



Facility Plan

Boone County Regional Sewer District

Amendment 1 - Richardson Acres and
Brown Station Wastewater
Improvements

December 10, 2020



December 10, 2020

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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.

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	-

¹Facility 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 = $(18 + \sqrt{\text{population}}) / (4 + \sqrt{\text{population}})$, (population is in thousands)

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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

WWTF	Current Design ADF (gpd)	Future Design ADF (gpd)	Current Design Peak Flow (gpm)
Cedar Gate	10,730	10,730	32
Richardson Acres	8,140	15,170	24
Brown Station	2,220	10,730	7
City of Hallsville	158,600 ¹	212,644 ²	148 ³
Hallsville United Methodist Church	587	587	2
Oak Ridge Mobile Home Park	10,730	10,730	32
Hillcrest Residential Care WWTF	3,075	3,075	9

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

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

³This 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 2-15 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 2-16 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 2-17 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 degree 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.

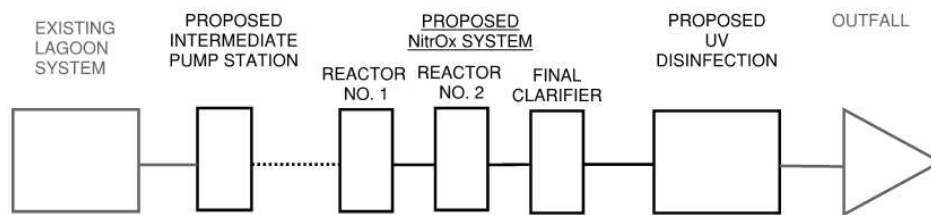


Figure 4-1 Proposed Cedar Gate WWTF Process Flow Schematic

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.

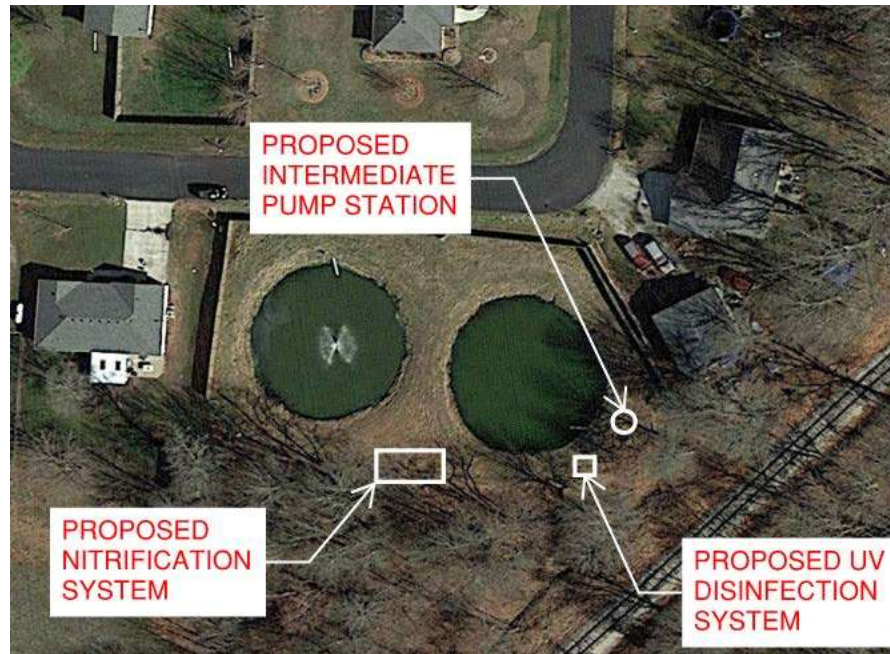


Figure 4-2 Proposed Cedar Gate WWTF Nitrification System Location

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.

