Permit No. CP0002033

STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

MISSOURI CLEAN WATER COMMISSION

CONSTRUCTION PERMIT

The Missouri Department of Natural Resources hereby issues a permit to:

Glo Homes LLC
755 Koko Loop
Union, MO 63084

for the construction of (described facilities):

See attached.

Permit Conditions:

See attached.

Construction of such proposed facilities shall be in accordance with the provisions of the Missouri Clean Water Law, Chapter 644, RSMo, and regulation promulgated thereunder, or this permit may be revoked by the Department of Natural Resources (Department).

As the Department does not examine structural features of design or the efficiency of mechanical equipment, the issuance of this permit does not include approval of these features.

A representative of the Department may inspect the work covered by this permit during construction. Issuance of a permit to operate by the Department will be contingent on the work substantially adhering to the approved plans and specifications.

This permit applies only to the construction of water pollution control components; it does not apply to other environmentally regulated areas.

March 20, 2019
Effective Date

Edward B. Galbraith, Director, Division of Environmental Quality

March 19, 2021
Expiration Date

Chris Wieberg, Director, Water Protection Program

CONSTRUCTION PERMIT

I. CONSTRUCTION DESCRIPTION

Installation of one 10,000 gallon tank partitioned into 1-6000 gallon septic compartment and 1- 4000 gallon pump compartment with two effluent filters, a chemical feed unit, a flow divider, two aerated trickling filters, and an open channel UV disinfection unit.

This project will also include general site work appropriate to the scope and purpose of the project and all necessary appurtenances to make a complete and usable wastewater treatment facility.

II. 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 not required to complete a cost analysis for compliance because the facility is not a combined or separate sanitary sewer system for a publically-owned treatment works.

III. CONSTRUCTION PERMIT CONDITIONS

The permittee is authorized to construct subject to the following conditions:

1. This construction permit does not authorize discharge.

2. All construction shall be in accordance with the plans and specifications submitted by Scheer Design Group, LLC on October 4, 2018.

3. The Department must be contacted in writing prior to making any changes to the plans and specifications that would directly or indirectly have an impact on the capacity, flow, system layout, or reliability of the proposed wastewater treatment facilities or any design parameter that is addressed by 10 CSR 20-8, in accordance with 10 CSR 20-8.110(11).

4. State and federal law does not permit bypassing of raw wastewater, therefore steps must be taken to ensure that raw wastewater does not discharge during construction. If a sanitary sewer overflow or bypass occurs, report the appropriate information to the Department's St. Louis Regional Office per 10 CSR 20-7.015(9)(G).

5. In addition to the requirements for a construction permit, 10 CSR 20-6.200 requires land disturbance activities of 1 acre or more to obtain a Missouri state operating permit to discharge stormwater. The permit requires best management practices sufficient to control runoff and sedimentation to protect waters of the state. Land disturbance permits will only be obtained by means of the Department's ePermitting system available online at dnr.mo.gov/env/wpp/epermit/help.htm. See dnr.mo.gov/env/wpp/stormwater/sw-land-disturb-permits.htm for more information.

6. A United States (U.S.) Army Corps of Engineers (COE) permit (404) and a Water Quality Certification (401) issued by the Department or permit waiver may be required for the activities described in this permit. This permit is not valid until these requirements are satisfied. If construction activity will disturb any land below the ordinary high water mark of jurisdictional waters of the U.S. then a 404/401 will be required. Since the COE makes determinations on what is jurisdictional, you must contact the COE to determine permitting requirements. You may call the Department's Water Protection Program at 573-751-1300 for more information. See dnr.mo.gov/env/wpp/401/ for more information.

7. Upon completion of construction:

   A. Chris Thompson will become the continuing authority for operation, maintenance, and modernization of these facilities;

   B. Submit an electronic copy of the as builts if the project was not constructed in accordance with previously submitted plans and specifications; and

   C. Submit the enclosed form Statement of Work Completed to the Department in accordance with 10 CSR 20-6.010(5)(N) and request the operating permit modification be issued.

IV. REVIEW SUMMARY

1. CONSTRUCTION PURPOSE

Construction is to upgrade the existing facility to meet current permitted discharge limits. Expansion at this facility was needed in response to an increase in design flow which resulted in the need for an antidegration review.

2. FACILITY DESCRIPTION

This facility currently does not have disinfection and is unable to meet ammonia limits. It has 3- 3500 septic tanks and a Microfast 9.0 extended aeration unit, Aquapoint Bioclere aerated trickling filters, and UV disinfection for treatment prior to discharging into the receiving stream. With the addition of additional primary and secondary treatment units and UV disinfection, final limits as proposed in the 2015 operation permit will be achievable.

The Westview Mobile Home Park is located at 712 Star Circle, Union, in Franklin County, Missouri. The facility has a design average flow of 9000 gpd and serves a population equivalent of approximately 156 people.

3. COMPLIANCE PARAMETERS

The proposed project is required to meet final effluent limits as established in the Water Quality and Antidegradation Review process. Daily maximum and monthly average limits for ammonia will be 1.7 and 0.6 mg/l for the summer months and 5.6 and 2.1 mg/l for the winter months. Daily maximum *E. coli* limits will be 1030 colonies per 100 ml sample.

4. ANTIDEGRADATION

The Department has reviewed the antidegradation report for this facility and issued the Water Quality and Antidegradation Review dated December 14, 2018, due to an increase in flow. See **APPENDIX – ANTIDEGRADATION**.

5. REVIEW of MAJOR TREATMENT DESIGN CRITERIA

Additional primary treatment is being added to the existing system to avoid hydraulically overloading the existing septic tanks. Flow will pass through the three 3500 gallon tanks in series by gravity to the proposed septic and pump tank. The septic compartment of the new tank is 6000 gallons. There will be 36 hours of detention storage at a design flow of 9000 gpd in the primary treatment phase. Wastewater will be time dosed to the existing 4400 gallon Microfast extended aeration unit. A Bioclere flow divider below the extended aeration unit will split the flow to two – 24/30/1600 Aquapoint Bioclere aerated trickling filters to be operated in parallel. A recycle line will be connected to these units to the original septic tanks. Discharge from the clarifiers of these units will be rejoined and directed to an Aqua Azul AZ-600 open channel, gravity flow UV disinfection unit. This model is equipped with 3 lamp modules with 6 bulbs each and is capable of handling a flow of 54 gpm. UV dose will be 30 mJ/cm^2 with a 60 percent transmissivity.

6. OPERATING PERMIT

Operating permit MO-0111902 will require a modification to reflect the construction activities. The modified Westview Mobile Home Park treatment facility, MO-0111902, was successfully public noticed from February 11, 2019 to March 11, 2019 with no comments received. Submit the Statement of Work Completed to the Department in accordance with 10 CSR 20-6.010(5)(N) and request the operating permit modification be issued.

Diane Reinhardt
Engineering Section
diane.reinhardt@dnr.mo.gov

Water Quality and Antidegradation Review

Department's Alternatives Analysis for Domestic Wastewater Facilities with Design Flow Less Than 10,000 Gallons per Day

For Protection of Water Quality
and Determination of Effluent Limits

November, 2018

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1. WATER QUALITY INFORMATION

In accordance with Missouri's Water Quality Standard [10 CSR 20-7.031(3)] and federal antidegradation policy at Title 40 Code of Federal Regulation (CFR) Section 131.12 (a), the Missouri Department of Natural Resources (Department) developed a statewide antidegradation policy and corresponding procedures to implement the policy. A proposed discharge to a water body will be required to undergo a level of Antidegradation Review which documents that the use of a water body's available assimilative capacity is justified. Effective August 30, 2008, and revised July13, 2016, a facility is required to use *Missouri's Antidegradation Implementation Procedure (AIP)* for new and expanded wastewater discharges.

2. APPLICABILITY

This Water Quality and Antidegradation Review is for facilities which produce primarily domestic wastewater and discharge less than 10,000 gallons per day. It is not applicable to facilities where the receiving waterbody, or downstream waterbodies, have a Total Maximum Daily Load (TMDL) or are 303(d) or 305(b) listed for the pollutants of concerns addressed in this alternatives analysis, with an exception for waterbodies that are listed for *E. coli* since disinfection will be required. Facilities that are currently under enforcement will need to coordinate with the Water Protection Program's compliance and enforcement section to determine applicability for the Department's Alternatives Analysis. No mixing will be included in this review for receiving waterbodies. If the applicant would like to have effluent limitation derivation include mixing considerations, a site specific alternatives analysis will need to be completed.

3. TIER DETERMINATION

Below is a list of pollutants of concern reasonably expected to be in the discharge for a domestic wastewater treatment facility. Pollutants of concern are defined as those pollutants "proposed for discharge that affects beneficial use(s) in waters of the state. POCs include pollutants that create conditions unfavorable to beneficial uses in the water body receiving the discharge or proposed to receive the discharge" (AIP, Page 7). No existing water quality data is required because all POCs were considered to be Tier 2 and significantly degrading in the absence of existing water quality. Assumed uses for the receiving waterbody are General Criteria, Protection of Warm Water Aquatic Life (AQL), Human Health Protection (HHP), Irrigation (IRR), and Livestock & Wildlife Protection (LWP). If any Tier 1 Pollutants of Concern not addressed in this alternatives analysis will be discharged, the applicant must submit *Attachment D: Tier 1 Review* (http://dnr.mo.gov/forms/780-2024-f.pdf) for those pollutants.

Table 1. Pollutants of Concern and Tier Determination

POLLUTANTS OF CONCERN	TIER*	DEGRADATION	COMMENT****
Biochemical Oxygen Demand (BOD_5)/DO	2	Significant	
Total Suspended Solids (TSS)	**	Significant	
Ammonia	2	Significant	
pH	***	Significant	Permit limits applied
Escherichia coli (*E. coli*)	2	Significant	

* Tier assumed.
** Tier determination not possible: No in-stream standard for this parameter.
*** The standard for this parameter is a range.
**** Permit limits for other parameters including Oil & Grease, Total Residual Chlorine, Nitrates, and Total Phosphorus will be applied based on water quality standards and criteria as applicable.

Total Residual Chlorine (TRC) effluent limits of 0.017 mg/L daily maximum, 0.008 mg/L monthly average are recommended if chlorine is used as a disinfectant. Standard compliance language for TRC, including the minimum level (ML), may be included in the operating permit.

