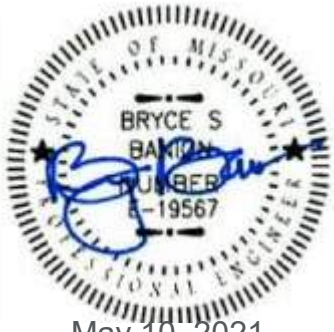
Facility Plan

Boone County Regional Sewer District

Amendment 2 - Richardson Acres and Brown Station Wastewater Improvements

May 10, 2021



May 10, 2021

Table of Contents

Tables:

Appendices:

1 Description of Need

1.1 Background

The Boone County Regional Sewer District (District) owns and operates the following Wastewater Treatment Facilities (WWTF):

1. Cedar Gate WWTF is located approximately 800 feet east of the intersection of Route B and E. Kemper Road southwest of Hallsville, MO. It is a two-cell aerated lagoon which currently serves approximately 28 homes. It discharges effluent into an unnamed tributary to Varnon Branch and is in the Upper Hinkson Creek Watershed.
2. Richardson Acres WWTF is located approximately 600 feet west of Route B and 2,400 feet south of Mt. Zion Church Road. It is a two-cell aerated lagoon which currently serves approximately 24 homes. It discharges effluent into an unnamed tributary to Clays Fork and is in the Rocky Fork Creek Watershed.
3. Brown Station WWTF located approximately 650 feet north of the intersection of North Brown Station Road and O'Rear Road. It is a recirculating sand filter which currently serves approximately six homes. It discharges effluent into Clays Fork and is in the Rocky Fork Creek Watershed.

The Missouri State Operating Permits for all three WWTF's have expired on the following dates:

1. Cedar Gate WWTF: November 8, 2012
2. Richardson Acres WWTF: March 31, 2020
3. Brown Station WWTF: March 31, 2020

Each of these permits included effluent limitations for Biological Oxygen Demand (BOD), Total Suspended Solids (TSS), and ammonia. The Permits for these WWTFs can be found in Appendix A.

The District faces several challenges regarding the continuing operation of these WWTFs. In order to meet the above listed ammonia limitations, the WWTFs need to be upgraded. Although these permits do not currently have effluent limitations for bacteria, it is anticipated that future permits will include bacteria limitations which will require the implementation of disinfection facilities to maintain compliance.

Future impacts regarding the addition of removal requirements for nutrients, such as total nitrogen and total phosphorous, are also expected to occur within upcoming permit renewal cycles. Therefore, it is prudent to consider these future requirements in the planning and design of any improvements to these facilities.

In addition to addressing the wastewater treatment needs for the Cedar Gate, Richardson Acres and Brown Station WWTFs, this Facility Plan also provides for the piping infrastructure for conveying wastewater flows from four other existing treatment facilities to the District's Rocky Fork WWTF as part of Alternative 3. These four facilities are not currently owned or operated by the

District and are listed below.

1. City of Hallsville, MO
2. Hallsville United Methodist Church

3. Oak Ridge Mobile Home Park
4. Hillcrest Residential Care WWTP

1.2 Project Purpose

The purposes of the Facility Plan are as follows:

1. Develop and evaluate three alternatives to address current and future wastewater treatment needs within the study area over the next 20 years and beyond for the District's Cedar Gate WWTF, the Richardson Acres WWTF and the Brown Station WWTF.
    a. Alternative No. 1: Make no improvements to the existing facilities.
    b. Alternative No. 2: Improve existing WWTFs to meet current and anticipated future MDNR regulations.
    c. Alternative No. 3: Construct one pump station at each WWTF site, a booster pump station at Brown Station and associated force mains that will discharge wastewater into the District's sanitary sewer collection system. The wastewater will be treated at the District's Rocky Fork WWTF. Each existing WWTF will be decommissioned.
2. Recommend the most feasible alternative that meets the 20-year need for wastewater service within the study area and meets the current and proposed regulations.
3. Provide estimates of construction and operations/maintenance costs.
4. Provide an estimated project schedule.

1.3 Scope

This Facility Plan has been prepared in accordance with the requirements specified in RSMO, 10-CSR 20-4 of the Missouri Codes of Rules and Regulations. Additionally, this Facility Plan was developed in conformance with RSMO 10-CSR 20-8 and most specifically, 10-CSR 20-8.10, entitled "Engineering – Reports, Plan, and Specifications".

The specific scope of this Facility Plan was developed to meet the following requirements of MDNR:

1. The recommended plan shall meet state and federal design criteria. The design criteria of the project shall be accepted by all state agencies responsible for issuing construction and operating permits for wastewater systems.
2. The recommended plan shall be technologically compatible with the topography and geology of the area and the administrative and operational capabilities of the District.
3. All equipment and processes shall have a demonstrated proven record of performance under similar environmental and cultural conditions. The equipment selected must be accepted by the District as being capable of performing for the life of the indebtedness with reasonable operations and maintenance requirements. The equipment and processes must be evaluated in terms of long-term operational and managerial cost implications.
4. All required construction techniques should be common to the State of Missouri, thus encouraging competitive pricing in construction contracts. Property owners, road and highway commissions, and other utility owners should accept the required construction techniques, including temporary disturbances as well as resulting permanent structures.

The project costs shall be established such that loan commitments can be obtained from participation in the MDNR State Revolving Fund (SRF) Loan program.

1.4 Phasing of Recommended Alternative Project

The District intends to divide the Recommended Alternative Project, described in Section 5 of this Facility Plan, into two separate and distinct projects for funding purposes. The separate projects are defined as follows:

1. Project 1: All wastewater improvements from the connection point to the Rocky Fork Sanitary Sewer to the Richardson Acres WWTF.

2. Project 2: All wastewater improvements from the Richardson Acres WWTF to the Cedar Gate WWTF.

Project 1 and Project 2 are shown on Exhibit 1 in Appendix B.

2 Projected Population, Flows, and Wastewater Loadings

The existing wastewater flows currently treated by the Cedar Gate, Richardson Acres and Brown Station WWTFs and anticipated future design flows are discussed in the following sections. The wastewater flows from the WWTFs not owned and operated by the District are also included in this Section.

2.1 Existing Wastewater Flows

Table 2-1 below summarizes the available flow data for the Cedar Gate, Richardson Acres, Brown Station, Hallsville United Methodist Church, Oak Ridge Mobile Home Park and Hillcrest Residential Care Facility WWTFs. The permitted design flow and the permitted actual flow are taken from each facility's operating permit, while the average flow was calculated based upon the Daily Monitoring Reports (DMRs). The available DMRs for the WWTFs include flow data from 2015 to 2019.

Table 2-1 Permitted & Monitored Flows

WWTF	Permit Design Flow (gpd)	Permit Actual Flow (gpd)	DMR Average Flow (gpd)
Cedar Gate	11,000	4,348	2,043
Richardson Acres	8,510	3,198	3,704
Brown Station	1,850	1,600	1,311
City of Hallsville[1]	197,650	149,568	-
Hallsville United Methodist Church[1]	587	Not Available	-
Oak Ridge Mobile Home Park[1]	9,000	Not Available	-
Hillcrest Residential Care WWTF[1]	3,075	2,000	-

[1]Facility is not owned or operated by the Boone County Regional Sewer District.

It is noted that the values derived for average daily flow (ADF) from the DMRs are gathered on a quarterly basis and can vary significantly from sampling event to sampling event. Due to the wide variations in the reported flow, this Facility Plan will not rely on the reported flow data. Additional analysis utilizing MDNR guidelines for deriving wastewater flow will be employed. Those guidelines are as follows:

The MDNR Code of State Regulations 10 CSR 20-8.020, Section 11 allows for the following design criteria for single family residences:

> Density = 3.7 persons/residence
> Design flow = 75-100 gallons/capita/day. The more conservative value of 100 gallons/capita/day will be used in the calculation of the design flow.

Peak factors within the system are calculated in accordance with 10 CSR 20-8.110:

> Peak Design Flow = (18+√ population) / (4+√ population), (population is in thousands)

Cedar Gate Existing Service Area

All dwellings within the existing service area are single family residences, except for one abandoned convenience store. This Facility Plan will consider the wastewater contribution of the abandoned convenience store to be the equivalent of one single family residence. The actual number of houses within the existing service area was determined from information provided by the District and an analysis of aerial mapping. The Cedar Gate WWTF currently serves 29 lots.

Applying the above referenced MDNR guidelines, the existing wastewater flows and peak factors to the Cedar Gate WWTF are calculated in Table 2-2.

Table 2-2 Cedar Gate Design Data for Existing Service Area

WWTF	Existing Dwellings (each)	Calculated Population (persons)	Design Flow (gpd)	Peak Flow Factor	Peak Flow (gpd)	Peak Flow (gpm)
Cedar Gate	29	107	10,730	4.24	45,440	32

Richardson Acres Existing Service Area

All dwellings within the existing service area are single family residences. The actual number of houses within the existing service area was determined from information provided by the District and an analysis of aerial mapping. The Richardson Acres WWTF currently serves 22 lots.

Applying the above referenced MDNR guidelines, the existing wastewater flows and peak factors to the Richardson Acres WWTF are calculated in Table 2-3.

Table 2-3 Richardson Acres Design Data for Existing Service Area

WWTF	Existing Dwellings (each)	Calculated Population (persons)	Design Flow (gpd)	Peak Flow Factor	Peak Flow (gpd)	Peak Flow (gpm)
Richardson Acres	22	81	8,140	4.27	34,730	24

Brown Station Existing Service Area

All dwellings within the existing service area are single family residences. The actual number of houses within the existing service area was determined from information provided by the District and an analysis of aerial mapping. The Brown Station WWTF currently serves six lots.

Applying the above referenced MDNR guidelines, the existing wastewater flows and peak factors to the Brown Station WWTF are calculated in Table 2-4.

Table 2-4 Brown Station Design Data for Existing Service Area

WWTF	Existing Dwellings (each)	Calculated Population (persons)	Design Flow (gpd)	Peak Flow Factor	Peak Flow (gpd)	Peak Flow (gpm)
Brown Station	6	22	2,220	4.37	9,710	7

City of Hallsville Existing Service Area

This Facility Plan includes the District receiving wastewater flows from the City of Hallsville and conveying them to the District's sanitary sewer collection system.

The wastewater flows will be derived from actual population data from "worldpopulationreview.com". According to the website, the City of Hallsville has a projected population of 1,586 in 2020.

Using the same MDNR CSR guidelines referenced above, the design wastewater flows generated by the existing population within the Hallsville Service Area are shown in Table 2-5.

Table 2-5 City of Hallsville Design Data for Existing Service Area

WWTF	Existing Dwellings (each)	Reported Population (persons)	Design Flow (gpd)	Peak Flow Factor	Peak Flow (gpd	Peak Flow (gpm)
Hallsville	-	1,586	158,600	3.66	580,780	403

Hallsville United Methodist Church

Hallsville Methodist Church is a church located on Route B approximately 2 miles south of Hallsville. The District has no information regarding the service area for this WWTF, but according to its Operating Permit it has a population of 8 and a design flow of 587.

Applying the above referenced MDNR guidelines, the estimated existing wastewater flows and peak factors for the Church are calculated in Table 2-6.

Table 2-6 Hallsville United Methodist Church Design Data for Existing Service Area

WWTF	Existing Dwellings (each)	Permit Population (persons)	Design Flow (gpd)	Peak Flow Factor	Peak Flow (gpd)	Peak Flow (gpm)
Hillcrest Residential Care	-	8	587	4.33	13,319	2

Oak Ridge Mobile Home Park Existing Service Area

All dwellings within the existing service area appear to be single family residences, consisting of a mixture of permanent residences and mobile homes. The District has no information regarding the service area for this WWTF. Aerial mapping indicates there are approximately 29 residences on the property.

Applying the above referenced MDNR guidelines, the estimated existing wastewater flows and peak factors for the Oak Ridge Mobile Home Park are calculated in Table 2-7.

Table 2-7 Oak Ridge Mobile Home Park Design Data for Existing Service Area

WWTF	Existing Dwellings (each)	Calculated Population (persons)	Design Flow (gpd)	Peak Flow Factor	Peak Flow (gpd)	Peak Flow (gpm)
Oak Ridge Mobile Home Park	29	107	10,730	4.24	45,440	32

Hillcrest Residential Care Existing Service Area

Hillcrest Residential Care Facility is a small privately owned and operated assisted living facility. The District has no information regarding the service area for this WWTF, but according to its Operating Permit, it has a population of 41 and a design flow of 3,075.

Applying the above referenced MDNR guidelines, the estimated existing wastewater flows and peak factors for the Hillcrest Residential Care Facility are calculated in Table 2-8.

Table 2-8 Hillcrest Residential Care Design Data for Existing Service Area

WWTF	Existing Dwellings (each)	Calculated Population (persons)	Design Flow (gpd)	Peak Flow Factor	Peak Flow (gpd)	Peak Flow (gpm)
Hillcrest Residential Care	-	41	3,075	4.33	13,300	9

2.2 Projected Population and Wastewater Flows for Respective Service Areas

Cedar Gate Future Service Area

The District anticipates no future growth in the existing Cedar Gate Service Area. Therefore, the total projected design wastewater flows generated by existing development with no future development within the service area are shown in Table 2-2.

Richardson Acres Future Service Area

A potential future service area defined by the District includes approximately 102 acres west of the existing Richardson Acres Service Area that is not currently served by the Richardson Acres WWTF. Assuming a similar development density of 5.4 acres per lot in the future service area, the District would anticipate an additional 19 (102 acres/5.4 acres/lot) single family residences may be constructed on the 102-acre tract. The additional future wastewater flow from an anticipated 19 homes should be accounted for in the planning of the future improvements in the service area.

Table 2-9 shows the current and projected number of houses in the service area for the Richardson Acres WWTF.

Table 2-9 Houses in Service Area

WWTF	Current Houses in Service Area (houses)	Anticipated Additional Houses in Future Service Area (houses)	Anticipated Total Houses in Future Service Area (houses)
Richardson Acres	22	19	41

Population data specifically for the potential service area doesn't exist, so the determination of projected wastewater flows cannot be calculated by common population methodologies. Therefore, the same MDNR CSR guidelines used in Section 2.1 above will be used for this analysis, as well.

The total projected design wastewater flows generated by existing and future development within the service area are shown in Table 2-10

Table 2-10 Projected Future Wastewater Flows

WWTF	Total Service Area (homes)	Total Service Area Population (persons)	Projected Average Wastewater Flow (gpd)	Peak Flow Factor	Projected Peak Wastewater Flow (gpd)	Projected Peak Wastewater Flow (gpm)
Richardson Acres	41	152	15,170	4.19	63,550	44

Brown Station Future Service Area

A potential future service area defined by the District includes approximately 23 homes that are not currently served by the Brown Station WWTF. The additional future wastewater flow from an anticipated 23 homes should be accounted for in the planning of the future improvements in the service area.

Table 2-11 shows the current and projected number of houses in the service area for the Brown Station WWTF.

Table 2-11 Houses in Service Area

WWTF	Current Service Area (houses)	Anticipated Additional in Future Service Area (houses)	Anticipated Total in Future Service Area (houses)
Brown Station	6	23	29

Population data specifically for the potential service area doesn't exist, so the determination of projected wastewater flows cannot be calculated by common population methodologies. Therefore, the same MDNR CSR guidelines used in Section 2.1 above will be used for this analysis, as well.

The total projected design wastewater flows generated by existing and future development within the service area are shown in Table 2-12.

Table 2-12 Projected Future Wastewater Flows

WWTF	Total Service Area (homes)	Total Service Area Population (persons)	Projected Average Wastewater Flow (gpd)	Peak Flow Factor	Projected Peak Wastewater Flow (gpd)	Projected Peak Wastewater Flow (gpm)
Brown Station	29	107	10,730	4.24	45,442	32

Hallsville Future Service Area

This Facility Plan includes the District receiving wastewater flows from the City of Hallsville and conveying them to the District's sanitary sewer collection system.

The wastewater flows will be derived from actual population data from "worldpopulationreview.com". According to the website, the City of Hallsville has a projected population of 1,586 in 2020. Assuming 1% growth per year over the next 20 years, the population will be 1,935 in 2040.

Using the same MDNR CSR guidelines used in Section 2.1 above, the total projected design wastewater flows generated by existing and future population within the Hallsville Service Area are shown in Table 2-13.

Table 2-13 Projected Future Wastewater Flows

WWTF	Total Service Area (homes)	Reported Population (persons)	Projected Average Wastewater Flow (gpd)	Peak Flow Factor	Projected Peak Wastewater Flow (gpd)	Projected Peak Wastewater Flow (gpm)
Hallsville	-	1,935	193,510	3.60	696,030	483

It is noted that the projected average wastewater flow of 193,510 gpd is within 10% of the average daily design flow of 212,622 gpd for the Hallsville WWTF, as shown on its Operating Permit. This Facility Plan will use the more conservative wastewater flow value for average day flow of 212,644 gpd or 148 gpm.

According to the Missouri Operating Permit, the City of Hallsville has approximately 53,992,000 gallons of storage volume in its lagoons. It is anticipated that these lagoons will be used to store peaks flows in the system.

Hallsville United Methodist Church

It is assumed there will be no future growth at the Church. Therefore, the total projected design wastewater flows generated by the existing population will equal the future projected design wastewater flows. The flows are shown in Table 2-6.

Oak Ridge Mobile Home Park Future Service Area

It is assumed there will be no future growth at the Mobile Home Park. Therefore, the total projected design wastewater flows generated by the existing population will equal the future projected design wastewater flows. The flows are shown in Table 2-7.

Hillcrest Residential Care Facility Future Service Area

It is assumed there will be no future growth at the Facility. Therefore, the total projected design wastewater flows generated by the existing population will equal the future projected design wastewater flows. The flows are shown in Table 2-8.

Summary of Wastewater Flows

Table 2-14 summarizes the current ADF, anticipated future ADF and current peak flows from the facilities included in this Section.

Table 2-14 Summary of Wastewater Flows - Project 1

WWTF	Current Design ADF (gpd)	Future Design ADF (gpd)	Current Design Peak Flow (gpm)
Richardson Acres	8,140	15,170	24
Brown Station	2,220	10,730	7
Oak Ridge Mobile Home Park	10,730	10,730	32
Hillcrest Residential Care WWTF	3,075	3,075	9

Table 2-15 Summary of Wastewater Flows - Project 2

WWTF	Current Design ADF (gpd)	Future Design ADF (gpd)	Current Design Peak Flow (gpm)
Cedar Gate	10,730	10,730	32
City of Hallsville	158,600[1]	212,644[2]	148[3]
Hallsville United Methodist Church	587	587	2

[1]Estimated population values were used to determine ADF. See discussion under Table 2-13.

[2]The ADF from the Operating Permit is used. See discussion under Table 2-13.

[3]This value is for ADF and is not a peak flow. See discussion under Table 2-13.

2.3 Wastewater Loadings

Cedar Gate

Table 2-15 shows a summary of the DMRs provided taken from MDNR's Clean Water Information System 2015 to 2019. The data from the DMRs can be found in Appendix C.

Table 2-16 Wastewater Loadings Cedar Gate

Parameter	Value
Flow (Jan 2015 to Dec 2019)	
Average Daily Flow (gpd)	2,043
Max Daily Flow (gpd)	14,000
Influent Concentrations (Jan 2015 to Dec 2019)	
Average BOD_5 (mg/L)	329.4
Max BOD_5 (mg/L)	426
Average TSS (mg/L)	309.2
Max TSS (mg/L)	420
Effluent Concentrations (Jan 2015 to Dec 2019)	
Average BOD_5 (mg/L)	24.6
Average TSS (mg/L)	22.1
Effluent Ammonia (Jan 2015 to Dec 2019)	
Average Ammonia (mg/L)	17.4

There is no data available for ammonia concentration in the WWTF's influent flow. For the purpose of this Facility Plan, the influent ammonia concentration will be assumed to be 35 mg/L, which is typical for domestic type wastewater. As additional data becomes available, this concentration may be adjusted during the design phase, if necessary.

Richardson Acres

Table 2-16 shows a summary of the DMRs provided by the District from 2015 to 2019. The data from the DMRs can be found in Appendix C.

Table 2-17 Wastewater Loadings Richardson Acres

Parameter	Value
Flow (Jan 2015 to Dec 2019)	
Average Daily Flow (gpd)	3,704
Max Daily Flow (gpd)	5,700
Influent Concentrations (Jan 2015 to Dec 2019)	
Average BOD_5 (mg/L)	113
Max BOD_5 (mg/L)	190
Average TSS (mg/L)	45.1
Max TSS (mg/L)	72
Effluent Concentrations (Jan 2015 to Dec 2019)	
Average BOD_5 (mg/L)	15.5
Average TSS (mg/L)	22.7
Effluent Ammonia (Jan 2015 to Dec 2019)	
Average Ammonia (mg/L)	3.9

The DMRs show the District began monitoring effluent ammonia at the Richardson Acres WWTF in March 2007. However, there is no data available for ammonia concentration in the WWTF's influent

flow. For the purpose of this Facility Plan, the influent ammonia concentration will be assumed to be 35 mg/L, which is typical for domestic type wastewater. As additional data becomes available, this concentration may be adjusted during the design phase, if necessary.

Brown Station

Table 2-17 shows a summary of the DMRs provided by the District from 2011 to 2016. The data from the DMRs can be found in Appendix C.

Table 2-18 Wastewater Loadings Brown Station

Parameter	Value
Flow (Jan 2015 to Dec 2019)	
Average Daily Flow (gpd)	1,311
Max Daily Flow (gpd)	2,880
Influent Concentrations (Jan 2015 to Dec 2019)	
Average BOD_5 (mg/L)	Not Available
Max BOD_5 (mg/L)	Not Available
Average TSS (mg/L)	Not Available
Max TSS (mg/L)	Not Available
Effluent Concentrations (Jan 2015 to Dec 2019)	
Average BOD_5 (mg/L)	3.6
Average TSS (mg/L)	3.7
Average Ammonia (mg/L)	0.8

The DMRs show the District began monitoring effluent ammonia at the Brown Station WWTF in June 2011. However, there is no data available for ammonia concentration in the WWTF's influent flow. For the purpose of this Facility Plan, the influent ammonia concentration will be assumed to be 35 mg/L, which is typical for domestic type wastewater. As additional data becomes available, this concentration may be adjusted during the design phase, if necessary.

3 Existing Facility Description

This section provides a description of the existing facilities evaluated in this Facility Plan.

3.1 Cedar Gate WWTF

- Permit No.: MO-0096415
- Receiving Stream: Unnamed Tributary to Varnon Branch (U)
- Two-cell lagoon, aerated lagoon/sludge is retained in lagoon
- Permitted Design Flow is 11,000 gallons per day
- Permitted Actual flow is 4,348 gallons per day
- Average BOD is 329 mg/L
- Average TSS is 309 mg/L

3.2 Richardson Acres WWTF

- Permit No.: MO-0115185
- Receiving Stream: Unnamed Tributary to Clay Forks
- STEP system/two-cell lagoon with aerated primary cell/sludge is retained in septic tanks and lagoon/sludge hauled to another treatment facility by owner
- Permitted Design Flow is 8,510 gallons per day
- Permitted Actual flow is 3,400 gallons per day
- Average BOD is 113 mg/L
- Average TSS is 45 mg/L

3.3 Brown Station WWTF

- Permit No.: MO-035305
- Receiving Stream: Clay Forks
- STEP system/recirculating sand filter/sludge hauled to another treatment facility by owner
- Permitted Design Flow is 1,850 gallons per day
- Permitted Actual flow is 1,600 gallons per day
- Average BOD is 89 mg/L
- Average TSS is 44 mg/L

3.4 Current NPDES Permits

A copy of the current NPDES Permits for the Cedar Gate WWTF, the Richardson Acres WWTF and the Brown Station WWTF are included in Appendix A.

3.5 Boone County Regional Sewer District's Existing Collection and Treatment Facilities

The District has verified that its wastewater collection system and the Rocky Fork WWTF can accommodate the anticipate wastewater flows, if Alternative No. 3 "Conveyance to the District's Sanitary Sewer System" is the selected alternative.

4 Wastewater Facilities Improvements Alternatives

This section will evaluate three alternatives which may be used to address the need for improvements at the Cedar Gate WWTF, the Richardson Acres WWTF and the Brown Station WWTF.

4.1 Alternative No. 1 – Take No Action

This alternative consists of taking no action to upgrade the existing WWTFs. As discussed in Section 1.1, the existing facilities will be required to meet more stringent effluent ammonia limitations and is anticipated to require disinfection under future permits. Additionally, the stated policy of MDNR is to eliminate small individual treatment works whenever possible. Alternative No. 1 would ultimately result in NPDES permit violations and would expose the District to additional liabilities, significant fines, and further punitive action by MDNR. Therefore, this alternative is not recommended.

4.2 Alternative No. 2 – Improve Existing Facilities

This alternative consists of making the necessary improvements to the Cedar Gate WWTF, Richardson Acres WWTF, and Brown Station WWTF to meet the anticipated future permit requirements for these facilities. Currently, effluent ammonia limits of 0.6 mg/l and 2.0 mg/l for summer and winter conditions are anticipated. This will require the WWTF's to fully nitrify in summer conditions, as well as provide an environment suitable to achieve partial nitrification in the cold winter months, which is challenging for lagoon systems. Regarding future nutrient limits, the Missouri Department of Natural Resources has indicated that these will likely not apply to WWTF's with a design permitted flow below 1.0 MGD. Lastly, effluent E. Coli requirements are anticipated within the next permit cycle therefore, new effluent disinfection facilities have been included within this alternative.

4.2.1 Cedar Gate WWTF Improvements

The existing Cedar Gate WWTF is a two celled lagoon system that can meet its technology-based limits for effluent BOD and TSS. However, the lagoon system is not capable of year-round consistent nitrification and will require improvements to address these future limits. The bacteria needed to achieve nitrification to remove ammonia require more oxygen than those required to remove BOD. In addition, cold temperatures have a negative impact on these bacteria. The existing Cedar Gate WWTF site also poses the challenge of limited site availability and thus a compact nitrification system is recommended.

4.2.1.1 NITRIFICATION

To address these limitations, it is proposed to construct a compact effluent polishing system that consists of a dual cell nitrification reactor which utilizes a plastic carrier media in conjunction with wastewater temperature supplement to achieve year-round nitrification. This system is provided by Triple Point Environmental as their NitrOx system. These dual cell reactors operate in series and would be installed at the Cedar Gate WWTF. The effluent from the existing lagoon treatment system will be directed to the new reactors via the addition of a new package pump station with submersible grinder type pumps. The pump station would contain two pumps operated in a one firm and one standby configuration. The carrier media within the reactors provides a high surface area in which nitrifying bacteria can attach to and grow. A supplemental heating element allows the design water temperature to stay above 5 degrees C which promotes nitrification. Air is provided via coarse bubble diffusers and two small positive displacement blowers in a one firm and one standby configuration. Carrier media is

retained within each respective reactor via retention screens. To help aid in basin heat retention, the reactors are also covered with floating insulated covers. Effluent from the nitrifying reactors would then flow to third concrete cell that would provide for the reduction of effluent TSS through a new final clarifier. Prior to discharge, flow would then receive effluent disinfection.

The process flow schematic illustrated below in Figure 4-1 illustrates the flow path from the existing lagoon system to the proposed process improvements and outfall. The proposed process improvements include an intermediate pump station, NitrOx System, final clarifier, and a UV disinfection system.

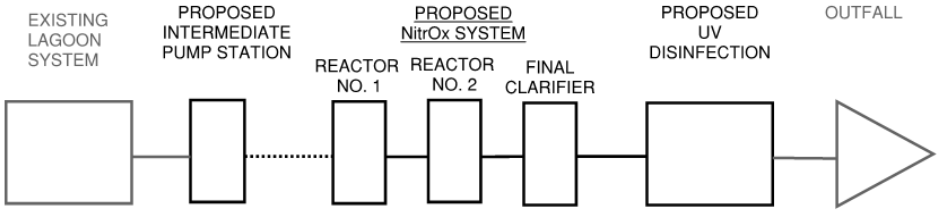


Figure 4-1 Proposed Cedar Gate WWTF Process Flow Schematic

4.2.1.2 DISINFECTION

While several options for disinfection are available, the most feasible options for the existing facility are likely ultraviolet (UV) disinfection or chlorine tablets.

UV disinfection offers a non-chemical alternative that is effective in deactivating microorganisms. Systems can be installed in a small footprint which benefits existing facilities with little room for expansion. During the disinfection season, power consumption will result in higher energy costs as compared to chlorine disinfection and maintenance must be performed by trained personnel. However, for facilities of this size, these are considered to be minor impacts, and in the opinion of this Facility Plan, should not be the basis of selecting a disinfection technology. It is estimated UV lamps must be replaced every two years, wiper assemblies every two years, and ballasts every five years. Regular cleaning of the quartz sleeves may be required depending on the effluent quality.

Chlorine can be fed as a solid tablet. Limits on the total residual chlorine in the effluent will require dechlorination. Limited storage volume makes frequent monitoring of tablet quantities necessary, especially during peak flow events when high tablet consumption can be experienced. Control of administered dosage is difficult, providing potentially inconsistent treatment results. Although it has the lowest operation and maintenance costs, increased safety risks and security risks associated with chlorine tablets and compliance with chlorine residual requirements make this alternative less desirable. Therefore, considering long term performance and operational safety, UV is the recommended disinfection alternative.
The proposed dual cell reactor NitrOx system would be installed on site between the two lagoon cells, such that no land acquisition would be required. Figure 4-2 detailing the proposed location of the NitrOx system is included below.

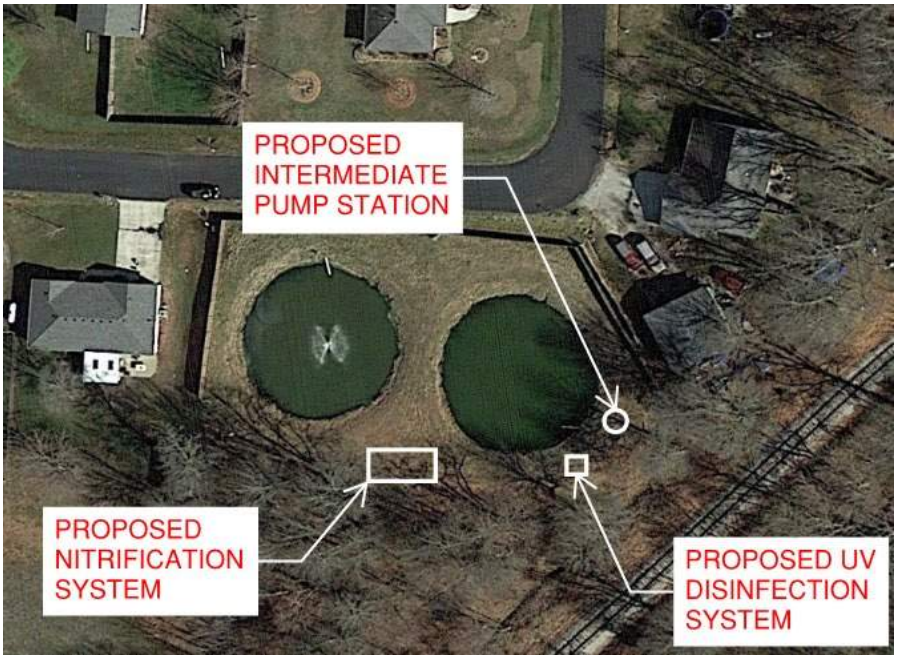


Figure 4-2 Proposed Cedar Gate WWTF Nitrification System Location

4.2.2 Richardson Acres WWTF Improvements

Richardson Acres WWTF will require similar nitrification and disinfection improvements in order to meet future ammonia removal and effluent bacteria limitations at the design rated flows. See section 4.2.1 for nitrification discussion. The site, as shown in Figure 4-3, has a larger footprint than that of the Cedar Gate WWTF and thus a compact nitrification system is not essential. Instead, a larger footprint nitrification system is suitable.

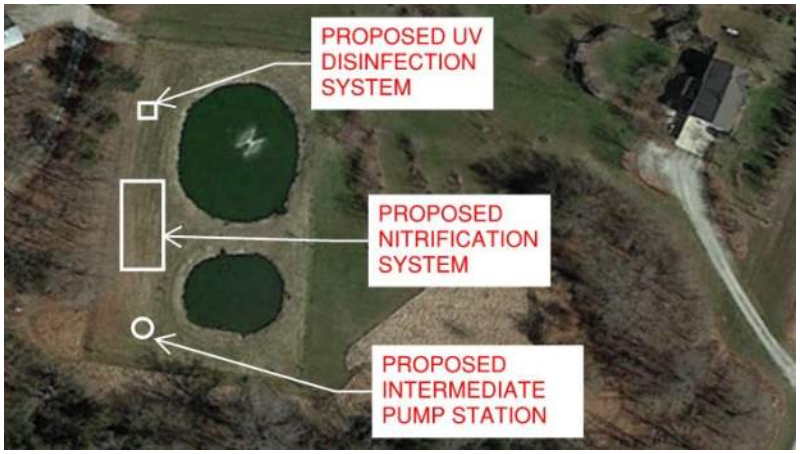


Figure 4-3 Richardson Acres WWTF Site Layout

4.2.2.1 NITRIFICATION

One treatment technology evaluated would include the construction of a dual cell nitrification reactor which utilizes granular media and aeration for nitrification. This dual cell reactor would be installed as shown in Figure 4-3. The effluent from the existing lagoons will be split between the two cells and flow horizontally across the granular media for forced air dispersion. The cells will be lined with a geomembrane liner and contain diffuser tubing beneath the granular media. In this configuration, ammonia removing microorganisms (nitrifiers) grow on media in an attached growth process which the

wastewater passes through. The cells would contain an insulating mulch layer to enhance performance during colder winter months.

At the site, the effluent from the dual cell reactor will be pumped to a disinfection facility. This will allow the disinfection equipment to be installed at grade to allow for better equipment access for routine maintenance. The pump station would have a duty and standby pump to ensure continuous, reliable operation of the WWTF.

The process flow schematic illustrated below in Figure 4-4 illustrates the flow path from the existing lagoon system to the proposed process improvements and outfall. The proposed process improvements include an intermediate pump station, SAGR System, and a UV disinfection system.

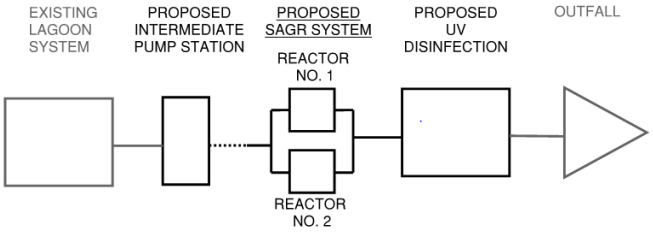


Figure 4-4 Proposed Richardson Acres WWTF Process Flow Schematic

4.2.2.2 DISINFECTION

While several options for disinfection are available, the most feasible options for the existing facility are ultraviolet (UV) disinfection or chlorine tablets. See Paragraph 4.2.1.1 for a description and comparison of UV disinfection and chlorine tablets. Considering long term performance, operational safety, and residual removal requirements associated with chlorine, UV is the recommended disinfection alternative at the Richardson Acres WWTF.

4.2.3 Brown Station WWTF Improvements

Brown Station WWTF will require similar nitrification improvements in order to meet effluent ammonia limits. See Paragraph 4.2.1 for nitrification details. The site, as shown in Figure 4-5, has a larger footprint than that of Cedar Gate WWTF and thus a compact nitrification system is not essential. Instead, a larger footprint nitrification system is suitable.

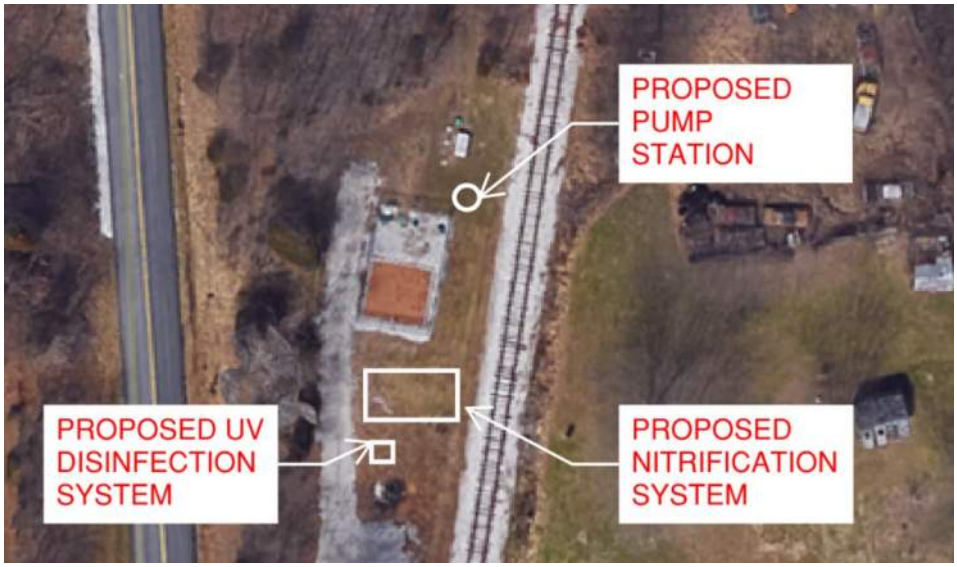


Figure 4-5 Brown Station WWTF Site Layout

4.2.3.1 NITRIFICATION

It is proposed to utilize an identical dual cell reactor as the proposed reactor at the Richardson Acres WWTF, at the Brown Station WWTF. The effluent from the dual cell reactor will be pumped to a disinfection facility. This will allow the disinfection equipment to be installed at grade to allow for better equipment access for routine maintenance. The pump station would have a duty and standby pump to ensure continuous, reliable operation of the WWTF.

The process flow schematic illustrated below in Figure 4-6 illustrates the flow path from the existing recirculating sand filter system to the proposed process improvements and outfall. The proposed process improvements include an intermediate pump station, SAGR System, and a UV disinfection system.

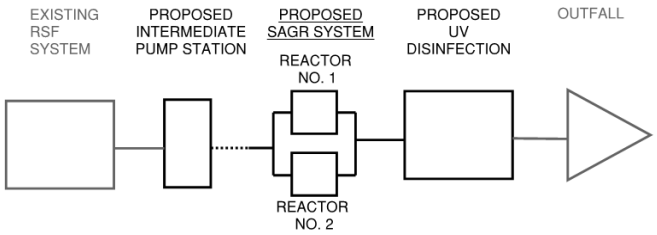


Figure 4-6 Proposed Brown Station WWTF Process Flow Schematic

4.2.3.2 DISINFECTION

While several options for disinfection are available, the most feasible options for the existing facility are ultraviolet (UV) disinfection or chlorine tablets. See Paragraph 4.2.1.1 for a description and comparison of UV disinfection and chlorine tablets. Considering long term performance and operational safety, UV is the recommended disinfection alternative at the Brown Station WWTF.

Estimated Costs for Cedar Gate, Richardson Acres and Brown Station WWTFs

Cost for the anticipated WWTF improvements at the Cedar Gate, the Richardson Acres and the Brown Station WWTFs are estimated below. Costs are presented in 2020 dollars. A more detailed breakdown of costs is presented in Appendix G.

Table 4-1 Alternative No. 2: Cedar Gate, Richardson Acres and Brown Station WWTFs Estimated Project Cost Estimate

Item Description	Cost
Treatment System Improvements	$2,479,300
Easement Acquisition	$6,000
Engineering and SRF Closing Costs	$549,000
Total Project	**$3,034,300**

In addition to the anticipated capital costs, an O&M cost estimate was developed for this alternative. The estimate includes only the estimated “additional” applicable power, labor, and replacement costs associated with the improvements.

Table 4-2 Alternative No. 2: Cedar Gate, Richardson Acres and Brown Station WWTFs Estimated Annual O&M Cost Estimate

Item Description	Cost
Power	$12,890
Labor	$33,590
Equipment Replacement	$21,020
Total	**$67,500**

4.3 Alternative No. 3 – Conveyance to the District's Sanitary Sewer System

This alternative consists of decommissioning the WWTFs at Cedar Gate, Richardson Acres and Brown Station from service and installing a pump station near each facility. Pumped wastewater flow from the new pump stations will be conveyed through new force mains and discharged to the District's sanitary sewer collection system. The point of connection will be an existing 8-inch sanitary sewer located approximately 1/4 mile south of East Oakland Church Road on Wagon Trail Road. The wastewater will be treated at the District's Rocky Fork WWTF.

This alternate also includes a force main from near Cedar Gate to the Brown Station Booster Pump Station dedicated solely to conveying potential flows from Hallsville to the Booster Pump Station.

A layout of the proposed pump stations and conveyance improvements is shown on Exhibit 1 located in Appendix B.

Replacing the existing WWTFs with pump stations will eliminate three existing permitted WWTFs, thereby achieving MDNR's goal of eliminating such WWTFs whenever possible and providing regional solutions to wastewater treatment.

Each pump station would consist of the following components:

- ***Wet Well*** – Raw wastewater collected at the existing influent point will discharge into a wet well. Wet wells may be precast concrete type or prefabricated fiberglass type.
- ***Submersible Pumps –*** Duplex submersible pumps will be installed in a wet pit configuration. One firm pump capable of pumping the peak design capacity and one standby pump will be installed. Pumps will be non-clog or grinder type.
- ***Valve Vault –*** Plug and check valves will be installed in an easily accessible above-ground valve vault. Bypass connections for attaching auxiliary pumps will also be provided.
- ***Controls –*** Pumps will be operated by a conductivity rod with backup float level control. Local control panels will be suitable for outdoor installation or installed in a shelter. Automatic dialers and other remote monitoring communication will be provided.
- ***Emergency Operation of Pump Station –*** Per 10 CSR 20-8.130(8), "Pumping stations and collection systems shall be designed to prevent or minimize bypassing of raw sewage. For use during possible periods of extensive power outages, mandatory power reductions or uncontrolled storm events, consideration should be given to providing a controlled high-level wet well overflow to supplement alarm systems and emergency power generation in order to prevent backup of sewage in basements…consideration shall also be given to installation of storage-detention tanks or basins". Considering this CSR the following two options will be considered:

1. ***Emergency Power Generation –*** The District will consider an option that includes the installation of either a portable or permanent emergency generator at the pump station to provide electrical power to the station during periods of power outages. Taken in conjunction with the cost and potential for onsite storage-detention, a decision regarding emergency power generation will be made during the design of the project.
2. ***Temporary Storage-Detention –*** Temporary storage of wastewater flows at the pump station site is another option that will be evaluated during design.

- ***Odor Control –*** The need for odor control facilities will be evaluated during design. Both liquid odor control and carbon odor control will be considered. Liquid odor control is used to prevent corrosion and the generation of odors in force mains with long resident times. Using a chemical feed skid system, odor control chemicals such as ferric chloride or bioxide may be injected at the pump station wet well or directly into the force main. Carbon odor control is used to treat odorous air that may be generated at pump station sites with longer wet well detention times or those pump stations adjacent to homes. Carbon odor control system pull air from the wet well and through a carbon filter media bed to remove odor causing compounds.

The anticipated project cost associated with this alternative is shown below in Table 4-3.

Table 4-3 Alternative No. 3: Anticipated Project Cost Estimate

Item Description	Cost
Pumping and Piping	$2,944,000
Easement Acquisition	$88,000
Engineering and SRF Closing Costs	$647,000
Total	**3,681,000**

In addition to the anticipated capital costs, an O&M cost estimate was developed for this alternative. The estimate includes applicable power, labor, chemical, and replacement costs associated with operating and maintaining the proposed system. The annual cost is presented in Table 4-4 below.

Table 4-4 Alternative No. 3: Anticipated Annual O&M Cost Estimate

Item Description	Cost
Power	$5,980
Labor	$12,480
Chemical	$21,830
Equipment Replacement	$8,790
Total	**$49,100**

5 Recommended Alternative

This section describes in greater detail the facilities associated with the recommended alternative.

5.1 Summary of Costs and Benefits

The recommended alternative shall be selected based upon an evaluation of the total costs for each alternative, compliance with MDNR's stated goal of removing small treatment works from service and other non-economic benefits that an alternative may offer. No costs were developed for Alternative No. 1, as this alternative was eliminated from further consideration in Section 4.

Alternatives 2 and 3 were evaluated using a Net Present Value 20-year Life Cycle Cost Analysis (NPV). The spreadsheets used in the evaluation are included in Appendix G. The NPV of each Alternative is the summation of project costs and the projected O&M costs.

The Net Present Value 20-year Life Cycle Cost Analysis assumes Project 2 will begin construction in 2025.

Table 5-1 shows a summary of the NPV analysis for Alternatives No. 2 and 3.

Table 5-1 NPV Summary

	Alternative No. 2	Alternative No. 3
Anticipated Project Costs	$3,034,300	$3,681,000
Anticipated O&M Costs	$936,700	$813,000
NPV	$3,971,000	$4,494,000

Alternative No. 3 has a higher NPV than Alternate No. 2 by approximately $520,000. However, Alternate 3 includes several non-economic benefits that Alternative 2 cannot provide. Those non-economic benefits are as follows:

1. Provides a Regional Solution for Wastewater Treatment
    a. Three existing WWTFs owned and operated by the District will be decommissioned and their permits eliminated. Those WWTFs are Cedar Gate, Richardson Acres and Brown Station.
    b. Three additional existing WWTFs that are privately owned and operated will be provided access to the District's pipe conveyance infrastructure, thereby providing the opportunity to decommission these facilities and eliminate their permits. Those WWTFs are the Hallsville United Methodist Church, the Oak Ridge Mobile Home Park and the Hillcrest Residential Care Facility.
    c. This Alternative also provides for the conveyance of potential wastewater flows from the City of Hallsville to the District's Rocky Fork WWTF.
    d. Wastewater generated by additional growth north of the Columbia city limits can be accommodated by this Alternative.
2. Reduces Wastewater Effluent to Hinkson Creek

a. Hinkson Creek is currently on Missouri's 303(d) List of Impaired Waterbodies. The Cedar Gate WWTF discharges effluent directly to the Varnon Branch. However, Varnon Branch ultimately discharges its waters into Hinkson Creek. The decommissioning of the Cedar Gate WWTF will eliminate a source of wastewater discharge into Hinkson Creek, thereby potentially improving the water quality of a waterbody on the 303(d) List.

3. Eliminates Potential Challenges with Future Nitrogen and Phosphorous Limits

    a. Alternative 3 has the potential for eliminating seven WWTFs from service in the next 5-10 years, thereby avoiding the significant costs of having to comply with MDNR's future limits on Nitrogen and Phosphorous.

4. Enhances the Boone County Regional Sewer District's Position as a Continuing Authority

    a. The District currently serves as the duly authorized Continuing Authority for the wastewater collection and treatment utility serving unincorporated Boone County. Alternative 3 bolsters the District's position to act in this role as it provides service to a large area along Route B from the north city limits of Columbia to Hallsville.

5.2 Recommended Alternative

Based upon discussions with District staff and the numerous benefits it provides, Alternative No. 3 is selected as the recommended Alternative.

5.3 Conveyance to the District's Sanitary Sewer System – Project 1 and Project 2

The conveyance system improvements will be sized using the flow analysis for existing service areas as presented in Table 2-14 and Table 2-15. The nature, density, and timing of future development within the respective service areas is largely unknown at this time, making it difficult to determine if the projected peak flows will ever be realized within the next 20 years. It does not seem prudent to incur the greater capital cost of constructing pump stations and force mains, at this time, to accommodate anticipated peak flows that may take many years to occur, or perhaps, never occur at all. Therefore, this Facility Plan makes the following recommendations:

1. Design and construct the proposed facilities using a conservative design peak flow for the existing condition.
2. Design features into the proposed facilities that will readily accommodate future expansion of the facilities if projected design flows are realized within the next 20 years. The recommended piping improvements are shown on Exhibit 1 in Appendix B.

A summary of the recommended improvements for **Project 1** are as follows:

1. Pump Stations: A pump station will be constructed at Richardson Acres. A booster pump station will be constructed at Brown Station.
2. Force Main: Force mains (FM) will be constructed as follows:

    a. (FM 1) 6-inch from the District Sewer Connection Point to the Brown Station Booster Pump Station

    b. (FM 2) 4-inch from the Brown Station Booster Pump Station to the Richardson Acres Connection Point

c. (FM 5) 2-inch from Richardson Acres to the Cedar Gate Force Main

3. Under Ground Storage: Underground storage will be constructed at Brown Station Booster Pump Station
4. STEP Pumps at Brown Station: The force main for the STEP pumps that currently discharges to the recirculating sand filter will be extended to the proposed Brown Station Booster Pump Station
5. WWTF Closure: WWTFs will be closed at Richardson Acres and Brown Station

A summary of the recommended improvements for **Project 2** are as follows:

1. Pump Station: A pump station will be constructed at Cedar Gate.
2. Force Main: Force mains will be constructed as follows:
   a. (FM 3) 3-inch from the Richardson Acres Connection Point to Cedar Gate
   b. (FM 4) 4-inch from the Brown Station Booster Pump Station to near Cedar Gate (Hallsville Connection)
   c. WWTF Closure: The WWTF will be closed at Cedar Gate

Capacity for the pump stations is shown below in Table 5-2. Detailed calculations associated with the pump station and force main can be found in Appendix E.

Table 5-2 Pump Station Parameters

Location	Pump Capacity (gpm)	Total Dynamic Head (ft)
Richardson Acres (Project 1)	24	69
Brown Station Booster Pump Station (Project 1)	254	148
Cedar Gate (Project 2)	32	147

Pump station improvements will be located within a private dedicated easement. The proposed pump station locations are shown on Exhibit 1 in Appendix B. A typical site plan and typical pump station plan are in Appendix F.

The force main improvements will be constructed in private dedicated easements in accordance with the District's preference. The locations of the proposed force mains are shown on Exhibit 1 in Appendix B. Force mains will be sized to convey the peak flow in the system and optimized to provide an acceptable range of velocities and capacities. The MDNR recommended minimum velocity of 2 feet per second (fps) will be maintained at the design pumping rate. The proposed force main sizing is shown below in Table 5-3. A process schematic is shown in Appendix D.

Table 5-3 Force Main Parameters - Project 1

Force Main Segment	Flow (gpm)	Diameter (in)	Length (ft)	Velocity (fps)
1	254	6.0	22,200	2.80
2	99	4.0	7,000	2.50
5	24	2.0	1,000	2.45

Table 5-4 Force Main Parameters – Project 2

Force Main Segment	Flow (gpm)	Diameter (in)	Length (ft)	Velocity (fps)
3	34	3.0	15,300	2.07
4	148	4.0	22,300	3.78

6 Anticipated Project, Operations/Maintenance Costs

This section will provide an estimate of the capital and operations/maintenance costs associated with the engineering and construction of the recommended improvements, as discussed in Section 5.

6.1 Anticipated Project Cost

Below is a summary of the costs associated with the recommended improvements as defined in Section 5.2 of this Facility Plan. A detailed evaluation of these costs is included in Appendix G.

Table 6-1 Anticipated Project Costs

Alternative No. 3 - Conveyance Improvements	Project Cost
Project 1	$2,366,000
Project 2	$1,315,000

It is anticipated that the funds for Project 1 will be available in 2021, coinciding with the SRF loan closing. The project is scheduled to be bid and constructed in 2022 and 2023.

It is anticipated that the funds for Project 2 will be available when the District is obligated to comply with new MDNR Permit requirements at the Cedar Gate WWTF.

6.2 Anticipated Operations/Maintenance Cost

The estimation of annual operations/maintenance costs for Alternative Nos. 2 and 3 are included in Appendix G. The operations/maintenance costs address the following components:

- Equipment Replacement, Percentage of Initial Equipment Cost at Intervals of 5, 10, 15 and 20 years, with the following percentages of 10, 25, 10 and 50 percent respectively
- Electricity Usage, Annual Inflation and Growth applied at below percentages
- Chemical Usage, Annual Inflation and Growth applied at below percentages
- Estimated Operations Staff Required, Annual Inflation applied at below percentage

The following assumptions are made as a part of the annual operations/maintenance cost evaluation:

- Inflation = 3%
- Interest = 4%
- Assumed Electrical Rate of 0.09 Cents/Kilowatt Hour

Based upon the above assumptions, the anticipated annual operations/maintenance costs associated with the recommended improvements is estimated to be $49,100 in 2020 dollars.

7 Schedule

7.1 Anticipated Project 1 Schedule for Selected Alternative

The District will apply for eligibility in the 2021 SRF Funding Pool. Based upon this requirement, the following submittal and completion dates are applicable:

- Submit SRF Application – December 2020
- Anti-Degradation Review Report – Not Required
- Submit Facility Plan – May 2021
- Water Quality Incentive Grant Application – March 2021
- Water Quality Incentive Grant Approval – June 2021
- Hold Public Hearings – August 2021
- Submit Plans and Specifications – April 2022
- Bid Project – October 2022
- Begin Construction – December 2022
- Complete Construction – December 2023

7.2 Anticipated Project 2 Schedule for Selected Alternative

The District will apply for eligibility in the 2022 SRF Funding Pool. Based upon this requirement, the following submittal and completion dates are applicable:

- Submit SRF Application – December 2020
- Anti-Degradation Review Report – Not Required
- Submit Facility Plan – May 2021
- Water Quality Incentive Grant Application – March 2022
- Water Quality Incentive Grant Approval – June 2022
- Hold Public Hearings – August 2022
- Submit Plans and Specifications – To Be Determined (TBD)
- Bid Project – TBD
- Begin Construction – TBD
- Complete Construction – TBD

APPENDIX A

MISSOURI STATE OPERATING PERMITS

STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

MISSOURI CLEAN WATER COMMISSION

MISSOURI STATE OPERATING PERMIT

In compliance with the Missouri Clean Water Law, (Chapter 644 R.S. Mo. as amended, hereinafter, the Law), and the Federal Water Pollution Control Act (Public Law 92-500, 92nd Congress) as amended,

Permit No.	MO-0096415
Owner:	Boone County Regional Sewer District (BCSD)
Address:	1314 North Seventh Street, Columbia, MO 65201
Continuing Authority:	Same as above
Address:	Same as above
Facility Name:	BCSD, Cedar Gate Subdivision
Facility Address:	South of East Birch Street & North Branch Street, Hallsville, MO 65255
Legal Description:	SE ¼, SE ¼, NW ¼, Sec. 23, T50N, R12W, Boone County
Latitude/Longitude:	+3906120/-09213589
Receiving Stream:	Unnamed tributary to Varnon Branch (U)
First Classified Stream and ID:	Hinkson Creek (C) (01008)
USGS Basin & Sub-watershed No.:	(10300102-120001)

is authorized to discharge from the facility described herein, in accordance with the effluent limitations and monitoring requirements as set forth herein:

FACILITY DESCRIPTION

Outfall #001 – POTW (subdivision) - SIC #4952
Two-cell aerated lagoon / sludge retained in lagoon.
Design population equivalent is 111.
Design flow is 11,000 gallons per day.
Actual flow is 4,348 gallons per day.
Design sludge production is 1.6 dry tons/year.

This permit authorizes only wastewater discharges under the Missouri Clean Water Law and the National Pollutant Discharge Elimination System; it does not apply to other regulated areas. This permit may be appealed in accordance with Section 644.051.6 of the Law.

November 9, 2007
Effective Date

Doyle Childers, Director, Department of Natural Resources
Executive Secretary, Clean Water Commission

November 8, 2012
Expiration Date

Irene Crawford, Director, Northeast Regional Office

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Outfall #001						
Flow	MGD	*		*	once/month	24 hr. estimate
Biochemical Oxygen Demand$_5$***	mg/L		65	45	once/quarter**	grab
Total Suspended Solids***	mg/L		120	80	once/quarter**	grab
pH – Units	SU	****		****	once/quarter**	grab
Ammonia as N	mg/L	*		*	once/quarter**	grab
Temperature	°C	*		*	once/quarter**	grab

MONITORING REPORTS SHALL BE SUBMITTED **QUARTERLY**; THE FIRST REPORT IS DUE **January 28, 2008.** THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

B. STANDARD CONDITIONS

IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED Parts I, II, & III STANDARD CONDITIONS DATED October 1, 1980 and August 15, 1994, AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.

C. INFLUENT MONITORING REQUIREMENTS

The facility is required to meet a removal efficiency of 65% or more. The monitoring requirements shall become effective upon issuance and remain in effect until expiration of the permit. To determine removal efficiencies, the influent wastewater shall be monitored by the permittee as specified below:

SAMPLING LOCATION AND PARAMETER(S)	UNITS	MONITORING REQUIREMENTS	
		MEASUREMENT FREQUENCY	SAMPLE TYPE
Influent			
Biochemical Oxygen Demand$_5$***	mg/L	once/year	grab
Total Suspended Solids***	mg/L	once/year	grab

MONITORING REPORTS SHALL BE SUBMITTED **ANNUALLY**; THE FIRST REPORT IS DUE **October 28, 2008.**

MO 780-0010 (8/91)

* Monitoring requirement only.
** Sample once per quarter in the months of March, June, September, and December.
*** This facility is required to meet a removal efficiency of 65% or more
**** pH is measured in pH units and is not to be averaged. The pH is to be maintained at or above 6.0 pH units.

D. SPECIAL CONDITIONS

1. This permit may be reopened and modified, or alternatively revoked and reissued, to:
   (a) Comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a) (2) of the Clean Water Act, if the effluent standard or limitation so issued or approved:
      (1) contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
      (2) controls any pollutant not limited in the permit.
   (b) Incorporate new or modified effluent limitations or other conditions, if the result of a waste load allocation study, toxicity test or other information indicates changes are necessary to assure compliance with Missouri's Water Quality Standards.
   (c) Incorporate new or modified effluent limitations or other conditions if, as the result of a watershed analysis, a Total Maximum Daily Load (TMDL) limitation is developed for the receiving waters which are currently included in Missouri's list of waters of the state not fully achieving the state's water quality standards, also called the 303(d) list.

   The permit as modified or reissued under this paragraph shall also contain any other requirements of the Clean Water Act then applicable.

2. All outfalls must be clearly marked in the field.

3. Permittee will cease discharge by connection to area-wide wastewater treatment system within 90 days of notice of its availability.

4. Changes in Discharges of Toxic Substances

   The permittee shall notify the Director as soon as it knows or has reason to believe:
   (a) That any activity has occurred or will occur which would result in the discharge of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:"
      (1) One hundred micrograms per liter (100 µg/L);
      (2) Two hundred micrograms per liter (200 µg/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/L) for 2,5 dinitrophenol and for 2-methyl-4, 6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;
      (3) Five (5) times the maximum concentration value reported for the pollutant in the permit application;
      (4) The level established in Part A of the permit by the Director.
   (b) That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant, which was not reported in the permit application.

5. Report as no-discharge when a discharge does not occur during the report period.

6. Water Quality Standards
   (a) Discharges to waters of the state shall not cause a violation of water quality standards rule under 10 CSR 20-7.031, including both specific and general criteria.
   (b) General Criteria. The following general water quality criteria shall be applicable to all waters of the state at all times including mixing zones. No water contaminant, by itself or in combination with other substances, shall prevent the waters of the state from meeting the following conditions:
      (1) Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses;
      (2) Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses;
      (3) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses;
      (4) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life;
      (5) There shall be no significant human health hazard from incidental contact with the water;
      (6) There shall be no acute toxicity to livestock or wildlife watering;
      (7) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community;
      (8) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste as defined in Missouri's Solid Waste Law, section 260.200, RSMo, except as the use of such materials is specifically permitted pursuant to section 260.200-260.247.

7. Sludge and Biosolids Use For Domestic Wastewater Treatment Facilities
   (a) Permittee shall comply with the pollutant limitations, monitoring, reporting, and other requirements in accordance with the attached permit Standard Conditions.

D. SPECIAL CONDITIONS (continued)

(b) If sludge is not removed by a contract hauler, permittee is authorized to land apply biosolids. Permit Standard Conditions, Part III shall apply to the land application of biosolids. Permittee shall notify the department at least 180 days prior to the planned removal of biosolids. The department may require submittal of a biosolids management plan for department review and approval as determined appropriate on a case-by-case basis.

8. The permittee shall comply with any applicable requirements listed in 10 CSR 20-8 and 10 CSR 20-9. The monitoring frequencies contained in this permit shall not be construed by the permittee as a modification of the monitoring frequencies listed in 10 CSR 20-9. If a modification of the monitoring frequencies listed in 10 CSR 20-9 is needed, the permittee shall submit a written request to the department for review and, if deemed necessary, approval.

9. The permittee shall develop and implement a program for maintenance and repair of the collection system. The recommended guidance is the US EPA's Guide For Evaluating Capacity, Management, Operation, And Maintenance (CMOM) Programs At Sanitary Sewer Collection Systems (Document number EPA 305-B-05-002). The permittee shall submit a report semi-annually in April and October with the Discharge and Monitoring reports which address measures taken to locate and eliminate sources of infiltration and inflow into the collection system serving the facility.

Missouri Department of Natural Resources
Statement of Basis
BCRSD, Cedar Gate Subdivision
NPDES #: MO-0096415
Boone County

A Statement of Basis (Statement) gives pertinent information regarding the applicable regulations and rational for the development of the NPDES Missouri State Operating Permit (operating permit). This Statement includes Wasteload Allocations, Water Quality Based Effluent Limitations, and Reasonable Potential Analysis calculations as well as any other calculations that effect the effluent limitations of this operating permit. This Statement does not pertain to operating permits that include sewage sludge land application plans and variance procedures, and does not include the public comment process for this operating permit.

A Statement is not an enforceable part of an operating permit.

Facility Information

Facility Type: POTW (subdivision)
Facility SIC Code(s): #4952

Facility Description: Two-cell aerated lagoon / sludge retained in lagoon.

OUTFALL(S) TABLE:

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	EFFLUENT TYPE	DISTANCE TO CLASSIFIED SEGMENT (MI)
001	0.017	Equivalent to secondary	Domestic	~ 3.8

Water Quality History: Discharge Monitoring Reports show compliance with effluent limits.

Comments: This is a permit renewal.

Receiving Stream Information

Please mark the correct designated waters of the state categories of the receiving stream.

Missouri or Mississippi River [10 CSR 20-7.015(2)]:	Yes ☐; No ☒
Lake or Reservoir [10 CSR 20-7.015(3)]:	Yes ☐; No ☒
Losing [10 CSR 20-7.015(4)]:	Yes ☐; No ☒
Metropolitan No-Discharge [10 CSR 20-7.015(5)]:	Yes ☐; No ☒
Special Stream [10 CSR 20-7.015(6)]:	Yes ☐; No ☒
Subsurface Water [10 CSR 20-7.015(7)]:	Yes ☐; No ☒
All Other Waters [10 CSR 20-7.015(8)]:	Yes ☒; No ☐

10 CSR 20-7.031 Missouri Water Quality Standards, the department defines the Clean Water Commission water quality objectives in terms of "water uses to be maintained and the criteria to protect those uses." The receiving stream and/or 1st classified receiving stream's beneficial water uses to be maintained are located in the Receiving Stream Table located below in accordance with [10 CSR 20-7.031(3)].

RECEIVING STREAM(S) TABLE:

WATERBODY NAME	CLASS	WBID	DESIGNATED USES*	8-DIGIT HUC	EDU**
Unnamed tributary to Varnon Branch	U	N/A	General Criteria	10300102	Ozark/Moreau/ Loutre Drainage
Hinkson Creek	C	01008	LWW, AQL, WBC***		

* - Irrigation (IRR), Livestock & Wildlife Watering (LWW), Protection of Warm Water Aquatic Life and Human Health-Fish Consumption (AQL), Cool Water Fishery(CLF), Cold Water Fishery (CDF), Whole Body Contact Recreation (WBC), Secondary Contact Recreation (SCR), Drinking Water Supply (DWS), Industrial (IND).
** - Ecological Drainage Unit
*** - UAA conducted on 7/13/2005 and retain use approved on 9/7/2005.

Rationale and Derivation of Effluent Limitations & Permit Conditions

ANTI-BACKSLIDING:
A provision in the Federal Regulations [CWA §303(d)(4); CWA §402(c); CFR §122.44(l)] that requires a reissued permit to be as stringent as the previous permit with some exceptions.

All limits in this statement are at least as protective as those previously established; therefore, backsliding does not apply.

ANTIDEGRADATION:
Policies which ensure protection of water quality for a particular water body where the water quality exceeds levels necessary to protect fish and wildlife propagation and recreation on and in the water. This also includes special protection of waters designated as outstanding natural resource waters. Anitdegradation plans are adopted by each State to minimize adverse effects on water.

As per [10 CSR 20-7.031(2)(D)], the three (3) levels of protection provided by the antidegradation policy in subsections (A), (B), and (C) of this section shall be implemented according to procedures developed by the department. *Missouri Antidegradation Rule and Implementation Procedure*, when approved, shall be applicable to new or upgraded/expanded facilities only.

APPLICABLE PERMIT PARAMETERS:
Effluent parameters for conventional, non-conventional, and toxic pollutants have been obtained from the previous NPDES operating permit for this facility, technology based effluent limits, water quality based effluent limits, and from appropriate sections of the renewal application.

COMPLIANCE AND ENFORCEMENT:
Action taken by the department to resolve violations of the Missouri Clean Water Law, its implementing regulations, and/or any terms and condition of an operating permit.

The permittee/facility is not under enforcement action and is considered to be in compliance with the Missouri Clean Water Law, its implementing regulations, and/or any terms and condition of an operating permit.

REMOVAL EFFICIENCY:
Removal efficiency is one method by which the Federal Regulations define Secondary Treatment and Equivalent to Secondary Treatment, which applies to Biochemical Oxygen Demand 5-day (BOD_5) and Total Suspended Solids (TSS) for domestic wastewater sources.

Equivalent to Secondary Treatment is 65% removal [40 CFR 105(a)(3) & (b)(3)].

SANITARY SEWER OVERFLOWS (SSOS), AND INFLOW & INFILTRATION (I&I):
Collection systems are a critical element in the successful performance of the wastewater treatment process. Under certain conditions, poorly designed, built, managed, operated, and/or maintained systems can pose risks to public health, the environment, or both. Causes of SSOs include, but are not limited to, the following: high levels of I&I during wet weather; blockages; structural, mechanical, or electrical failures; collapsed or broken sewer pipes; insufficient conveyance capacity; and vandalism. Effective and

continuous management, operation, and maintenance, as well as ensuring adequate capacity and rehabilitation when necessary are critical to maintaining collection system capacity and performance while extending the life of the system.

The permittee is required to develop or implement a program for maintenance and repair of the collection system and shall be required in this operating permit by either means of a Special Condition or Schedule of Compliance.

303(d) LIST & TOTAL MAXIMUM DAILY LOAD (TMDL):
Section 303(d) of the federal Clean Water Act requires that each state identify waters that are not meeting water quality standards and for which adequate water pollution controls have not been required. Water quality standards protect such beneficial uses of water as whole body contact (such as swimming), maintaining fish and other aquatic life, and providing drinking water for people, livestock and wildlife. The 303(d) list helps state and federal agencies keep track of waters that are impaired but not addressed by normal water pollution control programs.

