these forms requires the collection and analysis of the discharge and that pursuant to 401 KAR 5:075, Section 15(4) the cabinet has up to 30 days to determine if the application is administratively complete. Incomplete applications shall be returned to the applicant to correct deficiencies. Failure to submit a complete application 180 days prior to the expiration of the permits shall result in the termination of the permit and may result in appropriate enforcement action. Therefore it is recommended that the application be submitted to the Surface Water Permits Branch, Division of Water, at the above address as soon as possible.

If you have any questions regarding the completion of these forms, please contact me at 502-782-7137 or via e-mail at ann.workman@ky.gov

Sincerely,

Ann S. Workman

Ann S. Workman
Surface Water Permits Branch, Division of Water

GOLDEN ACRES WASTEWATER SYSTEM IMPROVEMENTS

Technical Specifications (KY-0044164)

Prepared For

Owner:

Central States Water Resources
1650 Des Peres Road, Suite 303
St. Louis, Missouri 63131

Prepared by:

21 Design Group
1351 Jefferson, Suite 301
Washington, MO 63090
636-432-2144

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SECTION 000110

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SECTION 011000

SUMMARY

PART 1 GENERAL

1.1 SUMMARY

A. This section generally describes the project and includes work by others, work sequencing, Contractor's use of premises, Owner occupancy, maintenance and operation of existing facilities, special conditions, work restrictions, and utility connection fees.

1.2 LOCATION OF PROJECT SITE

A. The project site is located off US Highway 68., Benton, KY where shown on the drawings.

1.3 GENERAL DESCRIPTION OF WORK

A. The work involves the replacement of the effluent pipe and construction of sanitary manholes as shown and specified herein.

B. The Owner will furnish equipment as described elsewhere. The Work will require coordination with manufacturers, suppliers, Engineer and the Owner on scheduling and delivery.

1.4 WORK SEQUENCE

A. The outlined sequence of construction does not include all items necessary to complete the work but is intended to identify the sequence of critical events necessary to minimize disruption and to ensure compliance with regulatory requirements. It shall be understood by the Contractor that critical events identified are not all inclusive and that additional items of work not shown may be required. The sequence of construction is a precedence requirement and does not attempt to schedule the Contractor's work. It is intended only to indicate which activities must precede other activities in order to minimize interference and disruptions.

B. The work sequence shall be determined by the Contractor and within ten (10) days after the "Notice to Proceed" is issued shall be submitted in writing to the Engineer for approval.

1.5 CONTRACTOR'S USE OF PREMISES

A. The Contractor's use of the project site shall be limited to its construction operations, including on-site storage of materials, on-site fabrication facilities, and field offices, as noted in the Contract Drawings.

B. Contractor shall note the location of all utilities, such as sanitary sewer manholes, water meters and fire hydrants along the route of the work. Contractor shall maintain access to public utilities at all times. Fire hydrants that are inadvertently damaged during construction shall be reported immediately to the utility owner and fire department.

C. Contractor shall extend full cooperation to all landowners performing necessary private work including private use of land. The Contractor shall notify each owner and tenant of land or other property not less than five days prior to occupation of such land by the Contractor. Any agreement

between the Contractor and the landowner or tenant involving the expenditure of money, materials, or equipment, and such agreement is made to complete the work on this contract, shall be in writing and acknowledged by the landowner/tenant with a copy provided to the Owner.

1.6 OWNER OCCUPANCY

A. The Owner may utilize all or part of the existing facilities during the entire period of construction for the conduct of the Owner's normal operations. The Contractor shall cooperate with the Owner to minimize interference with the Contractor's operations and to facilitate the Owner's operations.

1.7 MAINTENANCE AND OPERATION OF EXISTING FACILITIES

A. Work shall be scheduled and performed in such a manner as to result in the least possible disruption to the operation of the existing facilities and to the public's use of roadways, driveways, and utilities.

B. Contractor shall perform a location investigation of existing underground utilities and facilities and shall have obtained all required permits and permissions. Contractor shall also deliver written notice to property occupants (private and public) of all planned disruption to roadways, driveways, and utilities seventy-two hours in advance of disruption.

C. At no time shall the Contractor undertake to close off any pipelines, or open valves, or take any other action which would affect the operation of the existing system or facilities, except as specifically required by the Drawings and specifications, until authorization is granted by the Owner or Engineer and after proper notification.

D. The facilities will be maintained in continuous operation by the Owner during the entire construction period of this contract. Work shall be scheduled and coordinated by the Contractor that such work will not impede the collection system or pump station operation or cause odor or other nuisance. In performing the work shown and specified, the Contractor shall plan and schedule his work to meet the operating requirements and all additional restrictions.

E. Only the Owner can authorize the shutdown of any portions of the facility or system. The Contractor shall, under no circumstances, interfere with any existing component without the Owner's authorization in writing. Contractor shall notify the Owner at least 5 days in advance in writing. The Owner shall be responsible for removing facilities from operation.

F. A planned shutdown may be cancelled by the Owner upon a 24-hour notification by the Owner/Engineer to the Contractor. Such cancellation shall be expected due to wet weather conditions or other conditions beyond the control of the Owner, Engineer or Contractor. All efforts shall be taken to check weather forecasts and the like prior to scheduling facility shutdowns. However, if a cancellation must occur, the Owner shall not be responsible for any additional costs associated with mobilization and demobilization.

1.8 SPECIAL PERMIT CONDITIONS AND WORK RESTRICTIONS

A. Contractor shall research and report to Owner on any local jurisdiction's ordinance restricting the hours of operation for heavy construction equipment and schedule work in accordance with such ordinance. Contractor shall assume normal working hours on site may be 7 AM to 6 PM, Monday through Friday, and seek approval from Engineer or Owner for work outside of the normal working hours.

1.9 UTILITY CONNECTION FEES

A. Contractor shall pay for utility connection fees and assessment fees including electric, water, gas, storm drain, and telephone.

B. Submit contact information for each utility for which utility connections are desired and report to Owner or Engineer on communications with such utilities.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 013000

ADMINSTRATIVE REQUIREMENTS

PART 1 GENERAL

1.1 SUMMARY

A. This section includes project management, project records, project meetings, photographic documentation, site safety, security, and environmental procedures.

1.2 PROJECT MANAGEMENT

A. All work under the Contract shall be performed under the continuous supervision of competent personnel thoroughly experienced in the class of work specified. Prior to beginning the work, the Contractor shall give the Engineer, in writing, the name of the Contractor's official representative or superintendent for the project. The superintendent shall be capable of providing adequate supervision to the project and shall be responsible for receiving instructions, notices, and written orders from the Engineer. A change of the superintendent shall be reported to the Engineer in writing. Failure to provide adequate supervision to the project shall be grounds for the Engineer to require a change in supervision before allowing the work to proceed. The superintendent shall be responsible for reporting to the Engineer any inconsistencies, omissions, or lack of definite detail which is not covered on the plans or in the specification

B. File with the Engineer the names, phone numbers and addresses of two or more responsible persons in the Contractor's organization who are to be on call at all times. Contractor shall update the list within 24 hours of a change.

C. The Contractor shall employ a Project Superintendent who will be responsible for continuous coordination among all phases of work. He shall serve as the Contractor's liaison with the Owner's Representative.

D. The Project Superintendent shall have a minimum of three years of experience in the field and be acceptable to the Owner. He shall be maintained by the Contractor throughout the project and not be replaced without concurrence of the Owner.

E. The Project Superintendent's responsibilities shall include, but not be limited to:
   1. Consult the contract drawings and specifications of all trades to verify and coordinate the location of the various building components and items to be installed by all Contractors. Review the daily work schedules of all Contractors for a minimum of interferences to the work of other Contractors. This work includes (but is not limited to) installation of sleeves in walls and/or foundations for electrical and mechanical pipes and damper or louver openings.
   2. Consult and cooperate with all Contractors and their installers for all work to determine space requirements and adequate clearances with respect to other equipment in the building. The Owner's Representative reserves the right to determine space priority in the event of interference between piping, conduit equipment, furnishings, etc., of various trades.
   3. Inspect, report to the Owner's Representative, and coordinate the removal, relocation and reconnection of any installed work which interferes with the work of other trades. All work so directed shall be at the expense of the installing Contractor.

1.3 PROJECT RECORDS

A. During the performance of this contract, the Contractor shall maintain a suitable office at or near the site of the work which shall be the headquarters of a representative authorized to receive drawings, instructions, or other communication or articles. If a job costs less than $100,000 the Contractor may use a workman’s vehicle for the office at the site of the work and shall designate which workman’s vehicle it will be.

B. Copies of the drawings, specifications, approved shop drawings, change orders, and other contract documents shall be kept at the Contractor's office at the site of the work, and be made available for use at all times by Engineer and Owner.

C. “As constructed” information shall be recorded on a separate set of Plans for submittal upon completion of the project. See Section 017800 for specifics on recording this information.

1.4 PRECONSTRUCTION CONFERENCE

A. Prior to the start of work the Engineer, in cooperation with the various agencies, will establish the time and date, distribute agenda, and administer the preconstruction conference. Owner, Engineer, Contractor, major Subcontractor(s) and Governmental Agencies will attend.

1.5 PROGRESS MEETINGS

A. Progress meetings will generally occur at the end of the month. The general job status will be discussed including progress of work, field observations, problems & decisions, shop submittal schedules and reviews, revision of construction schedule, corrective measures and project payments.

1.6 ELECTRONIC PROTOCOL

A. This project will use electronic media for communications, submittal of shop drawings, pay requests, and other project related correspondence:

1.7 PHOTOGRAPHIC DOCUMENTATION

A. Contractor shall be responsible for the production of pre-construction and construction photographs as provided herein.
   1. Pre-Construction Photographs: Photographs taken, in sufficient numbers and detail prior to the start of Work to show original construction site conditions.
   2. Progress Photographs: Photographs shall be taken throughout the duration of construction at regular intervals to document progress of the Work.

B. Digital images shall be electronically transferred monthly and at the end of the project on computer disks in JPEG format. Each image shall be labeled with the date taken.

C. Contractor shall provide electronic copies of photographs at the completion of the project before final payment is made.

1.8 OWNER PURCHASED EQUIPMENT AND MATERIAL

A. Owner will be purchasing equipment and materials for the project which may affect the Work Sequence and Work Schedule. The following delivery schedule will be described elsewhere.

B. Owner will be purchasing equipment and materials for the project which may affect the Work Sequence and Work Schedule. Refer to Section 016400 for the details and dates of arrival of the Owner's purchased equipment and materials for the project. Double handling may be required when equipment must be moved from a common carrier and placed in a temporary storage area.

1.9 AVAILABLE LAND

A. Owner is providing for all land and access required for constructing the Work. If it is necessary or desirable that the Contractor use land outside of the Owner's acquired land, the Contractor shall obtain a written agreement with the landowner. The agreement between Contractor and property owner shall describe in detail such items as removal of fences, installation of temporary fences, limits of land to be occupied, and any costs associated with crop damage.

1.10 CONSTRUCTION PROGRESS SCHEDULE

A. Develop an overall schedule and submit ***two*** copies within ***seven*** days of Notice to Proceed for review and approval to Owner's Representative a schedule of the work to be completed on the Project.

B. Revise the schedule as requested by the Owner's Representative when:
   1. Work progress falls 10 percent behind scheduled progress.
   2. When time extensions are approved for changes and causes beyond Contractor's control.
   3. When Contractor feels a significant reorganization of activities becomes necessary because of field and material supply conditions in order to meet the contract completion date of the Project.

C. Coordinate Work of various sections, space requirements for installation, and accessibility for construction by others.

D. Work that disrupts utility service shall be shown on the Construction Schedule and specifically scheduled with the Owner. Schedule notification shall consist of a written notice defining the work to be accomplished, the normal function that will be interrupted, the duration of the interruption, and the mitigating effort to be performed by the Contractor to maintain the capacity to operate continuously. The written notice shall be submitted to the Owner fourteen days in advance of the proposed work and the Owner will respond to the Contractor in writing within 7 days of receipt of the notice regarding the acceptability of the proposed plan.

E. At no time shall the Contractor close off any pipelines, or open valves, or take any other action which would affect the operation of the existing system or facilities, except as specifically required by the Drawings and specifications, until authorization is granted by the Owner or Engineer and after proper notification.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

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SECTION 013300

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SUMMARY

A. This section specifies the general requirements for the submittals of shop drawings, product data, and samples. Refer to Section 01 78 00 for closeout submittal requirements.

1.2 GENERAL SUBMITTAL REQUIREMENTS

A. All submittals shall be sent to Engineer at an email address to be provided to contractor during the pre-construction conference.

B. All submittals, regardless of origin, shall be approved by Contractor before submitting to Engineer. The Contractor shall be responsible for timely submittals so that there will be no delay to the Work due to the absence of approved submittals.

C. Upon receipt of a submittal, the Engineer will review and return the shop drawings within 14 calendar days. This review time will commence starting the next working day following receipt of the submittal.

D. Contractor shall be solely responsible for the completeness of each submittal, including the identification of all deviations from the Contract Documents on each submittal and in the Contractor's letter of transmittal. Each submittal shall be complete in all aspects incorporating all information and data required to evaluate the products' compliance with the Contract Documents.

E. Partial or incomplete submissions shall be returned to the Contractor without review. Time delays caused by rejection of submittals are not cause for extra charges to the Owner or time extensions.

1.3 ELECTRONIC SUBMITTALS

A. Contractor may make electronic submittals which will be exchanged electronically through mutually agreeable software. Procore, ProjectWise, Submittal Exchange are acceptable, and others may be proposed by Contractor.

B. Follow the submittal requirements below.

1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single specification section and transmittal form with links enabling navigation to each item.
2. Use the same submittal and resubmittal numbering system.
3. Identify the Project, Contractor, Subcontractor or supplier, pertinent Drawing sheet and detail number(s), and specification section number, as appropriate.
4. Apply Contractor’s standard certification stamp, signed or initialed certifying that review, approval, verification of Products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents. Submittals without this certification will be returned without review.

1.4 SHOP DRAWINGS

A. Submit shop drawings in accordance with the Contract Documents and other technical sections in these Contract Documents requiring submittals.

B. The use of contract drawing reproductions for shop drawings is subject to rejection.

C. Shop drawings shall show applicable standards, such as ASTM number or Federal Specification, performance characteristics, the principal dimensions, weight, structural and operating features, space required, clearances, dimensions needed for installation and correlation with other equipment and materials, external connections, anchorages, supports required, type and/or brand of finish or shop coat, grease fittings, etc. depending on the subject of the Drawings.

D. If the Contractor submits shop drawings of equipment by manufacturers other than those listed in the specifications, provide the following information with the submittal:

1. The name and address of at least three companies or agencies that are currently using the equipment.
2. The name and telephone number of at least one person at each of the above companies or agencies whom the Owner's Representative may contact.
3. A description of the equipment that was installed at the above locations. The description shall be

in sufficient detail to allow the Owner's Representative to compare it with the equipment that is proposed to be installed in this project.

E. For materials originating outside of the United States for which tests are required, provide recertification and retesting by an independent domestic testing laboratory.

F. Provide a professional engineer’s, architect, land surveyor, or landscape architect seal on appropriate drawings of items that are submitted for review where required by the Specifications. Each copy of a submittal requiring a Professional Seal shall bear an original seal with signature and date. Electronic seals are permitted provided they meet the State Board of Professional Licensing regulations.

1.5 PRODUCT DATA

A. Product data may be in the form of manufacturer's catalog sheets, brochures, diagrams, schedules, performance charts, illustrations, and other standard descriptive data. Product data shall show applicable standards, such as ASTM number or Federal Specification.

B. Where product data from a manufacturer is submitted, clearly mark each copy with indelible ink to identify pertinent materials, products or models proposed with all pertinent data, performance characteristics and capacities, dimensions, clearances, diagrams, controls, connections, anchorage, and supports. Present a sufficient level of detail for assessment of compliance with the contract documents.

C. Manufacturer's standard schematic drawings may be used in the submittal, but shall be modified by deleting information which is not applicable to the project, and by providing additional information specific to the project.

D. When warranties are required, a sample of the warranty for each product shall be submitted with the shop drawings or product data. The sample warranty shall be the same form that will be used for the actual warranty.

E. When Buy American Provisions are required for the Project, Supplier/Manufacturer shall provide a Buy American Certification with submittals for materials and equipment covered by the Buy American Provisions. Contractor is responsible for confirming that any product purchased for the Project meets the Buy American Provisions.

1.6 SAMPLES

A. Submit samples for review of the various materials, together with the finish, before purchasing, fabricating, applying, or installing such materials and finishes.

B. Identify samples as to product, color, manufacturer, trade name, lot, style, model, etc., location of use, and contract document reference.

C. Samples shall be of sufficient size or quantity to illustrate clearly the quality, type, range of color, finish or texture and shall be properly labeled to show complete project identification, the nature of the material, trade name of manufacturer and location of the Work where the material represented by the sample will be used.

D. Acceptable samples will establish the standards by which the completed Work will be judged. Therefore, materials, finishes, and workmanship in the completed project shall be equal in every respect to that of the samples submitted and accepted.

E. Samples of value may be returned to the Contractor for use in the project after review, analysis, comparison, and/or testing as may be required in the review process. One sample marked "resubmittal is not required" will be returned to the Contractor. Rejected samples will not be returned.

F. Furnish one sample of the finally reviewed materials, colors, or textures to Engineer for final record. Such material samples shall carry on the back all identification as previously described. If the sample is paint, include manufacturer, mix and proportion, name of color, building, Contractor/Subcontractor, and surfaces to which it is to be applied.

1.7 CERTIFICATES OF COMPLIANCE

A. Furnish a Certificate of Compliance for materials specified to a recognized standard or code prior to the use of any such materials in the work. The Engineer may permit the use of certain materials or assemblies prior to sampling and testing if accompanied by a Certificate of Compliance. The certificate shall be signed by the manufacturer of the material or the manufacturer of assembled materials and shall state that the materials involved comply in all respects with the requirements of the Specifications. A Certificate of Compliance shall be furnished with each lot of material delivered to the

work and the lot so certified shall be clearly identified in the certificate.

B. All materials used on the basis of a Certificate of Compliance may be sampled and tested at any time. The fact that material is used on the basis of a Certificate of Compliance shall not relieve the Contractor of responsibility for incorporating material in the Work which conforms to the requirements of the Contract Documents and any such material not conforming to such requirements will be subject to rejection whether in place or not.

C. The Engineer reserves the right to refuse permission for use of material on the basis of a Certificate of Compliance.

1.8 ENGINEER'S REVIEW

A. Engineer's review is only for general conformance with the design concept of the project and the information given in the Construction Documents. Neither the review nor any corrections or comment made on submittals during review relieves the Contractor from full compliance with the Contract Documents, including, but not limited to, the plans and specifications. *Engineer's* review of a specific item does not, nor shall it be construed to, include review of an assembly of which the item is a component. The Contractor is solely responsible for: all measurements, dimensions, quantities, materials, and proper fit up and interfacing of all components; all aspects of any fabrication process; the means, methods, techniques, sequences and procedures of construction; coordination of the work with that of all other trades; and performing all work in a safe and satisfactory manner.

B. The returned submittal will indicate one of the following actions:

1. Resubmittal not required - The review indicates that the submittal is in general conformance with the design concept and complies with the drawings and specifications. The Contractor may begin to implement the work method or incorporate the material or equipment covered by the submittal.
2. Make corrections noted - The review indicates limited corrections are required as marked on the submittal. The Contractor may begin implementing the work method or incorporating the material and equipment covered by the submittal in accordance with the noted corrections. Where submittal information will be incorporated in O&M data, a corrected copy shall be provided.
3. Revise & resubmit - The review reveals that the submittal is insufficient or contains incorrect data, or indicates that the material, equipment or work method is not in general conformance with the design concept or in compliance with the Drawings and Specifications. The Contractor shall not undertake work covered by such submittals until a new submittal is submitted.
4. Rejected - The submittal was not accepted or reviewed.

C. Engineer's review of submittals shall not relieve Contractor from responsibility for errors, omissions, deviations, or responsibility for compliance with the Contract Documents.

1.9 RESUBMITTALS

A. Resubmittals shall be made within 30 days of the date of the review letter returning the material to be modified or corrected, unless within 14 days Contractor submits a request for an extension of the resubmittal time, listing the reasons the resubmittal cannot be completed within that time, and are approved by the Engineer.

B. Contractor shall request an amendment to the Contract Documents, if the Contractor considers any correction indicated on the shop drawings to constitute a change to the Contract Documents.

C. Resubmittals will be reviewed and returned in the same 14 day review period. It is considered reasonable that the Contractor shall make a complete and acceptable submittal by the second submission of a submittal item. Contractor shall verify that all exceptions previously noted by Engineer have been taken into account.

D. Resubmittals shall have the original submittal number for that item followed by an alphabetic suffix. For example, if Submittal 33000-2 requires a resubmittal, the first resubmittal number will bear the designation "33000-2A" and the second resubmittal number will bear the designation "33000-2B".

E. Resubmittals shall identify what revisions were made.

F. The need for more than one resubmittal, or any other delay in obtaining Engineer's review of submittals, will not entitle Contractor to extensions of Contract Times unless the delay of the Work is the direct result of failure of Engineer to review and return any submittal to Contractor within the specified review period. Additionally, Contractor shall reimburse Owner for the charges of Engineer for review of the additional resubmissions. Monies due to the Contractor may be withheld to cover additional costs of any review beyond the second submittal.

1.10 SUBMITTALS FOR PROJECT CLOSEOUT

A. When the following are specified in individual sections, submit them at project closeout, and according to Section 017800.
   1. Project record documents
   2. Operation and maintenance data
   3. Warranties
   4. Bonds

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 015713

TEMPORARY EROSION AND SEDIMENT CONTROL

PART 1 GENERAL

1.1 SUMMARY

A. Stormwater Pollution Prevention Plan (SWPPP)

B. Erosion Control Measures

C. Velocity and Flow Control Measures

D. Sediment Control Measures

E. Application/Installation of Measures

F. Removal/Replacement of Measures

1.2 DESCRIPTION OF WORK

A. Furnish all materials; install, construct, maintain, and remove specified erosion control devices; at locations specified in the contract documents, or where specified by the Engineer.

B. Complete the required construction work on this project, while minimizing soil erosion and controlling water pollution. Maintain these features as specified, from initial construction stages to final completion of the project.

1.3 SUBMITTALS

A. Comply with Section 013300.

B. Upon request, provide copies of all records and documentation related to compliance with the SWPPP.

1.4 SCHEDULING AND CONFLICTS

A. Comply with the following:

1. Implement erosion and sediment control measures at the appropriate time(s).
2. Coordinate construction to minimize damage to erosion and sediment control devices.

1.5 SPECIAL REQUIREMENTS

A. Protection of Property: Prevent accumulation of soil, sediment, or debris from project site onto adjoining public or private property. Remove any accumulation of soil or debris immediately and take remedial actions for prevention.

B. Permit Compliance: When applicable, conduct all operations in compliance with the SWPPP. Labor, equipment, or materials not included as a bid item, but necessary to prevent stormwater contamination from construction related sources, are considered incidental. Incidental work related to compliance with the permit may include, but is not limited to: hazardous materials protection, fuel containment, waste disposal, and providing employee sanitary facilities.

C. Project Staging: Replacing erosion and sediment control practices that are damaged or removed by the contractor in a manner that is inconsistent with the current project staging or SWPPP is the Contractor's responsibility and will be at the Contractor's expense.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.1 SWPPP PREPARTION

A. Prepare a SWPPP according to the requirements of the State.

B. Have the SWPPP prepared by an individual experienced in erosion and sediment control.

C. Ensure that controls utilized in the SWPPP conform to the type and quantity of erosion and sediment controls required.

D. Submit the completed SWPPP to the Engineer for review and approval prior to filing.

E. Upon approval of the Engineer, submit and pay fee as appropriate.

3.2 SWPPP MANAGEMENT

A. Update the SWPPP according to the requirements of the State.

B. Revise the SWPPP and implement changes, as necessary, to prevent sediment or hazardous materials from being transported off the site.