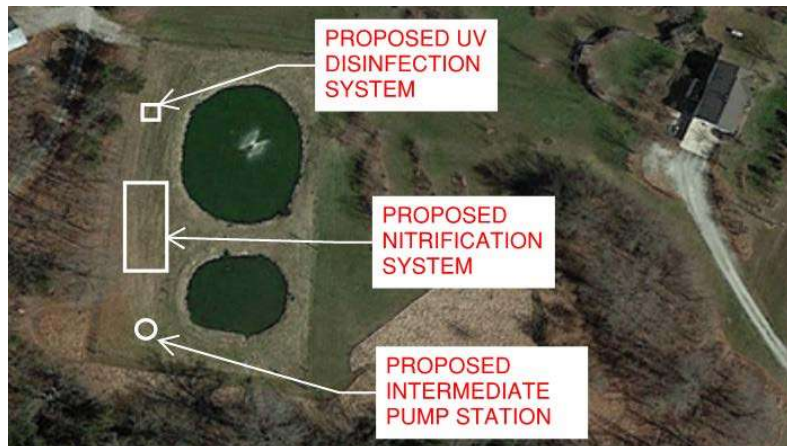


Figure 4-3 Richardson Acres WWTF Site Layout

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.

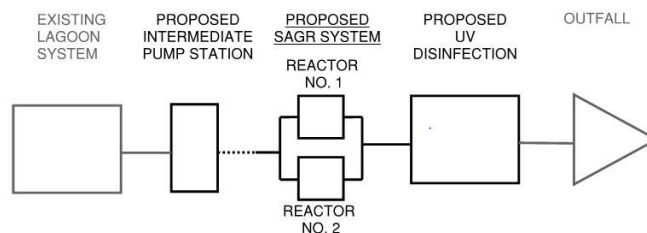


Figure 4-4 Proposed Richardson Acres WWTF Process Flow Schematic

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 section 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 section 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.

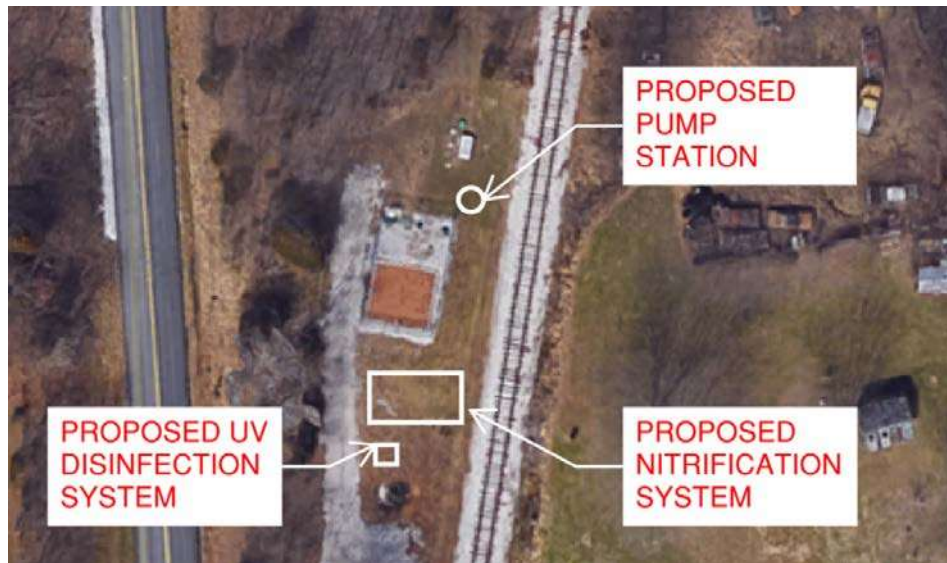


Figure 4-5 Brown Station WWTF Site Layout

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.