This facility does not discharge to a 303(d) listed stream. Hinkson Creek is not on the 303(d) list at the confluence with the receiving stream.

Outfall #001 – Main Facility Outfall

EFFLUENT LIMITATIONS TABLE:

PARAMETER	UNIT	BASIS FOR LIMITS	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MODIFIED	PREVIOUS PERMIT LIMITATIONS
FLOW	GPD	1	*		*	NO	S
BOD_5	MG/L	1		65	45	NO	S
TSS	MG/L	1		120	80	NO	S
PH (S.U.)	SU	1	≥6		≥6	NO	S
TEMPERATURE (°C)	°C	1/5/8	*		*	YES	**
AMMONIA AS N	MG/L	2/3/5	*		*	YES	**
MONITORING FREQUENCY	Please see Minimum Sampling and Reporting Frequency Requirements in the Derivation and Discussion Section below.						

* Monitoring requirement only

** Parameter not previously established in previous state operating permit.

S – Same as previous operating permit

Basis for Limitations Codes:

1. State or Federal Regulation/Law
2. Water Quality Standard (includes RPA)
3. Water Quality Based Effluent Limits
4. Lagoon Policy
5. Ammonia Policy
6. Antidegradation Policy
7. Water Quality Model
8. Best Professional Judgement
9. TMDL or Permit in lieu of TMDL
10. WET test Policy

OUTFALL #001 – DERIVATION AND DISCUSSION OF LIMITS:

- **Biochemical Oxygen Demand (BOD_5).** Effluent limitations have been retained from previous state operating permit, [10 CSR 20-7.015(8)(B)1.].

- **Total Suspended Solids (TSS).** Effluent limitations have been retained from previous state operating permit, [10 CSR 20-7.015(8)(B)1.].

- **pH.** Effluent limitation has been retained from previous state operating permit, [10 CSR 20-7.015(8)(B)2.].

- **Total Ammonia Nitrogen, Temperature.** Monitoring requirement only. Monitoring for temperature and ammonia are included to determine whether "reasonable potential" to exceed water quality standards exists after the discharge begins.

- **Minimum Sampling and Reporting Frequency Requirements.**

PARAMETER	SAMPLING FREQUENCY	REPORTING FREQUENCY
FLOW	ONCE/MONTH	ONCE/QUARTER
BOD_5	ONCE/QUARTER	ONCE/QUARTER
TSS	ONCE/QUARTER	ONCE/QUARTER
PH (S.U.)	ONCE/QUARTER	ONCE/QUARTER
TEMPERATURE (°C)	ONCE/QUARTER	ONCE/QUARTER
AMMONIA AS N	ONCE/QUARTER	ONCE/QUARTER

Administrative Requirements

On the basis of preliminary staff review and the application of applicable standards and regulations, the Department, as administrative agent for the Missouri Clean Water Commission, proposes to issue a permit(s) subject to certain effluent limitations, schedules, and special conditions contained herein and within the operating permit. The proposed determinations are tentative pending public comment.

Date of Factsheet: August 16, 2007
Public Notice Date: August 24, 2007

Completed by:

Terrie Burch, Environmental Specialist I
Missouri Department of Natural Resources
Northeast Regional Office
Telephone: (660) 385-8000
terrie.burch@dnr.mo.gov

Date

Approved by:

Abbie Stockett, Environmental Specialist IV
Missouri Department of Natural Resources
Northeast Regional Office

Date

STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

MISSOURI CLEAN WATER COMMISSION

MISSOURI STATE OPERATING PERMIT

In compliance with the Missouri Clean Water Law, (Chapter 644 R.S. Mo. as amended, hereinafter, the Law), and the Federal Water Pollution Control Act (Public Law 92-500, 92nd Congress) as amended,

Permit No.	MO-0115185
Owner:	Boone County Regional Sewer District (BCRSD)
Address:	1314 North 7th Street, Columbia, MO 65201
Continuing Authority:	Same as above
Address:	Same as above
Facility Name:	BCRSD Richardson Acres WWTF
Facility Address:	0.25 miles southwest of Hwy B & Flamingo Drive intersection, Columbia, MO 65202
Legal Description:	Sec. 34, T50N, R12W, Boone County
UTM Coordinates:	X=563994, Y=4324558
Receiving Stream:	Tributary to Clays Fork
First Classified Stream and ID:	8-20-13 MUDD V1.0 (C) (3960)
USGS Basin & Sub-watershed No.:	(10300102-0706)

is authorized to discharge from the facility described herein, in accordance with the effluent limitations and monitoring requirements as set forth herein:

FACILITY DESCRIPTION

Outfall #001 – POTW – SIC #4952
STEP system / two-cell lagoon with aerated primary cell / sludge retained in lagoon and septic tanks / sludge hauled to another treatment facility by owner
Design population equivalent is 85.
Design flow is 8,510 gallons per day.
Actual flow is 3,400 gallons per day.
Design sludge production is 1.3 dry tons/year.

This permit authorizes only wastewater discharges under the Missouri Clean Water Law and the National Pollutant Discharge Elimination System; it does not apply to other regulated areas. This permit may be appealed in accordance with Section 621.250 RSMo, Section 640.013 RSMo and Section 644.051.6 of the Law.

November 1, 2018
Effective Date

Edward B. Galbraith, Director, Division of Environmental Quality

March 31, 2020
Expiration Date

Chris Wieberg, Director, Water Protection Program

OUTFALL #001	TABLE A-1. INTERIM EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The interim effluent limitations shall become effective on **November 1, 2018** and remain in effect through **October 31, 2025**. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

EFFLUENT PARAMETER(S)	UNITS	INTERIM EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Flow	MGD	*		*	once/quarter***	24 hr. estimate
Biochemical Oxygen Demand$_5$	mg/L		65	45	once/quarter***	grab
Total Suspended Solids	mg/L		110	70	once/quarter***	grab
Ammonia as N	mg/L	*		*	once/quarter***	grab

MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE JANUARY 28, 2019. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

EFFLUENT PARAMETER(S)	UNITS	MINIMUM		MAXIMUM	MEASUREMENT FREQUENCY	SAMPLE TYPE
pH – Units **	SU	6.5			once/quarter***	grab

MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE JANUARY 28, 2019.

EFFLUENT PARAMETER(S)	UNITS	MONTHLY AVERAGE MINIMUM	MEASUREMENT FREQUENCY	SAMPLE TYPE
Biochemical Oxygen Demand$_5$ – Percent Removal (Note 2, Page 4)	%	65	once/year	calculated
Total Suspended Solids – Percent Removal (Note 2, Page 4)	%	65	once/year	calculated

MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY; THE FIRST REPORT IS DUE JANUARY 28, 2019.

* Monitoring requirement only.
** pH is measured in pH units and is not to be averaged.
*** See table below for quarterly sampling requirements.

Quarterly Minimum Sampling Requirements			
Quarter	**Months**	**Flow, Effluent BOD$_5$ and TSS, Ammonia as N and pH.**	**Report is Due**
First	January, February, March	Sample at least once during any month of the quarter	April 28th
Second	April, May, June	Sample at least once during any month of the quarter	July 28th
Third	July, August, September	Sample at least once during any month of the quarter	October 28th
Fourth	October, November & December	Sample at least once during any month of the quarter	January 28th

OUTFALL #001	TABLE A-2. FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective on **November 1, 2025** and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Flow	MGD	*		*	once/quarter***	24 hr. estimate
Biochemical Oxygen Demand$_5$	mg/L		65	45	once/quarter***	grab
Total Suspended Solids	mg/L		110	70	once/quarter***	grab
E. coli (Note 1, Page 4)	#/100mL		1030	206	once/quarter***	grab
Ammonia as N (Apr 1 – Sep 30) (Oct 1 – Mar 31)	mg/L	 3.6 7.5		 1.4 2.9	once/quarter***	grab

MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE JANUARY 28, 2026. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

EFFLUENT PARAMETER(S)	UNITS	MINIMUM		MAXIMUM	MEASUREMENT FREQUENCY	SAMPLE TYPE
pH – Units **	SU	6.5			once/quarter***	grab

MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE JANUARY 28, 2026.

EFFLUENT PARAMETER(S)	UNITS	MONTHLY AVERAGE MINIMUM	MEASUREMENT FREQUENCY	SAMPLE TYPE
Biochemical Oxygen Demand$_5$ – Percent Removal (Note 2, Page 4)	%	65	once/year	calculated
Total Suspended Solids – Percent Removal (Note 2, Page 4)	%	65	once/year	calculated

MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY; THE FIRST REPORT IS DUE JANUARY 28, 2026.

* Monitoring requirement only.
** pH is measured in pH units and is not to be averaged.
*** See table below for quarterly sampling requirements.

Quarterly Minimum Sampling Requirements				
Quarter	**Months**	***E. coli***	**All Other Parameters**	**Report is Due**
First	January, February, March	Not required to sample.	Sample at least once during any month of the quarter	April 28th
Second	April, May, June	Sample at least once during any month of the quarter	Sample at least once during any month of the quarter	July 28th
Third	July, August, September	Sample at least once during any month of the quarter	Sample at least once during any month of the quarter	October 28th
Fourth	October	**Sample once during October**	Sample at least once during any month of the quarter	January 28th
	November & December	Not required to sample.		

Note 1 - Effluent limitations and monitoring requirements for *E. coli* are applicable only during the recreational season from April 1 through October 31. The Monthly Average Limit for *E. coli* is expressed as a geometric mean. The Weekly Average for *E. coli* will be expressed as a geometric mean if more than one (1) sample is collected during a calendar week (Sunday through Saturday).

Note 2 – Influent sampling is not required when the facility does not discharge effluent during the reporting period. Samples are to be collected prior to any treatment process. Percent removal is calculated by the following formula: [(Influent –Effluent) / Influent] x 100% = Percent Removal. The Monthly Average Minimum Percent removal is to be reported as the average of all daily calculated removal efficiencies. Influent samples are to be collected as a grab sample.

B. SCHEDULE OF COMPLIANCE

The facility shall attain compliance with final effluent limitations as soon as reasonably achievable or no later than **7 years** of the effective date of this permit.

1. Within six months of the effective date of this permit, the permittee shall report progress made in attaining compliance with the final effluent limits.

2. The permittee shall submit interim progress reports detailing progress made in attaining compliance with the final effluent limits every 12 months from effective date.

3. Within **7 years** of the effective date of this permit, the permittee shall attain compliance with the final effluent limits.

Please submit progress reports to the Missouri Department of Natural Resources via the Electronic Discharge Monitoring Report (eDMR) Submission System.

C. STANDARD CONDITIONS

In addition to specified conditions stated herein, this permit is subject to the attached Parts I, II, & III standard conditions dated August 1, 2014, May 1, 2013, and March 1, 2015, and hereby incorporated as though fully set forth herein.

D. SPECIAL CONDITIONS

1. The full implementation of this operating permit, which includes implementation of any applicable schedules of compliance, shall constitute compliance with all applicable federal and state statutes and regulations in accordance with §644.051.16, RSMo, and the Clean Water Act (CWA) section 402(k); however, this permit may be reopened and modified, or alternatively revoked and reissued:
   (a) To comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a)(2) of the CWA, if the effluent standard or limitation so issued or approved:
      (1) contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
      (2) controls any pollutant not limited in the permit.
   (b) To incorporate an approved pretreatment program pursuant to 40 CFR 403.8(a).

2. All outfalls must be clearly marked in the field.

3. Permittee will cease discharge by connection to a facility with an area-wide management plan per 10 CSR 20-6.010(3)(B) within 90 days of notice of its availability.

4. Report as no-discharge when a discharge does not occur during the report period.

5. Changes in existing pollutants or the addition of new pollutants to the treatment facility

   The permittee must provide adequate notice to the Director of the following:
   (a) Any new introduction of pollutants into the POTW from an indirect discharger which would be subject to section 301 or 306 of CWA if it were directly discharging those pollutants; and
   (b) Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.
   (c) For purposes of this paragraph, adequate notice shall include information on;
      (1) the quality and quantity of effluent introduced into the POTW, and
      (2) any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

D. SPECIAL CONDITIONS (continued)

6. Reporting of Non-Detects:
   (a) An analysis conducted by the permittee or their contracted laboratory shall be conducted in such a way that the precision and accuracy of the analyzed result can be enumerated.
   (b) The permittee shall not report a sample result as "Non-Detect" without also reporting the detection limit of the test. Reporting as "Non Detect" without also including the detection limit will be considered failure to report, which is a violation of this permit.
   (c) The permittee shall provide the "Non-Detect" sample result using the less than sign and the minimum detection limit (e.g. <10).
   (d) Where the permit contains a Minimum Level (ML) and the permittee is granted authority in the permit to report zero in lieu of the < ML for a specified parameter (conventional, priority pollutants, metals, etc.), then zero (0) is to be reported for that parameter.
   (e) See Standard Conditions Part I, Section A, #4 regarding proper detection limits used for sample analysis.
   (f) When calculating monthly averages, one-half of the method detection limit (MDL) should be used instead of a zero. Where all data are below the MDL, the "<MDL" shall be reported as indicated in item (c).

7. It is a violation of the Missouri Clean Water Law to fail to pay fees associated with this permit (644.055 RSMo).

8. The permittee shall develop and implement a program for maintenance and repair of the collection system. The recommended guidance is the US EPA's Guide For Evaluating Capacity, Management, Operation, And Maintenance (CMOM) Programs At Sanitary Sewer Collection Systems (Document number EPA 305-B-05-002) or the Departments' CMOM Model located at http://dnr.mo.gov/env/wpp/permits/docs/cmom-template.doc. For additional information regarding the Departments' CMOM Model, see the CMOM Plan Model Guidance document at http://dnr.mo.gov/pubs/pub2574.htm.

   The permittee shall also submit a report via the Electronic Discharge Monitoring Report (eDMR) Submission System annually, by January 28th, for the previous calendar year. The report shall contain the following information:
   (a) A summary of the efforts to locate and eliminate sources of excessive infiltration and inflow into the collection system serving the facility for the previous year.
   (b) A summary of the general maintenance and repairs to the collection system serving the facility for the previous year.
   (c) A summary of any planned maintenance and repairs to the collection system serving the facility for the upcoming calendar year. This list shall include locations (GPS, 911 address, manhole number, etc.) and actions to be taken.

9. Bypasses are not authorized at this facility unless they meet the criteria in 40 CFR 122.41(m). If a bypass occurs, the permittee shall report in accordance to 40 CFR 122.41(m)(3), and with Standard Condition Part I, Section B, subsection 2.b. Bypasses are to be reported to the Northeast Regional Office during normal business hours or by using the online Sanitary Sewer Overflow/Facility Bypass Application located at: http://dnr.mo.gov/modnrcag/ or the Environmental Emergency Response hotline at 573-634-2436 outside of normal business hours. Once an electronic reporting system compliant with 40 CFR Part 127, the National Pollutant Discharge Elimination System (NPDES) Electronic Reporting Rule, is available all bypasses must be reported electronically via the new system. Blending, which is the practice of combining a partially-treated wastewater process stream with a fully-treated wastewater process stream prior to discharge, is not considered a form of bypass. If the permittee wishes to utilize blending, the permittee shall file an application to modify this permit to facilitate the inclusion of appropriate monitoring conditions.

10. The facility must be sufficiently secured to restrict entry by children, livestock and unauthorized persons as well as to protect the facility from vandalism.

11. At least one gate must be provided to access the wastewater treatment facility and provide for maintenance and mowing. The gate shall remain closed except when temporarily opened by; the permittee to access the facility, perform operational monitoring, sampling, maintenance, mowing, or for inspections by the Department. The gate shall be closed and locked when the facility is not staffed.

D. SPECIAL CONDITIONS (continued)

12. At least one (1) warning sign shall be placed on each side of the facility enclosure in such positions as to be clearly visible from all directions of approach. There shall also be one (1) sign placed for every five hundred feet (500') (150 m) of the perimeter fence. A sign shall also be placed on each gate. Minimum wording shall be SEWAGE TREATMENT FACILITY—KEEP OUT. Signs shall be made of durable materials with characters at least two inches (2") high and shall be securely fastened to the fence, equipment or other suitable locations.

13. An Operation and Maintenance (O & M) manual shall be maintained by the permittee and made available to the operator. The O & M manual shall include key operating procedures and a brief summary of the operation of the facility.

14. An all-weather access road shall be provided to the treatment facility.

15. The discharge from the wastewater treatment facility shall be conveyed to the receiving stream via a closed pipe or a paved or rip-rapped open channel. Sheet or meandering drainage is not acceptable. The outfall sewer shall be protected against the effects of floodwater, ice or other hazards as to reasonably insure its structural stability and freedom from stoppage. The outfall shall be maintained so that a sample of the effluent can be obtained at a point after the final treatment process and before the discharge mixes with the receiving waters.

16. A minimum of two (2) feet freeboard must be maintained in each lagoon cell.

17. The berms of the lagoon shall be mowed and kept free of any deep-rooted vegetation, animal dens, or other potential sources of damage to the berms.

18. The facility shall ensure that adequate provisions are provided to prevent surface water intrusion into the lagoon and to divert stormwater runoff around the lagoon and protect embankments from erosion.

19. Electronic Discharge Monitoring Report (eDMR) Submission System.
    (a) Discharge Monitoring Reporting Requirements. The permittee must electronically submit compliance monitoring data via the eDMR system. In regards to Standard Conditions Part I, Section B, #7, the eDMR system is currently the only Department approved reporting method for this permit.
    (b) Programmatic Reporting Requirements. The following reports (if required by this permit) must be electronically submitted as an attachment to the eDMR system until such a time when the current or a new system is available to allow direct input of the data:
        (1) Collection System Maintenance Annual Reports;
        (2) Schedule of Compliance Progress Reports;
        (3) Sludge/Biosolids Annual Reports; and
        (4) Any additional report required by the permit excluding bypass reporting.

        After such a system has been made available by the department, required data shall be directly input into the system by the next report due date.
    (c) Other actions. The following shall be submitted electronically after such a system has been made available by the department:
        (1) Notices of Intent to discharge (NOIs);
        (2) Notices of Termination (NOTs); and
        (3) Bypass reporting, See Special Condition #9 for 24-hr. bypass reporting requirements.
    (d) Electronic Submissions. To access the eDMR system, use the following link in your web browser: https://edmr.dnr.mo.gov/edmr/E2/Shared/Pages/Main/Login.aspx.
    (e) Waivers from Electronic Reporting. The permittee must electronically submit compliance monitoring data and reports unless a waiver is granted by the department in compliance with 40 CFR Part 127. The permittee may obtain an electronic reporting waiver by first submitting an eDMR Waiver Request Form: http://dnr.mo.gov/forms/780-2692-f.pdf. The department will either approve or deny this electronic reporting waiver request within 120 calendar days. Only permittees with an approved waiver request may submit monitoring data and reports on paper to the Department for the period that the approved electronic reporting waiver is effective.

MISSOURI DEPARTMENT OF NATURAL RESOURCES
FACT SHEET
FOR THE PURPOSE OF RENEWAL
OF
MO-0115185
BCRSD RICHARDSON ACRES WWTF

The Federal Water Pollution Control Act ("Clean Water Act" Section 402 Public Law 92-500 as amended) established the National Pollutant Discharge Elimination System (NPDES) permit program. This program regulates the discharge of pollutants from point sources into the waters of the United States, and the release of stormwater from certain point sources. All such discharges are unlawful without a permit (Section 301 of the "Clean Water Act"). After a permit is obtained, a discharge not in compliance with all permit terms and conditions is unlawful. Missouri State Operating Permits (MSOPs) are issued by the Director of the Missouri Department of Natural Resources (Department) under an approved program, operating in accordance with federal and state laws (Federal "Clean Water Act" and "Missouri Clean Water Law" Section 644 as amended). MSOPs are issued for a period of five (5) years unless otherwise specified.

As per [40 CFR Part 124.8(a)] and [10 CSR 20-6.020(1)(A)2.] a Factsheet shall be prepared to give pertinent information regarding the applicable regulations, rationale for the development of effluent limitations and conditions, and the public participation process for the Missouri State Operating Permit (operating permit) listed below.

A Factsheet is not an enforceable part of an operating permit.

This Factsheet is for a Minor.

Part I – Facility Information

Facility Type: POTW - SIC #4952

Facility Description: STEP system / two-cell lagoon with aerated primary cell / sludge retained in lagoon and septic tanks / sludge hauled to another treatment facility by owner

Have any changes occurred at this facility or in the receiving water body that effects effluent limit derivation?
☒ - Yes; Clays Fork (8-20-13 MUDD V1.0) (C) (3960) is now classified as EPA has approved the Department's new stream classifications. A schedule of compliance has been included in the permit to meet final effluent limitations for *E. coli* which are protective of the WBC - B use designation of the stream.
☐ - No.

Application Date: 05/12/2014
Expiration Date: 03/31/2015

OUTFALL(S) TABLE:

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	EFFLUENT TYPE
#001	0.009	Equivalent to Secondary	Domestic

Facility Performance History:
This facility was last inspected on September 20, 2016. The inspection showed the following unsatisfactory feature; failure to meet a removal efficiency of 65% for BOD and TSS.

Comments:
Changes in this permit include the addition of *E. coli*. See Part VI of the Fact Sheet for further information regarding the addition of effluent parameters. Special conditions were updated to include the addition of inflow and infiltration reporting requirements, reporting of Non-detects, and bypass reporting requirements.

Part II – Operator Certification Requirements

☐ - This facility is required to have a certified operator.

☒ - This facility is not required to have a certified operator.

Part III– Operational Monitoring

☒ - As per [10 CSR 20-9.010(4))], the facility is not required to conduct operational monitoring.

☐ - As per [10 CSR 20-9.010(4))], the facility is required to conduct operational monitoring.

Part IV – Receiving Stream Information

RECEIVING STREAM(S) TABLE: OUTFALL #001

WATER-BODY NAME	CLASS	WBID	DESIGNATED USES*	12-DIGIT HUC	DISTANCE TO CLASSIFIED SEGMENT (MI)
Tributary to Clays Fork	NA	NA	General Criteria	10300102-0706	0.2
Clays Fork (8-20-13 MUDD V1.0)	C	3960	AQL, WBC-B, SCR, HHP, IRR, LWW		

*As per 10 CSR 20-7.031 Missouri Water Quality Standards, the department defines the Clean Water Commission's water quality objectives in terms of "water uses to be maintained and the criteria to protect those uses." The receiving stream and 1st classified receiving stream's beneficial water uses to be maintained are in the receiving stream table in accordance with [10 CSR 20-7.031(1)(C)].

Uses which may be found in the receiving streams table, above:

10 CSR 20-7.031(1)(C)1.:
AQL = Protection of aquatic life (Current narrative use(s) are defined to ensure the protection and propagation of fish shellfish and wildlife, which is further subcategorized as: WWH = Warm Water Habitat; **CDF** = Cold-water fishery (Current narrative use is cold-water habitat.); **CLF** = Cool-water fishery (Current narrative use is cool-water habitat); EAH = Ephemeral Aquatic Habitat; MAH = Modified Aquatic Habitat; LAH = Limited Aquatic Habitat. This permit uses AQL effluent limitations in 10 CSR 20-7.031 Table A for all habitat designations unless otherwise specified.)

10 CSR 20-7.031(1)(C)2.: Recreation in and on the water
WBC = Whole Body Contact recreation where the entire body is capable of being submerged;
WBC-A = Whole body contact recreation that supports swimming uses and has public access;
WBC-B = Whole body contact recreation that supports swimming;
SCR = Secondary Contaet Recreation (like fishing, wading, and boating).

10 CSR 20-7.031(1)(C)3. to 7.:
HHP (formerly HHF) = Human Health Protection as it relates to the consumption of fish;
IRR = Irrigation for use on crops utilized for human or livestock consumption;
LWW = Livestock and wildlife watering (Current narrative use is defined as LWP = Livestock and Wildlife Protection);
DWS = Drinking Water Supply;
IND = Industrial water supply

10 CSR 20-7.031(1)(C)8-11.: Wetlands (10 CSR 20-7.031 Table A currently does not have corresponding habitat use criteria for these defined uses)
WSA = Storm- and flood-water storage and attenuation; WHP = Habitat for resident and migratory wildlife species; WRC = Recreational, cultural, educational, scientific, and natural aesthetic values and uses; WHC = Hydrologic cycle maintenance.

10 CSR 20-7.031(6): **GRW** = Groundwater

RECEIVING STREAM(S) LOW-FLOW VALUES:

RECEIVING STREAM (C, E, P, P1)	LOW-FLOW VALUES (CFS)		
	1Q10	7Q10	30Q10
Tributary to Clays Fork	NA	NA	NA

MIXING CONSIDERATIONS

Mixing Zone: Not Allowed [10 CSR 20-7.031(5)(A)4.B.(I)(a)].
Zone of Initial Dilution: Not Allowed [10 CSR 20-7.031(5)(A)4.B.(I)(b)].

RECEIVING STREAM MONITORING REQUIREMENTS:
No receiving water monitoring requirements recommended at this time.

Receiving Water Body's Water Quality
No stream survey has been conducted for this facility.

Part V – Rationale and Derivation of Effluent Limitations & Permit Conditions

ALTERNATIVE EVALUATIONS FOR NEW FACILITIES:
As per [10 CSR 20-7.015(4)(A)], discharges to losing streams shall be permitted only after other alternatives including land application, discharges to a gaining stream and connection to a regional wastewater treatment facility have been evaluated and determined to be unacceptable for environmental and/or economic reasons.

☐ - The facility discharges to a Losing Stream as defined by [10 CSR 20-2.010(36)] & [10 CSR 20-7.031(1)(N)], or is an existing facility, and has submitted an alternative evaluation.

☒ - The facility does not discharge to a Losing Stream as defined by [10 CSR 20-2.010(36)] & [10 CSR 20-7.031(1)(N)], or is an existing facility.

ANTI-BACKSLIDING:
A provision in the Federal Regulations [CWA §303(d)(4); CWA §402(o); 40 CFR Part 122.44(l)] that requires a reissued permit to be as stringent as the previous permit with some exceptions.

☐ - All limits in this operating permit are at least as protective as those previously established; therefore, backsliding does not apply.

☒ - Limitations in this operating permit for the reissuance of this permit conform to the anti-backsliding provisions of Section 402(o) of the Clean Water Act, and 40 CFR Part 122.44.

☒ - The Department determines that technical mistakes or mistaken interpretations of law were made in issuing the permit under section 402(a)(1)(b).

- **General Criteria**. The previous permit contained a special condition which described a specific set of prohibitions related to general criteria found in 10 CSR 20-7.031(4). In order to comply with 40 CFR 122.44(d)(1), the permit writer has conducted reasonable potential determinations for each general criterion and established numeric effluent limitations where reasonable potential exists. While the removal of the previous permit special condition creates the appearance of backsliding, since this permit establishes numeric limitations where reasonable potential to cause or contribute to an excursion of the general criteria exists the permit maintains sufficient effluent limitations and monitoring requirements in order to protect water quality, this permit is equally protective as compared to the previous permit. Therefore, given this new information, and the fact that the previous permit special condition was not consistent with 40 CFR 122.44(d)(1), an error occurred in the establishment of the general criteria as a special condition of the previous permit. Please see Part VII – Effluent Limits Determination for more information regarding the reasonable potential determinations for each general criterion related to this facility.

ANTIDEGRADATION:
In accordance with Missouri's Water Quality Standard [10 CSR 20-7.031(3)], for domestic wastewater discharge with new, altered, or expanding discharges, the Department is to document by means of Antidegradation Review that the use of a water body's available assimilative capacity is justified. In accordance with Missouri's water quality regulations for antidegradation [10 CSR 20-7.031(3)], degradation may be justified by documenting the socio-economic importance of a discharge after determining the necessity of the discharge. Facilities must submit the antidegradation review request to the department prior to establishing, altering, or expanding discharges. See http://dnr.mo.gov/env/wpp/permits/antideg-implementation.htm

☒ - No degradation proposed and no further review necessary. Facility did not apply for authorization to increase pollutant loading or to add additional pollutants to their discharge.

☐ - This permit contains new and/or expanded discharge, please see **APPENDIX FOR ANTIDEGRADATION ANALYSIS.**

AREA-WIDE WASTE TREATMENT MANAGEMENT & CONTINUING AUTHORITY:
As per [10 CSR 20-6.010(3)(B)], …An applicant may utilize a lower preference continuing authority by submitting, as part of the application, a statement waiving preferential status from each existing higher preference authority, providing the waiver does not conflict with any area-wide management plan approved under section 208 of the Federal Clean Water Act or any other regional sewage service and treatment plan approved for higher preference authority by the Department.

BIOSOLIDS & SEWAGE SLUDGE:
Biosolids are solid materials resulting from domestic wastewater treatment that meet federal and state criteria for beneficial uses (i.e. fertilizer). Sewage sludge is solids, semi-solids, or liquid residue generated during the treatment of domestic sewage in a treatment works; including but not limited to, domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment process; and a material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator or grit and screening generated during preliminary treatment of domestic sewage in a treatment works. Additional information regarding biosolids and sludge is located at the following web address: http://extension.missouri.edu/main/DisplayCategory.aspx?C=74, items WQ422 through WQ449.

☐ - Permittee has and a Department approved biosolids management plan, and is authorized to land applies biosolids in accordance with Standard Conditions III.

☒ - Permittee is not authorized to land apply biosolids. Sludge/biosolids are stored in the lagoon. The permittee must submit a sludge management plan for approval that details removal and disposal plans when sludge is to be removed from lagoons.

COMPLIANCE AND ENFORCEMENT:
Enforcement is the action taken by the Water Protection Program (WPP) to bring an entity into compliance with the Missouri Clean Water Law, its implementing regulations, and/or any terms and conditions of an operating permit. The primary purpose of the enforcement activity in the WPP is to resolve violations and return the entity to compliance.

☐ - The facility is currently under enforcement action.

☒ - The facility is not currently under Water Protection Program enforcement action.

ELECTRONIC DISCHARGE MONITORING REPORT (EDMR) SUBMISSION SYSTEM:
The U.S. Environmental Protection Agency (EPA) promulgated a final rule on October 22, 2015, to modernize Clean Water Act reporting for municipalities, industries, and other facilities by converting to an electronic data reporting system. This final rule requires regulated entities and state and federal regulators to use information technology to electronically report data required by the National Pollutant Discharge Elimination System (NPDES) permit program instead of filing paper reports. To comply with the federal rule, the Department is requiring all permittees to begin submitting discharge monitoring data and reports online.

Per 40 CFR 127.15 and 127.24, permitted facilities may request a temporary waiver for up to 5 years or a permanent waiver from electronic reporting from the Department. To obtain an electronic reporting waiver, a permittee must first submit an eDMR Waiver Request Form: http://dnr.mo.gov/forms/780-2692-f.pdf. A request must be made for each facility. If more than one facility is owned or operated by a single entity, then the entity must submit a separate request for each facility based on its specific circumstances. An approved waiver is non-transferable.

The Department must review and notify the facility within 120 calendar days of receipt if the waiver request has been approved or rejected [40 CFR 124.27(a)]. During the Department review period as well as after a waiver is granted, the facility must continue submitting a hard-copy of any reports required by their permit. The Department will enter data submitted in hard-copy from those facilities allowed to do so and electronically submit the data to the EPA on behalf of the facility.

☒ - The permittee/facility is currently using the eDMR data reporting system.

☐ - The facility has obtained a Department approved waiver from reporting electronically.

PRETREATMENT PROGRAM:
The reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater prior to or in lieu of discharging or otherwise introducing such pollutants into a Publicly Owned Treatment Works [40 CFR Part 403.3(q)].

☐ - This permittee has an approved pretreatment program in accordance with the requirements of [40 CFR Part 403] and [10 CSR 20-6.100] and is expected to implement and enforce its approved program.

☒ - The permittee, at this time, is not required to have a Pretreatment Program or does not have an approved pretreatment program.

REASONABLE POTENTIAL ANALYSIS (RPA):
Federal regulation [40 CFR Part 122.44(d)(1)(i)] requires effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause or contribute to an in-stream excursion above narrative or numeric water quality standard.

In accordance with [40 CFR Part 122.44(d)(1)(iii)] if the permit writer determines that any given pollutant has the reasonable potential to cause, or contribute to an in-stream excursion above the WQS, the permit must contain effluent limits for that pollutant.

☒ - A RPA was conducted on appropriate parameters. An RPA analysis was completed for the last permit cycle. Due to permit synchronization, the previous permit cycle was reduced to a time period of less than 5 years. Therefore, all RPA results from short term permit have been carried over to this permit

☐ - A RPA was not conducted for this facility.

REMOVAL EFFICIENCY:
Removal efficiency is a method by which the Federal Regulations define Secondary Treatment and Equivalent to Secondary Treatment, which applies to Biochemical Oxygen Demand 5-day (BOD_5) and Total Suspended Solids (TSS) for Publicly Owned Treatment Works (POTWs)/municipals.

☐ - Secondary Treatment is 85% removal [40 CFR Part 133.102(a)(3) & (b)(3)].

☒ - Equivalent to Secondary Treatment is 65% removal [40 CFR Part 133.105(a)(3) & (b)(3)].

SANITARY SEWER OVERFLOWS (SSO) AND INFLOW AND INFILTRATION (I&I):
Sanitary Sewer Overflows (SSOs) are defined as untreated sewage releases and are considered bypassing under state regulation [10 CSR 20-2.010(11)] and should not be confused with the federal definition of bypass. SSOs result from a variety of causes including blockages, line breaks, and sewer defects that can either allow wastewater to backup within the collection system during dry weather conditions or allow excess stormwater and groundwater to enter and overload the collection system during wet weather conditions. SSOs can also result from lapses in sewer system operation and maintenance, inadequate sewer design and construction, power failures, and vandalism. SSOs include overflows out of manholes, cleanouts, broken pipes, and other into waters of the state and onto city streets, sidewalks, and other terrestrial locations.

Inflow and Infiltration (I&I) is defined as unwanted intrusion of stormwater or groundwater into a collection system. This can occur from points of direct connection such as sump pumps, roof drain downspouts, foundation drains, and storm drain cross-connections or through cracks, holes, joint failures, faulty line connections, damaged manholes, and other openings in the collection system itself. I&I results from a variety of causes including line breaks, improperly sealed connections, cracks caused by soil erosion/settling, penetration of vegetative roots, and other sewer defects. In addition, excess stormwater and groundwater entering the collection system from line breaks and sewer defects have the potential to negatively impact the treatment facility.

Missouri RSMo §644.026.1.(13) mandates that the Department issue permits for discharges of water contaminants into the waters of this state, and also for the operation of sewer systems. Such permit conditions shall ensure compliance with all requirements as established by sections 644.006 to 644.141. Standard Conditions Part I, referenced in the permit, contains provisions requiring proper operation and maintenance of all facilities and systems of treatment and control. Missouri RSMo §644.026.1.(15) instructs the Department to require proper maintenance and operation of treatment facilities and sewer systems and proper disposal of residual waste from all such facilities. To ensure that public health and the environment are protected, any noncompliance which may endanger public health or the environment must be reported to the Department within 24 hours of the time the permittee becomes aware of the noncompliance. Standard Conditions Part I, referenced in the permit, contains the reporting requirements for the permittee when bypasses and upsets occur. The permit also contains requirements for permittees to develop and implement a program for maintenance and repair of the collection system. The permit requires that the permittee submit an annual report to the Department for the previous calendar year that contains a summary of efforts taken by the permittee to locate and eliminate sources of excess I & I, a summary of general maintenance and repairs to the collection system, and a summary of any planned maintenance and repairs to the collection system for the upcoming calendar year.

☒ - At this time, the Department recommends the US EPA's Guide for Evaluating Capacity, Management, Operation and Maintenance (CMOM) Programs At Sanitary Sewer Collection Systems (Document # EPA 305-B-05-002) or the Departments' CMOM Model located at http://dnr.mo.gov/env/wpp/permits/docs/cmom-template.doc. For additional information regarding the Departments' CMOM Model, see the CMOM Plan Model Guidance document at http://dnr.mo.gov/pubs/pub2574.htm. The CMOM identifies some of the criteria used to evaluate a collection system's management, operation, and maintenance and was intended for use by the EPA, state, regulated community, and/or third party entities. The CMOM is applicable to small, medium, and large systems; both public and privately owned; and both regional and satellite collection systems. The CMOM does not substitute for the Clean Water Act, the Missouri Clean Water Law, and both federal and state regulations, as it is not a regulation.

☐ - This facility is not required to develop or implement a program for maintenance and repair of the collection system; however, it is a violation of Missouri State Environmental Laws and Regulations to allow untreated wastewater to discharge to waters of the state.

SCHEDULE OF COMPLIANCE (SOC):

Per 644.051.4 RSMo, a permit may be issued with a Schedule of Compliance (SOC) to provide time for a facility to come into compliance with new state or federal effluent regulations, water quality standards, or other requirements. Such a schedule is not allowed if the facility is already in compliance with the new requirement, or if prohibited by other statute or regulation. A SOC includes an enforceable sequence of interim requirements (actions, operations, or milestone events) leading to compliance with the Missouri Clean Water Law, its implementing regulations, and/or the terms and conditions of an operating permit. *See also* Section 502(17) of the Clean Water Act, and 40 CFR §122.2. For new effluent limitations, the permit includes interim monitoring for the specific parameter to demonstrate the facility is not already in compliance with the new requirement. Per 40 CFR § 122.47(a)(1) and 10 CSR 20-7.031(11), compliance must occur as soon as possible. If the permit provides a schedule for meeting new water quality based effluent limits, a SOC must include an enforceable, final effluent limitation in the permit even if the SOC extends beyond the life of the permit.

A SOC is not allowed:

- For effluent limitations based on technology-based standards established in accordance with federal requirements, if the deadline for compliance established in federal regulations has passed. 40 CFR § 125.3.
- For a newly constructed facility in most cases. Newly constructed facilities must meet applicable effluent limitations when discharge begins, because the facility has installed the appropriate control technology as specified in a permit or antidegradation review. A SOC is allowed for a new water quality based effluent limit that was not included in a previously public noticed permit or antidegradation review, which may occur if a regulation changes during construction.
- To develop a TMDL, UAA, or other study associated with development of a site specific criterion. A facility is not prohibited from conducting these activities, but a SOC may not be granted for conducting these activities.

In order to provide guidance to Permit Writers in developing SOCs, and attain a greater level of consistency, on April 9, 2015 the Department issued an updated policy on development of SOCs. This policy provides guidance to Permit Writers on the standard time frames for schedules for common activities, and guidance on factors that may modify the length of the schedule such as a Cost Analysis for Compliance.

☒ - The time given for effluent limitations of this permit listed under Interim Effluent Limitation and Final Effluent Limitations were established in accordance with [10 CSR 20-7.031(11)]. The facility has been given a schedule of compliance to meet final effluent limits for *E. coli*, and extension of the existing schedule for Ammonia. The seven year schedule of compliance allowed for this facility should provide adequate time to obtain engineering, property easements, obtain a construction permit and construct the sewer connections necessary to connect to the City of Columbia's wastewater collection system

☐ - This permit does not contain a SOC.

SEWER EXTENSION AUTHORITY SUPERVISED PROGRAM:

In accordance with [10 CSR 20-6.010(6)(A)], the department may grant approval of a permittee's Sewer Extension Authority Supervised Program. These approved permittees regulate and approve construction of sanitary sewers and pump stations, which are tributary to this wastewater treatment facility. The permittee shall act as the continuing authority for the operation, maintenance, and modernization of the constructed collection system. See http://dnr.mo.gov/env/wpp/permits/sewer-extension.htm.

☐ - The permittee's Sewer Extension Authority Supervised Program has been reauthorized. Please see **Appendix – Sewer Extension Authority Supervised Program Reauthorization Letter** for applicable conditions.

☒ - The permittee does not have a department approved Sewer Extension Authority Supervised Program.

STORMWATER POLLUTION PREVENTION PLAN (SWPPP):

In accordance with 40 CFR 122.44(k) *Best Management Practices (BMPs)* to control or abate the discharge of pollutants when: (1) Authorized under section 304(e) of the Clean Water Act (CWA) for the control of toxic pollutants and hazardous substances from ancillary industrial activities: (2) Authorized under section 402(p) of the CWA for the control of stormwater discharges; (3) Numeric effluent limitations are infeasible; or (4) the practices are reasonably necessary to achieve effluent limitations and standards or to carry out the purposes and intent of the CWA.

☐ - 10 CSR 20-6.200 and 40 CFR 122.26 includes treatment works treating domestic sewage or any other sewage sludge or wastewater treatment device or system, used in the storage treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated to the disposal of sewage sludge that is located within the confines of the facility, with a design flow of 1.0 mgd or more, or are required to have an approved pretreatment program under 40 CFR part 403, as an industrial activity in which permit coverage is required.

☒ - At this time, the permittee is not required to develop and implement a SWPPP.

VARIANCE:
As per the Missouri Clean Water Law § 644.061.4, variances shall be granted for such period of time and under such terms and conditions as shall be specified by the commission in its order. The variance may be extended by affirmative action of the commission. In no event shall the variance be granted for a period of time greater than is reasonably necessary for complying with the Missouri Clean Water Law §§644.006 to 644.141 or any standard, rule or regulation promulgated pursuant to Missouri Clean Water Law §§644.006 to 644.141.

☐ - This operating permit is drafted under premises of a petition for variance.

☒ - This operating permit is not drafted under premises of a petition for variance.

WASTELOAD ALLOCATIONS (WLA) FOR LIMITS:
As per [10 CSR 20-2.010(78)], the amount of pollutant each discharger is allowed by the Department to release into a given stream after the Department has determined total amount of pollutant that may be discharged into that stream without endangering its water quality.

☐ - Wasteload allocations were calculated where applicable using water quality criteria or water quality model results and the dilution equation below:

$$Ce = \frac{(Qe + Qs)C - (Qs \times Cs)}{(Qe)}$$ (EPA/505/2-90-001, Section 4.5.5)

Where C = downstream concentration Ce = effluent concentration
Cs = upstream concentration Qe = effluent flow
Qs = upstream flow

Chronic wasteload allocations were determined using applicable chronic water quality criteria (CCC: criteria continuous concentration) and stream volume of flow at the edge of the mixing zone (MZ). Acute wasteload allocations were determined using applicable water quality criteria (CMC: criteria maximum concentration) and stream volume of flow at the edge of the zone of initial dilution (ZID).

Water quality based maximum daily and average monthly effluent limitations were calculated using methods and procedures outlined in USEPA's "Technical Support Document For Water Quality-based Toxics Control" (EPA/505/2-90-001).

Number of Samples "n":
Additionally, in accordance with the TSD for water quality-based permitting, effluent quality is determined by the underlying distribution of daily values, which is determined by the Long Term Average (LTA) associated with a particular Wasteload Allocation (WLA) and by the Coefficient of Variation (CV) of the effluent concentrations. Increasing or decreasing the monitoring frequency does not affect this underlying distribution or treatment performance, which should be, at a minimum, be targeted to comply with the values dictated by the WLA. Therefore, it is recommended that the actual planned frequency of monitoring normally be used to determine the value of "n" for calculating the AML. However, in situations where monitoring frequency is once per month or less, a higher value for "n" must be assumed for AML derivation purposes. Thus, the statistical procedure being employed using an assumed number of samples is "n = 4" at a minimum. For Total Ammonia as Nitrogen, "n = 30" is used

☒ - Wasteload allocations were not calculated.

WLA MODELING:
There are two general types of effluent limitations, technology-based effluent limits (TBELs) and water quality based effluent limits (WQBELs). If TBELs do not provide adequate protection for the receiving waters, then WQBEL must be used.

☐ - A WLA study including model was submitted to the Department.

☒ - A WLA study was either not submitted or determined not applicable by Department staff.

WATER QUALITY STANDARDS:
Per [10 CSR 20-7.031(4)], General Criteria shall be applicable to all waters of the state at all times including mixing zones. Additionally, [40 CFR 122.44(d)(1)] directs the Department to establish in each NPDES permit to include conditions to achieve water quality established under Section 303 of the Clean Water Act, including State narrative criteria for water quality.

WHOLE EFFLUENT TOXICITY (WET) TEST:

☐ - The permittee is required to conduct WET test for this facility.

☒ - At this time, the permittee is not required to conduct WET test for this facility.

40 CFR 122.41(M) - BYPASSES:

The federal Clean Water Act (CWA), Section 402 prohibits wastewater dischargers from "bypassing" untreated or partially treated sewage (wastewater) beyond the headworks. A bypass is defined as an intentional diversion of waste streams from any portion of a treatment facility, [40 CFR 122.41(m)(1)(i)]. Additionally, Missouri regulation 10 CSR 20-7.015(9)(G) states a bypass means the intentional diversion of waste streams from any portion of a treatment facility, except in the case of blending, to waters of the state. Only under exceptional and specified limitations do the federal regulations allow for a facility to bypass some or all of the flow from its treatment process. Bypasses are prohibited by the CWA unless a permittee can meet all of the criteria listed in 40 CFR 122.41(m)(4)(i)(A), (B), & (C). Any bypasses from this facility are subject to the reporting required in 40 CFR 122.41(l)(6) and per Missouri's Standard Conditions I, Section B, part 2.b. Additionally, Anticipated Bypasses include bypasses from peak flow basins or similar devices designed for peak wet weather flows.

☐ - Bypasses occur or have occurred at this facility.

☒ - This facility does not anticipate bypassing.

303(d) LIST & TOTAL MAXIMUM DAILY LOAD (TMDL):

Section 303(d) of the federal Clean Water Act requires that each state identify waters that are not meeting water quality standards and for which adequate water pollution controls have not been required. Water quality standards protect such beneficial uses of water as whole body contact (such as swimming), maintaining fish and other aquatic life, and providing drinking water for people, livestock and wildlife. The 303(d) list helps state and federal agencies keep track of waters that are impaired but not addressed by normal water pollution control programs.

A TMDL is a calculation of the maximum amount of a given pollutant that a body of water can absorb before its water quality is affected. If a water body is determined to be impaired as listed on the 303(d) list, then a watershed management plan will be developed that shall include the TMDL calculation

☐ - This facility discharges to a 303(d) listed stream.

☒ - This facility does not discharge to a 303(d) listed stream.

☐ - This facility discharges to a stream with an EPA approved TMDL.

Part VI – Effluent Limits Determination

APPLICABLE DESIGNATIONS OF WATERS OF THE STATE:
As per Missouri's Effluent Regulations [10 CSR 20-7.015], the waters of the state are divided into the below listed seven (7) categories. Each category lists effluent limitations for specific parameters, which are presented in each outfall's Effluent Limitation Table and further discussed in the Derivation & Discussion of Limits section.

- ☐ Missouri or Mississippi River [10 CSR 20-7.015(2)]
- ☐ Lakes or Reservoirs [10 CSR 20-7.015(3)]
- ☐ Losing Streams [10 CSR 20-7.015(4)]
- ☐ Metropolitan No-Discharge Streams [10 CSR 20-7.015(5)]
- ☐ Special Streams [10 CSR 20-7.015(6)]
- ☐ Subsurface Waters [10 CSR 20-7.015(7)]
- ☒ All Other Waters [10 CSR 20-7.015(8)]

OUTFALL #001 – MAIN FACILITY OUTFALL

Effluent limitations derived and established in the below Effluent Limitations Table are based on current operations of the facility. Future permit action due to facility modification may contain new operating permit terms and conditions that supersede the terms and conditions, including effluent limitations, of this operating permit.

EFFLUENT LIMITATIONS TABLE:

PARAMETER	Unit	Basis for Limits	Daily Maximum	Weekly Average	Monthly Average	Previous Permit Limit	Sampling Frequency	Reporting Frequency	Sample Type ****
Flow	MGD	1	*		*	*/*	1/quarter	quarterly	E
BOD_5	mg/L	1		65	45	65/45	1/quarter	quarterly	G
TSS	mg/L	1		110	70	110/70	1/quarter	quarterly	G
Escherichia coli **	#/100mL	1, 3		1,030	206	*/*	1/quarter	quarterly	G
Ammonia as N (Interim)	mg/L	2, 3	*		*	*/*	1/quarter	quarterly	G
Ammonia as N (Final) (Apr 1 –Sep 30)	mg/L	2, 3	3.6		1.4	*/*	1/quarter	quarterly	G
Ammonia as N (Final) (Oct 1 – Mar 31)	mg/L	2, 3	7.5		2.9	*/*	1/quarter	quarterly	G
PARAMETER	Unit	Basis for Limits	Minimum		Maximum	Previous Permit Limit	Sampling Frequency	Reporting Frequency	Sample Type
pH	SU	1	6.5			≥6.5	1/quarter	quarterly	G
PARAMETER	Unit	Basis for Limits			Monthly Avg Min	Previous Permit Limit	Sampling Frequency	Reporting Frequency	Sample Type
BOD_5 Percent Removal	%	1			65	65	1/year	annually	M
TSS Percent Removal	%	1			65	65	1/year	annually	M

* - Monitoring requirement only.
** - #/100mL; the Monthly Average for *E. coli* is a geometric mean.
*** - Parameter not previously established in previous state operating permit.

**** - C = 24-hour composite
G = Grab
T = 24-hr. total
E = 24-hr. estimate
M = Measured/calculated

Basis for Limitations Codes:
1. State or Federal Regulation/Law
2. Water Quality Standard (includes RPA)
3. Water Quality Based Effluent Limits
4. Antidegradation Review
5. Antidegradation Policy
6. Water Quality Model
7. Best Professional Judgment
8. TMDL or Permit in lieu of TMDL
9. WET Test Policy
10. Multiple Discharger Variance

OUTFALL #001 – DERIVATION AND DISCUSSION OF LIMITS:

- **Flow**. In accordance with [40 CFR Part 122.44(i)(1)(ii)] the volume of effluent discharged from each outfall is needed to assure compliance with permitted effluent limitations. If the permittee is unable to obtain effluent flow, then it is the responsibility of the permittee to inform the Department, which may require the submittal of an operating permit modification.

- **Biochemical Oxygen Demand (BOD_5)**. Effluent limitations have been retained from previous state operating permit, please see the APPLICABLE DESIGNATION OF WATERS OF THE STATE sub-section of the **Effluent Limits Determination.**

- **Total Suspended Solids (TSS)**. Effluent limitations have been retained from previous state operating permit, please see the APPLICABLE DESIGNATION OF WATERS OF THE STATE sub-section of the **Effluent Limits Determination.**

- ***Escherichia coli (E. coli)***. Monthly average of 206 per 100 mL as a geometric mean and Weekly Average of 1030 per 100 mL as a geometric mean during the recreational season (April 1 – Oetober 31), to protect Whole Body Contact Recreation (B) designated use of the receiving stream, as per 10 CSR 20-7.031(5)(C). An effluent limit for both monthly average and weekly average is required by 40 CFR 122.45(d). The Geometric Mean is calculated by multiplying all of the data points and then taking the nth root of this product, where n = # of samples collected. For example: Five E. coli samples were collected with results of 1, 4, 6, 10, and 5 (#/100mL). Geometric Mean = 5^{th} root of (1)(4)(6)(10)(5) = 5^{th} root of 1,200 = 4.1 #/100mL.

- **Total Ammonia Nitrogen**. The effluent limit calculation was completed for the last permit cycle. Due to permit synchronization, the previous permit cycle was reduced to a time period of less than 5 years. Therefore, the effluent limits from the short term permit have been carried over to this permit

- **pH**. – ≥ 6.5 SU. pH limitations of 6.0-9.0 SU [10 CSR 20-7.015] are not protective of the in-stream Water Quality Standard, which states that water contaminants shall not cause pH to be outside the range of 6.5-9.0 SU. 10 CSR 20-7.015 allows pH for lagoons to be maintained above 6.0 SU. With no mixing zone, the water quality standard, ≥ 6.5 SU, must be met at the outfall.

- **Biochemical Oxygen Demand (BOD_5) Percent Removal**. In accordance with 40 CFR Part 133, removal efficiency is a method by which the Federal Regulations define Secondary Treatment and Equivalent to Secondary Treatment, which applies to Biochemical Oxygen Demand 5-day (BOD_5) and Total Suspended Solids (TSS) for Publicly Owned Treatment Works (POTWs)/municipals. This facility is required to meet 65% removal efficiency for BOD_5.

- **Total Suspended Solids (TSS) Percent Removal**. In accordance with 40 CFR Part 133, removal efficiency is a method by which the Federal Regulations define Secondary Treatment and Equivalent to Secondary Treatment, which applies to Biochemical Oxygen Demand 5-day (BOD_5) and Total Suspended Solids (TSS) for Publicly Owned Treatment Works (POTWs)/municipals. This facility is required to meet 65% removal efficiency for TSS.

Sampling Frequency Justification:

Sampling and Reporting Frequency was retained from previous permit. Sampling for *E. coli* is set at quarterly per 10 CSR 20-7.015(9)(D)6.C.

Sampling Type Justification:

As per 10 CSR 20-7.015, BOD_5 and TSS samples collected for lagoons may be grab samples. Grab samples must be collected for pH, Ammonia as N, and *E. coli*. This is due to the holding time restriction for *E. coli*, the volatility of Ammonia, and the fact that pH cannot be preserved and must be sampled in the field. As Ammonia samples must be immediately preserved, these samples are to be collected as a grab. For further information on sampling and testing methods please review 10 CSR 20-7.015(9)(D) 2.

OUTFALL #001 – GENERAL CRITERIA CONSIDERATIONS:

In accordance with 40 CFR 122.44(d)(1), effluent limitations shall be placed into the permit for those pollutants which have been determined to cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality. The rule further states that pollutants which have been determined to cause, have the reasonable potential to cause, or contribute to an excursion above a narrative criterion within an applicable State water quality standard, the permit shall contain a numeric effluent limitation to protect that narrative criterion. In order to comply with this regulation, the permit writer will complete reasonable potential determinations on whether the discharge will violate any of the general criteria listed in 10 CSR 20-7.031(4). These specific requirements are listed below followed by derivation and discussion (the lettering matches that of the rule itself, under 10 CSR 20-7.031(4)). It should also be noted that Section 644.076.1, RSMo as well as Section D – Administrative Requirements of Standard Conditions Part I of this permit states that it shall be unlawful for any person to cause or permit any discharge of water contaminants from any water contaminant or point source located in Missouri that is in violation of sections 644.006 to 644.141 of the Missouri Clean Water Law or any standard, rule or regulation promulgated by the commission.

Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses. The discharge from this facility is made up of treated domestic wastewater. Based upon review of the recent Report of Compliance Inspection for the inspection conducted on September 20, 2016, no evidence of an excursion of this criterion has been observed by the Department in the past and the facility has not disclosed any other information related to the characteristics of the discharge on their permit application which has the potential to cause or contribute to an excursion of this narrative criterion. Additionally, this facility utilizes equivalent to secondary treatment technology and is currently in compliance with the equivalent to secondary treatment technology based effluent limits established in this permit and there has been no indication to the Department that the stream has had issues maintaining beneficial uses as a result of this discharge. Based on the information reviewed during the drafting of this permit, these final effluent limitations appear to have protected against the excursion of this criterion in the past. Therefore, the discharge does not have the reasonable potential to cause or contribute to an excursion of this criterion.

(A) Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses. Please see (A) above as justification is the same.
(B) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses. Please see (A) above as justification is the same.
(C) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life. This permit contains final effluent limitations which are protective of both acute and chronic toxicity for various pollutants that are either expected to be discharged by domestic wastewater facilities or that were disclosed by this facility on the application for permit coverage. Based on the information reviewed during the drafting of this permit, it has been determined if the facility meets final effluent limitations established in this permit, there is no reasonable potential for the discharge to cause an excursion of this criterion.
(D) There shall be no significant human health hazard from incidental contact with the water. Please see (D) above as justification is the same.
(E) There shall be no acute toxicity to livestock or wildlife watering. Please see (D) above as justification is the same.
(F) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community. Please see (A) above as justification is the same.
(G) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste as defined in Missouri's Solid Waste Law, section 260.200, RSMo, except as the use of such materials is specifically permitted pursuant to section 260.200-260.247. The discharge from this facility is made up of treated domestic wastewater. No evidence of an excursion of this criterion has been observed by the Department in the past and the facility has not disclosed any other information related to the characteristics of the discharge on their permit application which has the potential to cause or contribute to an excursion of this narrative criterion. Additionally, any solid wastes received or produced at this facility are wholly contained in appropriate storage facilities, are not discharged, and are disposed of offsite. This discharge is subject to Standard Conditions Part III, which contains requirements for the management and disposal of sludge to prevent its discharge. Therefore, this discharge does not have reasonable potential to cause or contribute to an excursion of this criterion.

Part VII – Cost Analysis for Compliance

Pursuant to Section 644.145, RSMo, when issuing permits under this chapter that incorporate a new requirement for discharges from publicly owned combined or separate sanitary or storm sewer systems or publicly owned treatment works, or when enforcing provisions of this chapter or the Federal Water Pollution Control Act, 33 U.S.C. 1251 et seq., pertaining to any portion of a publicly owned combined or separate sanitary or storm sewer system or [publicly owned] treatment works, the Department of Natural Resources shall make a "finding of affordability" on the costs to be incurred and the impact of any rate changes on ratepayers upon which to base such permits and decisions, to the extent allowable under this chapter and the Federal Water Pollution Control Act. This process is completed through a cost analysis for compliance. Permits that do not include new requirements may be deemed affordable.

☒ - The Department is required to determine "findings of affordability" because the permit applies to a combined or separate sanitary sewer system for a publically-owned treatment works.

Cost Analysis for Compliance - The Department has made a reasonable search for empirical data indicating the permit is affordable. The search consisted of a review of Department records that might contain economic data on the community, a review of information provided by the applicant as part of the application, and public comments received in response to public notices of this draft permit. If the empirical cost data was used by the permit writer, this data may consist of median household income, any other ongoing projects that the Department has knowledge, and other demographic financial information that the community provided as contemplated by Section 644. 145.3. See **Appendix – Cost Analysis for Compliance**

☐ - The Department is not required to determine Cost Analysis for Compliance because the permit contains no new conditions or requirements that convey a new cost to the facility.

Part VIII – Administrative Requirements

On the basis of preliminary staff review and the application of applicable standards and regulations, the Department, as administrative agent for the Missouri Clean Water Commission, proposes to issue a permit(s) subject to certain effluent limitations, schedules, and special conditions contained herein and within the operating permit. The proposed determinations are tentative pending public comment.

PERMIT SYNCHRONIZATION:
The Department of Natural Resources is currently undergoing a synchronization process for operating permits. Permits are normally issued on a five-year term, but to achieve synchronization many permits will need to be issued for less than the full five years allowed by regulation. The intent is that all permits within a watershed will move through the Watershed Based Management (WBM) cycle together will all expire in the same fiscal year. This will allow further streamlining by placing multiple permits within a smaller geographic area on public notice simultaneously, thereby reducing repeated administrative efforts. This will also allow the Department to explore a watershed based permitting effort at some point in the future. Renewal applications must continue to be submitted within 180 days of expiration, however, in instances where effluent data from the previous renewal is less than 4 years old, that data may be re-submitted to meet the requirements of the renewal application. If the permit provides a schedule of compliance for meeting new water quality based effluent limits beyond the expiration date of the permit, the time remaining in the schedule of compliance will be allotted in the renewed permit. With permit synchronization, this permit will expire in the 1st Quarter of calendar year 2020.

PUBLIC NOTICE:
The Department shall give public notice that a draft permit has been prepared and its issuance is pending. Additionally, public notice will be issued if a public hearing is to be held because of a significant degree of interest in and water quality concerns related to a draft permit. No public notice is required when a request for a permit modification or termination is denied; however, the requester and permittee must be notified of the denial in writing. The Department must issue public notice of a pending operating permit or of a new or reissued statewide general permit. The public comment period is the length of time not less than 30 days following the date of the public notice which interested persons may submit written comments about the proposed permit. For persons wanting to submit comments regarding this proposed operating permit, then please refer to the Public Notice page located at the front of this draft operating permit. The Public Notice page gives direction on how and where to submit appropriate comments.

☒ - The Public Notiee period for this operating permit was from August 17, 2018 to September 17, 2018. Responses to the Public Notice of this operating permit did not warrant the modification of effluent limits and/or the terms and conditions of this permit, however, changes were made to the Cost Analysis for Compliance.

DATE OF FACT SHEET: SEPTEMBER 24, 2018

COMPLETED BY:

BRANT FARRIS, ENVIRONMENTAL SPECIALIST III
MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM
OPERATING PERMITS SECTION - DOMESTIC WASTEWATER UNIT
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Appendices

APPENDIX – COST ANALYSIS FOR COMPLIANCE:

Missouri Department of Natural Resources
Water Protection Program
Cost Analysis for Compliance
(In accordance with RSMo 644.145)

BCRSD Richardson Acres WWTF, Permit Renewal
Boone County Regional Sewer District
Missouri State Operating Permit #MO-0115185

Section 644.145 RSMo requires the Department of Natural Resources ("Department" or "DNR") to make a "finding of affordability" when "issuing permits under" or "enforcing provisions of" state or federal clean water laws "pertaining to any portion of a combined or separate sanitary sewer system for publicly-owned treatment works." This cost analysis does not dictate that a permittee will upgrade their facility, or how the permittee will comply with the new permit requirements.

This cost analysis is based on data available to the Department as provided by the permittee and data obtained from readily available sources. For the most accurate analysis, it is essential that the permittee provides the Department with current information about the Districts financial and socioeconomic situation. The financial questionnaire available to permittees on the DNR website (http://dnr.mo.gov/forms/780-2511-f.pdf) should have been submitted with the permit renewal application. If it was not received with the renewal application, the Department sent a request to complete it with the welcome letter.

Flow evaluated: Not Applicable

Total Connections for the **Sewer District**: 6,908

New Permit Requirements:

The permit requires compliance with new effluent limitations for *E. coli* and an extension of an existing schedule for Ammonia. The District is connecting this wastewater treatment facility to the City of Columbia's wastewater collection system.

Anticipated Costs Associated with Complying with the New Requirements:

Cost associated with connection to the City of Columbia:

The January 9, 2017 Facility Plan for Richardson Acres WWTF also included costs for Brown Station WWTP. The combined anticipated project cost was estimated at $1,518,000, with an estimated annual O&M cost of $23,400. The permit also has new sampling requirements for *E. coli* upon the effective date of the final effluent limitations. However, the Department doesn't anticipate any new costs for sampling to be incurred by the District as the District has plans to eliminate the discharge by that date.

(1) A Sewer District's financial capability and ability to raise or secure necessary funding;

Current average monthly user rate:	$60.95
Current Long Term Liabilities for the District:	$17,505,740
Amount within the current user rate used toward payments on outstanding debt related to the current wastewater infrastructure:	$19.43

The Department has relied heavily on readily available data to complete this analysis.

(2) Affordability of pollution control options for the individuals or households at or below the median household income level of the community the district serves;

A Current Costs

Current operating costs (exclude depreciation):	$2,990,341
Current user rate:	$60.95

B Estimated Costs for Connection to the City of Columbia's wastewater collection system

Estimated Project Costs:	$1,518,000*
Annual Cost of Operation and Maintenance:	$23,400*
Estimated Resulting User Cost per Household per Month:	$69.91*
Median household income (MHI): [1] (data used – Boone County)	$51,658
Median household income (MHI): [1] (data used – City of Columbia)	$45,973
Cost per household as a percent of median household income: [2] (Boone County)	1.6%
Cost per household as a percent of median household income: [3] (City of Columbia)	1.8%

* - Data was provided by the District. Brown Station WWTP, Highfield Acres WWTF, Lee Heights WWTF, Midway Crossing WWTP, Oberlin Valley WWTP, Rocheport WWTP, Rollingwood WWTP, and this facility.

(3) An evaluation of the overall costs and environmental benefits of the control technologies;

The investment in wastewater treatment will provide several social, environmental and economic benefits. Improved wastewater provides benefits such as avoided health costs due to water-related illness, enhanced environmental ecosystem quality, and improved natural resources. The preservation of natural resources has been proven to increase the economic value and sustainability of the surrounding communities. Maintaining Missouri's water quality standards fulfill the goals of restoring and maintaining the chemical, physical and biological integrity of the receiving stream; and, where attainable, to achieves a level of water quality that provides for the protection and propagation of fish, shellfish, wildlife and recreation in and on the water.

(4) Inclusion of ongoing costs of operating and maintaining the existing wastewater collection and treatment system, including payments on outstanding debts for wastewater collection and treatment systems when calculating projected rates:

The District reported their current long term liability for their current wastewater collection and treatment systems to be $17,505,740. The community reported that each user pays $19.43 each month, which is used toward payments on the current outstanding debt.

(5) An inclusion of ways to reduce economic impacts on distressed populations in the community, including but not limited to low and fixed income populations. This requirement includes but is not limited to:

(a) Allowing adequate time in implementation schedules to mitigate potential adverse impacts on distressed populations resulting from the costs of the improvements and taking into consideration local community economic considerations.

A schedule of compliance will be provided based on the results of this cost analysis. The schedule of compliance is provided to ensure that the entity has time to reasonably plan for compliance with the new permit requirements. The time provided ensures the entity has time to hire an engineer, develop facility plans, hold community meetings, seek an appropriate funding source, and construct the facility. For compliance assistance, please visit the Department's Community Assistance webpage at https://dnr.mo.gov/assistance/. If it is determined by the permittee that a longer schedule of compliance is necessary due to financial reasons, please contact the permit writer and request modification of the permit schedule.

An integrated plan may be an appropriate option if they community needs to meet other environmental obligations as well as the new requirements within this permit. The integrated plan needs to be well thought out with specific timeframes built into the management plan in which the municipality can reasonably commit. The plan should be designed to allow your municipality to meet their Clean Water Act obligations by maximizing their infrastructure improvement dollars through the appropriate sequencing of work. For further information on how to develop an integrated plan, please see the Department publication, "Missouri Integrated Planning Framework," at http://dnr.mo.gov/pubs/pub2684.htm.

If the permittee can demonstrate that the proposed pollution controls result in substantial and widespread economic and social impact, the permittee may use Factor 6 of the Use Attainability Analysis (UAA) 40 CFR 131.10(g)(6) in the form of a variance. This process is completed by determining the treatment type with the highest attainable effluent quality that would not result in a socio-economic hardship. For more information on variance requests, please contact the Water Protection Program's Special Projects Coordinator at 573-751-9391.

(b) Allowing for reasonable accommodations for regulated entities when inflexible standards and fines would impose a disproportionate financial hardship in light of the environmental benefits to be gained.

- If available, connection to a larger centralized sewer system in the area may be more cost effective for the community. This can be incorporated into an integrated plan.
- An opportunity may exist for the relocation of the point of discharge to a receiving stream capable of a greater mixing zone.
- The permittee may apply for State Revolving Fund (SRF) financial support in order to help fund a Capital Improvements Plan. Other loans and grants also exist for which the facility may be eligible. Contact information for the Department's Financial Assistance Center (FAC) and more information can be found on the Department's website at http://dnr.mo.gov/env/wpp/srf/wastewater-assistance.htm.

Socioeconomic Data[4-8]: The following tables characterize the current overall socioeconomic condition of the community as compared to the overall socioeconomic condition of the State of Missouri. The following information was compiled using the latest U.S. Census data.