C. Submit all SWPPP revisions to the Engineer for review and approval.

D. Perform and maintain records of erosion and sediment control site inspections, unless otherwise specified in the contract documents.

E. Retain all records on-site.

F. Provide all records and documentation to the Engineer upon completion of the project.

3.3 EROSION AND SEDIMENT CONTROL INSPECTION

A. Perform inspections following rainfall events in excess of ½ inch.

B. Notify the Engineer immediately of situations requiring attention beyond that provided for in the contract documents.

C. Provide copies of the inspection reports to the Engineer.

END OF SECTION

SECTION 017000

EXECUTION

PART 1 GENERAL

1.1 SUMMARY

A. This section includes lands and rights-of-way, underground utility locations, construction layout and staking, methods of operation, salvage of materials and equipment, and cutting and patching.

1.2 MOBILIZATION AND NOTIFICATIONS

A. Contractor shall notify Engineer and Owner seven working days in advance of startup of construction operations, addition of work crews, or major increase in work force.

1.3 UNDERGROUND UTILITY LOCATIONS

A. Utility locations are generally not shown on the Drawings. If shown, the locations of the utilities depicted on the Contract Drawings are not to be considered exact. The approximate utility locations, where shown, were derived from data obtained from generalized large-scale utility company supplied drawings or from prior facility construction drawings. The actual location of existing utilities is the sole responsibility of the Contractor. Those shown on the plans are given to call particular attention to areas of special concern.

B. The Contractor shall make his own investigations including exploratory excavations as needed to determine the locations and type of existing utilities to be encountered. Any work associated with crossing or paralleling a particular utility shall be subsidiary to the work as stipulated in General Conditions.

C. The utilities anticipated to be affected, if any, by this Project are indicated on the Contract drawings. The utilities shown are not intended to be a complete or an all-inclusive. Other utilities may exist in the Project area and may not be shown. The Contractor shall be responsible for contacting all affected utilities; municipalities, local, County, State, and Federal entities whether or not they are shown or listed.

D. The Contractor shall coordinate all work which parallels, crosses, or is in the vicinity of a given utility with the Owner of that particular utility. The Contractor shall notify all utilities and underground service agencies in advance of work scheduled or envisioned and arrange to have their respective services located. Upon exposing a utility or underground service, the respective service agency shall be contacted by the Contractor, such that an inspection of the service can be made by the utility (if desired) prior to backfilling. The Contractor shall obtain acceptance, in writing, from the utility regarding the preservation of their respective service during construction.

E. Should any facility, either underground or overhead, be unexpectedly encountered or damaged during construction, the Contractor shall immediately notify a representative of the company involved and take such steps as necessary for protection of the general public and his own personnel.

1.4 CONSTRUCTION LAYOUT AND STAKING

A. All work under this Contract shall be constructed in accordance with the lines and grades shown on the Contract Drawings or as directed by the Engineer. Elevation of existing ground, structures and appurtenances are believed to be reasonably correct, but are not guaranteed to be absolute and therefore are presented only as an approximation. Any error or apparent discrepancy in the data shown or omissions of data required for accurately accomplishing the stakeout survey shall be referred immediately to the Engineer for interpretation or correction.

B. The Owner will establish reference points for construction, which in the judgment of the Engineer are necessary to enable the Contractor to proceed with the Work. The reference points shall be basic horizontal and vertical control points in the project area. Preserve these points and transfer from them distances and elevations necessary for the execution of the structural and piping work. These points shall be used as datum for work under this contract.

C. The Contractor will furnish construction staking to execute the work as described below. The Contractor shall provide an experienced instrument man, competent assistants, and such instruments, tools, stakes, and other materials required to complete the survey, layout, and measurement work.

D. The Contractor shall be responsible to preserve benchmarks, reference points, stakes, property pins, and all other survey location items. In case of destruction by the Contractor or resulting from his negligence, he shall be held liable for any expense and damage and shall be responsible for any mistakes that may be caused by the unnecessary loss or disturbance of such benchmarks, reference points and stakes.

1.5 LAYOUT MODIFICATIONS

A. Should the Contractor desire a revision in the designated alignment or location he shall make said request to the Owner's Representative. The decision of the Owner's Representative is final.

B. Alignment changes may be proposed and staked by Contractor for review in field by the Owner's Representative and/or Owner. Contractor may propose differences or deviations of the work to avoid disturbances, surface obstructions, easement changes. Reroutes may be authorized by the Owner or Owner's Representative based on staked field conditions. Alignment changes agreed upon by Owner or Owner’s representative shall be recorded by the Contractor on the Record Drawings. Field Orders will be issued by the Owner's Representative to document significant changes in alignment.

C. Adjustment for actual quantities installed for the pipeline and appurtenances, if different from the drawings, will be paid for in accordance with Contract Documents.

1.6 OWNER'S CONSTRUCTION REPRESENTATIVE AT PROJECT SITE

A. The Owner may appoint or employ a person(s) to work as the Construction Representative on the project. The Owner's Representative shall represent the Owner as specifically set forth in the Contract, and shall observe the work performed under this Contract to the end that such work is performed in substantial accordance with the drawings and specifications. Such observation shall in no way remove any obligations on the part of the Contractor to provide all required supervision and quality control necessary to perform the work in accordance with the Contract.

B. If the Owner's Representative observes departures from the drawings and specifications, the Owner's Representative will call them to the attention of the Contractor, who shall promptly correct the unsatisfactory conditions. If the Contractor believes there has been no departure from the drawings and specifications, the Contractor may make written appeal.

C. The presence or absence of the Owner's Representative, or the failure of the Owner's Representative to detect faulty work shall in no way relieve the Contractor from his obligation to perform the work strictly in accordance with the drawings and specifications.

D. The Owner's Representative shall have no authority to permit any deviation from the drawings and specifications, except on written Change Order or Field Order as applicable. The Contractor will be liable for any deviation, except on such written order.

1.7 METHODS OF OPERATION

A. The Contractor shall inform the Owner in advance concerning his plans for carrying on each part of the work, but the Contractor alone shall be responsible for the safety, adequacy, and efficiency of his plant, equipment, and methods.

B. Any method of work suggested by the Owner or Engineer, but not specified, shall be used at the risk and responsibility of the Contractor; and the Engineer and Owner will assume no responsibility therefor.

C. Review by the Owner or Engineer of any plan or method of work proposed by the Contractor shall not relieve the Contractor of any responsibility therefor, and such review shall not be considered as an assumption of any risk or liability by the Owner or Engineer, or any officer, agent, or employee thereof. The Contractor shall have no claim because of the failure or inefficiency of any plan or method so reviewed.

D. The Owner and the Engineer will not be responsible for any act or omission of the Contractor, or any subcontractor, or any of their agents or employees, or any other persons performing any of the work. The Owner and Engineer will not be responsible for any failure of the Contractor or his subcontractors or any other persons to perform the work in accordance with the requirements of the Contract Documents.

1.8 UNFAVORABLE CONSTRUCTION CONDITIONS

A. During unfavorable weather, wet ground, or other unsuitable construction conditions, Contractor shall confine his operations to work which will not be affected adversely by such conditions. No work shall be constructed under conditions that would adversely affect the quality unless the Contractor takes special precautions to perform the work in a proper and satisfactory manner.

1.9 OBSTRUCTIONS

A. Any street signs, traffic signs, posts, mailboxes, guard fence, standards, yard lights or other similar obstructions shall be removed, properly stored and reset or salvaged to the Owner as directed by the Engineer.

B. Trees and shrubs that are encountered in the vicinity of the proposed facilities shall be removed only if deemed necessary by the Engineer.

C. Existing fences (including chain link fences) interfering with the construction operations shall be maintained by the Contractor until completion of the work affected thereby, unless written permission is obtained from the owner to leave an interfering fence dismantled for any agreed period of time. On completion of the work the Contractor shall restore all fences to their original or to a better condition and to their original location or as shown on the plans

D. All property pins, section corners or other monuments moved and/or destroyed by the Contractor's operations shall be replaced and reset. Replacement and resetting shall be done by a professional Engineer or Surveyor paid by the Contractor at no additional cost to the Owner.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

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SECTION 017800

CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.1 SUMMARY

A. This section includes closeout submittals, operation and maintenance data, warranties, spare parts and maintenance materials, and project records.

1.2 SUBMITTALS

A. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Engineer's review. A partial list of such items appears below, but it shall be the Contractor's responsibility to submit any other items which are required in the Contract Documents:
   1. Written test results of project components, where required.
   2. Performance affidavits for equipment, where required.
   3. Certificates of inspection and acceptance by local governing agencies having jurisdiction.
   4. Keys, padlocks, and other items not considered spare parts or maintenance materials.
   5. Clearances of all property owners for work requiring site restoration caused by Contractor’s operations.

B. Provide final submittals to Engineer that are required by governing or other authorities.

C. Submit final Application for Payment identifying total adjusted quantities, and final change order if required.

1.3 OPERATION AND MAINTENANCE DATA

A. Submit data bound in 8-1/2 x 11-inch text pages, three ring binders with metal hinges.

B. Prepare binder cover with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS", title of project, and subject matter of binder when multiple binders are required.

C. Internally subdivide the binder contents with permanent page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.

D. Contents: Prepare a Table of Contents for each volume, with each Product or system description identified, typed on white paper, in three parts as follows:
   1. Section 1: Directory, listing names, addresses, and telephone numbers of Engineer, Contractor, Subcontractors, and major equipment suppliers.
   2. Section 2: Operation and maintenance instructions, arranged by specification section. For each category, identify names, addresses, and telephone numbers of Subcontractors, suppliers and manufacturers. Identify the following:
      a. Significant design criteria.
      b. List of equipment.
      c. Parts list for each component.
      d. Operating instructions.
      e. Maintenance instructions for equipment and systems.
      f. Maintenance instructions for finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.
   3. Section 3: Project documents and certificates, including the following:
      a. Air and water balance reports.
      b. Certificates.

c. Photocopies of warranties and bonds.

E. Submit 1 draft copy of completed volumes 30 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Engineer comments. Revise content of all document sets as required prior to final submission.

F. Submit the required number of sets of revised final volumes within 30 days after receipt of Engineer's comments.

1.4 SPARE PARTS AND MAINTENANCE MATERIALS

A. Provide products, spare parts, maintenance, and extra materials in quantities specified in individual specification sections.

B. Deliver to Project site and place in location as directed; obtain receipt prior to final payment.

C. Contractor shall furnish an inventory listing of all spare parts for each piece of equipment using the form included at the end of this section, or similar form.

1.5 WARRANTIES

A. Provide notarized copies of all warranties.

B. Execute and assemble transferable warranty documents from Subcontractors, suppliers, and manufacturers.

C. Provide Table of Contents and assemble in three ring binder similar to O&M manuals.

D. Submit prior to final Application for Payment.

E. For items of Work delayed beyond date of Substantial Completion, provide updated submittal within 10 days after acceptance, listing date of acceptance as start of warranty period.

1.6 PROJECT RECORDS

A. Specifications: Contractor shall legibly mark and record at each Product section description of actual Products installed, including the following:
   1. Manufacturer's name and product model and number.
   2. Product substitutions or alternates utilized.
   3. Changes made by Addenda and modifications.

B. Drawings: Contractor shall legibly mark each item to record actual construction including:
   1. Measured depths of foundations in relation to finish floor datum.
   2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
   3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
   4. Field changes of dimension and detail.
   5. Details not on original Contract drawings

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 030510

LEAKAGE TESTING OF HYDRAULIC STRUCTURES

PART 1 GENERAL

1.1 SUMMARY

A. This section describes the method of testing concrete and pre-cast concrete hydraulic structures for leakage.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Precast Concrete Utility Structures: 330516.

PART 2 PRODUCTS

2.1 PROVIDE WATER, PIPING, AND EQUIPMENT TO TEST CONCRETE STRUCTURES FOR LEAKAGE.

PART 3 EXECUTION

3.1 GENERAL

A. Hydrostatically test any reinforced concrete basin which will contain water to determine that it is free of detectable leaks. Do not start leak testing or cleaning of surfaces until cast-in-place concrete has achieved its full 28-day compressive strength and joint sealants have set and cured a minimum of 14 days. Basins to be tested shall be in their final condition will all structural supporting members (slabs, beams, etc.) in place and at their full 28-day compressive strength.

B. Prior to testing, thoroughly clean exposed surfaces, removing surface laitance and loose matter from walls and slabs. Remove wash water and debris from the structures by means other than washing through plant piping. Replace crystalline waterproofing if damaged by cleaning operations.

C. Conduct testing before backfill is placed against walls and after concrete has attained the specified compressive strength, the concrete has cured, and joint sealants have set and cured a minimum of 14 days.

3.2 LEAKAGE TEST PROCEDURE

A. Fill hydraulic structures to be subjected to leakage tests with water to the maximum operating liquid level line. Filling shall not exceed 3 feet of water depth per 24-hour period. Filling shall be at a uniform rate over a 24-hour period with continuous monitoring. For structures with adjacent bays, fill all bays simultaneously. Empty adjacent bays alternately. Repair any running leaks which appear during filling before continuing.

B. Seed the floor slab of each hydraulic structure with one bag of cement per 1,000-square-foot surface area. Seeding shall take place after the test filling has reached 18 inches in depth. Detect leaks in construction and expansion joints with the aid of a diver. Stir cementitious deposits on the floor. Observe cement deposits flowing toward leaks and repair where the defect is located.

C. After the structure has been kept full for 48 hours, it will be assumed for the purposes of the test that the absorption of moisture by the concrete in the structure is complete. Close all valves and gates to the structure and measure the change in water surface each day for a five-day period.

D. During the test period, examine exposed portions of the structure, and mark visible leaks or damp spots. Repair visible leaks or damp spots after dewatering. If the drop in water surface in a 24-hour period exceeds 1/10 of 1% of the normal volume of liquid contained in the structure, the leakage shall be considered excessive. Crystalline waterproofing shall be assumed to be fully effective within three days after filling the structure. Repair leaks and damp spots that still exist three days after filling.

E. If the leakage is excessive, drain the structure, repair leaks and damp spots, and refill the structure and again test for leakage. Continue this process until leaks have been repaired.

F. Inspect the manholes of the underdrain system for evidence of leaks in floor slabs. If leaking is indicated, locate and repair.

G. Repair visible leaks and damp spots whether leakage exceeds the allowable leakage or not. Repair leaks and damp spots with the same procedure that would otherwise be used to repair leakage in the event that the leakage test fails.

H. Repairs and additional filling and testing (including the cost of water) shall be made by the Contractor at no additional cost to the Owner.

3.3 REPAIR METHODS

A. Methods for repairing concrete not passing the leakage test and that for repairs of leaks and damp spots shall be as described in Section 033000.

END OF SECTION

SECTION 312333

TRENCHING AND BACKFILLING

PART 1 GENERAL

1.1 SUMMARY

A. This section includes materials and installation for trench excavation, backfilling, and compacting.

B. Sheeting, shoring, bracing, and protection of adjacent property, trees, and structures.

C. Preparation of subgrades, bedding for pipe, backfilling, and disposal of excess excavation.

1.2 SUBMITTALS

A. Submit shop drawings in accordance with the Section 013300.

B. All specified bedding and backfill material, except earth excavated material.

C. Moisture-Density test for each backfill material.

D. Sheeting, shoring and bracing design calculations by a registered professional engineer licensed in the State.

1.3 DEFINITIONS

A. Pipe Embedment Zone - The full width of trench from both below and above the bottom of the pipe or conduit to a horizontal level above the top of the pipe as defined by the embedment class or as shown on the details.

B. Trench Zone - The portion of the trench from the pipe embedment zone to finished grade in unpaved areas, and to the bottom of the drive zone in drive areas.

C. Pipe Cover - The distance from the top of the finished grade of the trench to the top of the waterline pipe.

D. Aggregate Pipe Base - A layer of material below the pipe embedment zone to stabilize the bottom of the trench and provide uniform bearing of the pipe and pipe embedment.

E. Class A Excavated Material
   1. Hard shale, sandstone, limestone, granite or similar materials which is encountered in monolithic ledges greater than 8" in thickness and which, in the opinion of the Owner's Representative, require jackhammering, use of a special headache ball or hydrohammer for removal. A toothed bucket is not considered as special "ripping" equipment.
   2. Two or more ledges with inter-lying strata of earth, clay, or gravel not more than eight (8) inches in thickness in each strata will be classified as a solid monolithic formation from the top of the top ledge to the bottom of the bottom ledge. Boulders that are encountered within glacial till or other soil and are not a portion of a continuous monolithic formation shall not be considered

F. Unclassified Excavated Material - All earth or other materials that do not meet the requirements of Class A excavated material.

1.4 COMPACTION TESTING

A. An independent geotechnical firm hired by General Contractor will test perform material testing and field compaction testing.

B. Material testing for each backfill material shall be two moisture density tests or two relative density tests according to the appropriate ASTM specification.

C. Minimum testing frequency for in-place field shall be:
   1. One test for every 200 cubic yard of backfill for site backfill with a minimum of one test for every full-shift of compaction operation on mass earthwork.
   2. One test at intervals of 500 feet along the trench.
   3. One in-place field density test whenever there is a suspicion of a change in backfill material, quality of moisture or effectiveness of compaction.

D. Sample backfill materials for the density testing shall be taken according to ASTM D75.

E. Determine the density of soil in place by the sand cone method ASTM D 1556, rubber-balloon method ASTM D2167; or nuclear method ASTM D 2922.

F. Compaction is the calculated ratio of the in-place (dry) density to the laboratory maximum (dry) density expressed as a percentage.

G. Determine laboratory moisture-density relations of soils according to the ASTM test method identified in the specific subsection.

H. If the Owner is responsible for compaction testing, the Contractor shall pay the costs of any retesting of work not conforming to specifications.

I. The following table identifies the compaction required based on the location of the trench.
   1. LOCATION/COMPACTION DENSITY
      a. Under paved areas, sidewalks, and pipe crossings: 95% of ASTM D698
      b. Under foundations and equipment support pads: 95% of ASTM D698
      c. Unpaved areas: 85% of ASTM D698
      d. Granular backfill: 75% relative density per ASTM D4253 and ASTM D4254

PART 2 PRODUCTS

2.1 PIPE EMBEDMENT MATERIAL

A. Native earth material which is fine, loose material, free from stones 1-inch and larger, hard frozen clods, and other material that may cause damage to the pipe, organic matter and debris that will deteriorate and cause voids.

B. Rigid Pipe - Bedding Classes A, B, C or crushed rock, as described in ASTM C12.

C. Ductile Iron Pipe - Type 1 through Type 5 laying conditions, as described in ASTM A746.

D. PVC and other Flexible Pipe - Classes I, II, III, as described in ASTM D2321.

E. Composite Pipe - Same as Flexible Pipe except as described in ASTM D2680.

2.2 GRANULAR BACKFILL MATERIAL

A. Granular material shall meet the following gradation:
   1. Sieve Size 1 inch, Percent Passing By Weight: 100%
   2. Sieve Size 3/4 inch, Percent Passing By Weight: 85-100%
   3. Sieve Size 3/8 inch, Percent Passing By Weight: 50-80%
   4. Sieve Size No. 4, Percent Passing By Weight: 35-60%
   5. Sieve Size No. 40, Percent Passing By Weight: 15-30%
   6. Sieve Size No. 200, Percent Passing By Weight: 5-10%

B. The granular material shall not contain clay lumps or organic matter. The fraction passing the No. 4 sieve shall have liquid limits no greater than 25 and a plasticity index no greater than 5. The material shall meet the quality requirements of ASTM C33.

2.3 AGGREGATE PIPE BASE MATERIAL

A. The aggregate base material shall consist of crushed rock or gravel; free from dust, clay and trash; be hard, durable, non-friable and meet the gradation as defined in ASTM C33 for No. 76 coarse aggregate or the following gradation:
   1. Sieve Size 3/4 inch; Percent Passing By Weight: 100%
   2. Sieve Size No. 4; Percent Passing By Weight: 0-35%
   3. Sieve Size No. 8; Percent Passing By Weight: 0-17%
   4. Sieve Size No. 200; Percent Passing By Weight: 0-10%

B. Other gradations may be utilized provided all the material passes the 3/4 sieve and it can be demonstrated that they provide adequate base support for the pipe.

C. The aggregate material shall meet the quality requirements of ASTM C33.

PART 3 EXECUTION

3.1 PREPARATION

A. Verify that survey bench marks and intended elevations for the Work are as shown on drawings.

B. Identify required lines, levels, contours, and datum.

C. Identify by visible markings all plant life, trees, lawns, fences and other features that are to be protected.

D. Protect bench marks from excavation equipment and vehicular traffic.

E. Existing underground installations such as water mains, gas mains, sewers, telephone lines, power lines, and buried structures in the vicinity of the work to be done hereunder are indicated on the drawings only to the extent such information has been made available to or discovered by the Engineer in preparing the drawings. There is no guarantee as to the accuracy or completeness of such

information, and all responsibility for the accuracy and completeness thereof is expressly disclaimed. Generally, service connections are not indicated on the drawings.

F. The Contractor shall be solely responsible for locating all existing underground installations, including service connections in advance of excavating or trenching by contacting the owners thereof and prospecting. The Contractor shall use his own information and shall not rely upon any information shown on the drawings concerning existing underground installations.

G. Where utilities are parallel to or cross the construction but do not conflict with the permanent work to be constructed, follow the procedures given below or as indicated in the drawings. Notify the utility owner 48 hours in advance of the crossing construction and coordinate the construction schedule with the utility owner's requirements.

H. Determine the true location and depth of utilities and service connections which may be affected by or affect the work. Determine the type, material, and condition of these utilities. In order to provide sufficient lead time to resolve unforeseen conflicts, order materials and take appropriate measures to ensure that there is no delay in

3.2 SHEETING, SHORING, AND BRACING OF TRENCHES

A. Sheeting and bracing, or trench boxes shall be provided where necessary to conform to 29CFR1926 Subpart P-Excavations, OSHA requirements.

B. Where it is necessary to drive sheeting below the centerline of the pipe, it shall be driven to a depth of at least 2 feet below the flow line of the pipe, or as directed by the geotechnical engineer.

3.3 TRENCH WIDTHS

A. Trench widths shall be as shown in the drawings.

B. The width of the trench shall be ample to allow the pipe to be laid and jointed properly and to allow the bedding and haunching to be placed and compacted to adequately support the pipe. The trench sides shall be kept as nearly vertical as possible. When wider trenches are specified, appropriate bedding class and pipe strength shall be used.

C. In unsupported, unstable soil the size and stiffness of the pipe, stiffness of the embedment and in-situ soil and depth of cover shall be considered in determining the minimum trench width necessary to adequately support the pipe

D. Ledge rock, boulders, and large stones shall be removed to provide a minimum clearance of 4-inches below and on each side of the pipe.

E. Trench width at the top of the trench will not be limited except where width of excavation would undercut adjacent structures and footings. In such case, width of trench shall be a minimum clearance of the trench wall to outside pipe being a minimum of 4-inches, and that there is at least 24-inch clearance between the top edge of the trench and the structure or footing.

3.4 MINIMUM PIPE COVER

A. Pipeline Location: Non-Paved Areas, Cover - 42 inches

B. Pipeline Location: Paved Areas, Cover - 42 inches

C. Pipeline Location: Under ditches and minor drainage courses, Cover - 4 feet

D. Pipeline Location: Under rivers and streams, Cover - 4 feet

E. Pipeline Location: State Highway, Cover - 6 feet

3.5 TRENCH EXCAVATION

A. Perform all excavation regardless of type, nature or condition of the material encountered to accomplish the construction. Excavate the trench to the lines and grades shown on the drawings with allowance for pipe thickness and for pipe base or special bedding.

B. Care shall be taken not to over-excavate. If the trench is excavated below the required grade, refill any part of the trench excavated below the grade with native material and compact to a density equal to the rest of the trench bottom.

C. Length of open trench to be no more than amount of pipe installed in one working day. Backfilling of the open trench to grade to be no more than 40-feet behind the installed pipe.