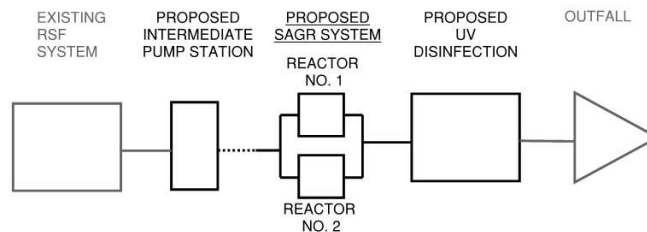


Figure 4-6 Proposed Brown Station WWTF Process Flow Schematic

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 section 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	\$2,383,000
Easement Acquisition	\$6,000
Engineering and SRF Closing Costs	\$528,000
Total Project	\$2,917,000

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	\$12,200
Labor	\$31,200
Equipment Replacement	\$19,200
Total	\$62,600

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 ¼ 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	\$2,805,000
Easement Acquisition	\$113,000
Engineering and SRF Closing Costs	\$617,000
Total	3,535,000

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	\$5,880
Labor	\$12,480
Chemical	\$5,400
Equipment Replacement	\$13,680
Total	\$37,440

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.

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	\$2,889,000	\$3,501,000
Anticipated O&M Costs	\$1,029,000	\$605,000
NPV	\$3,918,000	\$4,106,000

Alternative No. 3 has a higher NPV than Alternate No. 2 by approximately \$188,000. 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

The conveyance system improvements will be sized using the flow analysis for existing service areas as presented in Table 2-14. 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 brief summary of the recommended improvements are as follows:

1. Pump Stations: Pump stations will be constructed at Cedar Gate and Richardson Acres. A booster pump station will be constructed at Brown Station.
2. Force Main: Force mains will be constructed as follows:
 - a. (1) 6-inch from the District Sewer Connection Point to the Brown Station Booster Pump Station
 - b. (2) 4-inch from the Brown Station Booster Pump Station to the Richardson Acres Connection Point
 - c. (3) 3-inch from the Richardson Acres Connection Point to Cedar Gate

- d. (4) 4-inch from the Brown Station Booster Pump Station to near Cedar Gate (Hallsville Connection)
- e. (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 Cedar Gate, Richardson Acres and Brown Station

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)
Cedar Gate	32	147
Richardson Acres	24	69
Brown Station Booster Pump Station	254	148

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

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
3	34	3.0	15,300	2.07
4	148	4.0	22,300	3.78
5	24	2.0	1,000	2.45

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
Cedar Gate, Richardson Acres and Brown Station	\$3,535,000

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

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 \$37,440 in 2020 dollars.

7 Schedule

7.1 Anticipated Project 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 – December 2020
- Water Quality Incentive Grant Application – March 2021
- Water Quality Incentive Grant Approval – May 2021
- Hold Public Hearings – July 2021
- Submit Plans and Specifications – February 2022
- Bid Project – May 2022
- Begin Construction – July 2022
- Complete Construction – July 2023

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
MO 780-0041 (10-93)

Irene Crawford, Director, Northeast Regional Office

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS				PAGE NUMBER 2 of 4		
				PERMIT NUMBER MO-0096415		
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
<u>Outfall #001</u>						
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 <u>Parts I, II, & III</u> STANDARD CONDITIONS DATED <u>October 1, 1980 and August 15, 1994</u> , 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		
<u>Influent</u>						
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(I)] 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. Antidegradation 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 (BOD₅) 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

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

OUTFALL #001 – DERIVATION AND DISCUSSION OF LIMITS:

- **Biochemical Oxygen Demand (BOD₅).** 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

Handwritten signature of Edward B. Galbraith in cursive.

Edward B. Galbraith, Director, Division of Environmental Quality

March 31, 2020

Expiration Date

Handwritten signature of Chris Wieberg in cursive.

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 <u>QUARTERLY</u> ; THE FIRST REPORT IS DUE <u>JANUARY 28, 2019</u> . 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 <u>QUARTERLY</u> ; THE FIRST REPORT IS DUE <u>JANUARY 28, 2019</u> .						
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 <u>ANNUALLY</u> ; THE FIRST REPORT IS DUE <u>JANUARY 28, 2019</u> .						