4. DEMONSTRATION OF NECESSITY AND SOCIAL AND ECONOMIC IMPORTANCE

Missouri's Antidegradation Implementation Procedures (AIP) specify that if the proposed activity results in significant degradation then a demonstration of necessity (i.e., alternatives analysis) and a determination of social and economic importance are required. The applicant must submit *Attachment E: Tier 2 – Significant Degradation Using Department's Alternatives Analysis for Domestic Wastewater Facilities with Design Flow Less Than 10,000 Gallons per Day* form. This analysis will serve as the applicant's alternatives analysis to fulfill the requirements of the AIP.

A Geohydrologic Evaluation must be submitted with the Antidegradation Review Request.

A Missouri Department of Conservation Natural Heritage Review Report must be obtained by the applicant. The applicant should review the Natural Heritage Review and contact the U.S. Fish and Wildlife Service and the Missouri Department of Conservation for further coordination if necessary.

4.1. NO DISCHARGE EVALUATION

According to 10 CSR 20-6.010(4)(D), reports for the purpose of constructing a wastewater treatment facility shall consider the feasibility of constructing and operating a no discharge facility. Per the Antidegradation Implementation Procedure Section II.B.1, for discharges likely to cause significant degradation, applicants must provide an analysis of non-degrading alternatives. No-discharge alternatives may include surface land application, subsurface land application, and connection to a regional treatment facility.

The applicant must submit a *No Discharge Evaluation* form to demonstrate that a no-discharge facility is not feasible for this site. If the information provided on the form is not sufficient to demonstrate that a no-discharge facility is not feasible, a more detailed evaluation of no discharge options will be required before the Department can complete its determination.

4.2. DEMONSTRATION OF NECESSITY

The Department has used available data to complete an alternatives analysis of previously evaluated treatment technologies and expected performance. Data from forty-five Water Quality and Antidegradation Reviews (WQARs) completed between March 2011 and March 2016 was evaluated and results are presented in Figure 1, Figure 2, and Table 2 below.

The data include five facilities designed to provide a high level of treatment to meet the expected future ammonia as N effluent limits based on the 2013 EPA Ammonia criteria for the protection of mussels and gill-breathing snails (See Notice to Permittee in DERIVATION AND DISCUSSION OF LIMITS section). The data available to date indicates that the cost of facilities of this size range designed to meet 2013 EPA ammonia criteria is not substantively higher than other facilities designed to meet the current ammonia criteria.

The data include fourteen facilities designed to meet BOD and TSS effluent limits of 10 mg/L monthly average and 15 mg/L daily maximum or weekly average. The data available to date indicates that the cost of facilities designed to meet BOD and TSS effluent limits of 10 mg/L monthly average and 15 mg/L daily maximum or weekly average is not substantively higher than other facilities of this size range designed to meet less stringent BOD and TSS effluent limits.

Facilities which were designed to meet limits based on the 2013 EPA ammonia criteria included a membrane bioreactor, extended aeration package plant, recirculating sand filter with moving bed biofilm reactor, sequencing batch reactor, and an integrated fixed film activated sludge system.

Membrane bioreactor (MBR) systems combine a suspended growth biological reactor with solids removal via filtration across a membrane. The membranes can be designed for and operated in small spaces and with high removal efficiency of contaminants such as nitrogen, phosphorus, bacteria, biochemical oxygen demand, and total suspended solids. Membrane filtration allows a higher biomass concentration to be maintained in the treatment tank, thereby allowing smaller bioreactors to be used for a smaller footprint. MBR systems provide operational flexibility with respect to flow rates, as well as the ability to readily add or subtract units as needed, but that flexibility has limits. Membranes typically require that the water surface be maintained above a minimum elevation so that the membranes remain wet during operation. Throughput limitations are dictated by the physical properties of the membrane, and the result is that peak design flows generally should be no more than 1.5 to 2 times the average design flow. If peak flows exceed that limit, additional membranes may be needed to process the peak flow, or equalization may need to be included in the design. MBR systems typically have higher capital and operating costs than conventional systems.

The extended aeration process is a modification of the activated sludge process which provides biological treatment for the removal of biodegradable organic wastes under aerobic conditions. Wastewater in the aeration tank is mixed and oxygen is provided to the microorganisms. The mixed liquor then flows to a clarifier or settling chamber where most microorganisms settle to the bottom of the clarifier and a portion are pumped back to the beginning of the plant. The clarified wastewater flows over a weir and into a collection channel before being disinfected and discharged. Extended aeration is often used in smaller prefabricated package-type plants where lower operating efficiency is offset by mechanical simplicity and minimized design costs. In comparison to traditional activated sludge, longer mixing time with aged sludge and light loading (low F:M) offers a stable biological ecosystem better adapted for effectively treating waste load fluctuations from variable occupancy situations. Although the process is stable and easier to operate, extended aeration systems may discharge higher effluent suspended solids than found under conventional loadings.

Moving Bed Bioreactor (MBBR) systems may be a single aerated reactor, or several in series, with a buoyant free-moving plastic biofilm carrier media. MBBR systems can be designed to be capable of meeting more stringent total nitrogen limits. They produce a significantly reduced solids loading to the liquid-solids separation unit, the biofilm improves process stability, they offer flexibility to meet specific treatment objectives, and they are well suited for retrofit into existing treatment systems. MBBR systems require a smaller tank volume than a conventional activated sludge system and therefore have a smaller footprint. Adequate mixing must be provided to ensure that free floating media remains uniformly distributed and screens must be provided to retain the media within the reactors.

Integrated fixed film activated sludge (IFAS) systems add fixed or free floating media to an activated sludge basin. The process gets its name from combining a conventional activated sludge process with a fixed film system. This treatment system is similar to an MBBR; however MBBR systems do not recycle sludge. IFAS systems are often installed as a retrofit solution to conventional activated sludge systems. They require a smaller tank volume than a conventional activated sludge system and therefore have a smaller footprint. The biofilm combines aerobic, anaerobic, and anoxic zones promoting better nitrification compared to conventional activated sludge systems and the biofilm improves process stability. Adequate mixing must be provided to ensure that free floating media remains uniformly distributed and to slough biomass from the media. Higher dissolved oxygen concentrations may be required as compared to conventional activated sludge. Screens must be provided to retain the media within the reactors.

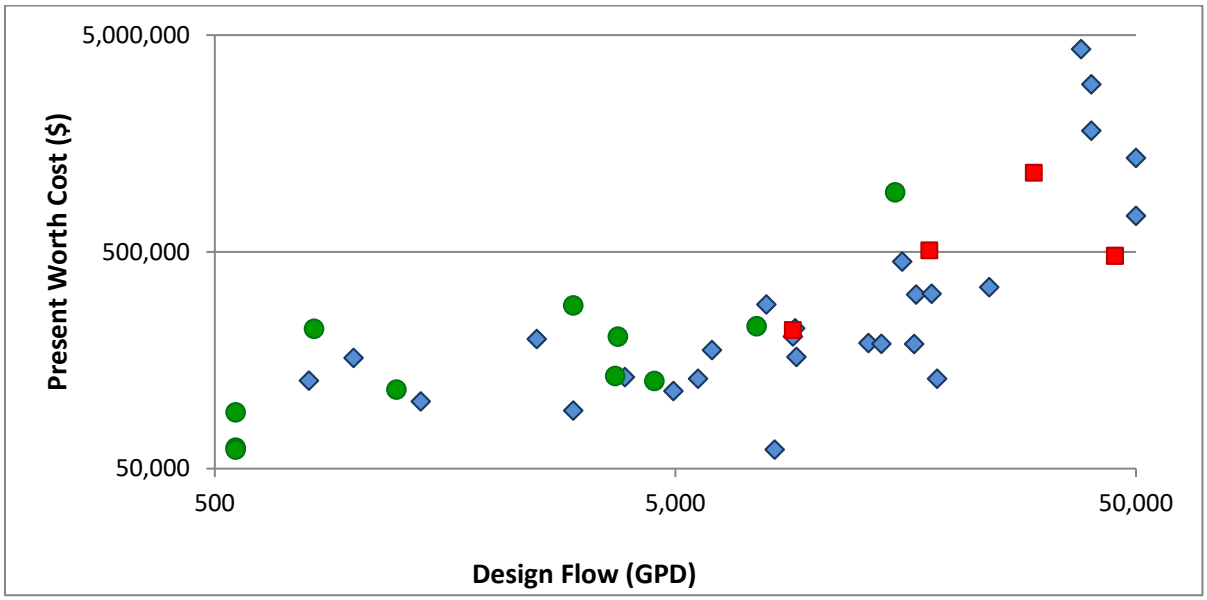
In addition to the treatment technologies listed above, all of which had previous WQARs that established advanced ammonia limits, there are other technology alternatives that can meet the advanced ammonia limits including recirculating sand filter, recirculating textile filter, conventional activated sludge, oxidation ditch, and lagoon retrofits. To obtain this level of performance, all technologies must be properly designed to accommodate nitrification and de-nitrification and they must be properly and actively operated.

Recirculating sand filters (RSF) remove contaminants in wastewater through physical, chemical, and, most importantly, biological processes. The three common components are a pretreatment unit (generally a septic tank), a recirculation tank, and a sand filter. In the recirculation tank, raw effluent from the septic tank and the sand filter filtrate are mixed and pumped back to the sand filter bed. RSFs are effective in applications with high levels of BOD and can provide a good effluent quality with 85 - 95% removal of BOD and TSS. They can be designed to provide nitrification, but this requires increased surface area. Treatment is affected by extremely cold weather. Treatment capacity can be expanded through modular design. RSFs require routine maintenance, although the complexity of maintenance is generally minimal.

Recirculating textile filters systems are configured similar to an RSF except the filter media is an engineered fabric textile. They can be configured to provide nitrification, but this may require additional treatment units. They have a small operating footprint, are more aesthetically pleasing than some other treatment options, produce minimal noise, have the ability to handle variable flows, and have simple maintenance.