D. Blasting will not be permitted unless approved by Owner and appropriate jurisdictions.

E. After the required excavation has been completed, the Owner’s Representative will inspect the exposed subgrade to determine the need for any additional excavation. It is the intent that additional

excavation be conducted in all areas within the influence of the pipeline where unacceptable materials exist in the exposed subgrade. Over excavation shall include the removal of all such unacceptable material that exists directly beneath the pipeline to a width 24-inches greater than the pipe outside diameter and to the depth required. Refill the trench to subgrade of pipe base with native material. Place the foundation stabilization material over the full width of the trench and compact in layers not exceeding 6 inches deep compacted to 95 percent relative compaction and carried to the required grade.

3.6 LOCATION OF EXCAVATED MATERIAL

A. During trench excavation, place the excavated material only within the working area. Do not obstruct any roadways or streets. Conform to federal, state, and local codes governing the safe loading of trenches with excavated material.

B. Excavated material not used as backfill shall be disposed of off-site.

3.7 DEWATERING

A. Provide and maintain means and devices to remove and dispose of all water entering the trench excavation during the time the trench is being prepared for the pipe laying, during the laying of the pipe, and until the backfill has been completed.

B. Water entering the excavation or other parts of the work shall be removed until all the work has been completed. No sanitary sewer shall be used for the disposal of trench water, unless specifically approved by the engineer, and then only if the trench water does not ultimately arrive at existing pumping or wastewater treatment facilities

C. Dispose of the water in a manner to prevent damage to adjacent property. Do not drain trench water through the pipeline under construction. Do not allow groundwater to rise around the pipe until jointing compound has set hard.

3.8 INSTALLING BURIED PIPING

A. Grade the bottom of the trench to the line and grade to which the pipe is to be laid, with allowance for pipe thickness. Remove hard spots that would prevent a uniform thickness of bedding. Place the specified thickness of pipe base material over the full width of trench. Grade the top of the pipe base ahead of the pipe laying to provide firm, continuous, uniform support along the full length of pipe, and compact to the relative compaction specified herein. Before laying each section of the pipe, check the grade and correct any irregularities.

B. Excavate bell holes at each joint to permit proper assembly and inspection of the entire joint. Fill the area excavated for the joints with the bedding material specified or indicated in the drawings for use in the pipe zone.

C. Inspect each pipe and fitting before lowering the buried pipe or fitting into the trench. Inspect the interior and exterior protective coatings. Patch damaged areas in the field with material recommended by the protective coating manufacturer. Clean ends of pipe thoroughly. Remove foreign matter and dirt from inside of pipe and keep clean during and after installation.

D. Handle pipe in such a manner as to avoid damage to the pipe. Do not drop or dump pipe into trenches under any circumstances.

E. Lay the pipe at the proper elevation and grade and properly attach to the adjacent pipe according to the type of joint.

F. When the pipe laying is not in progress, including the noon hours, close the open ends of pipe. Do not allow trench water, animals, or foreign material to enter the pipe.

G. Keep the trench dry until the pipe has been installed and jointed to the other pipe.

3.9 TRENCH BACKFILLING

A. Backfill according to the details for the particular type of pipe, and per the following:

1. Place the specified thickness of pipe base material over the full width of trench. Grade the top of the pipe base ahead of the pipe laying to provide firm, uniform support along the full length of pipe. Organic matter or clay material which may fall in an open trench during construction shall be removed. The Contractor shall limit the amount of native material which may fall on top of the completed pipe base until the pipe is installed.
2. Backfill shall be of a suitable material removed from excavation except where other material is specified. Debris, frozen material, large clods or stones, organic matter, or other unstable materials shall not be used for final backfill within 2 feet (0.6 m) of the top of the pipe. Do not bury waste material.

3. After pipe has been bedded, backfill simultaneously on both sides of the pipe, keeping the level of backfill the same on each side. Carefully place the material around the pipe so that the pipe barrel is completely supported and that no voids or uncompacted areas are left beneath the pipe. Do not permit free fall of the material until at least 2 feet of cover is provided over the top of the pipe. Use particular care in placing material on the underside of the pipe to prevent lateral movement during subsequent backfilling.
4. Compact material placed within 12 inches of the outer surface of the pipe by hand tamping only.
5. Continue to place the backfill material in the trench until it reaches the finished grad according to the following criteria:
    a. Backfilling under Paved Areas: Plus or minus 1/2 inch from required elevations.
    b. General Backfilling: Plus 3 inches from required elevations.

3.10 BACKFILL COMPACTION METHODS

A. Compact by using mechanical compaction or hand tamping. Do not use high impact hammer-type equipment except where the pipe manufacturer warrants in writing that such use will not damage the pipe. Jetting will not be allowed.

B. Do not use any axle-driven or tractor-drawn compaction equipment within 5 feet of walls and structures.

C. When existing pipe is encountered during excavation, care shall be taken to support pipe sufficiently so pipe remains in service and to ensure safety of workers. During backfilling place bedding material in and around the existing pipe and compact to specifications above.

3.11 PLACEMENT OF SAND-CEMENT SLURRY BACKFILL

A. Place sand-cement slurry backfill in a uniform manner that will prevent voids in or segregation of the material. Remove foreign material that falls into the excavation or trench. Do not commence backfilling over or place any material over the slurry cement backfill until at least four hours after placing the sand-cement slurry.

3.12 PLACEMENT OF CLSM (CONTROLLED LOW-STRENGTH MATERIAL)

A. Provide batching equipment to obtain the proper weights of soil, cement, water, and admixtures. Measuring devices shall be sensitive to a 2% variation above or below the actual weights required. Volumetric batching may be used, provided the same accuracy required for weight batching is maintained.

B. Design and operate the mixers used for mixing the CLSM so that the CLSM as discharged from the mixer is uniform in composition and consistency throughout each batch.

C. Place the CLSM such that it flows easily into all openings between the pipe and the excavated trench. In some cases, such as trenches on a slope, a stiffer mix may be required to prevent it from flowing down the trench. In this case, use vibration to ensure that the CLSM completely fills all spaces.

D. Lay the pipe on the soil pads and place the CLSM bedding as shown in the drawings. Place bedding under pipe from one side and vibrate so that it flows under the pipe until it appears on the other side. Then add CLSM to both sides of the pipe and vibrate until it completely fills the space between the pipe and the excavated trench bottom. This operation shall follow as closely behind pipelaying operations as possible. Place CLSM in such a way as to prevent uplift or buckling of the pipe. Deposit CLSM as nearly as practicable in its final position. Do not disturb the pipe trench or cause foreign material to become mixed with the cement slurry.

E. Do not place backfill above the pipe until the CLSM has reached the initial set. Place and maintain a 6-inch cover of moist backfill cover until additional backfill is placed. If the ambient temperature is 50°F or less, place an additional 6-inch cover of backfill over the 6-inch moist backfill cover prior to the end of the working day.

F. Whenever freezing temperatures are imminent, maintain the CLSM at a temperature of not less than 50°F for 24 hours after placement. The temperature of the mix shall be 50°F or greater at the time of placement. Monitor the temperature by placing a thermometer in the CLSM immediately after sampling at the placement site. When freezing weather appears imminent, make ready at the placement site materials that may be required for protection of the CLSM. Delay placement of CLSM until adequate provisions for protection against weather are made. Do not place CLSM bedding in pipe trenches when the trench bottom or walls are frozen or contain frozen material. Backfill placed as cover over the CLSM is prohibited from containing any frozen material.

3.13 INSTALLING IMPERVIOUS BARRIERS

A. Construct impervious barriers in the pipe and trench zones at 300-foot intervals on slopes exceeding 30% and within 50-feet of vertical points of inflection on slopes exceeding 30%. Construct concrete barriers such that the bottom of the collar extends at least 3 inches into the pipe base, at least 3 inches into each side of the walls of the trench, and at least 3 inches above the top of the pipe zone.

B. Install ABS dams by digging a slot approximately 3 inches deep into the pipe base, located approximately 3 feet from the nearest pipe bell. Key the dam into the groove such that the neck of the adapter connection pipe faces upstream. Center the dam into position and insert the edges into the side walls of the trench. Slide a Fernco adapter over the pipe to be installed. Move the pipe through the dam opening and assemble the pipe joint. Slip the Fernco adapter over the ABS barrier's neck and tighten the adapter's bands. Backfill both sides of the dam such that there are no voids around the pipe.

3.14 PROTECTING UNDERGROUND UTILITIES

A. Underground utilities are to be protected in place and remain in service, unless otherwise specified on the Plans or in the specifications. Compact bedding material under and around the utility so that no voids are left. Flowable fill may be an acceptable method of bedding and backfill.
   1. Where indicated in the drawings or as determined by the Owner's Representative, support utilities by a reinforced concrete beam or support wall as shown on the utility support details in the drawings. The primary purpose of the beam is to prevent settlement of the existing utility line during and after construction. The Contractor is responsible for the protection of the utility during construction and shall incorporate the beam as part of the protection.

B. Abandoned utility lines may be cut to facilitate installation of the new Works. All open ends are to be plugged. The cut utility line shall be removed from the site.
   1. Storm drains and sewers are to be plugged with an 8-inch wall of brick and mortar.
   2. Waterlines are to be capped with a cast-iron cap or a 3-foot-long concrete plug.

C. Sewer services, water services, and other utility service lines are not shown on the Drawings. Interference with these services may occur. If such situations arise, the Contractor shall move the conflicting utilities (such as water service leads, sewer service lines, gas lines, etc.) or adjust the pipeline vertical and/or horizontal alignment to maintain required vertical and/or horizontal separations. All proposed modifications to the pipeline alignment shall be presented to the Owner's Representative for review and all changes made shall conform to the recommendations of the Owner's Representative.

D. If the utility must be removed to facilitate construction of the new Works, the utility will be reconstructed with new materials and placed back into service. During this period, Contractor shall provide temporary service for the disconnected utility.

E. Disruption of water service to residential and/or places of business as a result of the Contractor's operations shall be limited to a maximum of 8 (eight) hours. In the event that disruption of a particular service will be longer than 8 hours, the Contractor shall provide temporary potable water service which meets the Department of Health requirements for potable water to the affected residence or place of business for drinking purposes. In the event that disruption of a particular service will be longer than 24 hours, the Contractor shall provide temporary potable water service which meets the entire domestic water demands of the affected residence or place of business. The Contractor shall at all times maintain on site, the materials required for providing temporary water services.

F. Waterlines whose thrust is in the direction of the new excavation, may be affected by the construction. Protect thrust blocks in place or shore to resist the thrust by a means approved by the water utility. If the thrust blocks are exposed or rendered to be ineffective in the opinion of the Owner's Representative, reconstruct them to bear against firm unexcavated soil.

END OF SECTION

SECTION 330516

PRECAST CONCRETE UTILITY STRUCTURES

PART 1 GENERAL

1.1 SUMMARY

A. This section includes design, materials, testing, and installation of precast concrete tanks, manholes and vaults.

1.2 SUBMITTALS

A. Submit shop drawings in accordance with Section 013300.

B. Submit manufacturer's catalog data on precast concrete tanks, manholes, steps and ladders, frames and covers. Show dimensions and materials of construction by ASTM reference and grade. Show lettering on manhole covers.

C. Provide structural design calculations sealed by a registered engineer in the State of Kentucky, as required for the project.

D. Show on shop drawings for each structure all proposed pipe size openings at the proposed elevation and orientation of penetrations.

E. Provide product data for waterproof material, steps, ladders, and all items identified in Part 2.

F. The date of manufacture and name of manufacturer shall be marked inside each precast section.

1.3 LOADING

A. All structures with top elevations near grade shall be designed for H-20 traffic loading. Access openings located in driving surfaces shall be designed for H-20 traffic loading. Access openings for vaults that are elevated above the surrounding surface and located in non-driving surfaces shall be designed for 300 pounds per square foot loading, unless otherwise indicated.

B. Soil lateral loads shall be as determined by ASTM C857 or loadings specified in the project soils report, whichever is greater. Alternate design by the strength design method shall include a load factor of 1.7 times the lateral earth or hydrostatic pressures.

C. Include the following load conditions in the design:

1. Structure roof removed while structure is backfilled to grade and subject to live and dead loads.

2. Structure roof in place and walls subject to simultaneous vertical and horizontal application of all live, impact, and dead loads. Include the case of an H-20 designated load placed directly above the wall.

PART 2 PRODUCTS

2.1 PRECAST CIRCULAR CONCRETE MANHOLES

A. Precast manholes and circular wet wells shall conform to the requirements of ASTM Designation C 478 with reinforcement of Grade 60 bars and the following modifications thereto.

B. The minimum shell thickness shall be 5-inches for 4 feet diameter manholes, 6-inches for 5 feet diameter manholes and 7-inches for 6 feet diameter manholes. All interior and exterior surfaces shall have smooth surfaces free of surface voids. Precast structures with textured or rough surfaces will not be accepted.

C. Joints shall be a compression type, neoprene gasket joint meeting ASTM C923. The unfilled portion of the joint shall be filled with preformed plastic joint sealing compound that conforms to Federal Specification SS-S-0021 0.

D. Concrete adjusting rings (4-inch maximum) shall be standard manufactured product of the precast manhole manufacturer and conform to the requirements of ASTM C 478. All grade rings shall have integral key.

E. Minimum allowable steel shall be hoops of No. 4 wire cast into each unit.

F. Precast top sections shall be eccentric cone; concentric cone; or flat slab, except where shown otherwise in the drawings.

2.2 PRECAST RECTANGULAR CONCRETE TANKS AND MANHOLES

A. Precast rectangular concrete manholes shall comply with ASTM C858 except as modified herein.

Minimum size shall be 60 inches square. Design manholes for the depths shown in the drawings, assuming a soil density of 130 pounds per cubic foot.

B. Minimum wall thickness shall be 6 inches unless otherwise noted in plans. Design knockout wall panels to accommodate loading pressures.

C. Precast top sections shall be flat slab, except where shown otherwise in the drawings.

2.3 PRECAST CONCRETE VAULTS

A. Precast concrete vaults shall comply with ASTM C858 except as modified herein.

B. Design shall comply with the following restrictions:

1. The maximum reinforcement ratio allowed is one-half the reinforcement ratio that would produce a balanced strain condition.

2. Earth pressure shall be converted to a horizontal pressure using a coefficient of earth pressure at rest of 0.5 and not a coefficient of active earth pressure.

3. Include a live load surcharge of 3 feet of soil in the design of the walls.

C. Precast vault construction shall be in the form of monolithic walls or horizontal wall sections; do not use panel walls.

D. Minimum wall thickness shall be 6 inches. Design knockout wall panels to accommodate loading pressures defined above.

E. Floor slab shall be cast-in-place concrete as shown in the drawings. Calculations for the floor slab design shall be included in the vault design submittal.

F. Provide aluminum ladders as indicated.

G. Vaults shall have concrete covers with lifting handles. Access openings shall be provided by 1) a minimum 30” diameter galvanized steel lids, which are bolted to galvanized steel frames with stainless steel bolts, 2) manhole ring and frames or 3) access hatches, as shown on the Plan details. The galvanized frames and lids shall be provided by the vault manufacturer.

Manhole covers and access hatches may be supplied by others provided the required clearances, dimensions and installation requirements are coordinated between both

suppliers. When leveling bolts are used to set the vault top sections, the Contractor shall

ensure that the load on the vault will be transferred through the mortar to the vault, and will not be carried by the leveling bolts.

2.4 INSERTS

A. Handling eyes, lifting inserts, and threaded inserts shall be galvanized steel. Design load capacity shall be 2,000 pounds unless shown otherwise in the drawings.

B. No more than 3 lift holes may be cast or drilled in each section.

2.5 STEPS AND RUNGS

A. Cast structure with steps (ladder rungs). Steps shall be 1/2-inch minimum diameter steel reinforced bar with a copolymer polypropylene plastic covering (per ASTM D4101) resistant to 1,500 pounds pullout force, conform to ASTM C-478 and OSHA standards, and allow hand-driven installation into precast manholes. The tread shall be at least 3/4 inch wide.

B. Minimum clear length of rungs shall be 14 inches. Space rungs vertically at 16 inches on center, set between 5 and 6 inches from the face of the concrete, and align with each other in a straight vertical line (both parallel and perpendicular to ladder rungs).

2.6 ALUMINUM LADDER

A. General

1. Aluminum Ladders shall comply with ANSI A14.3.

2. Design of the ladder and attachment to concrete to be provided during the manufacture. Do not connect any aluminum product directly to the concrete unless coated to prevent reaction.

3. The distance between rungs shall not exceed 12 inches and shall be uniform throughout the length of the ladder. The minimum clear length of rungs shall be 14 inches. The rungs shall have a nonskid coating.

4. Side rails: Continuous extruded-aluminum channels or tubes, not less than 2-1/2 inches deep, 3/4 inch wide, and 1/8 inch thick.

5. Rungs: Extruded-aluminum tubes, not less than 3/4 inch deep and not less than 1/8 inch thick, with ribbed tread surfaces.

6. Fit rungs in centerline of side rails; fasten by welding or with stainless-steel fasteners or brackets and aluminum rivets.

7. ANSI A14.3 requires a minimum support spacing is 10 feet (3 m).

8. Support ladder at top and bottom and not more than 60 inches o.c. with welded or bolted aluminum brackets.

B. Approved manufacturers are ACL Industries, Inc., Alco-Lite Industrial Products, Halliday Products, Precision Ladders, LLC., or equal.

2.7 MANHOLE FRAMES AND COVERS

A. Manhole frames and covers shall be made of cast iron conforming to ASTM A48, Class 35B. Castings shall be smooth, clean, and free from blisters, blowholes, and shrinkage. Frames and covers shall be designed for H20-44 traffic loads. The cover shall seat firmly into the frame without rocking.

B. Manhole ring and cover shall be:

1. Neenah No. R-1769-A, Deeter No. 1048, Clay & Bailey No. 2032M or approved equal (minimum wt. of cover 150 lbs., and ring 250 lbs.).

2. Watertight manhole ring and cover shall be Neenah No. R1916-F with anchor bolt holes or approved equal, minimum total weight of 450 lbs.

3. Manhole ring and cover for Type II manholes shall be slab type, Neenah No. R6065 for 6'deep and 6065A for 8" deep, Deeter No. 1180 for 6" deep or approved equal. Provide stainless steel bolts and fasteners.

C. Grind or otherwise finish each cover so that it will fit in its frame without rocking. Frames and covers shall be match-marked in sets before shipping to the site.

D. Manhole covers shall be designated as "Sanitary Sewer"; or "Storm Sewer" and shall be cast in 2-½" high block letters flush with the traffic surface on all manhole covers as appropriate for the individual manhole's use.

E. Coat castings with an asphalt coating complying with ASTM A849, Class A, to a minimum thickness of 50 mils.

F. Provide insulated cover, consisting of the materials stipulated on the drawings.

2.8 ACCESS HATCHES

A. Provide single leaf access hatch with clear openings as indicated. Hatch to be W2R by Halliday or equal unless otherwise shown.

B. The hatch shall be furnished with locking lugs to receive a padlock and recessed lifting handles.

C. All aluminum in contact with concrete, mortar, steel, or stainless steel shall be protected from direct contact through the use of bituminous coating or some other Engineer approved means.

D. The hatch shall be provided with 316 stainless steel hardware throughout.

E. The hatch shall be cast into the top slab

2.9 CONCRETE

A. Cement for manholes shall conform to ASTM C150, Type II, 4000 psi compressive strength.

2.10 NON-SHRINK GROUT

A. Nonshrink grout shall be a prepackaged, inorganic, non-gas liberating, nonmetallic, nonstaining, cement based grout requiring only the addition of water. Manufacturer's instructions shall be printed on each bag or other container in which the materials are packaged. The specific formulation for each class of nonshrink grout specified herein shall be that recommended by the manufacturer for the particular application.

B. Nonshrink grouts shall have a minimum 28 day compressive strength of 5000 psi, shall have no shrinkage (0.0 percent) and a maximum 4.0 percent expansion in the plastic state when tested in accordance with ASTM C 827, and shall have no shrinkage (0.0 percent) and a maximum of 0.2 percent expansion in the hardened state when tested in accordance with CRD C 621.

C. Non-shrink grout shall be Cormix "Supreme", L&M "Crystex", Master Builders "Masterflow 713 Grout" or "Set Grout", Sauereisen Cements "F-100 Level Fill Grout", UPCO "Upcon Super Flow", or Five Star Products Inc. "Five Star Grout", without exception.

D. The grout consistency shall be that necessary to completely fill the space to be grouted for the particular application. Dry pack consistency is such that the grout is plastic and moldable but will not flow. Where "dry pack" is called for in the Contract Documents, it shall mean a grout of the above described consistency; the type of grout to be used shall be as specified herein for the particular application.

E. Prepackaged grouts shall have ingredients measured by means recommended by the manufacturer.

2.11 SEALING COMPOUND AND MORTAR

A. Butyl rubber sealing compound shall comply with ASTM C990. Mortar shall comply with ASTM C387, Type S.

B. All grout used for sealing around pipe openings shall be as specified and designed for use in water. All openings and joints shall be sealed watertight.

C. Joint sealant shall be approved preformed mastic sealant. Sealant shall conform to the requirements of AASHTO M198 and shall be Kent seal or Ram Neck or pre-approved by the Engineer. Where specifically indicated, trowelable mastic sealant shall be a butyl rubber sealant, Trowelable EZ-Stik #3 as manufactured by Press-Seal Gasket Corporation or approved equal. Use Conseal CS 440 for fuel and oil resistant applications.

2.12 PIPE CONNECTORS

A. Flexible resilient watertight manhole and pipe connector shall meet all material and performance requirements of ASTM C923 for pipe outside diameter 4" through 60". Gasket material shall be produced from a polyisoprene blend compound or chemically resistant neoprene EPDM flexible boot. Natural rubber gaskets will not be acceptable.

B. Manhole to pipe connectors shall be cast into the manhole wall during the manufacturing process.

C. Approved pipe connectors are:

1. A-Lok X-CEL as manufactured by A-Lok Products, Inc.
2. Z-Lok-XP (A-Lok Products, Inc.).
3. Kor-N-Seal (Dukor Corporation),
4. Storm sewer pipe connections shall be Quik-Lok or Z-Lok STM (A-Lok Products) or equal.

D. Approved pipe connectors for existing concrete structures installed in the field shall be:

1. G3 Boot System as manufactured by A-Lok Products, Inc.,
2. LCT Manhole Adapter Gasket as manufactured by Romac Industries, Inc.

E. Approved pipe connectors for existing brick structures and rigid connections installed in the field shall be CMA Concrete Manhole Adapter as manufactured by Fernco.

F. New PVC pipe to existing VCP pipe connectors shall be a flexible coupling with stainless steel band clamps, as required and approved by the Engineer. Connectors shall be manufactured by Fernco Joint Sealer Co. or approved equal.

2.13 COATINGS

A. Waterproofing. The interior and exterior walls of all sanitary manholes shall be given two coats, each 12-15 mils dry film thickness, of Uniseal 1600, as manufactured by Anchor Tite or approved equal.

B. PVC Liner. Where indicated, the entire interior surface of all sanitary manholes shall be lined with a PVC sheet liner system equal to Ameron T-Lock liner as manufactured by Ameron Protective Linings Division, Brea, California, or approved equal. The liner shall be installed and tested in strict conformance with the manufacturers recommendations and field welded by Ameron certified technicians, no exceptions. The exterior of all manholes shall be painted with two 12-15 mils DFT coats of Uniseal 1600, as manufactured by Anchor Tite.

PART 3 EXECUTION

3.1 MANHOLE BASE

A. Excavate for the manhole and install a base of 8 inches thick washed crushed rock (3/4" max.), or as shown on the Plan details. Crushed rock base material shall extend 1 foot beyond the outside edge of the concrete manhole base.

B. Form and pour concrete bases as one monolithic pour. For sewer manholes, form the portion above the invert elevation of the sewer pipe to provide a smooth channel section. Channels shall vary uniformly in size and shape from inlet to outlet.