No.	Administrative Unit	Boone County	Missouri State
1	Population (2016)	172,773	6,059,651
2	Percent Change in Population (2000-2016)	27.6%	8.3%
3	2016 Median Household Income (in 2017 Dollars)	$51,658	$50,417
4	Percent Change in Median Household Income (2000-2016)	-2.5%	-5.9%
5	Median Age (2016)	30.3	38.3
6	Change in Median Age in Years (2000-2016)	0.8	2.2
7	Unemployment Rate (2016)	4.6%	6.6%
8	Percent of Population Below Poverty Level (2016)	19.3%	15.3%
9	Percent of Household Received Food Stamps (2016)	10.0%	13.0%

No.	Administrative Unit	Columbia City	Missouri State
1	Population (2016)	117,165	6,059,651
2	Percent Change in Population (2000-2016)	38.6%	8.3%
3	2016 Median Household Income (in 2017 Dollars)	$45,973	$50,417
4	Percent Change in Median Household Income (2000-2016)	-3.5%	-5.9%
5	Median Age (2016)	27.4	38.3
6	Change in Median Age in Years (2000-2016)	0.6	2.2
7	Unemployment Rate (2016)	4.2%	6.6%
8	Percent of Population Below Poverty Level (2016)	23.6%	15.3%
9	Percent of Household Received Food Stamps (2016)	10.0%	13.0%
10	(Primary) County Where the Community Is Located	Boone County	

(6) An assessment of other district investments and operating costs relating to environmental improvements and public health protection;

The District currently has approximately $28,650,000 in bonding capacity from three (3) prior bond elections. Of that total, $24,319,148 is already closed on previous or proposed projects, leaving $4,330,852 available for this project, and projects for Rollingwood Plat 1 WWTP, Brown Station WWTP, and Highfield WWTF projects. After those additional projects, the District will have approximately $757,477 remaining of bonding authority.

(7) An assessment of factors set forth in the United States Environmental Protection Agency's guidance, including but not limited to the "Combined Sewer Overflow Guidance for Financial Capability Assessment and Schedule Development" that may ease the cost burdens of implementing wet weather control plans, including but not limited to small system considerations, the attainability of water quality standards, and the development of wet weather standards;

The secondary indicators for consideration are not applicable for sewer districts as the indicators are structured for the financial capability of a municipality. The financial impact of the new requirements is determined using all available data for the sewer district.

(8) An assessment of any other relevant local economic conditions.

The District did not report any other relevant local economic conditions.

Conclusion and Finding

As a result of new regulations, the Department is proposing modifications to the current operating permit that would require the permittee to upgrade the facility. The permit also has new sampling requirements for *E. coli* upon the effective date of the final effluent limitations. However, the Department doesn't anticipate any new costs for sampling to be incurred by the District as the District has plans to eliminate the discharge by that date.

This determination is based on readily available data and may overestimate the financial impact on the community. The community's facility plan that is submitted as a part of the construction permit process includes a discussion of community details, what the community can afford, existing obligations, future growth potential, an evaluation of options available to the community with cost information, and a discussion on no-discharge alternatives. The cost information provided through the facility plan process, which is developed by the community and their engineer, is more comprehensive of the community's individual factors in relation to selected treatment technology and costing information.

References:

1. (A) 2016 MHI in 2016 Dollar: United States Census Bureau. 2012-2016 American Community Survey 5-Year Estimates, Table B19013: Median Household Income in the Past 12 Months (in 2016 Inflation-Adjusted Dollars). http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_16_5YR_B19013&prodType=table.
(B) 2000 MHI in 1999 Dollar: U.S. Census Bureau (2002) 2000 Census of Population and Housing, Summary Population and Housing Characteristics, PHC-1-27, Missouri, Table 2. Age and Sex: 2000, Washington, DC. http://www.census.gov/prod/cen2000/phc-2-27-pt1.pdf.
(C) 2017 CPI, 2016 CPI and 1999 CPI: For United States, United States Bureau of Labor Statistics (2017) Consumer Price Index - All Urban Consumers, United States City Average. All Items. 1982-84=100. http://data.bls.gov/timeseries/CUUR0000SA0?data_tool=Xgtable. For Missouri State: United States Bureau of Labor Statistics (2017) Consumer Price Index - All Urban Consumers, Midwest Urban Areas, All Items. 1982-84=100. http://data.bls.gov/timeseries/CUUR0200SA0?data_tool=Xgtable.
(D) 2016 MHI in 2017 Dollar: 2016 MHI in 2016 Dollar x 2017 CPI /2016 CPI; 2000 MHI in 2017 Dollar: 2000 MHI in 1999 Dollar x 2017 CPI /1999 CPI.
(E) Percent Change in Median Household Income (2000-2016) = (2016 MHI in 2017 Dollar - 2000 MHI in 2017 Dollar) / (2000 MHI in 2017 Dollar).
2. ($69.91/($51,658/12))100% = 1.6%
3. ($69.91/($45,973/12))100% = 1.8%
4. (A) Total Population in 2016: United States Census Bureau. 2012-2016 American Community Survey 5-Year Estimates, Table B01003: Total Population - Universe: Total Population. http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_16_5YR_B01003&prodType=table.
(B) Total Population in 2000: U.S. Census Bureau (2002) 2000 Census of Population and Housing, Summary Population and Housing Characteristics, PHC-1-27, Missouri, Table 2. Age and Sex: 2000, Washington, DC. http://www.census.gov/prod/cen2000/phc-2-27-pt1.pdf.
(C) Percent Change in Population (2000-2016) = (Total Population in 2016 - Total Population in 2000) / (Total Population in 2000).
5. (A) Median Age in 2016: United States Census Bureau. 2012-2016 American Community Survey 5-Year Estimates, Table B01002: Median Age by Sex - Universe: Total population. http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_16_5YR_B01002&prodType=table.
(B) Median Age in 2000: For United States, United States Census Bureau (2002) 2000 Census of Population and Housing, Summary Social, Economic, and Housing Characteristics, PHC-1-1 Part 1. United States Summary, Table 1. Age and Sex: 2000, Washington, DC., Page 2. https://www.census.gov/prod/cen2000/phc-1-1-pt1.pdf. For Missouri State, United States Census Bureau (2002) 2000 Census of Population and Housing, Summary Population and Housing Characteristics, PHC-1-27, Missouri, Table 2. Age and Sex: 2000, Washington, DC., Pages 64-92. http://www.census.gov/prod/cen2000/phc-2-27-pt1.pdf.
(C) Change in Median Age in Years (2000-2016) = (Median Age in 2016 - Median Age in 2000).
6. United States Census Bureau. 2012-2016 American Community Survey 5-Year Estimates, B23025: Employment Status for the Population 16 Years and Over - Universe: Population 16 years and Over. http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_16_5YR_B23025&prodType=table.
7. United States Census Bureau. 2012-2016 American Community Survey 5-Year Estimates, Table S1701: Poverty Status in the Past 12 Months. http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_16_5YR_S1701&prodType=table.
8. United States Census Bureau. 2012-2016 American Community Survey 5-Year Estimates, Table B22003: Receipt of Food Stamps/SNAP in the Past 12 Months by Poverty Status in the Past 12 Months for Households - Universe: Households. http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_16_5YR_B22003&prodType=table.

STANDARD CONDITIONS FOR NPDES PERMITS
ISSUED BY
THE MISSOURI DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION
REVISED
AUGUST 1, 2014

These Standard Conditions incorporate permit conditions as required by 40 CFR 122.41 or other applicable state statutes or regulations. These minimum conditions apply unless superseded by requirements specified in the permit.

Part I – General Conditions

Section A – Sampling, Monitoring, and Recording

1. **Sampling Requirements.**
   a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
   b. All samples shall be taken at the outfall(s) or Missouri Department of Natural Resources (Department) approved sampling location(s), and unless specified, before the effluent joins or is diluted by any other body of water or substance.

2. **Monitoring Requirements.**
   a. Records of monitoring information shall include:
      i. The date, exact place, and time of sampling or measurements;
      ii. The individual(s) who performed the sampling or measurements;
      iii. The date(s) analyses were performed;
      iv. The individual(s) who performed the analyses;
      v. The analytical techniques or methods used; and
      vi. The results of such analyses.
   b. If the permittee monitors any pollutant more frequently than required by the permit at the location specified in the permit using test procedures approved under 40 CFR Part 136, or another method required for an industry-specific waste stream under 40 CFR subchapters N or O, the results of such monitoring shall be included in the calculation and reported to the Department with the discharge monitoring report data (DMR) submitted to the Department pursuant to Section B, paragraph 7.

3. **Sample and Monitoring Calculations.** Calculations for all sample and monitoring results which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in the permit.

4. **Test Procedures**. The analytical and sampling methods used shall conform to the reference methods listed in 10 CSR 20-7.015 unless alternates are approved by the Department. The facility shall use sufficiently sensitive analytical methods for detecting, identifying, and measuring the concentrations of pollutants. The facility shall ensure that the selected methods are able to quantify the presence of pollutants in a given discharge at concentrations that are low enough to determine compliance with Water Quality Standards in 10 CSR 20-7.031 or effluent limitations unless provisions in the permit allow for other alternatives. A method is "sufficiently sensitive" when; 1) the method minimum level is at or below the level of the applicable water quality criterion for the pollutant or, 2) the method minimum level is above the applicable water quality criterion, but the amount of pollutant in a facility's discharge is high enough that the method detects and quantifies the level of pollutant in the discharge, or 3) the method has the lowest minimum level of the analytical methods approved under 10 CSR 20-7.015. These methods are also required for parameters that are listed as monitoring only, as the data collected may be used to determine if limitations need to be established. A permittee is responsible for working with their contractors to ensure that the analysis performed is sufficiently sensitive.

5. **Record Retention.** Except for records of monitoring information required by the permit related to the permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least five (5) years (or longer as required by 40 CFR part 503), 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 the permit, and records of all data used to complete the application for the 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 Department at any time.

6. **Illegal Activities.**
   a. The Federal Clean Water Act provides that 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 punished by a fine of not more than $10,000, or by imprisonment for not more than two (2) years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than four (4) years, or both.
   b. The Missouri Clean Water Law provides that any person or who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained pursuant to sections 644.006 to 644.141 shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than six (6) months, or by both. Second and successive convictions for violation under this paragraph by any person shall be punished by a fine of not more than $50,000 per day of violation, or by imprisonment for not more than two (2) years, or both.

Section B – Reporting Requirements

1. **Planned Changes.**
   a. The permittee shall give notice to the Department as soon as possible of any planned physical alterations or additions to the permitted facility when:
      i. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR 122.29(b); or
      ii. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under 40 CFR 122.42;
      iii. The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan;
      iv. Any facility expansions, production increases, or process modifications which will result in a new or substantially different discharge or sludge characteristics must be reported to the Department 60 days before the facility or process modification begins. Notification may be accomplished by application for a new permit. If the discharge does not violate effluent limitations specified in the permit, the facility is to submit a notice to the Department of the changed discharge at least 30 days before such changes. The Department may require a construction permit and/or permit modification as a result of the proposed changes at the facility.

2. **Non-compliance Reporting.**
   a. The permittee shall report any noncompliance which may endanger health or the environment. Relevant information shall be provided orally or via the current electronic method approved by the Department, within 24 hours from the time the permittee becomes aware of the circumstances, and shall be reported to the appropriate Regional Office during normal business hours or the Environmental Emergency Response hotline at 573-634-2436 outside of normal business hours. A written submission shall also be provided within five (5) business 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 reoccurrence of the noncompliance.

b. The following shall be included as information which must be reported within 24 hours under this paragraph.
   i. Any unanticipated bypass which exceeds any effluent limitation in the permit.
   ii. Any upset which exceeds any effluent limitation in the permit.
   iii. Violation of a maximum daily discharge limitation for any of the pollutants listed by the Department in the permit required to be reported within 24 hours.

c. The Department may waive the written report on a case-by-case basis for reports under paragraph 2. b. of this section if the oral report has been received within 24 hours.

3. **Anticipated Noncompliance**. The permittee shall give advance notice to the Department of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements. The notice shall be submitted to the Department 60 days prior to such changes or activity.

4. **Compliance Schedules.** Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of the permit shall be submitted no later than 14 days following each schedule date. The report shall provide an explanation for the instance of noncompliance and a proposed schedule or anticipated date, for achieving compliance with the compliance schedule requirement.

5. **Other Noncompliance.** The permittee shall report all instances of noncompliance not reported under paragraphs 2, 3, and 6 of this section, at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph 2. a. of this section.

6. **Other Information**. Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Department, it shall promptly submit such facts or information.

7. **Discharge Monitoring Reports.**
   a. Monitoring results shall be reported at the intervals specified in the permit.
   b. Monitoring results must be reported to the Department via the current method approved by the Department, unless the permittee has been granted a waiver from using the method. If the permittee has been granted a waiver, the permittee must use forms provided by the Department.
   c. Monitoring results shall be reported to the Department no later than the 28th day of the month following the end of the reporting period.

Section C – Bypass/Upset Requirements

1. **Definitions.**
   a. *Bypass*: the intentional diversion of waste streams from any portion of a treatment facility, except in the case of blending.
   b. *Severe Property Damage*: substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.
   c. *Upset*: an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

2. **Bypass Requirements.**
   a. Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs 2. b. and 2. c. of this section.
   b. Notice.
      i. Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least 10 days before the date of the bypass.
      ii. Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in Section B – Reporting Requirements, paragraph 5 (24-hour notice).
   c. Prohibition of bypass.
      i. Bypass is prohibited, and the Department may take enforcement action against a permittee for bypass, unless:
         1. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
         2. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
         3. The permittee submitted notices as required under paragraph 2. b. of this section.
      ii. The Department may approve an anticipated bypass, after considering its adverse effects, if the Department determines that it will meet the three (3) conditions listed above in paragraph 2. c. i. of this section.

3. **Upset Requirements.**
   a. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph 3. b. of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.
   b. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
      i. An upset occurred and that the permittee can identify the cause(s) of the upset;
      ii. The permitted facility was at the time being properly operated; and
      iii. The permittee submitted notice of the upset as required in Section B – Reporting Requirements, paragraph 2. b. ii. (24-hour notice).
      iv. The permittee complied with any remedial measures required under Section D – Administrative Requirements, paragraph 4.
   c. Burden of proof. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

Section D – Administrative Requirements

1. **Duty to Comply.** The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Missouri Clean Water Law and Federal Clean Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.
   a. The permittee shall comply with effluent standards or prohibitions established under section 307(a) of the Federal Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.
   b. The Federal Clean Water Act provides that any person who violates section 301, 302, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any such sections in a permit issued under section 402, or any requirement imposed in a pretreatment program approved under sections 402(a)(3) or 402(b)(8) of the Act, is subject to a civil penalty not to exceed $25,000 per day for each violation. The Federal Clean Water Act provides that any person who negligently violates sections 301, 302, 306, 307, 308, 318, or 405 of the Act, or any condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, or any requirement

imposed in a pretreatment program approved under section 402(a)(3) or 402(b)(8) of the Act, is subject to criminal penalties of $2,500 to $25,000 per day of violation, or imprisonment of not more than one (1) year, or both. In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than $50,000 per day of violation, or by imprisonment of not more than two (2) years, or both. Any person who knowingly violates such sections, or such conditions or limitations is subject to criminal penalties of $5,000 to $50,000 per day of violation, or imprisonment for not more than three (3) years, or both. In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than $100,000 per day of violation, or imprisonment of not more than six (6) years, or both. Any person who knowingly violates section 301, 302, 303, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, and who knows at that time that he thereby places another person in imminent danger of death or serious bodily injury, shall, upon conviction, be subject to a fine of not more than $250,000 or imprisonment of not more than 15 years, or both. In the case of a second or subsequent conviction for a knowing endangerment violation, a person shall be subject to a fine of not more than $500,000 or by imprisonment of not more than 30 years, or both. An organization, as defined in section 309(c)(3)(B)(iii) of the CWA, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than $1,000,000 and can be fined up to $2,000,000 for second or subsequent convictions.

c. Any person may be assessed an administrative penalty by the EPA Director for violating section 301, 302, 306, 307, 308, 318 or 405 of this Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of this Act. Administrative penalties for Class I violations are not to exceed $10,000 per violation, with the maximum amount of any Class I penalty assessed not to exceed $25,000. Penalties for Class II violations are not to exceed $10,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed $125,000.

d. It is unlawful for any person to cause or permit any discharge of water contaminants from any water contaminant or point source located in Missouri in violation of sections 644.006 to 644.141 of the Missouri Clean Water Law, or any standard, rule or regulation promulgated by the commission. In the event the commission or the director determines that any provision of sections 644.006 to 644.141 of the Missouri Clean Water Law or standard, rules, limitations or regulations promulgated pursuant thereto, or permits issued by, or any final abatement order, other order, or determination made by the commission or the director, or any filing requirement pursuant to sections 644.006 to 644.141 of the Missouri Clean Water Law or any other provision which this state is required to enforce pursuant to any federal water pollution control act, is being, was, or is in imminent danger of being violated, the commission or director may cause to have instituted a civil action in any court of competent jurisdiction for the injunctive relief to prevent any such violation or further violation or for the assessment of a penalty not to exceed $10,000 per day for each day, or part thereof, the violation occurred and continues to occur, or both, as the court deems proper. Any person who willfully or negligently commits any violation in this paragraph shall, upon conviction, be punished by a fine of not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment for not more than one year, or both. Second and successive convictions for violation of the same provision of this paragraph by any person shall be punished by a fine of not more than $50,000 per day of violation, or by imprisonment for not more than two (2) years, or both.

2. **Duty to Reapply.**
   a. If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit.
   b. A permittee with a currently effective site-specific permit shall submit an application for renewal at least 180 days before the expiration date of the existing permit, unless permission for a later date has been granted by the Department. (The Department shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)
   c. A permittees with currently effective general permit shall submit an application for renewal at least 30 days before the existing permit expires, unless the permittee has been notified by the Department that an earlier application must be made. The Department may grant permission for a later submission date. (The Department shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)

3. **Need to Halt or Reduce Activity Not a Defense.** It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

4. **Duty to Mitigate.** The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

5. **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 which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

6. **Permit Actions.**
   a. Subject to compliance with statutory requirements of the Law and Regulations and applicable Court Order, this permit may be modified, suspended, or revoked in whole or in part during its term for cause including, but not limited to, the following:
      i. Violations of any terms or conditions of this permit or the law;
      ii. Having obtained this permit by misrepresentation or failure to disclose fully any relevant facts;
      iii. A change in any circumstances or conditions that requires either a temporary or permanent reduction or elimination of the authorized discharge; or
      iv. Any reason set forth in the Law or Regulations.
   b. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

7. **Permit Transfer.**
   a. Subject to 10 CSR 20-6.010, an operating permit may be transferred upon submission to the Department of an application to transfer signed by the existing owner and the new owner, unless prohibited by the terms of the permit. Until such time the permit is officially transferred, the original permittee remains responsible for complying with the terms and conditions of the existing permit.
   b. The Department 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 the Missouri Clean Water Law or the Federal Clean Water Act.
   c. The Department, within 30 days of receipt of the application, shall notify the new permittee of its intent to revoke or reissue or transfer the permit.

8. **Toxic Pollutants.** The permittee shall comply with effluent standards or prohibitions established under section 307(a) of the Federal Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under section 405(d) of the Federal Clean Water Act within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.

9. **Property Rights.** This permit does not convey any property rights of any sort, or any exclusive privilege.

10. **Duty to Provide Information.** The permittee shall furnish to the Department, within a reasonable time, any information which the Department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The permittee shall also furnish to the Department upon request, copies of records required to be kept by this permit.

11. **Inspection and Entry.** The permittee shall allow the Department, or an authorized representative (including an authorized contractor acting as a representative of the Department), upon 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 must be kept under the conditions of the permit;
    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 permit compliance or as otherwise authorized by the Federal Clean Water Act or Missouri Clean Water Law, any substances or parameters at any location.

12. **Closure of Treatment Facilities.**
    a. Persons who cease operation or plan to cease operation of waste, wastewater, and sludge handling and treatment facilities shall close the facilities in accordance with a closure plan approved by the Department.
    b. Operating Permits under 10 CSR 20-6.010 or under 10 CSR 20-6.015 are required until all waste, wastewater, and sludges have been disposed of in accordance with the closure plan approved by the Department and any disturbed areas have been properly stabilized. Disturbed areas will be considered stabilized when perennial vegetation, pavement, or structures using permanent materials cover all areas that have been disturbed. Vegetative cover, if used, shall be at least 70% plant density over 100% of the disturbed area.

13. **Signatory Requirement.**
    a. All permit applications, reports required by the permit, or information requested by the Department shall be signed and certified. (See 40 CFR 122.22 and 10 CSR 20-6.010)
    b. The Federal Clean Water Act provides that 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 non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than six (6) months per violation, or by both.
    c. The Missouri Clean Water Law provides that any person who knowingly makes any false statement, representation or certification in any application, record, report, plan, or other document filed or required to be maintained pursuant to sections 644.006 to 644.141 shall, upon conviction, be punished by a fine of not more than ten thousand dollars, or by imprisonment for not more than six months, or by both.

14. **Severability.** The provisions of the permit are severable, and if any provision of the permit, or the application of any provision of the permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of the permit, shall not be affected thereby.

STANDARD CONDITIONS FOR NPDES PERMITS
ISSUED BY
THE MISSOURI DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION
REVISED
MAY 1, 2013

PART II - SPECIAL CONDITIONS – PUBLICLY OWNED TREATMENT WORKS
SECTION A – INDUSTRIAL USERS

1. Definitions

Definitions as set forth in the Missouri Clean Water Laws and approved by the Missouri Clean Water Commission shall apply to terms used herein.

Significant Industrial User (SIU). Except as provided in the *General Pretreatment Regulation* 10 CSR 20-6.100, the term Significant Industrial User means:

1. All Industrial Users subject to Categorical Pretreatment Standards; and
2. Any other Industrial User that: discharges an average of 25,000 gallons per day or more of process wastewater to the Publicly-Owned Treatment Works (POTW) (excluding sanitary, noncontact cooling and boiler blowdown wastewater); contributes a process wastestream which makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority on the basis that the Industrial User has a reasonable potential for adversely affecting the POTW's or for violating any Pretreatment Standard or requirement.

Clean Water Act (CWA) is the the federal Clean Water Act of 1972, 33 U.S.C. § 1251 et seq. (2002).

2. Identification of Industrial Discharges

Pursuant to 40 CFR 122.44(j)(1), all POTWs shall identify, in terms of character and volume of pollutants, any Significant Industrial Users discharging to the POTW subject to Pretreatment Standards under section 307(b) of the CWA and 40 CFR 403.

3. Application Information

Applications for renewal or modification of this permit must contain the information about industrial discharges to the POTW pursuant to 40 CFR 122.21(j)(6)

4. Notice to the Department

Pursuant to 40 CFR 122.42(b), all POTWs must provide adequate notice of the following:

1. Any new introduction of pollutants into the POTW from an indirect discharger which would be subject to section 301 or 306 of CWA if it were directly discharging these pollutants; and
2. Any substantial change into the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.
3. For purposes of this paragraph, adequate notice shall include information on:
   i. the quality and quantity of effluent introduced into the POTW, and
   ii. any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

For POTWs without an approved pretreatment program, the notice of industrial discharges which was not included in the permit application shall be made as soon as practicable. For POTWs with an approved pretreatment program, notice is to be included in the annual pretreatment report required in the special conditions of this permit. Notice may be sent to:

Missouri Department of Natural Resources
Water Protection Program
Attn: Pretreatment Coordinator
P.O. Box 176
Jefferson City, MO 65102

STANDARD CONDITIONS FOR NPDES PERMITS
ISSUED BY
THE MISSOURI DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION
March 1, 2015

PART III – SLUDGE AND BIOSOLIDS FROM DOMESTIC AND INDUSTRIAL WASTEWATER TREATMENT FACILITIES

SECTION A – GENERAL REQUIREMENTS

1. This permit pertains to sludge requirements under the Missouri Clean Water Law and regulation for domestic wastewater and industrial process wastewater. This permit also incorporates applicable federal sludge disposal requirements under 40 CFR 503 for domestic wastewater. The Environmental Protection Agency (EPA) has principal authority for permitting and enforcement of the federal sludge regulations under 40 CFR 503 for domestic wastewater. EPA has reviewed and accepted these standard sludge conditions. EPA may choose to issue a separate sludge addendum to this permit or a separate federal sludge permit at their discretion to further address the federal requirements.
2. These PART III Standard Conditions apply only to sludge and biosolids generated at domestic wastewater treatment facilities, including public owned treatment works (POTW), privately owned facilities and sludge or biosolids generated at industrial facilities.
3. Sludge and Biosolids Use and Disposal Practices:
    a. The permittee is authorized to operate the sludge and biosolids treatment, storage, use, and disposal facilities listed in the facility description of this permit.
    b. The permittee shall not exceed the design sludge volume listed in the facility description and shall not use sludge disposal methods that are not listed in the facility description, without prior approval of the permitting authority.
    c. The permittee is authorized to operate the storage, treatment or generating sites listed in the Facility Description section of this permit.
4. Sludge Received from other Facilities:
    a. Permittees may accept domestic wastewater sludge from other facilities including septic tank pumpings from residential sources as long as the design sludge volume is not exceeded and the treatment facility performance is not impaired.
    b. The permittee shall obtain a signed statement from the sludge generator or hauler that certifies the type and source of the sludge
5. These permit requirements do not supersede nor remove liability for compliance with county and other local ordinances.
6. These permit requirements do not supersede nor remove liability for compliance with other environmental regulations such as odor emissions under the Missouri Air Pollution Control Law and regulations.
7. This permit may (after due process) be modified, or alternatively revoked and reissued, to comply with any applicable sludge disposal standard or limitation issued or approved under Section 405(d) of the Clean Water Actor under Chapter 644 RSMo.
8. In addition to STANDARD CONDITIONS, the Department may include sludge limitations in the special conditions portion or other sections of a site specific permit.
9. Alternate Limits in the Site Specific Permit.
   Where deemed appropriate, the Department may require an individual site specific permit in order to authorize alternate limitations:
    a. A site specific permit must be obtained for each operating location, including application sites.
    b. To request a site specific permit, an individual permit application, permit fee, and supporting documents shall be submitted for each operating location. This shall include a detailed sludge/biosolids management plan or engineering report.
10. Exceptions to these Standard Conditions may be authorized on a case-by-case basis by the Department, as follows:
    a. The Department will prepare a permit modification and follow permit notice provisions as applicable under 10 CSR 20-6.020, 40 CFR 124.10, and 40 CFR 501.15(a)(2)(ix)(E). This includes notification of the owner of the property located adjacent to each land application site, where appropriate.
    b. Exceptions cannot be granted where prohibited by the federal sludge regulations under 40 CFR 503.

SECTION B – DEFINITIONS

1. Best Management Practices include agronomic loading rates, soil conservation practices and other site restrictions.
2. Biosolids means organic fertilizer or soil amendment produced by the treatment of domestic wastewater sludge.
3. Biosolids land application facility is a facility where biosolids are spread onto the land at agronomic rates for production of food or fiber. The facility includes any structures necessary to store the biosolids until soil, weather, and crop conditions are favorable for land application.
4. Class A biosolids means a material that has met the Class A pathogen reduction requirements or equivalent treatment by a Process to Further Reduce Pathogens (PFRP) in accordance with 40 CFR 503.
5. Class B biosolids means a material that has met the Class B pathogen reduction requirements or equivalent treatment by a Process to Significantly Reduce Pathogens (PFRP) in accordance with 40 CFR 503.
6. Domestic wastewater means wastewater originating from the sanitary conveniences of residences, commercial buildings, factories and institutions; or co-mingled sanitary and industrial wastewater processed by a (POTW) or a privately owned facility.
7. Industrial wastewater means any wastewater, also known as process water, not defined as domestic wastewater. Per 40 CFR Part 122, process water means any water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product.
8. Mechanical treatment plants are wastewater treatment facilities that use mechanical devices to treat wastewater, including septic tanks, sand filters, extended aeration, activated sludge, contact stabilization, trickling filters, rotating biological discs, and other similar facilities. It does not include wastewater treatment lagoons and constructed wetlands for wastewater treatment.
9. Operating location as defined in 10 CSR 20-2.010 is all contiguous lands owned, operated or controlled by one (1) person or by two (2) or more persons jointly or as tenants in common.
10. Plant Available Nitrogen (PAN) is the nitrogen that will be available to plants during the growing seasons after biosolids application.
11. Public contact site is land with a high potential for contact by the public. This includes, but is not limited to, public parks, ball fields, cemeteries, plant nurseries, turf farms, and golf courses.
12. Sludge is the solid, semisolid, or liquid residue removed during the treatment of wastewater. Sludge includes septage removed from septic tanks or equivalent facilities. Sludge does not include carbon coal byproducts (CCBs)
13. Sludge lagoon is part of a mechanical wastewater treatment facility. A sludge lagoon is an earthen basin that receives sludge that has been removed from a wastewater treatment facility. It does not include a wastewater treatment lagoon or sludge treatment units that are not a part of a mechanical wastewater treatment facility.
14. Septage is the material pumped from residential septic tanks and similar treatment works (with a design population of less than 150 people). The standard for biosolids from septage is different from other sludges.

SECTION C – MECHANICAL WASTEWATER TREATMENT FACILITIES

1. Sludge shall be routinely removed from wastewater treatment facilities and handled according to the permit facility description and sludge conditions of this permit.
2. The permittee shall operate the facility so that there is no sludge discharged to waters of the state.
3. Mechanical treatment plants shall have separate sludge storage compartments in accordance with 10 CSR 20, Chapter 8. Failure to remove sludge from these storage compartments on the required design schedule is a violation of this permit.

SECTION D – SLUDGE DISPOSED AT OTHER TREATMENT FACILITY OR CONTRACT HAULER

1. This section applies to permittees that haul sludge to another treatment facility for disposal or use contract haulers to remove and dispose of sludge.
2. Permittees that use contract haulers are responsible for compliance with all the terms of this permit including final disposal, unless the hauler has a separate permit for sludge or biosolids disposal issued by the Department; or the hauler transports the sludge to another permitted treatment facility.
3. Haulers who land apply septage must obtain a state permit.
4. Testing of sludge, other than total solids content, is not required if sludge is hauled to a municipal wastewater treatment facility or other permitted wastewater treatment facility, unless it is required by the accepting facility.

SECTION E – INCINERATION OF SLUDGE

1. Sludge incineration facilities shall comply with the requirements of 40 CFR 503 Subpart E; air pollution control regulations under 10 CSR 10; and solid waste management regulations under 10 CSR 80.
2. Permittee may be authorized under the facility description of this permit to store incineration ash in lagoons or ash ponds. This permit does not authorize the disposal of incineration ash. Incineration ash shall be disposed in accordance with 10 CSR 80; or if the ash is determined to be hazardous with 10 CSR 25.
3. In addition to normal sludge monitoring, incineration facilities shall report the following as part of the annual report, quantity of sludge incinerated, quantity of ash generated, quantity of ash stored, and ash used or disposal method, quantity, and location. Permittee shall also provide the name of the disposal facility and the applicable permit number.

SECTION F – SURFACE DISPOSAL SITES AND SLUDGE LAGOONS

1. Surface disposal sites of domestic facilities shall comply with the requirements in 40 CFR 503 Subpart C; air pollution control regulations under 10 CSR 10; and solid waste management regulations under 10 CSR 80.
2. Sludge storage lagoons are temporary facilities and are not required to obtain a permit as a solid waste management facility under 10 CSR 80. In order to maintain sludge storage lagoons as storage facilities, accumulated sludge must be removed routinely, but not less than once every two years unless an alternate schedule is approved in the permit. The amount of sludge removed will be dependent on sludge generation and accumulation in the facility. Enough sludge must be removed to maintain adequate storage capacity in the facility.
    a. In order to avoid damage to the lagoon seal during cleaning, the permittee may leave a layer of sludge on the bottom of the lagoon, upon prior approval of the Department; or
    b. Permittee shall close the lagoon in accordance with Section H.

SECTION G – LAND APPLICATION

1. The permittee shall not land apply sludge or biosolids unless land application is authorized in the facility description or the special conditions of the issued NPDES permit.
2. Land application sites within a 20 miles radius of the wastewater treatment facility are authorized under this permit when biosolids are applied for beneficial use in accordance with these standard conditions unless otherwise specified in a site specific permit. If the permittee's land application site is greater than a 20 mile radius of the wastewater treatment facility, approval must be granted from the Department.
3. Land application shall not adversely affect a threatened or endangered species or its designated critical habitat.
4. Biosolids shall not be applied unless authorized in this permit or exempted under 10 CSR 20, Chapter 6.
    a. This permit does not authorize the land application of domestic sludge except for when sludge meets the definition of biosolids.
    b. This permit authorizes "Class A or B" biosolids derived from domestic wastewater and/or process water sludge to be land applied onto grass land, crop land, timber or other similar agricultural or silviculture lands at rates suitable for beneficial use as organic fertilizer and soil conditioner.
5. Public Contact Sites:

    Permittees who wish to apply Class A biosolids to public contact sites must obtain approval from the Department after two years of proper operation with acceptable testing documentation that shows the biosolids meet Class A criteria. A shorter length of testing will be allowed with prior approval from the Department. Authorization for land applications must be provided in the special conditions section of this permit or in a separate site specific permit.
    a. After Class B biosolids have been land applied, public access must be restricted for 12 months.
    b. Class B biosolids are only land applied to root crops, home gardens or vegetable crops whose edible parts will not be for human consumption.
6. Agricultural and Silvicultural Sites:

    Septage – Based on Water Quality guide 422 (WQ422) published by the University of Missouri
    a. Haulers that land apply septage must obtain a state permit
    b. Do not apply more than 30,000 gallons of septage per acre per year.
    c. Septage tanks are designed to retain sludge for one to three years which will allow for a larger reduction in pathogens and vectors, as compared to other mechanical type treatment facilities.
    d. To meet Class B sludge requirements, maintain septage at 12 pH for at least thirty (30) minutes before land application. 50 pounds of hydrated lime shall be added to each 1,000 gallons of septage in order to meet pathogen and vector stabilization for septage biosolids applied to crops, pastures or timberland.
    e. Lime is to be added to the pump truck and not directly to the septic tanks, as lime would harm the beneficial bacteria of the septic tank.

Biosolids - Based on Water Quality guide 423, 424, and 425 (WQ423, WQ424, WQ425) published by the University of Missouri;

a. Biosolids shall be monitored to determine the quality for regulated pollutants
b. The number of samples taken is directly related to the amount of sludge produced by the facility (See Section I of these Standard Conditions). Report as dry weight unless otherwise specified in the site specific permit. Samples should be taken only during land application periods. When necessary, it is permissible to mix biosolids with lower concentrations of biosolids as well as other suitable Department approved material to reach the maximum concentration of pollutants allowed.
c. Table 1 gives the maximum concentration allowable to protect water quality standards

TABLE 1

Biosolids ceiling concentration [1]	
Pollutant	Milligrams per kilogram dry weight
Arsenic	75
Cadmium	85
Copper	4,300
Lead	840
Mercury	57
Molybdenum	75
Nickel	420
Selenium	100
Zinc	7,500

[1] Land application is not allowed if the sludge concentration exceeds the maximum limits for any of these pollutants

d. The low metal concentration biosolids has reduced requirements because of its higher quality and can safely be applied for 100 years or longer at typical agronomic loading rates. (See Table 2)

TABLE 2

Biosolids Low Metal Concentration [1]	
Pollutant	Milligrams per kilogram dry weight
Arsenic	41
Cadmium	39
Copper	1,500
Lead	300
Mercury	17
Nickel	420
Selenium	36
Zinc	2,800

[1] You may apply low metal biosolids without tracking cumulative metal limits, provided the cumulative application of biosolids does not exceed 500 dry tons per acre.

e. Each pollutant in Table 3 has an annual and a total cumulative loading limit, based on the allowable pounds per acre for various soil categories.

TABLE 3

Pollutant	CEC 15+		CEC 5 to 15		CEC 0 to 5	
	Annual	Total [1]	Annual	Total [1]	Annual	Total [1]
Arsenic	1.8	36.0	1.8	36.0	1.8	36.0
Cadmium	1.7	35.0	0.9	9.0	0.4	4.5
Copper	66.0	1,335.0	25.0	250.0	12.0	125.0
Lead	13.0	267.0	13.0	267.0	13.0	133.0
Mercury	0.7	15.0	0.7	15.0	0.7	15.0
Nickel	19.0	347.0	19.0	250.0	12.0	125.0
Selenium	4.5	89.0	4.5	44.0	1.6	16.0
Zinc	124.0	2,492.0	50.0	500.0	25.0	250.0

[1] Total cumulative loading limits for soils with equal or greater than 6.0 pH (salt based test) or 6.5 pH (water based test)

TABLE 4 - Guidelines for land application of other trace substances [1]

Cumulative Loading	
Pollutant	Pounds per acre
Aluminum	4,000[2]
Beryllium	100
Cobalt	50
Fluoride	800
Manganese	500
Silver	200
Tin	1,000
Dioxin	(10 ppt in soil)[3]
Other	[4]

[1] Design of land treatment systems for Industrial Waste, 1979. Michael Ray Overcash, North Carolina State University and Land Treatment of Municipal Wastewater, EPA 1981.)

[2] This applies for a soil with a pH between 6.0 and 7.0 (salt based test) or a pH between 6.5 to 7.5 (water based test). Case-by-case review is required for higher pH soils.

[3] Total Dioxin Toxicity Equivalents (TEQ) in soils, based on a risk assessment under 40 CFR 744, May 1998.

[4] Case by case review. Concentrations in sludge should not exceed the 95th percentile of the National Sewage Sludge Survey, EPA, January 2009.

Best Management Practices – Based on Water Quality guide 426 (WQ426) published by the University of Missouri

a. Use best management practices when applying biosolids.
b. Biosolids cannot discharge from the land application site
c. Biosolid application is subject to the Missouri Department of Agriculture State Milk Board concerning grazing restrictions of lactating dairy cattle.
d. Biosolid application must be in accordance with section 4 of the Endangered Species Act.
e. Do not apply more than the agronomic rate of nitrogen needed.
f. The applicator must document the Plant Available Nitrogen (PAN) loadings, available nitrogen in the soil, and crop removal when either of the following occurs: 1) When biosolids are greater than 50,000 mg/kg TN; or 2) When biosolids are land applied at an application rate greater than two dry tons per acre per year.
    i. PAN can be determined as follows and is in accordance with WQ426
    (Nitrate + nitrite nitrogen) + (organic nitrogen x 0.2) + (ammonia nitrogen x volatilization factor[1]).
    [1] Volatilization factor is 0.7 for surface application and 1 for subsurface application.
g. Buffer zones are as follows:
    i. 300 feet of a water supply well, sinkhole, lake, pond, water supply reservoir or water supply intake in a stream;
    ii. 300 feet of a losing stream, no discharge stream, stream stretches designated for whole body contact recreation, wild and scenic rivers, Ozark National Scenic Riverways or outstanding state resource waters as listed in the Water Quality Standards, 10 CSR 20-7.031;
    iii. 150 feet if dwellings;
    iv. 100 feet of wetlands or permanent flowing streams;
    v. 50 feet of a property line or other waters of the state, including intermittent flowing streams.
h. Slope limitation for application sites are as follows;
    i. A slope 0 to 6 percent has no rate limitation
    ii. Applied to a slope 7 to 12 percent, the applicator may apply biosolids when soil conservation practices are used to meet the minimum erosion levels
    iii. Slopes > 12 percent, apply biosolids only when grass is vegetated and maintained with at least 80 percent ground cover at a rate of two dry tons per acre per year or less.
i. No biosolids may be land applied in an area that it is reasonably certain that pollutants will be transported into waters of the state.
j. Do not apply biosolids to sites with soil that is snow covered, frozen or saturated with liquid without prior approval by the Department.
k. Biosolids / sludge applicators must keep detailed records up to five years.

SECTION H – CLOSURE REQUIREMENTS

1. This section applies to all wastewater facilities (mechanical, industrial, and lagoons) and sludge or biosolids storage and treatment facilities and incineration ash ponds. It does not apply to land application sites.
2. Permittees of a domestic wastewater facility who plan to cease operation must obtain Department approval of a closure plan which addresses proper removal and disposal of all residues, including sludge, biosolids. Mechanical plants, sludge lagoons, ash ponds and other storage structures must obtain approval of a closure plan from the Department. Permittee must maintain this permit until the facility is closed in accordance with the approved closure plan per 10 CSR 20 – 6. 010 and 10 CSR 20 – 6.015.
3. Residuals that are left in place during closure of a lagoon or earthen structure or ash pond shall not exceed the agricultural loading rates as follows:
    a. Residuals shall meet the monitoring and land application limits for agricultural rates as referenced in Section H of these standard conditions.
    b. If a wastewater treatment lagoon has been in operation for 15 years or more without sludge removal, the sludge in the lagoon qualifies as a Class B biosolids with respect to pathogens due to anaerobic digestion, and testing for fecal coliform is not required. For other lagoons, testing for fecal coliform is required to show compliance with Class B biosolids limitations. In order to reach Class B biosolids requirements, fecal coliform must be less than 2,000,000 colony forming units or 2,000,000 most probable number. All fecal samples must be presented as geometric mean per gram.
    c. The allowable nitrogen loading that may be left in the lagoon shall be based on the plant available nitrogen (PAN) loading. For a grass cover crop, the allowable PAN is 300 pounds/acre.
        i. PAN can be determined as follows:

        (Nitrate + nitrite nitrogen) + (organic nitrogen x 0.2) + (ammonia nitrogen x volatilization factor[1]).

        [1] Volatilization factor is 0.7 for surface application and 1 for subsurface application.
4. When closing a domestic wastewater treatment lagoon with a design treatment capacity equal or less than 150 persons, the residuals are considered "septage" under the similar treatment works definition. See Section B of these standard conditions. Under the septage category, residuals may be left in place as follows:
    a. Testing for metals or fecal coliform is not required
    b. If the wastewater treatment lagoon has been in use for less than 15 years, mix lime with the sludge at a rate of 50 pounds of hydrated lime per 1000 gallons (134 cubic feet) of sludge.
    c. The amount of sludge that may be left in the lagoon shall be based on the plant available nitrogen (PAN) loading. 100 dry tons/acre of sludge may be left in the basin without testing for nitrogen. If 100 dry tons/acre or more will be left in the lagoon, test for nitrogen and determine the PAN using the calculation above. Allowable PAN loading is 300 pounds/acre.
5. Residuals left within the domestic lagoon shall be mixed with soil on at least a 1 to 1 ratio, the lagoon berm shall be demolished, and the site shall be graded and contain ≥70% vegetative density over 100% of the site so as to avoid ponding of storm water and provide adequate surface water drainage without creating erosion.
6. Lagoons and/or earthen structure and/or ash pond closure activities shall obtain a storm water permit for land disturbance activities that equal or exceed one acre in accordance with 10 CSR 20-6.200
7. When closing a mechanical wastewater and/or industrial process wastewater plant; all sludge must be cleaned out and disposed of in accordance with the Department approved closure plan before the permit for the facility can be terminated.
    a. Land must be stabilized which includes any grading, alternate use or fate upon approval by the Department, remediation, or other work that exposes sediment to stormwater per 10 CSR 20-6.200. The site shall be graded and contain ≥70% vegetative density over 100% of the site, so as to avoid ponding of storm water and provide adequate surface water drainage without creating erosion.
    b. Per 10 CSR 20-6.015(4)(B)6, Hazardous Waste shall not be land applied or disposed during industrial and mechanical plant closures unless in accordance with Missouri Hazardous Waste Management Law and Regulations under 10 CSR 25.
    c. After demolition of the mechanical plant / industrial plant, the site must only contain clean fill defined in RSMo 260.200 (5) as uncontaminated soil, rock, sand, gravel, concrete, asphaltic concrete, cinderblocks, brick, minimal amounts of wood and metal, and inert solids as approved by rule or policy of the Department for fill or other beneficial use. Other solid wastes must be removed.
8. If sludge from the domestic lagoon or mechanical treatment plant exceeds agricultural rates under Section G and/or H, a landfill permit or solid waste disposal permit must be obtained if the permittee chooses to seek authorization for on-site sludge disposal under the Missouri Solid Waste Management Law and regulations per 10 CSR 80, and the permittee must comply with the surface disposal requirements under 40 CFR 503, Subpart C.

SECTION I – MONITORING FREQUENCY

1. At a minimum, sludge or biosolids shall be tested for volume and percent total solids on a frequency that will accurately represent sludge quantities produced and disposed. Please see the table below.

TABLE 5

Design Sludge Production (dry tons per year)	Monitoring Frequency (See Notes 1, 2, and 3)			
	Metals, Pathogens and Vectors	Nitrogen TKN [1]	Nitrogen PAN [2]	Priority Pollutants and TCLP [3]
0 to 100	1 per year	1 per year	1 per month	1 per year
101 to 200	biannual	biannual	1 per month	1 per year
201 to 1,000	quarterly	quarterly	1 per month	1 per year
1,001 to 10,000	1 per month	1 per month	1 per week	--[4]
10,001 +	1 per week	1 per week	1 per day	--[4]

[1] Test total Kjeldahl nitrogen, if biosolids application is 2 dry tons per acre per year or less.
[2] Calculate plant available nitrogen (PAN) when either of the following occurs: 1) when biosolids are greater than 50,000 mg/kg TN; or 2) when biosolids are land applied at an application rate greater than two dry tons per acre per year.
[3] Priority pollutants (40 CFR 122.21, Appendix D, Tables II and III) and toxicity characteristic leaching procedure (40 CFR 261.24) is required only for permit holders that must have a pre-treatment program.
[4] One sample for each 1,000 dry tons of sludge.

Note 1: Total solids: A grab sample of sludge shall be tested one per day during land application periods for percent total solids. This data shall be used to calculate the dry tons of sludge applied per acre.
Note 2: Total Phosphorus: Total phosphorus and total potassium shall be tested at the same monitoring frequency as metals.
Note 3: Table 5 is not applicable for incineration and permit holders that landfill their sludge.

2. If you own a wastewater treatment lagoon or sludge lagoon that is cleaned out once a year or less, you may choose to sample only when the sludge is removed or the lagoon is closed. Test one composite sample for each 100 dry tons of sludge or biosolids removed from the lagoon during the year within the lagoon at closing. Composite sample must represent various areas at one-foot depth.
3. Additional testing may be required in the special conditions or other sections of the permit. Permittees receiving industrial wastewater may be required to conduct additional testing upon request from the Department.
4. At this time. the Department recommends monitoring requirements shall be performed in accordance with, "POTW Sludge Sampling and Analysis Guidance Document," United States Environmental Protection Agency, August 1989, and the subsequent revisions.

SECTION J – RECORD KEEPING AND REPORTING REQUIREMENTS

1. The permittee shall maintain records on file at the facility for at least five years for the items listed in these standard conditions and any additional items in the Special Conditions section of this permit. This shall include dates when the sludge facility is checked for proper operation, records of maintenance and repairs and other relevant information.
2. Reporting period
    a. By January 28th of each year, an annual report shall be submitted for the previous calendar year period for all mechanical wastewater treatment facilities, sludge lagoons, and sludge or biosolids disposal facilities.
    b. Permittees with wastewater treatment lagoons shall submit the above annual report only when sludge or biosolids are removed from the lagoon during the report period or when the lagoon is closed.
3. Report Forms. The annual report shall be submitted on report forms provided by the Department or equivalent forms approved by the Department.
4. Reports shall be submitted as follows:

Major facilities (those serving 10,000 persons or 1 million gallons per day) shall report to both the Department and EPA. Other facilities need to report only to the Department. Reports shall be submitted to the addresses listed as follows:

DNR regional office listed in your permit
(see cover letter of permit)
ATTN: Sludge Coordinator

EPA Region VII
Water Compliance Branch (WACM)
Sludge Coordinator
11201 Renner Blvd.
Lenexa, KS 66219

5. Annual report contents. The annual report shall include the following:
    a. Sludge and biosolids testing performed. Include a copy or summary of all test results, even if not required by the permit.
    b. Sludge or biosolids quantity shall be reported as dry tons for quantity generated by the wastewater treatment facility, the quantity stored on site at the end of the year, and the quantity used or disposed.
    c. Gallons and % solids data used to calculate the dry ton amounts.
    d. Description of any unusual operating conditions.
    e. Final disposal method, dates, and location, and person responsible for hauling and disposal.
        i. This must include the name, address for the hauler and sludge facility. If hauled to a municipal wastewater treatment facility, sanitary landfill, or other approved treatment facility, give the name of that facility.
        ii. Include a description of the type of hauling equipment used and the capacity in tons, gallons, or cubic feet.
    f. Contract Hauler Activities:
    If contract hauler, provide a copy of a signed contract from the contractor. Permittee shall require the contractor to supply information required under this permit for which the contractor is responsible. The permittee shall submit a signed statement from the contractor that he has complied with the standards contained in this permit, unless the contract hauler has a separate sludge or biosolids use permit.
    g. Land Application Sites:
        i. Report the location of each application site, the annual and cumulative dry tons/acre for each site, and the landowners name and address. The location for each spreading site shall be given as a legal description for nearest ¼, ¼, Section, Township, Range, and county, or UTM coordinates. The facility shall report PAN when either of the following occurs: 1) When biosolids are greater than 50,000 mg/kg TN; or 2) when biosolids are land applied at an application rate greater than two dry tons per acre per year.
        ii. If the "Low Metals" criteria are exceeded, report the annual and cumulative pollutant loading rates in pounds per acre for each applicable pollutant, and report the percent of cumulative pollutant loading which has been reached at each site.
        iii. Report the method used for compliance with pathogen and vector attraction requirements.
        iv. Report soil test results for pH, CEC, and phosphorus. If none was tested during the year, report the last date when tested and results.

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM
FORM B: APPLICATION FOR AN OPERATING PERMIT FOR DOMESTIC OR MUNICIPAL WASTEWATER (≤100,000 gallons per day)

AP18334

FOR AGENCY USE ONLY	
CHECK NUMBER	
DATE RECEIVED	FEE SUBMITTED
5/12/14	

PLEASE READ THE ACCOMPANYING INSTRUCTIONS BEFORE COMPLETING THIS FORM

1. THIS APPLICATION IS FOR:

☐ An operating permit for a new (including antidegradation review) or unpermitted facility. Construction Permit # ____

☑ An operating permit renewal: Permit #MO- MO-0115185 Expiration Date 3/31/2015

☐ An operating permit modification: Permit #MO- _____ Reason: ____

1.1 Is the appropriate fee included with the application (see instructions for appropriate fee)? ☐ YES ☑ NO

1.2 Is a facility description included with this application (see 7.1)? ☑ YES ☐ NO

2. FACILITY

NAME		TELEPHONE NUMBER WITH AREA CODE	
BCRSD Richardson Acres		(573) 443-2774	
ADDRESS (PHYSICAL)	CITY	STATE	ZIP CODE
Flamingo Road and Rt B	Columbia	MO	65201

OUTFALL NUMBER
For multiple outfalls, this is number 001 of one

Estimated (actual) flow: 3,200 gpd, Design Average Flow: 8,510 gpd, Design Peak Hourly Flow: gph

2.1 Legal description: SE ¼, SW ¼, SW ¼, Sec. 50 , T 49 , R 12W County Boone

2.2 UTM Coordinates Easting (X): 563991 Northing (Y): 4324561

For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)

2.3 Name of receiving stream: unnamed tributary Clays Fork

3. OWNER

NAME	E-MAIL ADDRESS	TELEPHONE NUMBER WITH AREA CODE	
Boone County Regional Sewer District	dcooksey@bcrsd.com	(573) 441-0098	
ADDRESS	CITY	STATE	ZIP CODE
1314 North 7th street	Columbia	Mo.	65201

3.1 Request review of draft permit prior to public notice? ☑ YES ☐ NO

4. CONTINUING AUTHORITY: Permanent organization that will serve as the continuing authority for the operation, maintenance and modernization of the facility.

NAME	E-MAIL ADDRESS	TELEPHONE NUMBER WITH AREA CODE	
Boone County Regional Sewer District	dcooksey@bcrsd.com	(573) 441-0098	
ADDRESS	CITY	STATE	ZIP CODE
1314 North 7th street	Columbia	Mo	65201

5. OPERATOR

NAME	CERTIFICATE NUMBER
Dwayne Cooksey	1249
E-MAIL ADDRESS	TELEPHONE NUMBER WITH AREA CODE
dcooksey@bcrsd.com	5734410098

6. FACILITY CONTACT

NAME	TITLE
Dwayne Cooksey	Operations Manager
E-MAIL ADDRESS	TELEPHONE NUMBER WITH AREA CODE
dcooksey@bcrsd.com	5734410098

7. DESCRIPTION OF FACILITY

7.1 Describe the facility (attach additional sheet if required) and attach a flow chart showing the influents, treatment facilities and outfalls.

Extended Aeration/sludge hauled to another facility, Designed PE is 250, Designed flow is 8,510 gpd, actual flow is 3,200 gpd and designed sludge production is 1.3 dry tons/year

7.2 Attach an aerial photograph or USGS topographic map showing the location of the facility and outfall.

7.3 Design flow for this outfall: 8,510 Total design flow for the facility: 8,510 Actual flow for this outfall: 3,200 GPD

7.4 Number of people presently connected or population equivalent (P.E.): 22 Design P.E.: 85

7.5 Does the facility accept or process leachate from landfills? ☐Yes ☑ No

11. SLUDGE HANDLING, USE AND DISPOSAL

11.1 Is the sludge a hazardous waste as defined by 10 CSR 25? ☐ Yes ☑ No

Sludge production, including sludge received from others: _____ Design Dry Tons/Year _____ Actual Dry Tons/Year

11.3 Capacity of sludge holding structures:

Sludge storage provided: _____ cubic feet; _____ days of storage; _____ average percent solids of sludge;

☐ No sludge storage is provided.

Type of Storage:

☐ Basin ☐ Holding tank ☐ Building ☐ Other (Please describe) _____ ☐ Concrete Pad

Sludge Treatment:

☐ Anaerobic Digester ☐ Lagoon ☐ Composting
☐ Storage Tank ☐ Aerobic Digester ☐ Other (Attach description)
☐ Lime Stabilization ☐ Air or Heat Drying

Sludge Use or Disposal:

☐ Land Application ☐ Surface Disposal (Sludge Disposal Lagoon, Sludge held for more than two years)
☐ Contract Hauler ☐ Incineration
☐ Hauled to Another ☐ Sludge Retained in Wastewater treatment lagoon
Treatment Facility ☑ Other _____ Attach explanation sheet.
☐ Solid Waste Landfill

Person responsible for hauling sludge to disposal facility

☑ By Applicant ☐ By Others (complete below)

NAME	E-MAIL ADDRESS		
ADDRESS	**CITY**	**STATE**	**ZIP CODE**
CONTACT PERSON	**TELEPHONE NUMBER WITH AREA CODE**	**PERMIT NO.**	
		MO-	

Sludge use or disposal facility

☐ By applicant ☑ By others (Please complete below.)

NAME	E-MAIL ADDRESS		
City of Columbia			
ADDRESS	**CITY**	**STATE**	**ZIP CODE**
POB N	Columbia	MO	65202
CONTACT PERSON	**TELEPHONE NUMBER WITH AREA CODE**	**PERMIT NO.**	
Dave Sorrel	(573) 874-6286	MO- 0097837	

Does the sludge or biosolids disposal comply with federal sludge regulations under 40 CFR 503?

■ Yes ☐ No (Please explain)

12. DOWNSTREAM LANDOWNERS - ATTACH ADDITIONAL SHEETS AS NECESSARY. SEE INSTRUCTIONS.

NAME			
Allen Richardson			
ADDRESS	**CITY**	**STATE**	**ZIP CODE**
10051 N. Rt B	Hallsville	MO	65255

13. CERTIFICATION

I certify that I am familiar with the information contained in the application, that to the best of my knowledge and belief such information is true, complete and accurate, and if granted this permit, I agree to abide by the Missouri Clean Water Law and all rules, regulations, orders and decisions, subject to any legitimate appeal available to applicant under the Missouri Clean Water Law.

NAME AND OFFICIAL TITLE (TYPE OR PRINT)	TELEPHONE NUMBER WITH AREA CODE
Dwayne Cooksey Operations Manager	(573) 441-0098
SIGNATURE	**DATE SIGNED**
Dwayne Cooksey	5/9/2018

Boone County Aerial Photo Information Viewer

X Zoom to Neighborhood...

X Zoom to Location..

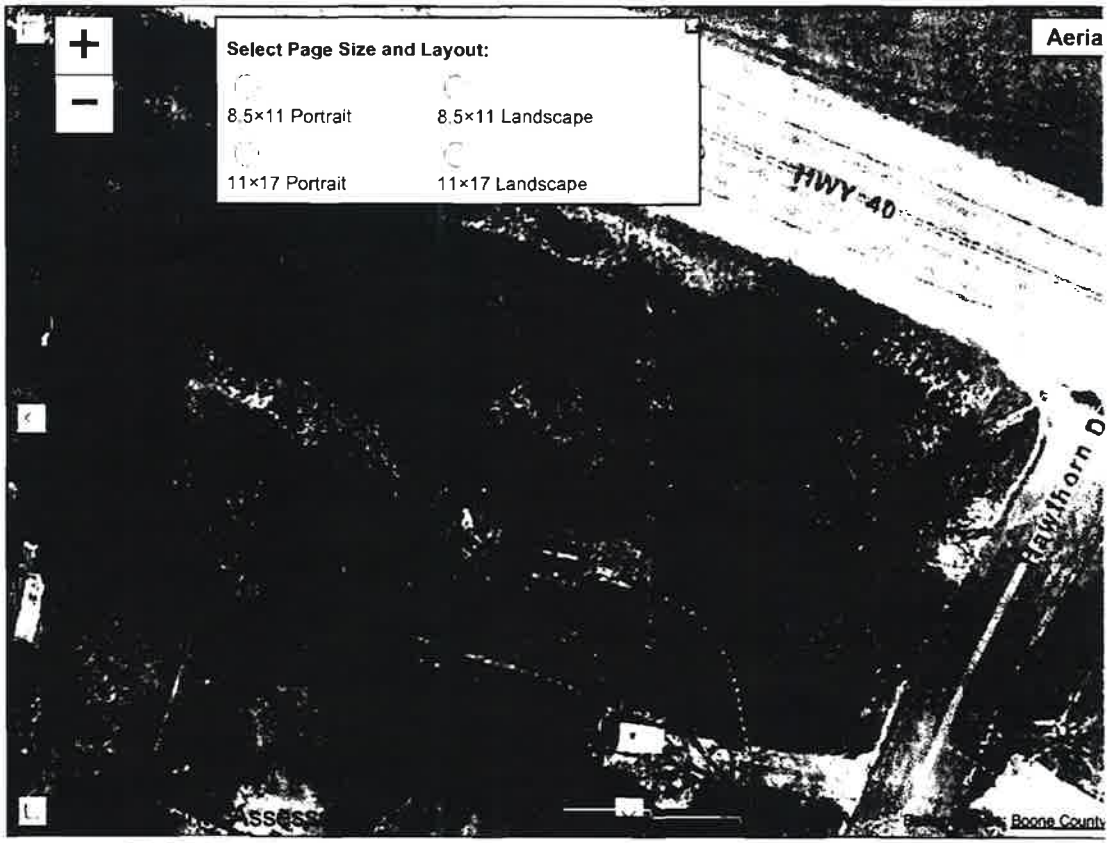
Welcome to the Boone County Aerial Photo Viewer. With this viewer you are able to zoom and pan the seamless aerial photos for Boone County, MO. First time users, please click here for instructions or click here for map navigation help.

Aerial Photo Source: Boone County, Ortho-rectified Digital Imagery, 2011, 2007, 2002, and historic aerial photos from 1994 to 1939

Please send us your comments and suggestions regarding this new mapping application. E-mail GIS

ATTENTION!!

These maps were prepared for the inventory of real property based on the utilization of deeds, plans, and/or supportive data. In addition, map files are frequently changed to reflect changes in boundaries, lot lines and other geographic features resulting from changes in ownership, development, and other causes. The existence, dimension, and location of features, as well as other information, should not be relied upon for any purpose without actual field verification. The County of Boone makes no warranty of any kind concerning the completeness or accuracy of information contained on these maps and assumes no liability or responsibility for the use or reuse of these maps by persons not affiliated with Boone County. Use of these maps by any person not affiliated with Boone County constitutes agreement by the user to assume full liability and responsibility for the verification of the accuracy of information shown on these maps.



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STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

MISSOURI CLEAN WATER COMMISSION

MISSOURI STATE OPERATING PERMIT

In compliance with the Missouri Clean Water Law, (Chapter 644 R.S. Mo. as amended, hereinafter, the Law), and the Federal Water Pollution Control Act (Public Law 92-500, 92nd Congress) as amended,

Permit No.	MO-0135305
Owner:	Boone County Regional Sewer District (BCRSD)
Address:	1314 N. 7th Street, Columbia, MO 65201
Continuing Authority:	Same as above
Address:	Same as above
Facility Name:	BCRSD Brown Station WWTP
Facility Address:	0.1 miles north of N. Brown Station Rd & O'Rear Rd intersection, Columbia, MO 65204
Legal Description:	Sec. 10, T49N, R12W, Boone County
UTM Coordinates:	X=563817, Y=4322532
Receiving Stream:	Tributary to Clays Fork
First Classified Stream and ID:	8-20-13 MUDD V1.0 (C) (3960)
USGS Basin & Sub-watershed No.:	(10300102-0706)

is authorized to discharge from the facility described herein, in accordance with the effluent limitations and monitoring requirements as set forth herein:

FACILITY DESCRIPTION

Outfall #001 – POTW – SIC #4952
STEP system / recirculating sand filter / sludge hauled to another treatment facility by owner
Design population equivalent is 19.
Design flow is 1,850 gallons per day.
Actual flow is 1,600 gallons per day.
Design sludge production is 0.37 dry tons/year.

This permit authorizes only wastewater discharges under the Missouri Clean Water Law and the National Pollutant Discharge Elimination System; it does not apply to other regulated areas. This permit may be appealed in accordance with Section 621.250 RSMo, Section 640.013 RSMo and Section 644.051.6 of the Law.

November 1, 2018
Effective Date

Edward B. Galbraith, Director, Division of Environmental Quality

March 31, 2020
Expiration Date

Chris Wieberg, Director, Water Protection Program

OUTFALL #001	TABLE A-1. INTERIM EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The interim effluent limitations shall become effective on **November 1, 2018** and remain in effect through **October 31, 2025**. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

EFFLUENT PARAMETER(S)	UNITS	INTERIM EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Flow	MGD	*		*	once/quarter***	24 hr. estimate
Biochemical Oxygen Demand$_5$	mg/L		45	30	once/quarter***	grab
Total Suspended Solids	mg/L		45	30	once/quarter***	grab
Ammonia as N (Apr 1 – Sep 30) (Oct 1 – Mar 31)	mg/L	4.8 11.9		1.7 3.0	once/ quarter***	grab
MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE JANUARY 28, 2019. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
EFFLUENT PARAMETER(S)	UNITS	MINIMUM		MAXIMUM	MEASUREMENT FREQUENCY	SAMPLE TYPE
pH – Units **	SU	6.5		9.0	once/quarter***	grab
MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE JANUARY 28, 2019.						
EFFLUENT PARAMETER(S)		UNITS	MONTHLY AVERAGE MINIMUM		MEASUREMENT FREQUENCY	SAMPLE TYPE
Biochemical Oxygen Demand$_5$ – Percent Removal (Note 2, Page 4)		%	85		once/year	calculated
Total Suspended Solids – Percent Removal (Note 2, Page 4)		%	85		once/year	calculated
MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY; THE FIRST REPORT IS DUE JANUARY 28, 2019.						

* Monitoring requirement only.
** pH is measured in pH units and is not to be averaged.
*** See table below for quarterly sampling requirements.

Quarterly Minimum Sampling Requirements			
Quarter	**Months**	**All Parameters**	**Report is Due**
First	January, February, March	Sample at least once during any month of the quarter	April 28th
Second	April, May, June	Sample at least once during any month of the quarter	July 28th
Third	July, August, September	Sample at least once during any month of the quarter	October 28th
Fourth	October, November & December	Sample at least once during any month of the quarter	January 28th

OUTFALL #001	TABLE A-2. FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective on **November 1, 2025** and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Flow	MGD	*		*	once/ quarter***	24 hr. estimate
Biochemical Oxygen Demand$_5$	mg/L		45	30	once/quarter***	grab
Total Suspended Solids	mg/L		45	30	once/ quarter***	grab
E. coli (Note 1, Page 4)	#/100mL		1,030	206	once/ quarter***	grab
Ammonia as N (Apr 1 – Sep 30) (Oct 1 – Mar 31)	mg/L	 4.8 11.9		 1.3 2.6	once/ quarter***	grab

MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE JANUARY 28, 2026. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

EFFLUENT PARAMETER(S)	UNITS	MINIMUM		MAXIMUM	MEASUREMENT FREQUENCY	SAMPLE TYPE
pH – Units **	SU	6.5		9.0	once/ quarter***	grab

MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE JANUARY 28, 2026.

EFFLUENT PARAMETER(S)	UNITS	MONTHLY AVERAGE MINIMUM	MEASUREMENT FREQUENCY	SAMPLE TYPE
Biochemical Oxygen Demand$_5$ – Percent Removal (Note 2, Page 4)	%	85	once/year	calculated
Total Suspended Solids – Percent Removal (Note 2, Page 4)	%	85	once/year	calculated

MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY; THE FIRST REPORT IS DUE JANUARY 28, 2026.

* Monitoring requirement only.
** pH is measured in pH units and is not to be averaged.
*** See table below for quarterly sampling requirements.

Quarterly Minimum Sampling Requirements

Quarter	Months	*E. coli*	All Other Parameters	Report is Due
First	January, February, March	Not required to sample.	Sample at least once during any month of the quarter	April 28th
Second	April, May, June	Sample at least once during any month of the quarter	Sample at least once during any month of the quarter	July 28th
Third	July, August, September	Sample at least once during any month of the quarter	Sample at least once during any month of the quarter	October 28th
Fourth	October	**Sample once during October**	Sample at least once during any month of the quarter	January 28th
	November & December	Not required to sample.		

Note 1 - Effluent limitations and monitoring requirements for *E. coli* are applicable only during the recreational season from April 1 through October 31. The Monthly Average Limit for *E. coli* is expressed as a geometric mean. The Weekly Average for *E. coli* will be expressed as a geometric mean if more than one (1) sample is collected during a calendar week (Sunday through Saturday).

Note 2 – Influent sampling is not required when the facility does not discharge effluent during the reporting period. Samples are to be collected prior to any treatment process. Percent removal is calculated by the following formula: [(Influent –Effluent) / Influent] x 100% = Percent Removal. The Monthly Average Minimum Percent removal is to be reported as the average of all daily calculated removal efficiencies. Influent samples are to be collected as a grab sample.

B. SCHEDULE OF COMPLIANCE

The facility shall attain compliance with final effluent limitations as soon as reasonably achievable or no later than **7 years** of the effective date of this permit.

1. Within six months of the effective date of this permit, the permittee shall report progress made in attaining compliance with the final effluent limits.