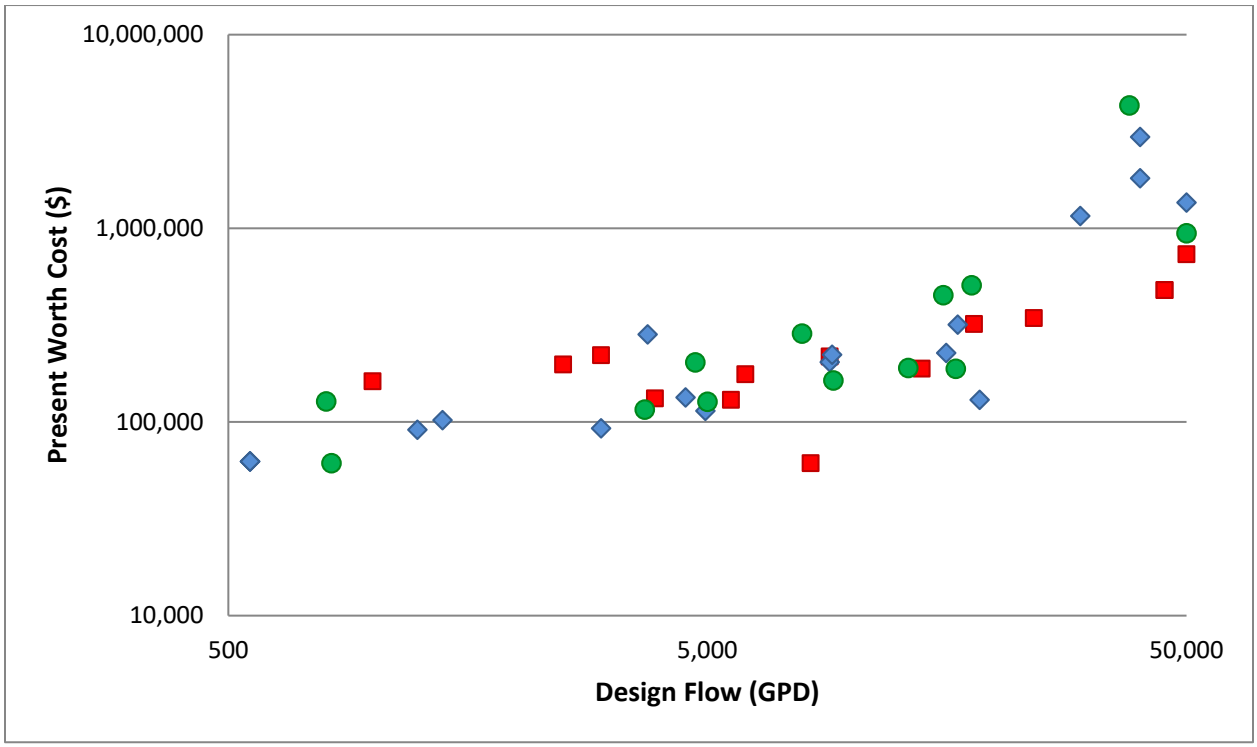
The above treatment system descriptions were adapted from EPA technology fact sheets and *Design of Municipal Wastewater Treatment Plants: WEF Manual of Practice No. 8 ASCE Manuals and Reports on Engineering Practice No. 76; Fifth Edition*, as well as other readily available sources and previous Water Quality and Antidegradation Reviews.

FIGURE 1. DESIGN FLOW VS. PRESENT WORTH COST VS. AMMONIA LIMITS



LEGEND		Summer Ammonia (mg/L)		Winter Ammonia (mg/L)	
		Daily Max	Monthly Avg.	Daily Max	Monthly Avg.
2013 EPA Criteria	■	≤1.7	≤0.6	≤5.6	≤2.1
Existing Aquatic Life Criteria (no mixing)	◆	approx. 3.7	approx. 1.4	approx. 7.5	approx. 2.9
Less Stringent (mixing)	●	>3.7	>1.4	>7.5	>2.9

FIGURE 2. DESIGN FLOW VS. PRESENT WORTH COST VS. BOD & TSS LIMITS



LEGEND	BOD (mg/L)		TSS (mg/L)	
	Daily Max	Monthly Avg.	Daily Max	Monthly Avg.
■	15	10	15	10
◆	15	10	>15	>10
●	>15	>10	>15	>10

TABLE 2. DESIGN FLOW VS. PRESENT WORTH COST

DATE	Design Flow (MGD)	Technology	BOD (mg/L)		TSS (mg/L)		Summer Ammonia (mg/L)		Winter Ammonia (mg/L)		Present Worth Cost ($)	$ PW/gpd
			Daily Max or Weekly Average	Monthly Average	Daily Max or Weekly Average	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Monthly Average		
5/2/2012	0.000555	Recirculating Fabric Filter	15	10	20	15	12.1	4.6	12.1	4.6	62,506	113
4/2/2013	0.000555	Recirculating Fabric Filter	15	10	20	15	12.1	4.6	12.1	4.6	62,506	113
10/1/2014	0.000555	Extended Aeration Package Plant	15	10	22.5	15	7.8	3	7.8	3	62,506	113
4/4/2012	0.000800	Recirculating Fabric Filter	30	15	30	15	4	1.5	7.7	2.9	127,427	159
12/1/2013	0.000821	Membrane Bioreactor	30	20	30	20	12.1	4.6	12.1	4.6	61,240	75
9/2/2012	0.001000	Recirculating Fabric Filter	15	10	15	10	3.7	1.4	7.5	2.9	162,007	162
7/6/2011	0.001240	Recirculating Fabric Filter	15	10	22	15	6	3	6	3	91,000	73
1/1/2015	0.001400	Recirculating Fabric Filter	15	10	23	15	3.7	1.4	7.6	2.9	102,174	73
5/5/2011	0.002500	Extended Aeration	15	10	15	10	3.7	1.4	7.5	2.9	198,000	79
9/1/2011	0.003000	Recirculating Fabric Filter	15	10	15	10	12.1	4.6	12.1	4.6	220,915	74
3/1/2012	0.003000	Extended Aeration Package Plant	15	10	20	15	3.7	1.4	7.5	2.9	92,604	31
2/22/2016	0.003700	Recirculating Rock Filter	30	20	30	20	7.3	2.8	7.3	2.8	115,688	31
7/4/2011	0.003750	Recirculating Fabric Filter	15	10	20	15	12.1	4.6	12.1	4.6	283,000	75
4/1/2014	0.003885	Recirculating Sand Filter	15	10	15	10	3.7	1.4	7.5	2.9	132,185	34
12/1/2012	0.004500	Recirculating Sand Filter	15	10	23	15	12.1	4.6	12.1	4.6	133,676	30
6/3/2013	0.004718	Recirculating Sand Filter	30	20	30	20	12.1	4.6	12.1	4.6	203,060	43
11/2/2011	0.004950	Recirculating Sand Filter	15	10	20	15	3.5	1.4	7.5	2.9	114,058	23
6/4/2011	0.005000	Moving Bed Biofilm Reactor	45	30	45	30	5.7	2.2	8.2	3.2	127,000	25
9/6/2012	0.005600	Extended Aeration with Filtration and Aerated Holding Tanks	15	10	15	10	3.7	1.4	7.5	2.9	130,000	23
6/1/2011	0.006000	Recirculating Sand Filter	15	10	15	10	3.7	1.4	7.5	2.9	176,239	29
3/1/2011	0.007875	Modular Fixed Film Activated Sludge with Constructed Wetlands	30	20	30	20	3.7	1.4	7.5	2.9	285,780	36
4/3/2012	0.008210	Membrane Bioreactor	15	10	15	10	2.6	1	2.6	1	61,240	7
8/5/2014	0.009000	Recirculating Sand Filter	15	10	20	15	3.1	1.2	7.5	2.9	203,698	23
1/1/2014	0.009000	Membrane Bioreactor	15	10	15	10	1.6	0.6	5.5	2.1	217,739	24
4/6/2012	0.009100	Membrane Bioreactor	15	10	20	15	3.7	1.4	7.5	2.9	222,160	24
3/7/2012	0.009158	Recirculating Gravel filter	30	20	30	20	3.7	1.5	6.5	2.5	163,681	18
6/1/2014	0.013125	Recirculating Sand Filter	45	30	45	30	3	1.1	6	2.3	189,985	14
8/4/2012	0.014000	Extended Aeration	15	10	15	10	3.7	1.4	7.5	2.8	188,208	13
7/1/2014	0.015540	Recirculating Sand Filter	23	15	23	15	3.9	1.5	7.8	3	450,986	29
7/5/2011	0.015750	Recirculating Sand Filter	15	10	20	15	7.8	2.5	7.8	2.5	226,969	14
2/27/2015	0.016500	Extended Aeration Package Plant	45	30	45	30	3.7	1.4	7.5	2.9	187,957	11
7/1/2012	0.016650	Extended Aeration	15	10	20	15	3.7	1.4	7.5	2.9	317,750	19
9/3/2014	0.017800	Extended Aeration Package Plant	45	30	45	30	1.4	0.6	2.9	2.1	507,618	29
5/11/2015	0.018000	Recirculating Sand Filter, Polishing Reactor, Chemical Phosphorus Removal	15	10	15	10	3.7	1.4	6.5	2.1	320,318	18
7/3/2013	0.018500	Recirculating Fabric Filter with Chemical & Filter Phosphorus Removal	15	10	20	15	3.7	1.4	7.5	2.9	130,000	7

2/27/2015	0.024000	Recirculating Gravel Filter	**15**	**10**	**15**	**10**	**3.7**	**1.4**	**6.5**	**2.1**	343,816	14
9/1/2014	0.030000	Recirculating Sand Filter, Moving Bed Biofilm Reactor, Chemical Phosphorus removal	**15**	**10**	**20**	**15**	**1.7**	**0.6**	**5.6**	**2.1**	1,157,390	39
6/2/2012	0.038000	Aerated Lagoon with Recirculating Sand Filter	**45**	**30**	**45**	**30**	**3.7**	**1.4**	**7.5**	**2.9**	4,309,665	113
2/3/2013	0.040000	Moving Bed Biofilm Reactor (can be operated as IFAS)	**15**	**10**	**20**	**15**	**3.7**	**1.4**	**7.5**	**2.9**	2,963,181	74
8/20/2015	0.040000	Recirculating Sand Filter, Moving Bed Biofilm Reactor	**15**	**10**	**20**	**15**	**3.7**	**1**	**5.6**	**2.1**	1,812,000	45
6/4/2013	0.045000	Moving Bed Biofilm Reactor	**15**	**10**	**15**	**10**	**1.7**	**0.6**	**5.6**	**2.1**	479,344	11
3/9/2016	0.045000	Moving Bed Biofilm Reactor	**15**	**10**	**15**	**10**	**1.7**	**0.6**	**5.6**	**2.1**	479,344	11
6/4/2012	0.050000	New Technology Package Plant	**30**	**20**	**30**	**20**	**7.5**	**2.9**	**7.5**	**2.9**	942,050	19
7/3/2011	0.050000	Extended Aeration Package Plant	**15**	**10**	**20**	**15**	**3.7**	**1.4**	**7.5**	**2.9**	1,357,506	27
8/3/2014	0.050000	Recirculating Sand Filter	**15**	**10**	**15**	**10**	**3.7**	**1.4**	**7.5**	**2.9**	733,723	15

Additionally, the table of wastewater treatment technologies in the *Ammonia Criteria: New EPA Recommended Criteria* factsheet located at http://dnr.mo.gov/pubs/pub2481.htm includes several technologies which have demonstrated capability in meeting ammonia effluent limits of less than 0.7 mg/L when designed appropriately.