3.2 INSTALLATION

A. Set each precast concrete manhole unit plumb on a bed of sealant or mortar to make a watertight joint at least 1/2 inch thick with the concrete base or with the preceding unit. Point the inside joint and wipe off the excess sealant or mortar. Secure the manhole frame to the grade ring with grout and cement mortar fillet. Backfill, compact, and replace pavement.

B. When working inside manholes, Contractor shall exercise caution and comply with OSHA requirements when working in the presence of sewer gases, combustible oxygen-deficient atmospheres, and confined spaces.

C. Handle with care to avoid damage to joint ends of each section. Damaged sections may be subject to rejection at the discretion of the Engineer. All manhole and vault construction shall be watertight. The invert, walls and steps shall be cleaned of excess grout and laitance.

D. Floors of the manholes shall be shaped and smoothed so that flow channels will be formed such that the manhole will be self-cleaning and free of areas where solids may be deposited. The floors shall have a slope of one (1) inch per foot on areas outside of the flow channels.

E. Connection to existing sewer mains shall be done in an approved manner. Cutting into existing sewer shall be done in such a manner as to prevent damage to sewer not being removed. New invert channel(s) shall be constructed as required and in accordance with the requirements herein and as shown on the Drawings.

F. Connections to manufactured, precast items shall be made by casting sections of pipe into the items, using non-shrink grout as shown on the Drawings, and/or using an acceptable resilient connector.

G. Precast Sections: Precast-reinforced concrete sections shall be set so as to be vertical and with sections in true alignment.

H. All holes in sections, used for their handling, shall be thoroughly plugged with mortar. The mortar shall be 1 part cement to 1-1/12 parts sand; mixed slightly damp to the touch (just short of "balling"): hammered into the holes until it is dense and an excess of paste appears on the surface; and then finished smooth and flush with the adjoining surfaces.

I. Upon installation the exterior of all structures shall be given an asphaltic waterproofing. The exterior surfaces of precast and poured-in-place manholes shall be coated with two heavy coats of a

water-based asphaltic coating. Application and curing shall be in accordance with the manufacturer's specifications and instructions. Coating shall be fully dried before backfilling.

J. Manhole Castings shall be set on a full mortar bed or sealed with a troweled-on butyl rubber mastic sealant, Press-Seal Gasket Corporation Trowelable EZ-Stik #3 or equal. Do not backfill around the

manhole casting for a minimum of 20 minutes to allow the grout to set.

K. In situations where the exterior walls of the manhole will be exposed to weather or where bolt down covers are required, the manhole casting shall be bolted to the precast cone section or flat slab top using 3/4" diameter stainless steel threaded rod, nuts and washers epoxy anchored into the concrete.

L. Castings and frames shall be set true to line and to correct elevations.

M. Assemble units so that the cover conforms to the elevation determined by the manhole location as follows:

1. In Paved Areas: Top of cover shall be flush with the paving surface.

2. In Shoulder Areas: Top of cover shall be flush with existing surface where it is in traveled way of shoulder and 0.1 foot above existing surface where outside limits of traveled way but not in the existing roadside ditch.

3. In Roadside Ditch or Unpaved Open Areas: Top of cover shall be 18 inches above the ground surface.

N. MORTAR

1. All mortar shall be used within 40 minutes after mixing. Mortar which has begun to take on initial set shall be discarded and shall not be mixed with additional cement or new mortar.

3.3 INVERTS

A. Manhole inverts shall be constructed of concrete with Type II cement and shall have a minimum 28-day compressive strength of 4000 psi.

B. In no case shall the invert section through a manhole be greater than that of the outgoing pipe. The shape of the invert shall conform exactly to the lower half of the pipe it connects. Side branches shall be connected with as large of a radius of curve as practicable. All inverts shall be troweled to a smooth clean surface. Slope bench 1-inch per foot minimum to avoid solids build-up.

C. Where the difference in elevation between the incoming sewer line and the manhole invert is less than twenty-four inches (24”), the invert shall be filleted to prevent solids deposition.

3.4 CONNECTION TO MANHOLES

A. Connections to new manholes shall utilize flexible connections. Flexible connections allow for limited differential settlement to occur between the pipe and manhole. The uniform compaction of the bedding material under the pipe and up to the spring line or top of the pipe as detailed is essential to the control of this differential settlement. Resilient connectors shall be used with all flexible connections. A flexible preformed mastic sealant shall be installed around the bottom half of the exterior pipe surface between the resilient connector and the invert. This flexible sealant shall be installed to separate the pipe from the invert to maintain the flexibility of the pipe/manhole connection. Pipes installed with flexible connections shall not have concrete encasement at the outside of the manhole.

B. Connection to Existing Structures shall be done in such a manner as to prevent damage to existing structures. Hole for installation of pipe shall be approximately 4 inches larger in diameter than the outside diameter of the pipe to be installed. Annular space around the pipe or resilient connector, as required, shall be filled solid with non-shrink grout. New invert channels shall be constructed as required and shall conform to the requirements herein. For installing a new manhole on an existing pipe, a clamp-on resilient connector shall be installed on the pipe prior to grouting into the manhole wall.

3.5 STUB LINES

A. Stub lines for future connections shall be provided in manholes at the locations indicated on the drawings and shall terminate in a bell and plug.

3.6 CLEANING AND TESTING

A. After all installations are complete, including all backfill and compaction, all structures and appurtenances shall be cleaned of foreign materials. Flushing of foreign materials from a newly completed section of sewer into section already in service will not be allowed. If the lining or coating system is damaged during either installation or cleaning it shall be repaired in strict accordance with and approved by the coating system manufacturer’s technical field service personnel.

B. Contractor shall furnish all labor, tools, potable water (if a hydrostatic test is allowed) and equipment necessary to perform all tests as specified herein.

C. If inspection or test shows defects, such defective work or material shall be replaced and inspection and tests repeated. Repairs to piping and appurtenances shall be made with new material at no additional cost to the Owner.

D. Manholes structure shall be either vacuum or hydrostatically tested. Vacuum or hydrostatic testing is recommended prior to backfilling, where feasible, to assist in locating leaks. The final test and acceptance shall be based only on a test after the manhole is backfilled and the cast manhole ring is in place. Existing manholes where new connections are made will not be required to be vacuum or hydrostatically tested. These manholes shall be visually inspected for water tightness with any leakage noted and corrected prior to manhole acceptance.

E. Testing Methods
   1. Vacuum Test - Plug all manhole entrances and exits other than the manhole top access using suitably sized and rated pneumatic or mechanical pipeline plugs. Follow manufacturer's recommendations and warnings for proper and safe installation of such plugs, taking care to securely brace the plugs and the pipe. Attach the vacuum test device to the cast manhole ring and draw a vacuum to 10" of mercury. With the valve at the vacuum line connection closed and the vacuum pump off, measure the time required for the vacuum to drop to 9" of mercury. The manhole passes the test if the time is greater than 60 seconds for a 48" diameter manhole, 75 seconds for a 60" diameter manhole, and 90 seconds for a 72" diameter manhole. If the manhole fails the test, the Contractor shall locate the leak and make proper repairs with non-shrink grout. The manhole shall be retested until acceptable test results are obtained.
   2. Hydrostatic Test - Manholes may be tested using internal or external hydrostatic pressure with prior approval by the Engineer. External hydrostatic testing shall only be used where the groundwater level is at least 4 feet above the invert of the manhole. In all other cases, the internal hydrostatic test procedures must be followed. Sewers connected to the manhole shall be adequately plugged. For the internal hydrostatic test, the manhole shall be filled with water to the top or to a maximum depth of 25-feet above the invert. Water gain or loss shall not exceed 1.14 gallons per day per vertical foot of manhole for either external or internal hydrostatic testing. Infiltration and exfiltration shall be determined after 24 hours of hydrostatic testing by determining the gain or loss of water in the manhole. Contractor shall be responsible for retrieving any plugs or material accidentally washed down a sewer.

END OF SECTION

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SECTION 333100

SANITARY SEWER SYSTEMS

PART 1 GENERAL

1.1 SUMMARY

A. The Contractor shall furnish all material, tools, equipment and labor necessary for material handling, cutting, installation and jointing of various types and sizes of pipe at the locations shown on the Drawings, or as detailed and in conformance with the specifications.

1.2 COORDINATION OF WORK

A. All work shall be fully coordinated with other work and shop drawings must be checked with each of the various trades. Conflicts in the sequence of the work shall be coordinated through consultation with the Engineer.

1.3 APPLICABLE STANDARDS

A. Specifications of the following listed standards will be referred to hereinafter by standards abbreviation and specification number which shall include the latest revision thereof.
   1. ANSI, American National Standards Institute.
   2. ASTM, American Society for Testing and Materials.
   3. AWWA, American Water Works Association.
   4. AASHTO American Association of State Highway Transportation Officials.

1.4 QUALITY ASSURANCE

A. Items submitted for approval in accordance with requirements shown on the Drawings and details shall be of the manufacturer indicated, or an approved equal, in compliance with materials, operations, physical assembly and performance as specified herein.

B. In addition to the correction period set forth in General Conditions, the manufacturer's standard warranties shall be provided.

1.5 SUBMITTALS

A. Pipe and Fittings: Certification of compliance, shop drawings.

B. Precast Concrete Structures & Appurtenances: Shop drawings, certification of compliance.

C. Coating and lining systems, non-shrink grout, polyethylene corrosion protection: Manufacturer’s data and specification sheets and certification of compliance.

D. Construction Sequence

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Store materials to prevent physical damage.

B. Protect materials during transportation and installation to avoid physical damage.

C. Pipe, fittings and accessories shall be handled in a manner to insure installation of the material in an undamaged and structurally sound condition.

D. Particular care shall be taken to not harm pipe bell and spigot ends. Handling equipment and procedures shall be in accordance with the approved manufacturer's recommendation for proper handling of his products. Improper handling of pipe that results in damage to pipe will be grounds for rejection of the pipe for installation.

1.7 CONNECT TO EXISTING LINES

A. Work shall be so scheduled and timed as to cause the least possible interference with the operation of the existing system.

B. Adequate facilities for disposal of fluids which may be released during the connecting operations shall be available.

C. Contractor shall provide the necessary pumps and temporary piping and associated accessories as required for pumping of wastewater around areas of construction so as to not impede the collection and treatment of the wastewater.

D. Sewage and water contaminated with sewage shall be conveyed to sanitary sewers.

1.8 BYPASS PUMPING

A. Where flow control is required to perform a specified repair, replacement, or connection to an existing sewer pipe or manhole, plugging or blocking shall be used wherever possible.

B. If plugging or blocking is not feasible or at the Contractor's discretion, Contractor shall provide the necessary pumps and temporary piping and associated accessories as required for pumping of wastewater around areas of construction so as to not impede the collection and treatment of the wastewater. Backup pumping capability will be required.

C. The design, installation, and operation of the temporary pumping system shall be the Contractor's responsibility. The temporary pumping system shall comply with the requirements of all codes and regulatory agencies having jurisdiction. Contractor shall be responsible for any spillage of raw sewage that results in civil or criminal charges from any local, state, or federal agency and will bear all costs for these charges and any restoration required.

D. It is essential to the operation of the existing sewerage system that there be no interruption in the flow of sewage throughout the duration of the Project. Contractor shall provide, maintain, and operate all temporary facilities such as plugs, pumping equipment (both primary and backup units as required), conduits, all necessary power or fuel source, and all other labor and equipment necessary to handle the sewage by-pass flow.

E. Contractor shall provide all necessary means to safely convey the sewage past the work area.

Contractor shall not stop or impede the sewer flows under any circumstances.

F. Contractor shall maintain sewage flow around the work area in a manner that will not cause surcharging of sewers, damage to sewers, and that will protect public and private property from damage and flooding.

G. Contractor shall protect water resources, wetlands, and other natural resources.

H. Contractor shall insure that the flow diversion pumping system is properly operated and maintained and shall provide responsible personnel to oversee the diversion pumping system at all times.

I. Work shall be so scheduled and timed as to cause the least possible interference with the operation of the existing sewer collection and treatment system.

J. Sewage and water contaminated with sewage shall be conveyed to sanitary sewers.

K. Bypass pumping shall be considered subsidiary to all other bid items.

1.9 WRAP OF BEDDING MATERIAL WITH GEOTEXTILE FABRIC

A. A layer of medium weight non-woven geotextile fabric shall be placed between the pipe zone backfill and the intermediate zone backfill to reduce fines migration into the pipe zone. Filter fabric shall be laid-out and overlapped according to the manufacturer's recommendations

1.10 WARRANTY

A. Full warranty against defects in materials and workmanship for one year after FINAL ACCEPTANCE, including all parts, labor, and expenses.

PART 2 PRODUCTS

2.1 PVC (POLYVINYL CHLORIDE) SEWER PIPE

A. SDR 35 PVC sewer pipe shall conform to ASTM D3034. SCH. 40 and SCH 80 PVC Pipe (Class 12454-B) shall conform to ASTM D1784 and D1785. All pipe joints shall be rubber gasketed bell and spigot. Pipe shall be made from PVC plastic having a cell classification of 12454-B, 12454-C, or 13343-C having a minimum tensile modulus of 500,000 psi, as defined in ASTM D1784. Nominal laying length shall be 13 feet for 8" through 18" and 19 1/2 feet for 21-inch through 27-inch sizes.

B. PVC pipe joints shall be bell and spigot design conforming to the requirements of ASTM D3212.

C. Gaskets shall meet the requirements of ASTM F477. Solvent weld or non-gasket friction joints are not acceptable.

D. PVC fittings shall be manufactured from the same material as the pipe and meet the requirements of ASTM D3034 for 4" through 15" and ASTM F679 - PS46 for 18" through 27". Fittings shall be so designed so that deflection under load is equal to or less than that of the connecting PVC pipe.

2.2 DUCTILE IRON PIPE

A. Ductile iron pipe, where indicated on the Drawings or required, shall be as specified herein.

B. All ductile iron pipe shall be push on or mechanical joint and shall conform to the requirements of ANSI/AWWA C151/A21.51. The wall thickness and outside diameter of the pipe shall conform to Tables 51.4 and 51.5 of AWWA C151. All ductile iron pipe shall be Class 51, except as noted otherwise.

C. Fittings for use with the ductile iron pipe specified herein, shall be ductile iron. Cast ductile iron fittings shall be pressure rated for at least 250 psi. All fittings with mechanical joints and push on joints shall conform to AWWA/ANSI C110/A21.10 and ANSI/AWWA C111/A21.11, except that Buna-N gaskets shall be used for the joint. The fitting manufacturer shall furnish the proper gaskets, nuts, bolts, glands, for each type of joint. Compact fittings are not acceptable. All fittings shall be American made with uniform flange/gland thickness.

D. The interior of all ductile iron pipe and fittings shall be lined with polyethylene or coated with Protecto 401 Ceramic Epoxy or Coropipe II WasteLiner as manufactured by Madison Chemical Industries, Inc.

E. All ductile iron pipe and fittings shall be checked for dry film thickness (DFT) in accordance with the SSPCA-PA2. Each pipe and fitting shall be marked with the date of application of the lining system and with its numerical sequence of application on that date. The pipe supplier shall furnish a certificate stating that the lining applicator has complied with all specification requirements relative to the material, its application and inspection.

F. Surface preparation, number of coats, application of the lining material and field touch-up shall be in strict accordance with the lining material manufacturer’s recommendations. During the installation of the pipe, the lining manufacturer shall provide the services of a field engineer to instruct and demonstrate to the Contractor’s personnel the procedure for the field touch-up of the lining where field cuts and taps were required.

G. Holiday inspection shall be conducted using test equipment described in AWWA C 210, Section

5.3.3.1. In accordance with the coating manufacturer’s recommendation, holiday testing may be conducted any time after the coating has reached sufficient cure.

H. Polyethylene: Inside coatings of all ductile iron pipe and fittings shall be of virgin polyethylene with nominal thickness of 40 mils (35 mils minimum) complying with ANSI/ASTM D 1248.

1. The polyethylene shall be bonded to the interior of the pipe by heat. All surfaces to be lined shall be blast cleaned comparable to the requirements of SSPC-SP6 or NACE no. 3.

2. All pipe and fittings shall be lined with a minimum dry film thickness of 40 mils, except for the gasket groove and spigot end up to 6-inches back from the end of the spigot which shall be lined with 10 mils of the material.

3. The coating thickness on sealing areas in the bell socket interior and on the spigot end of the pipe exterior shall be 8 mils nominal with a maximum of 10 mils. Thicker coatings in these areas are acceptable if it is demonstrated that joint dimensions are within allowable tolerances after coating.

4. Repairs and touchup shall be performed in accordance with the manufacturer's recommended repair and touchup procedures. All field cut ends shall be repaired, sealed and fully cured prior to installation.

5. Polyethylene Lining Testing - Factory tests. All ductile iron pipe and fittings with polyethylene linings shall be subjected to a 10,000-volt spark test prior to shipment. This test shall be utilized to seek any pinholes in the lining after the lining has cooled. Any pipe section or fitting that fails the non-destructive test shall be rejected.

I. Epoxy Coating: Inside coatings of all ductile iron pipe and fittings shall be an amine cured novalac epoxy containing at least 20% by volume of ceramic quartz pigment. The coating shall be Protecto 401 Ceramic Epoxy as manufactured by the Protecto Division of Vulcan Painters, Inc. The coating shall be a nominal 40 mils DFT thickness, with a minimum of 30 mils DFT thickness.

1. The epoxy coating shall be installed and tested in strict accordance with AWWA C 116/ANSI A21.16 and as supplemented in these specifications.

J. Polyurethane Coating: Inside coatings of all ductile iron pipe and fittings shall receive a two-component polyurethane coating system The lining material shall consist of a ceramic modified polyisocyanate resin and polyol resin mixed in a 1:1 ratio at the time of application. The material shall be Corropipe II WasteLiner(CM) as manufactured by the Madison Chemical Industries, Inc. The lining material shall be an ASTM D 16 Type V system. The coating shall be a minimum of 40 mils DFT thickness.

1. All surfaces to be coated or lined shall be cleaned to a near white metal finish (SSPC-SP 10) as applied to ductile iron pipe and fittings. All surfaces shall be completely dry, free of moisture, dust, grease or any other deleterious substances at the time the coating or lining is applied.

2. The coating thickness on the sealing areas in the bell socket interior and on the spigot end of the pipe exterior shall be 8 mils DFT nominal with a maximum of 10 mils DFT. Thicker coatings in these areas are acceptable if it is demonstrated that joint dimensions are within allowable tolerances after coating.

3. Field joints, repair and touch up material shall be GP II (E) Touch-Up as manufactured by Madison Chemical Industries, Inc. This work shall be performed in strict accordance with the manufacturer's recommended procedures. All field cut ends and touch ups shall be repaired, sealed and properly cured prior to installation.

K. Exterior Coating: An asphaltic coating shall be applied to the exterior of all ductile iron pipe and fittings intended for buried service and shall conform to ANSI/AWWA C151/A21.51. The exterior of all piping in the wet well shall be coated as specified in the Painting Section. All ductile iron pipe and fittings intended for interior use and for use above grade shall receive a prime coat of universal primer as specified in the Painting Section.

L. An asphaltic coating shall be applied to the exterior of all ductile iron pipe and fittings intended for buried service and shall conform to ANSI/AWWA C151/A21.51.

M. Corrosion Protection:

1. The exterior of all buried ductile iron piping shall be protected from corrosion by a seamless linear low-density polyethylene (LLDPE) tube conforming to ANSI/AWWA C105/A21.5 with a minimum thickness of 8 mils.

2. The tube shall have markings placed at two-foot intervals and include the manufacturer's name and/or trade mark, the year of manufacture, the standard designation ANSI/AWWA C105/A21.5, the minimum film thickness and material type, the application range of pipe nominal diameters for the film, and a warning notice: "Warning - Corrosion Protection - Repair any Damage."

3. Corrosion protection supplied in 48-inch wide flat sheets shall be used to cover irregular shaped valves, fittings and appurtenances not protected by the tube form of polyethylene wrap.

4. Securing tape shall be 2-inch wide by ten (10) mil thickness and supplied by the pipe manufacturers.

2.3 GEOTEXTILE FABRIC

A. Geotextile wrap of bedding material shall be with filter fabric US 205NW or equivalent and meet the following specifications:

1. Apparent Opening Size (AOS): #80 U.S. Standard Sieve Size per ASTM D4751.
2. Grab Tensile/Elongation: 205 lbs/50% per ASTM D4632.
3. Puncture Strength: 130 lb minimum, average roll value per ASTM D4833.

2.4 MANHOLES, CONCRETE ADDITIVES FOR MANHOLES, MANHOLE COATINGS AND NON-SHRINK GROUT FOR MANHOLES

A. Precast reinforced concrete manholes, concrete additives for manholes, manhole coatings and non-shrink grout for Sanitary Sewer Systems shall be as specified in Section 330516.

2.5 EXPANSION PIPE PLUG

A. Expansion pipe plugs 4" - 18" diameter shall be Hand-Tite Pipe Plug as manufactured by R.C. Graham Co.

2.6 TRACER WIRE

A. All gravity sewer pipes and new sections of laterals shall be installed with tracer wire to facilitate future location of the pipe.

B. Locator wire shall be #12 gauge solid copper wire with PE-45 insulation as manufactured by Kris-Tech Wire Company or an approved equal. Alternative manufacturer wire must be specified as locator or tracer wire and shall not be conductor wire for other purposes.

C. Locator wire shall be installed in such a manner to keep slices to an absolute minimum.

D. All connections or splices shall be made with a Splice Kit equal to 3M-DBR-Part Number – 054007-09964 or approved equal.

E. Wire shall be taped as shown on the Construction Plan details.

F. Wire shall be installed along all lines and outside manhole structures, lampholes, and cleanouts as shown on the Construction Plan details and shall have enough slack to extend to 48” above ground.

G. Contractor must prove continuity of locator wire after installation is complete. Owner’s Representative must be present during continuity testing.

H. Locator wire installation, including signal loss, shall be warranted for one year.

PART 3 EXECUTION

3.1 TRENCHING, BACKFILLING AND COMPACTING

A. Trenching and backfilling shall be in accordance with applicable requirements of Section 312333.

3.2 GENERAL PIPE INSTALLATION

A. Pipe shall be protected during handling against impact shocks and free fall and the pipe interior shall be free of extraneous material.

B. Pipe Handling: Pipe, manholes and appurtenances shall be handled in a manner to insure installation of the material in an undamaged and structurally sound condition. Particular care shall be taken to not harm pipe coatings. Handling equipment and procedures shall be in accordance with the approved manufacturer's recommendation for proper handling of its products. Improper handling of pipe that results in damage to pipe or coatings will be grounds for rejection of the pipe for installation. The Engineer will be the final judge as to the acceptability of any material on the project. Cutting of pipe is discouraged. The Contractor is urged to plan his job to minimize the necessity for cutting. Prior to installation each pipe shall be inspected for defects and cracks. All defective, unsound or damaged pipe shall be rejected. The interior of all pipes and fittings shall be thoroughly cleaned and kept clean thereafter. All joints surfaces shall be kept absolutely clean during the jointing process. Pipelines and runs intended to be straight shall be laid straight and to grade. Grade changes and alignment deflections shall be made as shown on the drawings.

C. Laying Pipe: Pipe shall not be laid in wet trench. At times when the laying of the pipe is not in progress, the open ends of the pipe shall be closed in such a manner that water due to rainfall or infiltration cannot enter. All joints shall be completed. Except where necessary for making connections with other lines, closures, or as authorized by the Engineer, pipe shall be laid with the bells facing upstream.

D. Aligning Pipe: Tangent runs intended to be straight shall be laid straight. Horizontal and vertical deflections shall be by angular divergence of the axis of adjacent pipe at the joint in accordance with manufacturer's recommendations. Shorter lengths of pipe may be used to increase the number of available joints.