2. The permittee shall submit interim progress reports detailing progress made in attaining compliance with the final effluent limits every 12 months from effective date.

3. Within **7 years** of the effective date of this permit, the permittee shall attain compliance with the final effluent limits.

Please submit progress reports to the Missouri Department of Natural Resources via the Electronic Discharge Monitoring Report (eDMR) Submission System

C. STANDARD CONDITIONS

In addition to specified conditions stated herein, this permit is subject to the attached Parts I, II, & III standard conditions dated August 1, 2014, May 1, 2013, and March 1, 2015, and hereby incorporated as though fully set forth herein.

D. SPECIAL CONDITIONS

1. The full implementation of this operating permit, which includes implementation of any applicable schedules of compliance, shall constitute compliance with all applicable federal and state statutes and regulations in accordance with §644.051.16, RSMo, and the Clean Water Act (CWA) section 402(k); however, this permit may be reopened and modified, or alternatively revoked and reissued:
   (a) To comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a)(2) of the CWA, if the effluent standard or limitation so issued or approved:
      (1) contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
      (2) controls any pollutant not limited in the permit.
   (b) To incorporate an approved pretreatment program pursuant to 40 CFR 403.8(a).

2. All outfalls must be clearly marked in the field.

3. Permittee will cease discharge by connection to a facility with an area-wide management plan per 10 CSR 20-6.010(3)(B) within 90 days of notice of its availability.

4. Report as no-discharge when a discharge does not occur during the report period.

5. Changes in existing pollutants or the addition of new pollutants to the treatment facility

   The permittee must provide adequate notice to the Director of the following:
   (a) Any new introduction of pollutants into the POTW from an indirect discharger which would be subject to section 301 or 306 of CWA if it were directly discharging those pollutants; and
   (b) Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.
   (c) For purposes of this paragraph, adequate notice shall include information on;
      (1) the quality and quantity of effluent introduced into the POTW, and
      (2) any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

D. SPECIAL CONDITIONS (continued)

6. Reporting of Non-Detects:
   (a) An analysis conducted by the permittee or their contracted laboratory shall be conducted in such a way that the precision and accuracy of the analyzed result can be enumerated.
   (b) The permittee shall not report a sample result as "Non-Detect" without also reporting the detection limit of the test. Reporting as "Non Detect" without also including the detection limit will be considered failure to report, which is a violation of this permit.
   (c) The permittee shall provide the "Non-Detect" sample result using the less than sign and the minimum detection limit (e.g. <10).
   (d) Where the permit contains a Minimum Level (ML) and the permittee is granted authority in the permit to report zero in lieu of the < ML for a specified parameter (conventional, priority pollutants, metals, etc.), then zero (0) is to be reported for that parameter.
   (e) See Standard Conditions Part I, Section A, #4 regarding proper detection limits used for sample analysis.
   (f) When calculating monthly averages, one-half of the method detection limit (MDL) should be used instead of a zero. Where all data are below the MDL, the "<MDL" shall be reported as indicated in item (c).

7. It is a violation of the Missouri Clean Water Law to fail to pay fees associated with this permit (644.055 RSMo).

8. The permittee shall develop and implement a program for maintenance and repair of the collection system. The recommended guidance is the US EPA's Guide For Evaluating Capacity, Management, Operation, And Maintenance (CMOM) Programs At Sanitary Sewer Collection Systems (Document number EPA 305-B-05-002) or the Departments' CMOM Model located at http://dnr.mo.gov/env/wpp/permits/docs/cmom-template.doc. For additional information regarding the Departments' CMOM Model, see the CMOM Plan Model Guidance document at http://dnr.mo.gov/pubs/pub2574.htm.

   The permittee shall also submit a report via the Electronic Discharge Monitoring Report (eDMR) Submission System annually, by January 28th, for the previous calendar year. The report shall contain the following information:
   (a) A summary of the efforts to locate and eliminate sources of excessive infiltration and inflow into the collection system serving the facility for the previous year.
   (b) A summary of the general maintenance and repairs to the collection system serving the facility for the previous year.
   (c) A summary of any planned maintenance and repairs to the collection system serving the facility for the upcoming calendar year. This list shall include locations (GPS, 911 address, manhole number, etc.) and actions to be taken.

9. Bypasses are not authorized at this facility unless they meet the criteria in 40 CFR 122.41(m). If a bypass occurs, the permittee shall report in accordance to 40 CFR 122.41(m)(3), and with Standard Condition Part I, Section B, subsection 2.b. Bypasses are to be reported to the Northeast Regional Office during normal business hours or by using the online Sanitary Sewer Overflow/Facility Bypass Application located at: http://dnr.mo.gov/modnrcag/ or the Environmental Emergency Response hotline at 573-634-2436 outside of normal business hours. Once an electronic reporting system compliant with 40 CFR Part 127, the National Pollutant Discharge Elimination System (NPDES) Electronic Reporting Rule, is available all bypasses must be reported electronically via the new system. Blending, which is the practice of combining a partially-treated wastewater process stream with a fully-treated wastewater process stream prior to discharge, is not considered a form of bypass. If the permittee wishes to utilize blending, the permittee shall file an application to modify this permit to facilitate the inclusion of appropriate monitoring conditions.

10. The facility must be sufficiently secured to restrict entry by children, livestock and unauthorized persons as well as to protect the facility from vandalism.

11. At least one gate must be provided to access the wastewater treatment facility and provide for maintenance and mowing. The gate shall remain closed except when temporarily opened by; the permittee to access the facility, perform operational monitoring, sampling, maintenance, mowing, or for inspections by the Department. The gate shall be closed and locked when the facility is not staffed.

D. SPECIAL CONDITIONS (continued)

12. At least one (1) warning sign shall be placed on each side of the facility enclosure in such positions as to be clearly visible from all directions of approach. There shall also be one (1) sign placed for every five hundred feet (500') (150 m) of the perimeter fence. A sign shall also be placed on each gate. Minimum wording shall be SEWAGE TREATMENT FACILITY—KEEP OUT. Signs shall be made of durable materials with characters at least two inches (2") high and shall be securely fastened to the fence, equipment or other suitable locations.

13. An Operation and Maintenance (O & M) manual shall be maintained by the permittee and made available to the operator. The O & M manual shall include key operating procedures and a brief summary of the operation of the facility.

14. An all-weather access road shall be provided to the treatment facility.

15. The discharge from the wastewater treatment facility shall be conveyed to the receiving stream via a closed pipe or a paved or rip-rapped open channel. Sheet or meandering drainage is not acceptable. The outfall sewer shall be protected against the effects of floodwater, ice or other hazards as to reasonably insure its structural stability and freedom from stoppage. The outfall shall be maintained so that a sample of the effluent can be obtained at a point after the final treatment process and before the discharge mixes with the receiving waters.

16. The media in the filter beds shall be properly maintained to prevent surface pooling, vegetative growth, and accumulation of leaf litter.

17. Electronic Discharge Monitoring Report (eDMR) Submission System.
    (a) Discharge Monitoring Reporting Requirements. The permittee must electronically submit compliance monitoring data via the eDMR system. In regards to Standard Conditions Part I, Section B, #7, the eDMR system is currently the only Department approved reporting method for this permit.
    (b) Programmatic Reporting Requirements. The following reports (if required by this permit) must be electronically submitted as an attachment to the eDMR system until such a time when the current or a new system is available to allow direct input of the data:
        (1) Collection System Maintenance Annual Reports;
        (2) Sludge/Biosolids Annual Reports; and
        (3) Any additional report required by the permit excluding bypass reporting.

        After such a system has been made available by the department, required data shall be directly input into the system by the next report due date.
    (c) Other actions. The following shall be submitted electronically after such a system has been made available by the department:
        (1) Notices of Intent to discharge (NOIs);
        (2) Notices of Termination (NOTs); and
        (3) Bypass reporting, See Special Condition #9 for 24-hr. bypass reporting requirements.
    (d) Electronic Submissions. To access the eDMR system, use the following link in your web browser: https://edmr.dnr.mo.gov/edmr/E2/Shared/Pages/Main/Login.aspx.
    (e) Waivers from Electronic Reporting. The permittee must electronically submit compliance monitoring data and reports unless a waiver is granted by the department in compliance with 40 CFR Part 127. The permittee may obtain an electronic reporting waiver by first submitting an eDMR Waiver Request Form: http://dnr.mo.gov/forms/780-2692-f.pdf. The department will either approve or deny this electronic reporting waiver request within 120 calendar days. Only permittees with an approved waiver request may submit monitoring data and reports on paper to the Department for the period that the approved electronic reporting waiver is effective.

MISSOURI DEPARTMENT OF NATURAL RESOURCES
FACT SHEET
FOR THE PURPOSE OF RENEWAL
OF
MO-0135305
BCRSD BROWN STATION WWTP

The Federal Water Pollution Control Act ("Clean Water Act" Section 402 Public Law 92-500 as amended) established the National Pollutant Discharge Elimination System (NPDES) permit program. This program regulates the discharge of pollutants from point sources into the waters of the United States, and the release of stormwater from certain point sources. All such discharges are unlawful without a permit (Section 301 of the "Clean Water Act"). After a permit is obtained, a discharge not in compliance with all permit terms and conditions is unlawful. Missouri State Operating Permits (MSOPs) are issued by the Director of the Missouri Department of Natural Resources (Department) under an approved program, operating in accordance with federal and state laws (Federal "Clean Water Act" and "Missouri Clean Water Law" Section 644 as amended). MSOPs are issued for a period of five (5) years unless otherwise specified.

As per [40 CFR Part 124.8(a)] and [10 CSR 20-6.020(1)(A)2.] a Factsheet shall be prepared to give pertinent information regarding the applicable regulations, rationale for the development of effluent limitations and conditions, and the public participation process for the Missouri State Operating Permit (operating permit) listed below.

A Factsheet is not an enforceable part of an operating permit.

This Factsheet is for a Minor.

Part I – Facility Information

Facility Type: POTW - SIC #4952

Facility Description: STEP system / recirculating sand filter / sludge hauled to another treatment facility by owner

Have any changes occurred at this facility or in the receiving water body that effects effluent limit derivation?
☒ - Yes; The Tributary to Clay Fork (C) (3960) is now classified as EPA has approved the Department's new stream classifications. A schedule of compliance has been included in the permit to meet final effluent limitations for *E. coli* which are protective of the WBC - B use designation of the stream.
☐ - No.

Application Date: 06/26/2015
Expiration Date: 03/10/2016

OUTFALL(S) TABLE:

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	EFFLUENT TYPE
#001	0.003	Secondary	Domestic

Facility Performance History:
The facility failed to meet final effluent limitations for Ammonia on the 2nd Quarter and 4th Quarter 2011, 2nd Quarter 2012, and 4th Quarter 2013 Discharge Monitoring Reports (DMRs). This facility was last inspected on May 13, 2015. The inspection showed the following unsatisfactory features; failed to provide sufficient gravel covering for media and distributers.

Comments:
Changes in this permit include the addition of *E. coli* limitations. See Part VI of the Fact Sheet for further information regarding the addition and removal of effluent parameters. Special conditions were updated to include the addition of inflow and infiltration reporting requirements, reporting of Non-detects, and bypass reporting requirements.

Part II – Operator Certification Requirements

☐ - This facility is required to have a certified operator.

☒ - This facility is not required to have a certified operator.

Part III– Operational Monitoring

☒ - As per [10 CSR 20-9.010(4))], the facility is not required to conduct operational monitoring.

☐ - As per [10 CSR 20-9.010(4))], the facility is required to conduct operational monitoring.

Part IV – Receiving Stream Information

RECEIVING STREAM(S) TABLE: OUTFALL #001

WATER-BODY NAME	CLASS	WBID	DESIGNATED USES*	12-DIGIT HUC	DISTANCE TO CLASSIFIED SEGMENT (MI)
Tributary to Clays Fork	NA	NA	General Criteria	10300102-0706	0.25
Tributary to Clays Fork (8-20-13 MUDD V1.0)	C	3960	AQL, WBC-B, SCR, HHP, IRR, LWW		

*As per 10 CSR 20-7.031 Missouri Water Quality Standards, the department defines the Clean Water Commission's water quality objectives in terms of "water uses to be maintained and the criteria to protect those uses." The receiving stream and 1st classified receiving stream's beneficial water uses to be maintained are in the receiving stream table in accordance with [10 CSR 20-7.031(1)(C)].

Uses which may be found in the receiving streams table, above:

10 CSR 20-7.031(1)(C)1.:
AQL = Protection of aquatic life (Current narrative use(s) are defined to ensure the protection and propagation of fish shellfish and wildlife, which is further subcategorized as: WWH = Warm Water Habitat; **CDF** = Cold-water fishery (Current narrative use is cold-water habitat.); **CLF** = Cool-water fishery (Current narrative use is cool-water habitat); EAH = Ephemeral Aquatic Habitat; MAH = Modified Aquatic Habitat; LAH = Limited Aquatic Habitat. This permit uses AQL effluent limitations in 10 CSR 20-7.031 Table A for all habitat designations unless otherwise specified.)

10 CSR 20-7.031(1)(C)2.: Recreation in and on the water
WBC = Whole Body Contact recreation where the entire body is capable of being submerged;
WBC-A = Whole body contact recreation that supports swimming uses and has public access;
WBC-B = Whole body contact recreation that supports swimming;
SCR = Secondary Contact Recreation (like fishing, wading, and boating).

10 CSR 20-7.031(1)(C)3. to 7.:
HHP (formerly HHF) = Human Health Protection as it relates to the consumption of fish;
IRR = Irrigation for use on crops utilized for human or livestock consumption;
LWW = Livestock and wildlife watering (Current narrative use is defined as LWP = Livestock and Wildlife Protection);
DWS = Drinking Water Supply;
IND = Industrial water supply

10 CSR 20-7.031(1)(C)8-11.: Wetlands (10 CSR 20-7.031 Table A currently does not have corresponding habitat use criteria for these defined uses)
WSA = Storm- and flood-water storage and attenuation; WHP = Habitat for resident and migratory wildlife species; WRC = Recreational, cultural, educational, scientific, and natural aesthetic values and uses; WHC = Hydrologic cycle maintenance.

10 CSR 20-7.031(6): **GRW** = Groundwater

RECEIVING STREAM(S) LOW-FLOW VALUES:

RECEIVING STREAM (C, E, P, P1)	LOW-FLOW VALUES (CFS)		
	1Q10	7Q10	30Q10
Tributary to Clays Fork	NA	NA	NA

MIXING CONSIDERATIONS

Mixing Zone: Not Allowed [10 CSR 20-7.031(5)(A)4.B.(I)(a)].
Zone of Initial Dilution: Not Allowed [10 CSR 20-7.031(5)(A)4.B.(I)(b)].

RECEIVING STREAM MONITORING REQUIREMENTS:
No receiving water monitoring requirements recommended at this time.

Receiving Water Body's Water Quality: No stream survey has been conducted on the receiving stream.

Part V – Rationale and Derivation of Effluent Limitations & Permit Conditions

ALTERNATIVE EVALUATIONS FOR NEW FACILITIES:
As per [10 CSR 20-7.015(4)(A)], discharges to losing streams shall be permitted only after other alternatives including land application, discharges to a gaining stream and connection to a regional wastewater treatment facility have been evaluated and determined to be unacceptable for environmental and/or economic reasons.

☐ - The facility discharges to a Losing Stream as defined by [10 CSR 20-2.010(36)] & [10 CSR 20-7.031(1)(N)], or is an existing facility, and has submitted an alternative evaluation.

☒ - The facility does not discharge to a Losing Stream as defined by [10 CSR 20-2.010(36)] & [10 CSR 20-7.031(1)(N)], or is an existing facility.

ANTI-BACKSLIDING:
A provision in the Federal Regulations [CWA §303(d)(4); CWA §402(o); 40 CFR Part 122.44(l)] that requires a reissued permit to be as stringent as the previous permit with some exceptions.

☐ - All limits in this operating permit are at least as protective as those previously established; therefore, backsliding does not apply.

☒ - Limitations in this operating permit for the reissuance of this permit conform to the anti-backsliding provisions of Section 402(o) of the Clean Water Act, and 40 CFR Part 122.44.

☒ - Information is available which was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and which would have justified the application of a less stringent effluent limitation at the time of permit issuance.

- Effluent limitations were re-calculated for Ammonia based new information derived from discharge monitoring reports and on the current Missouri Water Quality Standards for Ammonia. The newly established limitations are still protective of water quality.

☒ - The Department determines that technical mistakes or mistaken interpretations of law were made in issuing the permit under section 402(a)(1)(b).

- **General Criteria**. The previous permit contained a special condition which described a specific set of prohibitions related to general criteria found in 10 CSR 20-7.031(4). In order to comply with 40 CFR 122.44(d)(1), the permit writer has conducted reasonable potential determinations for each general criterion and established numeric effluent limitations where reasonable potential exists. While the removal of the previous permit special condition creates the appearance of backsliding, since this permit establishes numeric limitations where reasonable potential to cause or contribute to an excursion of the general criteria exists the permit maintains sufficient effluent limitations and monitoring requirements in order to protect water quality, this permit is equally protective as compared to the previous permit. Therefore, given this new information, and the fact that the previous permit special condition was not consistent with 40 CFR 122.44(d)(1), an error occurred in the establishment of the general criteria as a special condition of the previous permit. Please see Part VII – Effluent Limits Determination for more information regarding the reasonable potential determinations for each general criterion related to this facility.

ANTIDEGRADATION:
In accordance with Missouri's Water Quality Standard [10 CSR 20-7.031(3)], for domestic wastewater discharge with new, altered, or expanding discharges, the Department is to document by means of Antidegradation Review that the use of a water body's available assimilative capacity is justified. In accordance with Missouri's water quality regulations for antidegradation [10 CSR 20-7.031(3)], degradation may be justified by documenting the socio-economic importance of a discharge after determining the necessity of the discharge. Facilities must submit the antidegradation review request to the department prior to establishing, altering, or expanding discharges. See http://dnr.mo.gov/env/wpp/permits/antideg-implementation.htm

☒ - No degradation proposed and no further review necessary. Facility did not apply for authorization to increase pollutant loading or to add additional pollutants to their discharge.

☐ - This permit contains new and/or expanded discharge, please see **APPENDIX FOR ANTIDEGRADATION ANALYSIS.**

AREA-WIDE WASTE TREATMENT MANAGEMENT & CONTINUING AUTHORITY:
As per [10 CSR 20-6.010(3)(B)], …An applicant may utilize a lower preference continuing authority by submitting, as part of the application, a statement waiving preferential status from each existing higher preference authority, providing the waiver does not conflict with any area-wide management plan approved under section 208 of the Federal Clean Water Act or any other regional sewage service and treatment plan approved for higher preference authority by the Department.

BIOSOLIDS & SEWAGE SLUDGE:
Biosolids are solid materials resulting from domestic wastewater treatment that meet federal and state criteria for beneficial uses (i.e. fertilizer). Sewage sludge is solids, semi-solids, or liquid residue generated during the treatment of domestic sewage in a treatment works; including but not limited to, domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment process; and a material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator or grit and screening generated during preliminary treatment of domestic sewage in a treatment works. Additional information regarding biosolids and sludge is located at the following web address: http://extension.missouri.edu/main/DisplayCategory.aspx?C=74, items WQ422 through WQ449.

☐ - Permittee has and a Department approved biosolids management plan, and is authorized to land applies biosolids in accordance with Standard Conditions III.

☒ - Permittee is not authorized to land apply biosolids. Sludge/biosolids are hauled to another treatment facility by owner

COMPLIANCE AND ENFORCEMENT:
Enforcement is the action taken by the Water Protection Program (WPP) to bring an entity into compliance with the Missouri Clean Water Law, its implementing regulations, and/or any terms and conditions of an operating permit. The primary purpose of the enforcement activity in the WPP is to resolve violations and return the entity to compliance.

☐ - The facility is currently under enforcement action.

☒ - The facility is not currently under Water Protection Program enforcement action.

ELECTRONIC DISCHARGE MONITORING REPORT (EDMR) SUBMISSION SYSTEM:
The U.S. Environmental Protection Agency (EPA) promulgated a final rule on October 22, 2015, to modernize Clean Water Act reporting for municipalities, industries, and other facilities by converting to an electronic data reporting system. This final rule requires regulated entities and state and federal regulators to use information technology to electronically report data required by the National Pollutant Discharge Elimination System (NPDES) permit program instead of filing paper reports. To comply with the federal rule, the Department is requiring all permittees to begin submitting discharge monitoring data and reports online.

Per 40 CFR 127.15 and 127.24, permitted facilities may request a temporary waiver for up to 5 years or a permanent waiver from electronic reporting from the Department. To obtain an electronic reporting waiver, a permittee must first submit an eDMR Waiver Request Form: http://dnr.mo.gov/forms/780-2692-f.pdf. A request must be made for each facility. If more than one facility is owned or operated by a single entity, then the entity must submit a separate request for each facility based on its specific circumstances. An approved waiver is non-transferable.

The Department must review and notify the facility within 120 calendar days of receipt if the waiver request has been approved or rejected [40 CFR 124.27(a)]. During the Department review period as well as after a waiver is granted, the facility must continue submitting a hard-copy of any reports required by their permit. The Department will enter data submitted in hard-copy from those facilities allowed to do so and electronically submit the data to the EPA on behalf of the facility.

☒ - The permittee/facility is currently using the eDMR data reporting system.

☐ - The facility has obtained a Department approved waiver from reporting electronically.

PRETREATMENT PROGRAM:
The reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater prior to or in lieu of discharging or otherwise introducing such pollutants into a Publicly Owned Treatment Works [40 CFR Part 403.3(q)].

☐ - This permittee has an approved pretreatment program in accordance with the requirements of [40 CFR Part 403] and [10 CSR 20-6.100] and is expected to implement and enforce its approved program.

☒ - The permittee, at this time, is not required to have a Pretreatment Program or does not have an approved pretreatment program.

REASONABLE POTENTIAL ANALYSIS (RPA):
Federal regulation [40 CFR Part 122.44(d)(1)(i)] requires effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause or contribute to an in-stream excursion above narrative or numeric water quality standard.

In accordance with [40 CFR Part 122.44(d)(1)(iii)] if the permit writer determines that any given pollutant has the reasonable potential to cause, or contribute to an in-stream excursion above the WQS, the permit must contain effluent limits for that pollutant.

☒ - A RPA was conducted on appropriate parameters. Please see **APPENDIX – RPA RESULTS.**

☐ - A RPA was not conducted for this facility.

REMOVAL EFFICIENCY:
Removal efficiency is a method by which the Federal Regulations define Secondary Treatment and Equivalent to Secondary Treatment, which applies to Biochemical Oxygen Demand 5-day (BOD_5) and Total Suspended Solids (TSS) for Publicly Owned Treatment Works (POTWs)/municipals.

☒ - Secondary Treatment is 85% removal [40 CFR Part 133.102(a)(3) & (b)(3)].

☐ - Equivalent to Secondary Treatment is 65% removal [40 CFR Part 133.105(a)(3) & (b)(3)].

SANITARY SEWER OVERFLOWS (SSO) AND INFLOW AND INFILTRATION (I&I):
Sanitary Sewer Overflows (SSOs) are defined as untreated sewage releases and are considered bypassing under state regulation [10 CSR 20-2.010(11)] and should not be confused with the federal definition of bypass. SSOs result from a variety of causes including blockages, line breaks, and sewer defects that can either allow wastewater to backup within the collection system during dry weather conditions or allow excess stormwater and groundwater to enter and overload the collection system during wet weather conditions. SSOs can also result from lapses in sewer system operation and maintenance, inadequate sewer design and construction, power failures, and vandalism. SSOs include overflows out of manholes, cleanouts, broken pipes, and other into waters of the state and onto city streets, sidewalks, and other terrestrial locations.

Inflow and Infiltration (I&I) is defined as unwanted intrusion of stormwater or groundwater into a collection system. This can occur from points of direct connection such as sump pumps, roof drain downspouts, foundation drains, and storm drain cross-connections or through cracks, holes, joint failures, faulty line connections, damaged manholes, and other openings in the collection system itself. I&I results from a variety of causes including line breaks, improperly sealed connections, cracks caused by soil erosion/settling, penetration of vegetative roots, and other sewer defects. In addition, excess stormwater and groundwater entering the collection system from line breaks and sewer defects have the potential to negatively impact the treatment facility.

Missouri RSMo §644.026.1.(13) mandates that the Department issue permits for discharges of water contaminants into the waters of this state, and also for the operation of sewer systems. Such permit conditions shall ensure compliance with all requirements as established by sections 644.006 to 644.141. Standard Conditions Part I, referenced in the permit, contains provisions requiring proper operation and maintenance of all facilities and systems of treatment and control. Missouri RSMo §644.026.1.(15) instructs the Department to require proper maintenance and operation of treatment facilities and sewer systems and proper disposal of residual waste from all such facilities. To ensure that public health and the environment are protected, any noncompliance which may endanger public health or the environment must be reported to the Department within 24 hours of the time the permittee becomes aware of the noncompliance. Standard Conditions Part I, referenced in the permit, contains the reporting requirements for the permittee when bypasses and upsets occur. The permit also contains requirements for permittees to develop and implement a program for maintenance and repair of the collection system. The permit requires that the permittee submit an annual report to the Department for the previous calendar year that contains a summary of efforts taken by the permittee to locate and eliminate sources of excess I & I, a summary of general maintenance and repairs to the collection system, and a summary of any planned maintenance and repairs to the collection system for the upcoming calendar year.

☒ - At this time, the Department recommends the US EPA's Guide for Evaluating Capacity, Management, Operation and Maintenance (CMOM) Programs At Sanitary Sewer Collection Systems (Document # EPA 305-B-05-002) or the Departments' CMOM Model located at http://dnr.mo.gov/env/wpp/permits/docs/cmom-template.doc. For additional information regarding the Departments' CMOM Model, see the CMOM Plan Model Guidance document at http://dnr.mo.gov/pubs/pub2574.htm. The CMOM identifies some of the criteria used to evaluate a collection system's management, operation, and maintenance and was intended for use by the EPA, state, regulated community, and/or third party entities. The CMOM is applicable to small, medium, and large systems; both public and privately owned; and both regional and satellite collection systems. The CMOM does not substitute for the Clean Water Act, the Missouri Clean Water Law, and both federal and state regulations, as it is not a regulation.

☐ - This facility is not required to develop or implement a program for maintenance and repair of the collection system; however, it is a violation of Missouri State Environmental Laws and Regulations to allow untreated wastewater to discharge to waters of the state.

SCHEDULE OF COMPLIANCE (SOC):
Per 644.051.4 RSMo, a permit may be issued with a Schedule of Compliance (SOC) to provide time for a facility to come into compliance with new state or federal effluent regulations, water quality standards, or other requirements. Such a schedule is not allowed if the facility is already in compliance with the new requirement, or if prohibited by other statute or regulation. A SOC includes an enforceable sequence of interim requirements (actions, operations, or milestone events) leading to compliance with the Missouri Clean Water Law, its implementing regulations, and/or the terms and conditions of an operating permit. *See also* Section 502(17) of the Clean Water Act, and 40 CFR §122.2. For new effluent limitations, the permit includes interim monitoring for the specific parameter to demonstrate the facility is not already in compliance with the new requirement. Per 40 CFR § 122.47(a)(1) and 10 CSR 20-7.031(11), compliance must occur as soon as possible. If the permit provides a schedule for meeting new water quality based effluent limits, a SOC must include an enforceable, final effluent limitation in the permit even if the SOC extends beyond the life of the permit.

A SOC is not allowed:

- For effluent limitations based on technology-based standards established in accordance with federal requirements, if the deadline for compliance established in federal regulations has passed. 40 CFR § 125.3.
- For a newly constructed facility in most cases. Newly constructed facilities must meet applicable effluent limitations when discharge begins, because the facility has installed the appropriate control technology as specified in a permit or antidegradation review. A SOC is allowed for a new water quality based effluent limit that was not included in a previously public noticed permit or antidegradation review, which may occur if a regulation changes during construction.
- To develop a TMDL, UAA, or other study associated with development of a site specific criterion. A facility is not prohibited from conducting these activities, but a SOC may not be granted for conducting these activities.

In order to provide guidance to Permit Writers in developing SOCs, and attain a greater level of consistency, on April 9, 2015 the Department issued an updated policy on development of SOCs. This policy provides guidance to Permit Writers on the standard time frames for schedules for common activities, and guidance on factors that may modify the length of the schedule such as a Cost Analysis for Compliance.

☒ - The time given for effluent limitations of this permit listed under Interim Effluent Limitation and Final Effluent Limitations were established in accordance with [10 CSR 20-7.031(11)]. The facility has been given a schedule of compliance to meet final effluent limits for *E. coli*, and extension of the existing schedule for Ammonia. The seven year schedule of compliance allowed for this facility should provide adequate time to obtain engineering, property easements, obtain a construction permit and construct the sewer connections necessary to connect to the City of Columbia's wastewater collection system

☐ - This permit does not contain a SOC.

SEWER EXTENSION AUTHORITY SUPERVISED PROGRAM:
In accordance with [10 CSR 20-6.010(6)(A)], the department may grant approval of a permittee's Sewer Extension Authority Supervised Program. These approved permittees regulate and approve construction of sanitary sewers and pump stations, which are tributary to this wastewater treatment facility. The permittee shall act as the continuing authority for the operation, maintenance, and modernization of the constructed collection system. See http://dnr.mo.gov/env/wpp/permits/sewer-extension.htm.

☐ - The permittee's Sewer Extension Authority Supervised Program has been reauthorized. Please see **Appendix – Sewer Extension Authority Supervised Program Reauthorization Letter** for applicable conditions.

☒ - The permittee does not have a department approved Sewer Extension Authority Supervised Program.

STORMWATER POLLUTION PREVENTION PLAN (SWPPP):
In accordance with 40 CFR 122.44(k) *Best Management Practices (BMPs)* to control or abate the discharge of pollutants when: (1) Authorized under section 304(e) of the Clean Water Act (CWA) for the control of toxic pollutants and hazardous substances from ancillary industrial activities: (2) Authorized under section 402(p) of the CWA for the control of stormwater discharges; (3) Numeric effluent limitations are infeasible; or (4) the practices are reasonably necessary to achieve effluent limitations and standards or to carry out the purposes and intent of the CWA.

☐ - 10 CSR 20-6.200 and 40 CFR 122.26 includes treatment works treating domestic sewage or any other sewage sludge or wastewater treatment device or system, used in the storage treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated to the disposal of sewage sludge that is located within the confines of the facility, with a design flow of 1.0 mgd or more, or are required to have an approved pretreatment program under 40 CFR part 403, as an industrial activity in which permit coverage is required.

☒ - At this time, the permittee is not required to develop and implement a SWPPP.

VARIANCE:
As per the Missouri Clean Water Law § 644.061.4, variances shall be granted for such period of time and under such terms and conditions as shall be specified by the commission in its order. The variance may be extended by affirmative action of the commission. In no event shall the variance be granted for a period of time greater than is reasonably necessary for complying with the Missouri Clean Water Law §§644.006 to 644.141 or any standard, rule or regulation promulgated pursuant to Missouri Clean Water Law §§644.006 to 644.141.

☐ - This operating permit is drafted under premises of a petition for variance.

☒ - This operating permit is not drafted under premises of a petition for variance.

WASTELOAD ALLOCATIONS (WLA) FOR LIMITS:
As per [10 CSR 20-2.010(78)], the amount of pollutant each discharger is allowed by the Department to release into a given stream after the Department has determined total amount of pollutant that may be discharged into that stream without endangering its water quality.

☒ - Wasteload allocations were calculated where applicable using water quality criteria or water quality model results and the dilution equation below:

$$Ce = \frac{(Qe + Qs)C - (Qs \times Cs)}{(Qe)}$$ (EPA/505/2-90-001, Section 4.5.5)

Where C = downstream concentration Ce = effluent concentration
Cs = upstream concentration Qe = effluent flow
Qs = upstream flow

Chronic wasteload allocations were determined using applicable chronic water quality criteria (CCC: criteria continuous concentration) and stream volume of flow at the edge of the mixing zone (MZ). Acute wasteload allocations were determined using applicable water quality criteria (CMC: criteria maximum concentration) and stream volume of flow at the edge of the zone of initial dilution (ZID).

Water quality based maximum daily and average monthly effluent limitations were calculated using methods and procedures outlined in USEPA's "Technical Support Document For Water Quality-based Toxics Control" (EPA/505/2-90-001).

Number of Samples "n":
Additionally, in accordance with the TSD for water quality-based permitting, effluent quality is determined by the underlying distribution of daily values, which is determined by the Long Term Average (LTA) associated with a particular Wasteload Allocation (WLA) and by the Coefficient of Variation (CV) of the effluent concentrations. Increasing or decreasing the monitoring frequency does not affect this underlying distribution or treatment performance, which should be, at a minimum, be targeted to comply with the values dictated by the WLA. Therefore, it is recommended that the actual planned frequency of monitoring normally be used to determine the value of "n" for calculating the AML. However, in situations where monitoring frequency is once per month or less, a higher value for "n" must be assumed for AML derivation purposes. Thus, the statistical procedure being employed using an assumed number of samples is "n = 4" at a minimum. For Total Ammonia as Nitrogen, "n = 30" is used

☐ - Wasteload allocations were not calculated.

WLA MODELING:
There are two general types of effluent limitations, technology-based effluent limits (TBELs) and water quality based effluent limits (WQBELs). If TBELs do not provide adequate protection for the receiving waters, then WQBEL must be used.

☐ - A WLA study including model was submitted to the Department.

☒ - A WLA study was either not submitted or determined not applicable by Department staff.

WATER QUALITY STANDARDS:
Per [10 CSR 20-7.031(4)], General Criteria shall be applicable to all waters of the state at all times including mixing zones. Additionally, [40 CFR 122.44(d)(1)] directs the Department to establish in each NPDES permit to include conditions to achieve water quality established under Section 303 of the Clean Water Act, including State narrative criteria for water quality.

WHOLE EFFLUENT TOXICITY (WET) TEST:

☐ - The permittee is required to conduct WET test for this facility.

☒ - At this time, the permittee is not required to conduct WET test for this facility.

40 CFR 122.41(M) - BYPASSES:
The federal Clean Water Act (CWA), Section 402 prohibits wastewater dischargers from "bypassing" untreated or partially treated sewage (wastewater) beyond the headworks. A bypass is defined as an intentional diversion of waste streams from any portion of a treatment facility, [40 CFR 122.41(m)(1)(i)]. Additionally, Missouri regulation 10 CSR 20-7.015(9)(G) states a bypass means the intentional diversion of waste streams from any portion of a treatment facility, except in the case of blending, to waters of the state. Only under exceptional and specified limitations do the federal regulations allow for a facility to bypass some or all of the flow from

its treatment process. Bypasses are prohibited by the CWA unless a permittee can meet all of the criteria listed in 40 CFR 122.41(m)(4)(i)(A), (B), & (C). Any bypasses from this facility are subject to the reporting required in 40 CFR 122.41(l)(6) and per Missouri's Standard Conditions I, Section B, part 2.b. Additionally, Anticipated Bypasses include bypasses from peak flow basins or similar devices designed for peak wet weather flows.

☐ - Bypasses occur or have occurred at this facility.

☒ - This facility does not anticipate bypassing.

303(d) LIST & TOTAL MAXIMUM DAILY LOAD (TMDL):
Section 303(d) of the federal Clean Water Act requires that each state identify waters that are not meeting water quality standards and for which adequate water pollution controls have not been required. Water quality standards protect such beneficial uses of water as whole body contact (such as swimming), maintaining fish and other aquatic life, and providing drinking water for people, livestock and wildlife. The 303(d) list helps state and federal agencies keep track of waters that are impaired but not addressed by normal water pollution control programs.

A TMDL is a calculation of the maximum amount of a given pollutant that a body of water can absorb before its water quality is affected. If a water body is determined to be impaired as listed on the 303(d) list, then a watershed management plan will be developed that shall include the TMDL calculation

☐ - This facility discharges to a 303(d) listed stream.

☒ - This facility does not discharge to a 303(d) listed stream.

☐ - This facility discharges to a stream with an EPA approved TMDL.

Part VI – Effluent Limits Determination

APPLICABLE DESIGNATIONS OF WATERS OF THE STATE:
As per Missouri's Effluent Regulations [10 CSR 20-7.015], the waters of the state are divided into the below listed seven (7) categories. Each category lists effluent limitations for specific parameters, which are presented in each outfall's Effluent Limitation Table and further discussed in the Derivation & Discussion of Limits section.

- ☐ Missouri or Mississippi River [10 CSR 20-7.015(2)]
- ☐ Lakes or Reservoirs [10 CSR 20-7.015(3)]
- ☐ Losing Streams [10 CSR 20-7.015(4)]
- ☐ Metropolitan No-Discharge Streams [10 CSR 20-7.015(5)]
- ☐ Special Streams [10 CSR 20-7.015(6)]
- ☐ Subsurface Waters [10 CSR 20-7.015(7)]
- ☒ All Other Waters [10 CSR 20-7.015(8)]

OUTFALL #001 – MAIN FACILITY OUTFALL

Effluent limitations derived and established in the below Effluent Limitations Table are based on current operations of the facility. Future permit action due to facility modification may contain new operating permit terms and conditions that supersede the terms and conditions, including effluent limitations, of this operating permit.

EFFLUENT LIMITATIONS TABLE:

PARAMETER	Unit	Basis for Limits	Daily Maximum	Weekly Average	Monthly Average	Previous Permit Limit	Sampling Frequency	Reporting Frequency	Sample Type ****
Flow	MGD	1	*		*	*/*	1/quarter	quarterly	E
BOD_5	mg/L	1		45	30	45/30	1/quarter	quarterly	G
TSS	mg/L	1		45	30	45/30	1/quarter	quarterly	G
Escherichia coli **	#/100mL	1, 3		1,030	206	*/*	1/quarter	quarterly	G
Ammonia as N (Interim) (Apr 1 –Sep 30)	mg/L	2, 3	4.8		1.7	4.5/1.7	1/quarter	quarterly	G
Ammonia as N (Interim) (Oct 1 – Mar 31)	mg/L	2, 3	11.9		3.0	7.9/3.0	1/quarter	quarterly	G
Ammonia as N (Final) (Apr 1 –Sep 30)	mg/L	2, 3	4.8		1.3	4.8/1.7	1/quarter	quarterly	G
Ammonia as N (Final) (Oct 1 – Mar 31)	mg/L	2, 3	11.9		2.6	11.9/3.0	1/quarter	quarterly	G
PARAMETER	Unit	Basis for Limits	Minimum		Maximum	Previous Permit Limit	Sampling Frequency	Reporting Frequency	Sample Type
pH	SU	1	6.5		9.0	6.0-9.0	1/quarter	quarterly	G
PARAMETER	Unit	Basis for Limits			Monthly Avg Min	Previous Permit Limit	Sampling Frequency	Reporting Frequency	Sample Type
BOD_5 Percent Removal	%	1			85	85	1/year	annually	M
TSS Percent Removal	%	1			85	85	1/year	annually	M

* - Monitoring requirement only.
** - #/100mL; the Monthly Average for *E. coli* is a geometric mean.
*** - Parameter not previously established in previous state operating permit.

**** - C = 24-hour composite
G = Grab
T = 24-hr. total
E = 24-hr. estimate
M = Measured/calculated

Basis for Limitations Codes:

1. State or Federal Regulation/Law
2. Water Quality Standard (includes RPA)
3. Water Quality Based Effluent Limits
4. Antidegradation Review
5. Antidegradation Policy
6. Water Quality Model
7. Best Professional Judgment
8. TMDL or Permit in lieu of TMDL
9. WET Test Policy
10. Multiple Discharger Variance

OUTFALL #001 – DERIVATION AND DISCUSSION OF LIMITS:

- **Flow**. In accordance with [40 CFR Part 122.44(i)(1)(ii)] the volume of effluent discharged from each outfall is needed to assure compliance with permitted effluent limitations. If the permittee is unable to obtain effluent flow, then it is the responsibility of the permittee to inform the Department, which may require the submittal of an operating permit modification.

- **Biochemical Oxygen Demand (BOD_5).** Effluent limitations have been retained from previous state operating permit, please see the **APPLICABLE DESIGNATION OF WATERS OF THE STATE** sub-section of the **Effluent Limits Determination.**

- **Total Suspended Solids (TSS).** Effluent limitations have been retained from previous state operating permit, please see the **APPLICABLE DESIGNATION OF WATERS OF THE STATE** sub-section of the **Effluent Limits Determination.**

- ***Escherichia coli (E. coli)***. Monthly average of 206 per 100 mL as a geometric mean and Weekly Average of 1030 per 100 mL as a geometric mean during the recreational season (April 1 – October 31), to protect Whole Body Contact Recreation (B) designated use of the receiving stream, as per 10 CSR 20-7.031(5)(C). An effluent limit for both monthly average and weekly average is required by 40 CFR 122.45(d). The Geometric Mean is calculated by multiplying all of the data points and then taking the nth root of this product, where n = # of samples collected. For example: Five E. coli samples were collected with results of 1, 4, 6, 10, and 5 (#/100mL). Geometric Mean = 5^{th} root of (1)(4)(6)(10)(5) = 5^{th} root of 1,200 = 4.1 #/100mL.

- **Total Ammonia Nitrogen**. Early Life Stages Present Total Ammonia Nitrogen criteria apply [10 CSR 20-7.031(5)(B)7.C. & Table B3]. Background total ammonia nitrogen = 0.01 mg/L. No mixing considerations allowed; therefore, WLA = appropriate criterion.

Season	Temp (°C)	pH (SU)	Total Ammonia Nitrogen CCC (mg/L)	Total Ammonia Nitrogen CMC (mg/L)
Summer	26	7.8	1.5	12.1
Winter	6	7.8	3.1	12.1

Summer: April 1 – September 30

Chronic WLA: $C_e = ((0.003 + 0.0)1.5 – (0.0 * 0.01))/0.003$
$C_e = 1.5$ mg/L

Acute WLA: $C_e = ((0.003 + 0.0)12.1 – (0.0 * 0.01))/0.003$
$C_e = 12.1$ mg/L

$LTA_c = 1.5$ mg/L (0.6749) = 1.01 mg/L [CV = 0.97, 99th Percentile, 30 day avg.]
$LTA_a = 12.1$ mg/L (0.210) = 2.54 mg/L [CV = 0.97, 99th Percentile]

Use most protective number of LTA_c or LTA_a.

MDL = 1.01 mg/L (4.7692) = 4.8 mg/L [CV = 0.97, 99th Percentile]
AML = 1.01 mg/L (1.31) = 1.3 mg/L [CV = 0.97, 95th Percentile, n =30]

Winter: October 1 – March 31

Chronic WLA: $C_e = ((0.003 + 0.0)3.1 – (0.0 * 0.01))/0.003$
$C_e = 3.1$ mg/L

Acute WLA: $C_e = ((0.003 + 0.0)12.1 – (0.0 * 0.01))/0.003$
$C_e = 12.1$ mg/L

$LTA_c = 3.1$ mg/L (0.555) = 1.72 mg/L [CV = 1.5, 99th Percentile, 30 day avg.]
$LTA_a = 12.1$ mg/L (0.1444) = 1.75 mg/L [CV = 1.5, 99th Percentile]

Use most protective number of LTA_c or LTA_a.

MDL = 1.72 mg/L (6.93) = 11.9 mg/L [CV = 1.5, 99th Percentile]
AML = 1.72 mg/L (1.5) = 2.6 mg/L [CV = 1.5, 95th Percentile, n =30]

- **pH**. – 6.5-9.0 SU. pH limitations of 6.0-9.0 SU [10 CSR 20-7.015] are not protective of the in-stream Water Quality Standard, which states that water contaminants shall not cause pH to be outside the range of 6.5-9.0 SU. No mixing zone is allowed due to the classification of the receiving stream, therefore the water quality standard must be met at the outfall.

- **Biochemical Oxygen Demand (BOD_5) Percent Removal**. In accordance with 40 CFR Part 133, removal efficiency is a method by which the Federal Regulations define Secondary Treatment and Equivalent to Secondary Treatment, which applies to Biochemical Oxygen Demand 5-day (BOD_5) and Total Suspended Solids (TSS) for Publicly Owned Treatment Works (POTWs)/municipals. This facility is required to meet 85% removal efficiency for BOD_5.

- **Total Suspended Solids (TSS) Percent Removal**. In accordance with 40 CFR Part 133, removal efficiency is a method by which the Federal Regulations define Secondary Treatment and Equivalent to Secondary Treatment, which applies to Biochemical Oxygen Demand 5-day (BOD_5) and Total Suspended Solids (TSS) for Publicly Owned Treatment Works (POTWs)/municipals. This facility is required to meet 85% removal efficiency for TSS.

Sampling Frequency Justification:

Sampling and Reporting Frequency was retained from previous permit. Sampling for *E. coli* is set at quarterly per 10 CSR 20-7.015(9)(D)6.C.

Sampling Type Justification:

As per 10 CSR 20-7.015, BOD_5 and TSS collected for sand filters may be grab samples. Grab samples must be collected for pH, Ammonia as N and *E. coli*. This is due to the holding time restriction for *E. coli*, the volatility of Ammonia, and the fact that pH cannot be preserved and must be sampled in the field. As Ammonia samples must be immediately preserved, these samples are to be collected as a grab. For further information on sampling and testing methods please review 10 CSR 20-7.015(9)(D) 2.

OUTFALL #001 – GENERAL CRITERIA CONSIDERATIONS:

In accordance with 40 CFR 122.44(d)(1), effluent limitations shall be placed into the permit for those pollutants which have been determined to cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality. The rule further states that pollutants which have been determined to cause, have the reasonable potential to cause, or contribute to an excursion above a narrative criterion within an applicable State water quality standard, the permit shall contain a numeric effluent limitation to protect that narrative criterion. In order to comply with this regulation, the permit writer will complete reasonable potential determinations on whether the discharge will violate any of the general criteria listed in 10 CSR 20-7.031(4). These specific requirements are listed below followed by derivation and discussion (the lettering matches that of the rule itself, under 10 CSR 20-7.031(4)). It should also be noted that Section 644.076.1, RSMo as well as Section D – Administrative Requirements of Standard Conditions Part I of this permit states that it shall be unlawful for any person to cause or permit any discharge of water contaminants from any water contaminant or point source located in Missouri that is in violation of sections 644.006 to 644.141 of the Missouri Clean Water Law or any standard, rule or regulation promulgated by the commission.

Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses. The discharge from this facility is made up of treated domestic wastewater. Based upon review of the recent Report of Compliance Inspection for the inspection conducted on May 13, 2015, no evidence of an excursion of this criterion has been observed by the Department in the past and the facility has not disclosed any other information related to the characteristics of the discharge on their permit application which has the potential to cause or contribute to an excursion of this narrative criterion. Additionally, this facility utilizes equivalent to secondary treatment technology and is currently in compliance with the equivalent to secondary treatment technology based effluent limits established in this permit and there has been no indication to the Department that the stream has had issues maintaining beneficial uses as a result of this discharge. Based on the information reviewed during the drafting of this permit, these final effluent limitations appear to have protected against the excursion of this criterion in the past. Therefore, the discharge does not have the reasonable potential to cause or contribute to an excursion of this criterion.

(A) Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses. Please see (A) above as justification is the same.

(B) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses. Please see (A) above as justification is the same.

(C) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life. This permit contains final effluent limitations which are protective of both acute and chronic toxicity for various pollutants that are either expected to be discharged by domestic wastewater facilities or that were disclosed by this facility on the application for permit coverage. Based on the information reviewed during the drafting of this permit, it has been determined if the facility meets final effluent limitations established in this permit, there is no reasonable potential for the discharge to cause an excursion of this criterion.

(D) There shall be no significant human health hazard from incidental contact with the water. Please see (D) above as justification is the same.

(E) There shall be no acute toxicity to livestock or wildlife watering. Please see (D) above as justification is the same.

(F) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community. Please see (A) above as justification is the same.

(G) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste as defined in Missouri's Solid Waste Law, section 260.200, RSMo, except as the use of such materials is specifically permitted pursuant to section 260.200-260.247. The discharge from this facility is made up of treated domestic wastewater. No evidence of an excursion of this criterion has been observed by the Department in the past and the facility has not disclosed any other information related to the characteristics of the discharge on their permit application which has the potential to cause or contribute to an excursion of this narrative criterion. Additionally, any solid wastes received or produced at this facility are wholly contained in appropriate storage facilities, are not discharged, and are disposed of offsite. This discharge is subject to Standard Conditions Part III, which contains requirements for the management and disposal of sludge to prevent its discharge. Therefore, this discharge does not have reasonable potential to cause or contribute to an excursion of this criterion.

Part VII – Cost Analysis for Compliance

Pursuant to Section 644.145, RSMo, when issuing permits under this chapter that incorporate a new requirement for discharges from publicly owned combined or separate sanitary or storm sewer systems or publicly owned treatment works, or when enforcing provisions of this chapter or the Federal Water Pollution Control Act, 33 U.S.C. 1251 et seq., pertaining to any portion of a publicly owned combined or separate sanitary or storm sewer system or [publicly owned] treatment works, the Department of Natural Resources shall make a "finding of affordability" on the costs to be incurred and the impact of any rate changes on ratepayers upon which to base such permits and decisions, to the extent allowable under this chapter and the Federal Water Pollution Control Act. This process is completed through a cost analysis for compliance. Permits that do not include new requirements may be deemed affordable.

☒ - The Department is required to determine "findings of affordability" because the permit applies to a combined or separate sanitary sewer system for a publically-owned treatment works.

Cost Analysis for Compliance - The Department has made a reasonable search for empirical data indicating the permit is affordable. The search consisted of a review of Department records that might contain economic data on the community, a review of information provided by the applicant as part of the application, and public comments received in response to public notices of this draft permit. If the empirical cost data was used by the permit writer, this data may consist of median household income, any other ongoing projects that the Department has knowledge, and other demographic financial information that the community provided as contemplated by Section 644. 145.3. See **Appendix – Cost Analysis for Compliance**

☐ - The Department is not required to determine Cost Analysis for Compliance because the permit contains no new conditions or requirements that convey a new cost to the facility.

Part VIII – Administrative Requirements

On the basis of preliminary staff review and the application of applicable standards and regulations, the Department, as administrative agent for the Missouri Clean Water Commission, proposes to issue a permit(s) subject to certain effluent limitations, schedules, and special conditions contained herein and within the operating permit. The proposed determinations are tentative pending public comment.

PERMIT SYNCHRONIZATION:
The Department of Natural Resources is currently undergoing a synchronization process for operating permits. Permits are normally issued on a five-year term, but to achieve synchronization many permits will need to be issued for less than the full five years allowed by regulation. The intent is that all permits within a watershed will move through the Watershed Based Management (WBM) cycle together will all expire in the same fiscal year. This will allow further streamlining by placing multiple permits within a smaller geographic area on public notice simultaneously, thereby reducing repeated administrative efforts. This will also allow the Department to explore a watershed based permitting effort at some point in the future. Renewal applications must continue to be submitted within 180 days of expiration, however, in instances where effluent data from the previous renewal is less than 4 years old, that data may be re-submitted to meet the requirements of the renewal application. If the permit provides a schedule of compliance for meeting new water quality based effluent limits beyond the expiration date of the permit, the time remaining in the schedule of compliance will be allotted in the renewed permit. With permit synchronization, this permit will expire in the 1st Quarter of calendar year 2020.

PUBLIC NOTICE:
The Department shall give public notice that a draft permit has been prepared and its issuance is pending. Additionally, public notice will be issued if a public hearing is to be held because of a significant degree of interest in and water quality concerns related to a draft permit. No public notice is required when a request for a permit modification or termination is denied; however, the requester and permittee must be notified of the denial in writing. The Department must issue public notice of a pending operating permit or of a new or reissued statewide general permit. The public comment period is the length of time not less than 30 days following the date of the public notice which interested persons may submit written comments about the proposed permit. For persons wanting to submit comments regarding this proposed operating permit, then please refer to the Public Notice page located at the front of this draft operating permit. The Public Notice page gives direction on how and where to submit appropriate comments.

☒ - The Public Notice period for this operating permit was from August 17, 2018 to September 17, 2018. Responses to the Public Notice of this operating permit did not warrant the modification of effluent limits and/or the terms and conditions of this permit, however, changes were made to the Cost Analysis for Compliance.

DATE OF FACT SHEET: SEPTEMBER 24, 2018

COMPLETED BY:

BRANT FARRIS, ENVIRONMENTAL SPECIALIST III
MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM
OPERATING PERMITS SECTION - DOMESTIC WASTEWATER UNIT
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Appendices

APPENDIX – RPA RESULTS:

Parameter	CMC*	RWC Acute*	CCC*	RWC Chronic*	n**	Range max/min	CV***	MF	RP Yes/No
Total Ammonia as Nitrogen (Summer) mg/L	12.1	8.52	1.5	8.52	12.00	2.5/0.3	0.97	3.41	YES
Total Ammonia as Nitrogen (Winter) mg/L	12.1	83.67	3.1	83.67	11.00	12.6/0.3	1.50	6.64	YES

N/A – Not Applicable
* - Units are (µg/L) unless otherwise noted.
** - If the number of samples is 10 or greater, then the CV value must be used in the WQBEL for the applicable constituent. If the number of samples is < 10, then the default CV value must be used in the WQBEL for the applicable constituent.
*** - Coefficient of Variation (CV) is calculated by dividing the Standard Deviation of the sample set by the Mean of the same sample set.
RWC – Receiving Water Concentration. It is the concentration of a toxicant or the parameter toxicity in the receiving water after mixing (if applicable).
n – Is the number of samples.
MF – Multiplying Factor. 99% Confidence Level and 99% Probability Basis.
RP – Reasonable Potential. It is where an effluent is projected or calculated to cause an excursion above a water quality standard based on a number of factors including, as a minimum, the four factors listed in 40 CFR 122.44(d)(1)(ii).

Reasonable Potential Analysis is conducted as per (TSD, EPA/505/2-90-001, Section 3.3.2). A more detailed version including calculations of this RPA is available upon request.

APPENDIX – COST ANALYSIS FOR COMPLIANCE:

Missouri Department of Natural Resources
Water Protection Program
Cost Analysis for Compliance
(In accordance with RSMo 644.145)

BCRSD Brown Station WWTP, Permit Renewal
Boone County Regional Sewer District
Missouri State Operating Permit #MO-0135305

Section 644.145 RSMo requires the Department of Natural Resources ("Department" or "DNR") to make a "finding of affordability" when "issuing permits under" or "enforcing provisions of" state or federal clean water laws "pertaining to any portion of a combined or separate sanitary sewer system for publicly-owned treatment works." This cost analysis does not dictate that a permittee will upgrade their facility, or how the permittee will comply with the new permit requirements.

This cost analysis is based on data available to the Department as provided by the permittee and data obtained from readily available sources. For the most accurate analysis, it is essential that the permittee provides the Department with current information about the Districts financial and socioeconomic situation. The financial questionnaire available to permittees on the DNR website (http://dnr.mo.gov/forms/780-2511-f.pdf) should have been submitted with the permit renewal application. If it was not received with the renewal application, the Department sent a request to complete it with the welcome letter.

Flow evaluated: Not Applicable

Total Connections for the **Sewer District:** 6,908

New Permit Requirements:

The permit requires compliance with new effluent limitations for *E. coli*. The District is connecting this wastewater treatment facility to the City of Columbia's wastewater collection system.

Anticipated Costs Associated with Complying with the New Requirements:

Cost associated with connection to the City of Columbia:

The January 9, 2017 Facility Plan for Brown Station WWTP also included costs for Richardson Acres WWTF. The combined anticipated project cost was estimated at $1,518,000, with an estimated annual O&M cost of $23,400. The permit also has new sampling requirements for *E. coli* upon the effective date of the final effluent limitations. However, the Department doesn't anticipate any new costs for sampling to be incurred by the District as the District has plans to eliminate the discharge by that date.

(1) A Sewer District's financial capability and ability to raise or secure necessary funding;

Current average monthly user rate:	$60.95
Current Long Term Liabilities for the District:	$17,505,740
Amount within the current user rate used toward payments on outstanding debt related to the current wastewater infrastructure:	$19.43

The Department has relied heavily on readily available data to complete this analysis.

(2) Affordability of pollution control options for the individuals or households at or below the median household income level of the community the district serves;

A Current Costs

Current operating costs (exclude depreciation):	$2,990,341
Current user rate:	$60.95

B Estimated Costs for Connection to the City of Columbia's wastewater collection system

Estimated Project Costs:	$1,518,000*
Annual Cost of Operation and Maintenance:	$23,400*
Estimated Resulting User Cost per Household per Month:	$69.91*
Median household income (MHI): [1] (data used – Boone County)	$51,658
Median household income (MHI): [1] (data used – City of Columbia)	$45,973
Cost per household as a percent of median household income: [2] (Boone County)	1.6%
Cost per household as a percent of median household income: [3] (City of Columbia)	1.8%

* - Data was provided by the District. This rate includes increases from Highfield Acres WWTF, Lee Heights WWTF, Midway Crossing WWTP, Oberlin Valley WWTP, Richardson Acres WWTF, Rocheport WWTP, Rollingwood WWTP, and this facility.

(3) An evaluation of the overall costs and environmental benefits of the control technologies;

The investment in wastewater treatment will provide several social, environmental and economic benefits. Improved wastewater provides benefits such as avoided health costs due to water-related illness, enhanced environmental ecosystem quality, and improved natural resources. The preservation of natural resources has been proven to increase the economic value and sustainability of the surrounding communities. Maintaining Missouri's water quality standards fulfill the goals of restoring and maintaining the chemical, physical and biological integrity of the receiving stream; and, where attainable, to achieves a level of water quality that provides for the protection and propagation of fish, shellfish, wildlife and recreation in and on the water.

(4) Inclusion of ongoing costs of operating and maintaining the existing wastewater collection and treatment system, including payments on outstanding debts for wastewater collection and treatment systems when calculating projected rates:

The District reported their current long term liability for their current wastewater collection and treatment systems to be $17,505,740. The community reported that each user pays $19.43 each month, which is used toward payments on the current outstanding debt.

(5) An inclusion of ways to reduce economic impacts on distressed populations in the community, including but not limited to low and fixed income populations. This requirement includes but is not limited to:

(a) Allowing adequate time in implementation schedules to mitigate potential adverse impacts on distressed populations resulting from the costs of the improvements and taking into consideration local community economic considerations.

A schedule of compliance will be provided based on the results of this cost analysis. The schedule of compliance is provided to ensure that the entity has time to reasonably plan for compliance with the new permit requirements. The time provided ensures the entity has time to hire an engineer, develop facility plans, hold community meetings, seek an appropriate funding source, and construct the facility. For compliance assistance, please visit the Department's Community Assistance webpage at https://dnr.mo.gov/assistance/. If it is determined by the permittee that a longer schedule of compliance is necessary due to financial reasons, please contact the permit writer and request modification of the permit schedule.

An integrated plan may be an appropriate option if they community needs to meet other environmental obligations as well as the new requirements within this permit. The integrated plan needs to be well thought out with specific timeframes built into the management plan in which the municipality can reasonably commit. The plan should be designed to allow your municipality to meet their Clean Water Act obligations by maximizing their infrastructure improvement dollars through the appropriate sequencing of work. For further information on how to develop an integrated plan, please see the Department publication, "Missouri Integrated Planning Framework," at http://dnr.mo.gov/pubs/pub2684.htm.

If the permittee can demonstrate that the proposed pollution controls result in substantial and widespread economic and social impact, the permittee may use Factor 6 of the Use Attainability Analysis (UAA) 40 CFR 131.10(g)(6) in the form of a variance. This process is completed by determining the treatment type with the highest attainable effluent quality that would not result in a socio-economic hardship. For more information on variance requests, please contact the Water Protection Program's Special Projects Coordinator at 573-751-9391.

(b) Allowing for reasonable accommodations for regulated entities when inflexible standards and fines would impose a disproportionate financial hardship in light of the environmental benefits to be gained.

- If available, connection to a larger centralized sewer system in the area may be more cost effective for the community. This can be incorporated into an integrated plan.
- An opportunity may exist for the relocation of the point of discharge to a receiving stream capable of a greater mixing zone.
- The permittee may apply for State Revolving Fund (SRF) financial support in order to help fund a Capital Improvements Plan. Other loans and grants also exist for which the facility may be eligible. Contact information for the Department's Financial Assistance Center (FAC) and more information can be found on the Department's website at http://dnr.mo.gov/env/wpp/srf/wastewater-assistance.htm.

Socioeconomic Data[4-8]: The following tables characterize the current overall socioeconomic condition of the community as compared to the overall socioeconomic condition of the State of Missouri. The following information was compiled using the latest U.S. Census data.

No.	Administrative Unit	Boone County	Missouri State
1	Population (2016)	172,773	6,059,651
2	Percent Change in Population (2000-2016)	27.6%	8.3%
3	2016 Median Household Income (in 2017 Dollars)	$51,658	$50,417
4	Percent Change in Median Household Income (2000-2016)	-2.5%	-5.9%
5	Median Age (2016)	30.3	38.3
6	Change in Median Age in Years (2000-2016)	0.8	2.2
7	Unemployment Rate (2016)	4.6%	6.6%
8	Percent of Population Below Poverty Level (2016)	19.3%	15.3%
9	Percent of Household Received Food Stamps (2016)	10.0%	13.0%

No.	Administrative Unit	Columbia City	Missouri State
1	Population (2016)	117,165	6,059,651
2	Percent Change in Population (2000-2016)	38.6%	8.3%
3	2016 Median Household Income (in 2017 Dollars)	$45,973	$50,417
4	Percent Change in Median Household Income (2000-2016)	-3.5%	-5.9%
5	Median Age (2016)	27.4	38.3
6	Change in Median Age in Years (2000-2016)	0.6	2.2
7	Unemployment Rate (2016)	4.2%	6.6%
8	Percent of Population Below Poverty Level (2016)	23.6%	15.3%
9	Percent of Household Received Food Stamps (2016)	10.0%	13.0%
10	(Primary) County Where the Community Is Located	Boone County	

(6) An assessment of other district investments and operating costs relating to environmental improvements and public health protection;

The District currently has approximately $28,650,000 in bonding capacity from three (3) prior bond elections. Of that total, $24,319,148 is already closed on previous or proposed projects, leaving $4,330,852 available for this project, and projects for Rollingwood Plat 1 WWTP, Highfield WWTF, and Richardson Acres WWTP projects. After those additional projects, the District will have approximately $757,477 remaining of bonding authority.

(7) An assessment of factors set forth in the United States Environmental Protection Agency's guidance, including but not limited to the "Combined Sewer Overflow Guidance for Financial Capability Assessment and Schedule Development" that may ease the cost burdens of implementing wet weather control plans, including but not limited to small system considerations, the attainability of water quality standards, and the development of wet weather standards;

The secondary indicators for consideration are not applicable for sewer districts as the indicators are structured for the financial capability of a municipality. The financial impact of the new requirements is determined using all available data for the sewer district.

(8) An assessment of any other relevant local economic conditions.

The District did not report any other relevant local economic conditions.

Conclusion and Finding

As a result of new regulations, the Department is proposing modifications to the current operating permit that would require the permittee to upgrade the facility. The permit also has new sampling requirements for *E. coli* upon the effective date of the final effluent limitations. However, the Department doesn't anticipate any new costs for sampling to be incurred by the District as the District has plans to eliminate the discharge by that date.

This determination is based on readily available data and may overestimate the financial impact on the community. The community's facility plan that is submitted as a part of the construction permit process includes a discussion of community details, what the community can afford, existing obligations, future growth potential, an evaluation of options available to the community with cost information, and a discussion on no-discharge alternatives. The cost information provided through the facility plan process, which is developed by the community and their engineer, is more comprehensive of the community's individual factors in relation to selected treatment technology and costing information.

References:

1. (A) 2016 MHI in 2016 Dollar: United States Census Bureau. 2012-2016 American Community Survey 5-Year Estimates, Table B19013: Median Household Income in the Past 12 Months (in 2016 Inflation-Adjusted Dollars). http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_16_5YR_B19013&prodType=table.
(B) 2000 MHI in 1999 Dollar: U.S. Census Bureau (2002) 2000 Census of Population and Housing, Summary Population and Housing Characteristics, PHC-1-27, Missouri, Table 2. Age and Sex: 2000, Washington, DC. http://www.census.gov/prod/cen2000/phc-2-27-pt1.pdf.
(C) 2017 CPI, 2016 CPI and 1999 CPI: For United States, United States Bureau of Labor Statistics (2017) Consumer Price Index - All Urban Consumers, United States City Average. All Items. 1982-84=100. http://data.bls.gov/timeseries/CUUR0000SA0?data_tool=Xgtable. For Missouri State: United States Bureau of Labor Statistics (2017) Consumer Price Index - All Urban Consumers, Midwest Urban Areas, All Items. 1982-84=100. http://data.bls.gov/timeseries/CUUR0200SA0?data_tool=Xgtable.
(D) 2016 MHI in 2017 Dollar: 2016 MHI in 2016 Dollar x 2017 CPI /2016 CPI; 2000 MHI in 2017 Dollar: 2000 MHI in 1999 Dollar x 2017 CPI /1999 CPI.
(E) Percent Change in Median Household Income (2000-2016) = (2016 MHI in 2017 Dollar - 2000 MHI in 2017 Dollar) / (2000 MHI in 2017 Dollar).
2. ($69.91/($51,658/12))100% = 1.6%
3. ($69.91/($45,973/12))100% = 1.8%
4. (A) Total Population in 2016: United States Census Bureau. 2012-2016 American Community Survey 5-Year Estimates, Table B01003: Total Population - Universe: Total Population. http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_16_5YR_B01003&prodType=table.
(B) Total Population in 2000: U.S. Census Bureau (2002) 2000 Census of Population and Housing, Summary Population and Housing Characteristics, PHC-1-27, Missouri, Table 2. Age and Sex: 2000, Washington, DC. http://www.census.gov/prod/cen2000/phc-2-27-pt1.pdf.
(C) Percent Change in Population (2000-2016) = (Total Population in 2016 - Total Population in 2000) / (Total Population in 2000).
5. (A) Median Age in 2016: United States Census Bureau. 2012-2016 American Community Survey 5-Year Estimates, Table B01002: Median Age by Sex - Universe: Total population. http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_16_5YR_B01002&prodType=table.
(B) Median Age in 2000: For United States, United States Census Bureau (2002) 2000 Census of Population and Housing, Summary Social, Economic, and Housing Characteristics, PHC-1-1 Part 1. United States Summary, Table 1. Age and Sex: 2000, Washington, DC., Page 2. https://www.census.gov/prod/cen2000/phc-1-1-pt1.pdf. For Missouri State, United States Census Bureau (2002) 2000 Census of Population and Housing, Summary Population and Housing Characteristics, PHC-1-27, Missouri, Table 2. Age and Sex: 2000, Washington, DC., Pages 64-92. http://www.census.gov/prod/cen2000/phc-2-27-pt1.pdf.
(C) Change in Median Age in Years (2000-2016) = (Median Age in 2016 - Median Age in 2000).
6. United States Census Bureau. 2012-2016 American Community Survey 5-Year Estimates, B23025: Employment Status for the Population 16 Years and Over - Universe: Population 16 years and Over. http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_16_5YR_B23025&prodType=table.
7. United States Census Bureau. 2012-2016 American Community Survey 5-Year Estimates, Table S1701: Poverty Status in the Past 12 Months. http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_16_5YR_S1701&prodType=table.
8. United States Census Bureau. 2012-2016 American Community Survey 5-Year Estimates, Table B22003: Receipt of Food Stamps/SNAP in the Past 12 Months by Poverty Status in the Past 12 Months for Households - Universe: Households. http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_16_5YR_B22003&prodType=table.