As a result of this alternatives analysis, the Department has determined that for a facility which discharges less than 10,000 gallons per day, depending on site specific conditions, there are technologies available which may be economically efficient and practicable that are capable of meeting the effluent limitations in Table 3. If the facility owners do not believe that there is a treatment technology that is both economically efficient and practicable for their facility to meet the limits in Table 3, a site specific alternatives analysis may be required.

4.3. DESIGN FLOW DETERMINATION

As part of the Department's alternatives analysis, facilities up to 50,000 gallons per day were evaluated. A design flow maximum of 10,000 gallons per day was chosen for applicability of this alternatives analysis for a variety of reasons. As facilities increase in size, site specific factors may require a more site specific alternatives analysis. For example, larger facilities are more likely to have wet weather flows that must be addressed and are more likely to need Whole Effluent Toxicity testing or nutrient monitoring. Larger facilities are also more likely to discharge a larger variety of pollutants of concern which may not be addressed in this review. Larger facilities also benefit from an economy of scale; smaller facilities tend to have a higher cost per gallon of wastewater treated, which is distributed over fewer paying customers. Finally, as we are working with a limited amount of data, limiting the design flow applicability for the Department's alternatives analysis ensures a factor of safety in our review.

4.4. REGIONALIZATION ALTERATIVE

Within Section II B 1. of the AIP, discussion of the potential for discharge to a regional wastewater collection system is mentioned. The applicant must provide justification for not pursuing regionalization on the *No Discharge Evaluation* form. If the information provided on the form is not sufficient to demonstrate that a regionalization alternative is not feasible, a more detailed evaluation will be required before the Department can complete its determination.

4.5. LOSING STREAM ALTERATIVE DISCHARGE LOCATION

Under 10 CSR 20-7.015(4)(A), *discharges to losing stream shall be permitted only after other alternatives including land application, discharge to gaining stream and connection to a regional facility have been evaluated and determined to be unacceptable for environmental and/or economic reasons*.

Information provided by the applicant on the *No Discharge Evaluation* form must include evaluation and justification for why the owner is not pursuing land application, or connection to a regional facility.

4.6. SOCIAL AND ECONOMIC IMPORTANCE EVALUATION

Missouri's antidegradation implementation procedures specify that if the proposed activity results in significant degradation then a determination of social and economic importance is required.

Information provided by the applicant in the *Attachment E: Tier 2 – Significant Degradation Using Department's Alternatives Analysis for Domestic Wastewater Facilities with Design Flow Less Than 10,000 Gallons per Day* form must include a detailed social and economic importance evaluation. If the information provided on the form is not sufficient to demonstrate important social and economic importance, then a more detailed evaluation will be required before the Department can complete its determination.

6. General Assumptions of the Water Quality and Antidegradation Review

1. A Water Quality and Antidegradation Review (WQAR) assumes that [10 CSR 20-6.010(3) Continuing Authorities and 10 CSR 20-6.010(4) (D), consideration for no discharge] has been or will be addressed in a Missouri State Operating Permit or Construction Permit Application.

2. A WQAR does not indicate approval or disapproval of alternative analysis as per [10 CSR 20-7.015(4) Losing Streams], and/or any section of the effluent regulations.

3. Changes to Federal and State Regulations made after the drafting of this WQAR may alter Water Quality Based Effluent Limits (WQBEL).

4. Effluent limitations derived from Federal or Missouri State Regulations (FSR) may be WQBEL or Effluent Limit Guidelines (ELG).

5. WQBEL supersede ELG only when they are more stringent. Mass limits derived from technology based limits are still appropriate.

6. A WQAR does not allow discharges to waters of the state, and shall not be construed as a National Pollution Discharge Elimination System or Missouri State Operating Permit to discharge or a permit to construct, modify, or upgrade.

7. Limitations and other requirements in a WQAR may change as Water Quality Standards, Methodology, and Implementation procedures change.

8. Nothing in this WQAR removes any obligations to comply with county or other local ordinances or restrictions.

9. If the proposed treatment technology is not covered in 10 CSR 20-8 Design Guides, the treatment process may be considered a new technology. As a new technology, the permittee will need to work with the review engineer to ensure equipment is sized properly. The operating permit may contain additional requirements to evaluate the effectiveness of the technology once the facility is in operation. This Antidegradation Review is based on the information provided by the facility and is not a comprehensive review of the proposed treatment technology. If the review engineer determines the proposed technology will not consistently meet proposed effluent limits, the permittee will be required to revise their Antidegradation Report.

7. Permit Limits and Monitoring Information

Table 3. Effluent Limits – All Outfalls

Parameter	Units	Daily Maximum	Weekly Average	Monthly Average	Basis for Limit (note 1)	Monitoring Frequency
Flow	MGD	*		*	FSR	Once/Month
Biochemical Oxygen Demand$_5$ **	mg/L		15	10	PEL	Once/Month
Total Suspended Solids **	mg/L		15	10	PEL	Once/Month
pH	SU	6.5– 9.0		6.5 – 9.0	FSR	Once/Month
Ammonia as N (Apr 1 – Sept 30)	mg/L	1.7		0.6	PEL	Once/Month
Ammonia as N (Oct 1 – Mar 31)	mg/L	5.6		2.1	PEL	Once/Month
WBC(A) (note 2)	#/100mL	630***		126	FSR	Once/Month

ESCHERICHIA COLIFORM (*E. COLI*)	WBC(B) (NOTE 2)	#/100ML	1030***	206	FSR	ONCE/MONTH
	LOSING STREAM (NOTE 3)	#/100ML	126***	*	FSR	ONCE/MONTH

* Monitoring requirements only.

** Publicly owned treatment works will be required to meet a removal efficiency of 85% or more for BOD_5 and TSS. Influent BOD_5 and TSS data should be reported to ensure removal efficiency requirements are met.

*** Publicly owned treatment works will receive a weekly average *E. coli* limit and private facilities will receive a daily maximum *E. coli* limit.

NOTE 1 – PREFERRED ALTERNATIVE EFFLUENT LIMIT – PEL; OR FEDERAL/STATE REGULATION – FSR. ALSO, PLEASE SEE THE **GENERAL ASSUMPTIONS OF THE WQAR #4 & #5.**

NOTE 2 - Effluent limitations and monitoring requirements for *E. coli* for WBC(A) and WBC(B)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 3 – Effluent limits and monitoring requirements for *E. coli* are applicable year round for designated losing streams. No more than 10% of samples over the course of a calendar year shall exceed the 126 #/100 mL daily maximum.

Permit limits for other applicable parameters, including Oil & Grease, Total Residual Chlorine, Nitrates, and Total Phosphorus, will be included in the operating permit based on water quality standards and criteria as applicable.

8. RECEIVING WATER MONITORING REQUIREMENTS

No receiving water monitoring requirements recommended at this time.

9. DERIVATION AND DISCUSSION OF LIMITS

Water quality-based – Using water quality criteria or water quality model results and the dilution equation below:

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

Where C = downstream concentration
C_s = upstream concentration
Q_s = upstream flow
C_e = effluent concentration
Q_e = effluent flow

Chronic wasteload allocations were determined using applicable chronic water quality criteria (CCC: criteria continuous concentration). Acute wasteload allocations were determined using applicable water quality criteria (CMC: criteria maximum concentration).

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).

Note: Under 40 CFR 133.105, permitting authorities shall require more stringent limitations than equivalent to secondary treatment limitations for 1) existing facilities if the permitting authority determines that the 30-day average and 7-day average BOD_5 and TSS effluent values that could be achievable through proper operation and maintenance of the treatment works, and 2) new facilities if the permitting authority determines that the 30-day average and 7-day average BOD_5 and TSS effluent values that could be achievable through proper operation and maintenance of the treatment works, considering the design capability of the treatment process.

9.1. LIMIT DERIVATION

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

- **Biochemical Oxygen Demand (BOD_5).** BOD_5 limits of 10 mg/L monthly average and 15 mg/L average weekly were determined by the Department to be achievable and protective of beneficial uses and existing water quality.

  As per the *DO Modeling & BOD Effluent Limit Development Administrative Guidance for the Purpose of Conducting Water Quality Assistance Reviews*, facilities less than 100,000 gallons per day, and proposing BOD treatment less than or equal to an average monthly of 10 mg/L and average weekly of 15 mg/L as demonstrated by performance specifications from a manufacturer or effluent sampling of an existing facility with the same treatment facility are exempt from the DO modeling requirement. See http://dnr.mo.gov/env/wpp/permits/docs/DO_Modeling_Administrative_Guidance_Dec_09.pdf.

  Influent monitoring may be required for this facility in its Missouri State Operating Permit.

- **Total Suspended Solids (TSS).** TSS limits of 10 mg/L monthly average and 15 mg/L average weekly were determined by the Department to be achievable based and protective of beneficial uses and existing water quality. According to EPA, because TSS and BOD are closely correlated, we apply the same limits for TSS as BOD.

  Influent monitoring may be required for this facility in its Missouri State Operating Permit.

  - **pH**. – 6.5-9.0 SU. Technology based effluent limitations of 6.0-9.0 SU [10 CSR 20-7.015] are not protective of the Water Quality Standard, which states that water contaminants shall not cause pH to be outside the range of 6.5-9.0 SU. No mixing zone is allowed when using the Department's Alternatives Analysis, therefore the water quality standard must be met at the outfall.

  - **Total Ammonia Nitrogen**. The Department has determined that the alternatives analysis-based technology limits of 0.6 mg/L monthly average and 1.7 mg/L daily maximum in summer, and 2.1 mg/L monthly average and 5.6 mg/L daily maximum in winter are achievable by some treatment technologies. Because these limits are more protective than the water quality-based limits calculated below for a stream with no mixing, the technology-based limits were used.

  In choosing to use the Department's alternatives analysis, the facility is electing to build a treatment plant that provides a high level of treatment that meets the expected future limits based on the 2013 EPA Ammonia criteria and will potentially reduce the need to upgrade in the near future (See Notice to Permittee below). If the facility owners do not believe that there is a treatment technology that is both economically efficient and practicable for their facility to meet these limits, a site specific alternatives analysis may be required.

  Water Quality-Based Effluent Limits (WQBEL):
  Early Life Stages Present Total Ammonia Nitrogen criteria apply
  [10 CSR 20-7.031(5)(B)7.C. & Table B3]. Background total ammonia nitrogen = 0.01 mg/L

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

Summer: April 1 – September 30, Winter: October 1 – March 31.