3.3 PIPE INSTALLATION

A. Bedding Pipe: Pipe shall be placed in bedding material as specified in Section 312333 TRENCHING AND BACKFILLING.

B. Laying Pipe: Lay pipe upgrade starting at the low point and with spigot end of pipe pointing downstream with bell holes excavated as required. Inspect each length and reject damaged or defective lengths. All pipe shall be laid with ends abutting and true to line and grade and shall be fitted and matched so that when laid together they will form a smooth and uniform invert. As the work progresses, the interior of the pipe shall be cleared of all superfluous materials.

C. Pipe jointing shall be accomplished as follows:
   1. All surfaces of the portions of the pipe to be joined shall be clean and dry. Lubricants and primers shall be used as recommended by the pipe manufacturer. The joints shall then be placed, fitted, joined and adjusted so as to obtain a water tight joint. Where possible the proper seating of the gasketed joints shall be visually inspected prior to placement of the next section of pipe. Pipe or piped joints found to be defective shall be removed from the trench, marked as defective and returned to the manufacturer.

D. The downstream end of new line extensions shall be plugged in a positive manner by use of inflatable plugs or other means acceptable to the Engineer until construction, cleaning, and testing is completed and the new construction is accepted by the Engineer.

E. Service (Wye) Connections. Install fittings for service connections in all types of pipe at locations and in the manner designated by the manufacturer and approved by the Engineer.

F. Riser Pipes shall be constructed of approved sewer pipe and fittings as specified herein and as detailed on the Drawings. Each riser pipe shall be plugged with an Engineer approved plugging device.

G. House service lines shall be constructed of approved sewer pipe and fittings as specified herein and as detailed on the Drawings. Connections between new and old work shall be made by means of suitable adapters approved by the Engineer.

H. Sewer lines and stubs indicated on the Drawings to be plugged for future connection, shall be plugged with an Engineer approved plugging device. The plugging device shall be corrosion resistant, designed for long term burial and prevent infiltration for the duration of its use. It shall allow easy removal for future connection with no damage to the existing line or stub. The plug shall be as manufactured by Hand-Tite, Inc. or approved equal.

3.4 SEPARATION OF WATER MAINS AND SEWERS

A. Gravity Sanitary Sewers. When potable water pipes and gravity sanitary sewers are laid parallel to each other, the horizontal distance between them shall be not less than 10 ft (3.0 m). The distance shall be measured from edge to edge. The laying of water pipes and sanitary sewers shall be in separate trenches with undisturbed earth between them. When a water pipe and a sanitary sewer cross and the sewer is 2 ft (0.6 m) or more (clear space) below the water pipe, no special requirements or limitations are provided herein. At all other crossings, the sanitary sewer is to be constructed of one of the following materials (or approved equal) and pressure tested to assure water tightness.
   1. Ductile iron pipe confirming to ASTM A536 or ANSI/AWWA C151/A21.51 with minimum thickness class 50, and gasketed, push-on, or mechanical joints in conformance with ANSI/AWWA C110/A21.10 or ANSI/AWWA C111/A21.11.
   2. PVC pipe conforming to ASTM D3034 with minimum wall thickness of SDR41, ASTM F679, ASTM F789, or ASTM F794, with gasketed push-on joints in conformance with ASTM D3212.
   3. Reinforced concrete pipe conforming to ASTM C76 with gasketed joints in conformance with ASTM C361 or ASTM C443.

B. Joints in the sewer pipe shall be located as far as practical from the intersected water main.

C. Where a water main is laid across or through an area where there is an existing sanitary sewer, which is not constructed of one of the above specified materials and is 2 ft (0.6m) or less below the water pipe, the existing sewer shall be encased in concrete with a minimum of 6 in (15 cm) thickness for a 10 ft (3.0 m) distance on each side of the crossing or the crossed section of sewer replaced to meet the above specified construction requirements.

D. Pressure Sewer Lines. When force mains run parallel to water lines, the separation distance shall be as far as practical, but at least a 10 ft (3.0m) horizontal separation shall be maintained. There shall be at least a 2 ft (0.6 m) vertical separation at crossings with the water main crossing above the sewer force main.

3.5 MANHOLES - GENERAL

A. Excavation and backfill around manholes shall be in accordance with the applicable paragraphs in Section 312333 TRENCHING AND BACKFILLING. Install manholes on an 8-inch layer of gravel bedding used for sewer pipe bedding. Bedding shall extend a minimum of 6-inches beyond the outer edge of the base

B. Handle with care to avoid damage to joint ends of each section. Damaged sections may be subject to rejection at the discretion of the Engineer. All manhole construction shall be watertight. The invert, walls and steps shall be cleaned of excess grout and laitance.

C. Floors of the manholes shall be shaped and smoothed so that flow channels will be formed such that the manhole will be self-cleaning and free of areas where solids may be deposited. The floors shall have a slope of one (1) inch per foot on areas outside of the flow channels.

D. Connection to existing sewer mains shall be done in an approved manner. Cutting into existing sewer shall be done in such a manner as to prevent damage to sewer not being removed. New invert channel(s) shall be constructed as required and in accordance with the requirements herein and as shown on the Drawings.

E. Precast manholes with T-lock liner shall be spark tested in strict accordance with the manufacturers recommended test procedures by a certified technician and witnessed by the Owner's representative.

3.6 MANHOLES - PRECAST CONCRETE

A. Manholes, wetwell and valve vault shall be constructed of precast reinforced manhole sections, concentric or eccentric reducer cone section and flat tops as detailed.

B. All precast structures shall be set plumb and level on a 8-inch thick (minimum) layer of compacted ¾" gravel.

C. All section joints shall be set and sealed with an approved joint sealant.

3.7 MANHOLE CASTINGS

A. All castings and frames shall be placed in the positions indicated on the Drawings.

B. Manhole Castings shall be set on a full mortar bed or sealed with a troweled-on butyl rubber mastic sealant, Press-Seal Gasket Corporation "Trowelable EZ-Stik #3". In situations where the exterior walls of the manhole will be exposed to weather or where bolt down covers are required, the manhole casting shall be bolted to the precast cone section or flat slab top using 3/4" diameter stainless steel threaded rod, nuts and washers epoxy anchored into the concrete.

C. Castings and frames shall be set true to line and to correct elevations.

3.8 CONNECTION TO MANHOLES.

A. Connections to new manholes shall utilize flexible connections. Flexible connections allow for limited differential settlement to occur between the pipe and manhole. The uniform compaction of the bedding material under the pipe and up to the spring line or top of the pipe as detailed is essential to the control of this differential settlement. Resilient connectors shall be used with all flexible connections. A flexible preformed mastic sealant shall be installed around the bottom half of the exterior pipe surface between the resilient connector and the invert. This flexible sealant shall be installed to separate the pipe from the invert to maintain the flexibility of the pipe/manhole connection. Pipes installed with flexible connections shall not have concrete encasement at the outside of the manhole.

B. Connection to Existing Structures shall be done in such a manner as to prevent damage to existing structures. Hole for installation of pipe shall be approximately 4 inches larger in diameter than the outside diameter of the pipe to be installed. Annular space around the pipe or resilient connector, as required, shall be filled solid with non-shrink grout. New invert channels shall be constructed as required and shall conform with the requirements herein. For installing a new manhole on an existing pipe, a clamp-on resilient connector shall be installed on the pipe prior to grouting into the manhole wall.

3.9 NON-SHRINK GROUT

A. All mixing, surface preparation, handling, placing, consolidation, curing and other means of execution for prepackaged grouts shall be done in strict accordance with the instructions and recommendations of the manufacturer.

B. Grout shall be placed in such a manner, for the consistency necessary for each application, so as to assure that the space to be grouted is completely filled.

C. The finish of the grout surface shall match that of the adjacent concrete.

3.10 CLEANING AND TESTING

A. General:
   1. After all installations are complete, including all backfill and compaction, all piping and appurtenances shall be cleaned of foreign materials. Flushing of foreign materials from a newly completed section of interceptor sewer into section already in service will not be allowed. If ductile iron pipe is utilized the Contractor shall take care not to damage the internal linings. If lining is damaged during either installation or cleaning it shall be repaired in strict accordance with and approved by the pipe manufacturer's technical field service personnel.
   2. Contractor shall furnish all labor, tools, potable water, and equipment necessary to perform leakage and deflection tests as specified herein. The methods and equipment used to make the test shall be mutually determined by the Engineer and Contractor before any testing is started. For the purpose of testing, a section of the line shall be considered as the length of line between manholes. Any section that fails the test shall be repaired and retested by the Contractor until the leakage and/or deflection limits is within the allowable limits. Water used for exfiltration testing shall not be allowed to be disposed of through the completed sewer line. The Contractor shall provide the required pumps to dispose of test water to the nearest storm sewer or waterway.
   3. If inspection or test shows defects, such defective work or material shall be replaced and inspection and tests repeated. Repairs to piping and appurtenances shall be made with new material at no additional cost to the Owner.
   4. All visible leaks shall be repaired.

B. Gravity Lines:
   1. Lines shall be checked for alignment by lamping and visual inspection and deflection by mandrel testing. The pipe between manholes shall not be more than 1/4 of the pipe diameter out of alignment.
   2. Deflection limits for flexible sewer pipe shall not exceed five (5) percent of the nominal diameter of the pipe. Deflection limits shall be verified by passing a mandrel through the section of sewer line not less than 30 days after completion of the installation.
   3. Perform deflection test using a properly sized mandrel without mechanical pulling devices.
   4. Under no circumstances shall the mandrel test be performed prior to the completion of all compaction operations required for surface preparation, regardless of the time of completion of the pipe installation.
   5. The sewer mandrel shall be fabricated with a diameter not less than 95 percent of base or average diameter of the pipe as determined by the ASTM standard to which the pipe is manufactured. The mandrel shall be certified by an independent testing laboratory. The current certification shall be submitted and approved by the Engineer prior to using the mandrel.
   6. The Contractor shall provide video verification of the sewer main on all lines 30 days after substantial completion.
   7. Air Test:
      a. In addition to the visual inspection, the Contractor shall perform a low pressure air test on all pipe installed.
      b. Testing methods for PVC pipe shall conform to the applicable requirements of ASTM F1417.
      c. Testing methods for concrete pipe shall conform to the applicable requirements of ASTM C 924.
      d. Testing methods for vitrified clay pipe shall conform to the applicable requirements of ASTM C828.
      e. For making the low pressure air tests, the Contractor shall use equipment specifically designed and manufactured for the purpose of testing sewer pipelines using low pressure air. The equipment shall be provided with an air regulator valve or pressure relief valve set so that the internal air pressure in the pipeline cannot exceed 9 psig. All air used shall pass through a single control panel.

f. Pneumatic plugs shall have a sealing length equal to or greater than the diameter of the pipe to be tested. Pneumatic plugs shall resist internal test pressures without requiring external bracing or blocking.
g. The Contractor shall be extremely cautious when testing with low pressure air. It is extremely important that the various plugs be installed in such a way as to prevent blowouts. Inasmuch as a force of 250 lbf (112N) is exerted on an 8-inch (230 mm) plug by an internal pipe pressure of 5 psi (34 kPa), it should be realized that sudden expulsion of a poorly installed plug or of a plug that is partially deflated before the pipe pressure is release can be dangerous.
h. NO ONE shall be allowed in the manholes during testing.
i. The section of pipe between successive manholes shall be sealed with suitable plugs. Do not overpressure the line. Do not exceed 9.0 psig. One of the plugs shall have an orifice through which to pass air into the section of pipe being tested. The air supply source (air compressor) shall have a 9 psig pressure relief valve. The air supply line shall have a positive on-off valve and suitable means for readily disconnecting it at the control panel. A second orifice in the plug shall be used for constantly reading the internal pressure of the pipe. This orifice shall be continuously connected to a pressure gauge having a range of from 0 to 10 psi. The gauge shall have minimum divisions of 0.10 psi and shall have an accuracy of ± 0.04 psi.
j. The line under test shall be slowly pressurized to approximately 4 psi. Regulate the air supply so that the pressure is maintained between 3.5 and 4.0 psig for at least 2 minutes. The air temperature should stabilize in equilibrium with the temperature of the pipe walls. Disconnect the air supply and decrease the pressure to exactly 3.5 psi before starting the test.
k. Determine the time required for the pressure to drop from 3.5 psi to 2.5 psi, and compare this interval to the required time to decide if the rate of air loss is within the allowable. Tables 1 and 2 show the minimum holding times for PVC pipe listed by diameter. If the pressure drops 1.0 psig before the appropriate time shown in Table 1 has elapsed, the air loss rate shall be considered excessive and the pipe section has failed the test. For testing of long sections or sections of larger diameter pipes, or both, a timed-pressure drop of 0.5 psig shall be used in lieu of the 1.0 psig drop as shown in Table 2.
l. Upon completion of the test, open the bleeder valve and allow all air to escape. Plugs should not be removed until air pressure in the test section has been reduced to atmospheric pressure.

8. An infiltration/exfiltration test may be performed with prior approval by the Engineer.
a. Infiltration Test: An infiltration test shall be performed when the crown of the sewer line is below the ground water table. The amount of water leaking into the sewer shall be measured by the use of appropriately sized weirs designed specifically for this purpose and approved by the Engineer. The allowable leakage shall not be more than 50 gallons per day, per mile of pipe, per inch nominal diameter. The section of pipe to be tested shall be pumped dry before the start of the test.
b. Exfiltration Test: In areas where the crown of the pipe is above the ground water level, an exfiltration test shall be performed. The section of sewer to be tested shall be filled with water so that the water table in the upstream manhole is at least 4 feet above the flowline or 2 feet above the top of the pipe, whichever is greater. The amount of water added during the test period to maintain the water level shall be measured and it shall not exceed a rate of 50 gallons per day, per mile of pipe, per inch of nominal diameter. PVC joints shall be repaired by removal and replacement of the pipe section or pipe joint as directed by the Engineer. D.I.P. joints found to be defective shall be repaired by disassembly of the pipe joint, replacement of the joint and or pipe gasket and reassembly of pipe section utilizing a ductile iron mechanical joint long sleeve with internal pipe filler. Bell clamps will not be an acceptable method of joint repair.

C. Manholes:
1. Manholes structure shall be either vacuum or hydrostatically tested. Vacuum or hydrostatic testing is recommended prior to backfilling, where feasible, to assist in locating leaks. The final test and acceptance shall be based only on a test after the manhole is backfilled and the cast manhole ring is in place. Existing manholes where new connections are made will not be required

to be vacuum or hydrostatically tested. These manholes shall be visually inspected for water tightness with any leakage noted and corrected prior to manhole acceptance.

2. Vacuum Test - A vacuum test shall be performed on all new manholes. Plug all manhole entrances and exits other than the manhole top access using suitably sized and rated pneumatic or mechanical pipeline plugs. Follow manufacturer's recommendations and warnings for proper and safe installation of such plugs, taking care to securely brace the plugs and the pipe. Attach the vacuum test device to the cast manhole ring and draw a vacuum to 10" of mercury. With the valve at the vacuum line connection closed and the vacuum pump off, measure the time required for the vacuum to drop to 9" of mercury. The manhole passes the test if the time is greater than 60 seconds for a 48" diameter manhole, 75 seconds for a 60" diameter manhole, and 90 seconds for a 72" diameter manhole. If the manhole fails the test, the Contractor shall locate the leak and make proper repairs with non-shrink grout. The manhole shall be retested until acceptable test results are obtained.
3. Hydrostatic Test - Manholes may be tested using internal or external hydrostatic pressure with prior approval by the Engineer. External hydrostatic testing shall only be used where the groundwater level is at least 4 feet above the invert of the manhole. In all other cases, the internal hydrostatic test procedures must be followed. Sewers connected to the manhole shall be adequately plugged. For the internal hydrostatic test, the manhole shall be filled with water to the top or to a maximum depth of 25-feet above the invert. Water gain or loss shall not exceed 1.14 gallons per day per vertical foot of manhole for either external or internal hydrostatic testing. Infiltration and exfiltration shall be determined after 24 hours of hydrostatic testing by determining the gain or loss of water in the manhole. Contractor shall be responsible for retrieving any plugs or material accidentally washed down a sewer.

3.11 CORROSION PROTECTION

A. Protective coating for D.I. pipe shall be provided by the use of 8 mil polyethylene loose fitting tubing. The wrapping shall be bunched up at each end to provide for overlap to adjoining pipe by 1 foot. The wrapping on the adjacent pipe is pulled over the bell and secured with three circumferential turns of polyethylene adhesive tape. The resulting loose wrap on the barrel of the pipe shall be pulled snugly around the barrel and taped at 3 foot intervals. The Contractor shall use care in backfilling as to avoid tearing and shall repair all holes in the wrapping.

B. Polyethylene encasement materials and installation shall be in accordance with ANSI/AWWA C105/A21.5.

3.12 BYPASS PUMPING

A. Where plugging is used, the Contractor shall monitor upstream manholes for excessive surcharge conditions. The Contractor shall take immediate action and utilize all means necessary to quickly alleviate the surcharge conditions.

B. Contractor is responsible for locating any existing utilities in the area Contractor selects to locate the diversion pipelines. The diversion pipelines shall be located to minimize any disturbance to existing utilities, traffic, and the Contractor shall obtain approval of the pipeline locations from the Owner and Engineer prior to installation.

C. Plugging or blocking of sewage flows shall incorporate primary and secondary plugging devices. Plugging devices shall be braced and/or designed such that they are capable of retaining the maximum head that could be produced at the plug location during maximum surcharging of the sewer system. When plugging or blocking is no longer needed for performance and acceptance of work, the plugs or blocks shall be removed in a manner that permits the sewage flow to slowly return to normal, to prevent surcharging or causing other major disturbances downstream.

D. When working inside manholes, Contractor shall exercise caution and comply with OSHA requirements when working in the presence of sewer gases, combustible oxygen-deficient atmospheres, and confined spaces.

E. Contractor shall protect the discharge lines from damage in the areas of backhoe operations. Damaged, leaking or defective discharge lines shall be immediately replaced.

F. Contractor shall confine the discharge pipelines to the limits of Work as defined by the contract documents during bypassing operations.

END OF SECTION

SECTION 400500

GENERAL PIPING REQUIREMENTS

PART 1 GENERAL

1.1 DESCRIPTION

A. This section describes the general requirements for selecting piping materials; selecting the associated bolts, nuts, and gaskets for flanges for the various piping services in the project; and miscellaneous piping items.

1.2 SUBMITTALS

A. Submit shop drawings in accordance with Section 013300.

B. Provide data sheets for each type of piping and submit affidavits of compliance with referenced standards (e.g. AWWA, ANSI, ASTM, etc.).

C. Submit verification of NSF 61 Certification for pipe and fittings.

D. Submit affidavit of compliance with referenced standards (e.g., AWWA, ANSI, ASTM, etc.).

E. Submit certified copies of mill test reports for bolts and nuts, including coatings if specified. Provide recertification by an independent domestic testing laboratory for materials originating outside of the United States.

F. Submit manufacturer's data sheet for gaskets supplied showing dimensions and bolting recommendations.

G. Submit manufacturer’s data sheet for flange insulating kits.

H. Submit manufacturer’s data sheet for insulating unions, showing recommended installation procedures.

1.3 DEFINITIONS OF BURIED AND EXPOSED PIPING

A. Buried piping is piping buried in the soil, commencing at the wall or beneath the slab of a structure. Where a coating is specified, provide the coating up to the structure wall. Piping encased in concrete is considered to be buried. Do not coat encased pipe.

B. Exposed piping is piping in any of the following conditions or locations:
   1. Above ground.
   2. Inside buildings, vaults, or other structures.
   3. In underground concrete trenches or galleries.

1.4 INTENT OF DRAWINGS AND SPECIFICATIONS

A. Except in details, piping is indicated diagrammatically. Sizes and locations are indicated on the Drawings. Not every offset and fitting, or structural difficulty that may be encountered has been indicated on the Drawings.

B. Perform minor modifications to piping alignment where necessary to avoid structural, mechanical, or other type of obstructions that cannot be removed or changed.
   1. Modifications are intended to be of minor scope, not involving a change in the design concept or a change to the Contract Price or Contract Time.

PART 2 PRODUCTS

2.1 MATERIALS SELECTION AND ALTERNATIVE MATERIALS

A. The drawings list the material and specification for each piping service in the project. The same pipe material shall be used for all pipe sizes in all locations for the given piping service. Do not intermix piping materials unless shown on the Drawings. Stainless steel pipe may be used as an alternate to ductile iron pipe in “exposed piping” locations.

2.2 THREAD FORMING FOR STAINLESS STEEL BOLTS

A. Form threads by means of rolling, not cutting or grinding.

2.3 BOLTS AND NUTS FOR FLANGES FOR PVC, STAINLESS STEEL, STEEL, AND DUCTILE IRON PIPING

A. Bolts and nuts for all buried flanges and all flanges located indoors; outdoors; above ground; and in vaults and structures shall be Type 304 stainless steel conforming to ASTM A193, Grade B8 Class 2, for bolts and ASTM A194, Grade 8, for nuts unless indicated otherwise. Fit shall be Class 2A and

2B per ASME B1.1 when connecting cast iron valves having body bolt holes.

B. Bolts and nuts used in flange insulation kits shall conform to the same requirements as described in the paragraph contained herein; or ASTM A193 (Grade B7). Nuts shall conform to ASTM A194 (Grade 2H).

C. Form threads for stainless steel bolts by means of rolling, not cutting or grinding.

D. Provide washers for each nut and bolt head. Washers shall be of the same material as the nuts.

2.4 LUBRICANT FOR STAINLESS STEEL BOLTS AND NUTS

A. Lubricant shall be chloride free and shall be RAMCO TG-50, Anti-Seize by RAMCO, Specialty Lubricants Corporation Huskyä Lube O'Seal, or equal.

2.5 GASKETS FOR FLANGES FOR DUCTILE IRON PIPING AND FITTINGS IN WATER SERVICE

A. Gaskets shall be full face, 1/8-inch thick, cloth-inserted rubber, with a Shore "A" hardness of 75 to 85. Gaskets shall be suitable for a water pressure of 200 psi at a temperature of 180°F. Gaskets shall have "nominal" pipe size inside diameters not the inside diameters per ASME B16.21. Products: Garlock Style 19 or equal.

2.6 GASKETS FOR FLANGES FOR DUCTILE IRON AND STAINLESS STEEL PIPING AND FITTINGS IN AIR SERVICE

A. Gaskets shall be full face, 1/8-inch thick, cloth-inserted rubber, with a Shore "A" hardness of 60. Gaskets shall be suitable for air pressure of 150 psi at a temperature of 300°F. Gaskets shall have "nominal" pipe size inside diameters not the inside diameters per ASME B16.21. Products: Garlock Style 8314 or equal.

2.7 GASKETS FOR FLANGES FOR STEEL AND DUCTILE-IRON PIPING AND FITTINGS IN RAW SEWAGE, SLUDGE, AND SCUM SERVICE

A. Gaskets shall be full face, 1/8-inch thick, Buna-N having a hardness of 55 to 65 durometer. Gaskets shall be suitable for a water pressure of 200 psi at a temperature of 250°F. Gaskets shall have "nominal" pipe size inside diameters not the inside diameters per ASME B16.21. Provide Garlock Style 9122 or equal.

2.8 GASKETS FOR FLANGES FOR PVC AND CPVC PIPING

A. Gaskets for flanged joints shall be full faced, 1/8-inch thick, having a hardness of 50 to 70 durometer Gasket material for other than sodium hypochlorite service shall be EPR. Gasket material for sodium hypochlorite service shall be Viton ETP.

2.9 FLANGE INSULATION KITS

A. Flange insulation kits shall consist of insulating gasket, an insulating stud sleeve for each bolt, insulating washers for each bolt, and a steel washer between each insulating washer and the nut. The sleeves shall be one piece, integral with the insulating washer. Gaskets shall be full face. Provide double sleeve and washer sets for each bolt.

B. Gasket material shall be phenolic, 1/8-inch thick. The flange insulating gasket shall be full diameter of the flange with a nitrile O-ring on each side of the gasket. Dielectric strength shall not be less than 500 volts per mil and a compressive strength of not less than 24,000-psi.

C. Insulating flange bolt sleeves shall be high-density polyethylene or spiral-wrapped mylar. Dielectric strength shall not be less than 1,200 volts per mil.