- * 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 28 th
Second	April, May, June	Sample at least once during any month of the quarter	July 28 th
Third	July, August, September	Sample at least once during any month of the quarter	October 28 th
Fourth	October, November & December	Sample at least once during any month of the quarter	January 28 th

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
<i>E. coli</i> (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 <u>QUARTERLY</u> ; THE FIRST REPORT IS DUE <u>JANUARY 28, 2026</u> . 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 <u>QUARTERLY</u> ; THE FIRST REPORT IS DUE <u>JANUARY 28, 2026</u> .						
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 <u>ANNUALLY</u> ; THE FIRST REPORT IS DUE <u>JANUARY 28, 2026</u> .						

- * 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	<i>E. coli</i>	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 28 th
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 28 th
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 28 th
Fourth	October	Sample once during <u>October</u>	Sample at least once during any month of the quarter	January 28 th
	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: $[(\text{Influent} - \text{Effluent}) / \text{Influent}] \times 100\% = \text{Percent Removal}$. 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 Contact Recreation (like fishing, wading, and boating).

10 CSR 20-7.031(1)(C)3. to 7.:

HHP (formerly HHH) = 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; **WHIP** = 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

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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 (BOD₅) 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 for the upcoming calendar year, it is a violation of Missouri State Environmental Laws and Regulations to allow untreated wastewater to discharge to any water body in 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 SOC's, and attain a greater level of consistency, on April 9, 2015 the Department issued an updated policy on development of SOC's. 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:

$$C_e = \frac{(Q_e + Q_s)C - (Q_s \times C_s)}{(Q_e)} \quad (\text{EPA/505/2-90-001, Section 4.5.5})$$

Where C = downstream concentration C_e = effluent concentration
Cs = upstream concentration Q_e = effluent flow
Q_s = 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.

- | | |
|---|---|
| <input type="checkbox"/> Missouri or Mississippi River [10 CSR 20-7.015(2)] | <input type="checkbox"/> Special Streams [10 CSR 20-7.015(6)] |
| <input type="checkbox"/> Lakes or Reservoirs [10 CSR 20-7.015(3)] | <input type="checkbox"/> Subsurface Waters [10 CSR 20-7.015(7)] |
| <input type="checkbox"/> Losing Streams [10 CSR 20-7.015(4)] | <input checked="" type="checkbox"/> All Other Waters [10 CSR 20-7.015(8)] |
| <input type="checkbox"/> Metropolitan No-Discharge Streams [10 CSR 20-7.015(5)] | |

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
<i>Escherichia coli</i> **	#/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 | 5. Antidegradation Policy | 9. WET Test Policy |
| 2. Water Quality Standard (includes RPA) | 6. Water Quality Model | 10. Multiple Discharger Variance |
| 3. Water Quality Based Effluent Limits | 7. Best Professional Judgment | |
| 4. Antidegradation Review | 8. TMDL or Permit in lieu of TMDL | |

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 (BOD₅).** 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**.

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- **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 = 5th root of (1)(4)(6)(10)(5) = 5th 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 (BOD₅) 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 (BOD₅) and Total Suspended Solids (TSS) for Publicly Owned Treatment Works (POTWs)/municipals. This facility is required to meet 65% removal efficiency for BOD₅.
- **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 (BOD₅) 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, BOD₅ 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 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 – 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:	<u>\$60.95</u>
Current Long Term Liabilities for the District:	<u>\$17,505,740</u>
Amount within the current user rate used toward payments on outstanding debt related to the current wastewater infrastructure:	<u>\$19.43</u>

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):	<u>\$2,990,341</u>
Current user rate:	<u>\$60.95</u>

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

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

* - 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 Data⁴⁻⁸: 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 are completed, 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 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.



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- 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. 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.
 - b. 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 302 of the Act, 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 302 of the Act, 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.



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- 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.



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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.



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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