Summer

$C_e = (((Q_e+Q_s)*C) - (Q_s*C_s))/Q_e$

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

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

LTA_c = 1.5 mg/L (0.780) = **1.2 mg/L** [CV = 0.6, 99th Percentile, 30 day avg.]
LTA_a = 12.1 mg/L (0.321) = 3.88 mg/L [CV = 0.6, 99th Percentile]

MDL = 1.2 mg/L (3.11) = 3.7 mg/L [CV = 0.6, 99th Percentile]
AML = 1.2 mg/L (1.19) = 1.4 mg/L [CV = 0.6, 95th Percentile, n = 30]

Winter

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

Acute WLA: $C_e = ((Q_e + 0.0)12.1 – (0.0025 * 0.01))/Q_e = 12.1$ mg/L

LTA_c = 3.1 mg/L (0.780) = **2.4 mg/L** [CV = 0.6, 99th Percentile, 30 day avg.]
LTA_a = 12.1 mg/L (0.321) = 3.9 mg/L [CV = 0.6, 99th Percentile]

MDL = 2.4 mg/L (3.11) = 7.5 mg/L [CV = 0.6, 99th Percentile]
AML = 2.4 mg/L (1.19) = 2.9 mg/L [CV = 0.6, 95th Percentile, n = 30]

	Maximum Daily Limit (mg/l)		Average Monthly Limit (mg/l)	
	Summer	Winter	Summer	Winter
WQBEL	3.7	7.5	1.4	2.9
Alternatives Analysis Limits	1.7	5.6	0.6	2.1

Notice to Permittee:

On August 22, 2013, the U.S. Environmental Protection Agency (EPA) published a notice in the Federal Register announcing the final national recommended ambient water quality criteria for protection of aquatic life from the effects of ammonia in freshwater. The EPA's guidance, *Final Aquatic Life Ambient Water Quality Criteria for Ammonia – Fresh Water 2013*, is not a rule, nor automatically part of a state's water quality standards. States must adopt new ammonia criteria consistent with EPA's published ammonia criteria into their water quality standards that protect the designated uses of the water bodies.

The Water Protection Program (WPP) is providing this notice to inform permittees that EPA's published ammonia criteria for aquatic life protection is lower than the current Missouri criteria. The Department of Natural Resources has initiated stakeholder discussions on how to best incorporate these new criteria into the State's rules. A date for when this rule change will occur has not been determined. The ammonia effluent limits proposed in this WQAR are expected to meet the new EPA criteria where mussels of the family Unionidae are present or expected to be present for a facility in a location that discharges to a

receiving stream with no mixing. More information about the new ammonia criteria for aquatic life protection may be found at: http://dnr.mo.gov/pubs/pub2481.htm.

- ***Escherichia coli (E. coli)***. Limits will be applied based on the receiving stream designated use.

  Whole Body Contact (A): Monthly average of 126 per 100 mL as a geometric mean and Daily Maximum or Weekly Average as a geometric mean of 630 per 100 mL during the recreational season (April 1 – October 31), to protect Whole Body Contact Recreation (A) designated use of the receiving water body, as per 10 CSR 20-7.031(5)(C) and 10 CSR 20-7.015 (9)(B)1. An effluent limit for both monthly average and daily maximum or weekly average is required by 40 CFR 122.45(d). Publicly owned treatment works will receive weekly average limits, while non-publicly owned treatment works will receive daily maximum limits.

  Whole Body Contact (B): Monthly average of 206 per 100 mL as a geometric mean and Daily Maximum or Weekly Average as a geometric mean of 1030 per 100 mL during the recreational season (April 1 – October 31), to protect Whole Body Contact Recreation (B) designated use of the receiving water body, as per 10 CSR 20-7.031(5)(C) and 10 CSR 20-7.015 (9)(B)1. An effluent limit for both monthly average and daily maximum or weekly average is required by 40 CFR 122.45(d). Publicly owned treatment works will receive weekly average limits, while non-publicly owned treatment works will receive daily maximum limits.

  Losing Stream: Discharges to losing streams shall not exceed 126 per 100 mL as a Daily Maximum at any time, as per 10 CSR 20-7.031(5)(C). Monitoring only for a monthly average. No more than 10% of samples over the course of the calendar year shall exceed 126 #/100 mL daily maximum as per 10 CSR 20-7.015(9)(B)1.G.

  Per the effluent regulations, the *E. coli* sampling/monitoring frequency for facilities less than 100,000 gallons per day shall be set to match the monitoring frequency of wastewater and sludge sampling program for the receiving water category in 7.015(1)(B)3. during the recreational season (April 1 – October 31), with compliance to be determined by calculating the geometric mean of all samples collected during the reporting period (samples collected during the calendar week for the weekly average, and samples collected during the calendar month for the monthly average). Please see GENERAL ASSUMPTIONS OF THE WQAR #7

- **Total Residual Chlorine (TRC)**. These limits will apply to facilities which chlorinate. Warm-water Protection of Aquatic Life CCC = 10 µg/L, CMC = 19 µg/L [10 CSR 20-7.031, Table A]. Background TRC = 0.0 µg/L.

  $C_e = (((Q_e+Q_s)*C) - (Q_s*C_s))/Q_e$

  Chronic WLA: $C_e = ((Q_e + 0.0)10 – (0.0 * 0.0))/ Q_e = 10$ µg/L

  Acute WLA: $C_e = ((Q_e + 0.0)19 – (0.0 * 0.0))/ Q_e = 19$ µg/L

  LTA_c = 10 µg/L (0.527) = **5.3 µg/L** [CV = 0.6, 99th Percentile]
  LTA_a = 19 µg/L (0.321) = 6.1 µg/L [CV = 0.6, 99th Percentile]

  MDL = **5.3 µg/L** (3.11) = 16.5 µg/L [CV = 0.6, 99th Percentile]
  AML = **5.3 µg/L** (1.55) = 8.2 µg/L [CV = 0.6, 95th Percentile, n = 4]

Total Residual Chlorine effluent limits of 0.017 mg/L daily maximum, 0.008 mg/L monthly average are recommended if chlorine is used as a disinfectant. Standard compliance language for TRC, including the minimum level (ML), should be included in the permit.

- **Oil & Grease**. These limits will apply to publicly owned treatment works and may apply to other facilities as appropriate. Conventional pollutant, [10 CSR 20-7.031, Table A]. Effluent limitation for protection of aquatic life; 10 mg/L monthly average, 15 mg/L daily maximum.

- **Total Phosphorus.** Discharges to Table Rock Lake and Lake Taneycomo watersheds shall meet 0.5 mg/L per 10 CSR 20-7.015(3). Discharges to the White River Basin and outside of the area designated above for phosphorus limitations shall have monitoring only for phosphorus at a frequency the same as BOD and TSS as per 10 CSR 20-7.015(3)(E).

Permit limits for any other applicable parameters may be included in the operating permit based on water quality standards and criteria as applicable.

10. ANTIDEGRADATION REVIEW PRELIMINARY DETERMINATION

The proposed new or expanded facility discharge is assumed to result in significant degradation of the receiving waterbody. The Department has used available data to complete a review of available treatment technologies and expected performance. As a result of this review, the Department has determined that, depending on site specific conditions, there may be technologies available which are economically efficient and practicable for a facility that are capable of meeting the effluent limits in Table 3. If the facility owners do not believe that there is a treatment technology that is both economically efficient and practicable for their facility to meet the limits in Table 3, a site specific WQAR may be requested.

Any treatment option designed to meet these effluent limits may be considered a reasonable alternative in moving forward with the appropriate facility plan, construction permit application, or other future submittals.

If the proposed treatment system is not covered in 10 CSR 20-8 Design Guides and is considered a new treatment technology, your construction permit application must address approvability of the technology in accordance with the *New Technology Definitions and Requirements* factsheet available at http://dnr.mo.gov/pubs/pub2453.htm. If you have any questions regarding the new technology factsheet, please contact Cindy LePage of the Water Protection Program. The permittee will need to work with the review engineer to ensure equipment is sized properly and that the technology will consistently achieve the proposed effluent limits. The operating permit may contain additional requirements to evaluate the effectiveness of the technology once the facility is in operation.

Per the requirements of the AIP, the effluent limits in this review were developed to be protective of beneficial uses and to attain the highest statutory and regulatory requirements. The Department has determined that the submitted review is sufficient and meets the requirements of the AIP. No further analysis is needed for this discharge.

WATER PROTECTION PROGRAM

John Rustige, P.E.
Wastewater Engineering Unit Chief

Appendix A: Map of Discharge Location

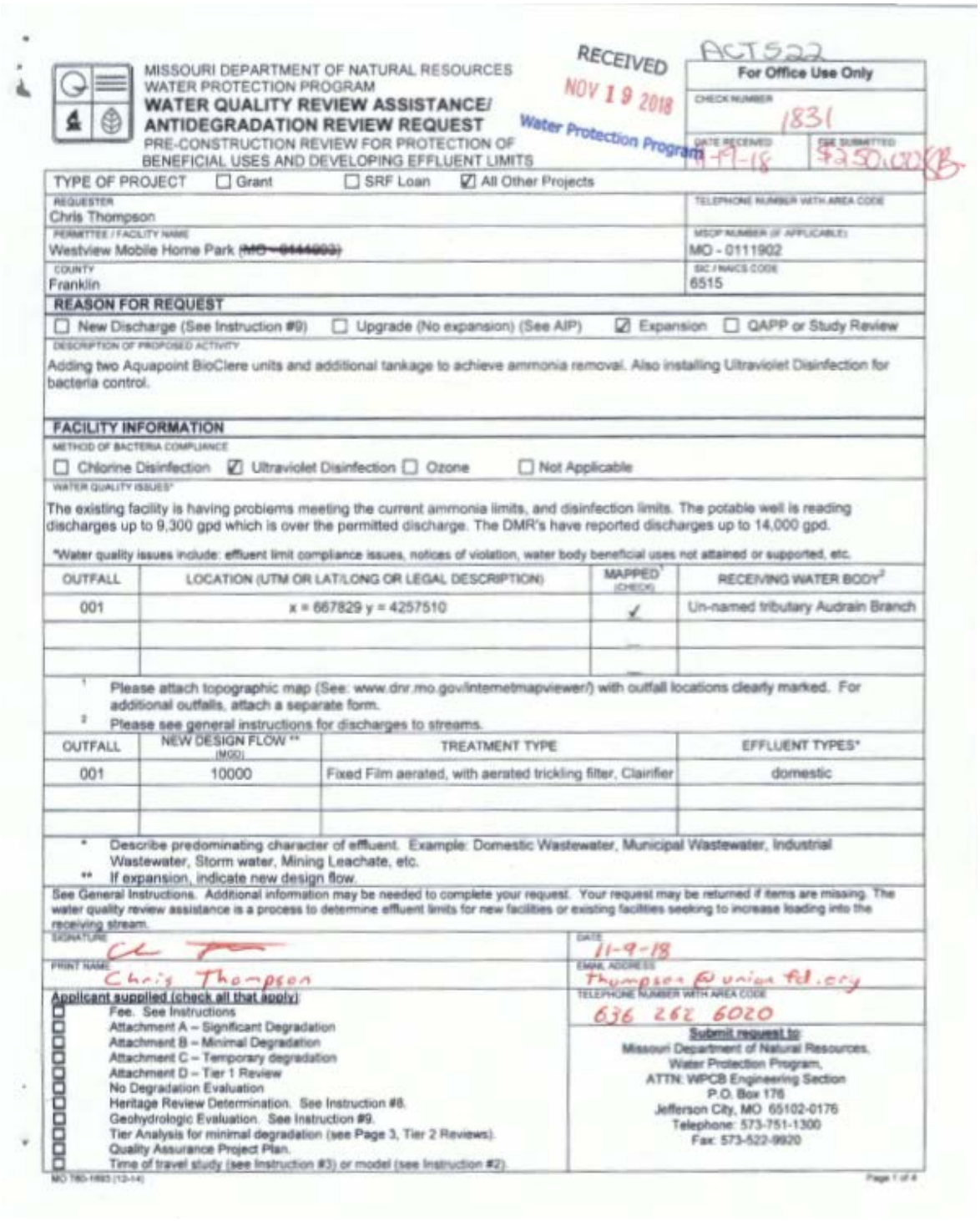
(*A USGS topographic map can be obtained on the web at http://www.dnr.mo.gov/internetmapviewer/.*)