D. Insulating flange bolt washers shall be high-strength phenolic a minimum thickness of 1/8-inch. Dielectric strength shall not be less than 500 volts per mil and a compressive strength of not less than 25,000-psi.

E. Steel flange bolt washers for placement over the insulating washers shall be a minimum thickness of 1/8-inch and be cadmium plated.

F. Flange insulation kits shall be as manufactured by Central Plastics Company, Advance Product Systems, or equal.

2.10 INSULATING UNIONS

A. Insulating unions shall consist of a molded nylon sealing sleeve mounted in a three-piece malleable-iron (ASTM A47 or A197) body. Ends shall be threaded (ASME B1.20.1) when connecting to steel piping and copper solder joint when connecting to copper piping. Minimum working pressure shall be 150-psi. Unions shall be as manufactured by Central Plastics Company, Capital Insulation, or equal.

PART 3 EXECUTION

3.1 INSTALLING PIPE SPOOLS IN CONCRETE

A. Install pipes in walls and slabs before placing concrete. See Section 400762.

3.2 RAISED FACE AND FLAT FACE FLANGES

A. Use a flat-faced carbon steel, or alloy flange when mating with a flat-faced cast or ductile iron flanges.

B. High pressure rated flanges as required to mate with equipment when equipment flange is of high pressure rating than required for piping.

C. Where a raised face flange connects to a flat-faced flange, remove the raised face of the flange.

3.3 INSTALLING ABOVEGROUND OR EXPOSED PIPING

A. Set piping plumb and at the horizontal and vertical location shown on the Drawings. Provide pipe hangers and supports to maintain alignment, as detailed in the drawings and as specified in Section 400764.

B. Install pipe without springing, forcing, or stressing the pipe or any adjacent connecting valves or equipment.

C. Pipe penetrations through walls, slabs, and floors shall be as detailed on the Drawings or as allowed for alternate configurations as specified herein.

D. Install pipe spools in walls and slabs before placing concrete.

E. Inspection for Defects: Before installation, inspect pipe and appurtenances for defects and, when applicable, tap the pipe with a light hammer to detect cracks. Reject defective, damaged, or unsound pipe and appurtenances.

F. Cutting: Cut pipe, when necessary, in a neat and workmanlike manner without damage to the pipe, interior lining, and exterior coating. Perform cutting with an approved mechanical cutter, using a wheel cutter when applicable and practicable.

G. Cut pipe ends square, ream pipe and tube ends to full pipe diameter, remove burrs.

H. Beveling: Grind smooth and bevel cut ends and rough edges using methods recommended by the manufacturer and approved by Engineer.

I. Bolt holes of flanges shall straddle the horizontal and vertical centerlines of the pipe. Clean flanges by wire brushing before installing flanged fittings. Lubricate bolts and tighten nuts uniformly and progressively. If flanges leak under pressure testing, loosen or remove the nuts and bolts, reset or replace the gasket, reinstall or retighten the bolts and nuts, and retest the joints. Joints shall be watertight.

J. Provide a flange insulation kit at all flanges between dissimilar metals whether shown on the Drawings or not.

K. Install access fittings to permit disinfection of water system.

3.4 INSTALLING FLANGED PIPING

A. Set pipe with the flange bolt holes straddling the pipe horizontal and vertical centerline. Install pipe without springing, forcing, or stressing the pipe or any adjacent connecting valves or equipment. Before bolting up, align flange faces to the design plane within 1/16 inch per foot measured across any diameter. Align flange bolt holes within 1/8-inch maximum offset.

B. Inspection for Defects: Before installation, inspect pipe and appurtenances for defects and, when applicable, tap the pipe with a light hammer to detect cracks. Reject defective, damaged, or unsound pipe and appurtenances.

C. Inspect each gasket to verify that it is the correct size, material, and type for the specified service and that it is clean and undamaged. Examine bolts or studs, nuts, and washers for defects such as burrs or cracks and rust and replace as needed.

D. Clean flanges by wire brushing before installing flanged fittings. Clean flange bolts and nuts by wire brushing, lubricate carbon steel bolts with oil and graphite, and tighten nuts uniformly and progressively.

E. Bolt lengths shall extend completely through their nuts. Any that fail to do so shall be considered acceptably engaged if the lack of complete engagement is not more than one thread.

F. Do not use more than one gasket between contact faces in assembling a flanged joint.

G. Tighten the bolts to the manufacturer’s specifications, using the recommended cross bolt pattern in

multiple steps of increasing torque, until the final torque requirements are achieved. Do not over torque.

H. If flanges leak under pressure testing, loosen or remove the nuts and bolts, reset or replace the gasket, reinstall or retighten the bolts and nuts, and retest the joints. Joints shall be watertight.

I. Install access fittings to permit disinfection of water system.

3.5 INSTALLING BLIND FLANGES

A. At outlets not indicated to be connected to valves or to other pipes and to complete the installed pipeline hydrostatic test, provide blind flanges with bolts, nuts, and gaskets.

B. Coat the inside face of blind flanges per Section 099000, System No. 12.

3.6 INSTALLING GROOVED-END PIPING

A. Install grooved-end pipe and fittings in accordance with the coupling manufacturer's recommendations and the following.

B. Clean loose scale, rust, oil, grease, and dirt from the pipe or fitting groove before installing coupling. Apply the coupling manufacturer's gasket lubricant to the gasket exterior including lips, pipe ends, and housing interiors.

C. Fasten coupling alternately and evenly until coupling halves are seated. Use torques as recommended by the coupling manufacturer.

D. Provide separate hangers and supports at both sides of flexible joints; see Section 400764.

3.7 INSTALLATION OF STAINLESS STEEL BOLTS AND NUTS

A. Prior to assembly, coat threaded portions of stainless steel bolts and nuts with lubricant.

3.8 INSTALLATION OF SCHEDULE 80 PVC PIPING

A. Cut pipe ends square and remove all burrs, chips, and filings before joining pipe or fittings. Bevel solvent welded pipe ends as recommended by the pipe manufacturer.

B. Wipe away loose dirt and moisture from the ID and OD of the pipe end and the ID of the fitting before applying solvent cement. Do not apply solvent cement to wet surfaces.

C. Make up solvent welded joints per ASTM D2855.

D. Allow at least eight (8) hours of drying time before moving solvent welded joints or subjecting the joints to an internal or external loads or pressures.

E. Tighten bolts on PVC flanges by tightening the nuts diametrically opposite each other using a torque wrench. Complete tightening shall be accomplished in stages.

F. Cut threaded ends to the dimensions of ASME B1.20.1. Ends shall be square cut. Follow the pipe manufacturer’s recommendations regarding pipe hold-down methods, saw cutting blade size, and saw cutting speed. Pipe or tubing cutters shall be specifically designed for use on PVC pipe.

G. If a hold-down vise is used when the pipe is cut, insert a rubber sheet between the vise jaws and the pipe to protect from scratching the pipe.

H. Thread cutting dies shall be clean and sharp and shall not be used to cut materials other than plastic.

I. Apply Teflon thread compound or Teflon tape lubricant to threads before screwing on the fitting.

J. Provide unions on exposed piping 3-inches and smaller as follows:
   1. Provide a union 6 to 12-inches downstream of valves.
   2. Upstream and downstream of equipment which may need to be removed for maintenance.
   3. Where shown in the Drawings.

END OF SECTION

SECTION 400515

PRESSURE TESTING OF PIPING

PART 1 GENERAL

1.1 DESCRIPTION

A. This section specifies the cleaning and hydrostatic, pneumatic, and leakage testing of pressure piping for pumping stations, wastewater treatment plants; general water piping systems; and raw sewage force mains.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. General Piping Requirements: 400500.

B. Valve Schedule: 400521.

1.3 SUBMITTALS

A. Submit shop drawings in accordance with Section 013300.

B. Submit test bulkhead locations and design calculations, pipe attachment details, and methods to prevent excessive pipe wall stresses.

C. Submit six copies of the test records to the Owner's Representative upon completion of the testing.

1.4 TEST PRESSURES

A. Test pressures for the various services and types of piping are shown in:
   1. Subsection on “Test Pressure and Test Fluids” in Part 3.

1.5 TESTING RECORDS

A. Provide records of each piping installation during the testing. These records shall include:

   1. Date and times of test.
   2. Identification of pipeline, or pipeline section tested or retested.
   3. Identification of pipeline material.
   4. Identification of pipe specification.
   5. Test fluid.
   6. Test pressure at low point in process, pipeline, or pipeline section.
   7. Remarks: Leaks identified (type and location), types of repairs, or corrections made.
   8. Certification by Contractor that the leakage rate measured conformed to the specifications.

PART 2 PRODUCTS

2.1 VENTS AND DRAINS FOR ABOVEGROUND PIPING

A. Install vents on the high points of aboveground piping, whether shown in the drawings or not. Install drains on low points of aboveground piping, whether shown in the drawings or not. Provide a valve at each vent or drain point. Valves shall be 3/4 inch for piping 3 inches and larger and 1/2 inch for piping smaller than 3 inches.
   1. Valves shall be as specified in Section 400563 and suited for the application unless otherwise shown in the drawings.

2.2 MANUAL AIR-RELEASE VALVES FOR BURIED PIPING

A. Provide temporary manual air-release valves at test bulkheads for pipeline test. Construct the pipe outlet in the same manner as for a permanent air valve and after use, seal with a blind flange, pipe cap, or plug and coat the same as the adjacent pipe.

2.3 TEST BULKHEADS

A. Design and fabricate test bulkheads per Section VIII of the ASME Boiler and Pressure Vessel Code. Materials shall comply with Part UCS of said code. Design pressure shall be at least 2.0 times the specified test pressure for the section of pipe containing the bulkhead. Limit stresses to 70 percent of yield strength of the bulkhead material at the bulkhead design pressure. Include air-release and water drainage connections.

2.4 TESTING FLUID

A. Testing fluid shall be water unless a pneumatic test is shown in the following subsections.

B. For lubricating oil; hydraulic oil; fuel oil; and gasoline piping, use potable water for

hydrostatic testing and flushing.

C. For potable water pipelines, obtain and use only potable water for hydrostatic testing.

D. Submit request for use of water from waterlines of water utility 48 hours in advance.

E. The Contractor may obtain the water from the water utility water utility*'s rate of charges*.

2.5 TESTING EQUIPMENT

A. Provide calibrated pressure gauges, pipes, bulkheads, pumps, compressors, and meters to perform the hydrostatic and pneumatic testing.

PART 3 EXECUTION

3.1 TESTING PREPARATION

A. Pipes shall be in place, backfilled, and anchored before commencing pressure testing.

B. Conduct pressure tests on exposed and aboveground piping after the piping has been installed and attached to the pipe supports, hangers, anchors, expansion joints, valves, and meters.

C. For buried piping, the pipe may be partially backfilled and the joints left exposed for inspection during an initial leakage test. Perform the final pressure test, however, after completely backfilling and compacting the trench.

D. Provide any temporary piping needed to carry the test fluid to the piping that is to be tested. After the test has been completed and demonstrated to comply with the specifications, disconnect and remove temporary piping. Do not remove exposed vent and drain valves at the high and low points in the tested piping; remove any temporary buried valves and cap the associated outlets. Plug taps or connections to the existing piping from which the test fluid was obtained.

E. Provide temporary drain lines needed to carry testing fluid away from the pipe being tested. Remove such temporary drain lines after completing the pressure testing. Pipes may remain full after testing.

F. Prior to starting the test, the Contractor shall notify the Owner's Representative.

3.2 CLEANING

A. Before conducting hydrostatic tests, flush pipes with water to remove dirt and debris. For pneumatic tests, blow air through the pipes. Maintain a flushing velocity of at least 3 fps for water testing and at least 2,000 fpm for pneumatic testing. Flush pipes for time period as given by the formula: T=(2L)/3, in which “T” is flushing time (seconds) and “L” is pipe length (feet).

B. For pipelines 24 inches or larger in diameter, acceptable alternatives to flushing are use of high-pressure water jet, sweeping, or scrubbing. Water, sediment, dirt, and foreign material accumulated during this cleaning operation shall be discharged, vacuumed, or otherwise removed from the pipe.

3.3 TESTING AND DISINFECTION SEQUENCE FOR POTABLE WATER PIPING

A. Perform required disinfection after hydrostatic testing, except when pipeline being tested is connected to a potable waterline.

B. Locate and install test bulkheads, valves, connections to existing pipelines, and other appurtenances in a manner to provide an air gap separation between existing potable water pipelines and the pipeline being tested. Disinfect water and pipeline being tested before hydrostatic testing when connected to a potable waterline.

3.4 LENGTH OF TEST SECTION FOR BURIED PIPING

A. The maximum length of test section for buried pipe of 12 inches or smaller in diameter is 1 mile; for buried pipe larger than 12 inches, 1 mile. Provide intermediate test bulkheads where the pipeline length exceeds these limits.

3.5 INITIAL PIPELINE FILLING FOR HYDROSTATIC TESTING

A. Maximum rate of filling shall not cause water velocity in pipeline to exceed 1 fps. Filling may be facilitated by removing automatic air valves and releasing air manually.

3.6 TESTING NEW PIPE WHICH CONNECTS TO EXISTING PIPE

A. Prior to testing new pipelines which are to be connected to existing pipelines, isolate the new line from the existing line by means of test bulkheads, pipe caps, spectacle flanges, or blind flanges. After successfully testing the new line, remove test bulkheads, caps, or flanges and connect to the existing piping.

3.7 HYDROSTATIC TESTING OF ABOVEGROUND OR EXPOSED PIPING

A. Open vents at high points of the piping system to purge air while filling the pipe with water. Venting during system filling may also be provided by temporarily loosening flanges.

B. Subject the piping system to the test pressure indicated. Maintain the test pressure for a minimum of two hours. Examine joints, fittings, valves, and connections for leaks. The piping system shall show zero leakage or weeping. Correct leaks and retest until zero leakage is obtained.

C. Where the test pressure is not indicated, test each pressure piping system at 150 percent of the operating pressure indicated, but not less than 25 psi test pressure. The required test period is two hours. Observe each test section for leakage at end of test period. Test fails if leakage observed or pressure drop exceeds 5 percent of test pressure.

D. Test hot and cold water piping systems subject to the Uniform Plumbing Code per Section 609 latest edition of the code. Piping subject to this testing requirement is listed below.

3.8 HYDROSTATIC TESTING OF BURIED PIPING

A. Where any section of the piping contains concrete thrust blocks or encasement, do not perform the pressure test until at least 10 days after placing the concrete. When testing mortar-lined or PVC piping, fill the pipe to be tested with water and allow it to soak for at least 48 hours to absorb water before conducting the pressure test.

B. Apply and maintain the test pressure by means of a positive displacement hydraulic force pump.

C. Maintain the test pressure for the following duration by restoring it whenever it falls an amount of 5 psi:
   1. Pipe Diameter 18 inches and Less: 2 hours.
   2. Pipe Diameter 20 to 36 inches: 8 hours.
   3. Pipe Diameter Greater than 36 inches: 24 hours.

D. After the test pressure is reached, use a meter to measure the additional water added to maintain the pressure. This amount of water is the loss due to leakage in the piping system. The allowable leakage volume is defined by the formula: L=(HNDxSquare Root[P])/C. Where L=Allowable leakage (gallons), H=Specified test period (hours), N=Number of rubber-gasketed joints in the pipe tested (use zero for welded or flanged pipe), D=Diameter of the pipe (inches), P=Specified test pressure (psig), and C=7,400.

E. After the test pressure is reached, use a meter to measure the additional water added to maintain the pressure. This amount of water is the loss due to leakage in the piping system. The allowable leakage volume is defined by the formula: L=(HSDxSquare Root[P])/C. Where L=Allowable leakage (gallons), H=Specified test period (hours), S=length of pipe tested (feet), D=Diameter of the pipe (inches), P=Specified test pressure (psig), and C=148,000.

F. Test piping subject to the Uniform Fire Code requirements per NFPA 24. Test such piping hydrostatically at not less than 200-psi pressure for two hours or at 50 psi in excess of the maximum static pressure when the maximum static pressure is in excess of 150 psi. The amount of leakage in piping shall be measured at the specified test pressure by pumping from a calibrated container. The amount of leakage at the joints shall not exceed 2 quarts per hour per 100 gaskets or joints irrespective of pipe diameter. The piping subject to this testing requirement is listed below shown in the drawings.

G. The allowable leakage for buried piping having threaded, brazed, or welded (including solvent welded) joints shall be zero.

H. Repair and retest any pipes showing leakage rates greater than that allowed in the above criteria.

3.9 PNEUMATIC TESTING

A. Perform pneumatic testing using dry air or nitrogen. Perform tests only after the piping has been completely installed including supports, hangers, and anchors. Protect test personnel and Owner's operating personnel. Secure piping to be tested to prevent the pipe from moving and to prevent damage to adjacent piping and equipment. Remove or isolate from the piping any appurtenant instruments or devices that could be damaged by the test prior to applying the test.

B. Apply an initial pneumatic leakage test of 25 psig to the piping system prior to final leak testing. Examine for leakage, detected by soap bubbles, at joints and connections. After correcting visible leaks, gradually increase the pressure in the system to not more than one-half of the test pressure. Then increase the pressure in steps of approximately one-tenth of the test pressure until the required test pressure has been reached. Continuously maintain the pneumatic test pressure for a minimum time of four hours and for such additional time as may be necessary to conduct a soap bubble examination for leakage. The piping system shall show no leakage. Correct any visible leakage and retest.

C. Test piping systems subject to the Uniform Plumbing Code per Section ***1214*** of the ***latest*** edition of the code. Piping subject to this testing requirement is ***listed below.***

3.10 REPETITION OF TEST

A. If the actual leakage exceeds the allowable, locate and correct the faulty work and repeat the test. Restore the work and all damage resulting from the leak and its repair. Eliminate visible leakage.

3.11 BULKHEAD AND TEST FACILITY REMOVAL

A. After a satisfactory test, remove the testing fluid, remove test bulkheads and other test facilities, and restore the pipe coatings.

3.12 TEST PRESSURE AND TEST FLUIDS

A. Testing and design ***pressures (psig)*** shall be as ***listed below.***
   1. Process Air:
      a. 8 psig test pressure. (Design operating pressures 4 – 6.5 psig)
   2. Gravity Sewer, Gravity Process Lines:
      a. Low Pressure Air (See Section 333100).

B. Test pressure shall be the difference between the test HGL elevation and the invert elevation multiplied by 0.433 (psi).

END OF SECTION

SECTION 400711

MISCELLANEOUS PIPE FITTINGS AND ACCESSORIES

PART 1 GENERAL

1.1 DESCRIPTION

A. This section includes materials and installation of miscellaneous piping specialties, such as chemical diffusers; chemical solution tubes; backflow preventers; and PVC calibration columns. Note that all materials referenced in this section are being supplied and installed under the separate sections referenced below.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. General Piping Requirements: 400500.

B. Pressure Testing of Piping: 400515.

1.3 SUBMITTALS

A. Submit shop drawings in accordance with Section 013300. (Not applicable for this project)

B. Submit manufacturer's catalog data and descriptive literature showing dimensions and materials of construction by ASTM reference and grade. Show coatings.

C. Submit certification from manufacturer that fittings are NSF 61 listed.

1.4 WARRANTY

A. Full warranty against defects in materials and workmanship for one year following FINAL ACCEPTANCE, including all parts, labor, and expenses.

PART 2 PRODUCTS

2.1 FLANGE INSULATION KITS (NOT USED)

A. See Section 400500.

2.2 INSULATING UNIONS (NOT USED)

A. See Section 400500.

2.3 CHEMICAL DIFFUSERS (NOT USED)

A. Diffuser configuration shall provide multiple feed points along a cross section within the basin. Materials of construction shall be compatible with chemical solution and be capable of withstanding the working pressure of the system and the hydrostatic pressure of the basin. Manufacturer to design orifices in quantity and diameter to obtain optimum chemical transfer for the application.

B. Connection to Diffuser: Connecting pipe shall be “hard” pipe compatible with chemical solution used and capable of withstanding the working pressure of the system. Connection of the connecting pipe to the chemical diffuser shall allow for disassembly.

C. Provide means to support or anchor the diffuser in the basin for the diffuser orientations shown in the Drawings. Anchors and supports shall be compatible with the chemical solution used.

D. Chemical diffuser shall be by SAF-T-Flow, Hydro Instruments, or equal.

2.4 LONG BODY BURIED PIPE COUPLINGS (NOT USED)

A. Buried long body pipe couplers, as shown in the Contract Documents, shall be of the gasketed, sleeve-type design with a diameter to properly fit the pipe. Each coupling shall consist of one (1) steel middle ring, two (2) steel followers, two (2) rubber compound wedge section gaskets and sufficient track-head bolts to properly compress the gaskets. Buried long body couplers shall be Dresser- Model 40, or Engineer approved equivalent.

B. The coupling gaskets shall be composed of a crude or synthetic rubber base compound with other products to produce a material that will not deteriorate from age, heat, or exposure to air under normal storage conditions. It shall also possess the quality of resilience and ability to resist cold flow of the material sot that the joint will remain sealed and tight indefinitely when subjected to shock, vibration, pulsation, and temperature or other adjustments of the pipeline.

2.5 BACKFLOW PREVENTERS (NOT USED)

A. Reduced Pressure Backflow Preventers, 2-Inch and Smaller

1. The reduced pressure backflow preventer shall consist of two independently operating, spring loaded, “Y” pattern check valves and one hydraulically dependent differential relief valve. The device shall automatically reduce the pressure in the “zone” between the check valves to at least 5-psi lower than the inlet pressure. Should the differential between the upstream and the zone of the unit drop to 2-psi, the differential relief valve shall open and maintain the proper differential.
2. Reduced pressure backflow preventer assemblies shall be Febco Model 825YA, or Engineer approved equivalent.

B. Vertical Reduced Pressure Type Backflow Preventer, 2 1/2-inch and Larger
1. The reduced pressure backflow preventer shall consist of two independently operating, spring loaded, “Y” pattern check valves and one hydraulically dependent differential relief valve. The device shall automatically reduce the pressure in the “zone” between the check valves to at least 5-psi lower than the inlet pressure. Should the differential between the upstream and the zone of the unit drop to 2-psi, the differential relief valve shall open and maintain the proper differential.
2. Vertical backflow preventer shall be Febco Model 880V - N Shape, or Engineer approved equivalent.

C. Reduced Pressure Backflow Preventer, 2 1/2-inch and Larger
1. Reduced pressure backflow preventer assemblies shall consist of two independent “Y” configured check valves and one differential relief valve. By design, the assembly shall automatically reduce the pressure in the zone between the check valves by 5-psi. Should the differential between the zone and upstream pressure drop to 2-psi, the differential relief valve will open, maintaining proper zone differential.
2. All internal metal parts included in the check assemblies shall be of Series 300 stainless steel, and shall not contain any dissimilar metals, Elastomeric seat discs on the checks and relief valve must be reversible and seat rings shall be B-61 bronze. The check assembly shall be center stem guided at the seat ring and at the cover by replaceable non-corrosive bushings. Relief valve spring is to be Series 300 stainless steel.
3. Valve bodies and cover shall be manufactured of ductile iron ASTM A536, Grade 65-45-2, Ductile Iron bodies shall be flanged, ASME B16.1, Class 125.
4. Reduced pressure backflow preventer assemblies shall include flange, full port resilient wedge shut-off valves and four ball valve test cocks, considered integral to the assembly. Assemblies must be factory assembled and backflow tested.
5. The assembly shall be constructed so all internal parts, including seat rings, can be serviced from the top or side or removed while assembly is in line. The assembly shall be rated 175-psi working pressure.
6. Provide a bronze air gap drain to catch atmospheric discharge from the device. The drain must be of such design as to allow mounting directly to the reduced pressure backflow preventer.
7. The assembly shall meet or exceed requirements of ASSE Standard 1013, AWWA Standard C511, and the USC Foundation for Cross Connection Control and Hydraulic Research.
8. Reduced pressure backflow preventer assemblies shall be Febco Model 825YD, or Engineer approved equivalent.