STANDARD CONDITIONS FOR NPDES PERMITS
ISSUED BY
THE MISSOURI DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION
REVISED
AUGUST 1, 2014

These Standard Conditions incorporate permit conditions as required by 40 CFR 122.41 or other applicable state statutes or regulations. These minimum conditions apply unless superseded by requirements specified in the permit.

Part I – General Conditions
Section A – Sampling, Monitoring, and Recording

1. **Sampling Requirements.**
   a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
   b. All samples shall be taken at the outfall(s) or Missouri Department of Natural Resources (Department) approved sampling location(s), and unless specified, before the effluent joins or is diluted by any other body of water or substance.

2. **Monitoring Requirements.**
   a. Records of monitoring information shall include:
      i. The date, exact place, and time of sampling or measurements;
      ii. The individual(s) who performed the sampling or measurements;
      iii. The date(s) analyses were performed;
      iv. The individual(s) who performed the analyses;
      v. The analytical techniques or methods used; and
      vi. The results of such analyses.
   b. If the permittee monitors any pollutant more frequently than required by the permit at the location specified in the permit using test procedures approved under 40 CFR Part 136, or another method required for an industry-specific waste stream under 40 CFR subchapters N or O, the results of such monitoring shall be included in the calculation and reported to the Department with the discharge monitoring report data (DMR) submitted to the Department pursuant to Section B, paragraph 7.

3. **Sample and Monitoring Calculations.** Calculations for all sample and monitoring results which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in the permit.

4. **Test Procedures**. The analytical and sampling methods used shall conform to the reference methods listed in 10 CSR 20-7.015 unless alternates are approved by the Department. The facility shall use sufficiently sensitive analytical methods for detecting, identifying, and measuring the concentrations of pollutants. The facility shall ensure that the selected methods are able to quantify the presence of pollutants in a given discharge at concentrations that are low enough to determine compliance with Water Quality Standards in 10 CSR 20-7.031 or effluent limitations unless provisions in the permit allow for other alternatives. A method is "sufficiently sensitive" when; 1) the method minimum level is at or below the level of the applicable water quality criterion for the pollutant or, 2) the method minimum level is above the applicable water quality criterion, but the amount of pollutant in a facility's discharge is high enough that the method detects and quantifies the level of pollutant in the discharge, or 3) the method has the lowest minimum level of the analytical methods approved under 10 CSR 20-7.015. These methods are also required for parameters that are listed as monitoring only, as the data collected may be used to determine if limitations need to be established. A permittee is responsible for working with their contractors to ensure that the analysis performed is sufficiently sensitive.

5. **Record Retention.** Except for records of monitoring information required by the permit related to the permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least five (5) years (or longer as required by 40 CFR part 503), 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 the permit, and records of all data used to complete the application for the 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 Department at any time.

6. **Illegal Activities.**
   a. The Federal Clean Water Act provides that 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 punished by a fine of not more than $10,000, or by imprisonment for not more than two (2) years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than four (4) years, or both.
   b. The Missouri Clean Water Law provides that any person or who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained pursuant to sections 644.006 to 644.141 shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than six (6) months, or by both. Second and successive convictions for violation under this paragraph by any person shall be punished by a fine of not more than $50,000 per day of violation, or by imprisonment for not more than two (2) years, or both.

Section B – Reporting Requirements

1. **Planned Changes.**
   a. The permittee shall give notice to the Department as soon as possible of any planned physical alterations or additions to the permitted facility when:
      i. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR 122.29(b); or
      ii. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under 40 CFR 122.42;
      iii. The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan;
      iv. Any facility expansions, production increases, or process modifications which will result in a new or substantially different discharge or sludge characteristics must be reported to the Department 60 days before the facility or process modification begins. Notification may be accomplished by application for a new permit. If the discharge does not violate effluent limitations specified in the permit, the facility is to submit a notice to the Department of the changed discharge at least 30 days before such changes. The Department may require a construction permit and/or permit modification as a result of the proposed changes at the facility.

2. **Non-compliance Reporting.**
   a. The permittee shall report any noncompliance which may endanger health or the environment. Relevant information shall be provided orally or via the current electronic method approved by the Department, within 24 hours from the time the permittee becomes aware of the circumstances, and shall be reported to the appropriate Regional Office during normal business hours or the Environmental Emergency Response hotline at 573-634-2436 outside of normal business hours. A written submission shall also be provided within five (5) business 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 reoccurrence of the noncompliance.

b. The following shall be included as information which must be reported within 24 hours under this paragraph.
   i. Any unanticipated bypass which exceeds any effluent limitation in the permit.
   ii. Any upset which exceeds any effluent limitation in the permit.
   iii. Violation of a maximum daily discharge limitation for any of the pollutants listed by the Department in the permit required to be reported within 24 hours.

c. The Department may waive the written report on a case-by-case basis for reports under paragraph 2. b. of this section if the oral report has been received within 24 hours.

3. **Anticipated Noncompliance**. The permittee shall give advance notice to the Department of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements. The notice shall be submitted to the Department 60 days prior to such changes or activity.

4. **Compliance Schedules.** Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of the permit shall be submitted no later than 14 days following each schedule date. The report shall provide an explanation for the instance of noncompliance and a proposed schedule or anticipated date, for achieving compliance with the compliance schedule requirement.

5. **Other Noncompliance.** The permittee shall report all instances of noncompliance not reported under paragraphs 2, 3, and 6 of this section, at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph 2. a. of this section.

6. **Other Information**. Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Department, it shall promptly submit such facts or information.

7. **Discharge Monitoring Reports.**
   a. Monitoring results shall be reported at the intervals specified in the permit.
   b. Monitoring results must be reported to the Department via the current method approved by the Department, unless the permittee has been granted a waiver from using the method. If the permittee has been granted a waiver, the permittee must use forms provided by the Department.
   c. Monitoring results shall be reported to the Department no later than the 28th day of the month following the end of the reporting period.

Section C – Bypass/Upset Requirements

1. **Definitions.**
   a. *Bypass*: the intentional diversion of waste streams from any portion of a treatment facility, except in the case of blending.
   b. *Severe Property Damage*: substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.
   c. *Upset*: an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

2. **Bypass Requirements.**
   a. Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs 2. b. and 2. c. of this section.
   b. Notice.
      i. Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least 10 days before the date of the bypass.
      ii. Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in Section B – Reporting Requirements, paragraph 5 (24-hour notice).
   c. Prohibition of bypass.
      i. Bypass is prohibited, and the Department may take enforcement action against a permittee for bypass, unless:
         1. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
         2. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
         3. The permittee submitted notices as required under paragraph 2. b. of this section.
      ii. The Department may approve an anticipated bypass, after considering its adverse effects, if the Department determines that it will meet the three (3) conditions listed above in paragraph 2. c. i. of this section.

3. **Upset Requirements.**
   a. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph 3. b. of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.
   b. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
      i. An upset occurred and that the permittee can identify the cause(s) of the upset;
      ii. The permitted facility was at the time being properly operated; and
      iii. The permittee submitted notice of the upset as required in Section B – Reporting Requirements, paragraph 2. b. ii. (24-hour notice).
      iv. The permittee complied with any remedial measures required under Section D – Administrative Requirements, paragraph 4.
   c. Burden of proof. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

Section D – Administrative Requirements

1. **Duty to Comply.** The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Missouri Clean Water Law and Federal Clean Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.
   a. The permittee shall comply with effluent standards or prohibitions established under section 307(a) of the Federal Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.
   b. The Federal Clean Water Act provides that any person who violates section 301, 302, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any such sections in a permit issued under section 402, or any requirement imposed in a pretreatment program approved under sections 402(a)(3) or 402(b)(8) of the Act, is subject to a civil penalty not to exceed $25,000 per day for each violation. The Federal Clean Water Act provides that any person who negligently violates sections 301, 302, 306, 307, 308, 318, or 405 of the Act, or any condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, or any requirement

imposed in a pretreatment program approved under section 402(a)(3) or 402(b)(8) of the Act, is subject to criminal penalties of $2,500 to $25,000 per day of violation, or imprisonment of not more than one (1) year, or both. In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than $50,000 per day of violation, or by imprisonment of not more than two (2) years, or both. Any person who knowingly violates such sections, or such conditions or limitations is subject to criminal penalties of $5,000 to $50,000 per day of violation, or imprisonment for not more than three (3) years, or both. In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than $100,000 per day of violation, or imprisonment of not more than six (6) years, or both. Any person who knowingly violates section 301, 302, 303, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, and who knows at that time that he thereby places another person in imminent danger of death or serious bodily injury, shall, upon conviction, be subject to a fine of not more than $250,000 or imprisonment of not more than 15 years, or both. In the case of a second or subsequent conviction for a knowing endangerment violation, a person shall be subject to a fine of not more than $500,000 or by imprisonment of not more than 30 years, or both. An organization, as defined in section 309(c)(3)(B)(iii) of the CWA, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than $1,000,000 and can be fined up to $2,000,000 for second or subsequent convictions.

c. Any person may be assessed an administrative penalty by the EPA Director for violating section 301, 302, 306, 307, 308, 318 or 405 of this Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of this Act. Administrative penalties for Class I violations are not to exceed $10,000 per violation, with the maximum amount of any Class I penalty assessed not to exceed $25,000. Penalties for Class II violations are not to exceed $10,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed $125,000.

d. It is unlawful for any person to cause or permit any discharge of water contaminants from any water contaminant or point source located in Missouri in violation of sections 644.006 to 644.141 of the Missouri Clean Water Law, or any standard, rule or regulation promulgated by the commission. In the event the commission or the director determines that any provision of sections 644.006 to 644.141 of the Missouri Clean Water Law or standard, rules, limitations or regulations promulgated pursuant thereto, or permits issued by, or any final abatement order, other order, or determination made by the commission or the director, or any filing requirement pursuant to sections 644.006 to 644.141 of the Missouri Clean Water Law or any other provision which this state is required to enforce pursuant to any federal water pollution control act, is being, was, or is in imminent danger of being violated, the commission or director may cause to have instituted a civil action in any court of competent jurisdiction for the injunctive relief to prevent any such violation or further violation or for the assessment of a penalty not to exceed $10,000 per day for each day, or part thereof, the violation occurred and continues to occur, or both, as the court deems proper. Any person who willfully or negligently commits any violation in this paragraph shall, upon conviction, be punished by a fine of not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment for not more than one year, or both. Second and successive convictions for violation of the same provision of this paragraph by any person shall be punished by a fine of not more than $50,000 per day of violation, or by imprisonment for not more than two (2) years, or both.

2. **Duty to Reapply.**
   a. If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit.
   b. A permittee with a currently effective site-specific permit shall submit an application for renewal at least 180 days before the expiration date of the existing permit, unless permission for a later date has been granted by the Department. (The Department shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)
   c. A permittees with currently effective general permit shall submit an application for renewal at least 30 days before the existing permit expires, unless the permittee has been notified by the Department that an earlier application must be made. The Department may grant permission for a later submission date. (The Department shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)

3. **Need to Halt or Reduce Activity Not a Defense.** It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

4. **Duty to Mitigate.** The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

5. **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 which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

6. **Permit Actions.**
   a. Subject to compliance with statutory requirements of the Law and Regulations and applicable Court Order, this permit may be modified, suspended, or revoked in whole or in part during its term for cause including, but not limited to, the following:
      i. Violations of any terms or conditions of this permit or the law;
      ii. Having obtained this permit by misrepresentation or failure to disclose fully any relevant facts;
      iii. A change in any circumstances or conditions that requires either a temporary or permanent reduction or elimination of the authorized discharge; or
      iv. Any reason set forth in the Law or Regulations.
   b. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

7. **Permit Transfer.**
   a. Subject to 10 CSR 20-6.010, an operating permit may be transferred upon submission to the Department of an application to transfer signed by the existing owner and the new owner, unless prohibited by the terms of the permit. Until such time the permit is officially transferred, the original permittee remains responsible for complying with the terms and conditions of the existing permit.
   b. The Department 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 the Missouri Clean Water Law or the Federal Clean Water Act.
   c. The Department, within 30 days of receipt of the application, shall notify the new permittee of its intent to revoke or reissue or transfer the permit.

8. **Toxic Pollutants.** The permittee shall comply with effluent standards or prohibitions established under section 307(a) of the Federal Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under section 405(d) of the Federal Clean Water Act within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.

9. **Property Rights.** This permit does not convey any property rights of any sort, or any exclusive privilege.

10. **Duty to Provide Information.** The permittee shall furnish to the Department, within a reasonable time, any information which the Department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The permittee shall also furnish to the Department upon request, copies of records required to be kept by this permit.

11. **Inspection and Entry.** The permittee shall allow the Department, or an authorized representative (including an authorized contractor acting as a representative of the Department), upon 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 must be kept under the conditions of the permit;
    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 permit compliance or as otherwise authorized by the Federal Clean Water Act or Missouri Clean Water Law, any substances or parameters at any location.

12. **Closure of Treatment Facilities.**
    a. Persons who cease operation or plan to cease operation of waste, wastewater, and sludge handling and treatment facilities shall close the facilities in accordance with a closure plan approved by the Department.
    b. Operating Permits under 10 CSR 20-6.010 or under 10 CSR 20-6.015 are required until all waste, wastewater, and sludges have been disposed of in accordance with the closure plan approved by the Department and any disturbed areas have been properly stabilized. Disturbed areas will be considered stabilized when perennial vegetation, pavement, or structures using permanent materials cover all areas that have been disturbed. Vegetative cover, if used, shall be at least 70% plant density over 100% of the disturbed area.

13. **Signatory Requirement.**
    a. All permit applications, reports required by the permit, or information requested by the Department shall be signed and certified. (See 40 CFR 122.22 and 10 CSR 20-6.010)
    b. The Federal Clean Water Act provides that 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 non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than six (6) months per violation, or by both.
    c. The Missouri Clean Water Law provides that any person who knowingly makes any false statement, representation or certification in any application, record, report, plan, or other document filed or required to be maintained pursuant to sections 644.006 to 644.141 shall, upon conviction, be punished by a fine of not more than ten thousand dollars, or by imprisonment for not more than six months, or by both.

14. **Severability.** The provisions of the permit are severable, and if any provision of the permit, or the application of any provision of the permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of the permit, shall not be affected thereby.

STANDARD CONDITIONS FOR NPDES PERMITS
ISSUED BY
THE MISSOURI DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION
REVISED
MAY 1, 2013

PART II - SPECIAL CONDITIONS – PUBLICLY OWNED TREATMENT WORKS
SECTION A – INDUSTRIAL USERS

1. Definitions

Definitions as set forth in the Missouri Clean Water Laws and approved by the Missouri Clean Water Commission shall apply to terms used herein.

Significant Industrial User (SIU). Except as provided in the *General Pretreatment Regulation* 10 CSR 20-6.100, the term Significant Industrial User means:

1. All Industrial Users subject to Categorical Pretreatment Standards; and
2. Any other Industrial User that: discharges an average of 25,000 gallons per day or more of process wastewater to the Publicly-Owned Treatment Works (POTW) (excluding sanitary, noncontact cooling and boiler blowdown wastewater); contributes a process wastestream which makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority on the basis that the Industrial User has a reasonable potential for adversely affecting the POTW's or for violating any Pretreatment Standard or requirement.

Clean Water Act (CWA) is the the federal Clean Water Act of 1972, 33 U.S.C. § 1251 et seq. (2002).

2. Identification of Industrial Discharges

Pursuant to 40 CFR 122.44(j)(1), all POTWs shall identify, in terms of character and volume of pollutants, any Significant Industrial Users discharging to the POTW subject to Pretreatment Standards under section 307(b) of the CWA and 40 CFR 403.

3. Application Information

Applications for renewal or modification of this permit must contain the information about industrial discharges to the POTW pursuant to 40 CFR 122.21(j)(6)

4. Notice to the Department

Pursuant to 40 CFR 122.42(b), all POTWs must provide adequate notice of the following:

1. Any new introduction of pollutants into the POTW from an indirect discharger which would be subject to section 301 or 306 of CWA if it were directly discharging these pollutants; and
2. Any substantial change into the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.
3. For purposes of this paragraph, adequate notice shall include information on:
   i. the quality and quantity of effluent introduced into the POTW, and
   ii. any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

For POTWs without an approved pretreatment program, the notice of industrial discharges which was not included in the permit application shall be made as soon as practicable. For POTWs with an approved pretreatment program, notice is to be included in the annual pretreatment report required in the special conditions of this permit. Notice may be sent to:

Missouri Department of Natural Resources
Water Protection Program
Attn: Pretreatment Coordinator
P.O. Box 176
Jefferson City, MO 65102

STANDARD CONDITIONS FOR NPDES PERMITS
ISSUED BY
THE MISSOURI DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION
March 1, 2015

PART III – SLUDGE AND BIOSOLIDS FROM DOMESTIC AND INDUSTRIAL WASTEWATER TREATMENT FACILITIES

SECTION A – GENERAL REQUIREMENTS

1. This permit pertains to sludge requirements under the Missouri Clean Water Law and regulation for domestic wastewater and industrial process wastewater. This permit also incorporates applicable federal sludge disposal requirements under 40 CFR 503 for domestic wastewater. The Environmental Protection Agency (EPA) has principal authority for permitting and enforcement of the federal sludge regulations under 40 CFR 503 for domestic wastewater. EPA has reviewed and accepted these standard sludge conditions. EPA may choose to issue a separate sludge addendum to this permit or a separate federal sludge permit at their discretion to further address the federal requirements.
2. These PART III Standard Conditions apply only to sludge and biosolids generated at domestic wastewater treatment facilities, including public owned treatment works (POTW), privately owned facilities and sludge or biosolids generated at industrial facilities.
3. Sludge and Biosolids Use and Disposal Practices:
    a. The permittee is authorized to operate the sludge and biosolids treatment, storage, use, and disposal facilities listed in the facility description of this permit.
    b. The permittee shall not exceed the design sludge volume listed in the facility description and shall not use sludge disposal methods that are not listed in the facility description, without prior approval of the permitting authority.
    c. The permittee is authorized to operate the storage, treatment or generating sites listed in the Facility Description section of this permit.
4. Sludge Received from other Facilities:
    a. Permittees may accept domestic wastewater sludge from other facilities including septic tank pumpings from residential sources as long as the design sludge volume is not exceeded and the treatment facility performance is not impaired.
    b. The permittee shall obtain a signed statement from the sludge generator or hauler that certifies the type and source of the sludge
5. These permit requirements do not supersede nor remove liability for compliance with county and other local ordinances.
6. These permit requirements do not supersede nor remove liability for compliance with other environmental regulations such as odor emissions under the Missouri Air Pollution Control Law and regulations.
7. This permit may (after due process) be modified, or alternatively revoked and reissued, to comply with any applicable sludge disposal standard or limitation issued or approved under Section 405(d) of the Clean Water Actor under Chapter 644 RSMo.
8. In addition to STANDARD CONDITIONS, the Department may include sludge limitations in the special conditions portion or other sections of a site specific permit.
9. Alternate Limits in the Site Specific Permit.
   Where deemed appropriate, the Department may require an individual site specific permit in order to authorize alternate limitations:
    a. A site specific permit must be obtained for each operating location, including application sites.
    b. To request a site specific permit, an individual permit application, permit fee, and supporting documents shall be submitted for each operating location. This shall include a detailed sludge/biosolids management plan or engineering report.
10. Exceptions to these Standard Conditions may be authorized on a case-by-case basis by the Department, as follows:
    a. The Department will prepare a permit modification and follow permit notice provisions as applicable under 10 CSR 20-6.020, 40 CFR 124.10, and 40 CFR 501.15(a)(2)(ix)(E). This includes notification of the owner of the property located adjacent to each land application site, where appropriate.
    b. Exceptions cannot be granted where prohibited by the federal sludge regulations under 40 CFR 503.

SECTION B – DEFINITIONS

1. Best Management Practices include agronomic loading rates, soil conservation practices and other site restrictions.
2. Biosolids means organic fertilizer or soil amendment produced by the treatment of domestic wastewater sludge.
3. Biosolids land application facility is a facility where biosolids are spread onto the land at agronomic rates for production of food or fiber. The facility includes any structures necessary to store the biosolids until soil, weather, and crop conditions are favorable for land application.
4. Class A biosolids means a material that has met the Class A pathogen reduction requirements or equivalent treatment by a Process to Further Reduce Pathogens (PFRP) in accordance with 40 CFR 503.
5. Class B biosolids means a material that has met the Class B pathogen reduction requirements or equivalent treatment by a Process to Significantly Reduce Pathogens (PFRP) in accordance with 40 CFR 503.
6. Domestic wastewater means wastewater originating from the sanitary conveniences of residences, commercial buildings, factories and institutions; or co-mingled sanitary and industrial wastewater processed by a (POTW) or a privately owned facility.
7. Industrial wastewater means any wastewater, also known as process water, not defined as domestic wastewater. Per 40 CFR Part 122, process water means any water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product.
8. Mechanical treatment plants are wastewater treatment facilities that use mechanical devices to treat wastewater, including septic tanks, sand filters, extended aeration, activated sludge, contact stabilization, trickling filters, rotating biological discs, and other similar facilities. It does not include wastewater treatment lagoons and constructed wetlands for wastewater treatment.
9. Operating location as defined in 10 CSR 20-2.010 is all contiguous lands owned, operated or controlled by one (1) person or by two (2) or more persons jointly or as tenants in common.
10. Plant Available Nitrogen (PAN) is the nitrogen that will be available to plants during the growing seasons after biosolids application.
11. Public contact site is land with a high potential for contact by the public. This includes, but is not limited to, public parks, ball fields, cemeteries, plant nurseries, turf farms, and golf courses.
12. Sludge is the solid, semisolid, or liquid residue removed during the treatment of wastewater. Sludge includes septage removed from septic tanks or equivalent facilities. Sludge does not include carbon coal byproducts (CCBs)
13. Sludge lagoon is part of a mechanical wastewater treatment facility. A sludge lagoon is an earthen basin that receives sludge that has been removed from a wastewater treatment facility. It does not include a wastewater treatment lagoon or sludge treatment units that are not a part of a mechanical wastewater treatment facility.
14. Septage is the material pumped from residential septic tanks and similar treatment works (with a design population of less than 150 people). The standard for biosolids from septage is different from other sludges.

SECTION C – MECHANICAL WASTEWATER TREATMENT FACILITIES

1. Sludge shall be routinely removed from wastewater treatment facilities and handled according to the permit facility description and sludge conditions of this permit.
2. The permittee shall operate the facility so that there is no sludge discharged to waters of the state.
3. Mechanical treatment plants shall have separate sludge storage compartments in accordance with 10 CSR 20, Chapter 8. Failure to remove sludge from these storage compartments on the required design schedule is a violation of this permit.

SECTION D – SLUDGE DISPOSED AT OTHER TREATMENT FACILITY OR CONTRACT HAULER

1. This section applies to permittees that haul sludge to another treatment facility for disposal or use contract haulers to remove and dispose of sludge.
2. Permittees that use contract haulers are responsible for compliance with all the terms of this permit including final disposal, unless the hauler has a separate permit for sludge or biosolids disposal issued by the Department; or the hauler transports the sludge to another permitted treatment facility.
3. Haulers who land apply septage must obtain a state permit.
4. Testing of sludge, other than total solids content, is not required if sludge is hauled to a municipal wastewater treatment facility or other permitted wastewater treatment facility, unless it is required by the accepting facility.

SECTION E – INCINERATION OF SLUDGE

1. Sludge incineration facilities shall comply with the requirements of 40 CFR 503 Subpart E; air pollution control regulations under 10 CSR 10; and solid waste management regulations under 10 CSR 80.
2. Permittee may be authorized under the facility description of this permit to store incineration ash in lagoons or ash ponds. This permit does not authorize the disposal of incineration ash. Incineration ash shall be disposed in accordance with 10 CSR 80; or if the ash is determined to be hazardous with 10 CSR 25.
3. In addition to normal sludge monitoring, incineration facilities shall report the following as part of the annual report, quantity of sludge incinerated, quantity of ash generated, quantity of ash stored, and ash used or disposal method, quantity, and location. Permittee shall also provide the name of the disposal facility and the applicable permit number.

SECTION F – SURFACE DISPOSAL SITES AND SLUDGE LAGOONS

1. Surface disposal sites of domestic facilities shall comply with the requirements in 40 CFR 503 Subpart C; air pollution control regulations under 10 CSR 10; and solid waste management regulations under 10 CSR 80.
2. Sludge storage lagoons are temporary facilities and are not required to obtain a permit as a solid waste management facility under 10 CSR 80. In order to maintain sludge storage lagoons as storage facilities, accumulated sludge must be removed routinely, but not less than once every two years unless an alternate schedule is approved in the permit. The amount of sludge removed will be dependent on sludge generation and accumulation in the facility. Enough sludge must be removed to maintain adequate storage capacity in the facility.
    a. In order to avoid damage to the lagoon seal during cleaning, the permittee may leave a layer of sludge on the bottom of the lagoon, upon prior approval of the Department; or
    b. Permittee shall close the lagoon in accordance with Section H.

SECTION G – LAND APPLICATION

1. The permittee shall not land apply sludge or biosolids unless land application is authorized in the facility description or the special conditions of the issued NPDES permit.
2. Land application sites within a 20 miles radius of the wastewater treatment facility are authorized under this permit when biosolids are applied for beneficial use in accordance with these standard conditions unless otherwise specified in a site specific permit. If the permittee's land application site is greater than a 20 mile radius of the wastewater treatment facility, approval must be granted from the Department.
3. Land application shall not adversely affect a threatened or endangered species or its designated critical habitat.
4. Biosolids shall not be applied unless authorized in this permit or exempted under 10 CSR 20, Chapter 6.
    a. This permit does not authorize the land application of domestic sludge except for when sludge meets the definition of biosolids.
    b. This permit authorizes "Class A or B" biosolids derived from domestic wastewater and/or process water sludge to be land applied onto grass land, crop land, timber or other similar agricultural or silviculture lands at rates suitable for beneficial use as organic fertilizer and soil conditioner.
5. Public Contact Sites:

    Permittees who wish to apply Class A biosolids to public contact sites must obtain approval from the Department after two years of proper operation with acceptable testing documentation that shows the biosolids meet Class A criteria. A shorter length of testing will be allowed with prior approval from the Department. Authorization for land applications must be provided in the special conditions section of this permit or in a separate site specific permit.
    a. After Class B biosolids have been land applied, public access must be restricted for 12 months.
    b. Class B biosolids are only land applied to root crops, home gardens or vegetable crops whose edible parts will not be for human consumption.
6. Agricultural and Silvicultural Sites:

    Septage – Based on Water Quality guide 422 (WQ422) published by the University of Missouri
    a. Haulers that land apply septage must obtain a state permit
    b. Do not apply more than 30,000 gallons of septage per acre per year.
    c. Septage tanks are designed to retain sludge for one to three years which will allow for a larger reduction in pathogens and vectors, as compared to other mechanical type treatment facilities.
    d. To meet Class B sludge requirements, maintain septage at 12 pH for at least thirty (30) minutes before land application. 50 pounds of hydrated lime shall be added to each 1,000 gallons of septage in order to meet pathogen and vector stabilization for septage biosolids applied to crops, pastures or timberland.
    e. Lime is to be added to the pump truck and not directly to the septic tanks, as lime would harm the beneficial bacteria of the septic tank.

Biosolids - Based on Water Quality guide 423, 424, and 425 (WQ423, WQ424, WQ425) published by the University of Missouri;

a. Biosolids shall be monitored to determine the quality for regulated pollutants
b. The number of samples taken is directly related to the amount of sludge produced by the facility (See Section I of these Standard Conditions). Report as dry weight unless otherwise specified in the site specific permit. Samples should be taken only during land application periods. When necessary, it is permissible to mix biosolids with lower concentrations of biosolids as well as other suitable Department approved material to reach the maximum concentration of pollutants allowed.
c. Table 1 gives the maximum concentration allowable to protect water quality standards

TABLE 1

Biosolids ceiling concentration [1]	
Pollutant	Milligrams per kilogram dry weight
Arsenic	75
Cadmium	85
Copper	4,300
Lead	840
Mercury	57
Molybdenum	75
Nickel	420
Selenium	100
Zinc	7,500

[1] Land application is not allowed if the sludge concentration exceeds the maximum limits for any of these pollutants

d. The low metal concentration biosolids has reduced requirements because of its higher quality and can safely be applied for 100 years or longer at typical agronomic loading rates. (See Table 2)

TABLE 2

Biosolids Low Metal Concentration [1]	
Pollutant	Milligrams per kilogram dry weight
Arsenic	41
Cadmium	39
Copper	1,500
Lead	300
Mercury	17
Nickel	420
Selenium	36
Zinc	2,800

[1] You may apply low metal biosolids without tracking cumulative metal limits, provided the cumulative application of biosolids does not exceed 500 dry tons per acre.

e. Each pollutant in Table 3 has an annual and a total cumulative loading limit, based on the allowable pounds per acre for various soil categories.

TABLE 3

Pollutant	CEC 15+		CEC 5 to 15		CEC 0 to 5	
	Annual	Total [1]	Annual	Total [1]	Annual	Total [1]
Arsenic	1.8	36.0	1.8	36.0	1.8	36.0
Cadmium	1.7	35.0	0.9	9.0	0.4	4.5
Copper	66.0	1,335.0	25.0	250.0	12.0	125.0
Lead	13.0	267.0	13.0	267.0	13.0	133.0
Mercury	0.7	15.0	0.7	15.0	0.7	15.0
Nickel	19.0	347.0	19.0	250.0	12.0	125.0
Selenium	4.5	89.0	4.5	44.0	1.6	16.0
Zinc	124.0	2,492.0	50.0	500.0	25.0	250.0

[1] Total cumulative loading limits for soils with equal or greater than 6.0 pH (salt based test) or 6.5 pH (water based test)

TABLE 4 - Guidelines for land application of other trace substances [1]

Cumulative Loading	
Pollutant	Pounds per acre
Aluminum	4,000[2]
Beryllium	100
Cobalt	50
Fluoride	800
Manganese	500
Silver	200
Tin	1,000
Dioxin	(10 ppt in soil)[3]
Other	[4]

[1] Design of land treatment systems for Industrial Waste, 1979. Michael Ray Overcash, North Carolina State University and Land Treatment of Municipal Wastewater, EPA 1981.)

[2] This applies for a soil with a pH between 6.0 and 7.0 (salt based test) or a pH between 6.5 to 7.5 (water based test). Case-by-case review is required for higher pH soils.

[3] Total Dioxin Toxicity Equivalents (TEQ) in soils, based on a risk assessment under 40 CFR 744, May 1998.

[4] Case by case review. Concentrations in sludge should not exceed the 95th percentile of the National Sewage Sludge Survey, EPA, January 2009.

Best Management Practices – Based on Water Quality guide 426 (WQ426) published by the University of Missouri

a. Use best management practices when applying biosolids.
b. Biosolids cannot discharge from the land application site
c. Biosolid application is subject to the Missouri Department of Agriculture State Milk Board concerning grazing restrictions of lactating dairy cattle.
d. Biosolid application must be in accordance with section 4 of the Endangered Species Act.
e. Do not apply more than the agronomic rate of nitrogen needed.
f. The applicator must document the Plant Available Nitrogen (PAN) loadings, available nitrogen in the soil, and crop removal when either of the following occurs: 1) When biosolids are greater than 50,000 mg/kg TN; or 2) When biosolids are land applied at an application rate greater than two dry tons per acre per year.
    i. PAN can be determined as follows and is in accordance with WQ426
    (Nitrate + nitrite nitrogen) + (organic nitrogen x 0.2) + (ammonia nitrogen x volatilization factor[1])
    [1] Volatilization factor is 0.7 for surface application and 1 for subsurface application.
g. Buffer zones are as follows:
    i. 300 feet of a water supply well, sinkhole, lake, pond, water supply reservoir or water supply intake in a stream;
    ii. 300 feet of a losing stream, no discharge stream, stream stretches designated for whole body contact recreation, wild and scenic rivers, Ozark National Scenic Riverways or outstanding state resource waters as listed in the Water Quality Standards, 10 CSR 20-7.031;
    iii. 150 feet if dwellings;
    iv. 100 feet of wetlands or permanent flowing streams;
    v. 50 feet of a property line or other waters of the state, including intermittent flowing streams.
h. Slope limitation for application sites are as follows;
    i. A slope 0 to 6 percent has no rate limitation
    ii. Applied to a slope 7 to 12 percent, the applicator may apply biosolids when soil conservation practices are used to meet the minimum erosion levels
    iii. Slopes > 12 percent, apply biosolids only when grass is vegetated and maintained with at least 80 percent ground cover at a rate of two dry tons per acre per year or less.
i. No biosolids may be land applied in an area that it is reasonably certain that pollutants will be transported into waters of the state.
j. Do not apply biosolids to sites with soil that is snow covered, frozen or saturated with liquid without prior approval by the Department.
k. Biosolids / sludge applicators must keep detailed records up to five years.

SECTION H – CLOSURE REQUIREMENTS

1. This section applies to all wastewater facilities (mechanical, industrial, and lagoons) and sludge or biosolids storage and treatment facilities and incineration ash ponds. It does not apply to land application sites.
2. Permittees of a domestic wastewater facility who plan to cease operation must obtain Department approval of a closure plan which addresses proper removal and disposal of all residues, including sludge, biosolids. Mechanical plants, sludge lagoons, ash ponds and other storage structures must obtain approval of a closure plan from the Department. Permittee must maintain this permit until the facility is closed in accordance with the approved closure plan per 10 CSR 20 – 6. 010 and 10 CSR 20 – 6.015.
3. Residuals that are left in place during closure of a lagoon or earthen structure or ash pond shall not exceed the agricultural loading rates as follows:
    a. Residuals shall meet the monitoring and land application limits for agricultural rates as referenced in Section H of these standard conditions.
    b. If a wastewater treatment lagoon has been in operation for 15 years or more without sludge removal, the sludge in the lagoon qualifies as a Class B biosolids with respect to pathogens due to anaerobic digestion, and testing for fecal coliform is not required. For other lagoons, testing for fecal coliform is required to show compliance with Class B biosolids limitations. In order to reach Class B biosolids requirements, fecal coliform must be less than 2,000,000 colony forming units or 2,000,000 most probable number. All fecal samples must be presented as geometric mean per gram.
    c. The allowable nitrogen loading that may be left in the lagoon shall be based on the plant available nitrogen (PAN) loading. For a grass cover crop, the allowable PAN is 300 pounds/acre.
        i. PAN can be determined as follows:

        (Nitrate + nitrite nitrogen) + (organic nitrogen x 0.2) + (ammonia nitrogen x volatilization factor[1])

        [1] Volatilization factor is 0.7 for surface application and 1 for subsurface application.
4. When closing a domestic wastewater treatment lagoon with a design treatment capacity equal or less than 150 persons, the residuals are considered "septage" under the similar treatment works definition. See Section B of these standard conditions. Under the septage category, residuals may be left in place as follows:
    a. Testing for metals or fecal coliform is not required
    b. If the wastewater treatment lagoon has been in use for less than 15 years, mix lime with the sludge at a rate of 50 pounds of hydrated lime per 1000 gallons (134 cubic feet) of sludge.
    c. The amount of sludge that may be left in the lagoon shall be based on the plant available nitrogen (PAN) loading. 100 dry tons/acre of sludge may be left in the basin without testing for nitrogen. If 100 dry tons/acre or more will be left in the lagoon, test for nitrogen and determine the PAN using the calculation above. Allowable PAN loading is 300 pounds/acre.
5. Residuals left within the domestic lagoon shall be mixed with soil on at least a 1 to 1 ratio, the lagoon berm shall be demolished, and the site shall be graded and contain ≥70% vegetative density over 100% of the site so as to avoid ponding of storm water and provide adequate surface water drainage without creating erosion.
6. Lagoons and/or earthen structure and/or ash pond closure activities shall obtain a storm water permit for land disturbance activities that equal or exceed one acre in accordance with 10 CSR 20-6.200
7. When closing a mechanical wastewater and/or industrial process wastewater plant; all sludge must be cleaned out and disposed of in accordance with the Department approved closure plan before the permit for the facility can be terminated.
    a. Land must be stabilized which includes any grading, alternate use or fate upon approval by the Department, remediation, or other work that exposes sediment to stormwater per 10 CSR 20-6.200. The site shall be graded and contain ≥70% vegetative density over 100% of the site, so as to avoid ponding of storm water and provide adequate surface water drainage without creating erosion.
    b. Per 10 CSR 20-6.015(4)(B)6, Hazardous Waste shall not be land applied or disposed during industrial and mechanical plant closures unless in accordance with Missouri Hazardous Waste Management Law and Regulations under 10 CSR 25.
    c. After demolition of the mechanical plant / industrial plant, the site must only contain clean fill defined in RSMo 260.200 (5) as uncontaminated soil, rock, sand, gravel, concrete, asphaltic concrete, cinderblocks, brick, minimal amounts of wood and metal, and inert solids as approved by rule or policy of the Department for fill or other beneficial use. Other solid wastes must be removed.
8. If sludge from the domestic lagoon or mechanical treatment plant exceeds agricultural rates under Section G and/or H, a landfill permit or solid waste disposal permit must be obtained if the permittee chooses to seek authorization for on-site sludge disposal under the Missouri Solid Waste Management Law and regulations per 10 CSR 80, and the permittee must comply with the surface disposal requirements under 40 CFR 503, Subpart C.

SECTION I – MONITORING FREQUENCY

1. At a minimum, sludge or biosolids shall be tested for volume and percent total solids on a frequency that will accurately represent sludge quantities produced and disposed. Please see the table below.

TABLE 5

Design Sludge Production (dry tons per year)	Monitoring Frequency (See Notes 1, 2, and 3)			
	Metals, Pathogens and Veetors	Nitrogen TKN [1]	Nitrogen PAN [2]	Priority Pollutants and TCLP [3]
0 to 100	1 per year	1 per year	1 per month	1 per year
101 to 200	biannual	biannual	1 per month	1 per year
201 to 1,000	quarterly	quarterly	1 per month	1 per year
1,001 to 10,000	1 per month	1 per month	1 per week	--[4]
10,001 +	1 per week	1 per week	1 per day	--[4]

[1] Test total Kjeldahl nitrogen, if biosolids application is 2 dry tons per acre per year or less.
[2] Calculate plant available nitrogen (PAN) when either of the following occurs: 1) when biosolids are greater than 50,000 mg/kg TN; or 2) when biosolids are land applied at an application rate greater than two dry tons per acre per year.
[3] Priority pollutants (40 CFR 122.21, Appendix D, Tables II and III) and toxicity characteristic leaching procedure (40 CFR 261.24) is required only for permit holders that must have a pre-treatment program.
[4] One sample for each 1,000 dry tons of sludge.

Note 1: Total solids: A grab sample of sludge shall be tested one per day during land application periods for percent total solids. This data shall be used to calculate the dry tons of sludge applied per acre.
Note 2: Total Phosphorus: Total phosphorus and total potassium shall be tested at the same monitoring frequency as metals.
Note 3: Table 5 is not applicable for incineration and permit holders that landfill their sludge.

2. If you own a wastewater treatment lagoon or sludge lagoon that is cleaned out once a year or less, you may choose to sample only when the sludge is removed or the lagoon is closed. Test one composite sample for each 100 dry tons of sludge or biosolids removed from the lagoon during the year within the lagoon at closing. Composite sample must represent various areas at one-foot depth.
3. Additional testing may be required in the special conditions or other sections of the permit. Permittees receiving industrial wastewater may be required to conduct additional testing upon request from the Department.
4. At this time, the Department recommends monitoring requirements shall be performed in accordance with, "POTW Sludge Sampling and Analysis Guidance Document," United States Environmental Protection Agency, August 1989, and the subsequent revisions.

SECTION J – RECORD KEEPING AND REPORTING REQUIREMENTS

1. The permittee shall maintain records on file at the facility for at least five years for the items listed in these standard conditions and any additional items in the Special Conditions section of this permit. This shall include dates when the sludge facility is checked for proper operation, records of maintenance and repairs and other relevant information.
2. Reporting period
   a. By January 28th of each year, an annual report shall be submitted for the previous calendar year period for all mechanical wastewater treatment facilities, sludge lagoons, and sludge or biosolids disposal facilities.
   b. Permittees with wastewater treatment lagoons shall submit the above annual report only when sludge or biosolids are removed from the lagoon during the report period or when the lagoon is closed.
3. Report Forms. The annual report shall be submitted on report forms provided by the Department or equivalent forms approved by the Department.
4. Reports shall be submitted as follows:

Major facilities (those serving 10,000 persons or 1 million gallons per day) shall report to both the Department and EPA. Other facilities need to report only to the Department. Reports shall be submitted to the addresses listed as follows:

DNR regional office listed in your permit
(see cover letter of permit)
ATTN: Sludge Coordinator

EPA Region VII
Water Compliance Branch (WACM)
Sludge Coordinator
11201 Renner Blvd.
Lenexa, KS 66219

5. Annual report contents. The annual report shall include the following:
    a. Sludge and biosolids testing performed. Include a copy or summary of all test results, even if not required by the permit.
    b. Sludge or biosolids quantity shall be reported as dry tons for quantity generated by the wastewater treatment facility, the quantity stored on site at the end of the year, and the quantity used or disposed.
    c. Gallons and % solids data used to calculate the dry ton amounts.
    d. Description of any unusual operating conditions.
    e. Final disposal method, dates, and location, and person responsible for hauling and disposal.
        i. This must include the name, address for the hauler and sludge facility. If hauled to a municipal wastewater treatment facility, sanitary landfill, or other approved treatment facility, give the name of that facility.
        ii. Include a description of the type of hauling equipment used and the capacity in tons, gallons, or cubic feet.
    f. Contract Hauler Activities:
    If contract hauler, provide a copy of a signed contract from the contractor. Permittee shall require the contractor to supply information required under this permit for which the contractor is responsible. The permittee shall submit a signed statement from the contractor that he has complied with the standards contained in this permit, unless the contract hauler has a separate sludge or biosolids use permit.
    g. Land Application Sites:
        i. Report the location of each application site, the annual and cumulative dry tons/acre for each site, and the landowners name and address. The location for each spreading site shall be given as a legal description for nearest ¼, ¼, Section, Township, Range, and county, or UTM coordinates. The facility shall report PAN when either of the following occurs: 1) When biosolids are greater than 50,000 mg/kg TN; or 2) when biosolids are land applied at an application rate greater than two dry tons per acre per year.
        ii. If the "Low Metals" criteria are exceeded, report the annual and cumulative pollutant loading rates in pounds per acre for each applicable pollutant, and report the percent of cumulative pollutant loading which has been reached at each site.
        iii. Report the method used for compliance with pathogen and vector attraction requirements.
        iv. Report soil test results for pH, CEC, and phosphorus. If none was tested during the year, report the last date when tested and results.

RECEIVED

JUN 16 2015

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM
FORM B: APPLICATION FOR OPERATING PERMIT FOR FACILITIES THAT RECEIVE PRIMARILY DOMESTIC WASTE AND HAVE A DESIGN FLOW LESS THAN OR EQUAL TO 100,000 GALLONS PER DAY

WATER PROTECTION PROGRAM

FOR AGENCY USE ONLY	
CHECK NUMBER	
DATE RECEIVED: 6-16-15	FEE SUBMITTED: -0-

READ THE ACCOMPANYING INSTRUCTIONS BEFORE COMPLETING THIS FORM

1. THIS APPLICATION IS FOR:

☐ An operating permit for a new or unpermitted facility. Construction Permit # _____
(Include completed antidegradation review or request for antidegradation review, see instructions)

☑ A site-specific operating permit renewal: Permit #MO- 0135305 Expiration Date 3/10/2016

☐ A site-specific operating permit modification: Permit #MO- _____ Reason: _____

☐ General permit (MOGD – Non POTWs discharging < 50,000 GPD or MOG823 – Land Application of Domestic Wastewater):
Permit #MO- _____ Expiration Date _____

1.1 Is the appropriate fee included with the application (see instructions for appropriate fee)? ☐ YES ☐ NO

2. FACILITY

NAME		TELEPHONE NUMBER WITH AREA CODE	
BCRSD Brown Station WWTF		(573) 443-2774	
ADDRESS (PHYSICAL)	CITY	STATE	ZIP CODE
O'Rear Road and North Brown Station Road	Columbia	MO	65204

2.1 Legal description: ¼, NW ¼, NW ¼, Sec. 10 , T 49n , R 12w County Boone

2.2 UTM Coordinates Easting (X): 563938 Northing (Y): 4322492
For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)

2.3 Name of receiving stream: Clays Fork

2.4 Number of outfalls: one Wastewater outfalls: one Stormwater outfalls: 0 Instream monitoring sites: 0

3. OWNER

NAME	EMAIL ADDRESS	TELEPHONE NUMBER WITH AREA CODE	
Boone County Regional Sewer District	dcooksey@bcrsd.com	(573) 441-0098	
ADDRESS	CITY	STATE	ZIP CODE
1314 North 7th street	Columbia	Mo	65201

3.1 Request review of draft permit prior to public notice? ☑ YES ☐ NO

3.2 Are you a publicly owned treatment works? ☑ YES ☐ NO
If yes, is the Financial Questionnaire attached? ☐ YES ☑ NO

3.3 Are you a privately owned treatment works? ☐ YES ☑ NO

3.4 Are you a privately owned treatment facility regulated by the Public Service Commission? ☐ YES ☑ NO

4. CONTINUING AUTHORITY: Permanent organization that will serve as the continuing authority for the operation, maintenance and modernization of the facility.

NAME	EMAIL ADDRESS	TELEPHONE NUMBER WITH AREA CODE	
Boone County Regional Sewer District	dcooksey@bcrsd.com	(573) 441-0098	
ADDRESS	CITY	STATE	ZIP CODE
1314 North Seventh Street	Columbia	Mo	65201

If the continuing authority is different than the owner, include a copy of the contract agreement between the two parties and a description of the responsibilities of both parties within the agreement.

5. OPERATOR

NAME	TITLE	CERTIFICATE NUMBER
Dwayne Cooksey	Operations Manager	1249
EMAIL ADDRESS		TELEPHONE NUMBER WITH AREA CODE
dcooksey@bcrsd.com		(573) 441-0098

6. FACILITY CONTACT

NAME		TITLE	
Dwayne Cooksey		Operations Manager	
EMAIL ADDRESS		TELEPHONE NUMBER WITH AREA CODE	
dcooksey@bcrsd.com		(573) 441-0098	
ADDRESS	CITY	STATE	ZIP CODE
1314 North Seventh Street	Columbia	Mo.	65257

MO 780-1512 (12-14)

NE Boone

7. DESCRIPTION OF FACILITY

7.1 Process Flow Diagram or Schematic: Provide a diagram showing the processes of the treatment plant. Show all of the treatment units, including disinfection (e.g. – chlorination and dechlorination), influents, and outfalls. Specify where samples are taken. Indicate any treatment process changes in the routing of wastewater during dry weather and peak wet weather. Include a brief narrative description of the diagram.
Attach sheets as necessary.

STEP System/Recirculating sand filter. Sludge disposal is handled by BCRSD. Design population equivalent is 19. Design flow is 1,850 gallon per day. Design sludge production is 0.37 dry tons/year.

7.2 Attach an aerial photograph or USGS topographic map showing the location of the facility and outfall.

8. ADDITIONAL FACILITY INFORMATION

8.1 Facility SIC code: _____ Discharge SIC code: 4952

8.2 Number of people presently connected or population equivalent (P.E.) 18.5 Design P.E. 18.5

8.3 Connections to the facility:

Number of units presently connected:

Homes 5 Trailers _____ Apartments _____ Other (including industrial) _____

Number of commercial establishments: _____

8.4 Design flow: 1,850 gpd | Actual flow: < 1,000 gallon per day

8.5 Will discharge be continuous through the year? ✓ Yes | No

Discharge will occur during the following months:

How many days of the week will discharge occur? 7

8.6 Is industrial wastewater discharged to the facility? | Yes | ✓ No

If yes, attach a list of the industries that discharge to your facility

8.7 Does the facility accept or process leachate from landfills? | Yes | ✓ No

8.8 Is wastewater land applied? | Yes | ✓ No

If yes, is Form I attached? | Yes | No

8.9 Does the facility discharge to a losing stream or sinkhole? | Yes | ✓ No

8.10 Has a wasteload allocation study been completed for this facility? Yes | ✓ No

9. LABORATORY CONTROL INFORMATION

LABORATORY WORK CONDUCTED BY PLANT PERSONNEL In House

Lab work conducted outside of plant.	Yes	No
Push-button or visual methods for simple test such as pH, settlable solids.	Yes	No
Additional procedures such as dissolved oxygen, chemical oxygen demand, biological oxygen demand, titrations, solids, volatile content.	Yes	No
More advanced determinations such as BOD seeding procedures, fecal coliform, nutrients, total oils, phenols, etc.	Yes	No
Highly sophisticated instrumentation, such as atomic absorption and gas chromatograph.	Yes	No

10. COLLECTION SYSTEM

10.1 Length of pipe in the sewer collection system? 1.383 Feet, or _____ Miles (either unit is appropriate)

10.2 Does significant infiltration occur in the collection system? | Yes | ✓ No

If yes, briefly explain any steps underway or planned to minimize inflow and infiltration:

11. BYPASSING

Does any bypassing occur in the collection system or at the treatment facility? | Yes | ✓ No

If yes, explain:

12. SLUDGE HANDLING, USE AND DISPOSAL

12.1 Is the sludge a hazardous waste as defined by 10 CSR 25? ☐ Yes ☑ No

12.2 Sludge production, including sludge received from others: 0.37 Design dry tons/year 0.37 Actual dry tons/year

12.3 Capacity of sludge holding structures:
Sludge storage provided: 507 cubic feet; 1825 days of storage; 15 average percent solids of sludge;
☑ No sludge storage is provided. ☐ Sludge is stored in lagoon.

12.4 Type of Storage:
☐ Holding tank ☐ Building
☐ Basin ☐ Lagoon
☐ Concrete Pad ☑ Other (Describe) residential septic tanks and WWTF

12.5 Sludge Treatment:
☐ Anaerobic Digester ☐ Lagoon ☐ Composting
☑ Storage Tank ☐ Aerobic Digester ☐ Other (Attach description)
☐ Lime Stabilization ☐ Air or Heat Drying

12.6 Sludge Use or Disposal:
☐ Land Application ☐ Surface Disposal (Sludge Disposal Lagoon, Sludge held for more than two years)
☐ Contract Hauler ☑ Hauled to Another treatment facility
☐ Incineration ☐ Sludge Retained in Wastewater treatment lagoon
☐ Solid waste landfill

12.7 Person responsible for hauling sludge to disposal facility:
☑ By applicant ☐ By others (complete below)

NAME	EMAIL ADDRESS		
ADDRESS	**CITY**	**STATE**	**ZIP CODE**
CONTACT PERSON	**TELEPHONE NUMBER WITH AREA CODE**	**PERMIT NO.**	
		MO-	

12.8 Sludge use or disposal facility
☐ By applicant ☑ By others (Complete below.)

NAME	EMAIL ADDRESS		
City of Columbia			
ADDRESS	**CITY**	**STATE**	**ZIP CODE**
POB N	Columbia	MO	65202
CONTACT PERSON	**TELEPHONE NUMBER WITH AREA CODE**	**PERMIT NO.**	
Davie Sorrel	(573) 874-6286	MO- 0097837	

12.9 Does the sludge or biosolids disposal comply with federal sludge regulations under 40 CFR 503?
☑ Yes ☐ No (Explain)

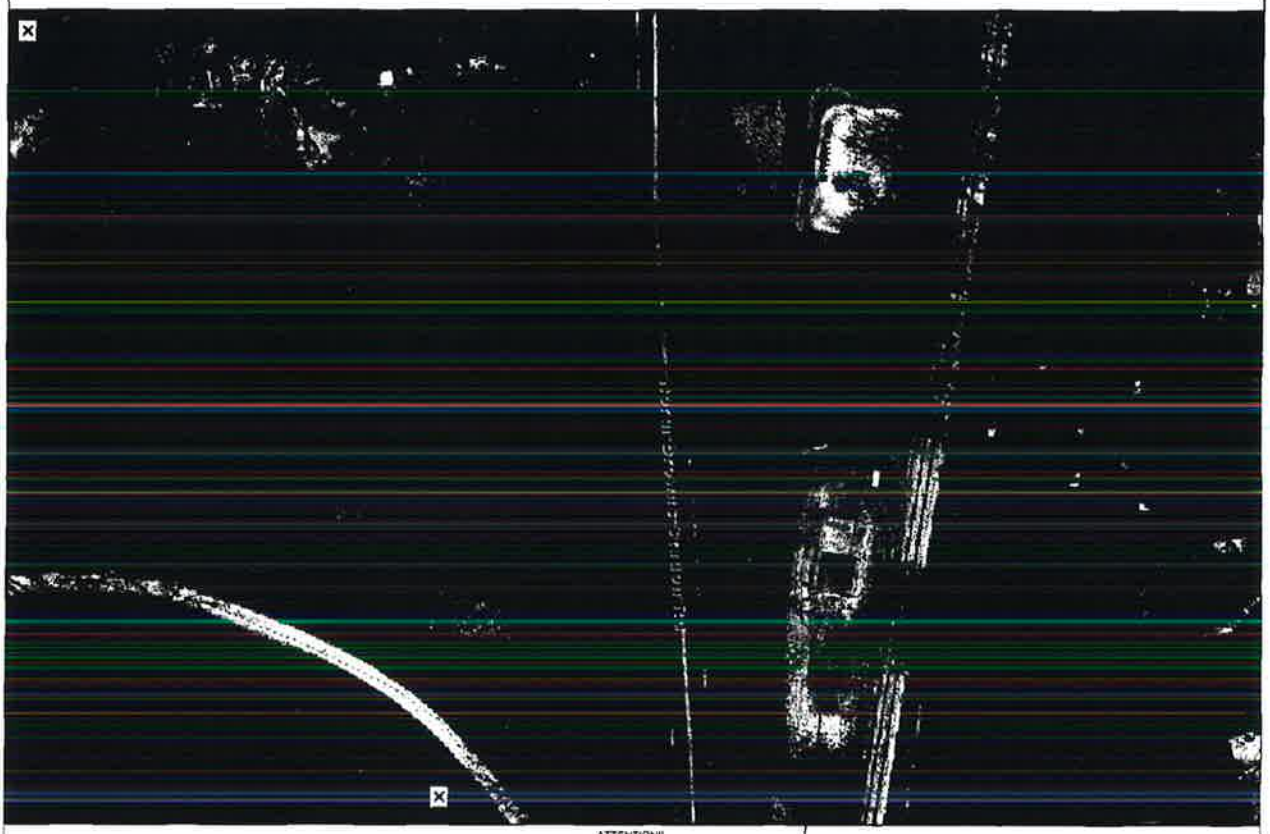
13. CERTIFICATION

I certify that I am familiar with the information contained in the application, that to the best of my knowledge and belief such information is true, complete and accurate, and if granted this permit, I agree to abide by the Missouri Clean Water Law and all rules, regulations, orders and decisions, subject to any legitimate appeal available to applicant under the Missouri Clean Water Law.

NAME (TYPE OR PRINT)	OFFICIAL TITLE	TELEPHONE NUMBER WITH AREA CODE
Dwayne Cooksey	Operations Manager	(573) 441-0098
SIGNATURE		**DATE SIGNED**
Dwayne Cooksey Operations Manager		6/24/2015

Boone County Internet Parcel Map

Prepared by the Boone County Assessor's Office, (573) 886-4262



ATTENTION!!

DISCLAIMER; READ CAREFULLY: These maps were prepared for the inventory of real property based on the utilization of deeds, plans, and/or supportive data. In addition, map files are frequently changed to reflect changes in boundaries, lot lines and other geographic features resulting from changes in ownership, development and other causes. The existence, dimension, and location of features, as well as other information, should not be relied upon for any purpose without actual field verification. The County of Boone makes no warranty of any kind concerning the completeness or accuracy of information contained on these maps and assumes no liability or responsibility for the use or reuse of these maps by persons not affiliated with Boone County. Use of these maps by any person not affiliated with Boone County constitutes agreement by the user to assume full liability and responsibility for the verification of the accuracy of information shown on these maps.

Fifth

APPENDIX B
EXHIBIT 1: PROPOSED IMPROVEMENTS

HALLSVILLE WWTF

HALLSVILLE EQUALIZATION BASIN

CEDAR GATE WWTF

HALLSVILLE UNITED METHODIST CHURCH WWTF

ROUTE B

E. MT. ZION CHURCH RD.

RICHARDSON ACRES WWTF

OAK RIDGE MOBILE HOME PARK WWTF

HILLCREST RESIDENTIAL CARE WWTF

BROWN STATION BOOSTER PUMP STATION

BROWN STATION WWTF

ROUTE B

BROWN STATION RD

COLT RR

ROUTE HH

E. OAKLAND CHURCH RD.

GRAVITY SEWER CONNECTION

Legend

- Wastewater Facilities
- Project 1 Force Main Alignment
- Project 2 Force Main Alignment

N

1,500 750 0 1,500

Feet

Cedar Gate, Richardson Acres and Brown Station Wastewater Improvements

EXHIBIT 1

APPENDIX C

DAILY MONITORING REPORTS

CEDAR GATE DRM DATA

Date	Description	Influent/Effluent	Unit	Monthly Average	Daily Max
12/31/2019	Ammonia (as N) + unionized ammonia	End of Pipe	mg/L	13.2	
09/30/2019	Ammonia (as N) + unionized ammonia	End of Pipe	mg/L	14.3	
06/30/2019	Ammonia (as N) + unionized ammonia	End of Pipe	mg/L	17.1	
03/31/2019	Ammonia (as N) + unionized ammonia	End of Pipe	mg/L	17.4	
12/31/2018	Ammonia (as N) + unionized ammonia	End of Pipe	mg/L	11.5	
09/30/2018	Ammonia (as N) + unionized ammonia	End of Pipe	mg/L	8.1	
06/30/2018	Ammonia (as N) + unionized ammonia	End of Pipe	mg/L	25.2	
03/31/2018	Ammonia (as N) + unionized ammonia	End of Pipe	mg/L	35.4	
12/31/2017	Ammonia (as N) + unionized ammonia	End of Pipe	mg/L	22.7	
09/30/2017	Ammonia (as N) + unionized ammonia	End of Pipe	mg/L	8.1	
06/30/2017	Ammonia (as N) + unionized ammonia	End of Pipe	mg/L	11.2	
03/31/2017	Ammonia (as N) + unionized ammonia	End of Pipe	mg/L	33.9	
12/31/2016	Ammonia (as N) + unionized ammonia	End of Pipe	mg/L	18.5	
09/30/2016	Ammonia (as N) + unionized ammonia	End of Pipe	mg/L	11.8	
06/30/2016	Ammonia (as N) + unionized ammonia	End of Pipe	mg/L	22.1	
03/31/2016	Ammonia (as N) + unionized ammonia	End of Pipe	mg/L	2.2	
12/31/2015	Ammonia (as N) + unionized ammonia	End of Pipe	mg/L	9.5	
09/30/2015	Ammonia (as N) + unionized ammonia	End of Pipe	mg/L	13.4	
06/30/2015	Ammonia (as N) + unionized ammonia	End of Pipe	mg/L	12.3	
03/31/2015	Ammonia (as N) + unionized ammonia	End of Pipe	mg/L	40.3	
12/31/2019	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	9	
09/30/2019	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	17	
06/30/2019	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	16	
03/31/2019	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	19	
12/31/2018	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	10	
09/30/2018	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	25	
06/30/2018	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	14	
03/31/2018	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	43	
12/31/2017	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	14	
09/30/2017	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	7	
06/30/2017	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	13	
03/31/2017	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	41	
12/31/2016	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	10	
09/30/2016	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	11	
06/30/2016	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	43	
03/31/2016	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	26	
12/31/2015	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	11	
09/30/2015	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	13	
06/30/2015	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	34	
03/31/2015	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	116	
12/31/2019	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.00295	0.003
11/30/2019	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.0028	0.0028
10/31/2019	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.0025	0.0029
09/30/2019	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.0029	0.003
08/31/2019	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.0021	0.0028
07/31/2019	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.00305	0.0032
06/30/2019	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.00295	0.003
05/31/2019	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.00295	0.003
04/30/2019	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.00295	0.003
03/31/2019	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.00255	0.003
02/28/2019	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.0032	0.0036
01/31/2019	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.0033	0.0036
12/31/2018	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.00255	0.003
11/30/2018	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.00215	0.0029
10/31/2018	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.00265	0.0034
09/30/2018	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.00175	0.0021
08/31/2018	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.00175	0.0021
07/31/2018	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.0025	0.0029
06/30/2018	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.0021	0.0028
05/31/2018	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.0029	0.003
04/30/2018	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.00201	0.00216
03/31/2018	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.0026	0.0048
02/28/2018	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.0021	0.0028
01/31/2018	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.0014	0.0014
12/31/2017	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.00155	0.0017
11/30/2017	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.0012	0.00144
10/31/2017	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.00155	0.0017
09/30/2017	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.00127	0.0014
08/31/2017	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.0021	0.0028
07/31/2017	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.001	0.001
06/30/2017	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.001	0.001

05/31/2017	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.001	0.001
04/30/2017	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.00122	0.00144
03/31/2017	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.00122	0.00144
02/28/2017	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.00122	0.00144
01/31/2017	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.0014	0.0014
12/31/2016	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.00122	0.00144
11/30/2016	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.00144	0.00144
10/31/2016	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.00144	0.0014
09/30/2016	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.0012	0.00144
08/31/2016	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.00122	0.00144
07/31/2016	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.012	0.014
06/30/2016	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.0021	0.0028
05/31/2016	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.0012	0.0014
04/30/2016	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.00144	0.00144
03/31/2016	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.001	0.001
02/29/2016	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.0012	0.0014
01/31/2016	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.00122	0.00144
12/31/2015	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.00122	0.00144
11/30/2015	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.00194	0.00288
10/31/2015	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.001	0.001
09/30/2015	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.0012	0.0014
08/31/2015	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.001	0.001
07/31/2015	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.0012	0.0014
06/30/2015	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.0019	0.0029
05/31/2015	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.0021	0.0029
04/30/2015	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.00216	0.00288
03/31/2015	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.00097	0.00144
02/28/2015	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d		
01/31/2015	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.0027933	0.00428
12/31/2019	Total Suspended Solids (TSS)	End of Pipe	mg/L	6	
09/30/2019	Total Suspended Solids (TSS)	End of Pipe	mg/L	15	
06/30/2019	Total Suspended Solids (TSS)	End of Pipe	mg/L	10	
03/31/2019	Total Suspended Solids (TSS)	End of Pipe	mg/L	25	
12/31/2018	Total Suspended Solids (TSS)	End of Pipe	mg/L	12	
09/30/2018	Total Suspended Solids (TSS)	End of Pipe	mg/L	10	
06/30/2018	Total Suspended Solids (TSS)	End of Pipe	mg/L	13	
03/31/2018	Total Suspended Solids (TSS)	End of Pipe	mg/L	56	
12/31/2017	Total Suspended Solids (TSS)	End of Pipe	mg/L	14	
09/30/2017	Total Suspended Solids (TSS)	End of Pipe	mg/L	14	
06/30/2017	Total Suspended Solids (TSS)	End of Pipe	mg/L	13	
03/31/2017	Total Suspended Solids (TSS)	End of Pipe	mg/L	33	
12/31/2016	Total Suspended Solids (TSS)	End of Pipe	mg/L	6	
09/30/2016	Total Suspended Solids (TSS)	End of Pipe	mg/L	12	
06/30/2016	Total Suspended Solids (TSS)	End of Pipe	mg/L	33	
03/31/2016	Total Suspended Solids (TSS)	End of Pipe	mg/L	23	
12/31/2015	Total Suspended Solids (TSS)	End of Pipe	mg/L	24	
09/30/2015	Total Suspended Solids (TSS)	End of Pipe	mg/L	13	
06/30/2015	Total Suspended Solids (TSS)	End of Pipe	mg/L	72	
03/31/2015	Total Suspended Solids (TSS)	End of Pipe	mg/L	37	
12/31/2019	BOD, 5-day, 20 deg. C	Influent	mg/L	279	
12/31/2018	BOD, 5-day, 20 deg. C	Influent	mg/L	426	
12/31/2017	BOD, 5-day, 20 deg. C	Influent	mg/L	348	
12/31/2016	BOD, 5-day, 20 deg. C	Influent	mg/L	284	
12/31/2015	BOD, 5-day, 20 deg. C	Influent	mg/L	310	
12/31/2019	Total Suspended Solids (TSS)	Influent	mg/L	190	
12/31/2018	Total Suspended Solids (TSS)	Influent	mg/L	322	
12/31/2017	Total Suspended Solids (TSS)	Influent	mg/L	316	
12/31/2016	Total Suspended Solids (TSS)	Influent	mg/L	420	
12/31/2015	Total Suspended Solids (TSS)	Influent	mg/L	298	