Appendix B: Antidegradation Review Summary Attachments

The attachments that follow contain summary information provided by the applicant.

Department staff determined that the following changes must be made to the information contained within these attachments:

1) Water Quality Review Assistance/Antidegradation Review Request form:



MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM
WATER QUALITY REVIEW ASSISTANCE/ ANTIDEGRADATION REVIEW REQUEST
PRE-CONSTRUCTION REVIEW FOR PROTECTION OF BENEFICIAL USES AND DEVELOPING EFFLUENT LIMITS

RECEIVED NOV 19 2018 Water Protection Program

ACT522

For Office Use Only
CHECK NUMBER 1831
DATE RECEIVED 11-19-18
FEE SUBMITTED $250.00 CB

TYPE OF PROJECT ☐ Grant ☐ SRF Loan ☑ All Other Projects

REQUESTER: Chris Thompson
TELEPHONE NUMBER WITH AREA CODE:
PERMITTEE / FACILITY NAME: Westview Mobile Home Park ~~(MO-0144903)~~
MSOP NUMBER (IF APPLICABLE): MO - 0111902
COUNTY: Franklin
SIC / NAICS CODE: 6515

REASON FOR REQUEST

☐ New Discharge (See Instruction #9) ☐ Upgrade (No expansion) (See AIP) ☑ Expansion ☐ QAPP or Study Review

DESCRIPTION OF PROPOSED ACTIVITY:
Adding two Aquapoint BioClere units and additional tankage to achieve ammonia removal. Also installing Ultraviolet Disinfection for bacteria control.

FACILITY INFORMATION

METHOD OF BACTERIA COMPLIANCE
☐ Chlorine Disinfection ☑ Ultraviolet Disinfection ☐ Ozone ☐ Not Applicable

WATER QUALITY ISSUES*
The existing facility is having problems meeting the current ammonia limits, and disinfection limits. The potable well is reading discharges up to 9,300 gpd which is over the permitted discharge. The DMR's have reported discharges up to 14,000 gpd.

*Water quality issues include: effluent limit compliance issues, notices of violation, water body beneficial uses not attained or supported, etc.

OUTFALL	LOCATION (UTM OR LAT/LONG OR LEGAL DESCRIPTION)	MAPPED[1] (CHECK)	RECEIVING WATER BODY[2]
001	x = 667829 y = 4257510	✓	Un-named tributary Audrain Branch

[1] Please attach topographic map (See: www.dnr.mo.gov/intermetmapviewer/) with outfall locations clearly marked. For additional outfalls, attach a separate form.
[2] Please see general instructions for discharges to streams.

OUTFALL	NEW DESIGN FLOW ** (MGD)	TREATMENT TYPE	EFFLUENT TYPES*
001	10000	Fixed Film aerated, with aerated trickling filter, Clairifier	domestic

* Describe predominating character of effluent. Example: Domestic Wastewater, Municipal Wastewater, Industrial Wastewater, Storm water, Mining Leachate, etc.
** If expansion, indicate new design flow.

See General Instructions. Additional information may be needed to complete your request. Your request may be returned if items are missing. The water quality review assistance is a process to determine effluent limits for new facilities or existing facilities seeking to increase loading into the receiving stream.

SIGNATURE: Chris Thompson
DATE: 11-9-18
PRINT NAME: Chris Thompson
EMAIL ADDRESS: Thompson@unionfd.org
TELEPHONE NUMBER WITH AREA CODE: 636 262 6020

Applicant supplied (check all that apply)
☐ Fee. See Instructions
☐ Attachment A – Significant Degradation
☐ Attachment B – Minimal Degradation
☐ Attachment C – Temporary degradation
☐ Attachment D – Tier 1 Review
☐ No Degradation Evaluation
☐ Heritage Review Determination. See Instruction #8.
☐ Geohydrologic Evaluation. See Instruction #9.
☐ Tier Analysis for minimal degradation (see Page 3, Tier 2 Reviews).
☐ Quality Assurance Project Plan.
☐ Time of travel study (see Instruction #3) or model (see Instruction #2).

Submit request to:
Missouri Department of Natural Resources,
Water Protection Program,
ATTN: WPCB Engineering Section
P.O. Box 176
Jefferson City, MO 65102-0176
Telephone: 573-751-1300
Fax: 573-522-9920

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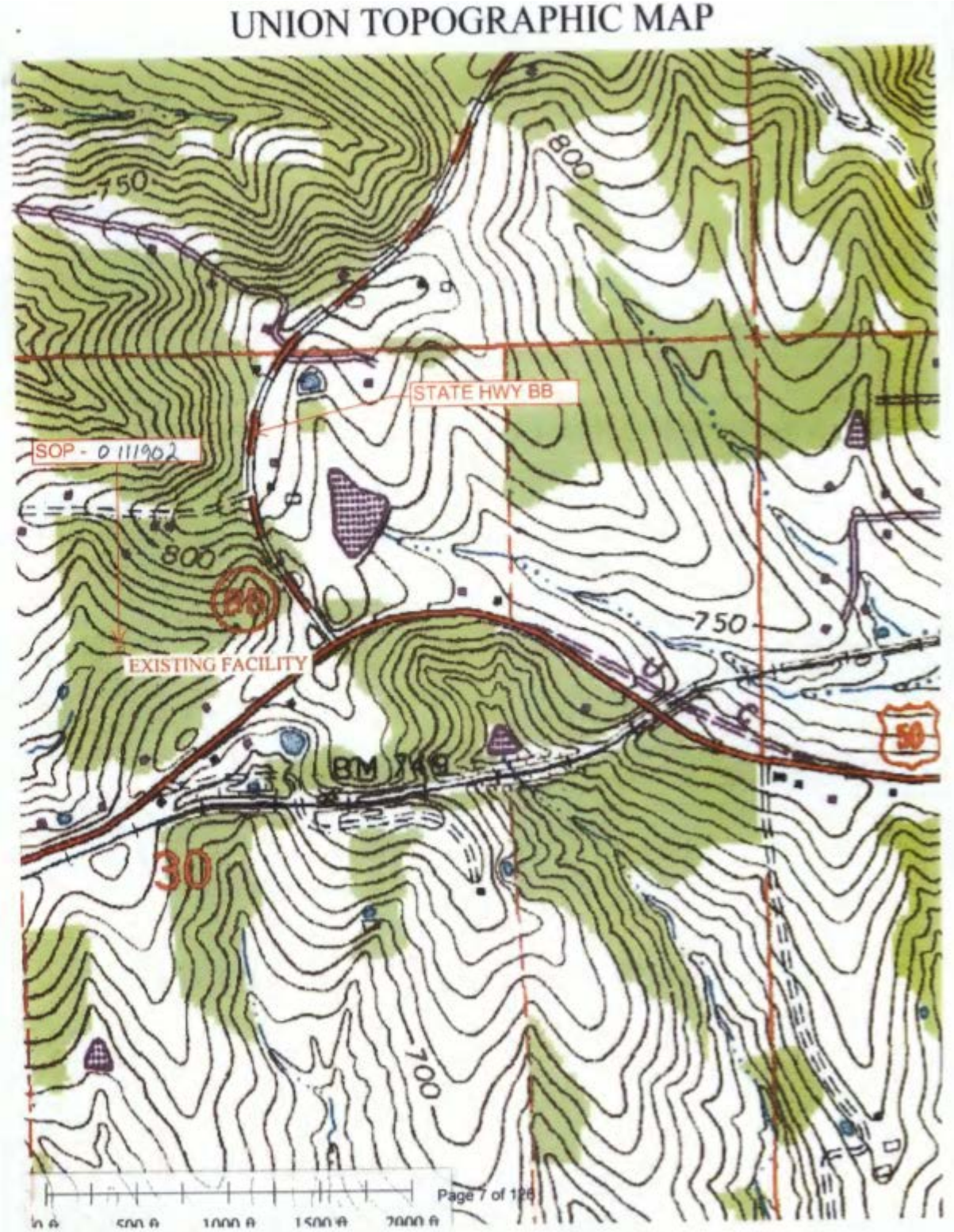
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EXISTING FACILITY
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Page 7 of 126

2) Attachment E: Tier 2 – Significant Degradation Using Department's Alternatives Analysis for Domestic Wastewater Facilities with Design Flow Less Than 10,000 Gallons Per Day form:

RECEIVED
NOV 19 2018
Water Protection Program

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM, WATER POLLUTION CONTROL BRANCH

ANTIDEGRADATION REVIEW SUBMITTAL
ATTACHMENT E: TIER 2 – SIGNIFICANT DEGRADATION USING DEPARTMENT'S ALTERNATIVES ANALYSIS FOR DOMESTIC WASTEWATER FACILITIES WITH DESIGN FLOW LESS THAN 10,000 GALLONS PER DAY

1. APPLICABILITY

If you answer "Yes" to any of the below questions, a site specific alternatives analysis may be required.