2.6 METALLIC QUICK-CONNECT COUPLINGS (NOT USED)

A. ***Type 1:*** Quick-connect couplings larger than 1 inch shall be female coupler, ASME B16.1, Class 125, flange type with locking handles. Provide dust plug and security chain with each coupling. Bodies and locking handles shall be ***Type 316 stainless steel***. Gasket shall be ***Buna-N***. Couplings shall be Ever-Tite Model FLB, Parker-Hannifin Model 400-DL, or equal.

B. ***Type 2:*** Quick-connect couplings shall be male adapter/ASME B16.1 Class 125 flange. Bodies shall be ***Type 316 stainless steel***. Provide quick- connect plug or cap for each coupling. Couplings shall be Ever-Tite Model FLA, CIVACON Model 633-LAS, or equal.

C. ***Type 3:*** Quick-connectors 1 inch and smaller shall be Type 316 stainless steel, female body by male stem. Quick-connector shall have a ring of Type 316 stainless steel locking balls and Buna-N O-ring. Quick-connectors shall not have internal ball or poppet valve. Quick-connectors shall be Swagelok QF series, Aeroquip FD45 series, or equal.

D. ***Type 4:*** Female couplers shall be 90-degree elbow type with internal spring check valve. Pressure of 0.75 psi shall open valve for full flow. Provide dust plug and security chain with each coupler. Bodies shall be Type 316 stainless steel. Gasket shall be Buna-N. Couplers shall be CIVACON 633-G, Evertite, Parker Fluid Connector, or equal.

2.7 "Y" STRAINERS (NOT USED)

A. "Y" Strainers (2-Inch and Smaller Diameter)
   1. "Y" strainers shall be either bronze body or PVC body. Body type shall be bronze if adjacent pipe material is copper tube or galvanized steel. Body type shall be PVC if adjacent pipe material is PVC.
   2. Strainer size shall match size of adjacent piping or shall be as shown on the Drawings.
   3. The strainer shall contain a removable cap to allow the filter screen to be removed without removing the strainer from the pipeline. The filter screen shall be Type 316 stainless steel or PVC with 1/32-inch or 20 mesh openings.
   4. Minimum working pressure of strainers shall be 150-psi.
   5. Strainers shall have threaded end connections.
   6. Provide one spare screen with each "Y"-strainer. Pack screens in a box with manufacturer's name, address, and telephone number.

B. "Y" Strainers (Greater than 2-Inch Diameter)
   1. "Y" strainers shall be stainless steel body.
   2. The strainer shall contain a removable cap to allow the filter screen to be removed without removing the strainer from the pipeline. The filter screen shall be Type 316 stainless steel with 80 mesh openings.
   3. Minimum working pressure of strainers shall be 150-psi.
   4. Strainers shall have flanged end connections, or as indicated on the Drawings.
   5. Provide one spare screen with each "Y" strainer. Pack screens in a box with manufacturer's name and local representative's name, address, and telephone number.
   6. Strainers shall be by Eaton Corporation, or Engineer approved equivalent.

2.8 CAST-IRON WYE STRAINERS 4 THROUGH 10 INCHES (NOT USED)

A. Strainers 4 inches through 10 inches shall have cast-iron body and cover (ASTM A126, Class B), with minimum pressure rating of 175 psi, wye pattern. Screen shall be stainless steel (ASTM A240 or A666, Type 304), with a perforated screen area that is minimum three times the area of the pipe to which the strainer is attached.

B. Provide a blowoff connection with isolation ball valve and plug or cap on strainer cover.

C. Ends shall be flanged, conforming to ASME B16.1, Class 125; flanges shall be flatfaced.

D. The strainer, except for stainless steel parts, shall be fusion-bonded epoxy lined and coated per Section 099761.

E. Strainers shall be Watts Regulator 77F Series, Mueller Steam Specialty Model 758, Red-White Valve Corp., or equal.

F. Calibration cylinder and fittings shall be made of inert clear PVC pipe conforming to ASTM D1785, Schedule 80 and equipped with flanged connection to pump manifold and end cap fitted with vacuum breaker and ball valve for air venting. Calibration cylinders shall have calibration marks with at least 12 inches (305 mm) of clear observable length permanently marked in gallons and liters and fractions thereof, to allow reading of the fluid contents with an accuracy of 1 percent. Provide at least 10 calibration lines, with a minimum of one line every 100-ml.

PART 3 EXECUTION

3.1 INSTALLATION OF SERVICE SADDLES (NOT USED)

A. Install service saddles and long body couplings with the gasket seated on the pipe so that zero leakage is obtained. Tighten bolts to the torque requirements recommended by the manufacturer.

3.2 PAINTING AND COATING OF SERVICE SADDLES (NOT USED)

A. Coat service saddles located above ground or in vaults and structures the same as the piping to which they are attached. Color of finish coat shall match the color of the pipe to which the service saddle is connected. Do not coat stainless steel strap.

B. Coat buried saddles and corporation stops with three (3) wraps of AWWA C209 tape.

3.3 BACKFLOW INSTALLATION (NOT USED)

A. Install backflow assemblies at the locations shown on the drawings, and per the manufacturer's recommendations.

B. Provide Schedule 80 PVC piping from air gap drain outlet on RPBP devices to six (6) inches above floor.

C. Coordinate location of RPBP devices with other trades so that water discharge will not damage nearby equipment.

3.4 LINING AND COATING BACKFLOW PREVENTERS (NOT USED

A. Coat backflow preventers located above ground or in vaults and structures per Section 099000, System 29. Apply the specified prime coat at the place of manufacture. Apply intermediate and finish coats at the place of manufacture or at the jobsite. Finish coat shall match the color of the adjacent piping. Coat handwheels the same as the valves. Do not coat bronze or brass valves. Line the interior metal parts of metal valves, excluding seating areas and bronze and stainless steel pieces, per Section 099000. Apply lining at the place of manufacture. Alternately, apply a fusion-bonded coating suitable for potable water in compliance with AWWA C550.

3.5 INSTALLING QUICK-CONNECT COUPLINGS (NOT USED)

A. Attach to piping per the relevant piping specification.

3.6 INSTALLING CALIBRATION COLUMNS (NOT USED)

A. Connect calibration columns to the piping by means of a tee connection.

END OF SECTION

SECTION 400762

WALL PIPES, SEEP RINGS, AND PENETRATIONS

PART 1 GENERAL

1.1 DESCRIPTION

A. This section includes materials, installation, and testing of steel, cast-iron, and ductile-iron wall pipes and sleeves (including wall collars and seepage rings) and penetrations.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Painting and Coating: 099000.

B. Precast Concrete Utility Structures: 330516.

C. General Piping Requirements: 400500.

1.3 SUBMITTALS

A. Submit shop drawings in accordance with Section 013300.

B. Submit detail drawings for fabricated steel or cast-iron wall and floor pipes and sleeves, wall flanges, seep rings, and sealing materials. Show dimensions and wall thicknesses.

C. Show flange sizes and the appropriate ANSI or AWWA flange dimensional standard where flanged end wall pipes or penetrations are used.

D. Show grooved-end dimensions and AWWA grooved-end dimensional standard where grooved-end wall pipes or penetrations are used.

E. List coating systems to be applied, manufacturer, and dry thickness of coatings. Call out coatings where coatings are to be applied.

F. List materials of construction, with ASTM material reference and grade.

G. Submit manufacturer's instructions for installing rubber annular hydrostatic sealing devices.

H. Submit six copies of the results of the leakage test for cast-iron sleeves having shrink-fit steel collars or collar halves bottomed in a groove and steel sleeves having welded steel collars.

1.4 WARRANTY

A. Full warranty against defects in materials and workmanship for one year after FINAL ACCEPTANCE; including all parts, labor, and expenses.

PART 2 PRODUCTS

2.1 GENERAL

A. Use cast-iron, ductile-iron, or fabricated steel wall sleeves when containing rubber annular hydrostatic sealing devices through which piping passes.

B. Use only cast-iron or ductile-iron wall pipes when connecting to cast-iron and ductile-iron pipe. Use only fabricated steel or stainless steel wall pipes when connecting to steel or stainless steel>> pipe, respectively.

C. Cast-iron flanges shall conform to ASME B16.1, Class 125 or 250, to match the flange on the connecting pipe.

D. Steel flanges shall conform to AWWA C207, Class D. Class 300 steel flanges 48 inches and smaller shall conform to AWWA C207, Class F. Class 300 flanges larger than 48 inches shall conform to the dimensions of ASME B16.1 Class 250 flanges. Flanges shall be flat face. Flanges shall match the flange on the connecting pipe.

E. See Section 400500 for flange bolts and gaskets.

2.2 CAST-IRON OR DUCTILE-IRON WALL PIPES AND SLEEVES

A. Provide cast- or ductile-iron wall pipes with ends as shown in the drawings for connection to adjacent cast-iron and ductile-iron pipe or for containing pipes where they pass through concrete walls, ceilings, and floor slabs. Provide seepage ring on wall pipes and sleeves passing through concrete walls and slabs that are to be watertight. Locate collars such that the collar is at the center of the wall or floor slab, unless otherwise shown in the drawings.

B. Wall pipes and sleeves shall be of the following types:

1. Pipe or sleeve with integrally cast seep ring.

2. Pipe or sleeve with shrink-fit steel collar attached.
3. Pipe or sleeve with steel collar halves bottomed in a groove provided in the pipe or sleeve.
4. Pipe or sleeve with ductile iron collar welded continuously around pipe (360 degrees) on both sides of collar. Welding shall be done in pipe manufacturer's shop by a qualified welder.

C. Minimum wall thickness for pipes and sleeves having integrally cast seep rings shall be as follows:
1. Pipe or Sleeve Size 3 inches: Minimum Wall Thickness 0.48 inches.
2. Pipe or Sleeve Size 4 inches: Minimum Wall Thickness 0.52 inches.
3. Pipe or Sleeve Size 6 inches: Minimum Wall Thickness 0.55 inches.
4. Pipe or Sleeve Size 8 inches: Minimum Wall Thickness 0.60 inches.
5. Pipe or Sleeve Size 10 inches: Minimum Wall Thickness 0.68 inches.
6. Pipe or Sleeve Size 12 inches: Minimum Wall Thickness 0.75 inches.
7. Pipe or Sleeve Size 14 inches: Minimum Wall Thickness 0.66 inches.
8. Pipe or Sleeve Size 16 inches: Minimum Wall Thickness 0.70 inches.
9. Pipe or Sleeve Size 18 inches: Minimum Wall Thickness 0.75 inches.
10. Pipe or Sleeve Size 20 inches: Minimum Wall Thickness 0.80 inches.
11. Pipe or Sleeve Size 24 inches: Minimum Wall Thickness 0.89 inches.

D. Minimum wall thickness of pipes or sleeves having shrink-fit collars shall be special Class 52. Cut shrink-fit collars from a 1/4-inch-thick steel ring. Attach the collar to a cast-iron or ductile-iron pipe or sleeve by heating the steel collar and allowing it to shrink over the pipe at the necessary location. Provide an epoxy bond (Keysite 740 or 742 or Scotchkote 302) between the pipe and collar. Sandblast the area of the pipe to be epoxy coated per SSPC SP-10.

E. Wall pipes or sleeves having steel collar halves bottomed in a groove shall be ductile iron Special Class 54 minimum unless otherwise shown. Wall flanges shall consist of 1/4-inch-thick steel seep ring halves for pipes through 24-inch and 3/8-inch-thick halves for pipe 30 inches and larger, bottomed in a groove provided on the pipe. The pipe groove shall be machine cut to a depth of 1/16 to 5/64 inch to provide a press fit for the seep ring. Seep ring halves shall be welded together after fit into groove but shall not be welded to pipe. Seep rings shall be sealed completely around the pipe with silicon sealant manufactured by Dow-Corning No. 790, General Electric Silpruf, or equal.

F. The material used in cast- or ductile-iron wall flanges, wall sleeves, and wall penetrations shall conform to ASTM A395, A436, A536, A48 (Class 35), or A126 (Class B).

G. Pressure test at least one of each size of cast-iron pipes or sleeves having shrink-fit steel collars or collar halves installed in a groove in the pipe at the place of fabrication to demonstrate watertightness of the seal between the collar and the sleeve. The test shall be at a pressure of 20 psig for four hours' duration and shall show zero leakage.

2.3 FABRICATED STEEL WALL PIPES AND SLEEVES

A. Provide fabricated steel wall pipes and sleeves with ends as shown in the drawings for connection to adjacent steel pipes, or for containing pipes, where they pass through concrete walls. Provide seepage ring or wall flange on wall pipes and sleeves passing through concrete walls and slabs that are to be watertight. Wall thickness shall be the same as the pipe wall thickness when connecting to steel pipe. Minimum wall thickness for sleeves containing pipes shall be standard weight per ASME B36.10 for sleeves 72 inches and smaller and 1/2 inch for sleeves greater than 72 inches through 96 inches.

B. Wall flanges shall be in the form of a steel wall collar welded to the steel sleeve or penetration. Cut welded wall collars from a 1/4-inch steel ring. Attach the collar to a steel wall pipe or sleeve with full circle, 3/16-inch fillet welds. Welding procedures shall be in accordance with ASME B31.3, Chapter V.

C. Steel pipe used in fabricating wall sleeves containing pipes shall comply with ASTM A53 (Type E or S), Grade B; ASTM A135, Grade B; ASTM A139, Grade B; or API 5L or 5LX. Wall pipes connecting to steel pipe shall be of the same material as the connecting pipe. Wall collar material shall comply with ASTM A36, A105, A181, or A182.

D. Stainless steel pipe used in fabricating wall pipes shall be of the same material as the connecting pipe. Wall collar material shall comply with ASTM A240.

E. Pressure test at least one of each size of fabricated steel wall sleeve or penetration and collar assemblies at the place of fabrication to demonstrate watertightness of the seal between the collar and the sleeve. The test shall be at a pressure of 20 psig for four hours' duration and shall show zero leakage.

2.4 RUBBER ANNULAR HYDROSTATIC SEALING DEVICES

A. Rubber annular hydrostatic sealing devices shall be of the modular mechanical type, utilizing

interlocking synthetic rubber links shaped to continuously fill the annular space between the pipe sleeve and the passing pipe. Assemble links to form a continuous rubber belt around the pipe, with a pressure plate under each bolthead and nut.

B. Materials of construction shall be as follows:
   1. Pressure plate: Delrin plastic; carbon steel; Type 304 stainless steel; Type 316 stainless steel; or Reinforced nylon polymer.
   2. Bolts and nuts for links: Type 303 or 316 stainless steel; or Zinc phosphated carbon steel.
   3. Sealing element: EPDM or Nitrile rubber.

C. The size of the wall sleeve needed to accommodate the passing pipe shall be as recommended by the rubber annular seal manufacturer.

D. Provide centering blocks in 25 percent of the sealing elements on pipelines larger than 12 inches in diameter.

E. The rubber annular hydrostatic sealing devices shall be Link Seal as manufactured by Thunderline Corporation; Innerlynx as manufactured by Advance Products & Systems, Inc.; or equal.

2.5 BOLTS, NUTS, AND GASKETS FOR FLANGED-END WALL PIPES

A. See Section 400500.

2.6 POLYETHYLENE FOAM FILLER FOR PIPE PENETRATIONS

A. Packing foam shall be an extruded closed-cell polyethylene foam rod, such as Minicel backer rod, manufactured by Industrial Systems Department, Plastic Products Group of Hercules, Inc., Middletown, Delaware; Ethafoam, as manufactured by Dow Chemical Company, Midland, Michigan; or equal. The rod shall be 1/2 inch larger in diameter than the annular space.

2.7 POLYURETHANE SEALANT FOR PIPE PENETRATIONS

A. Sealant shall be multipart, polyurethane sealant, to cure at ambient temperature, for continuous immersion in water. Install as recommended by the manufacturer. Products: SIKA Sikaflex 2C or equal.

2.8 PAINTING AND COATING

A. Line and coat sleeves and pipes except stainless steel with fusion-bonded epoxy per Section 099000 or Engineer approved fusion bonded epoxy coating system.

B. Coat penetrations and sleeves exposed, above ground, or in vaults and structures in accordance with Section 099000 or Engineer approved fusion-bonded epoxy coating system.

C. Coat submerged sleeves and penetrations per Section 099000, System No. 12 or Engineer approved fusion bonded epoxy coating system.

D. Coat buried sleeves and penetrations per Section 099000, System No. 10 or Engineer approved fusion bonded epoxy coating system.

E. Do not coat stainless steel sleeves and penetrations.

PART 3 EXECUTION

3.1 LOCATION OF PIPES AND SLEEVES

A. Provide a wall or floor pipe where shown in the drawings and wherever piping passes through walls or floors of tanks or channels in which the water surface is above the pipe penetration.

B. Provide a floor sleeve where shown in the drawings and wherever plastic pipe, steel, or stainless steel pipe 3 inches and smaller or stainless steel or copper tubing passes through a floor or slab. Provide a rubber annular sealing device in the annular space between the sleeve and the passing pipe or tubing.

C. Provide wall sleeves where shown in the drawings and wherever plastic, steel or stainless steel pipe 3 inches and smaller, or stainless steel or copper tubing passes through a wall. Provide a single rubber annular seal when the wall is 8 inches thick or less. Provide two rubber annular seals (one at each end of the sleeve) when the wall is more than 8 inches thick. Pack the annular space with polyethylene foam filler and fill the ends of the penetration with 2 inches of elastomeric sealant on both sides of the structure.

D. Where wall sleeves are installed in which water or soil is on one or both sides of the channel or wall, provide two rubber annular seals (one at each end of the sleeve).

E. Where pipes pass through walls or slabs and no sleeves or wall or floor pipe with seep ring is provided, pack the annular space with polyethylene foam filler and fill the ends of the penetration with

2 inches of elastomeric sealant on both sides of the structure.

3.2 INSTALLATION IN EXISTING CONCRETE WALLS AND SLABS

A. Core drill holes 1 to 2 inches larger in diameter than the outside diameter of the wall flange or collar. Install wall pipe and collar assembly axially aligned with the piping to which it will be connected or will contain. Pack the void space between the sleeve and concrete with polyethylene foam filler and fill the ends of the penetration with 2 inches of elastomeric sealant on both sides of the structure.

3.3 INSTALLATION IN NEW CONCRETE WALLS AND SLABS

A. Install wall pipes and sleeves in walls before placing concrete. Do not allow any portion of the pipe or sleeve to touch any of the reinforcing steel. Install wall pipe or sleeve and collar assembly axially aligned with the piping to which it will be attached or will contain. Provide supports to prevent the pipe or sleeve from displacing or deforming while the concrete is being poured and is curing.

3.4 INSTALLATION IN DRY FLOORS AND SLABS

A. Install pipe sleeves and spools in concrete floors and slabs which do not have water over them such that the sleeve or pipe extends from the bottom of the floor or slab to an elevation sufficient to make pipe and fitting connections; unless shown otherwise in the drawings.

3.5 INSTALLATION OF WALL PIPES HAVING FLANGED END CONNECTIONS

A. Check alignment before grouting in place or pouring concrete. Realign if the sleeve is not properly aligned.

B. Install flanged end wall sleeves or penetrations with bolt holes of the end flanges straddling the horizontal and vertical centerlines of the sleeve.

3.6 QUALIFICATIONS OF WELDERS

A. Welder qualifications shall be in accordance with AWS D1.1.

3.7 INSTALLATION OF RUBBER ANNULAR HYDROSTATIC SEALING DEVICES

A. Install in accordance with the manufacturer's instructions.

3.8 FIELD TESTING

A. Check each wall penetration for leakage at the time the hydraulic structure is tested for leakage; see Section 033000. Penetrations shall show zero leakage.

END OF SECTION

SECTION 402040 DUCTILE-IRON PROCESS PIPE

PART 1 GENERAL

1.1 DESCRIPTION

A. This section describes materials, testing, and installation of ductile-iron process pipe and fittings ***12-*** inches and smaller.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Painting and Coating: 099000.
B. Trenching and Backfilling: 312333.
C. General Piping Requirements: 400500.
D. Pressure Testing of Piping: 400515.
E. Wall Pipes, Seep Rings, and Penetrations: 400762.

1.3 SUBMITTALS

A. Submit shop drawings in accordance with the General Conditions and Section 013300.

B. Provide an affidavit of compliance with standards referenced in this specification, e.g., AWWA C151. Submit copy of report of pressure tests for qualifying the designs of all sizes and types of AWWA C153 fittings that are being used in the project. The pressure test shall demonstrate that the minimum safety factor described in AWWA C153, Section 5.5 is met.

C. Submit piping layout profile drawings showing location and dimensions of pipe and fittings; submit after equipment and valve submittals have been reviewed and marked "Resubmittal not required." Include laying lengths of valves, meters, in-line pumps, and other equipment determining piping dimensions. Label or number each fitting or piece of pipe. Piping having identical design pressure class, laying lengths, and bell-and-spigot dimensions that is to be placed in long straight reaches of alignment may have the same identifying label or number.

D. Provide the following information:
   1. Mortar lining thickness.
   2. Wall thickness.
   3. Outside coating.
   4. Material test data for this project.
   5. Show deflections at push-on and mechanical joints.
   6. Submit joint and fitting details and manufacturer’s data sheets.

E. Submit calculations and test data proving that the proposed restrained joint arrangement can transmit the required forces with a minimum safety factor of 1.5.

F. Submit certificate that cement for mortar lining complies with ASTM C150, designating type.

G. Submit test report on physical properties of rubber compound used in the gaskets.

H. Submit drawing or manufacturer's data sheet showing flange facing, including design of facing serrations.

I. Submit weld procedure specification, procedure qualification record, and welder's qualifications prior to any welding to ductile-iron pipe.

1.4 WARRANTY

A. Full warranty against defects in materials and workmanship for one year following FINAL ACCEPTANCE; including all parts, labor, and expenses.

PART 2 PRODUCTS

2.1 PIPE

A. Pipe shall be cast ductile iron, conforming to AWWA C151.

B. All pipe shall be manufactured in the United States. The Material Supplier and/or Contractor shall furnish data certified by the Manufacturer that all pipe is of domestic manufacture.

2.2 PIPE MARKING

A. Plainly mark each length of straight pipe and each fitting at the bell end to identify the design pressure class, the ductile-iron wall thickness, the date of manufacture, and the proper location of the pipe item by reference to the layout schedule. Mark the spigot end of restrained joint pipe to show clearly the

required depth of insertion into the bell.

2.3 PIPE WALL THICKNESS

A. Minimum wall thicknesses for pipe having grooved-end joints shall be as follows:
   1. Pipe Size 4 to 16-Inch: Thickness Class 53
   2. Pipe Size 18-Inch: Thickness Class 54
   3. Pipe Size 20-Inch: Thickness Class 55
   4. Pipe Size 24 to 36-Inch: Thickness Class 56
   5. Pipe Size 42-Inch and Larger: Thickness Class 53.

B. Minimum wall thickness for pipe having push-on or mechanical joints, restrained joints, plain ends, or cast flange ends shall be Thickness Class 50 unless otherwise shown in the drawings.

C. Minimum wall thickness for pipe having threaded flanges shall be Special Class 53 or Pressure Class 350.

D. Minimum pipe wall thickness required for corporation stops and tapped outlets shall be in accordance with Table A.1 of AWWA C151 for three full threads for design pressures up to 250 psi and four full threads for design pressures over 250 to 350 psi. Provide threaded weld-on boss for tapped outlets where indicated in the drawings.

2.4 FITTINGS

A. Fittings 48 inches and smaller shall conform to AWWA C110 with a minimum pressure rating of 250 psi. Flanges shall be flat faced.

B. Mechanical joint fittings conforming to AWWA C153 may be used in lieu of AWWA C110 fittings. Mechanical joint ductile-iron fittings 18 through 48 inches conforming to AWWA C110 (except for laying length) with a minimum pressure rating of 250 psi may also be used.