RICHARDSON ACRES DMR DATA

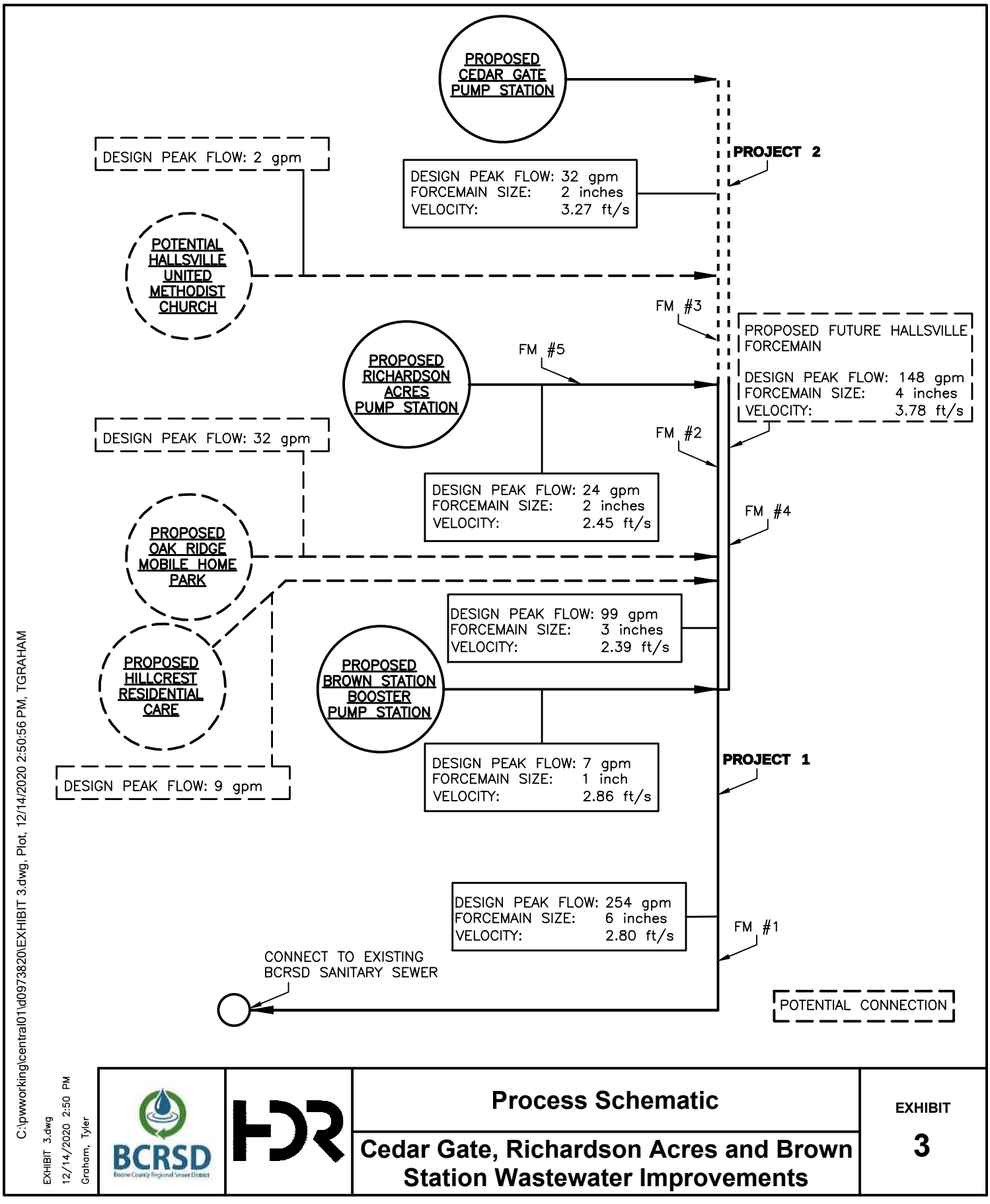
Date	Description	Influent/Effluent	Unit	Monthly Average	Daily Max
12/31/2019	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	9	
09/30/2019	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	14	
06/30/2019	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	37	
03/31/2019	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	14	
12/31/2018	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	8	
09/30/2018	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	18	
06/30/2018	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	12	
03/31/2018	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	15	
12/31/2017	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	13	
09/30/2017	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	6	
06/30/2017	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	10	
03/31/2017	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	9	
12/31/2016	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	8	
09/30/2016	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	17	
06/30/2016	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	34	
03/31/2016	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	10	
12/31/2015	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	16	
09/30/2015	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	19	
06/30/2015	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	27	
03/31/2015	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	14	
12/31/2019	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.0038	0.0041
09/30/2019	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.00436	0.0054
06/30/2019	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.0042	0.0047
03/31/2019	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.00445	0.0057
12/31/2018	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.0037	0.0041
09/30/2018	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.0032	0.0036
06/30/2018	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.00288	0.00288
03/31/2018	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.0038	0.0047
12/31/2017	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.0036	0.0041
09/30/2017	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.00344	0.0041
06/30/2017	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.0031	0.0043
03/31/2017	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.0034833	0.003927
12/31/2016	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.0041713	0.0048
09/30/2016	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.0039713	0.0042
06/30/2016	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.003638	0.004114
03/31/2016	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.0036683	0.00432
12/31/2015	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.0040205	0.004114
09/30/2015	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.004155667	0.004547
06/30/2015	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.0035635	0.003927
03/31/2015	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.00288	0.00288
12/31/2019	Nitrogen, ammonia total (as N)	End of Pipe	mg/L	2	
09/30/2019	Nitrogen, ammonia total (as N)	End of Pipe	mg/L	0.8	
06/30/2019	Nitrogen, ammonia total (as N)	End of Pipe	mg/L	0.3	
03/31/2019	Nitrogen, ammonia total (as N)	End of Pipe	mg/L	5.6	
12/31/2018	Nitrogen, ammonia total (as N)	End of Pipe	mg/L	0.6	
09/30/2018	Nitrogen, ammonia total (as N)	End of Pipe	mg/L	2.7	
06/30/2018	Nitrogen, ammonia total (as N)	End of Pipe	mg/L	1.1	
03/31/2018	Nitrogen, ammonia total (as N)	End of Pipe	mg/L	11.5	
12/31/2017	Nitrogen, ammonia total (as N)	End of Pipe	mg/L	4.2	
09/30/2017	Nitrogen, ammonia total (as N)	End of Pipe	mg/L	1.1	
06/30/2017	Nitrogen, ammonia total (as N)	End of Pipe	mg/L	3.6	
03/31/2017	Nitrogen, ammonia total (as N)	End of Pipe	mg/L	9.2	
03/31/2015	Nitrogen, ammonia total (as N)	End of Pipe	mg/L	8.4	
12/31/2019	Total Suspended Solids (TSS)	End of Pipe	mg/L	8	
09/30/2019	Total Suspended Solids (TSS)	End of Pipe	mg/L	9	
06/30/2019	Total Suspended Solids (TSS)	End of Pipe	mg/L	49	
03/31/2019	Total Suspended Solids (TSS)	End of Pipe	mg/L	15	
12/31/2018	Total Suspended Solids (TSS)	End of Pipe	mg/L	4	
09/30/2018	Total Suspended Solids (TSS)	End of Pipe	mg/L	42	
06/30/2018	Total Suspended Solids (TSS)	End of Pipe	mg/L	16	
03/31/2018	Total Suspended Solids (TSS)	End of Pipe	mg/L	13	
12/31/2017	Total Suspended Solids (TSS)	End of Pipe	mg/L	15	
09/30/2017	Total Suspended Solids (TSS)	End of Pipe	mg/L	17	
06/30/2017	Total Suspended Solids (TSS)	End of Pipe	mg/L	14	
03/31/2017	Total Suspended Solids (TSS)	End of Pipe	mg/L	9	
12/31/2016	Total Suspended Solids (TSS)	End of Pipe	mg/L	12	
09/30/2016	Total Suspended Solids (TSS)	End of Pipe	mg/L	32	
06/30/2016	Total Suspended Solids (TSS)	End of Pipe	mg/L	41.5	
03/31/2016	Total Suspended Solids (TSS)	End of Pipe	mg/L	27	
12/31/2015	Total Suspended Solids (TSS)	End of Pipe	mg/L	26	
09/30/2015	Total Suspended Solids (TSS)	End of Pipe	mg/L	38	
06/30/2015	Total Suspended Solids (TSS)	End of Pipe	mg/L	33	
03/31/2015	Total Suspended Solids (TSS)	End of Pipe	mg/L	33	
09/30/2018	BOD, 5-day, 20 deg. C	Influent	mg/L	79	
06/30/2018	BOD, 5-day, 20 deg. C	Influent	mg/L	105	
03/31/2018	BOD, 5-day, 20 deg. C	Influent	mg/L	190	
12/31/2017	BOD, 5-day, 20 deg. C	Influent	mg/L	55	
09/30/2017	BOD, 5-day, 20 deg. C	Influent	mg/L	83	
06/30/2017	BOD, 5-day, 20 deg. C	Influent	mg/L	102	
03/31/2017	BOD, 5-day, 20 deg. C	Influent	mg/L	177	
09/30/2018	Total Suspended Solids (TSS)	Influent	mg/L	42	
06/30/2018	Total Suspended Solids (TSS)	Influent	mg/L	64	
03/31/2018	Total Suspended Solids (TSS)	Influent	mg/L	72	
12/31/2017	Total Suspended Solids (TSS)	Influent	mg/L	25	
09/30/2017	Total Suspended Solids (TSS)	Influent	mg/L	32	
06/30/2017	Total Suspended Solids (TSS)	Influent	mg/L	53	
03/31/2017	Total Suspended Solids (TSS)	Influent	mg/L	28	

BROWN STATION DMR DATA

Date	Description	Influent/Effluent	Unit	Monthly Average	Daily Max
3/31/2015	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	3	
6/30/2015	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	3	
9/30/2015	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	3	
12/31/2015	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	3	
3/31/2016	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	3	
6/30/2016	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	4	
9/30/2016	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	3	
12/31/2016	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	3	
3/31/2017	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	5	
6/30/2017	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	4	
9/30/2017	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	3	
12/31/2017	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	3	
3/31/2018	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	6	
6/30/2018	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	5	
9/30/2018	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	3	
12/31/2018	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	4	
3/31/2019	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	3	
6/30/2019	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	3	
9/30/2019	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	3	
12/31/2019	BOD, 5-day, 20 deg. C	End of Pipe	mg/L	5	
3/31/2015	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	1000	1000
6/30/2015	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.0065667	0.00144
9/30/2015	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.001	0.001
12/31/2015	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.001352	0.00288
3/31/2016	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.001	0.001
6/30/2016	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.001	0.001
9/30/2016	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.001	0.001
12/31/2016	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.001	0.001
3/31/2017	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.001	0.001
6/30/2017	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.001	0.001
9/30/2017	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.001	0.001
12/31/2017	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.001	0.001
3/31/2018	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.001	0.00178
6/30/2018	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.001	0.001
9/30/2018	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.001	0.001
12/31/2018	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.001	0.001
3/31/2019	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.001	0.001
6/30/2019	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.001	0.001
9/30/2019	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.001	0.001
12/31/2019	Flow, in conduit or thru treatment plant	End of Pipe	Mgal/d	0.001	0.001
3/31/2015	Nitrogen, ammonia total (as N)	End of Pipe	mg/L	0.8	
6/30/2015	Nitrogen, ammonia total (as N)	End of Pipe	mg/L	0.8	
9/30/2015	Nitrogen, ammonia total (as N)	End of Pipe	mg/L	0.3	
12/31/2015	Nitrogen, ammonia total (as N)	End of Pipe	mg/L	0.3	
3/31/2016	Nitrogen, ammonia total (as N)	End of Pipe	mg/L	0.6	
6/30/2016	Nitrogen, ammonia total (as N)	End of Pipe	mg/L	0.3	
9/30/2016	Nitrogen, ammonia total (as N)	End of Pipe	mg/L	0.3	
12/31/2016	Nitrogen, ammonia total (as N)	End of Pipe	mg/L	1.4	
3/31/2017	Nitrogen, ammonia total (as N)	End of Pipe	mg/L	0.6	
6/30/2017	Nitrogen, ammonia total (as N)	End of Pipe	mg/L	0.3	
9/30/2017	Nitrogen, ammonia total (as N)	End of Pipe	mg/L	0.3	
12/31/2017	Nitrogen, ammonia total (as N)	End of Pipe	mg/L	0.3	
3/31/2018	Nitrogen, ammonia total (as N)	End of Pipe	mg/L	1.1	
6/30/2018	Nitrogen, ammonia total (as N)	End of Pipe	mg/L	0.6	
9/30/2018	Nitrogen, ammonia total (as N)	End of Pipe	mg/L	0.3	
12/31/2018	Nitrogen, ammonia total (as N)	End of Pipe	mg/L	1.4	
3/31/2019	Nitrogen, ammonia total (as N)	End of Pipe	mg/L	5.3	
6/30/2019	Nitrogen, ammonia total (as N)	End of Pipe	mg/L	0.3	
9/30/2019	Nitrogen, ammonia total (as N)	End of Pipe	mg/L	0.3	
12/31/2019	Nitrogen, ammonia total (as N)	End of Pipe	mg/L	0.3	
3/31/2015	Total Suspended Solids (TSS)	End of Pipe	mg/L	2	
6/30/2015	Total Suspended Solids (TSS)	End of Pipe	mg/L	3.5	
9/30/2015	Total Suspended Solids (TSS)	End of Pipe	mg/L	2	
12/31/2015	Total Suspended Solids (TSS)	End of Pipe	mg/L	3	
3/31/2016	Total Suspended Solids (TSS)	End of Pipe	mg/L	3	
6/30/2016	Total Suspended Solids (TSS)	End of Pipe	mg/L	7	
9/30/2016	Total Suspended Solids (TSS)	End of Pipe	mg/L	2	
12/31/2016	Total Suspended Solids (TSS)	End of Pipe	mg/L	3	
3/31/2017	Total Suspended Solids (TSS)	End of Pipe	mg/L	3	
6/30/2017	Total Suspended Solids (TSS)	End of Pipe	mg/L	3	
9/30/2017	Total Suspended Solids (TSS)	End of Pipe	mg/L	7	
12/31/2017	Total Suspended Solids (TSS)	End of Pipe	mg/L	6	
3/31/2018	Total Suspended Solids (TSS)	End of Pipe	mg/L	3	
6/30/2018	Total Suspended Solids (TSS)	End of Pipe	mg/L	8	
9/30/2018	Total Suspended Solids (TSS)	End of Pipe	mg/L	3	
12/31/2018	Total Suspended Solids (TSS)	End of Pipe	mg/L	3	
3/31/2019	Total Suspended Solids (TSS)	End of Pipe	mg/L	3	
6/30/2019	Total Suspended Solids (TSS)	End of Pipe	mg/L	3	
9/30/2019	Total Suspended Solids (TSS)	End of Pipe	mg/L	3	
12/31/2019	Total Suspended Solids (TSS)	End of Pipe	mg/L	3	

APPENDIX D

CONVEYANCE SYSTEM PROCESS SCHEMATIC



C:\pwworking\central01\d0973820\EXHIBIT 3.dwg, Plot, 12/14/2020 2:50:56 PM, TGRAHAM

EXHIBIT 3.dwg
12/14/2020 2:50 PM
Graham, Tyler

BCRSD
Boone County Regional Sewer District

HDR

Process Schematic

Cedar Gate, Richardson Acres and Brown Station Wastewater Improvements

EXHIBIT
3

APPENDIX E

PUMP/FORCE MAIN DESIGN CALCULATIONS

Boone County Regional Sewer District
Cedar Gate
Pump Station & Force Main Design Calculations
8-Oct-20

	PVC 2241
Static Lift	
Gravity Invert Elevation Into the P5 (ft)	900.00
Assumed Depth Below Gravity Invert (ft)	6.00
Pump Center Line Elevation (ft)	894.00
High Point Elevation	935.00
Pump Static Lift Requred (ft)	**41.00**
Length Of Pipe	
P5 Station (ft)	0
Discharge Point Station (ft)	15300
Total Pipe Length (ft)	**15300**
Pipe Diameter	
Nominal (in)	3
Pipe Type PVC D2241 SDR 21 Inside Diameter (in)	3
Pipe Area (sf)	0.05
Flow at 5 ft/sec (cfs)	0.25
Flow at 5 ft/sec (gpm)	110.2
Flow at 2 ft/sec (cfs)	0.10
Flow at 2 ft/sec (gpm)	44.1
System Flow - From Facility Plan	
Number of Future Residences	0
Number of Existing Residences	0
Total Residences in 20 Years	0
Future Flow at 3.7 capita/home and 100 gpd	0
Existing Flow at 3.7 capita/home and 100 gpd	0
Total Flow gpd	12200
Average Day Flow (gpm)	**8.5**
Peak Hour Flow (PF = 4 x Avg Day) gpm	**33.9**
Pump Head	
Hazen Williams Friction Coefficient New	150
Hazen Williams Friction Coefficient (20 Yrs)	130
Friction Head Calculation (C=150)	48.6
Friction Head Calculation (C=130)	63.4
Friction Head + Static Lift (C=150)	**89.6**
Friction Head + Static Lift (C=130)	**104.4**
Wetwell Size	
Diameter (ft)	6
Area (sf)	28.27
Water Depth (ft)	5
Volume (cf)	141.4
Volume (gallons)	1057.5
Detention Time Calculations	
Existing Avg Flow (gal/day)	12200
Volume of Forcemain (cf)	751
Volume of Forcemain (gal)	5618
Number of Changes/ day	2.17
Retention Time (hours)	11.05
More than 6 hours - Odor Control Required.	
Pump Operation - Future Conditions	
Average Day Flow Future (gpm)	8.5
Time to Fill Manhole (min)	124.81
Pump Design Flow (gpm)	33.9
Time to Drain Manhole (min)	34.0
Recommended Pump Design	
Flow = 34 gpm	
Head = 147 feet (104 + 43)	
Estimated Pump Horsepower at 50% Efficient(hp)	1.9

Boone County Regional Sewer District
Richardson Acres
Pump Station & Force Main Design Calculations
8-Oct-20

	PVC 2241
5tatic Lift	
Gravity Invert Elevation Into the PS (ft)	925.00
Assumed Depth Below Gravity Invert (ft)	6.00
Pump Center Line Elevation (ft)	919.00
High Point Elevation	930.00
Pump 5tatic Lift Requred (ft)	**11.00**
Length Of Pipe	
P5 5tation (ft)	0
Discharge Point Station (ft)	1000
Total Pipe Length (ft)	**1000**
Pipe Diameter	
Nominal (in)	2
Pipe Type PVC D2241 SDR 21 Inside Diameter (in)	2
Pipe Area (sf)	0.02
Flow at 5 ft/sec (cfs)	0.11
Flow at 5 ft/sec (gpm)	49.0
Flow at 2 ft/sec (cfs)	0.04
Flow at 2 ft/sec (gpm)	19.6
System Flow - From Facility Plan	
Number of Future Residences	0
Number of Existing Residences	0
Total Residences in 20 Years	0
Future Flow at 3.7 capita/home and 100 gpd	0
Existing Flow at 3.7 capita/home and 100 gpd	0
Total Flow gpd	8500
Average Day Flow (gpm)	**5.9**
Peak Hour Flow (PF = 4 x Avg Day) gpm	**23.6**
Pump Head	
Hazen Williams Friction Coefficient New	150
Hazen Williams Friction Coefficient (20 Yrs)	130
Friction Head Calculation (C=150)	11.7
Friction Head Calculation (C=130)	15.3
Friction Head + Static Lift (C=150)	**22.7**
Friction Head + 5tatic Lift (C=130)	**26.3**
Manhole 5ize	
Diameter (ft)	6
Area (sf)	28.27
Water Depth (ft)	5
Volume (cf)	141.4
Volume (gallons)	1057.5
Detention Time Calculations	
Existing Avg Flow (gal/day)	8500
Volume of Forcemain (cf)	22
Volume of Forcemain (gal)	163
Number of Changes/ day	52.09
Retention Time (hours)	0.46
Less than 6 hours - Odor Control Not Required.	
Pump Operation - Future Conditions	
Average Day Flow Future (gpm)	5.9
Time to Fill Manhole (min)	179.15
Pump Design Flow (gpm)	23.6
Time to Drain Manhole (min)	47.5
Recommended Pump Design	
Flow = 24 gpm	
Head = 69 feet (26 + 43)	
Estimated Pump Horsepower at 50% Efficient(hp)	0.6

Boone County Regional Sewer District
Brown Station Booster Pump Station
Pump Station & Force Main Design Calculations
8-Oct-20

	PVC 2241
Static Lift	
Gravity Invert Elevation Into the PS (ft)	920.00
Assumed Depth Below Gravity Invert (ft)	6.00
Pump Center Line Elevation (ft)	914.00
High Point Elevation	925.00
Pump Static Lift Requred (ft)	**11.00**
Length Of Pipe	
P5 5tation (ft)	0
Discharge Point Station (ft)	23200
Total Pipe Length (ft)	**23200**
Pipe Diameter	
Nominal (in)	6
Pipe Type PVC D2241 SDR 21 Inside Diameter (in)	6
Pipe Area (sf)	0.20
Flow at 5 ft/sec (cfs)	0.98
Flow at 5 ft/sec (gpm)	440.6
Flow at 2 ft/sec (cfs)	0.39
Flow at 2 ft/sec (gpm)	176.2
System Flow - From Facility Plan	
Number of Future Residences	0
Number of Existing Residences	0
Total Residences in 20 Years	0
Future Flow at 3.7 capita/home and 100 gpd	0
Existing Flow at 3.7 capita/home and 100 gpd	0
Total Flow gpd	91500
Average Day Flow (gpm)	**63.S**
Peak Hour Flow (PF = 4 x Avg Day) gpm	**2S4.2**
Pump Head	
Hazen Williams Friction Coefficient New	150
Hazen Williams Friction Coefficient (20 Yrs)	130
Friction Head Calculation (C=150)	105.1
Friction Head Calculation (C=130)	137.0
Friction Head + Static Lift (C=150)	**116.1**
Friction Head + 5tatic Lift (C=130)	**148.0**
Manhole 5ize	
Diameter (ft)	6
Area (sf)	28.27
Water Depth (ft)	5
Volume (cf)	141.4
Volume (gallons)	1057.5
Detention Time Calculations	
Existing Avg Flow (gal/day)	91500
Volume of Forcemain (cf)	4555
Volume of Forcemain (gal)	34074
Number of Changes/ day	2.69
Retention Time (hours)	8.94
More than 6 hours - Odor Control Required.	
Pump Operation - Future Conditions	
Average Day Flow Future (gpm)	63.5
Time to Fill Manhole (min)	16.64
Pump Design Flow (gpm)	254.2
Time to Drain Manhole (min)	6.9
Recommended Pump Design	
Flow = 2S4 gpm	
Head = 148 feet	
Estimated Pump Horsepower at S0% Efficient(hp)	14.3

APPENDIX F

TYPICAL PUMP STATION SITE PLAN

TYPICAL PUMP STATION PLAN AND SECTION

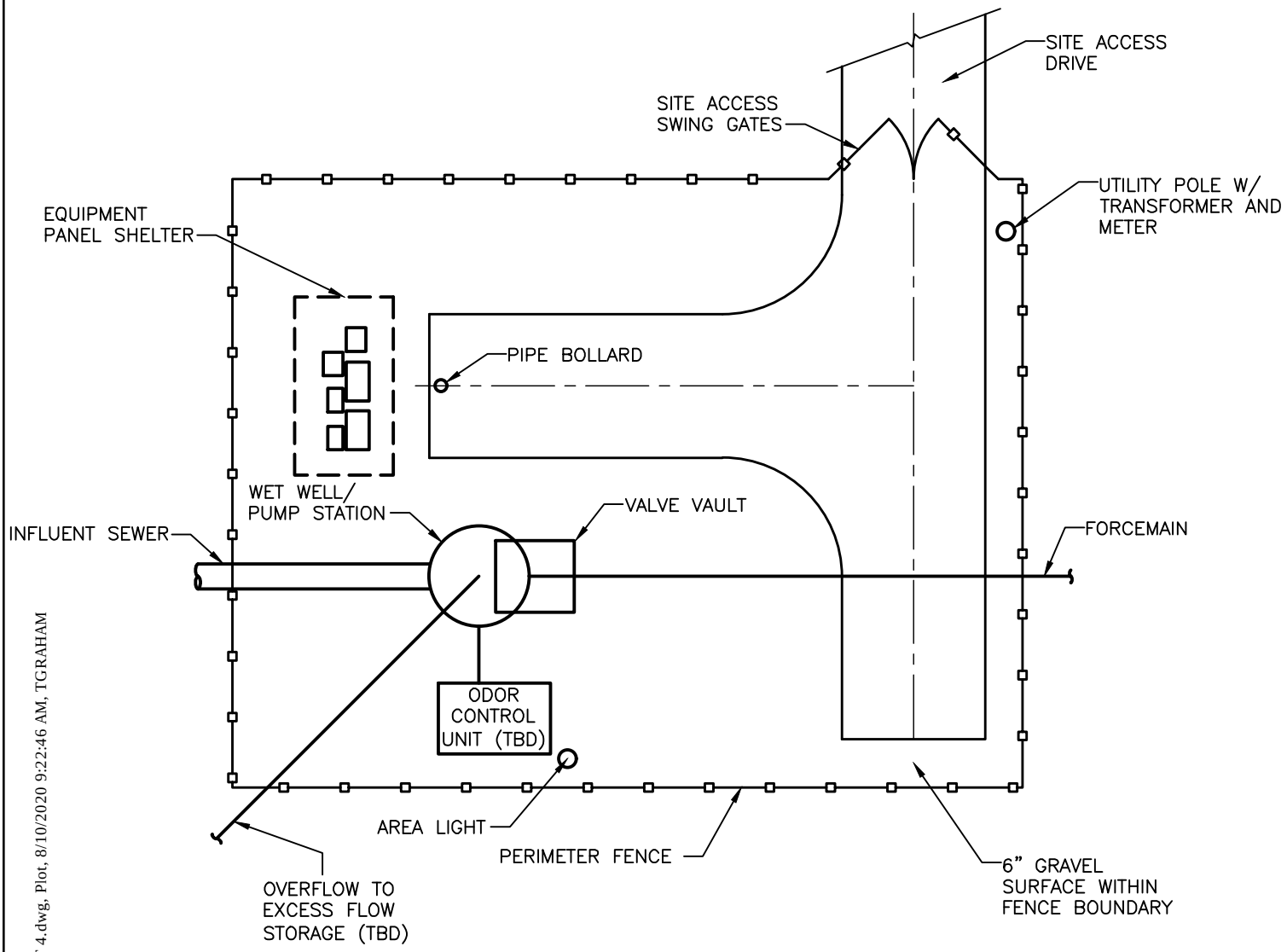


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EXHIBIT 4.dwg
8/10/2020 9:22 AM
Graham, Tyler

BCRSD
Boone County Regional Sewer District

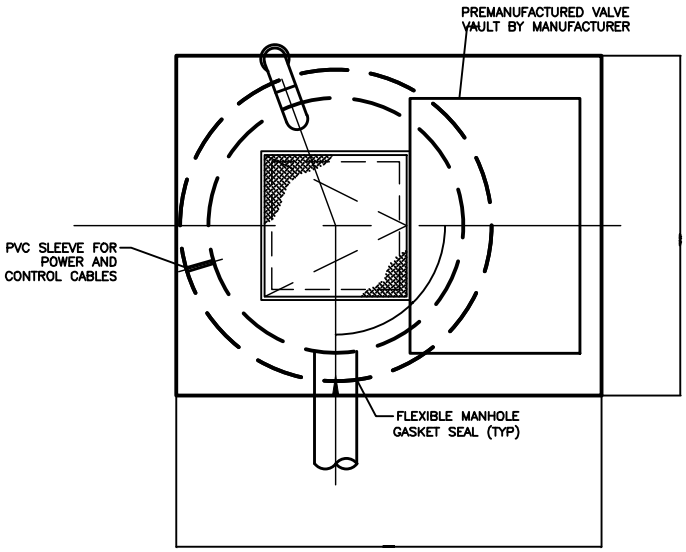
HDR

Typical Pump Station Site Plan

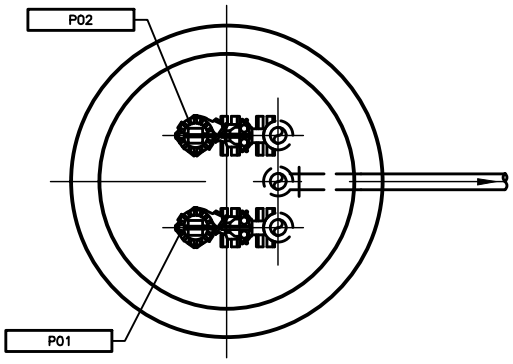
Cedar Gate, Richardson Acres and Brown Station Wastewater Improvements

EXHIBIT

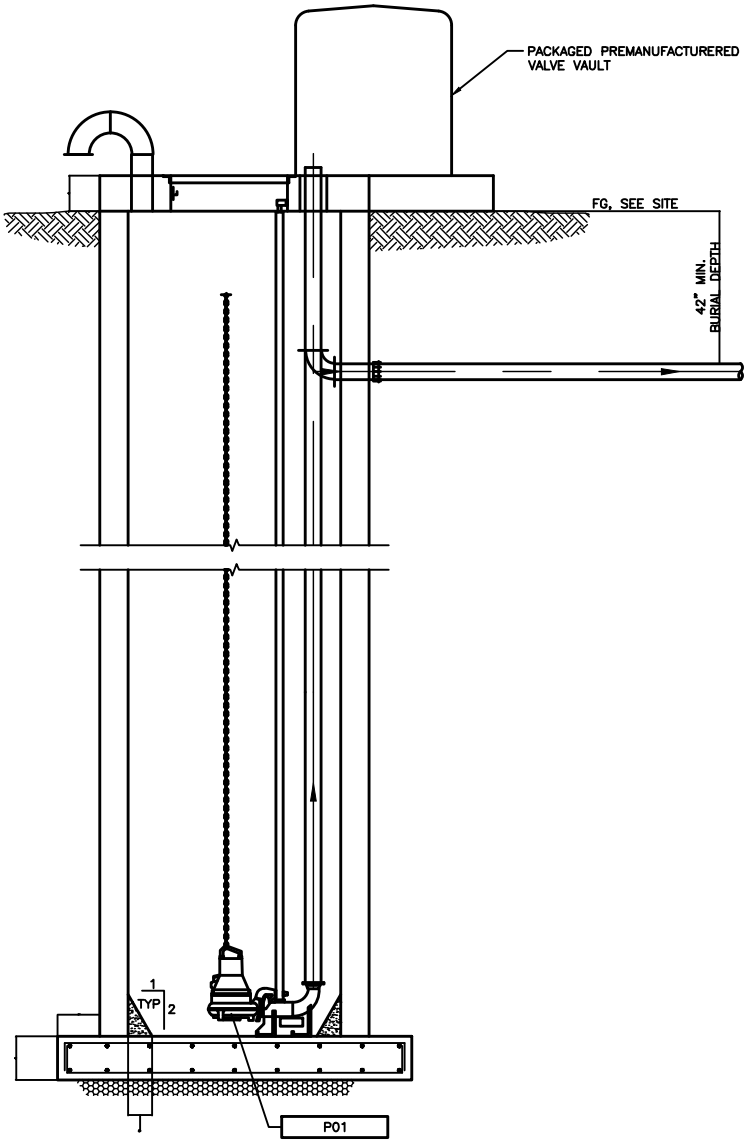
4



TYPICAL PUMP STATION – UPPER PLAN



TYPICAL PUMP STATION – LOWER PLAN



SECTION

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EXHIBIT 6.dwg
8/10/2020 9:26 AM
Graham, Tyler

BCRSD
Boone County Regional Sewer District

HDR

Typical Pump Station Plan and Sections

Cedar Gate, Richardson Acres and Brown Station Wastewater Improvements

EXHIBIT

6

APPENDIX G

PROJECT COST ESTIMATE

OPERATIONS AND MAINTENANCE COST ESTIMATE

ALTERNATIVE NO. 2

Base Year for Cost Estimata 2020
First Year of Service 2022
Mid-Point of Construction 2021

Item		Base Yeer Cost						Mid-Point of Construction	First Yaar of Service													
		2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041
Total, Project Costs				-	-	-	$1,042,300	$1,074,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NPV of Capital Cost at Base Year[1]				-	-	-	-	$1,032,692	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total NPV of Capital Costs[1]		*$1,033,000*																					
R&R		$0	-	$0	$0	$0	$0	$0	$9,621	$9,910	$10,207	$10,513	$10,829	$11,154	$11,488	$11,833	$12,188	$12,554	$12,930	$13,318	$13,718	$14,129	$14,553
Labor		$0	-	$0	$0	$0	$0	$0	$12,791	$13,174	$13,570	$13,977	$14,396	$14,828	$15,273	$15,731	$16,203	$16,689	$17,190	$17,705	$18,236	$18,784	$19,347
Chemical		$0	-	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Electricity		$0	-	$0	$0	$0	$0	$0	$3,679	$3,789	$3,903	$4,020	$4,140	$4,264	$4,392	$4,524	$4,660	$4,800	$4,944	$5,092	$5,245	$5,402	$5,564
Total, O&M Costs		$0		$0	$0	$0	$0	$0	$26,091	$26,873	$27,679	$28,510	$29,365	$30,246	$31,153	$32,088	$33,051	$34,042	$35,064	$36,115	$37,199	$38,315	$39,464
NPV of O&M Cost at Base Year				$0	$0	$0	$0	$0	$19,827	$19,636	$19,447	$19,260	$19,075	$18,892	$18,710	$18,530	$18,352	$18,175	$18,001	$17,828	$17,656	$17,486	$17,318
Total NPV of O&M Costs		*$278,000*																					

NPV Summary

Project Cost	$1,033,000
O&M	$278,000
Total NPV	***$1,311,000***

Economic Assumptions

Capital Escalation (Inflation) Rate	3.00%
O&M Escalation (Inflation) Rate	3.00%
Annual Interest (Discount) Rate	4.00%

R&R	$ 4,224.00	$ 3,754.00	$ 2,213.00	$ 10,191.00
CHEMICAL	$ 21,600.00	$ 5,400.00	$ -	$ 27,000.00
LABOR	$ 4,160.00	$ 4,160.00	$ 4,160.00	$ 12,480.00
ELECTRICITY	$ 4,703.00	$ 490.00	$ 784.00	$ 5,977.00

Notes:

Base Year for cost Estimate	**2020**
First Year of Service	**2022**
Mid-Point of Construction	**2021**

Item		Base Year Cost	Mid-Point of Construction	First Year of Service																			
		2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041
Total, Project Costs		$1,340,000	$1,380,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NPV of Capital Cost at Base Year[1]			$1,326,923	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total NPV of Capital Costs[1]		*$1,327,000*																					
R&R		$7,387	-	$7,387	$7,387	$7,387	$7,387	$7,387	$7,387	$7,387	$7,387	$7,387	$7,387	$7,387	$7,387	$7,387	$7,387	$7,387	$7,387	$7,387	$7,387	$7,387	$7,387
Labor		$10,400	-	$11,033	$11,364	$11,705	$12,056	$12,418	$12,791	$13,174	$13,570	$13,977	$14,396	$14,828	$15,273	$15,731	$16,203	$16,689	$17,190	$17,705	$18,236	$18,784	$19,347
Electricity		$4,606	-	$4,887	$5,034	$5,185	$5,340	$5,500	$5,665	$5,835	$6,010	$6,191	$6,376	$6,568	$6,765	$6,968	$7,177	$7,392	$7,614	$7,842	$8,077	$8,320	$8,569
Total, O&M Costs		$22,394		$23,308	$23,785	$24,277	$24,784	$25,306	$25,843	$26,397	$26,967	$27,555	$28,160	$28,783	$29,425	$30,086	$30,767	$31,468	$32,191	$32,935	$33,701	$34,491	$35,304
NPV of O&M Cost at Base Year				$21,549	$21,146	$20,762	$20,371	$20,000	$19,639	$19,288	$18,947	$18,615	$18,292	$17,978	$17,672	$17,374	$17,084	$16,801	$16,526	$16,258	$15,996	$15,741	$15,492
Total NPV of O&M Costs		*$366,000*																					

NPV Summary

Capital Cost	$1,327,000
O&M	$366,000
Total NPV	***$1,693,000***

Economic Assumptions

Capital Escalation (Inflation) Rate	3.00%
O&M Escalation (Inflation) Rate	3.00%
Annual interest (Discount) Rate	4.00%

Notes:

Base Year for cost Estimate 2020
First Year of Service 2022
Mid-Point of Construction 2021

Item		Base Year Cost	Mid-Point of Construction	First Year of Service																		
		2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041
Total, Project Costs		$652,000	$672,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NPV of Capital Cost at Base Year[1]			$646,154	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total NPV of Capital Costs[1]		*$646,000*																					
R&R		$4,008	-	$4,008	$4,008	$4,008	$4,008	$4,008	$4,008	$4,008	$4,008	$4,008	$4,008	$4,008	$4,008	$4,008	$4,008	$4,008	$4,008	$4,008	$4,008	$4,008	$4,008
Labor		$10,400	-	$11,033	$11,364	$11,705	$12,056	$12,418	$12,791	$13,174	$13,570	$13,977	$14,396	$14,828	$15,273	$15,731	$16,203	$16,689	$17,190	$17,705	$18,236	$18,784	$19,347
Electricity		$4,606	-	$4,887	$5,034	$5,185	$5,340	$5,500	$5,665	$5,835	$6,010	$6,191	$6,376	$6,568	$6,765	$6,968	$7,177	$7,392	$7,614	$7,842	$8,077	$8,320	$8,569
Total, O&M Costs		$19,015		$19,928	$20,406	$20,898	$21,405	$21,927	$22,464	$23,018	$23,588	$24,175	$24,780	$25,404	$26,046	$26,707	$27,388	$28,089	$28,811	$29,556	$30,322	$31,111	$31,924
NPV of O&M Cost at Base Year				$18,425	$18,141	$17,864	$17,593	$17,329	$17,071	$16,819	$16,573	$16,332	$16,097	$15,867	$15,642	$15,422	$15,207	$14,997	$14,791	$14,589	$14,392	$14,199	$14,010
Total NPV of O&M Costs		*$321,000*																					

NPV Summary

Capital Cost	$646,000
O&M	$321,000
Total NPV	***$967,000***

Economic Assumptions

Capital Escalation (Inflation) Rate	3.00%
O&M Escalation (Inflation) Rate	2.50%
Annual Interest (Discount) Rate	4.00%

Notes:

BOONE COUNTY REGIONAL SEWER DISTRICT
ALTERNATIVE #2 - CEDAR GATE WWTF IMPROVEMENTS
ENGINEER'S OPINION OF PROJECT COSTS
8/5/2020

Item Description	Est. Qty.	Unit	Unit Price	Extension
Intermediate Pump Station				
Excavation/Backfill	148	CY	$25	$3,698
Granular Bedding	1	CY	$50	$52
Package Pump Station	1	LS	$49,500	$49,500
Pump Controls	1	LS	$10,000	$10,000
Installation / Start-Up	50%			$31,625
Tertiary Nitrification				
Excavation/Backfill	86	CY	$25	$2,139
Granular Bedding	6	CY	$50	$286
Concrete Basins	51	CY	$1,500	$75,825
NitrOx System	1	LS	$117,500	$117,500
Installation / Start-Up	35%			$68,513
UV Disinfection				
Excavation/Backfill	3	CY	$25	$78
Granular Bedding	2	CY	$50	$89
Base Slab	2	CY	$1,000	$1,778
UV System	1	LS	$41,250	$41,250
Installation / Start-Up	35%			$15,118
SUBTOTAL				**$417,500**
Site Piping and Site Civil	15%			$62,625
Electrical and I&C	10%			$42,000
SUBTOTAL				**$522,100**
Contractor Items				
Mobilization	2%			$11,000
Bonding and Insurance	3%			$16,000
General Conditions, OH&P	10%			$55,000
SUBTOTAL				**$604,100**
Temporary Easement (3)	1	AC	$1,000.00	$1,000
Inflation (5 years @ 3% per year)				$96,217
Contingency	25%			$152,000
SUBTOTAL				**$853,300**
SRF Closing Costs	2%			$18,000
Engineering, Legal, and Administration	20%			$171,000
TOTAL PROJECT				**$1,042,300**
Notes:				
1. Assumes no rock excavation				
2. Assumes portable generator cost included in Richardson Acres cost.				

3. Assume temporary easement required for site staging and construction.

BOONE COUNTY REGIONAL SEWER DISTRICT
ALTERNATIVE #2 - RICHARDSON ACRES WWTF IMPROVEMENTS
ENGINEER'S OPINION OF PROJECT COSTS
10/8/2020

Item Description	Est. Qty.	Unit	Unit Price	Extension
Intermediate Pump Station				
Excavation/Backfill	150	CY	$25	$3,750
Granular Bedding	2	CY	$50	$100
Package Pump Station	1	LS	$48,000	$48,000
Pump Controls	1	LS	$10,000	$10,000
Installation / Start-Up	50%			$30,925
Tertiary Nitrification				
Excavation/Backfill	2,500	CY	$30	$75,000
SAGR (Nitrification Equipment, Including Blowers)	1	LS	$150,000	$150,000
Uniform Graded Clean Rock	960	CY	$35	$33,600
Insulating Woodchips	80	CY	$10	$800
Non-Woven Geotextile (8oz)	11,800	SF	$0.15	$1,800
HDPE Liner (60 mil)	7,840	SF	$1.50	$11,800
Wall Framing and Sheating	470	LF	$13	$6,200
Influent Flow Splitter Structure	1	EA	$5,000	$5,000
Piping, Fittings, Valves from Splitter to SAGR	1	LS	$10,000	$10,000
Effluent Level Control Manhole	2	EA	$5,000	$10,000
Installation / Start-Up [3]	40%			$121,680
UV Disinfection				
Excavation/Backfill	4	CY	$25	$100
Granular Bedding	2	CY	$50	$100
Base Slab	2	CY	$1,000	$2,000
UV System	1	LS	$40,500	$40,500
Installation / Start-Up	35%			$14,945
SUBTOTAL				**$576,300**
Site Piping and Site Civil	15%			$86,445
Portable Generator	1	EA	$36,000	$36,000
Electrical and I&C	10%			$57,630
SUBTOTAL				**$756,400**
Contractor Items				
Mobilization	2%			$16,000
Bonding and Insurance	3%			$24,000
General Conditions, OH&P	10%			$80,000

Item Description	Est. Qty.	Unit	Unit Price	Extension
SUBTOTAL				**$876,400**
Contingency	25%			$219,100
SUBTOTAL				**$1,095,500**
SRF Closing Costs	2%			$22,000
Engineering, Legal, and Administration	20%			$220,000
Temporary Easement [2]	1	AC	$2,500	$2,500
TOTAL PROJECT				**$1,340,000**
Notes:				
1. Assumes no rock excavation.				
2. Assume temporary easement required for site staging and construction.				
3. Utilizd 40% SAGR installation due to high anticipated labor requirement.				

BOONE COUNTY REGIONAL SEWER DISTRICT
ALTERNATIVE #2 - BROWN STATION WWTF IMPROVEMENTS
ENGINEER'S OPINION OF PROJECT COSTS
10/8/2020

Item Description	Est. Qty.	Unit	Unit Price	Extension
Intermediate Pump Station				
Excavation/Backfill	150	CY	$25	$3,750
Granular Bedding	2	EA	$50	$100
Package Pump Station	1	LS	$46,500	$46,500
Pump Controls	1	LS	$10,000	$10,000
Installation / Start-Up	50%	LS		$30,175
Tertiary Nitrification				
Excavation/Backfill	710	CY	$30	$21,300
SAGR (Nitrification Equipment, Including Blowers)	1	LS	$42,200	$42,200
Uniform Graded Clean Rock	270	CY	$35	$9,500
Insulating Woodchips	30	CY	$10	$300
Non-Woven Geotextile (8oz)	3,320	SF	$0.15	$500
HDPE Liner (60 mil)	2,210	SF	$1.50	$3,400
Wall Framing and Sheating	140	LF	$13	$1,900
Influent Flow Splitter Structure	1	EA	$5,000	$5,000
Piping, Fittings, Valves from Splitter to SAGR	1	LS	$10,000	$10,000
Effluent Level Control Manhole	2	EA	$5,000	$10,000
Installation / Start-Up [3]	40%			$41,640
UV Disinfection				
Excavation/Backfill	4	CY	$25	$100
Granular Bedding	2	CY	$50	$100
Base Slab	2	CY	$1,000	$2,000
UV System	1	LS	$39,750	$39,750
Installation / Start-Up	35%			$14,683
SUBTOTAL				**$292,900**
Site Piping and Site Civil	15%			$43,935
Electrical and I&C	10%			$29,290
SUBTOTAL				**$366,200**

Item Description	Est. Qty.	Unit	Unit Price	Extension
Contractor Items				
Mobilization	2%			$8,000
Bonding and Insurance	3%			$12,000
General Conditions, OH&P	10%			$39,000
SUBTOTAL				**$425,200**
Contingency	25%			$106,300
SUBTOTAL				**$531,500**
SRF Closing Costs	2%			$11,000
Engineering, Legal, and Administration	20%			$107,000
Temporary Easement [2]	1	AC	$2,500	$2,500
TOTAL PROJECT				**$652,000**
Notes:				
1. Assumes no rock excavation.				
2. Assume temporary easement required for site staging and construction.				
3. Utilizd 40% SAGR installation due to high anticipated labor requirement.				
4. Assumes portable generator cost included in Richardson Acres cost.				

BOONE COUNTY REGIONAL SEWER DISTRICT
CEDAR GATE WWTF IMPROVEMENTS
OPERATIONS AND MAINTENANCE COST ESTIMATE - ALT 2 WWTF

Replacement Costs

Inflation Rate	3%	Assumed
Interest Rate	4%	Assumed

Today's Replacement Costs

Item	5 YR - 10%	10 YR - 50%	15 YR - 10%	20 YR - 75%	Original Cost
Intermediate Pumps	$2,063	$10,313	$2,063	$15,469	$20,625
NitrOx System	$5,850	$29,250	$5,850	$43,875	$58,500
UV Equipment	$2,000	$2,000	$2,000	$2,000	
Total	$9,913	$41,563	$9,913	$61,344	

Future Replacement Costs

(Adjusted w/ Inflation)	Present Value	5 YR 1.16	10 YR 1.34	15 YR 1.56	20 YR 1.81
5 Year Equipment Cycle	$9,913	$11,491			
10 Year Equipment Cycle	$41,563		$55,857		
15 Year Equipment Cycle	$9,913			$15,443	
20 Year Equipment Cycle	$61,344				$110,794
Total	$122,731	$11,491	$55,857	$15,443	$110,794

Replacement Acnt. Deposit **Required**

(Includes Interest)

			5 YR $11,491	10 YR $55,857	15 YR $15,443	20 YR $110,794
	Annual Factor	Annual Deposit	Future Replacement Funds			
SFF - 5 yrs	0.1846	$2,122	$11,491	$11,491	$11,491	$11,491
SFF - 10 yrs	0.0833	$3,695		$44,365	$20,015	$20,015
SFF - 15 yrs	0.0499	($802)			($16,062)	($4,345)
SFF - 20 yrs	0.0336	$2,809				$83,633
Total			$11,491	$55,857	$15,443	$110,794

Estimated Annual Replacement Costs **Deposit** **$7,823**

Labor Costs

Component	Days Per Week	Hours Per Day	Personnel	Rate	Overhead / Fringe	Cost
Daily Operator Attention	5	1.0	1	$25.00	$15.00	$10,400

Estimated Annual Labor Costs **$10,400**

Electricity Usage Costs (Design Year)

Component	HP	Quantity	Total HP	Watts	Hours/day	kW-hrs/year
Intermediate Pumps	2.0	1	2	1,491	8	4,355
Nitrox System						
Nitrox Aeration Blowers	2.0	1	2	1,491	16	8,710
Nitrox Heating (Based on 1°C for 2 months and 3°C for 2 months Influ	-	-	-	-	-	17,611
UV Equipment	-	2	-	250	24	2,190
					kW-hrs/year =	32,866
					$/kW-hrs =	$0.09

Estimated Additional Annual Electricity Usage Costs (Design Year, Not Adjusted For Inflation) **$2,991**

TOTAL **$21,214**

BOONE COUNTY REGIONAL SEWER DISTRICT
RICHARDSON ACRES WWTF IMPROVEMENTS
OPERATIONS AND MAINTENANCE COST ESTIMATE - ALT 2 WWTF

Replacement Costs

Inflation Rate	3%	Assumed
Interest Rate	4%	Assumed

Today's Replacement Costs

Item	5 YR - 10%	10 YR - 50%	15 YR - 10%	20 YR - 75%	Original Cost
Intermediate Pumps	$2,000	$10,000	$2,000	$15,000	$20,000
SAGR - Aeration	$6,500	$6,500	$6,500	$6,500	
SAGR - Media	$0	$0	$0	$0	
Sand Filter Equipment					
UV Equipment	$2,000	$2,000	$2,000	$2,000	
Portable Standy Generator	$3,600	$18,000	$3,600	$27,000	$36,000
Total	$14,100	$36,500	$14,100	$50,500	

Future Replacement Costs
(Adjusted w/ Inflation)

	Present Value	5 YR 1.16	10 YR 1.34	15 YR 1.56	20 YR 1.81
5 Year Equipment Cycle	$14,100	$16,346			
10 Year Equipment Cycle	$36,500		$49,053		
15 Year Equipment Cycle	$14,100			$21,967	
20 Year Equipment Cycle	$50,500				$91,209
Total	$115,200	$16,346	$49,053	$21,967	$91,209

Replacement Acnt. Deposit
(Includes Interest)

	Annual Factor	Annual Deposit	Required 5 YR $16,346	10 YR $49,053	15 YR $21,967	20 YR $91,209
			Future Replacement Funds			
SFF - 5 yrs	0.1846	$3,018	$16,346	$16,346	$16,346	$16,346
SFF - 10 yrs	0.0833	$2,724		$32,707	$14,755	$14,755
SFF - 15 yrs	0.0499	($456)			($9,134)	($2,471)
SFF - 20 yrs	0.0336	$2,101				$62,578
Total			$16,346	$49,053	$21,967	$91,209

Estimated Annual Replacement Costs **Deposit** **$7,387**

Labor Costs

Component	Days Per Week	Hours Per Day	Personnel	Rate	Overhead / Fringe	Cost
Daily Operator Attention	5	1.0	1	$25.00	$15.00	$10,400

Estimated Annual Labor Costs **$10,400**

Electricity Usage Costs (Design Year)

Component	HP	Quantity	Total HP	Watts	Hours/day	kW-hrs/year
Intermediate Pumps	2.0	2	4	2,983	8	8,710
SAGR Aeration Blowers	7.5	1	7.5	5,593	24	48,992
UV Equipment		1		250	24	2,190
					kW-hrs/year =	51,182
					$/kW-hrs =	$0.09

Estimated Additional Annual Electricity Usage Costs (Design Year, Not Adjusted For Inflation) **$4,606**

TOTAL **$22,394**

BOONE COUNTY REGIONAL SEWER DISTRICT
BROWN STATION WWTF IMPROVEMENTS
OPERATIONS AND MAINTENANCE COST ESTIMATE - ALT 2 WWTF

Replacement Costs

Inflation Rate	3%	Assumed
Interest Rate	4%	Assumed

Today's Replacement Costs

Item	5 YR - 10%	10 YR - 50%	15 YR - 10%	20 YR - 75%	Original Cost
Intermediate Pumps	$1,938	$9,688	$1,938	$14,531	$19,375
SAGR - Aeration	$6,500	$6,500	$6,500	$6,500	
SAGR - Media	$0	$0	$0	$0	
Sand Filter Equipment					
UV Equipment	$2,000	$2,000	$2,000	$2,000	
Total	$10,438	$18,188	$10,438	$23,031	

Future Replacement Costs

(Adjusted w/ Inflation)	Present Value	5 YR 1.16	10 YR 1.34	15 YR 1.56	20 YR 1.81
5 Year Equipment Cycle	$10,438	$12,100			
10 Year Equipment Cycle	$18,188		$24,442		
15 Year Equipment Cycle	$10,438			$16,261	
20 Year Equipment Cycle	$23,031				$41,597
Total	$62,094	$12,100	$24,442	$16,261	$41,597

Replacement Acnt. Deposit **Required**

(Includes Interest)			5 YR $12,100	10 YR $24,442	15 YR $16,261	20 YR $41,597
	Annual Factor	Annual Deposit	Future Replacement Funds			
SFF - 5 yrs	0.1846	$2,234	$12,100	$12,100	$12,100	$12,100
SFF - 10 yrs	0.0833	$1,028		$12,343	$5,568	$5,568
SFF - 15 yrs	0.0499	($70)			($1,407)	($381)
SFF - 20 yrs	0.0336	$816				$24,309
Total			$12,100	$24,442	$16,261	$41,597

Estimated Annual Replacement Costs **Deposit** **$4,008**

Labor Costs

Component	Days Per Week	Hours Per Day	Personnel	Rate	Overhead / Fringe	Cost
Daily Operator Attention	5	1.0	1	$25.00	$15.00	$10,400

Estimated Annual Labor Costs **$10,400**

Electricity Usage Costs (Design Year)

Component	HP	Quantity	Total HP	Watts	Hours/day	kW-hrs/year
Intermediate Pumps	2.0	2	4	2,983	8	8,710
SAGR Aeration	7.5	1	7.5	5,593	24	48,992
UV Equipment		1		250	24	2,190
					kW-hrs/year =	51,182
					$/kW-hrs =	$0.09

Estimated Additional Annual Electricity Usage Costs (Design Year, Not Adjusted For Inflation) **$4,606**

TOTAL **$19,015**

ALTERNATIVE NO. 3

PROJECT 1

Base Year for Cost Estimate	2020
First Year of Service	2022
Mid-Point of Construction	2021

Item		Base Year Cost	Mid-Point of Construction	First Year of Service																			
		2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041
Total, Project Costs		$2,366,000	$2,437,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NPV of Capital Cost at Base Year[1]			$2,343,269	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total NPV of Capital Costs[1]		*$2,343,000*																					
R&R		$6,579	-	$6,579	$6,579	$6,579	$6,579	$6,579	$6,579	$6,579	$6,579	$6,579	$6,579	$6,579	$6,579	$6,579	$6,579	$6,579	$6,579	$6,579	$6,579	$6,579	$6,579
Labor		$8,320	-	$8,827	$9,091	$9,364	$9,645	$9,935	$10,233	$10,540	$10,856	$11,181	$11,517	$11,862	$12,218	$12,585	$12,962	$13,351	$13,752	$14,164	$14,589	$15,027	$15,478
Chemical		$21,625	-	$23,154	$23,849	$24,564	$25,301	$26,060	$26,842	$27,647	$28,477	$29,331	$30,211	$31,117	$32,051	$33,012	$34,003	$35,023	$36,073	$37,156	$38,270	$39,418	$40,601
Electricity		$5,193	-	$5,509	$5,675	$5,845	$6,020	$6,201	$6,387	$6,578	$6,776	$6,979	$7,188	$7,404	$7,626	$7,855	$8,091	$8,333	$8,583	$8,841	$9,106	$9,379	$9,661
Total, O&M Costs		$41,917		$44,069	$45,194	$46,352	$47,545	$48,774	$50,040	$51,344	$52,687	$54,070	$55,495	$56,963	$58,474	$60,031	$61,634	$63,286	$64,987	$66,740	$68,544	$70,403	$72,318
NPV of O&M Cost at Base Year				$40,744	$40,177	$39,622	$39,079	$38,547	$38,027	$37,517	$37,017	$36,526	$36,049	$35,579	$35,118	$34,666	$34,223	$33,789	$33,363	$32,945	$32,534	$32,131	$31,736
Total NPV of O&M Costs		*$719,000*																					

NPV Summary

Project Cost	$2,343,000
O&M	$719,000
Total NPV	***$3,062,000***

Economic Assumptions

Capital Escalation (Inflation) Rate	3.00%
O&M Escalation (Inflation) Rate	3.00%
Annual Interest (Discount) Rate	4.00%

	BROWN STA	RICH ACRES	TOTAL	CEDAR GATE
R&R	$ 3,555.00	$ 3,024.00	$ 6,579.00	$ 2,213.00
CHEMICAL	$ 16,425.00	$ 5,400.00	$ 21,825.00	$ -
LABOR	$ 4,160.00	$ 4,160.00	$ 8,320.00	$ 4,160.00
ELECTRICITY	$ 4,703.00	$ 490.00	$ 5,193.00	$ 784.00

Notes:

PROJECT 2

Base Year for Cost Estimate 2020
First Year of Service 2022
Mid-Point of Construction 2021

Item		Base Year Cost 2020	2021	2022	2023	2024	2025	Mid-Point of Construction 2026	First Year of Service 2027
Total, Project Costs				-	-	-	$1,315,000	$1,354,000	-
NPV of Capital Cost at Base Year[1]				-	-	-	-	$1,301,923	-
Total NPV of Capital Costs[1]		*$1,302,000*							

Item	2028	2020	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041
Total, Project Costs	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NPV of Capital Cost at Base Year[1]	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Item		2020	2021	2022	2023	2024	2025	2026	2027
R&R		$0	-	$0	$0	$0	$0	$0	$2,722
Labor		$0	-	$0	$0	$0	$0	$0	$5,116
Chemical		$0	-	$0	$0	$0	$0	$0	$0
Electricity		$0	-	$0	$0	$0	$0	$0	$964
Total, O&M Costs		$0		$0	$0	$0	$0	$0	$8,802
NPV of O&M Cost at Base Year				$0	$0	$0	$0	$0	$6,689
Total NPV of O&M Costs		*$94,000*							

Item	2028	2020	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041
R&R	$2,803	$2,887	$2,974	$3,063	$3,155	$3,250	$3,347	$3,448	$3,551	$3,658	$3,767	$3,881	$3,997	$4,117
Labor	$5,270	$5,428	$5,591	$5,758	$5,931	$6,109	$6,292	$6,481	$6,676	$6,876	$7,082	$7,295	$7,513	$7,739
Chemical	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Electricity	$993	$1,023	$1,054	$1,085	$1,118	$1,151	$1,186	$1,221	$1,258	$1,296	$1,335	$1,375	$1,416	$1,458
Total, O&M Costs	$9,066	$9,338	$9,618	$9,907	$10,204	$10,510	$10,826	$11,150	$11,485	$11,829	$12,184	$12,550	$12,926	$13,314
NPV of O&M Cost at Base Year	$6,625	$6,561	$6,498	$6,435	$6,373	$6,312	$6,252	$6,191	$6,132	$6,073	$6,015	$5,957	$5,899	$5,843

NPV Summary

Project Cost		$1,302,000
O&M		$94,000
	Total NPV	*$1,396,000*

Economic Assumptions

Capital Escalation (Inflation) Rate	3.00%
O&M Escalation (Inflation) Rate	3.00%
Annual Interest (Discount) Rate	4.00%

Notes:

AMENDMENT 2 - RICHARDSON ACRES AND BROWN STATION WASTEWATER IMPROVEMENTS
BOONE COUNTY REGIONAL SEWER DISTRICT
ESTIMATE OF COST - PROJECT 1
MAY 04, 2021

Item No.	Item Description	Est. Qty.	Unit	Estimate of Cost	
				Unit Price	Extension
1	Mobilization	1	LS	$38,000.00	$38,000.00
2	2 IN Force Main	1000	LF	$11.00	$11,000.00
3	3 IN Force Main	0	LF	$14.00	$0.00
4	4 IN Force Main	14000	LF	$8.00	$112,000.00
5	6 IN Force Main	22200	LF	$21.00	$466,200.00
6	2 IN Combination Air Release/Vacuum Valve	5	EA	$4,800.00	$24,000.00
7	12 IN Horizontal Directional Drilling	300	LF	$170.00	$51,000.00
	CEDAR GATE PUMP STATION				
8	Submersable Non-Clog Pumps	0	LS	$40,000.00	$0.00
9	Submersable Grinder Pumps	0	LS	$25,000.00	$0.00
10	Odor Control Facility	0	LS	$90,000.00	$0.00
11	Pump Station (Excluding Submersible Pumps)	0	LS	$180,000.00	$0.00
12	Lagoon Fill Material	0	CY	$25.00	$0.00
13	Sludge Removal	0	LS	$50,000.00	$0.00
14	Wastewater Treatment Facility Closure	0	LS	$10,000.00	$0.00
	RICHARDSON ACRES PUMP STATION				
15	Submersable Non-Clog Pumps	0	LS	$40,000.00	$0.00
16	Submersable Grinder Pumps	1	LS	$25,000.00	$25,000.00
17	Odor Control Facility	1	LS	$65,000.00	$65,000.00
18	Pump Station (Excluding Submersible Pumps)	1	LS	$180,000.00	$180,000.00
19	Lagoon Fill Material	200	CY	$25.00	$5,000.00
20	Sludge Removal	1	LS	$50,000.00	$50,000.00
21	Wastewater Treatment Facility Closure	1	LS	$10,000.00	$10,000.00
	BOOSTER PUMP STATION AT BROWN STATION				
22	Submersable Non-Clog Pumps	1	LS	$40,000.00	$40,000.00
23	Submersable Grinder Pumps	0	LS	$25,000.00	$0.00
24	Odor Control Facility	1	LS	$90,000.00	$90,000.00
25	Pump Station (Excluding Submersible Pumps)	1	LS	$180,000.00	$180,000.00
26	Underground Pipe Storage	100	LF	$300.00	$30,000.00
27	Lagoon Fill Material	0	CY	$25.00	$0.00
28	Sludge Removal	0	LS	$50,000.00	$0.00
29	Wastewater Treatment Facility Closure	1	LS	$15,000.00	$15,000.00
30	Erosion Control Fence	29900	LF	$2.20	$65,780.00
31	Seeding	29900	LF	$2.00	$59,800.00
	CONSTRUCTION SUBTOTAL				$1,517,780.00
	Contingency (25%)		LS		$379,445.00
	CONSTRUCTION TOTAL				$1,897,225.00
	Easements		LS		$51,385.50
	SRF Closing Costs (2%)		LS		$37,944.50
	Engineering, Legal, Administration (20%)		LS		$379,445.00
	PROJECT TOTAL				$2,366,000.00

AMENDMENT 2 - RICHARDSON ACRES AND BROWN STATION WASTEWATER IMPROVEMENTS
BOONE COUNTY REGIONAL SEWER DISTRICT
ESTIMATE OF COST - PROJECT 2
MAY 4, 2021

				Estimate of Cost	
Item No.	**Item Description**	**Est. Qty.**	**Unit**	**Unit Price**	**Extension**
1	Mobilization	1	LS	$20,000.00	$20,000.00
2	2 IN Force Main	0	LF	$11.00	$0.00
3	3 IN Force Main	15300	LF	$14.00	$214,200.00
4	4 IN Force Main	15300	LF	$8.00	$122,400.00
5	6 IN Force Main	0	LF	$21.00	$0.00
6	2 IN Combination Air Release/Vacuum Valve	6	EA	$4,800.00	$28,800.00
7	12 IN Horizontal Directional Drilling	0	LF	$170.00	$0.00
	CEDAR GATE PUMP STATION				
8	Submersable Non-Clog Pumps	0	LS	$40,000.00	$0.00
9	Submersable Grinder Pumps	1	LS	$25,000.00	$25,000.00
10	Odor Control Facility	0	LS	$90,000.00	$0.00
11	Pump Station (Excluding Submersible Pumps)	1	LS	$180,000.00	$180,000.00
12	Lagoon Fill Material	100	CY	$25.00	$2,500.00
13	Sludge Removal	1	LS	$50,000.00	$50,000.00
14	Wastewater Treatment Facility Closure	1	LS	$10,000.00	$10,000.00
	RICHARDSON ACRES PUMP STATION				
15	Submersable Non-Clog Pumps	0	LS	$40,000.00	$0.00
16	Submersable Grinder Pumps	0	LS	$25,000.00	$0.00
17	Odor Control Facility	0	LS	$90,000.00	$0.00
18	Pump Station (Excluding Submersible Pumps)	0	LS	$180,000.00	$0.00
19	Lagoon Fill Material	0	CY	$25.00	$0.00
20	Sludge Removal	0	LS	$50,000.00	$0.00
21	Wastewater Treatment Facility Closure	0	LS	$10,000.00	$0.00
	BOOSTER PUMP STATION AT BROWN STATION				
22	Submersable Non-Clog Pumps	0	LS	$40,000.00	$0.00
23	Submersable Grinder Pumps	0	LS	$25,000.00	$0.00
24	Odor Control Facility	0	LS	$90,000.00	$0.00
25	Pump Station (Excluding Submersible Pumps)	0	LS	$180,000.00	$0.00
26	Underground Pipe Storage	0	LF	$300.00	$0.00
27	Lagoon Fill Material	0	CY	$25.00	$0.00
28	Sludge Removal	0	LS	$50,000.00	$0.00
29	Wastewater Treatment Facility Closure	0	LS	$15,000.00	$0.00
30	Erosion Control Fence	21500	LF	$2.20	$47,300.00
31	Seeding	21500	LF	$2.00	$43,000.00
	CONSTRUCTION SUBTOTAL				$743,200.00
	Inflation (5 years @ 3%/year)				$118,168.80
	Contingency (25%)		LS		$185,800.00
	CONSTRUCTION TOTAL				$1,047,168.80
	Easements		LS		$37,454.06
	SRF Closing Costs (2%)		LS		$20,943.38
	Engineering, Legal, Administration (20%)		LS		$209,433.76
	PROJECT TOTAL				$1,315,000.00

BOONE COUNTY REGIONAL SEWER DISTRICT
CEDAR GATE PUMP STATION
OPERATIONS AND MAINTENANCE COST ESTIMATE
05/04/21

Replacement Costs

Inflation Rate	3%	Assumed
Interest Rate	4%	Assumed

Today's Replacement Costs

Item	5 YR - 10%	10 YR - 25%	15 YR - 10%	20 YR - 50%	Original Cost
Pumps	$6,000	$7,500	$6,000	$15,000	$30,000
Liquid Odor Control	$0	$0	$0	$0	$0
Portable Standy Generator	$0	$0	$0	$0	$0
Total	$6,000	$7,500	$6,000	$15,000	

Future Replacement Costs

(Adjusted w/ Inflation)	Present Value	5 YR 1.16	10 YR 1.34	15 YR 1.56	20 YR 1.81	
5 Year Equipment Cycle	$6,000	$6,956				
10 Year Equipment Cycle	$7,500		$10,079			
15 Year Equipment Cycle	$6,000			$9,348		
20 Year Equipment Cycle	$15,000				$27,092	
Total	$34,500	$8,956	$10,079	$9,348	$27,092	

Replacement Acnt. Deposit **Required**

(Includes Interest)			5 YR $6,956	10 YR $10,079	15 YR $9,348	20 YR $27,092
	Annual Factor	Annual Deposit	Future Replacement Funds			
SFF - 5 yrs	0.1846	$1,284	$6,956	$6,956	$6,956	$6,956
SFF - 10 yrs	0.0833	$260		$3,124	$1,409	$1,409
SFF - 15 yrs	0.0499	$49			$983	$266
SFF - 20 yrs	0.0336	$620				$18,461
Total			$6,956	$10,079	$9,348	$27,092

Estimated Annual Replacement Costs **Deposit** **$2,213**

Chemical Costs

Component	Gallons Per Day	Gallons Per Year	Cost Per Gallon	Cost
Bioxide (Future)	0	0	$3.00	$0

Estimated Annual Chemcial Costs **$0**

Labor Costs

Component	Days Per Week	Hours Per Day	Personnel	Rate	Overhead / Fringe	Cost
Lift Stations Week Day Staff (Operator)	2	1	1	$25.00	$15.00	$4,160

Estimated Annual Labor Costs **$4,160**

Electricity Usage Costs (Design Year)

Component	HP	Quantity	Total HP	Watts	Hours/day	kW-hrs/year
Pumps	4.0	1	4	2,983	8	8,710
Liquid Odor Control	0	0	0	0	12	0
					kW-hrs/year =	8,710
					$/kW-hrs =	$0.09

Estimated Additional Annual Electricity Usage Costs (Design Year, Not Adjusted For Inflation) **$784**

TOTAL **$7,157**

BOONE COUNTY REGIONAL SEWER DISTRICT
RICHARDSON ACRES PUMP STATION
OPERATIONS AND MAINTENANCE COST ESTIMATE
05/04/21

Replacement Costs

Inflation Rate	3%	Assumed
Interest Rate	4%	Assumed

Today's Replacement Costs

Item	5 YR - 10%	10 YR - 25%	15 YR - 10%	20 YR - 50%	Original Cost
Pumps	$6,000	$7,500	$6,000	$15,000	$30,000
Liquid Odor Control	$3,000	$2,500	$3,000	$4,000	$8,000
Portable Standy Generator	$0	$0	$0	$0	$0
Total	$9,000	$10,000	$9,000	$19,000	

Future Replacement Costs

(Adjusted w/ Inflation)	Present Value	5 YR 1.16	10 YR 1.34	15 YR 1.56	20 YR 1.81
5 Year Equipment Cycle	$9,000	$10,433			
10 Year Equipment Cycle	$10,000		$13,439		
15 Year Equipment Cycle	$9,000			$14,022	
20 Year Equipment Cycle	$19,000				$34,316
Total	$47,000	$10,433	$13,439	$14,022	$34,316

Replacement Acnt. Deposit **Required**

(Includes Interest)	Annual Factor	Annual Deposit	5 YR $10,433	10 YR $13,439	15 YR $14,022	20 YR $34,316
			Future Replacement Funds			
SFF - 5 yrs	0.1846	$1,926	$10,433	$10,433	$10,433	$10,433
SFF - 10 yrs	0.0833	$250		$3,006	$1,356	$1,356
SFF - 15 yrs	0.0499	$111			$2,232	$604
SFF - 20 yrs	0.0336	$736				$21,923
Total			$10,433	$13,439	$14,022	$34,316

Estimated Annual Replacement Costs **Deposit** **$3,024**

Chemical Costs

Component	Gallons Per Day	Gallons Per Year	Cost Per Gallon	Cost
Bioxide (Future)	5	1,800	$3.00	$5,400

Estimated Annual Chemcial Costs **$5,400**

Labor Costs

Component	Days Per Week	Hours Per Day	Personnel	Rate	Overhead / Fringe	Cost
Lift Stations Week Day Staff (Operator)	2	1	1	$25.00	$15.00	$4,160

Estimated Annual Labor Costs **$4,160**

Electricity Usage Costs (Design Year)

Component	HP	Quantity	Total HP	Watts	Hours/day	kW-hrs/year
Pumps	2.0	1	2	1,491	8	4,355
Liquid Odor Control	0.5	1	0.5	373	8	1,089
					kW-hrs/year =	5,444
					$/kW-hrs =	$0.09

Estimated Additionat Annual Electricity Usage Costs (Design Year, Not Adjusted For Inflation) **$490**

TOTAL **$13,074**

BOONE COUNTY REGIONAL SEWER DISTRICT
BROWN STATION BOOSTER PUMP STATION
OPERATIONS AND MAINTENANCE COST ESTIMATE
05/04/21

Replacement Costs

Inflation Rate	3%	Assumed
Interest Rate	4%	Assumed

Today's Replacement Costs

Item	5 YR - 10%	10 YR - 25%	15 YR - 10%	20 YR - 50%	Original Cost
Pumps	$6,000	$10,000	$6,000	$20,000	$40,000
Liquid Odor Control	$3,000	$2,500	$3,000	$5,000	$10,000
Portable Standy Generator	$0	$0	$0	$0	$0
Total	$9,000	$12,500	$9,000	$25,000	

Future Replacement Costs
(Adjusted w/ Inflation)

	Present Value	5 YR 1.16	10 YR 1.34	15 YR 1.56	20 YR 1.81
5 Year Equipment Cycle	$9,000	$10,433			
10 Year Equipment Cycle	$12,500		$16,799		
15 Year Equipment Cycle	$9,000			$14,022	
20 Year Equipment Cycle	$25,000				$45,153
Total	$55,500	$10,433	$16,799	$14,022	$45,153

Replacement Acnt. Deposit **Required**
(Includes Interest)

	Annual Factor	Annual Deposit	5 YR $10,433	10 YR $16,799	15 YR $14,022	20 YR $45,153
			Future Replacement Funds			
SFF - 5 yrs	0.1846	$1,926	$10,433	$10,433	$10,433	$10,433
SFF - 10 yrs	0.0833	$530		$6,365	$2,872	$2,872
SFF - 15 yrs	0.0499	$36			$717	$194
SFF - 20 yrs	0.0336	$1,063				$31,654
Total			$10,433	$16,799	$14,022	$45,153

Estimated Annual Replacement Costs **Deposit** **$3,555**

Chemical Costs

Component	Gallons Per Day	Gallons Per Year	Cost Per Gallon	Cost
Bioxide (Future)	15	5,475	$3.00	$16,425

Estimated Annual Chemcial Costs **$16,425**

Labor Costs

Component	Days Per Week	Hours Per Day	Personnel	Rate	Overhead / Fringe	Cost
Lift Stations Week Day Staff (Operator)	2	1	1	$25.00	$15.00	$4,160

Estimated Annual Labor Costs **$4,160**

Electricity Usage Costs (Design Year)

Component	HP	Quantity	Total HP	Watts	Hours/day	kW-hrs/year
Pumps	15.0	1	15	11,185	12	48,992
Liquid Odor Control	1	1	1	746	12	3,266
					kW-hrs/year =	52,259
					$/kW-hrs =	$0.09

Estimated Additional Annual Electricity Usage Costs (Design Year, Not Adjusted For Inflation) **$4,703**

TOTAL **$28,844**

APPENDIX H

2019 USER RATE STUDY

SANITARY SEWER USE REGULATIONS

2019 USER RATE STUDY

BOONE COUNTY REGIONAL SEWER DISTRICT
BOONE COUNTY, MO
ASSUMPTIONS FOR RATE STUDY
Prepared by Stephen M. Connelly, CPA, PC
July 31, 2019

1 *CUSTOMERS*

We assume an annual growth rate of customers at 0.5%, plus any additional customer acquisitions. Our customer base is billed customers from the billing report.