The department's alternatives analysis is *not* applicable to facilities that have a Total Maximum Daily Load (TMDL) or are 303(d) or 305(b) listed for the pollutants of concerns addressed in this alternatives analysis, with an exception for *E. coli* since disinfection will be required.

Facilities currently under enforcement will need to coordinate with the Water Protection Program's compliance and enforcement section to determine applicability for the department's alternatives analysis.

1.1 Does the receiving waterbody or downstream waterbody have a Total Maximum Daily Load (TMDL)? (This can be checked at: http://dnr.mo.gov/env/wpp/tmdl/) ☐ Yes ☑ No

1.2 Is the receiving waterbody or downstream waterbody 303(d) or 305(b) listed as impaired or potentially impaired? (This can be checked at: dnr.mo.gov/env/wpp/waterquality/303d/303d.htm) ☐ Yes ☑ No

1.3 Is the facility currently under enforcement with the department or the U.S. Environmental Protection Agency? ☐ Yes ☑ No

1.4 Is the design flow 10,000 gallons per day or more? ☑ Yes ☐ No

1.5 Is a nondischarging system a viable option ☐ Yes ☑ No

The following forms must also be submitted with this form:

☑ No Discharge Evaluation Form (dnr.mo.gov/forms/780-2805-f.pdf)

☑ Water Quality Review Assistance/Antidegradation Review Request Form (http://dnr.mo.gov/forms/780-1893-f.pdf)

2. FACILITY

NAME		TELEPHONE NUMBER WITH AREA CODE	
Westview Mobile Home Park		(636) 262-6020	
ADDRESS (PHYSICAL)	CITY	STATE	ZIP CODE
712 Star Circle	Union	Mo	63084

3. OWNER

NAME AND OFFICIAL TITLES			
Chris Thompson - Owner			
ADDRESS	CITY	STATE	ZIP CODE
755 KOKO Loop	Union	MO	63084
TELEPHONE NUMBER WITH AREA CODE	EMAIL ADDRESS		
(636) 262-6020	thompson@unionfd.org		

4. CONTINUING AUTHORITY The regulatory requirement regarding continuing authority is found in 10 CSR 20-6.010(3) available at www.sos.mo.gov/adrules/csr/current/10csr/10c20-6a.pdf.

NAME AND OFFICIAL TITLES			
Same as Above			
ADDRESS	CITY	STATE	ZIP CODE
TELEPHONE NUMBER WITH AREA CODE	EMAIL ADDRESS		

MO 780-2804 (06-17)

5. RECEIVING WATER BODY SEGMENT #1

NAME
Tributary to Audrain Branch

5.1 UPPER END OF SEGMENT (Location of discharge)
UTM X=667829 Y=4257510 OR Lat_____, Long _____

5.2 LOWER END OF SEGMENT
UTM X=666511 Y=4258253 OR Lat_____, Long _____

Per the Missouri Antidegradation Implementation Procedure, or AIP, the definition of a segment is: "A section of water that is bound, at a minimum, by significant existing sources and confluences with other significant water bodies."

6. WATER BODY SEGMENT #2

NAME
Audrain Branch

6.1 UPPER END OF SEGMENT
UTM X=666511 Y=4258253 OR Lat_____, Long _____

6.2 LOWER END OF SEGMENT
UTM X=664844 Y=4259578 OR Lat_____, Long _____

7. SOCIAL AND ECONOMIC IMPORTANCE OF THE PREFERRED ALTERNATIVE

This section must be completed with adequate and thorough descriptions of the social and economic importance associated with the proposed project in accordance with the Antidegradation Implementation Procedure Section II.E. for discharge to be allowed.

Social and economic importance is defined as the social and economic benefits to the community that will occur from any activity involving a new or expanding discharge.

7.1 Identify the affected community:

(The affected community is defined in 10 CSR 20-7.031(2)(B) as the community "in the geographical area in which the waters are located: Per the Antidegradation Implementation Procedure Section II.E.1, "the affected community should include those living near the site of the proposed project as well as those in the community that are expected to directly or indirectly benefit from the project.")

Westview Mobile Home Park, since being constructed, has provided the Franklin County, Missouri community with affordable, clean housing for lower income families. Originally the mobile home park was able to house approximately 30 families. The improvements completed in 2014 allowed the mobile home park to expand to 52 family units. This has increased the availability of affordable housing, and increased the tax base for Westview Mobile Home Park. The increased tax base has benefited both the state and local governments, local fire department, local ambulance department, and local schools. The additional affordable housing also helps increase Franklin County, Missouri available work force by providing affordable lower income housing.

7.2 Identify the important social and economic development associated with the project:

Will the proposed discharging activity:

Create or expand employment?	☑ Yes	☐ No	☐ Don't know	☐ N/A
Increase median family income?	☐ Yes	☑ No	☐ Don't know	☐ N/A
Reduce the number of households below the poverty line?	☐ Yes	☑ No	☐ Don't know	☐ N/A
Increase the community tax base?	☑ Yes	☐ No	☐ Don't know	☐ N/A
Increase needed housing supply?	☑ Yes	☐ No	☐ Don't know	☐ N/A
Provide necessary public services (e.g., school, infrastructure, fire department, etc.)?	☐ Yes	☑ No	☐ Don't know	☐ N/A
Correct a public health, safety, or environmental problem?	☑ Yes	☐ No	☐ Don't know	☐ N/A
Other:				

MO 780-2804 (06-17)

7.3 Describe the important social and economic development associated with the project:
The applicant must describe the expected changes in the factors identified in question 7.2 that are associated with the project and provide information on any additional items demonstrating important social and economic development. The applicant should first describe the existing condition of the affected community. This base condition should then be compared to the predicted change (benefit) in social and economic condition after the discharge is allowed. The social and economic measures identified above do not constitute a comprehensive list. Each situation and community is different and will require an analysis of unique social and economic factors in accordance with the Antidegradation Implementation Procedure Section II.E.1.

The owner currently employs persons to maintain the mobile home park. Items like cutting grass, removing snow, providing safe drinking water and disposal of trash and sewage all create local employment for persons from the community.

The additional homes within the mobile home park will increase community tax base. Since these homes are rental units, the mobile home park owner will need to pay taxes on the homes even if they are not rented.

As with all communities low income affordable housing is a must. Westview mobile home park provides a place for starter housing for low income families. The increase of low income housing helps the community by providing a larger available work force that may help attract manufacturing to the community.

Currently Westview Mobile Home Park has an existing wastewater facility that is having problems meeting its current discharge limits. The proposed improvements will help the existing facility meet the state and EPA mandated reduction in allowable ammonia discharge. This will help correct the current public health, safety, and environmental problem that the existing facility is experiencing.

7.4 Is any other written correspondence or documentation included with this application to provide further evidence of social and economic importance:

☑ No

☐ Yes

- ☐ Letter(s) from the mayor or community in support of the proposed project
- ☐ Rezoning approval
- ☐ Other:

8. NO DISCHARGE ALTERNATIVES EVALUATION

According to 10 CSR 20-6.010(4)(D), reports for the purpose of constructing a wastewater treatment facility shall consider the feasibility of constructing and operating a no discharge facility. Per the Antidegradation Implementation Procedure Section II.B.1, for discharges likely to cause significant degradation, applicants must provide an analysis of non-degrading alternatives. No-discharge alternatives may include surface land application, subsurface land application, and connection to a regional treatment facility.

You must submit the *No-Discharge Evaluation Form* available at dnr.mo.gov/forms/780-2805-f.pdf **to demonstrate that a nondischarging alternative is not feasible.** If sufficient information is not provided on the *No-Discharge Evaluation Form* to demonstrate that a nondischarging facility is not feasible, a more detailed evaluation of no discharge options must be submitted.

MO 780-2804 (06-17)

9. IDENTIFY PREFERRED TREATMENT ALTERNATIVE

Describe your preferred treatment alternative that has been recommended or approved by a registered professional engineer licensed to practice in Missouri. The preferred treatment alternative must be capable of meeting the effluent limits in the table under item 10 of this form.

Applicants choosing to use a new wastewater technology considered an "unproven technology" in Missouri must comply with the requirements set forth in the Innovative Technology factsheet found at: dnr.mo.gov/pubs/pub2453.htm

The existing facility was meeting the allowable discharge limits within the State Operating Permit, until the permit was re-issued. At that time the allowable discharge ammonia limits were reduced. Currently it is being proposed that two BioClere Units which are an aerated trickling filter above a clairifier be installed. Waste will be recycled back to the beginning of the treatment train to promote anoxic conditions at the beginning of the treatment train. Alkalinity corrections will be made to help promote ammonia reduction. A ultraviolet light disinfection unit will reduce E.coli. The manufacture of the BioClere units, believes that proposed system will meet the POC limits below in section 10.0

ENGINEERING CONSULTANT NAME	COMPANY NAME
Kirby Scheer, P.E,	Scheer Design Group, LLC

10. SUMMARY OF THE POLLUTANTS OF CONCERN AND EFFLUENT LIMITS

Pollutants of concern to be considered include those pollutants reasonably expected to be present in the discharge per the Antidegradation Implementation Procedure Section II.A. and assumed or demonstrated to cause significant degradation.
The tier protection levels are specified and defined in rule at 10 CSR 20-7.031 (2).
All POCs in this alternatives analysis were considered to be Tier 2 and significantly degrading in the absence of existing water quality.

As a result of this alternatives analysis review, the department has determined, depending on site specific conditions, there are treatment technologies available that may be economically efficient and practicable, which are capable of meeting the effluent limitations below. If the facility owners do not believe there is a treatment technology that is economically efficient, affordable, or practicable for their facility to meet these limits, a site specific alternatives analysis will be required.

The chosen alternative must be capable of meeting the following effluent limitations:

Pollutant of Concern*		Units	Daily Maximum	Weekly Average	Monthly Average
BOD_5		mg/L		15	10
TSS		mg/L		15	10
Ammonia as N Summer		mg/L	1.7		0.6
Ammonia as N Winter		mg/L	5.6		2.1
pH		SU	6.5–9.0		6.5 – 9.0
Escherichia coli (*E. coli*)	WBC(A)	#/100 mL	630***		126
	WBC(B)	#/100 mL	1030***		206
	Losing Stream**	#/100 mL	126***		Monitoring only

* Permit limits for other parameters, including oil and grease, total residual chlorine, nitrates, and total phosphorus, will be included in the operating permit based on applicable water quality standards and criteria as applicable.

Total residual chlorine (TRC) effluent limits of 0.017 mg/L daily maximum, 0.008 mg/L monthly average are recommended if chlorine is used as a disinfectant. Standard compliance language for TRC, including the minimum level (ML), may be included in the operating permit.