C. Grooved-end fittings shall conform to AWWA C110 with grooved ends conforming to AWWA C606, radius cut rigid joints. Fitting material shall conform to ASTM A48, Class 30; ASTM A126, Class B; or ASTM A536, Grade 65-42-10. Wall thickness of ductile-iron (ASTM A536) fittings shall conform to AWWA C110 or C153; wall thickness of cast-iron fittings shall conform to AWWA C110. Fittings and couplings shall be furnished by the same manufacturer.

D. Material for fittings with welded-on bosses shall have a Charpy notch impact value of minimum 10 ft-lbs under the conditions defined in AWWA C151. Test completed welds by the liquid penetrant method per ASTM E165.

2.5 FLANGES

A. Flanges shall be solid back, Class 125 per AWWA C115, or Class 250, flat faced per ASME B16.1 with serrated facings. Flanges on pipe shall be either cast or threaded. Material shall be ductile iron.

B. Flanged pipe and fittings shall be shop fabricated, not field fabricated. Assembly of flange on pipe outside of manufacturer's shop is unacceptable. Threaded flanges shall comply with AWWA C115. Flanges shall be individually fitted and machine tightened in the shop, then machined flat and perpendicular to the pipe barrel. Flanges shall be back-faced parallel to the face of flange. Prior to assembly of the flange onto the pipe, apply a thread compound to the threads to provide a leak-free connection. There shall be zero leakage through the threads at a hydrostatic test pressure of 250 psi without the use of the gasket.

C. Flanged pipe for gas service shall be in accordance with AWWA C115 and ANSI A21.52. In addition to pipe marking specified in AWWA C115 and ANSI A21.52, conspicuously stamp each flanged pipe with words "AIR TESTED".

D. Material for blind flanges shall be ductile iron or as indicated on the Drawings.

2.6 PIPE LINING

A. Line pipe interior ***and fittings with cement mortar*** per AWWA C104/A21.4. except as otherwise described herein or as otherwise shown. Lining thickness shall be the double thickness listed in AWWA C104, Section 4.7. Cement for lining material shall conform to ASTM C150, Type ***II.***

B. Line fittings per Section 099000.

C. The inside coating of ductile iron pipe and fittings shall be Protecto 401 ceramic epoxy lining to a minimum thickness of 40 mils in raw sewage, primary effluent, primary sludge, anaerobically digested sludge, and other corrosive environments. The epoxy coating shall be installed and tested in strict accordance with AWWA C 116/ANSI A21.16 and as supplemented in these specifications.

D. Where specifically called for in these specifications or shown on the drawings, the inside coating of ductile iron pipe and fittings shall be VITCO SG-14 glass lining (porcelain enamel) to a minimum thickness of 10 mils.
   1. The glass lining applied to pipe and fittings shall be hard, smooth, continuous vitreous material which is formulated to prevent the adherence of grease in sludge and scum lines, and to resist the adherence of crystalline metal salt deposits (Struvite and Vivionite) to sludge and centrate lines.
   2. The glass portion of the lining, the frit(s) used in the formulation, as supplied from the manufacturer, shall have a density of 2.5 to 3.0 grams per cubic centimeter as measured by ASTM D-792.
   3. The finished lining shall be able to withstand a strain of 0.001 inch/inch of the base metal without visible damage to the glass and it shall have a minimum hardness of 5 on the Moh's hardness scale.
   4. The lining shall be capable of withstanding an instantaneous thermal shock from ambient + 350oF to ambient without visible crazing, blistering or spalling.
   5. The lining shall be resistant to corrosion by an HCl solution adjusted to a pH of 3 at 125 degrees F and a NaOH solution adjusted to a pH of 10 at 125 degrees F. Demonstration of this shall be by a weight loss of not more than 3 milligrams per square inch when exposed for 30 minutes.
   6. There shall be negligible visible loss of surface gloss to the lining after immersing a cut production sample in an 8 percent by weight sulfuric acid solution at 148 degrees F for a period of 10 minutes.
   7. The lining shall be of a light, bright color to allow visual detection of defects more easily.

E. Line blind flanges per Section 099000.

F. Pipe and fittings for process air service shall be unlined (and supplied with EPDM gaskets).

G. Cement-mortar for pointing interior joints shall consist of one part cement to one and one-half parts of washed plaster sand conforming to ASTM C35, mixed with the minimum amount of water which will permit placing the mortar.

H. Maintain a moist environment inside the lined pipe and fittings by sealing the ends with polyethylene sheet.

I. Loose areas of cement-mortar lining are not acceptable. Remove and reconstruct lining in areas where quality is defective, such as sand pockets, voids over sanded areas, blisters, drummy areas, cracked areas, and thin spots. Longitudinal cracks in excess of 1/32 inch in width or where crack extends to metal shall be repaired with epoxy. Repair all cracks larger than 1/16 inch with epoxy.

2.7 GROOVED-END COUPLINGS

A. Grooved-end pipe couplings shall be ductile iron, ASTM A536 (Grade 65-45-12). Gaskets shall be halogenated butyl rubber or EPDM or Buna-N and shall conform to ASTM D2000.

B. Bolts in exposed service shall conform to ASTM A183, 110,000-psi tensile strength or ASTM A193, Grade B8, Class 2. Bolts in buried or submerged service shall be ASTM A193, Grade B8, Class 2.

C. Couplings for pipe 24 inches and smaller shall conform to AWWA C606 for flexible radius ductile-iron pipe, except where rigid radius couplings are required to connect to fittings. Couplings for pipe sizes 30 and 36 inches shall be in accordance with the coupling manufacturer's published literature for tolerances and dimensions for flexible and rigid radius cut joints. Couplings shall be Victaulic Style 31, Gustin-Bacon No. 500, or equal.

D. Grooved-end adapter flanges for piping 24 inches and smaller having an operating pressure of 150 psi and less shall be Victaulic Style 341 or 342 or equal. Flange dimensions shall conform to ASME B16.1, Class 125.

E. Grooved-end transition couplings for connecting ductile-iron pipe 12 inches and smaller to steel pipe shall be Victaulic Style 307 or equal.

2.8 GASKETS FOR FLANGES

A. See Section 400500.

2.9 GASKETS FOR MECHANICAL, PUSH-ON, AND RESTRAINED JOINTS

A. Synthetic or natural rubber in accordance with AWWA C111.

B. Gasket materials shall be selected by pipe manufacturer and shall be suitable for service and maximum operating temperature of piping system.

2.10 BOLTS AND NUTS FOR FLANGES

A. See Section 400500.

2.11 BOLTS AND NUTS FOR MECHANICAL AND RESTRAINED JOINTS

A. Bolts, nuts and washers for mechanical and restrained joints shall conform to ANSI/AWWA Standard C111/A21.11 and shall be cadmium plated meeting SAE AMS-QQ-P-416, Type 1, Class 2 (Cor-Ten, Cor-Blue, or approved equal) or Type 304 or 316 stainless steel tee head bolts and hex nuts with Teflon coated nuts.

2.12 OUTLETS AND NOZZLES

A. Provide outlets 2-inches and using a tapping saddle, using a threaded weld-on boss; or as indicated in the Drawings.

B. For outlets larger than 2 inches use a tee with a flanged outlet.

C. For outlets larger than 2 inches in buried piping, use a tee with a restrained joint outlet.

2.13 JOINTS

A. Joints in aboveground or submerged piping or piping located in vaults and structures shall be grooved end or flanged.

B. Joints in buried piping shall be of the restrained; push-on; or mechanical-joint type per AWWA C111 except where flanged joints are required to connect to valves, meters, and other equipment. Provide unrestrained buried joints except where restrained joints are specifically shown in the drawings.

C. Restrained joints for piping 6 inches and larger shall be American Cast Iron Pipe "Lok-Ring" or "Flex-Ring," U.S. Pipe "TR-Flex," or equal. Weldments for restrained joints shall be tested by the liquid penetrant method per ASTM E165. Restrained joints for field closures shall be “Megalug” by EBAA Iron.

D. Restrained joints in 4-inch-diameter buried piping shall be American Cast Iron Pipe Company “Fast-Grip,” U.S. Pipe Field-lok gasket within Tyton joint pipe and fittings, or equal. Joint restraint shall be certified to four times rated pressure of 200 psi by Factory Mutual.

E. Where thrust restraint is called for in the drawings, provide pipe with restrained joints capable of transmitting 1.5 times the thrust, as calculated by the following equation:

2.14 MECHANICAL JOINT RESTRAINT SYSTEM USING FOLLOWER RING AND WEDGES

A. The restraining mechanism shall consist of a follower gland having a seal gasket and individually actuated wedges that increase their resistance to pullout as pressure or external forces increase. The system manufacturer shall provide all the components (follower ring, wedges, and gaskets) for the restraining device. The device shall be capable of full mechanical joint deflection during assembly, and the flexibility of the joint shall be maintained after burial. The joint restraint ring and its wedging components shall be constructed of ductile iron conforming to ASTM A536, Grade 60-42-10. The wedges shall be ductile iron, heat-treated to a minimum hardness of 370 BHN. Dimensions of the gland shall be such that it can be used with mechanical joint bells conforming to AWWA C111 and AWWA C153. The design shall use torque limiting twist-off nuts to provide actuation of the restraining wedges. The mechanical joint restraint shall be available in the size range of 3 through 48 inches. Minimum rated pressure shall be 350 psi for sizes 16 inches and smaller and 250 psi in sizes 18 inches and larger. Products: Megalug Series 1100 as manufactured by EBAA Iron, Inc., or equal.

2.15 DUCTILE-IRON PIPE WELDMENTS

A. All welding to ductile-iron pipe, such as for bosses, joint restraint, and joint bond cables, shall be done at the place of manufacture of the pipe. Perform welding by skilled welders experienced in the method and materials to be used. Welders shall be qualified under the standard qualification procedures of the ASME Boiler and Pressure Vessel Code, Section IX, Welding Qualifications.

B. Welds shall be of uniform composition, neat, smooth, full strength, and ductile. Completely grind out porosity and cracks, trapped welding flux, and other defects in the welds in such a manner that will permit proper and complete repair by welding.

C. Completed welds shall be inspected at the place of manufacture by the liquid penetrant method. Conform to the requirements specified in ASTM E165, Method A, Type I or Type II. The materials used shall be water washable and nonflammable.

PART 3 EXECUTION

3.1 DELIVERY, UNLOADING, AND TEMPORARY STORAGE OF PIPE AT SITE

A. Limit onsite pipe storage to a maximum of one week.

B. Use unloading and installation procedures that avoid cracking of the lining. If necessary, use plastic sheet bulkheads to close pipe ends and keep cement-mortar lining moist.

C. Deliver the pipe alongside the pipelaying access road over which the pipe trailer-tractors can travel under their own power. Place the pipe in the order in which it is to be installed and secure it from rolling.

D. Do not move pipe by inserting any devices or pieces of equipment into the pipe barrel. Field repair linings damaged by unloading or installation procedures.

3.2 SANITATION OF PIPE INTERIOR

A. During laying operations, do not place tools, clothing, or other materials in the pipe.

B. When pipelaying is not in progress, close the ends of the installed pipe by a child- and vermin-proof plug.

3.3 INSTALLING FLANGED PIPE AND FITTINGS

A. Install in accordance with Sections 400500. Cut the bore of the gaskets such that the gaskets do not protrude into the pipe when the flange bolts are tightened.

3.4 INSTALLING GROOVED-END PIPE AND FITTINGS

A. Install in strict accordance with manufacturer's recommendations.

3.5 INSTALLING BURIED PIPING

A. Install in accordance with AWWA C600 and as specified herein.

B. When installing piping in trenches, do not deviate more than 1-inch from line or ½-inch from grade. Measure for grade at the pipe invert.

C. Provide thrust blocks at fittings where indicated and from Engineer approved submittals.

D. Inspection for Defects: Before installation, inspect pipe and appurtenances for defects and, when applicable, tap the pipe with a light hammer to detect cracks. Reject defective, damaged, or unsound pipe and appurtenances.

E. Push-On Joints: Bevel and lubricate spigot end of pipe to facilitate assembly without damage to gasket. Taper of bevel shall be approximately 30 degrees with centerline of pipe and approximately 1/4 IN back.

F. Push-On Joints: Use lubricant that is non-toxic, does not support the growth of bacteria, has no deteriorating effects on the gasket material, and imparts no taste or odor to water in pipe. Assure the gasket groove is thoroughly clean. For cold weather installation, warm gasket prior to placement in bell.

G. Cutting: Cut pipe, when necessary, in a neat and workmanlike manner without damage to the pipe, interior lining, and exterior coating. Perform cutting with an approved mechanical cutter, using a wheel cutter when applicable and practicable.

H. Cut pipe ends square, ream pipe and tube ends to full pipe diameter, remove burrs.

I. Depth of Cover: The depth of cover over water mains from the top of the pipe to the ground surface shall be sufficient to prevent freezing. The minimum depth shall be 42", or otherwise as shown on the Drawings.

J. Install access fittings to permit disinfection of water system.

K. If effective sealing is not obtained, disassemble, thoroughly clean, and reassemble the joint.

L. Assemble restrained joints per manufacturer's instructions.

M. Do not exceed the joint deflection angles recommended by the Manufacturer.

3.6 INSTALLING ABOVEGROUND OR EXPOSED PIPING

A. See Sections 400500

B. Support exposed pipe in accordance with Section 400764.

3.7 PAINTING AND COATING

A. Coat pipe located above ground and in vaults and structures per Section 099000 or apply prime coat in the shop before transporting pipe to the jobsite. As an alternate to the specified prime coat, pipe, supplier/manufacturer may utilize Tnemec Series N140, or equal, as the prime coat and apply intermediate and finish coats in the field before installing the pipe, then touch up after installation.

B. Provide asphaltic coating on buried pipe exterior per AWWA C151.

C. Coat buried piping per Section 099000, System No. 10.

D. Coat buried flanges and buried mechanical and restrained joint bolts, nuts, and glands per Section 099000, System No. 10.

E. Coat submerged pipe per Section 099000, System No. 12 or with Engineer approved fusion-bonded epoxy coating system.

F. Line and coat exposed grooved-end couplings the same as the pipe exterior coating or with an Engineer approved fusion-bonded epoxy.

G. Line and coat submerged and buried grooved-end couplings per Section 099000, System No. 12; or with Engineer approved fusion-bonded epoxy system.

3.8 POLYETHYLENE ENCASEMENT OF BURIED PIPE AND FITTINGS

A. Wrap buried pipe, fittings, grooved-end couplings, and joints with a minimum of 8-mil low-density polyethylene wrap conforming to AWWA C105.

B. Polyethylene encasement for ductile-iron pipe shall be supplied as a flat tube meeting the dimensions of Table 1 in AWWA C105 and shall be supplied by the ductile-iron pipe manufacturer.

3.9 CLEANING PIPE

A. After interior joints have been pointed and mortar has hardened, sweep pipe clean of all dirt and debris. If hardened mud exists in the pipe, remove with the use of pressurized water hoses.

3.10 FIELD HYDROSTATIC TESTING

A. Test pressures are shown in Section 400515. Test in accordance with Section 400515.

3.11 BURIED WARNING AND IDENTIFICATION TAPE

A. Provide detectable warning tape. Warning and identification shall read “CAUTION BURIED WATER PIPING BELOW” or similar wording.

END OF SECTION

AI: 1643

Form TPR	TRANSFER OF PERMIT REQUEST Kentucky Pollutant Discharge Elimination System (KPDES)	Division of Water

NAME OF FACILITY: Airview Estates Subdivision WWTP	AGENCY USE ONLY	
PERMIT NO.: KY0045390	COUNTY: Hardin	

I. CURRENT PERMITTEE INFORMATION (Existing permit holder)

Name of Current Permittee: Airview Utilities, LLC

Facility Location Address (Street, road, etc.): 178 W. Airview Dr.

Facility City, State, Zip Code: Elizabethtown, KY 42701

II. PROPOSED OWNER OR OPERATOR INFORMATION

Name of Proposed Permittee and Official Title: Josiah Cox, President

NEW Name of Facility (if applicable): Airview WWTF

NEW Name of Company (if applicable): Bluegrass Water Utility Operating Company, LLC

Proposed Permittee Mailing Address: 500 Northwest Plaza Dr. Suite 500

Proposed Permittee City, State, Zip Code: St. Ann, MO 63074

Proposed Permittee Telephone Number: (314) 736-4672

Proposed Permittee Email Address: jcox@cswrgroup.com

NetDMR Official Contact for Proposed Permittee: Kaleb Stephens

NetDMR Official Contact Telephone Number: (715) 790-2559

NetDMR Official Contact Email Address: kstephens@cswrgroup.com

III. NOTIFICATION BY CURRENT PERMITTEE

☐ Effective Date of Transfer of Permit Ownership:

☐ Attach a signed copy of the contractual written agreement between the existing permittee and new proposed permittee containing a specific date for transfer of the permit responsibility, coverage, and liability between them

PRINTED NAME AND TITLE:	
SIGNATURE:	DATE:

IV. ACKNOWLEDGEMENT BY NEW PERMITTEE

I hereby certify that I agree to the transfer of the permit, and I will assume ownership and all responsibility for meeting the permit conditions relating to water quality at the permitted facility listed above on the effective date of transfer indicated.

PRINTED NAME AND TITLE: Josiah Cox - President	
SIGNATURE:	DATE: 9/19/19

Return completed application form and attachments to: Division of Water, Surface Water Permits Branch, 300 Sower Boulevard, 3rd Floor, Frankfort, KY 40601. Direct questions to: Surface Water Permits Branch at (502) 564-3410.

MATTHEW G. BEVIN
GOVERNOR

CHARLES G. SNAVELY
SECRETARY

ENERGY AND ENVIRONMENT CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION

ANTHONY R. HATTON
COMMISSIONER

300 SOWER BOULEVARD
FRANKFORT, KENTUCKY 40601

September 24, 2019

Airview Estates Subdivision WWTP
Bluegrass Water Utility Operating Company LLC
500 Northwest Plaza Dr Ste 500
Saint Ann, MO 63074

RE: **Change of Ownership**
Agency Interest # 1643
KPDES Permit #: KY0045390
Location: Hardin County, Kentucky

Dear Mr. Cox:

The Division of Water received your request for modification of the Kentucky Pollutant Discharge Elimination System (KPDES) coverage for the above-referenced facility. The KPDES permit will be modified to reflect the change of ownership once you have submitted an application for renewal of the permit.

If you have any questions, please contact me at (502) 564-3410, or via e-mail at Joy.Haden@ky.gov.

Sincerely,

Joy Haden
Surface Water Permits Branch
Division of Water

JH: jh

C: ARM

ERNIE FLETCHER
GOVERNOR

ENVIRONMENTAL AND PUBLIC PROTECTION CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
DIVISION OF WATER
14 REILLY ROAD
FRANKFORT, KENTUCKY 40601-1190
www.kentucky.gov

LAJUANA S. WILCHER
SECRETARY

March 18, 2005

Mr. Fred Schlatter
Airview Estates Subdivision
10411 Forest Garden Lane
Louisville, Kentucky 40223

Re: Public Notice of Draft KPDES Permit
KPDES No.: KY0045390
Airview Estates Subdivision
AI ID: 1643 Activity ID: APE20040001
Hardin County, Kentucky

Dear Mr. Schlatter:

A draft Kentucky Pollutant Discharge Elimination System (KPDES) permit for your facility has been completed and the information sent to public notice as per Regulation 401 KAR 5:075, Sections 3 and 5. Enclosed for your review are copies of the public notice, draft permit, and fact sheet or statement of basis.

Your facility is being issued a permit that is shorter than the normal five-year term in order to synchronize permit issuance by watershed. The permit fee that is assessed for this short-term permit is prorated based on the permit duration. Implementation of watershed permitting began in the year 2002 and your targeted permit issuance date is based upon your location in the watershed basin.

The prorated issuance fee for your KPDES permit is 485.00. Please make your check payable to the Kentucky State Treasurer and mail it to the KPDES Branch, Division of Water upon receipt of this letter.

Feel free to contact the permit writer (referenced in the public notice) or me at (502) 564-2225, extension 528, if you have any questions.

Sincerely,

Ann S. Workman

Ann S. Workman
Inventory and Data Management Section
KPDES Branch
Division of Water

ASW:asw
Enclosures
c: Louisville Regional Office
Division of Water Files

ERNIE FLETCHER
GOVERNOR

ENVIRONMENTAL AND PUBLIC PROTECTION CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
DIVISION OF WATER
14 REILLY ROAD
FRANKFORT, KENTUCKY 40601-1190
www.kentucky.gov

LAJUANA S. WILCHER
SECRETARY

July 11, 2005

Mr. Fred Schlatter
Airview Estates Subdivision
10411 Forest Garden Lane
Louisville, Kentucky 40223

Re: Airview Estates Subdivision WWTP
KPDES No.: KY0045390
Hardin County, Kentucky

Dear Mr. Schlatter:

Enclosed is the Kentucky Pollutant Discharge Elimination System (KPDES) permit for the above-referenced facility. This action constitutes a final permit issuance under 401 KAR 5:075, pursuant to KRS 224.16-050.

Your facility is being issued a permit that is shorter than the normal five-year term in order to synchronize permit issuance by watershed. The permit fee that is assessed for this short-term permit is prorated based on the permit duration. Implementation of watershed permitting began in the year 2001 and your targeted permit issuance is based upon your location in the watershed basin. Since your total fee has already been paid, a $116.75 refund will be sent to you in 6-8 weeks.

This permit will become effective on the date indicated in the attached permit provided that no request for adjudication is granted. All provisions of the permit will be effective and enforceable in accordance with 401 KAR 5:075, unless stayed by the Hearing Officer under Sections 11 and 13.

Any demand for a hearing on the permit shall be filed in accordance with the procedures specified in KRS 224.10-420, 224.10-440, 224.10-470 and any regulations promulgated thereto. Any person aggrieved by the issuance of a permit final decision may demand a hearing, pursuant to KRS 224.10-420(2) within thirty (30) days from the date of the issuance of this letter. Two (2) copies of request for hearing should be submitted in writing to the Environmental and Public Protection Cabinet, Office of Administrative Hearings, 35-36 Fountain Place, Frankfort, Kentucky 40601 and the Commonwealth of Kentucky, Environmental and Public Protection Cabinet, Division of Water, 14 Reilly Road, Frankfort, Kentucky 40601. For your record keeping purposes, it is recommended that these requests be sent by certified mail. The written request must conform to the appropriate statutes referenced above.

If you have any questions regarding the KPDES decision, please contact Courtney Seitz, Inventory and Data Management Section, KPDES Branch, at (502) 564-2225, extension 465.

Further information on procedures and legal matters pertaining to the hearing request may be obtained by contacting the Office of Administrative Hearings at (502) 564-7312.

Sincerely,

David W. Morgan, Director
Division of Water

DWM:NG:ng
Enclosure
c: Division of Water Files

MATTHEW G. BEVIN
GOVERNOR

CHARLES G. SNAVELY
SECRETARY

ANTHONY R. HATTON
COMMISSIONER

ENERGY AND ENVIRONMENT CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION

300 SOWER BOULEVARD
FRANKFORT, KENTUCKY 40601

November 26, 2019

Mr. Josiah Cox
Bluegrass Water Utility Operating Company, Inc.
500 Northwest Plaza Dr., Ste. 500
St. Ann, MO 63074

RE: **Public Notice of Draft KPDES Permit Notification**
Agency Interest Number (AI #): 1643
KPDES Permit #: KY0045390 – Airview WWTP
Location: Hardin

Dear Mr. Cox:

A draft Kentucky Pollutant Discharge Elimination System (KPDES) permit for the above-referenced facility has been completed and the information sent to public notice, as per Regulation 401 KAR 5:075, Sections 3 and 5. Copies of the public notice, draft permit, and fact sheet and application can be found at: http://dep.gateway.ky.gov/eSearch/Search_Pending_Approvals.aspx?NumDaysDoc=30&Program=Wastewater. Comments on the draft permit must be received by the comment due date on the public notice.

The close of the public notice period is December 26, 2019.

If you have any questions, please contact me at 502-782-7137.

Sincerely,

Ann S. Workman

Ann S. Workman
Surface Water Permits Branch
Division of Water