2 *USAGE*

We used a calculated 5 year average monthly usage from the billing reports as our base. This generally reflects less average usage as more conservation is realized and usage is trending downward over time.

3 *RATES*

Rates are derived based on the necessary levels to meet the state mandated 1.10 debt service coverage ratio, cash requirements and other various assumptions regarding expenses.

4 *DEBT*

Debt is a function of the Capital Improvement Plan funding list for projects related to the recent MDNR Cost Analysis for Compliance. Additional capital purchases are factored into the fixed asset schedule as required. Debt is also fully recognized on the financial statements in the year of draw down.

Successful bond issue election of $31mm is assumed in 2021.
If the bond issues were to fail, projects would be paid for from current cash which would dramatically increase rates.

5 *INCOME STATEMENT ITEMS*

Items on the income statement are evaluated on an individual basis, based on known data. Absent specific additional information, expenses are assumed to increase at the historical inflation rate from 1914-2018 of 3.23%.

We assume a 4% annual increase in wholesale treatment expense which is nearly 1/3 of the annual operating budget. However, this line-item is highly variable and dependent on the City of Columbia, (City) their costs, and the resultant rates they charge. The City is currently negotiating an integrated management plan with MDNR which could result in higher annual increases than 4 per cent. Higher cost increases would necessarily result in higher rates charged by the District.

In 2019 and going forward, personnel expense assumes various retirements, replacements, etc. An additional full time administrative support position is added in 2021.
The timing of these changes are reflected in the income statements.

BOONE COUNTY REGIONAL SEWER DISTRICT
BOONE COUNTY, MO
Actual and Projected Rate Structure 2017-2036
Prepared by Stephen M. Connelly, CPA, P
July 31, 2019

		RATE A ACTUAL		RATE A PROJECTION																	
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
	(change)	*$ 1.75*	*$ 1.10*	*$ 1.20*	*$ 0.75*	*$ -*	*$ 0.50*	*$ -*	*$ 0.50*	*$ -*	*$ 1.00*	*$ 1.10*	*$ 1.25*	*$ 0.90*	*$ 1.00*	*$ 1.00*	*$ 1.00*	*$ -*	*$ -*	*$ -*	*$ -*
Base service fee		$ 23.60	$ 24.70	$ 25.90	$ 26.65	$ 26.65	$ 27.15	$ 27.15	$ 27.65	$ 27.65	$ 28.65	$ 29.75	$ 31.00	$ 31.90	$ 32.90	$ 33.90	$ 34.90	$ 34.90	$ 34.90	$ 34.90	$ 34.90
Usage charge		$ 6.90	$ 7.25	$ 7.60	$ 7.85	$ 7.85	$ 8.25	$ 8.25	$ 8.50	$ 8.50	$ 9.50	$ 10.30	$ 11.05	$ 11.25	$ 11.90	$ 12.85	$ 13.60	$ 13.60	$ 13.60	$ 13.60	$ 13.60
	(change)	*$ 0.40*	*$ 0.35*	*$ 0.35*	*$ 0.15*	*$ -*	*$ 0.40*	*$ -*	*$ 0.25*	*$ -*	*$ 1.00*	*$ 0.80*	*$ 0.75*	*$ 0.20*	*$ 0.65*	*$ 0.95*	*$ 0.75*	*$ -*	*$ -*	*$ -*	*$ -*
Total Charge (bsf + usage charge)		$ 58.11	$ 60.96	$ 63.91	$ 65.91	$ 65.91	$ 68.41	$ 68.41	$ 70.16	$ 70.16	$ 76.16	$ 81.26	$ 86.26	$ 88.16	$ 92.41	$ 98.16	$ 102.91	$ 102.91	$ 102.91	$ 102.91	$ 102.91
Prior Year Total Charge (bsf + usage charge)		$ 54.36	$ 58.11	$ 60.96	$ 63.91	$ 65.91	$ 65.91	$ 68.41	$ 68.41	$ 70.16	$ 70.16	$ 76.16	$ 81.26	$ 86.26	$ 88.16	$ 92.41	$ 98.16	$ 102.91	$ 102.91	$ 102.91	$ 102.91
Difference YoY		$ 3.75	$ 2.85	$ 2.95	$ 2.00	$ -	$ 2.50	$ -	$ 1.75	$ -	$ 6.00	$ 5.10	$ 5.00	$ 1.90	$ 4.25	$ 5.75	$ 4.75	$ -	$ -	$ -	$ -
Percentage change		7%	4.9%	4.8%	3.1%	0.0%	3.8%	0.0%	2.6%	0.0%	8.6%	6.7%	6.2%	2.2%	4.8%	6.2%	4.8%	0.0%	0.0%	0.0%	0.0%
Funds available for DS		1,908,119	1,740,357	1,822,269	2,058,435	2,108,275	2,180,368	2,075,235	2,159,349	2,043,903	2,350,797	2,595,471	2,833,098	2,846,130	3,020,243	3,296,144	3,498,110	3,341,670	3,177,229	2,843,858	2,659,255
Debt Service		1,462,359	1,499,014	1,747,791	1,712,537	1,717,505	1,545,527	1,501,451	1,656,415	1,764,980	1,956,112	2,003,368	2,554,748	2,294,449	2,535,573	2,578,333	2,639,798	2,626,567	2,721,176	1,937,680	1,856,958
DSCR		1.30	1.16	1.04	1.20	1.23	1.41	1.38	1.30	1.16	1.20	1.30	1.11	1.24	1.19	1.28	1.33	1.27	1.17	1.47	1.43
Benchmark		1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	2.10	3.10
Incremental Debt Service		272,295	83,129	(91,183)	158,767	199,109	436,626	385,126	306,629	93,114	180,976	356,150	20,796	292,942	210,103	418,161	540,302	411,315	167,214	647,646	560,546

BOONE COUNTY REGIONAL SEWER DISTRICT
BOONE COUNTY, MO
STATEMENTS OF REVENUES, EXPENSES AND CHANGES IN NET POSITION
ACTUAL AND PROJECTED YEARS ENDED DECEMBER 31, 2017-2036
Prepared by Stephen M. Connelly, CPA, PC
July 31, 2019

	ACTUAL																			
	2017	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**
OPERATING REVENUES:																				
Customer fees (user fees, penalties, etc)	4,592,287	4,528,889	4,679,059	5,005,865	5,156,299	5,356,891	5,385,401	5,604,327	5,633,415	6,090,692	6,491,855	6,892,347	7,074,898	7,425,478	7,885,100	8,278,361	8,321,125	8,364,145	8,246,856	8,287,340
Grants																				
Miscellaneous	17,421	4,718	4,812	22,909	23,367	23,834	24,311	28,997	29,577	30,168	30,772	31,387	32,015	32,655	33,308	33,975	34,654	35,347	36,054	36,775
Total Operating Revenue	4,609,708	4,533,607	4,683,871	5,028,774	5,179,666	5,380,725	5,409,712	5,633,324	5,662,992	6,120,861	6,522,627	6,923,734	7,106,914	7,458,134	7,918,409	8,312,336	8,355,779	8,399,492	8,282,911	8,324,115
OPERATING EXPENSES:																				
Personnel expenses	1,070,689	1,105,462	1,112,622	1,142,220	1,164,960	1,212,616	1,262,296	1,314,093	1,368,100	1,424,416	1,483,146	1,544,397	1,608,285	1,674,929	1,744,454	1,816,991	1,892,678	1,971,659	2,054,086	2,140,118
Materials and supplies	6,404	4,948	4,586	4,735	4,887	5,045	5,208	5,377	5,550	5,729	5,914	6,106	6,303	6,506	6,716	6,933	7,157	7,389	7,627	7,874
Dues, training and seminars	5,746	12,988	11,042	11,399	11,767	12,147	12,539	12,944	13,362	13,794	14,240	14,700	15,174	15,664	16,170	16,693	17,232	17,788	18,363	18,956
Utilities	187,041	185,135	183,819	189,757	195,886	202,213	208,744	215,487	222,447	229,632	237,049	244,706	252,610	260,769	269,192	277,887	286,863	296,128	305,693	315,567
Equipment costs	62,527	60,658	55,530	57,323	59,175	61,086	63,059	65,096	67,199	69,369	71,610	73,923	76,311	78,776	81,320	83,947	86,658	89,457	92,347	95,330
Maintenance	250,536	202,115	229,421	241,810	254,867	268,630	283,136	298,426	314,541	331,526	349,428	368,297	388,186	409,148	431,241	454,529	479,073	504,943	532,210	560,949
Wholesale treatment	953,509	997,473	1,037,372	1,078,867	1,122,022	1,166,903	1,213,579	1,262,122	1,312,607	1,365,111	1,419,716	1,476,504	1,535,564	1,596,987	1,660,866	1,727,301	1,796,393	1,868,249	1,942,979	2,020,698
Contract services	241,388	301,972	296,215	305,779	315,652	325,845	336,366	347,228	358,440	370,014	381,963	394,297	407,029	420,173	433,741	447,748	462,208	477,135	492,544	508,451
Miscellaneous	22,239	17,593	19,378	23,822	24,591	25,386	26,206	27,052	27,926	28,828	29,759	30,720	31,713	32,737	33,794	34,886	36,013	37,176	38,377	39,616
Bad debts	20,264	21,535	22,230	22,948	23,689	24,455	25,244	26,060	26,902	27,770	28,667	29,593	30,549	31,536	32,555	33,606	34,692	35,812	36,969	38,163
Depreciation	1,182,286	1,240,326	1,250,378	1,291,388	1,323,360	1,349,484	1,396,979	1,495,463	1,610,290	1,704,703	1,759,724	1,913,638	2,057,171	2,160,119	2,244,467	2,309,125	2,361,270	2,425,720	2,458,995	2,484,701
Total Operating Expenses	4,002,629	4,150,205	4,222,594	4,370,047	4,500,857	4,653,809	4,833,359	5,069,348	5,327,363	5,570,894	5,781,216	6,096,882	6,408,895	6,687,344	6,954,518	7,209,645	7,460,236	7,731,457	7,980,190	8,230,423
INCOME FROM OPERATIONS	607,079	383,402	461,277	658,727	678,809	726,916	576,353	563,977	335,628	549,967	741,411	826,853	698,018	770,790	963,890	1,102,691	895,543	668,035	302,721	93,692
NON-OPERATING REVENUES/(EXPENSES):																				
Interest income	118,754	116,630	110,613	108,321	106,106	103,968	101,903	99,909	97,984	96,127	94,336	92,607	90,941	89,334	87,786	86,294	84,858	83,474	82,143	80,862
Interest expense	(360,652)	(333,494)	(316,291)	(306,237)	(279,032)	(252,817)	(246,992)	(274,865)	(296,180)	(290,012)	(259,868)	(309,248)	(354,149)	(345,273)	(336,133)	(322,198)	(304,167)	(295,376)	(290,680)	(290,458)
Bond Issuance costs	(184,257)	(101,443)	(103,787)	(179,348)	(170,103)	(161,756)	(164,601)	(187,983)	(235,249)	(263,997)	(207,846)	(203,304)	(165,956)	(199,552)	(160,815)	(177,142)	(177,141)	(177,140)	(177,139)	(177,138)
Gain/(loss) on disposal of assets	(171,320)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contributed collection systems	1,623,043	520,275	525,478	530,733	536,040	541,400	546,814	552,282	557,805	563,383	569,017	574,707	580,454	586,259	592,121	598,043	604,023	610,063	616,164	622,326
Misc./Contr collection system closure	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Non-Operating Rev/(Exp)	1,025,568	201,968	216,012	153,468	193,011	230,795	237,124	189,343	124,361	105,502	195,638	154,763	151,290	130,769	182,959	184,997	207,573	221,022	230,488	235,591
NET INCOME/(LOSS)	1,632,647	585,369	677,289	812,194	871,820	957,711	813,477	753,320	459,989	655,469	937,049	981,616	849,309	901,558	1,146,850	1,287,688	1,103,116	889,057	533,209	329,283
INCREASE/(DECREASE) IN NET POSIT	1,632,647	585,369	677,289	812,194	871,820	957,711	813,477	753,320	459,989	655,469	937,049	981,616	849,309	901,558	1,146,850	1,287,688	1,103,116	889,057	533,209	329,283
NET POSITION, BEGINNING	13,609,706	15,242,353	15,827,723	16,505,012	17,317,206	18,189,026	19,146,738	19,960,215	20,713,535	21,173,524	21,828,992	22,766,041	23,747,657	24,596,966	25,498,524	26,645,374	27,933,062	29,036,178	29,925,235	30,458,443
NET POSITION, ENDING	15,242,353	15,827,723	16,505,012	17,317,206	18,189,026	19,146,738	19,960,215	20,713,535	21,173,524	21,828,992	22,766,041	23,747,657	24,596,966	25,498,524	26,645,374	27,933,062	29,036,178	29,925,235	30,458,443	30,787,726
	2017	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**
Funds available for DS	1,908,119	1,740,357	1,822,269	2,058,435	2,108,275	2,180,368	2,075,235	2,159,349	2,043,903	2,350,797	2,595,471	2,833,098	2,846,130	3,020,243	3,296,144	3,498,110	3,341,670	3,177,229	2,843,858	2,659,255
Debt Service	1,462,359	1,499,014	1,747,791	1,712,537	1,717,505	1,545,527	1,501,451	1,656,415	1,764,980	1,956,112	2,003,368	2,554,748	2,294,449	2,535,573	2,578,333	2,639,798	2,626,567	2,721,176	1,937,680	1,856,958
DSCR	1.30	1.16	1.04	1.20	1.23	1.41	1.38	1.30	1.16	1.20	1.30	1.11	1.24	1.19	1.28	1.33	1.27	1.17	1.47	1.43
Benchmark	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10
Incremental Debt Service	272,295	83,129	(91,183)	158,767	199,109	436,626	385,126	306,629	93,114	180,976	356,150	20,796	292,942	210,103	418,161	540,302	411,315	167,214	647,646	560,546

BOONE COUNTY REGIONAL SEWER DISTRICT
BOONE COUNTY, MO
Actual and Projected Number of Customers 2017-2036
Prepared by Stephen M. Connelly, CPA, PC
July 31, 2019

Number of BILLED Customers by Rate Class for 2017-2036

Rate Class	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
A	5,919	5,995	6,019	6,049	6,256	6,288	6,320	6,440	6,472	6,504	6,537	6,569	6,602	6,635	6,668	6,702	6,735	6,769	6,803	6,837
B	206	202	205	206	207	208	209	210	211	212	213	214	215	217	218	219	220	221	222	223
C	63	76	76	77	77	78	78	78	79	79	79	80	80	81	81	81	82	82	83	83
D	16	16	16	16	17	17	17	17	17	17	17	17	17	17	17	18	18	18	18	18
E	48	49	57	57	58	58	58	58	59	59	59	60	60	60	61	61	61	61	62	62
F & Others	292	297	299	300	300	301	302	303	304	304	305	306	307	308	309	309	310	311	312	313
TOTAL	6,544	6,635	6,673	6,705	6,915	6,949	6,984	7,106	7,141	7,176	7,211	7,247	7,282	7,318	7,354	7,390	7,426	7,462	7,499	7,536

NOTE:> These numbers include BILLED customers who may have multiple units.

CIP FUNDING LIST with ANNUAL INFLATION ADJUSTMENT (Financed)

Description		Budget	Inflation Adjusted Budget		
2019 DEBT FUNDING					
Lee Heights		609,500			
Oberlin Valley		609,500			
	TOTAL	1,219,000	1,219,000	100%	
2020 DEBT FUNDING					
	TOTAL	-	-	103%	1
2021 DEBT FUNDING					
	TOTAL	-	-	106%	2
2022 DEBT FUNDING					
Contingency		500,000			
Collection System Rehab		1,046,325			
	TOTAL	1,546,325	1,689,711	109%	3
2023 DEBT FUNDING					
Collection System Rehab		1,046,325			
Midway Arms		724,150			
Midway Crossings Capacity		2,225,518			
	TOTAL	3,995,993	4,497,525	113%	4
2024 DEBT FUNDING					
Collection System Rehab		1,046,325			
Highfield Acres		259,265			
Brown Station/Richardson Acres		1,518,000			
Rollingwood		498,100			
	TOTAL	3,321,690	3,850,749	116%	5
2025 DEBT FUNDING					
Contingency		500,000			
Collection System Rehab		1,046,325			
	TOTAL	1,546,325	1,846,393	119%	6
2026 DEBT FUNDING					
	TOTAL	-	-	123%	7
2027 DEBT FUNDING					
South Route K		6,454,000			
	TOTAL	6,454,000	8,175,734	127%	8
2028 DEBT FUNDING					
Prairie Meadows		3,057,000			
	TOTAL	3,057,000	3,988,692	130%	9
2029 DEBT FUNDING					
Trails West		1,122,243			
	TOTAL	1,122,243	1,508,201	134%	10
2030 DEBT FUNDING					
Twin Lakes		1,169,000			
	TOTAL	1,169,000	1,618,169	138%	11
2031 DEBT FUNDING					
Meadow Village		620,000			
	TOTAL	620,000	883,972	143%	12
2032 DEBT FUNDING					
Cedar Gate		469,287			
	TOTAL	469,287	689,164	147%	13
2033 DEBT FUNDING					
Kimkade Crossing		1,307,050			
	TOTAL	1,307,050	1,977,030	151%	14
2034 DEBT FUNDING					
Eagle Knoll		381,400			
	TOTAL	381,400	594,209	156%	15
2035 DEBT FUNDING					
Quarter Mile		343,000			
	TOTAL	343,000	550,414	160%	15
2036 DEBT FUNDING					
Rocheport		102,344			
	TOTAL	102,344	169,159	165%	15
COMBINED TOTAL FOR ALL PROJECTS		$26,209,313	$32,538,549		

BOONE COUNTY REGIONAL SEWER DISTRICT
BOONE COUNTY, MO
Actual and Projected Debt Levels 2017-2036
Prepared by Stephen M. Connelly, CPA, PC

2017

	Beg Bal	Advances	Payments	Ending Bal	Gross Interest	Gross DS
Series 1998B	105,000		35,000	70,000	3,325	38,325
Series 2000A	255,000		60,000	195,000	12,683	72,683
Series 2002B	130,000		20,000	110,000	6,250	26,250
Series 2004B	505,000		60,000	445,000	22,325	82,325
Series 2006B	375,000		35,000	340,000	16,525	51,525
Series 2007B	1,890,000		120,000	1,770,000	81,944	201,944
SRF Direct Loan - 09, 11	1,030,300		60,900	969,400	15,081	75,981
Direct Loan 2012	1,027,300		53,000	974,300	14,221	67,221
City of Rocheport	11,100		600	10,500	183	783
Direct Loan 2013	11,448,000		515,000	10,933,000	163,725	678,725
Direct Loan 2015	2,937,000		130,000	2,807,000	36,597	166,597
Calculated	19,713,700	0	1,089,500	18,624,200	372,859	1,462,359

2018

	Beg Bal	Advances	Payments	Ending Bal	Gross Interest	Gross DS
Series 1998B	70,000		70,000	0	1,750	71,750
Series 2000A	195,000		65,000	130,000	9,197	74,197
Series 2002B	110,000		20,000	90,000	5,150	25,150
Series 2004B	445,000		60,000	385,000	19,175	79,175
Series 2006B	340,000		35,000	305,000	14,950	49,950
Series 2007B	1,770,000		125,000	1,645,000	76,631	201,631
SRF Direct Loan - 09, 11	969,400		62,000	907,400	14,137	76,137
Direct Loan 2012	974,300		54,800	919,500	13,438	68,238
City of Rocheport	10,500		700	9,800	172	872
Direct Loan 2013	10,933,000		528,000	10,405,000	155,962	683,962
Direct Loan 2015	2,807,000		133,000	2,674,000	34,952	167,952
Calculated	18,624,200	0	1,153,500	17,470,700	345,514	1,499,014

2019

	Beg Bal	Advances	Payments	Ending Bal	Gross Interest	Gross DS
Series 1998B	0		0	0	0	0
Series 2000A	130,000		65,000	65,000	5,541	70,541
Series 2002B	90,000		20,000	70,000	4,050	24,050
Series 2004B	385,000		60,000	325,000	16,025	76,025
Series 2006B	305,000		35,000	270,000	13,550	48,550
Series 2007B	1,645,000		135,000	1,510,000	69,881	204,881
SRF Direct Loan - 09, 11	907,400		63,100	844,300	13,177	76,277
Direct Loan 2012	919,500		55,700	863,800	12,643	68,343
City of Rocheport	9,800		700	9,100	160	860
Direct Loan 2013	10,405,000		541,000	9,864,000	148,000	689,000
Direct Loan 2015	2,674,000		136,000	2,538,000	33,264	169,264
Direct Loan 2019		1,219,000		1,219,000	0	0
Calculated	17,470,700	1,219,000	1,111,500	17,578,200	316,291	1,427,791

2020

	Beg Bal	Advances	Payments	Ending Bal	Gross Interest	Gross DS
Series 2000A	65,000		65,000	0	1,853	66,853
Series 2002B	70,000		20,000	50,000	3,000	23,000
Series 2004B	325,000		60,000	265,000	13,250	73,250
Series 2006B	270,000		35,000	235,000	12,150	47,150
Series 2007B	1,510,000		140,000	1,370,000	64,281	204,281
SRF Direct Loan - 09, 11	844,300		66,000	778,300	12,179	78,179
Direct Loan 2012	863,800		55,600	808,200	11,827	67,427
City of Rocheport	9,100		700	8,400	148	848
Direct Loan 2013	9,864,000		554,000	9,310,000	139,853	693,853
Direct Loan 2015	2,538,000		139,000	2,399,000	31,544	170,544
Direct Loan 2019	1,219,000		0	1,219,000	16,152	16,152
Calculated	17,578,200	0	1,135,300	16,442,900	306,237	1,441,537

2021

	Beg Bal	Advances	Payments	Ending Bal	Gross Interest	Gross DS
Series 2002B	50,000		25,000	25,000	1,875	26,875
Series 2004B	265,000		65,000	200,000	10,000	75,000
Series 2006B	235,000		35,000	200,000	10,575	45,575
Series 2007B	1,370,000		145,000	1,225,000	58,300	203,300
SRF Direct Loan - 09, 11	778,300		67,100	711,200	11,157	78,257
Direct Loan 2012	808,200		58,400	749,800	10,993	69,393
City of Rocheport	8,400		700	7,700	136	836
Direct Loan 2013	9,310,000		567,000	8,743,000	131,505	698,505
Direct Loan 2015	2,399,000		142,000	2,257,000	29,780	171,780
Direct Loan 2019	1,219,000		53,100	1,165,900	14,711	67,811
Calculated	16,442,900	0	1,158,300	15,284,600	279,032	1,437,332

2022

	Beg Bal	Advances	Payments	Ending Bal	Gross Interest	Gross DS
Series 2002B	25,000		25,000	0	625	25,625
Series 2004B	200,000		65,000	135,000	6,750	71,750
Series 2006B	200,000		40,000	160,000	8,700	48,700
Series 2007B	1,225,000		150,000	1,075,000	51,363	201,363
SRF Direct Loan - 09, 11	711,200		68,300	642,900	10,118	78,418
Direct Loan 2012	749,800		60,200	689,600	10,133	70,333
City of Rocheport	7,700		700	7,000	124	824
Direct Loan 2013	8,743,000		581,000	8,162,000	122,959	703,959
Direct Loan 2015	2,257,000		145,000	2,112,000	27,985	172,985
Direct Loan 2019	1,165,900		54,000	1,111,900	14,060	68,060
Direct Loan 2022		1,689,711		1,689,711	0	0
Calculated	15,284,600	1,689,711	1,189,200	15,785,111	252,817	1,442,017

2023

	Beg Bal	Advances	Payments	Ending Bal	Gross Interest	Gross DS
Series 2004B	135,000		65,000	70,000	3,500	68,500
Series 2006B	160,000		40,000	120,000	6,700	46,700
Series 2007B	1,075,000		160,000	915,000	43,962	203,962
SRF Direct Loan - 09, 11	642,900		70,500	572,400	9,051	79,551
Direct Loan 2012	689,600		61,800	627,800	9,248	71,048
City of Rocheport	7,000		700	6,300	112	812
Direct Loan 2013	8,162,000		595,000	7,567,000	114,204	709,204
Direct Loan 2015	2,112,000		149,000	1,963,000	26,145	175,145
Direct Loan 2019	1,111,900		55,000	1,056,900	13,398	68,398
Direct Loan 2022	1,689,711			1,689,711	20,672	20,672
Direct Loan 2023		4,497,525		4,497,525	0	0
Calculated	15,785,111	4,497,525	1,197,000	19,085,636	246,992	1,443,992

2024

	Beg Bal	Advances	Payments	Ending Bal	Gross Interest	Gross DS
Series 2004B	70,000		70,000	0	0	70,000
Series 2006B	120,000		40,000	80,000	4,700	44,700
Series 2007B	915,000		165,000	750,000	36,125	201,125
SRF Direct Loan - 09, 11	572,400		72,600	499,800	7,945	80,545
Direct Loan 2012	627,800		62,700	565,100	8,352	71,052
City of Rocheport	6,300		700	5,600	101	801
Direct Loan 2013	7,567,000		609,000	6,958,000	105,243	714,243
Direct Loan 2015	1,963,000		151,000	1,812,000	24,261	175,261
Direct Loan 2019	1,056,900		55,900	1,001,000	12,725	68,625
Direct Loan 2022	1,689,711		73,600	1,616,111	20,391	93,991
Direct Loan 2023	4,497,525			4,497,525	55,022	55,022
Direct Loan 2024		3,850,749		3,850,749	0	0
Calculated	19,085,636	3,850,749	1,300,500	21,635,885	274,865	1,575,365

2025

	Beg Bal	Advances	Payments	Ending Bal	Gross Interest	Gross DS
Series 2006B	80,000		40,000	40,000	2,700	42,700
Series 2007B	750,000		175,000	575,000	27,813	202,813
SRF Direct Loan - 09, 11	499,800		73,700	426,100	6,823	80,523
Direct Loan 2012	565,100		64,500	500,600	7,430	71,930
City of Rocheport	5,600		800	4,800	88	888
Direct Loan 2013	6,958,000		624,000	6,334,000	96,067	720,067
Direct Loan 2015	1,812,000		155,000	1,657,000	22,346	177,346
Direct Loan 2019	1,001,000		56,900	944,100	12,040	68,940
Direct Loan 2022	1,616,111		74,900	1,541,211	19,489	94,389
Direct Loan 2023	4,497,525		196,000	4,301,525	54,274	250,274
Direct Loan 2024	3,850,749			3,850,749	47,110	47,110
Direct Loan 2025		1,846,393		1,846,393	0	0
Calculated	21,635,885	1,846,393	1,460,800	22,021,478	296,180	1,756,980

2026

	Beg Bal	Advances	Payments	Ending Bal	Gross Interest	Gross DS
Series 2006B	40,000		40,000	0	850	40,850
Series 2007B	575,000		185,000	390,000	19,025	204,025
SRF Direct Loan - 09, 11	426,100		75,900	350,200	5,674	81,574
Direct Loan 2012	500,600		66,300	434,300	6,481	72,781
City of Rocheport	4,800		800	4,000	79	879
Direct Loan 2013	6,334,000		638,000	5,696,000	86,676	724,676
Direct Loan 2015	1,657,000		159,000	1,498,000	20,381	179,381
Direct Loan 2019	944,100		57,900	886,200	11,342	69,242
Direct Loan 2022	1,541,211		76,200	1,465,011	18,572	94,772
Direct Loan 2023	4,301,525		199,300	4,102,225	51,873	251,173
Direct Loan 2024	3,850,749		167,700	3,683,049	46,470	214,170
Direct Loan 2025	1,846,393		0	1,846,393	22,589	22,589
Calculated	22,021,478	0	1,666,100	20,355,378	290,012	1,956,112

2027

	Beg Bal	Advances	Payments	Ending Bal	Gross Interest	Gross DS
Series 2007B	390,000		190,000	200,000	10,000	200,000
SRF Direct Loan - 09, 11	350,200		78,300	271,900	4,481	82,781
Direct Loan 2012	434,300		68,100	366,200	5,507	73,607
City of Rocheport	4,000		800	3,200	61	861
Direct Loan 2013	5,696,000		654,000	5,042,000	77,056	731,056
Direct Loan 2015	1,498,000		162,000	1,336,000	18,365	180,365
Direct Loan 2019	886,200		58,900	827,300	10,633	69,533
Direct Loan 2022	1,465,011		77,500	1,387,511	17,638	95,138
Direct Loan 2023	4,102,225		202,800	3,899,425	49,431	252,231
Direct Loan 2024	3,683,049		170,700	3,512,349	44,415	215,115
Direct Loan 2025	1,846,393		80,400	1,765,993	22,282	102,682
Direct Loan 2027		8,175,734		8,175,734	0	0
Calculated	20,355,378	8,175,734	1,743,500	26,787,612	259,868	2,003,368

2028

	Beg Bal	Advances	Payments	Ending Bal	Gross Interest	Gross DS
Series 2007B	200,000		200,000	0	0	200,000
SRF Direct Loan - 09, 11	271,900		79,400	192,500	3,272	82,672
Direct Loan 2012	366,200		69,900	296,300	4,507	74,407
City of Rocheport	3,200		800	2,400	47	847
Direct Loan 2013	5,042,000		670,000	4,372,000	67,200	737,200
Direct Loan 2015	1,336,000		165,000	1,171,000	16,317	181,317
Direct Loan 2019	827,300		59,900	767,400	9,911	69,811
Direct Loan 2022	1,387,511		78,800	1,308,711	16,689	95,489
Direct Loan 2023	3,899,425		206,300	3,693,125	46,947	253,247
Direct Loan 2024	3,512,349		173,600	3,338,749	23,041	196,641
Direct Loan 2025	1,765,993		81,800	1,684,193	21,297	103,097
Direct Loan 2027	8,175,734			8,175,734	100,021	100,021
Direct Loan 2028		3,988,692		3,988,692	0	0
Calculated	26,787,612	3,988,692	1,785,500	28,990,804	309,248	2,094,748

2029

	Beg Bal	Advances	Payments	Ending Bal	Gross Interest	Gross DS
SRF Direct Loan - 09, 11	192,500		81,800	110,700	2,034	83,834
Direct Loan 2012	296,300		71,700	224,600	3,481	75,181
City of Rocheport	2,400		800	1,600	34	834
Direct Loan 2013	4,372,000		686,000	3,686,000	57,105	743,105
Direct Loan 2015	1,171,000		169,000	1,002,000	14,225	183,225
Direct Loan 2019	767,400		60,900	706,500	9,177	70,077
Direct Loan 2022	1,308,711		44,200	1,264,511	15,723	59,923
Direct Loan 2023	3,693,125		209,900	3,483,225	44,419	254,319
Direct Loan 2024	3,338,749		176,600	3,162,149	40,197	216,797
Direct Loan 2025	1,684,193		83,200	1,600,993	20,295	103,495
Direct Loan 2027	8,175,734		356,200	7,819,534	98,662	454,862
Direct Loan 2028	3,988,692			3,988,692	48,797	48,797
Direct Loan 2029		1,508,201		1,508,201	0	0
Calculated	28,990,804	1,508,201	1,940,300	28,558,705	354,149	2,294,449

2030

	Beg Bal	Advances	Payments	Ending Bal	Gross Interest	Gross DS
SRF Direct Loan - 09, 11	110,700		83,700	27,000	754	84,454
Direct Loan 2012	224,600		73,400	150,200	2,430	75,830
City of Rocheport	1,600		800	800	20	820
Direct Loan 2013	3,686,000		702,000	2,984,000	46,776	748,776
Direct Loan 2015	1,002,000		173,000	829,000	12,083	185,083
Direct Loan 2019	706,500		61,900	644,600	8,431	70,331
Direct Loan 2022	1,264,511		81,600	1,182,911	14,740	96,340
Direct Loan 2023	3,483,225		213,500	3,269,725	41,847	255,347
Direct Loan 2024	3,162,149		179,600	2,982,549	38,033	217,633
Direct Loan 2025	1,600,993		84,700	1,516,293	19,275	103,975
Direct Loan 2027	7,819,534		362,300	7,457,234	94,298	456,598
Direct Loan 2028	3,988,692		173,800	3,814,892	48,134	221,934
Direct Loan 2029	1,508,201			1,508,201	18,451	18,451
Direct Loan 2030		1,618,169		1,618,169	0	0
Calculated	28,558,705	1,618,169	2,190,300	27,985,574	345,273	2,535,573

2031

	Beg Bal	Advances	Payments	Ending Bal	Gross Interest	Gross DS
SRF Direct Loan - 09, 11	27,000		27,000	0	105	27,105
Direct Loan 2012	150,200		75,100	75,100	1,355	76,455
City of Rocheport	800		800	0	7	807
Direct Loan 2013	2,984,000		719,000	2,265,000	36,201	755,201
Direct Loan 2015	829,000		177,000	652,000	9,891	186,891
Direct Loan 2019	644,600		63,100	581,500	7,673	70,773
Direct Loan 2022	1,182,911		83,000	1,099,911	13,740	96,740
Direct Loan 2023	3,269,725		217,100	3,052,625	39,231	256,331
Direct Loan 2024	2,982,549		182,800	2,799,749	35,832	218,632
Direct Loan 2025	1,516,293		86,200	1,430,093	18,237	104,437
Direct Loan 2027	7,457,234		368,600	7,088,634	89,859	458,459
Direct Loan 2028	3,814,892		176,800	3,638,092	46,005	222,805
Direct Loan 2029	1,508,201		65,700	1,442,501	18,201	83,901
Direct Loan 2030	1,618,169			1,618,169	19,797	19,797
Direct Loan 2031		883,972		883,972	0	0
Calculated	27,985,574	883,972	2,242,200	26,627,346	336,133	2,578,333

2032

	Beg Bal	Advances	Payments	Ending Bal	Gross Interest	Gross DS
Direct Loan 2012	75,100		75,100	0	267	75,367
Direct Loan 2013	2,265,000		726,300	1,538,700	30,397	756,697
Direct Loan 2015	652,000		181,000	471,000	7,648	188,648
Direct Loan 2019	581,500		64,100	517,400	6,900	71,000
Direct Loan 2022	1,099,911		84,400	1,015,511	12,724	97,124
Direct Loan 2023	3,052,625		220,900	2,831,725	36,571	257,471
Direct Loan 2024	2,799,749		186,000	2,613,749	33,592	219,592
Direct Loan 2025	1,430,093		87,600	1,342,493	17,181	104,781
Direct Loan 2027	7,088,634		375,000	6,713,634	85,342	460,342
Direct Loan 2028	3,638,092		179,800	3,458,292	43,839	223,639
Direct Loan 2029	1,442,501		66,900	1,375,601	17,395	84,295
Direct Loan 2030	1,618,169		70,500	1,547,669	19,528	90,028
Direct Loan 2031	883,972			883,972	10,814	10,814
Direct Loan 2032		689,164		689,164	0	0
Calculated	26,627,346	689,164	2,317,600	24,998,910	322,198	2,639,798

2033

	Beg Bal	Advances	Payments	Ending Bal	Gross Interest	Gross DS
Direct Loan 2013	1,538,700		744,500	794,200	19,580	764,080
Direct Loan 2015	471,000		181,000	290,000	25,368	206,368
Direct Loan 2019	517,400		65,300	452,100	6,114	71,414
Direct Loan 2022	1,015,511		85,900	929,611	11,689	97,589
Direct Loan 2023	2,831,725		224,700	2,607,025	17,274	241,974
Direct Loan 2024	2,613,749		189,200	2,424,549	31,313	220,513
Direct Loan 2025	1,342,493		89,200	1,253,293	16,108	105,308
Direct Loan 2027	6,713,634		381,400	6,332,234	80,748	462,148
Direct Loan 2028	3,458,292		183,000	3,275,292	41,635	224,635
Direct Loan 2029	1,375,601		68,000	1,307,601	16,576	84,576
Direct Loan 2030	1,547,669		71,700	1,475,969	18,664	90,364
Direct Loan 2031	883,972		38,500	845,472	10,667	49,167
Direct Loan 2032	689,164			689,164	8,431	8,431
Direct Loan 2033		1,977,030		1,977,030	0	0
Calculated	24,998,910	1,977,030	2,322,400	24,653,540	304,167	2,626,567

2034

	Beg Bal	Advances	Payments	Ending Bal	Gross Interest	Gross DS
Direct Loan 2013	794,200		794,200	0	8,494	802,694
Direct Loan 2015	290,000		181,000	109,000	4,114	185,114
Direct Loan 2019	452,100		66,300	385,800	5,314	71,614
Direct Loan 2022	929,611		87,400	842,211	10,637	98,037
Direct Loan 2023	2,607,025		228,600	2,378,425	31,112	259,712
Direct Loan 2024	2,424,549		192,400	2,232,149	28,995	221,395
Direct Loan 2025	1,253,293		90,600	1,162,693	15,015	105,615
Direct Loan 2027	6,332,234		388,000	5,944,234	76,075	464,075
Direct Loan 2028	3,275,292		186,100	3,089,192	39,393	225,493
Direct Loan 2029	1,307,601		69,100	1,238,501	15,743	84,843
Direct Loan 2030	1,475,969		72,900	1,403,069	17,785	90,685
Direct Loan 2031	845,472		39,200	806,272	10,196	49,396
Direct Loan 2032	689,164		30,000	659,164	8,317	38,317
Direct Loan 2033	1,977,030			1,977,030	24,187	24,187
Direct Loan 2034		594,209		594,209	0	0
Calculated	24,653,540	594,209	2,425,800	22,821,949	295,376	2,721,176

2035

	Beg Bal	Advances	Payments	Ending Bal	Gross Interest	Gross DS
Direct Loan 2015	109,000		109,000	0	1,784	110,784
Direct Loan 2019	385,800		67,500	318,300	4,502	72,002
Direct Loan 2022	842,211		87,400	754,811	10,637	98,037
Direct Loan 2023	2,378,425		228,600	2,149,825	31,112	259,712
Direct Loan 2024	2,232,149		192,400	2,039,749	28,995	221,395
Direct Loan 2025	1,162,693		90,600	1,072,093	15,015	105,615
Direct Loan 2027	5,944,234		388,000	5,556,234	76,075	464,075
Direct Loan 2028	3,089,192		186,100	2,903,092	39,393	225,493
Direct Loan 2029	1,238,501		69,100	1,169,401	15,743	84,843
Direct Loan 2030	1,403,069		72,900	1,330,169	17,785	90,685
Direct Loan 2031	806,272		39,200	767,072	10,196	49,396
Direct Loan 2032	659,164		30,000	629,164	8,317	38,317
Direct Loan 2033	1,977,030		86,200	1,890,830	23,858	110,058
Direct Loan 2034	594,209			594,209	7,269	7,269
Direct Loan 2035		550,414		550,414	0	0
Calculated	22,821,949	550,414	1,647,000	21,725,363	290,680	1,937,680

2036

	Beg Bal	Advances	Payments	Ending Bal	Gross Interest	Gross DS
Direct Loan 2019	318,300		68,700	249,600	3,675	72,375
Direct Loan 2022	754,811		87,400	667,411	10,637	98,037
Direct Loan 2023	2,149,825		228,600	1,921,225	31,112	259,712
Direct Loan 2024	2,039,749		192,400	1,847,349	28,995	221,395
Direct Loan 2025	1,072,093		90,600	981,493	15,015	105,615
Direct Loan 2027	5,556,234		388,000	5,168,234	76,075	464,075
Direct Loan 2028	2,903,092		186,100	2,716,992	39,393	225,493
Direct Loan 2029	1,169,401		69,100	1,100,301	15,743	84,843
Direct Loan 2030	1,330,169		72,900	1,257,269	17,785	90,685
Direct Loan 2031	767,072		39,200	727,872	10,196	49,396
Direct Loan 2032	629,164		30,000	599,164	8,317	38,317
Direct Loan 2033	1,890,830		87,600	1,803,230	22,802	110,402
Direct Loan 2034	594,209		25,900	568,309	3,981	29,881
Direct Loan 2035	550,414			550,414	6,734	6,734
Direct Loan 2036		169,159		169,159	0	0
Calculated	21,725,363	169,159	1,566,500	20,328,022	290,458	1,856,958

BOONE COUNTY REGIONAL SEWER DISTRICT
BOONE COUNTY, MO
Actual and Projected Capital Assets 2017-2036
Prepared by Stephen M. Connelly, CPA, PC

31-Dec-17

	Beg Bal	Additions	Contributed Capital	Disposals	Transfer	Ending Bal	Beg Bal	Expense	Disposals	Ending Bal	
Land	42,888					42,888					
Building	173,907					173,907					
Vehicles & equipment	1,119,655	55,973		(62,896)		1,112,732					
Treatment & Collection Systems	32,172,031	78,561	1,623,043	(171,320)	6,819,775	40,522,090					
Work-In-Progress - CIP	6,977,424	721,115			(6,819,775)	878,764					
Accumulated Deprec							9,613,610	1,182,286	(62,896)	10,733,000	
	40,485,905	855,649	1,623,043	(234,216)	-	42,730,381	9,613,610	1,182,286	(62,896)	10,733,000	31,997,381

31-Dec-18

	Beg Bal	Additions	Contributed Capital	Disposals	Transfer	Ending Bal	Beg Bal	Expense	Disposals	Ending Bal	
Land	42,888	51,247				94,135					
Building	173,907					173,907					
Vehicles & equipment	1,112,732	28,679		(2,922)		1,138,489					
Treatment & Collection Systems	40,522,090	42,639	520,275		127,453	41,212,457					
Work-In-Progress - CIP	878,764	191,813			(127,453)	943,124					
Accumulated Deprec							10,733,000	1,240,326	(2,922)	11,970,404	
	42,730,381	314,378	520,275	(2,922)	-	43,562,112	10,733,000	1,240,326	(2,922)	11,970,404	31,591,708

31-Dec-19

	Beg Bal	Additions	Contributed Capital	Disposals	Transfer	Ending Bal	Beg Bal	Expense	Disposals	Ending Bal	
Land	94,135					94,135					
Building	173,907					173,907					
Vehicles & equipment	1,138,489	54,636				1,193,125					
Treatment & Collection Systems	41,212,457		525,478	-	471,562	42,209,497					
Work-In-Progress - CIP	943,124	1,219,000			(471,562)	1,690,562					
Accumulated Deprec							11,970,404	1,250,378		13,220,783	
	43,562,112	1,273,636	525,478	-	-	45,361,226	11,970,404	1,250,378	0	13,220,783	32,140,444

31-Dec-20

	Beg Bal	Additions	Contributed Capital	Disposals	Transfer	Ending Bal	Beg Bal	Expense	Disposals	Ending Bal	
Land	94,135					94,135					
Building	173,907					173,907					
Vehicles & equipment	1,193,125	56,275				1,249,401					
Treatment & Collection Systems	42,209,497		530,733	-	845,281	43,585,510					
Work-In-Progress - CIP	1,690,562	-			(845,281)	845,281					
Accumulated Deprec							13,220,783	1,291,388		14,512,170	
	45,361,226	56,275	530,733	-	-	45,948,234	13,220,783	1,291,388	0	14,512,170	31,436,064

31-Dec-21

	Beg Bal	Additions	Contributed Capital	Disposals	Transfer	Ending Bal	Beg Bal	Expense	Disposals	Ending Bal	
Land	94,135					94,135					
Building	173,907					173,907					
Vehicles & equipment	1,249,401	57,964				1,307,364					
Treatment & Collection Systems	43,585,510	100,000	536,040	-	422,641	44,644,191					
Work-In-Progress - CIP	845,281	-			(422,641)	422,641					
Accumulated Deprec							14,512,170	1,323,360		15,835,530	
	45,948,234	157,964	536,040	-	-	46,642,238	14,512,170	1,323,360	0	15,835,530	30,806,708

31-Dec-22

	Beg Bal	Additions	Contributed Capital	Disposals	Transfer	Ending Bal	Beg Bal	Expense	Disposals	Ending Bal	
Land	94,135					94,135					
Building	173,907					173,907					
Vehicles & equipment	1,307,364	59,703				1,367,067					
Treatment & Collection Systems	44,644,191	100,000	541,400	-	211,320	45,496,911					
Work-In-Progress - CIP	422,641	1,689,711			(211,320)	1,901,031					
Accumulated Deprec							15,835,530	1,349,484		17,185,014	
	46,642,238	1,849,414	541,400	-	-	49,033,052	15,835,530	1,349,484	0	17,185,014	31,848,038

31-Dec-23

	Beg Bal	Additions	Contributed Capital	Disposals	Transfer	Ending Bal	Beg Bal	Expense	Disposals	Ending Bal
Land	94,135					94,135				
Building	173,907					173,907				
Vehicles & equipment	1,367,067	61,494				1,428,561				

Treatment & Collection Systems	45,496,911	100,000	546,814	-	950,516	47,094,241					
Work-In-Progress - CIP	1,901,031	4,497,525			(950,516)	5,448,041					
Accumulated Deprec							17,185,014	1,396,979		18,581,993	
	49,033,052	4,659,019	546,814	-	-	54,238,885	17,185,014	1,396,979	0	18,581,993	35,656,892

31-Dec-24

	Beg Bal	Additions	Contributed Capital	Disposals	Transfer	Ending Bal	Beg Bal	Expense	Disposals	Ending Bal	
Land	94,135					94,135					
Building	173,907					173,907					
Vehicles & equipment	1,428,561	63,339				1,491,899					
Treatment & Collection Systems	47,094,241	100,000	552,282	-	2,724,020	50,470,544					
Work-In-Progress - CIP	5,448,041	3,850,749			(2,724,020)	6,574,770					
Accumulated Deprec							18,581,993	1,495,463		20,077,456	
	54,238,885	4,014,088	552,282	-	-	58,805,255	18,581,993	1,495,463	0	20,077,456	38,727,798

31-Dec-25

	Beg Bal	Additions	Contributed Capital	Disposals	Transfer	Ending Bal	Beg Bal	Expense	Disposals	Ending Bal	
Land	94,135					94,135					
Building	173,907					173,907					
Vehicles & equipment	1,491,899	65,239				1,557,138					
Treatment & Collection Systems	50,470,544	100,000	557,805	-	3,287,385	54,415,734					
Work-In-Progress - CIP	6,574,770	1,846,393			(3,287,385)	5,133,778					
Accumulated Deprec							20,077,456	1,610,290		21,687,746	
	58,805,255	2,011,632	557,805	-	-	61,374,692	20,077,456	1,610,290	0	21,687,746	39,686,945

31-Dec-26

	Beg Bal	Additions	Contributed Capital	Disposals	Transfer	Ending Bal	Beg Bal	Expense	Disposals	Ending Bal	
Land	94,135					94,135					
Building	173,907					173,907					
Vehicles & equipment	1,557,138	67,196				1,624,334					
Treatment & Collection Systems	54,415,734	100,000	563,383	-	2,566,889	57,646,006					
Work-In-Progress - CIP	5,133,778	-			(2,566,889)	2,566,889					
Accumulated Deprec							21,687,746	1,704,703		23,392,449	
	61,374,692	167,196	563,383	-	-	62,105,271	21,687,746	1,704,703	0	23,392,449	38,712,821

31-Dec-27

	Beg Bal	Additions	Contributed Capital	Disposals	Transfer	Ending Bal	Beg Bal	Expense	Disposals	Ending Bal	
Land	94,135					94,135					
Building	173,907					173,907					
Vehicles & equipment	1,624,334	69,212				1,693,545					
Treatment & Collection Systems	57,646,006		569,017	-	1,283,444	59,498,468					
Work-In-Progress - CIP	2,566,889	8,175,734			(1,283,444)	9,459,179					
Accumulated Deprec							23,392,449	1,759,724		25,152,174	
	62,105,271	8,244,946	569,017	-	-	70,919,234	23,392,449	1,759,724	0	25,152,174	45,767,060

31-Dec-28

	Beg Bal	Additions	Contributed Capital	Disposals	Transfer	Ending Bal	Beg Bal	Expense	Disposals	Ending Bal	
Land	94,135					94,135					
Building	173,907					173,907					
Vehicles & equipment	1,693,545	71,288				1,764,833					
Treatment & Collection Systems	59,498,468		574,707	-	4,729,589	64,802,764					
Work-In-Progress - CIP	9,459,179	3,988,692			(4,729,589)	8,718,281					
Accumulated Deprec							25,152,174	1,913,638		27,065,812	
	70,919,234	4,059,980	574,707	-	-	75,553,921	25,152,174	1,913,638	0	27,065,812	48,488,109

31-Dec-29

	Beg Bal	Additions	Contributed Capital	Disposals	Transfer	Ending Bal	Beg Bal	Expense	Disposals	Ending Bal	
Land	94,135					94,135					
Building	173,907					173,907					
Vehicles & equipment	1,764,833	73,427				1,838,260					
Treatment & Collection Systems	64,802,764		580,454	-	4,359,140	69,742,359					
Work-In-Progress - CIP	8,718,281	1,508,201			(4,359,140)	5,867,341					
Accumulated Deprec							27,065,812	2,057,171		29,122,982	
	75,553,921	1,581,627	580,454	-	-	77,716,002	27,065,812	2,057,171	0	29,122,982	48,593,020

31-Dec-30

	Beg Bal	Additions	Contributed Capital	Disposals	Transfer	Ending Bal	Beg Bal	Expense	Disposals	Ending Bal
Land	94,135					94,135				
Building	173,907					173,907				
Vehicles & equipment	1,838,260	75,629				1,913,890				
Treatment & Collection Systems	69,742,359		586,259	-	2,933,671	73,262,288				

Work-In-Progress - CIP	5,867,341	1,618,169			(2,933,671)	4,551,840					
Accumulated Deprec							29,122,982	2,160,119		31,283,101	
	77,716,002	1,693,799	586,259	-	-	79,996,060	29,122,982	2,160,119	0	31,283,101	48,712,959

31-Dec-31

	Beg Bal	Additions	Contributed Capital	Disposals	Transfer	Ending Bal	Beg Bal	Expense	Disposals	Ending Bal	
Land	94,135					94,135					
Building	173,907					173,907					
Vehicles & equipment	1,913,890	77,898				1,991,788					
Treatment & Collection Systems	73,262,288		592,121	-	2,275,920	76,130,330					
Work-In-Progress - CIP	4,551,840	883,972			(2,275,920)	3,159,892					
Accumulated Deprec							31,283,101	2,244,467		33,527,568	
	79,996,060	961,870	592,121	-	-	81,550,052	31,283,101	2,244,467	0	33,527,568	48,022,483

31-Dec-32

	Beg Bal	Additions	Contributed Capital	Disposals	Transfer	Ending Bal	Beg Bal	Expense	Disposals	Ending Bal	
Land	94,135					94,135					
Building	173,907					173,907					
Vehicles & equipment	1,991,788	80,235				2,072,023					
Treatment & Collection Systems	76,130,330		598,043	-	1,579,946	78,308,318					
Work-In-Progress - CIP	3,159,892	689,164			(1,579,946)	2,269,110					
Accumulated Deprec							33,527,568	2,309,125		35,836,693	
	81,550,052	769,399	598,043	-	-	82,917,493	33,527,568	2,309,125	0	35,836,693	47,080,801

SANITARY SEWER USE REGULATIONS

Chapter One: Definitions

1.1 Definitions - The following words and terms as used in this regulation shall be deemed to mean and be construed as follows, unless the context specifically indicates otherwise. The word Ashall@ is always mandatory and not merely directory. The word Amay@ is permissive. Any word not herein defined shall be as defined in any recognized Standard English dictionary.

1.1.1 Administrative Authority - The person or persons or administrative agency appointed by the Boone County Regional Sewer District Board of Trustees to administer these regulations or portions thereof.

1.1.2 BOD (biochemical oxygen demand) - The quantity of oxygen utilized in the biochemical oxidation of organic matter under standard laboratory procedure in five (5) days at twenty (20) degrees Celsius, expressed in milligrams per liter (mg/l).

1.1.3 Biosolids – Solid organic matter recovered from wastewater treatment that can be beneficially used, especially as fertilizer. Solids that have been stabilized within the treatment process, whereas sludge has not. (Revised 9/16/08)

1.1.4 Board - The Boone County Regional Sewer District Board of Trustees consisting of persons appointed by the County Commission according to provision or article. One of the trustees is a member of the County Commission.

1.1.5 Building Drain - That part of the lowest horizontal piping of a drainage system that receives the discharge from waste and other drainage pipes inside the walls of the building and conveys it to the building lateral, beginning three (3) feet outside the exterior face of the building wall.

1.1.6 Building Lateral - The pipe that extends from the building drain to the public sewer or other place of disposal.

1.1.7 Commercial User - Any contributor to the District=s treatment works whose lot, parcel of real estate, or building is used for commercial purposes and produces normal domestic wastewater.

1.1.8 Construction - Any act of building and/or installing a wastewater collection system and/or centralized wastewater treatment facility or making such system or facility operational and functional and any act of repairing or replacing such a system or facility other than acts of routine maintenance necessary to keep such system or facility functional in accordance with its design.

1.1.9 Continuing Authority - The Boone County Regional Sewer District whenever it agrees to act or acts as such for purposes of wastewater collection and/or treatment facilities within the jurisdiction and geographic boundaries of the District.

1.1.10 Department - The Missouri Department of Natural Resources or successor agency.

1.1.11 District - The Boone County Regional Sewer District management, staff and crew acting under the authority of its designated officials.

1.1.12 Extra Strength Wastewater - Wastewater that has a BOD concentration of more than 250 milligrams per liter (mg/l) and/or a suspended solids concentration of more than 300 mg/l.

1.1.13 Industrial User - Any contributor to the District=s treatment works whose lot, parcel of real estate, or building is used for industrial purposes and produces liquid wastes from industrial or commercial processes as distinguished from domestic wastewater.

1.1.14 Industrial Wastewater - Any industrial user having process waste streams which are subject to any federal categorical pretreatment standards either currently in effect or promulgated or modified after the effective date of this regulation shall comply with the requirements of such standards. All categorical pretreatment standards established pursuant to 40 CFR Chapter One, Subchapter N, are hereby incorporated by reference and are fully enforceable under this ordinance the same as if fully set out herein. Limitations established in such standards shall apply to the treated effluents from the processes regulated by the standard, unless otherwise specified by the standard. When the limits in a categorical pretreatment standard are production based, the administrative authority may convert the limits to equivalent mass or concentration for purposes of calculating effluent limitations applicable to individual users. Where regulated process effluents can not be sampled prior to mixing with other wastestreams, alternative limits for the mixed effluent may be established by the administrative authority using the combined wastestream formula subject to the provisions of 40 CFR 403.6(e). (Revised 9/16/08)

1.1.15 Interference - The inhibition or disruption of the Boone County Regional Sewer District's wastewater works or operations or its processing, use or disposal of sludge, by a user's discharge which alone or in conjunction with other discharges, causes, or contributes to the inhibition or disruption and which: (a) causes a violation of any requirement of the Boone County Regional Sewer District's NPDES Permit (including an increase in the magnitude or duration of a violation); or (b) prevents the use or disposal of sludge by the Boone County Regional Sewer District in compliance with the following statutes and regulations: Section 503 of the Clean Water Act; the Solid Waste Disposal Act; including Title II commonly referred to as the Resource Conservation and Recovery Act (RCRA); any state regulations contained in any state sludge management plan prepared pursuant to Subtitle D of the Solid Waste Disposal Act; the Clean Air Act; the Toxic Substances Control Act; or any more stringent state or local regulations. A user contributes interference when the user:

(1) Discharges a pollutant concentration or a daily pollutant loading in excess of that allowed by District regulation or Department permit or by federal, state or local law;

(2) Discharges wastewater that substantially differs in nature and constituents from the user's normal average discharge;

(3) Knows or has reason to know that its discharge, alone or in conjunction with discharges from other users, would result in interference; or

(4) Knows or has reason to know that the District is, for any reason, violating its NPDES Permit and that the user's discharge either alone or in conjunction with discharges from other users, increases the magnitude or duration of the District's violations.

1.1.16 Modification - Any act or work upon an existing wastewater collection system and/or centralized wastewater treatment facility that changes the design or function of the system or facility other than routine maintenance.

1.1.17 NPDES Permit - A permit issued under the National Pollutant Discharge Elimination System pursuant to the Federal Water Pollution Control Act, also known as the Clean Water Act, as amended, 33 U.S.C. § 1251 et seq., for a discharge into waters of the state.
(Revised 9/16/08)

1.1.18 Natural Outlet - Any passage of escape or exit that drains into a watercourse, pond, ditch, lake or other body of surface water or groundwater.

1.1.19 Normal Domestic Wastewater - Wastewater discharging from dwellings (including apartment houses and hotels), office buildings, factories or institutions, and free from storm water, surface water and extra strength wastewater and has a BOD concentration of not more than 250 milligrams per liter (mg/l) and a suspended solids concentration of not more than 300 mg/l.

1.1.20 Operation and Maintenance - All expenditures during the useful life of the treatment works for materials, labor, utilities, and other items which are necessary for managing and maintaining the sewage works to achieve the capacity and performance for which such works were designed and constructed.

1.1.21 Owner - Any person or persons, jointly and severally, and any agent or representative of such person which requests and for which the District applies for and obtains a Department construction or operating permit as Continuing Authority for a wastewater collection system or treatment facility. The term AOwner@ shall include the person, entity or organization having an ownership or possessory interest in real estate upon which a wastewater collection system or treatment facility under permit is situated and shall include persons with contract rights in any such system or facility prior to conveyance of such system or facility to the District. The term AOwner@ shall include any person, entity or organization to which these regulations otherwise apply.

1.1.22 Pass Through - A discharge of a pollutant from the Boone County Regional Sewer District's wastewater treatment works into waters of the State of Missouri when such discharge causes a violation of any requirement of the District's NPDES permit, or a violation of a state or federal water quality standard or increases the magnitude or duration of any violation and which is the result of a user's discharge of the pollutant either alone or in conjunction with other users' discharges of the pollutant in the District's wastewater treatment works. A user contributes to pass through when the user:

(1) Discharges a pollutant concentration of a daily pollutant loading in excess of that allowed by District regulation or Department permit or by federal, state or local law;

(2) Discharges wastewater that substantially differs in nature and constituents from the user's normal average discharge;

(3) Knows or has reason to know that its discharge, alone or in conjunction with discharges from other users, would result in pass through; or

(4) Knows or has reason to know that the District is, for any reason, violating its final effluent limitations in its NPDES permit and that the user's discharge either alone or in conjunction with discharge from other users, increases the magnitude or duration of the District's violations.

1.1.23 Permit - Written authorization issued by the Department and the District allowing the Owner to construct or modify or operate a wastewater collection system and/or centralized treatment facility subject to these regulations.

1.1.24 pH - The logarithm (base ten) of the reciprocal of the hydrogen ion concentration in moles per liter of solution.

1.1.25 Public Sanitary Sewer Systems - Wastewater collection systems and wastewater treatment facilities that are controlled by public authority, also referred to in these ordinances as the District=s wastewater treatment works.

1.1.26 Replacement - Expenditures for obtaining and installing equipment, accessories, or appurtenances that are necessary during the useful life of the wastewater treatment works to maintain the capacity and performance for which such works were designed and constructed. The term Aoperation and maintenance@ includes replacement.

1.1.27 Residential User - Any contributor to the District=s wastewater treatment works whose lot, parcel of real estate, or building is used for domestic dwelling purposes only and produces normal domestic wastewater.

1.1.28 Sanitary Sewer - A pipe or conduit that carries domestic, industrial or normal wastewater and to which storm waters, surface waters and groundwater are not admitted.

1.1.29 Sewer - A pipe or conduit for carrying domestic, industrial or normal wastewater and other waste liquids and/or storm water.

1.1.30 Slug Discharge - Any discharge at a flow rate or concentration that could cause interference as defined herein.

1.1.31 Sludge – Accumulated and concentrated solids generated within the wastewater treatment process that have not undergone a stabilization process. (Revised 9/16/08)

1.1.32 TSS (total suspended solids) - Solids that either float on the surface of, or are in suspension in water, wastewater or other liquids and which are removable by laboratory filtering, expressed in milligrams per liter (mg/l).

1.1.33 Useful Life - The estimated period during which the wastewater treatment works will be operated.

1.1.34 User - The owner or occupant of property or premises that is connected directly or indirectly or has available to the property or premises the facilities of the wastewater treatment works of the Boone County Regional Sewer District.

1.1.35 Wastewater or Sewage - A combination of the water-carried wastes from residences, business buildings, institutions and industrial establishments.

1.1.36 Wastewater Collection System - Any system or method employed to collect, transmit or distribute waterborne waste, sewage, or other waterborne pollutants or contaminants from two or more sources of origination to a centralized treatment facility employing hydrologic or engineering principles to improve water quality to governmentally prescribed standards.

1.1.37 Wastewater Treatment Facility - Any structures and equipment designed, constructed or operated to receive 1500 gallons or more per day of waterborne waste, sewage or other pollutants from two or more sources of origination and treat such waterborne waste to governmentally prescribed standards.

1.1.38 Wastewater Treatment Works - Any devices and systems for the storage, treatment, recycling, and reclamation of municipal sewage, domestic sewage, or liquid industrial wastes. These include interceptor sewers, outfall sewers, sewage collection systems, individual systems, pumping, power, and other equipment and their appurtenances; extensions, improvements, remodeling, additions, and alterations thereof; elements essential to provide a reliable recycled supply such as standby treatment units and clear well facilities; and any works, including site acquisition of land that will be an integral part of the treatment process or is used for ultimate disposal of residues resulting from such treatment (including land for composting sludge, temporary storage of such compost, and land used for the storage of treated wastewater in land treatment systems before land application); or any other method or system for preventing, abating, reducing, storing, treating, separating, or disposing of municipal waste or industrial waste, including waste in sanitary sewer systems.

1.1.39 Water Meter - A water volume measuring and recording device, furnished and/or installed by the water supplier for the property.

Chapter Two: Sanitary Sewer Use Regulations

2.1 Title - These regulations including appendixes and tables shall be known, referred to and cited as the Sanitary Sewer Use Regulations.

2.2 Scope and Purpose - These regulations govern the use of public sanitary sewers, the installation and connection of building sanitary sewers, and the discharge of waters and wastes into the public sanitary sewer systems: and provides penalties for violations thereof in the service area of the Boone County Regional Sewer District, as established by the Boone County Regional Sewer District Board of Trustees. These regulations are enacted in order to protect and promote the public health and to ensure the safe and efficient delivery of wastewater collection and centralized treatment services within the areas of Boone County, Missouri, subject to the jurisdiction of the Boone County Regional Sewer District.

2.3 Authority - These regulations are enacted under the authority vested in the Boone County Regional Sewer District by sections 204.320 and 204.330, Revised Statutes of Missouri.

2.4 Jurisdiction - These regulations shall be applicable to all areas within Boone County, Missouri, to which the District operates and maintains public sanitary sewer systems.

2.5 Exemptions from District Regulations - These regulations shall not be applicable in the following circumstances:

2.5.1 Systems Under Jurisdiction of Other Entity - No construction, operating, or other permit shall be issued in the name of the District for any wastewater collection system or treatment facility if there is another public or governmental wastewater management and treatment agency having jurisdiction, or concurrent jurisdiction with the consent of the District, willing to provide wastewater collection and treatment services.

2.5.2 Systems Permitted by Department to Other Entity - No wastewater collection system or treatment facility shall be subject to these regulations if constructed and operated under Department permit issued to another public or governmental wastewater management and treatment agency having exclusive jurisdiction or if the District waives the right to act as Continuing Authority for such system or facility.

2.6 General Provisions Governing Disposal of Wastewater - The following general provisions shall be applicable to the disposal of wastewater or sewage:

2.6.1 Wastewater Treatment Required - It shall be unlawful for any person to place, deposit, or allow to be deposited in an unsanitary manner on public or private property within any area under the jurisdiction of the District, any human or animal excrement, garbage, or other objectionable waste which contaminates or pollutes the waters of this state. It shall be unlawful to discharge to any natural outlet within any area under the jurisdiction of the

District, any sewage or other polluted waters, except where suitable treatment has been provided in accordance with provisions of these regulations.

2.6.2 Classes of Sanitary Sewers - The general sanitary sewer system shall be composed of four (4) classes of sanitary sewers: public sanitary sewer systems; private common collector sanitary sewers; private sanitary sewer systems; and on-site systems. The determination as to the class to which any sanitary sewer belongs shall be made without regard to the area drained, the size, character or purpose thereof. All public sanitary sewers shall be constructed along streets, alleys and other public ways wherever practicable; and no such sanitary sewer shall be built or acquired by the District, unless it is on a public way or right-of-way or easement dedicated to the District or easement dedicated to public utilities. Such sanitary sewers may be connected with any other sanitary sewer of any class or with a natural course of drainage in accordance with these regulations and applicable laws.

2.6.2.1 Public Sanitary Sewer Systems - A sanitary sewer controlled by public authority and regulated by the Department. Public sanitary sewers are those which have been or may be constructed or acquired and paid for wholly out of any public funds available for that purpose for the public use, or sanitary sewer systems which have been built by a developer and/or private person and conveyed to the District. Public sanitary sewers shall be established along the principal courses of drainage, at such points, to such extent, of such dimensions and under such conditions as may be provided by regulation, and these may be extensions or branches of sanitary sewers already constructed or entirely new throughout, as may be deemed expedient.

2.6.2.2 Private Common Collector Sanitary Sewers - A private common collector sanitary sewer is a sanitary sewer line which is not owned and maintained by the District or other public entity and which serves two (2) or more lots, tracts or parcels of land or two (2) or more structures under separate ownership. The District shall not accept ownership or responsibility for operation, maintenance, or repair of private common collector sanitary sewers, unless constructed or reconstructed to standards established by the Department and District and the conveyance of which is formally accepted by the District, regardless of whether the District accepts sewage or wastewater therefrom for treatment or disposal, and regardless of whether persons using such sanitary sewers are customers of the District. No person shall record any instrument of conveyance of any interest in a private common collector sanitary sewer without written acceptance of the Board prior to recordation. The District may accept wastewater for treatment from private collection sewers of any type constructed prior to the enactment of these regulations, but the District shall not operate or maintain or repair any collection sewers not owned by the District, nor shall the District assume any legal or financial responsibility for the operation, maintenance, or repair or common collection sewers not owned by the District. Whenever practicable, the District shall notify property owners or other persons who are connected t privately owned common collector sewers and who receive wastewater treatment services from the District of the existence of this regulation by any method deemed appropriate; such notice filed in the land records of Boone County, Missouri, pertaining to property effected by this regulation shall be presumed effective; provided, however, failure of the District to provide such notice shall not effect the validity of this regulation, nor establish any financial or legal obligation of the District to provide operation, maintenance, or repair serviced to private collection sewers, nor establish any legal liability on the part of the District for any injury or damage caused by non-maintenance or repair of private collection sewers.

2.6.2.3 Private Sanitary Sewer Systems - A private sanitary sewer system is a system that is not under the jurisdiction of the District or other governmental entity and which is regulated by the Department and, when applicable, the Missouri Public Service Commission. If neither the District under the provisions of these regulations nor any other public or governmental agency having jurisdiction is willing and/or able to provide wastewater collection and treatment services, but wastewater collection and treatment services are nonetheless required in the geographic area to which a Department issued operating permit is applicable and it is demonstrated that a competent, qualified and solvent private person, entity or organization is ready, willing and available to provide such services as Continuing Authority pursuant to Department regulations, then such other person, entity or organization may act as Continuing Authority without objection of the District if approved by the Department. Provided, however, that as authorized by section 644.027, RSMo, no private sanitary sewer system which is regulated by the Department shall be granted a new operating permit or renewal of an existing operating permit issued by the Department if the District gives notice to the Department and the Continuing Authority to whom such operating permit has been or will be issued that the District operates and maintains a public sanitary sewer collection and treatment system to which the private sanitary sewer system can be connected located within a reasonable distance of a District owned or operated public sanitary sewer to which connection is practicable. A District owned or operated public sanitary sewer shall be presumed to be within a reasonable distance of a private sanitary sewer system to which connection is practicable if the District determines that a) the operation of a private sanitary sewer system is or has not been in compliance with a Department issued operating permit or otherwise has been declared a public health nuisance or hazard by state or local authorities having jurisdiction, b) a connection to a District public sewer can be designed and constructed, c) the expense of connection to the District public sanitary sewer, either individually or in combination with one or more other new connections in close proximity to the private sanitary sewer system is no greater than the cost of installing a new private sanitary sewer system or repairing or reconstructing the existing private sanitary sewer system which complies with Department regulations and permit issued under such regulations as well as applicable District regulations, or d) that no private sanitary sewer system can be constructed or reconstructed which complies with all applicable state and local water pollution control regulations and applicable local zoning or land use regulations. In circumstances in which an existing private sanitary sewer system cannot be repaired or reconstructed to comply with all state and local water pollution control regulations and/or due to topography, local zoning, or other land use regulations, it is impracticable to repair or reconstruct the private sanitary sewer system which complies with all such applicable state and local regulations, then in such circumstances it shall be presumed that connection to a District public sanitary sewer is practicable. In such cases the Department shall deny issuance of a new operating permit, or terminate or deny renewal of an existing operating permit in accordance with Department policies and regulations and the operator of such private sanitary sewer system shall connect to the District system within a reasonable time established by the District.

(Revised 11-15-05 & 4-19-07)

2.6.2.4 Private On-site Sewage Disposal Systems - A private on-site sewage disposal system is defined as any subsurface sewage treatment system, lagoon disposal system or other waterborne waste disposal method employing basic hydrologic or engineering principles which receives 1500 gallons or less of waterborne waste per day. Private on-site

sewage disposal systems are regulated by the Boone County Small On-site Wastewater System Regulations and Boone County Subdivision Regulations enforced by the Boone County Health Department. It shall be unlawful to construct or maintain any privy, privy vault, septic tank, cesspool, or other facility intended or used for the disposal of sewage except as otherwise regulated by Boone County and state law. The owner of any house, building, or property used for human employment, recreation, or other purposes, situated within Boone County, and abutting on any street, alley, or right-of-way without public sanitary sewer but which may have public sanitary sewer in the future are hereby required to install suitable toilet and waste water disposal facilities therein in accordance with applicable building and plumbing codes, and to connect such facilities directly with the closest public sanitary sewer at the owner's expense in accordance with the provisions of these regulations, within sixty (60) days after date of official notice to do so or such longer time as reasonably determined necessary by the District for good and sufficient cause, whenever a permit to construct or repair an onsite waste water disposal system is denied by the Boone County Health Director or designee in accordance with chapter IV of the Boone County Code of Health Regulations, which is hereby incorporated by reference.

(Revised 6-20-07)

2.7 Design and Construction of Wastewater Collection Systems and Treatment Facilities - Wastewater collection systems and treatment facilities shall be designed and constructed in accordance with the following requirements:

2.7.1 Design Standards for Wastewater Collection Systems and Treatment Facilities - All collection systems and treatment facilities shall be designed in accordance with generally accepted engineering principles with sufficient capacity to collect and/or treat wastewater generated in the geographic area which is subject to the Department construction permit application to which the system or facility pertains considering the maximum population density and permissible land uses in such area.

2.7.1.1 Specifications - All collection systems and treatment facilities shall be designed in accordance with the following: the Sanitary Sewer Specifications and Standards adopted by City of Columbia, the Septic Tank Effluent Pump Specifications adopted by the District, the Pump Station and Wastewater Treatment Facility Specifications adopted by the District.

2.7.1.2 Compliance with District's Long Range Plan - All plans and specifications issued in support of an application for a construction or operating permit shall be consistent and in compliance with the District's master plan for overall wastewater collection and treatment services to the extent practicable. The District's Long range plan for capital improvements and additions is based on AC Kirkwood report of October 1991, ARecommended Sewerage System Improvements and Capital Cost Estimates,@ and other engineering studies and evaluations of geographic areas in Boone County.

2.7.1.2.1 Eliminate Points of Discharge - Whenever practical, wastewater collection systems and treatment facilities shall be designed in a manner to minimize or eliminate points of wastewater discharge in the environment and shall only create

or establish new points of regulated wastewater discharge when no other alternative is reasonably available in the opinion of the District.

2.7.1.2.2 Provide for Future Growth - All collection systems and treatment facility designs submitted in support of construction permit issued in the name of the District as the Continuing Authority shall to the greatest extent practicable provide for or be designed to accommodate anticipated growth in wastewater collection and treatment capacity for the drainage area or service area to which the permit is applicable.

2.7.1.3 Design Compliance - All collection systems and treatment facilities shall be designed by an engineer registered in Missouri in compliance with applicable state of Missouri and federal clean water and pollution control regulations in effect at the time of design, and may only be constructed and modified in accordance with plans and specifications prepared by a registered engineer.

2.7.1.3.1 Public Sanitary Sewer Extended to Each Lot - It shall be unlawful to connect a sanitary sewer line of any type to a public sanitary sewer unless such public sanitary sewer is extended a minimum of ten feet inside the property line of the lot or tract to be provided with public wastewater collection and treatment service; and in any case where the public sanitary sewer is located deeper than ten feet from grade, it shall be extended at least one foot further inside the property line beyond ten feet for every twelve inches depth in excess of ten feet.

2.7.1.3.2 Private Sanitary Sewer Laterals - It shall be unlawful for any private sanitary sewer lateral to be extended off the described, platted or surveyed lot or tract of land from which it originates except in cases where such private lateral extends into or across a publicly maintained road or street right of way or general utility easement abutting such property in order to connect to an existing District owned and operated sewer line located within or immediately adjacent to such road or street or general utility easement such that such private sewer lateral does not extend into or encroach upon any other private property. Subject to the foregoing, it shall be unlawful for any person to connect a sanitary sewer line of any type to a District owned and operated sanitary sewer unless such public sanitary sewer is extended a minimum of ten feet from and within the property line of the lot or tract to be provided with public wastewater collection and treatment service; and in any case where the public sanitary sewer is located deeper than ten feet from grade, it shall be extended at least one foot further inside the property line beyond ten feet for every twelve inches depth in excess of ten feet. (Revised 11/21/2006; 9/16/08)

2.7.1.3.3 Common Collectors - It shall be unlawful for two or more privately owned wastewater collection lines originating from separate dwellings, buildings, or other structures, or from two or more septic tanks, lagoons or other wastewater treatment facilities to be connected to each other unless the District grants a variance for such extension or connection. A variance may be granted upon showing that the extension or connection does not violate any applicable federal or state clean water law, rule or regulation, that without the variance the person or persons seeking the variance will incur unreasonable and unnecessary hardship, and that such person or persons can demonstrate that adequate provision has been made for perpetual maintenance and operation of such facilities.

2.7.1.4 Plan Approval - Plans and specifications prepared for any collection system or treatment facility shall be approved by the administrative authority when the District is the permittee and also by all public or governmental agencies having jurisdiction prior to construction, modification or operation.

2.7.1.5 Costs and Liability - Except in cases when the District is both the Owner and permittee under a Department construction permit, all design and construction work performed under such permit shall be performed at the sole cost, expense and liability of the Owner. The District shall have no liability or responsibility for such work.

2.7.1.6 Fees - The District by resolution or other official action by its Board may from time to time impose such user fees in the form of permit fees, inspection fees or other charges as it may deem appropriate as long as such user fees are based on the actual cost or reasonable estimate of actual cost of providing permits, inspections or administrative services of direct benefit to the person receiving such services.

2.7.1.7 Certification - No collection system or treatment facility shall be made operational unless written certification is issued by a licensed engineer that the facilities constructed or modified under Department construction permit have been completed in accordance with approved plans and specifications for the work under such permit as required by Department regulations.

2.7.1.8 Conveyance - Once the collection system and/or treatment facility is found to be in compliance with District regulations, the system and/or facility shall be conveyed to the District. The treatment facility and collection system shall be conveyed by Bill of Sale. Real estate rights to collection systems shall be conveyed by easement. Real estate rights to treatment facilities shall be conveyed by Warranty Deed. Prior to District's acceptance of any warranty deed, the party conveying such warranty deed shall provide the District with a policy of title insurance issued by a reputable insurer in such amount and with such coverage for the full insurable value of the property to be conveyed as determined by District to be appropriate to assure District of marketable title free and clear of all liens and encumbrances. District further reserves the right to require such title insurance on other interests in real property conveyed to District as determined reasonably appropriate by District under the circumstances to protect the interests of the District. Upon District formal acceptance of instruments of conveyance, the District will act as Continuing Authority and be responsible for the upkeep and maintenance of real estate and improvements located therein. The District reserves the right to further extend mains and collection lines and to connect other sanitary sewers without additional or further compensation to the grantors of real and personal property interests after District acceptance of conveyances. (Revised 6-20-07)

2.7.1.9 Condition of Conveyed Wastewater Collection and Treatment Equipment All manufactured wastewater collection and treatment equipment to be transferred and conveyed to the Boone County Regional Sewer District for ownership and operation, including but not limited to pump stations and treatment plants, shall be new or reconditioned, but in all cases shall have at least a one year manufacturer warranty that such equipment is free from defect in material and workmanship and in the event that defects in materials or workmanship are discovered during the warranty period, such equipment shall be repaired or replaced at manufacturer expense. Boone County Regional Sewer District shall be the sole judge of the acceptability of all manufacturer warranties under the provisions of this

regulation and reserves the right to refuse for acceptance and operation any equipment that is not reliably warranted by a manufacturer of established reputation within the industry that produces the equipment to be warranted. (Adopted 9/17/2002)

2.7.2 Construction Permits - Unless exempt from the provisions of these regulations, no collection system and/or treatment facility shall be constructed or modified except in compliance with the terms and conditions of both the Department construction permit as well as the District construction permit and in accordance with the approved application.

2.7.2.1 Plan Modifications - Unauthorized changes, deviations or modifications that constitute a violation of the Department construction permit shall subject the Owner to imposition of penalties as provided by these regulations.

2.7.2.2 Costs and Liability - Unless otherwise agreed by written contract, the person designated as Owner of the wastewater collection system and/or treatment facility specified in a construction permit application and permit shall be wholly responsible for the performance of and payment for all design and construction work necessary under the permit.

2.7.3 Inspections and Testing of Wastewater Collection Systems and Treatment Facilities - Except in cases in which the District is not the designated Continuing Authority, no collection system and/or treatment facility shall be used or operated except under permit issued to the District pursuant to Department regulations after inspection of same is conducted by the Administrative authority and the system and/or facility is approved and found to be in compliance with these regulations.

2.7.3.1 Access for Inspections - No final inspection shall be conducted or approval granted for the use or operation of any collection system and/or treatment facility unless such system and/or facility is exposed for inspection and/or put in a condition to be tested at the Owner's expense so that the system and/or facility can be examined for compliance with these regulations. Any system and/or facility which has been backfilled in whole or part, or covered or completed such that complete inspection or testing for compliance can not be conducted shall, upon request of the Administrative authority, be uncovered, re-excavated, or otherwise exposed or put in a condition to be inspected or tested at the sole expense of the Owner in order that a complete inspection or testing can be conducted for purposes of determining compliance with these regulations.

2.7.3.2 Failure to Allow Inspections - Any Owner which shall fail to expose or otherwise make a system and/or facility available for complete inspection or testing upon request of the Administrative authority or governmental agency having jurisdiction during construction or after completion of construction but prior to final inspection shall be subject to District's application to the Department to terminate the construction permit, or District's refusal to obtain an operating permit from the Department, and/or penalties or relief provided for under these regulations.

2.7.4 Operation of Wastewater Collection Systems and Treatment Facilities Prior to District Acceptance - If operation and maintenance of a system and/or facility is necessary prior to District acceptance, the following applies:

2.7.4.1 District as Continuing Authority - Unless exempt from the provisions of these regulations, no owner or other person shall operate any wastewater collection system and/or treatment facility not owned by the District except under an operating permit issued in the name of the District.

2.7.4.2 Owner Responsibility - Except as may be otherwise provided by written contract between the District and the Owner or until such time as all property interests of or pertaining to a wastewater collection system and/or treatment facility operated under an operating permit issued to the District are conveyed to and accepted by the District, the Owner of such system and/or facility shall be wholly responsible for the operation and maintenance of such system and/or facility regardless of whether the District receives fees or charges for the use of such system and/or facility.

2.7.4.3 Repair of Deficiencies - The Owner of such system and/or facility shall be wholly responsible for the prompt remedy and repair of any operational defect or deficiency in the system and/or facility or violation of any applicable law, rule or regulation pertaining to such system and/or facility.

2.7.4.4 District Responsibility - The District shall have the right but not the obligation to take any measures necessary to protect the public health, safety or welfare for any system and/or facility for which a construction permit has been applied for from the Department listing the District as the continuing authority or the operating authority or under which an operating permit is or will be issued in the name of the District regardless of whether the Owner of such system and/or facility takes or has a legal obligation to take any such measures.

2.7.4.5 Remedial Measures and Costs - Any Owner which shall fail, neglect or refuse to operate or maintain such system and/or facility, or which shall fail, neglect or refuse to remedy or repair any such defect or deficiency or otherwise correct any such violation shall be liable to the District for the reasonable costs of any remedial measures taken by the District to protect the public health, safety or welfare necessitated by the Owner's failure, neglect or refusal to take necessary remedial measures in addition to being subject to any penalty or relief provided for in these regulations.

2.7.4.6 Enforcement Costs - Any person or Owner who or which obtains any permit issued in the name of the District as controlling or operating authority under Department regulations is presumed to understand and agree to the content of these regulations and in the event any person, entity, or organization, whether singular or plural, who or which is listed as an Owner or agent of the Owner on any such permit violates or facilitates a violation of any regulation hereunder shall be liable to the District for the actual cost of remedial measures taken to protect the public health or safety and for enforcing these regulations due to such violation, including court costs, reasonable attorney fees and the actual expense of any laboratory testing and expert witness fees incurred by the District in enforcing these regulations as to the person or Owner in violation. Such costs may be entered as a judgment against the person or Owner in violation in addition to or in lieu of any court imposed penalty.

2.8 Acceptance of Existing Sanitary Sewer Systems - The District Board may accept the conveyance of a private sanitary sewer system if the system meets District specifications and is properly conveyed by way of easements, bill of sale and warranty deed.

2.9 Individual Building Connections to District Wastewater Treatment Works - Individual buildings may be connected to District owned and operated sewer lines by means of private service laterals in accordance with applicable plumbing codes and District regulations. Private service laterals extending from the building which they serve to the District sewer line, including the point of connection to the District sewer line, are the property of the person or persons owning the property upon which they are situated. As such, the owner of such property has the responsibility and liability for the installation, maintenance, and repair of such private laterals. Accordingly, individual building connections may be made to the District sewer lines in accordance with the following requirements:

(Revised 11/21/2006)

2.9.1 Application for Service - No unauthorized person shall uncover, make any connections with or opening into, use, alter, or disturb any public sanitary sewer or appurtenance thereof without first filing an application for service with the District.

2.9.2 Classes of Applications - There shall be two (2) classes of applications for service: (a) for residential and commercial service, and (b) for service to establishments producing industrial wastes. In either case, the owner or their agent shall make application on a form furnished by the District. The application shall be supplemented by any plans, specifications, or other information considered pertinent in the judgment of the District.

2.9.3 Fees - Payment of inspection fees and connection charges are due at the time of application. The District by resolution or other official action by its Board may from time to time impose such user fees in the form of permit fees or other charges as it may deem appropriate as long as such user fees are based on the actual cost or reasonable estimate of actual cost of providing permits, inspections or administrative services of direct benefit to the person receiving such services.

2.9.3.1 Inspection Fee For Connections -- An inspection fee shall be chargeable for new connections to District owned and operated sewers as follows: Seventy Dollars ($70.00) for a residential, commercial, and industrial building gravity sanitary sewer connection and One Hundred and Forty Dollars ($140.00) for a residential, commercial or industrial pressurized sanitary sewer connection. Inspection fees shall be paid to the District at the time the application for sewer service shall be filed. (Revised 01/01/2018)

2.9.3.2 Connection Charge – A charge with every new or additional or expanded building connection to the District, shall be paid to the District upon application for sewer service. Each new residential or commercial user of the wastewater system shall pay a wastewater system connection fee per residential or commercial unit**.** An expanded connection is any existing connection that increases the size or number of water meters serving its premises. The connection charge shall be in accordance with the following connection charge schedule and shall be based upon the water meter(s) size serving the premises excluding those set by special regulation for particular collection systems.

Size of water meter in Inches	BCRSD Connect Fee
5/8 and ¾	$1,600.00
1	$2,675.00
1 1/2	$5,350.00
2	$8,560.00

The connection fee for water meters larger than 2" will be determined by District staff on a case by case basis. (Revised 12/15/2015, 12/17/2014, 1/1/04, 4/20/04, 12/19/06, 5/18/10)

2.9.3.2.1 New User Exemptions - New users of the District shall not be assessed an initial connection charge in the following instances but any increase in the size or number of water meters shall be assessed for expanded use:

(1) If an unexpired building permit is or was in existence for the premises on the date this new rule is adopted.

(2) If a user's premises is served by the District or the new user occupies a structure in and has been or will be assessed for connection to a sanitary sewer improvement project financed under the Neighborhood Improvement District Act for public sanitary sewer services on the effective date this new rule is adopted.

(3) If there is a break in sanitary sewer service to the user's premises for less than two years.

(4) If metered water usage on the user's premises is solely for purposes of fire protection or landscape irrigation or otherwise not connected to sewage collection or treatment facilities owned or operated by the District.

2.9.3.2.2 Waivers - The Board may waive imposition of connection charges in cases where the District has adopted a sewage capacity cost allocation ordinance in the area subject to connection charges or in cases where a real estate subdivider or developer has entered into a binding agreement with the District in which the subdivider or developer installs or pays for all or substantially all of the costs of installing public wastewater collection facilities and additional sewage treatment capacity, when applicable, and agrees to convey such facilities to the District. Connection charges also may be waived in cases where public wastewater collection and/or treatment facilities to which connection is made are being financed under the provisions of the Neighborhood Improvement District Act.

2.9.3.2.3 Increase in Size and Number of Water Meters - Any user who increases the size of a water meter(s) serving its property or premises shall pay a charge equal to the difference between the connection charge for the meter(s) which existed prior to the increase and the connection charge for the newly installed meter(s). Any user who increases the number of water meters serving its property or premises shall pay a connection charge for each additional water meter in accordance with section 2.9.3.2 above.

2.9.3.3 Elimination of Connection - Failure to pay inspection fees and connection charges and other applicable fees shall be grounds for the District to eliminate the connection until such time as the charges are paid in full or construction requirements are satisfied.

2.9.4 Construction Costs - All costs and expenses incident to the installation and connection of the building sanitary sewer shall be borne by the owner. The owner shall indemnify the District from any loss or damage that may directly or indirectly be occasioned by the installation of the building sanitary sewer.

2.9.5 Separate Building Connections - A separate and independent sanitary sewer connection shall be provided for every building.

2.9.6 Connection of New Buildings - The applicant shall install at applicant's expense necessary sewage facilities and sanitary sewer lines along public highways, roadways, streets, or alleys where grades have been established, or within dedicated easements acceptable to the District.

2.9.6.1 Private Service Laterals and Public Sanitary Sewer Extension- No private sewer service lateral shall extend off of the property which it serves except in cases where such private lateral extends into or across a publicly maintained road or street right of way or general utility easement abutting such property in order to connect to an existing District owned and operated sewer line located within or immediately adjacent to such road or street or general utility easement such that such private sewer lateral does not extend into or encroach upon any other private property. Subject to the foregoing, it shall be unlawful for any person to connect a sanitary sewer line of any type to a District owned and operated sanitary sewer unless such public sanitary sewer is extended a minimum of ten feet from and within the property line of the lot or tract to be provided with public wastewater collection and treatment service; and in any case where the public sanitary sewer is located deeper than ten feet from grade, it shall be extended at least one foot further inside the property line beyond ten feet for every twelve inches depth in excess of ten feet.

(Revised 11/21/2006)

2.9.6.2 Construction Specifications - The size, slope, alignment, materials of construction of a building sanitary sewer, and the methods to be used in excavating, placing of the pipe, jointing, testing and backfilling the trench, shall all conform to the requirements of the building and plumbing code or other applicable rules and regulations of the Boone County Department of Planning & Building Inspections.

2.9.6.3 Elevation - Whenever possible, the building sanitary sewer shall be brought to the building at an elevation below the basement floor. In all buildings in which any building drain is too low to allow gravity flow to the public sanitary sewer, sanitary sewage carried by such building drain shall be lifted by an approved means and discharged to the building sanitary sewer.

2.9.6.4 Connection Specifications - The connection of the building sanitary sewer into the public sanitary sewer shall conform to the requirements of the building and plumbing code or other applicable rules and regulations of the Boone County Department of Planning and Building Inspection and/or the applicable regulations of the City of Columbia. All such connections shall be made gas tight and watertight. Any deviation from the prescribed procedures and materials must be approved by the administrative authority before installation.

2.9.6.5 Inspection of Connection and Building Lateral Required - The applicant for the building sanitary sewer connection permit shall notify the District when the connection to the public sanitary sewer is ready for inspection. The connection and the building lateral from the house or building drain to the District's sanitary sewer main shall be left uncovered for inspection. Failure of the applicant to provide for the inspection will result in the lateral and connection being uncovered at the applicant's expense in order that the connection and lateral may be inspected for proper installation by the District personnel.

2.9.6.6 Safety and Reclamation - All excavations for building sanitary sewer installation shall be adequately guarded with barricades and lights so as to protect the public from hazard. Streets, sidewalks, parkways, and other public property disturbed in the course of the work shall be restored in a manner satisfactory to the District.

2.9.6.7 Use of Existing Sanitary Sewer Lines - Old sanitary sewer lines may be used in connection with new buildings only when they are found, on examination and test by the District, to meet the requirements of these regulations.

2.9.7 Connection of Existing Buildings - At such time as public sanitary sewer with sufficient treatment capacity becomes available to a property served by a private on-site sewage disposal system, a direct connection shall be made to the public sanitary sewer within ninety (90) days of availability in compliance with this regulation, if practicable. Any septic tanks, cesspools, and similar private sewage disposal facilities shall be abandoned and filled with suitable material.

2.9.8 Unlawful Connections - It shall be unlawful to make any connection to a public sanitary sewer in the following respects:

2.9.8.1 Sources of Surface Runoff or Groundwater - No person shall make connection of roof downspouts, exterior foundation drains, areaway drains, or other sources of surface runoff or groundwater to a building sanitary sewer or building drain which in turn is connected directly or indirectly to a public sanitary sewer.

2.9.8.2 Substantial Additions to the Water-using Equipment or Appliances - No substantial additions to the water-using equipment or appliances connected to the sanitary sewer system of the District shall be made except upon written notice to, and with the written consent of, the District.

2.9.9 Maintenance and Repair of Private Service Laterals and Connections – Any person or persons owning or possessing property served by and connected to a District owned and operated sewer line shall be solely responsible for the operation, maintenance and repair of the service lateral line from the building it serves up to and including the point of connection to the District sewer line unless otherwise specifically provided for by District regulation. In addition to the provisions of other District regulations and in the event that the District gives any person or persons owning or possessing property served by and connected to a District owned and operated sewer line a warning or notice of violation as a result of inspection and determination that their private service lateral or connection to the District sewer line is defective or in disrepair, then such person or persons shall immediately repair or replace such lateral or connection or take such other remedial action as necessary in accordance with the requirements of such warning or notice so given. (Revised 11/21/2006)

2.10 Backflow Prevention Devices - The District may require any customer to install a backflow prevention device at the customer's expense on the customer's lateral or house drain as a condition to provision of wastewater collection and treatment services to the customer's property if the District finds that installation of such device is necessary to prevent a possible sewage backup into a habitable dwelling or structure. The District shall require every customer to install a backflow prevention device at the customer's expense on the customer's lateral or house drain as a condition to provision of wastewater collection and treatment services to the customer's property for all new construction and/or all repair, renovation, or rehabilitation of laterals or house drains. Such backflow prevention devices may include backwater valves, grinder pumps, or other equipment designed to prevent sewage backflow, so long as the particular device to be installed is approved by the District prior to installation; provided, however, that the District's approval of any backflow prevention device chosen by the customer is not intended and shall not be construed to indicate that the District assumes responsibility or liability for the adequacy or sufficiency of the design or function of any such device. The extendable backwater valve manufactured by Clean Check, Inc., Part # EBV-P401AP with adapter and plug, and approved equal, is hereby recognized and approved by the District for such installation. It shall be the responsibility of the customer or qualified professionals retained by the customer to periodically inspect, maintain, and repair any such device installed in accordance with manufacturer specifications and recommendations. The District assumes no responsibility or liability for the failure of a backflow prevention device to function or otherwise prevent sewage backflow after installation.

(Revised 9/21/04 & 11/21/2006, 6/15/10)

2.11 Notice Required Prior to Excavation - Any person desiring to lay pipes for water, gas, steam, or other purposes, in any street or alley upon which sanitary sewers are to be laid, shall give at least forty-eight (48) hours' notice to the District before opening the street, and the manner of excavating and backfilling over such pipe shall be subject to the approval of the District. All such work shall be planned and executed so that no injury shall occur to any public sanitary sewer or to any building sanitary sewer connected therewith.

2.12 Unlawful Discharges - The following discharges shall be prohibited in the public sanitary sewers:

2.12.1 Pollutant Limits - Except as hereinafter provided, it shall be unlawful for any person to discharge or cause to be discharged into any sanitary sewer any of the following described substances, materials, water or wastes:

(1) Any liquid or vapor having a temperature higher than one hundred fifty (150) degrees Fahrenheit (sixty-five (65) degrees Celsius).

(2) Any pollutants with a closed cup flashpoint of less than one hundred forty (140) degrees Fahrenheit or sixty (60) degrees Celsius.

(3) Any gasoline, benzene, naphtha, fuel oil, mineral oil, or other flammable or explosive liquid, solid or gas.

(4) Any water or wastes containing more than two hundred (200) milligrams per liter (mg/l) of fat, oil or grease [emulsified oil or grease exceeding on analysis an average of one hundred (100) mg/l floatable and six hundred (600) mg/l dispersed of other soluble matter].

(5) Any water or wastes that contain grease or oil or other substances that will solidify or become discernibly viscous at temperatures between thirty-two (32) and one hundred fifty (150) degrees Fahrenheit (zero (0) and sixty-five (65) degrees Celsius).

(6) Any garbage that has not been properly shredded or comminuted to a degree that all particles will be carried freely under the flow conditions of the sanitary sewer with no particle greater than one-half inch in any dimension.

(7) Any ashes, cinders, sand, mud, straw, shavings, metal, glass, rags, feathers, tar, plastics, wood, paunch manure, hair and fleshings, entrails, lime slurry, lime residues, beer or distillery slops, chemical residues, paint residues, unapproved cannery waste, bulk solids, or any other solid or viscous substance capable of causing obstruction to the flow in sanitary sewers or other interference with the proper operation of the wastewater treatment facility.

(8) Any water or wastes having corrosive properties capable of causing damage or hazard to pipe, structures, equipment or personnel of the wastewater treatment facility or collection system. Free acids and alkalis of such wastes must be neutralized within a permissible range of pH between 5.5 and 9.5. The administrative authority may grant variances for higher pH than 9.5, but in no event lower than 5.5.

(9) Any water or wastes containing a toxic or poisonous substance, that result in toxic gases, fumes, or vapors, or of high chlorine demand in sufficient quantity to injure or interfere with any wastewater treatment works process, constitute a hazard to worker health and safety, or to other humans or animals, or create any hazard in the receiving waters or the effluent of the wastewater treatment facility.

(10) Any water or wastes that contain more than ten (10) mg/l by weight of the following gases: hydrogen sulfide, sulfur dioxide or nitrous oxide.

(11) Any water or wastes containing the discharge of acid pickling wastes or concentrated plating solutions, whether neutralized or not, which are capable of causing any obstruction, damage or corrosion in the sanitary sewers or the wastewater treatment facility.

(12) Any waters containing suspended solids of such character and quantity that unusual provision, attention or expense is required to handle such materials at the wastewater treatment facility.

(13) Any noxious or malodorous gas or other substance which either singly or by interaction with other wastes is capable of creating public nuisance or hazard to life or of preventing entry into sanitary sewers for maintenance and repair.

(14) Any waters, wastes, materials or substances which react with water or wastes in the sanitary sewer system to release noxious gases, develop color of undesirable intensity, form suspended solids in objectionable concentration, or create any other condition deleterious to structures and treatment processes.

(15) Any water or wastes that do not comply with applicable state and federal pretreatment standards and requirements.

(16) No user shall introduce or cause to be introduced into the wastewater treatment works any pollutant or wastewater that causes pass through or interference. These general prohibitions apply to all users of the wastewater treatment works whether or not they are subject to categorical pretreatment standards, any regulation containing pollutant discharge limits promulgated by EPA in accordance with 33 U.S.C. ' 1317 which applies to a specific category of users and which appear in 40 CFR Chapter I, Subchapter N, Parts 405-471 or any other national, state, or local pretreatment standards or requirements.

(17) No user shall introduce or cause to be introduced into the wastewater treatment works any pollutants, including oxygen-demanding pollutants (BOD, etc.), released in a discharge at a flow rate or pollutant concentration which, either singly or by interaction with other pollutants, will cause interference with the wastewater treatment works.

2.12.2 Remedies for Pollutant Limits - If any waters or wastes are discharged, or are proposed to be discharged to the public sanitary sewers, which waters contain the substances or possess the characteristics enumerated in these regulations, and which in the judgment of the District, may have a deleterious effect upon the treatment works, processes, equipment, or receiving waters, or which otherwise create a hazard to life to constitute a public nuisance, the District may: reject the wastes; require pretreatment to an acceptable condition for discharge to the public sanitary sewers; require control over the quantities and rates of discharge; and/or require payment to cover the added cost of handling and treating the wastes not covered by existing sanitary sewer charges under the provisions of these regulations.

2.12.3 Pretreatment - If the District allows the pretreatment or equalization of waste flows, the design and installation of the plants and equipment shall be subject to the review and approval of the District, and subject to the requirements of all applicable codes, regulations and laws including those dictated by the City of Columbia's pretreatment program. No statement contained in this section shall be construed as preventing any special agreement or arrangement between the District and any industrial concern whereby an industrial waste of unusual strength or character may be accepted by the District for treatment, subject to payment therefore, by the industrial concern. (Revised 9/16/08)

2.12.3.1 Pretreatment Requirements - Grease, oil, and sand interceptors shall be provided when, in the opinion of the District, they are necessary for the proper handling of liquid wastes, sand, or other harmful ingredients, except that such interceptors

shall not be required for private living quarters or dwelling units. All interceptors shall be of a type and capacity approved by the District, and shall be located as to be readily and easily accessible for cleaning and inspection.

2.12.3.2 Pretreatment Costs - Where preliminary treatment or flow-equalizing facilities are provided for any waters or wastes, they shall be maintained continuously in satisfactory and effective operation by the owner at the owner's expense.

2.12.3.3 Pretreatment Monitoring - When required by the District, the owner of any property serviced by a buildings sanitary sewer carrying wastes shall install a suitable control manhole together with such necessary meters and other appurtenances in the building's sanitary sewer to facilitate observation, sampling, and measurement of the wastes. Such manhole, when required, shall be accessibly and safely located, and shall be constructed in accordance with plans approved by the District. The manhole shall be installed by the owner at his or her expense, and shall be maintained by him or her so as to be safe and accessible at all times.

2.12.3.4 Pretreatment Analysis - All measurements, tests, and analyses of the characteristics of waters and wastes to which reference is made in this regulation shall be determined in accordance with the latest edition of "Standard Methods for the Examination of Water and Wastewater," published by the American Public Health Association, and shall be determined at the control manhole provided, or upon suitable samples taken at said control manhole. In the event that no special manhole has been required, the control manhole shall be considered to be the nearest downstream manhole in the public sanitary sewer to the point at which the building sanitary sewer is connected. Sampling shall be carried out by customarily accepted methods to reflect the effect of constituents upon the sewage works and to determine the existence of hazards to life, limb, and property. (The particular analysis involved will determine whether a twenty-four (24) hour composite of all outfalls or a premise is appropriate or whether a grab sample or samples should be taken. A grab sample is an individual sample collected in less than fifteen (15) minutes, without regard for flow or time. Normally, but not always, BOD and suspended solids analyses are obtained from 24-hour composites of all outfalls whereas pH analyses are determined from periodic grab samples.)

2.12.3.5 Other Pretreatment Standards Applicable - Whenever a District customer is connected to a District collection line for which waste water treatment is provided by the City of Columbia or other municipality, and such waste water treatment provider has adopted ordinances or regulations requiring pretreatment and monitoring, then the customer's compliance with the requirements of those ordinances or regulations shall be applicable to the customer as a condition to District services to the customer regardless of whether District imposes the same or differing requirements; in the event of conflict between particular requirements, the higher or more rigorous standards intended to protect the public health shall be applicable. (Revised 5/12/04)

2.12.4 Unusual Waste Subject to Review, Regulation and Approval - Unusual wastes discharged into the District wastewater treatment works shall be subject to the following:

2.12.4.1 Wastes Unusual in Composition - Wastes which are unusual in composition, i.e., contain an extremely large amount of TSS or BOD; are high in dissolved solids such as sodium chloride, calcium chloride, or sodium sulfate; or are in any other way unusual, shall be reviewed by the administrative authority, who will determine whether such wastes shall be prohibited from or may be admitted to the District sanitary sewers or shall be modified or treated before being admitted. Wastes that, in the opinion of the administrative authority, are unusual or highly variable in volume shall be subject to flow equalization or other forms of regulation.

2.12.4.2 Unusual Water or Wastewater Due to Interaction - Any water or waste which, by interaction with other water or wastes in the public sanitary sewer system, releases obnoxious gases or develops color of undesirable intensity, or forms suspended solids in objectionable concentration, or creates any other condition deleterious to structures and treatment processes, shall be subject to control of the administrative authority.

2.12.5 Treatment or Flow Control May be Required - In cases where the administrative authority determines that wastes may be deleterious to the wastewater treatment works or have an adverse effect upon the wastewater treatment process or the receiving stream, or body of water, the administrative authority may require treatment to reduce the TSS, BOD or other constituents to levels more closely approaching those of normal wastewater before discharging such wastes into the District sanitary sewers. The administrative authority may also require any user to control its discharge to the public sanitary sewers so that it will not exceed a maximum percentage of the total flow in a sanitary sewer or to a treatment facility.

2.13 Unlawful Acts - The following acts or conduct shall be unlawful:

2.13.1 Allowing Pollutants to Enter Sanitary Sewer - It shall be unlawful to place or deposit or cause to be deposited or placed into any sanitary sewer any normal domestic wastewater, industrial waste or other polluted water except in accordance with the provisions of these regulations.

2.13.2 Tampering or Vandalism - It shall be unlawful to adjust, obstruct, damage, break or remove any portion of any manhole, cleanout, catch basin, inlet, outlet, or any part of the wastewater treatment works, or throw or deposit or cause to be thrown or deposited in any sanitary sewer opening or receptacle connecting with the wastewater treatment works, any matter or thing whatsoever, except in accordance with the provisions of these regulations or to obstruct in any way or uncover the public sanitary sewers for any purpose, or to make connection therewith, or uncover the public connection branches thereof, unless and except with the consent and under the supervision of the administrative authority.

2.13.3 Unauthorized or Deficient Connections - It shall be unlawful to make or cause to be made any such connections, except as herein provided, and by a competent and skillful mechanic, or to make such connections in any manner other than provided for by regulations adopted by the District.

2.13.4 Infiltration and Inflow - It shall be unlawful to allow the entry of ground water or storm water to the wastewater treatment works through: a faulty sanitary sewer service line or connection point with the public sanitary sewer; surface water area drain; subsurface cleanout; roof drain; or by pumping any unpolluted industrial process waters to any wastewater collection system.

2.13.5 Utilizing a Structurally Poor Connection - It shall be unlawful to utilize a service connection point that is structurally poor and deteriorated, protruding into the public sanitary sewer, causing infiltration or inflow of subsurface water, or allowing the growth of tree roots into the wastewater collection system.

2.13.6 Prohibited STEP System Waste Products – – It shall be unlawful to deposit or permit the deposit of solid or insoluble organic or inorganic waste products into a plumbing drainage system which uses a septic tank effluent pump except waste products generated by the human body and paper tissue products designed to dissolve and be used in sanitary sewer systems; provided, however, that no enforcement action shall be taken for violation of this rule unless the property owner or resident has first been given written notice of violation of this rule and thereafter commits a further violation of this rule.
(Revised 12-18-07)

2.13.7 Constructing or Utilizing a Private Lateral that extends into or encroaches upon any other private property - It shall be unlawful for any private sanitary sewer lateral to be extended off the described, platted or surveyed lot or tract of land from which it originates except in cases where such private lateral extends into or across a publicly maintained road or street right of way or general utility easement abutting such property in order to connect to an existing District owned and operated sewer line located within or immediately adjacent to such road or street or general utility easement such that such private sewer lateral does not extend into or encroach upon any other private property.
(Revised 9/16/08)

2.14 Enforcement - These regulations shall be enforced in the following manner:

2.14.1 Commission of Unlawful Act - Any person who commits an unlawful act under these regulations or who knowingly makes any false statement, representation or certification in any application, record plan or other document filed or required to be maintained or who falsifies, tampers with or knowingly renders inaccurate any monitoring device or method required hereunder shall be subject to the remedies provided for in section 2.15 below. Each day the unlawful act occurs or continues shall constitute a separate violation.

2.14.2 Violation of Chapter 644 RSMo Prohibited - It shall be unlawful for any person to violate or allow violation of any provision of Chapter 644 RSMo within the geographic boundaries of the District and any person who violates or allows violation of any such provision shall be subject to any penalties or relief provided for in these regulations; provided, however, that no enforcement proceeding hereunder shall be brought by or on behalf of the District or maintained by the District if any enforcement proceeding is brought by the Missouri Clean Water Commission or the Missouri Department of Natural Resources for the same violation or if either such agency shall notify the District of its intent to bring an enforcement proceeding for any such violation. No violation proceeding shall be brought by

or on behalf of the District for violation of any provision of Chapter 644 RSMo except in emergency or exigent circumstances unless the District has provided the Missouri Clean Water Commission or the Missouri Department of Natural Resources with actual notice of its intent to bring such proceeding, in writing or otherwise, and the fact of such notice is stated in the pleading filed in the legal proceeding for enforcement.

2.15 Remedies - If any person is found to be violating any provision of these regulations, the administrative authority may, at his or her discretion, pursue any combination of the following remedies. The penalty provided in this section shall not be construed to be exclusive but is intended to be supplementary and in addition to any other remedy provided by law or at equity. Any person who repeatedly violates the same provision or provisions of these regulations shall be subject to injunctive relief in addition to the remedies provided for herein.

2.15.1 Injunctive Relief - Injunctive or other appropriate relief in circuit court restraining the violation, requiring compliance with District regulations and recovering the District's cost in remediating any damage caused by the violation.

2.15.2 Civil Penalty - Any person or Owner who violates or facilitates the violation of any provision of these regulations shall be subject to payment of a civil penalty as determined by the Circuit Court of Boone County, Missouri, in a sum not to exceed $300.00 per day for each day's violation of any such regulation. Every separate violation of these regulations shall be considered subject to a separate penalty and each day's violation of each such regulation shall subject the violator to a cumulative penalty.

2.15.3 Costs and Expense of Violation and Remedy are Responsibility of Violator - In addition to any other remedy available to the District authorized under these regulations, any person violating any of the provisions of these regulations in accordance with their terms shall be liable to the District for any expense, loss, or damage occasioned to the District by reason of such violation. As an alternative to an enforcement action, the District may specially invoice or add as a special charge to a customer account the costs and expenses incurred by the District to respond to and repair or remedy defects or damages to property or equipment owned or otherwise maintained by the District resulting from any violation of these regulations. (Revised 12/18/07)

2.16 Failure to Remedy Violation - The District is authorized to do any combination of the following if any person shall fail to remedy a violation after notice of the violation: revoke any application for service or construction permit granted by the District; discontinue sanitary sewer service to that person; use District or contract forces to remedy the violation and charge the costs of the remedy to the person in violation.

2.17 Operational Inspections and Monitoring - The following provisions shall be applicable to operational inspections and monitoring of facilities subject to these regulations:

2.17.1 Residential and Commercial Users - The District is duly authorized to inspect and approve the installation of building laterals and their connection to the public sanitary sewer system, and to inspect such wastewater as may be discharged therefrom.

2.17.1.1 Access to Systems - The District's duly authorized employees bearing proper credentials and identification shall be permitted to enter all properties for the purposes of inspection, observation, measurement, sampling, and testing in accordance with the provisions of this regulation. The District's representatives shall have no authority to inquire into any processes including metallurgical, chemical, oil, refining, ceramic, paper, or other industries beyond that point having a direct bearing on the kind and source of discharge to the sanitary sewers or waterways or facilities for wastewater treatment.

2.17.1.2 Access to Easement - The District's duly authorized employees bearing proper credentials and identification shall be permitted to enter all private properties through which the District holds an easement for the purposes of inspection, observation, measurement, sampling, repair, and maintenance of any portion of the District facilities lying within said easement.

2.17.2 Industrial Users - Industrial users of the District's wastewater treatment works shall be subject to the following:

2.17.2.1 Certification Statement - All wastewater discharge permit applications and user reports must be signed by an authorized representative of the user and contain the following certification statement: "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."

2.17.2.2 Preliminary Treatment Facilities - Where preliminary treatment facilities are provided for any waters or wastes, they shall be owned and maintained continuously in satisfactory and effective operation by the owner at his or her expense.

2.17.2.3 Accidental Discharges and Slug Control Plans - At least once every two (2) years, the District shall evaluate whether each significant industrial user needs an accidental discharge/slug control plan. A significant industrial user is a noncategorical industry with >25,000 GPD; >5% of dry weather hydraulic or organic capacity; categorical industry; or any industrial user designated by continuing authority to have a reasonable potential to adversely affect the wastewater treatment works' operation. The District may require any user to develop, submit for approval, and implement such a plan. Alternatively, the District may develop such a plan for any user. An accidental discharge/slug control plan shall address, at a minimum, the following:

(1) Description of discharge practices, including nonroutine batch discharges;

(2) Description of stored chemicals;

(3) Procedures for immediately notifying the District of any accidental or slug discharge, as required by of this regulation; and

(4) Procedures to prevent adverse impact from any accidental or slug discharge. Such procedures include, but are not limited to, inspection and maintenance of storage areas, handling and transfer of materials, loading and unloading operations, control of plant site runoff, worker training, building of containment structures or equipment, measures for containing toxic organic pollutants, including solvents, and measures and equipment for emergency response.

2.17.2.4 Reporting Accidental and/or Slug Discharges - The following shall be applicable to accidental and/or slug discharges:

2.17.2.4.1 Immediate Notification - In the case of any discharge, including, but not limited to, accidental discharges, discharges of a nonroutine, episodic nature, a noncustomary batch discharge, or a slug load, that may cause potential problems for the wastewater treatment works, the user shall immediately telephone and notify the District of the incident. This notification shall include the location of the discharge, type of waste, concentration and volume, if known, and corrective actions taken by the user.

2.17.2.4.2 Written Report - Within five (5) days following such discharge, the user shall, unless waived by the District, submit a detailed written report describing the cause(s) of the discharge and the measures to be taken by the user to prevent similar future occurrences. Such notification shall not relieve the user of any expense, loss, damage, or other liability that may be incurred as a result of damage to the wastewater treatment works, natural resources, or any other damage to person or property; nor shall such notification relieve the user of any penalties or other liability that may be imposed pursuant to this regulation.

2.17.2.4.3 Posted Notice - A notice shall be permanently posted on the user's bulletin board or other prominent place advising employees who to call in the event of an accidental or slug discharge. Employers shall ensure that all employees who may cause such a discharge to occur are advised of the emergency notification procedure.

2.18 Accounts and Billing - The following regulations shall be applicable to customer accounts and billing:

2.18.1 Liability For Payment of Accounts and Applications for Service- The liability for payment of any user charges, connection fees, or other charges levied by the sewer district shall be against the owner or owners of real property which is connected to District sanitary sewers made available for collection and treatment of waste water generated on the property and such property is subject to a statutory lien for payment as provided in section 204.455, RSMo. The District may permit the establishment of customer accounts by tenants, lessees and other persons who occupy or use property which is connected to District sanitary sewers with the express or implied consent of the property owner(s), but the establishment of such accounts shall not relieve the property owner(s) from financial responsibility for payment of all such user charges, connection fees, or other charges levied by the sewer district, nor otherwise affect the discharge rights to assert a lien against the property served under section 204.455, RSMo. Customers shall apply for sewer service by submitting their name and

address, the kind of service requested, and the location to be served. No customer shall be refused service due to race, sex, creed, national origin, marital status, age, number of dependents, source of income, or place of residence in the service area.

(Revised 2/17/04)

2.18.2 Billing & Payment - The manner of furnishing the statement shall be as determined by the Board, provided each customer is billed in a reasonable, predictable manner. The District may divide the service area into sections, and/or the customers into various classes for the purpose of rendering statements. Such sections or classes may be changed from time to time to meet the operating requirements of the District. Such sections or classes are for the sole purpose of establishing a billing rotation and shall have no affect on the amount or rate of billing.

2.18.2.1 Billing Period - The District shall render a bill once during each billing period to every customer in accordance with the applicable rate schedule. A billing period covers thirty (30) days of service. Each customer is billed for thirty (30) days of service in advance. When bills are rendered for a period of less than a complete billing period due to the connection or termination of service, the billing shall be for the proportionate part of the charge. (Revised 4-19-07)

2.18.2.2 Due and Payable - All service bills shall be due and payable in full ten (10) days from the date of the bill, after which they shall be subject to late charges. If the last day for remittance falls upon a weekend or holiday, or any other day when the offices regularly used for the payment of customer bills, are not open to the general public, the final payment date shall be extended through to the close of the next business day. The date of payment for remittance through the mail shall be the date on which the department receives the remittance. (Revised 4-19-07)

2.18.2.3 Late Charge - The District shall assess a two percent (2%) late charge upon the bill of a customer for the reason that any balance due and owing upon the bill remains outstanding beyond the ten (10) day period of time established for payment.

(Revised 4-19-07)

2.18.2.4 Contents of Statement - The statement shall contain the number of days of service, billing date, due date, previous balance, current amount due, total due, date delinquent, address and phone number to call for information. Billing or clerical errors or omissions contained on a statement shall not serve as a defense to late payment charges of the actual account balance when due to the extent of amounts actually due, nor a defense to the costs and expenses chargeable for delinquent accounts and collection thereof resulting from nonpayment in whole or in part of the actual account balance due and not paid.

(Revised 4-19-07)

2.18.2.5 Delinquent Accounts - A delinquent account is a bill remaining unpaid by a customer at least twenty (20) days from rendition of the bill by the District. The District is hereby authorized to establish an administrative procedure to handle delinquent accounts. Collections of delinquent payments may be pursued through collection agencies and in the courts of jurisdiction and may include for collection the amount of the delinquent payments, service charges and collection costs, court costs, reasonable attorney's fees, and all

other expenses incurred regarding the collection of the delinquent account. Any account remaining unpaid after six (6) months shall be subject to Section 204.455 RSMo relating to liens being placed upon property where services were provided. (Revised 4-19-07)

2.18.2.6 Termination of Service - Whenever a customer shall order services terminated or otherwise cease to be a customer, all amounts owed by the customer to the District shall immediately become due. Bills for accounts to which services have been terminated or discontinued for a period of thirty (30) days shall be considered delinquent thirty (30) days after the final billing date. Should the account remain outstanding for a period of sixty (60) days, the account will be submitted to a collection agency or attorney for collection as determined under District administrative procedures. All costs, fees and expenses chargeable for delinquent accounts as specified in section 2.18.2.5. shall be applicable to the debt owed under the delinquent account. (Revised 4-19-07)

2.18.3 Temporary Interruptions of Service - The District reserves the right to discontinue sanitary services in its mains at any time, without notice, for making repairs, extensions, or alterations to the wastewater treatment works.

2.18.3.1 Notification of Customers - Whenever service is interrupted for repairs, all customers affected by such interruptions will be notified in advance if it is possible to do so. Every effort will be made to minimize the interruption and temporary methods of disposing of bulk sewage will be provided for when possible.

2.18.3.2 Refunds - No refunds of charges for sanitary sewer service will be made for interruption of service unless the interruption is in effect for a continuous period in excess of forty-eight (48) hours without disposal by the District.

2.19 Disconnection - The following provisions shall be applicable to disconnections of service:

2.19.1 Reasons for Disconnection of Service - The District shall have the right to discontinue sanitary sewer service to the customer for the following reasons. Discontinuance of sanitary sewer service to a premise for any reason shall not prevent the District from pursuing any lawful remedy for the collection of monies due from the Customer, and the District shall have the right to include court costs, applicable service charge(s), disconnect and/or reconnect charges, collection charges and reasonable attorney's fees for collection.

2.19.1.1 Non-payment - Service may be discontinued for: nonpayment of a delinquent account; failure to comply with the terms and conditions of a settlement agreement relating to a current or prior sanitary sewer account; failure to inform the District of their intent to terminate sanitary sewer services; or for failure to respond to a delinquent notice.

2.19.1.2 Tampering or Vandalism - No person, except authorized employees of the District, shall connect to the service lines without written authorization. In the event the District shall discover evidence of tampering with lines used for sewage distribution, or other such line of the sanitary sewer having the probable effect of rendering actual meter readings inaccurate, or to receive the service of the sanitary sewer without proper payments, sanitary sewer service may be discontinued.

2.19.1.3 Violation of Health Regulation and/or Unsafe Conditions - Service may be disconnected upon request from health department because of unsafe condition of structure or dwelling and/or non-compliance with sanitary sewer use regulations.

2.19.2 Procedures for Disconnection of Service - Prior to any service disconnection for any of the reasons listed in section 2.19.1.1-3, the District shall give five (5) working days' written notice of such intent by mail to the customer at their billing address. Service of notice is complete upon mailing. The District shall maintain an accurate record of the date of mailing. Such notice shall give a telephone number and address at which such disconnection may be contested. The general manager is hereby authorized to promulgate rules and regulations to establish an administrative procedure to handle such contests. The District may disconnect service between the hours of 8:00 a.m. and 4:00 p.m. on the date specified on the disconnection notice, or within a reasonable time thereafter. Service shall not be disconnected on a day when the offices of the District are not available to the public for the purpose of reconnecting discontinued service.

2.19.2.1 Notice of Disconnection - A Disconnection Notice shall contain the following: name and address of the customer; clear and concise statement of the reason for the proposed disconnection; cost of reconnection; date on or after which service shall be discontinued unless action is taken by the customer; terms under which disconnection may be avoided by the customer; and the telephone number where inquiry/complaint may be made.

2.19.2.2 Reasonable Effort to Contact - Immediately preceding the disconnection of service, the employee of the District designated to perform such function shall make a reasonable effort to contact and identify her/himself to the customer or responsible person then upon the premises stating action taken, reason for action, and phone numbers where inquiries may be made.

2.19.2.3 Postponement Due to Medical Circumstances - Notwithstanding any other provisions of this section, the District may postpone the disconnection of sanitary sewer service to a residential customer for a time not in excess of twenty-one (21) days if the disconnection will aggravate an existent medical emergency of the customer, a member of his/her family or other permanent resident of the premises where service is rendered.

2.19.2.4 Customer Dispute - If the District is advised, prior to the date of disconnection that any portion of bill is in dispute, the District shall record the date, place and time the complaint was made, and enter into the resolution process with the customer. The complaint may be initiated in person, by phone, or in writing. The District, in attempting to resolve the dispute in a mutually satisfactory manner, may employ those methods set forth by the management in the customer complaints process.

2.19.2.5 Failure to Pay Undisputed Amount - When a complaint is made, the customer shall make payment of the nondisputed amount; if customer fails to make payment of the nondisputed amount within three (3) working days from the date of registering the complaint, the customer shall waive their right to continuance of service and disconnection of service may proceed.

2.19.2.6 Failure to Negotiate - Failure of the customer to enter into negotiation with the District to resolve a dispute shall constitute a waiver of the customer's right to continuance of service and the District may then proceed to disconnect service as provided.

2.19.3 Disconnect/Reconnect Charge - A fee equal to the actual costs of the District, to a minimum of three hundred dollars ($300.00), shall be charged to all accounts when it is necessary to utilize District forces to physically disconnect sanitary sewer service. Reconnection charges shall also be levied against the affected account on the basis of the actual costs of reconnection, to a minimum of three hundred dollars ($300.00). Total fees to disconnect and reconnect service will be a minimum of six hundred dollars ($600.00).

2.20 Reconnection/Restoration of Service - Upon the customer's request, the District shall restore service promptly if the cause for disconnection of service has been eliminated, applicable restoration charges paid and, if required, satisfactory credit arrangements have been made.

2.21 Resale of Sanitary Sewer Services - Should the resale of sanitary sewer service become necessary, the following regulations apply.

2.21.1 Resale at a Profit Prohibited - No customer shall sell at a profit, or offer for sale at a profit any sanitary sewer service purchased for their sole use from the District unless authorized by the District.

2.21.2 Authorization Required - Any customer wishing to resell a sanitary sewer service, shall do so only after having first obtained authorization from the District.

2.21.3 Evidence of Compliance - Any customer reselling sanitary sewer service, regardless of whether the sanitary sewer service so resold is metered or not, shall from time to time as determined by the District, furnish evidence that such resale is in compliance with all rules relating to such.

2.21.4 Submeters May be Required - Any customer wishing to resell sanitary sewer service may be required, as determined by the District, to install submeters where required and maintain records at such customer's expense, for the purpose of determining compliance with this section.

2.22 Interpretation and Severability - The regulations enacted hereunder are intended to be supplementary to all of the provisions or remedies authorized or prescribed by law, rule or regulation enacted thereunder. The invalidity of any particular regulation enacted herein shall not affect the validity of any other provision and all regulations hereunder shall be construed as consistently and harmoniously as possible with each other and other applicable provisions of law. In the event these regulations conflict with another law, rule or regulation, the law, rule or regulation imposed by a higher governmental authority shall be applicable in cases of preemption, but otherwise the law, rule or regulation which affords the greater protection to the public health or safety shall prevail. These regulations also shall be liberally construed to

the fullest extent permitted by law to effectuate the broad remedial purposes for which they are intended.

2.23 Variances - The Board may grant a variance from the strict application of the regulations adopted in this chapter upon application if it finds after public hearing and upon competent and substantial evidence that the applicant meets the criteria for grant of a variance required by these regulations. No variance from any requirement contained within chapter two of these regulations shall be granted unless the Board finds: (a) the applicant will incur unreasonable and unnecessary hardship if a variance is not granted and the variance is not sought primarily to avoid financial expense in complying with the requirements of these regulations (b) grant of a variance will not endanger the health, safety or welfare of the public, and (c) grant of a variance will not hinder, thwart or circumvent the general intent or any specific purpose of these regulations. All applications for variances shall be filed with the General Manager of the District and after review thereof the General Manager shall make a recommendation to the Board to grant or deny the application and state the reasons for his recommendation. The applicant may appeal any decision of the Board as provided by law.

2.24 Effective Date - This regulation shall be in full force and effect from the 15th day of September 1998.

APPENDIX I

PUBLIC MEETING MINUTES (TBD)

APPENDIX J

CLEARANCE LETTERS

December 10, 2020

U.S. Army Corp of Engineers
700 Federal Building
Regulatory OD-R
601 East 12th Street
Kansas City, MO 64106

RE: Clearance Letter
Boone County Regional Sewer District
Amendment 1- Richardson Acres and Brown Station Wastewater Improvements Facility Plan

To Whom It May Concern:

The Boone County Regional Sewer District (District) is proposing to decommission the following existing wastewater treatment facilities (WWTF):

1. Cedar Gate Lagoon located south of East Birch Street and North Branch Street, Hallsville, MO (SE1/4, SE1/4, NW1/4, Sec. 23, T50N, R12W).
2. Richardson Acres Lagoon located 0.25 miles southwest of Highway B and Flamingo Drive Intersection (SW1/4, SW1/4, SW1/4, Sec. 34. T50N, R12W).
3. Brown Station Recirculating Sand Filter located 0.1 miles north of North Brown Station Road and O'Rear Road Intersection (NW1/4, NW1/4, Sec. 10, T49N, R12W).

A pump station will be constructed near each of the WWTF's by which wastewater will be pumped into a force main that will ultimately discharge into a gravity sanitary sewer owned and operated by the District. This gravity sewer is located approximately ¼ mile south of East Oakland Church Road on Wagon Trail Road.

Enclosed is a map showing the proposed pump stations and force main routings.

We are requesting that you review the proposed project.

If you need additional information, please contact me at (816) 347-1157.

Thank you.

Sincerely,

Bryce Banion

Bryce Banion, P.E.
Project Manager
HDR Engineering, Inc.

HALLSVILLE WWTF

HALLSVILLE EQUALIZATION BASIN

CEDAR GATE WWTF

HALLSVILLE UNITED METHODIST CHURCH WWTF

ROUTE B

E. MT. ZION CHURCH RD.

RICHARDSON ACRES WWTF

OAK RIDGE MOBILE HOME PARK WWTF

HILLCREST RESIDENTIAL CARE WWTF

BROWN STATION BOOSTER PUMP STATION

BROWN STATION WWTF

ROUTE B

BROWN STATION RD

COLT RR

ROUTE HH

E. OAKLAND CHURCH RD.

GRAVITY SEWER CONNECTION

Legend

- Wastewater Facilities
- Project 1 Force Main Alignment
- Project 2 Force Main Alignment

N

1,500 750 0 1,500

Feet

Cedar Gate, Richardson Acres and Brown Station Wastewater Improvements

EXHIBIT 1

December 10, 2020

U.S. Fish and Wildlife
Attn: Charlie Scott
101 Park DeVille Drive, Suite A
Columbia, MO 65203

RE: Clearance Letter
Boone County Regional Sewer District
Amendment 1- Richardson Acres and Brown Station Wastewater Improvements Facility Plan

Dear Mr. Scott:

The Boone County Regional Sewer District (District) is proposing to decommission the following existing wastewater treatment facilities (WWTF):

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Feet

Cedar Gate, Richardson Acres and Brown Station Wastewater Improvements

EXHIBIT 1

December 10, 2020

Missouri Office of Administration
Inter-Governmental Relations Section
Attn: Sarah Vanderfeltz
201 W. Capital Avenue, Room 125
Jefferson City, MO 65101

RE: Clearance Letter
Boone County Regional Sewer District
Amendment 1- Richardson Acres and Brown Station Wastewater Improvements Facility Plan

Dear Ms. Vanderfeltz:

The Boone County Regional Sewer District (District) is proposing to decommission the following existing wastewater treatment facilities (WWTF):

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Cedar Gate, Richardson Acres and Brown Station Wastewater Improvements

EXHIBIT 1

December 10, 2020

Missouri Department of Conservation
Attn: Shannon Cave
P.O. Box 180
Jefferson City, MO 65102

RE: Clearance Letter
Boone County Regional Sewer District
Amendment 1- Richardson Acres and Brown Station Wastewater Improvements Facility Plan

Dear Ms. Cave:

The Boone County Regional Sewer District (District) is proposing to decommission the following existing wastewater treatment facilities (WWTF):

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Cedar Gate, Richardson Acres and Brown Station Wastewater Improvements

EXHIBIT 1

December 10, 2020

Missouri Department of Natural Resources
State Historic Preservation Office
Attn: Judith Deel
P.O. Box 176
Jefferson City, MO 65102

RE: Clearance Letter
Boone County Regional Sewer District
Amendment 1- Richardson Acres and Brown Station Wastewater Improvements Facility Plan

Dear Ms. Deel:

The Boone County Regional Sewer District (District) is proposing to decommission the following existing wastewater treatment facilities (WWTF):

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Cedar Gate, Richardson Acres and Brown Station Wastewater Improvements

EXHIBIT 1

December 10, 2020

Missouri Department of Natural Resources
Division of State Parks
P.O. Box 176
Jefferson City, MO 65101

RE: Clearance Letter
Boone County Regional Sewer District
Lee Heights Wastewater Improvements Facility Plan

To Whom It May Concern:

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EXHIBIT 1

December 10, 2020

Missouri Department of Natural Resources
Division of Geology and Land Survey
Attn: Bruce Volner
P.O. Box 250
Rolla, MO 65402

RE: Clearance Letter
Boone County Regional Sewer District
Amendment 1- Richardson Acres and Brown Station Wastewater Improvements Facility Plan

Dear Mr. Volner:

The Boone County Regional Sewer District (District) is proposing to decommission the following existing wastewater treatment facilities (WWTF):

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