** For any facility that will discharge to a waterbody designated as a losing stream or within two miles flow distance upstream of a losing stream.

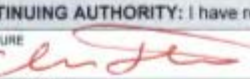
*** Publicly owned treatment works will receive a weekly average limit and private facilities will receive a daily maximum limit.

If any Tier 1 Pollutants of Concern not addressed in this alternatives analysis will be discharged, the applicant must submit *Attachment D: Tier 1 Review* (dnr.mo.gov/forms/780-2024-f.pdf) for those pollutants.

OWNER: I have read and reviewed the prepared documents and agree with this submittal.

SIGNATURE	DATE
	11-9-18

CONTINUING AUTHORITY: I have read and reviewed the prepared documents and agree with this submittal.

SIGNATURE	DATE
	11-9-18

MO 780-2804 (06-17)

3) No Discharge Evaluation Form:

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM, WATER POLLUTION CONTROL BRANCH
NO DISCHARGE EVALUATION

RECEIVED
NOV 19 2018
Water Protection Program

NO DISCHARGE EVALUATION

According to 10 CSR 20-6.010(4)(D), reports for the purpose of constructing a wastewater treatment facility shall consider the feasibility of constructing and operating a no-discharge facility. Per the Antidegradation Implementation Procedure Section II.B.1, for discharges likely to cause significant degradation, applicants must provide an analysis of nondegrading alternatives. No-discharge alternatives may include surface land application, subsurface land application, and connection to a regional treatment facility.

Please refer to the *No-Discharge Evaluation Memo and Matrix* available at dnr.mo.gov/env/wpp/permits/docs/20160217-no-discharge-memo.pdf for examples of information and documentation to provide to justify common reasons for not pursuing no-discharge land application. If sufficient information is not provided on this form to demonstrate that a no-discharge facility is not feasible, a more detailed evaluation of no-discharge options may have to be submitted.

Additional pages may be attached if more room is needed.

1. FACILITY:

NAME	COUNTY
Westview Mobile Home Park MO - 0111902	Franklin

2. EVALUATION OF NO-DISCHARGE LAND APPLICATION
Check all applicable reasons why no-discharge land application was not pursued:

☑ **2.1 Land Availability and Cost:**

A. How many acres are required for land application of the effluent? 3.05 acres
B. What is the cost to purchase any necessary additional land within 1.5 miles of the facility? $32,500
C. Were costs evaluated for transporting and land applying at a location farther from the site? ☐ Yes ☑ No
D. What is the capital cost estimate for piping and pumps to transport effluent to a suitable land application site? $615,800
E. Did you evaluate entering a long-term lease with a farmer or other land owner: ☐ Yes ☑ No

How many land owners were contacted and what restrictions were presented?

The local area is residential housing and subdivision. The areas along US Highway 50 are zoned commercial and demand a premium price.

Could controls be built into the contract, such as requiring the owner to use a certain percentage of the water annually?

not applicable

F. Were increased application rates evaluated in order to use less land? ☐ Yes ☑ No
G. Was using multiple application sites evaluated to optimize application rate per site? ☐ Yes ☑ No
H. Can the facility do seasonal discharge or seasonal application? ☐ Yes ☑ No
I. Was land applying to public use areas, such as golf courses or parks, evaluated? ☐ Yes ☐ No
J. Were long-term costs evaluated and compared for upgrading to a mechanical plant with future Water Quality Standards changes (i.e. mussel ammonia, bacteria, TP, TN) versus cost for a land application system? ☐ Yes ☑ No

☑ **2.2 Easements**

A. Were land owners contacted for rights to an easement? ☐ Yes ☑ No
B. What is the cost of easement acquisition? most land owners are against mobile home parks and will refuse easements

780-2808 (05-17)

☑ **2.3 Zoning or Suitability of Site in Proximity to Neighboring Sites or Waterbodies:**

A.	Can buffer distances be increased to reduce neighbor complaints?	☐ Yes	☑ No
B.	Was drip or subsurface irrigation evaluated as opposed to surface application?	☑ Yes	☐ No
C.	Does the county ordinance specifically restrict land application, surface and subsurface?	☑ Yes	☐ No
D.	Can a vegetated buffer be installed to reduce necessary buffer distances?	☐ Yes	☑ No
E.	Can higher application rates requiring less land be used?	☐ Yes	☑ No
F.	Are there other steps or considerations that can be made (see 2.1)?	☐ Yes	☑ No
G.	What is the distance to a neighboring county without zoning restrictions? to far to consider		

☑ **2.4 Unsuitability of Geology or Soils**

A.	Is a geohydrologic evaluation, county soils survey map, or other resource showing suitability and application rates included with this application?	☑ Yes	☐ No
B.	Is it cost-effective to bring in additional soils?	☐ Yes	☑ No
C.	Can the application rate be decreased to a suitable rate?	☐ Yes	☑ No
D.	Were subsurface application alternatives (e.g. low pressure pipe, drip) considered?	☑ Yes	☐ No
E.	If collapse potential is a concern, was using a liner or alternative site (see 2.1) evaluated?	☐ Yes	☑ No

2.5 Summarize why no-discharge land application was not a practicable or economically efficient alternative

Residential home owners in the area are not in favor of the mobile home park. The nearest regional facility would be the wastewater treatment facility at Twin Lakes Subdivision which is now managed by Franklin County Public Water Supply District No. 1. Twin Lakes Subdivision's WWTF was sized only to treat the flow from the existing subdivision. Expanding Twin Lakes Subdivision's treatment facility and installing a pumping station will cost more than improving the existing system. The next nearest Collection System would be The City of Union. This would be approximately 3.5 miles in length and with out eminent domain easements would be impossible.

The existing site does not offer enough area for a above ground irrigation system or a sub surface drip irrigation system. The anticipated cost of this system is greater than the cost of improving the existing system. The discharge from the improved system will be of a higher quality than any regional system is able to provide.

3. EVALUATION OF REGIONALIZATION

3.1 Regionalization Feasibility:

A. What is the distance to connect to the closest municipality's line or other facility's line? 3700 feet

B. Is there any planning or zoning in the area regarding development and services? none

C. What is the estimated capital cost for piping and pumps to regionalize? $322,700

D. Does a regional facility have the capacity to treat the additional effluent from this project, and if not, what would it cost to upgrade the regional facility?

NO, The nearest facility is designed to treat the waste flow from the Twin Lakes Subdivision only. We would need multiple easements.

3.2 Summarize why regionalization was not a practicable or economically efficient alternative

The nearest regional facility is approximately 3,700 feet away from the existing facility. The force main system would require several different easements from individual home owners to reach the beginning of the collection line at Twin Lakes Subdivision. The package treatment plant that treats the waste from Twin Lakes Subdivision is sized only for the subdivision. The anticipated expansion cost to the existing facility at Twin Lakes Subdivision combined with the cost of the lift station and force main would far exceed the cost of improving the treatment facility that currently serves Westview Mobile Home Park.

4. DOCUMENTATION

4.1 Is any other written correspondence or documentation included with this application to provide further justification for not pursuing a no-discharge option or regionalization?

☐ No

☑ Yes:

- ☐ Correspondence with land owners regarding land for sale or lease or easement rights.
- ☐ Letters from the community or a consulting engineer regarding availability, proximity, and location of suitable land and the reasonable cost of such land.
- ☐ Documentation of recent land sales or appraisals.
- ☑ Calculations for sizing a land application system.
- ☑ Detailed cost estimates for a land application system or regionalization including lift stations, piping, easements, liners, and/or connection costs.
- ☑ Geohydrologic evaluation or other soils report.
- ☐ Copy of a county or city ordinance.
- ☐ Council meeting minutes.
- ☐ A letter from an existing higher preference continuing authority waiving preferential status where service is not available in accordance with 10 CSR 20-6.0 10 (3) or if capacity is not available.
- ☐ A letter from the existing higher preference continuing authority stating that the regional facility has no interest in taking flow from the new or expanded facility.
- ☐ A letter from the regional municipality stating that the project area is outside city limits and annexation would be required.
- ☐ Verification of funding from State Revolving Fund, which does not fund projects outside city limits.
- ☐ Other:

OWNER: I have read and reviewed the prepared documents and agree with this submittal.

NAME AND OFFICIAL TITLES: Chris Thompson Owner of Glo Homes

SIGNATURE: [signature] DATE: 11-9-18

CONTINUING AUTHORITY: I have read and reviewed the prepared documents and agree with this submittal. The regulatory requirement regarding continuing authority is found in 10 CSR 20-6.010(3) available at sos.mo.gov/cmsimages/adrules/csr/current/10csr/10c20-6.pdf.

NAME AND OFFICIAL TITLES: Same as above

SIGNATURE: DATE:

780-2805 (05-17)

On-Site Drip Irrigation System For a Non-Discharge System

1.) Average design flow for on Site system	15,000	gpd
2.) Assumed Drip Irrigation soils loading rate	0.15	gal/day sq ft
3.) Approximate area needed for absorption field	2.30	ac
4.) Approximate area for setbacks and access to site	0.75	ac
5.) Total Site Needed for On Site Drip Irrigation	3.05	ac
6.) 15 acres of property listed for $160,000 near the project site	$10,667	asking cost per acre
7.) Cost of the soils absorption site only	$32,487	
8.) Average Residential Home field flow loading rate	360	gallon per day
9.) Average cost of residential home on-site sytem	$14,000	
10.) Average cost per treated gallon for residentail drip irrigation system	$39	per treated gallon
11.) Assumed cost of drip irrigation system for the anticipated design flow from Westview MHP	$583,333	
12.) Adding the cost of the land if necessary to purchase	$615,821	

Rough sizing and estimated cost of Lift Station to Nearest Treatment facility

1.)	Average Design Flow for WestView MHP Lift Station	15000 gpd
2.)	Avergae design flow in gallons per minute	10.42 gpm
3.)	Assumed Peaking Factor for Peak Hourly Flow Rate	4
4.)	Assumed Peak Hourly Flow Rate	41.67 gpm
5.)	lowest ground elevation in the system from usgs topo map	725 ft
6.)	Highest ground elevation in the sytem from usgs topo map	860 ft
7.)	Assumed depth of the lift station	12 ft
8.)	Assumed static head for pumping sytem from usgs topo map	147 ft
9.)	length of pressure main from usgs topo map	3700 ft
10.)	Size of force main line	4 in
11.)	minimum flow for scour velocity	78.30 gpm
12.)	Hazen-Williams head loss per 100 ft of discharge pipe	0.56 ft / 100 ft
13.)	Friction loss in the pipe	20.80 feet of head
14.)	Total Dynamic Head for the pumping system neglecting minor losses at this time	168 of TDH
15.)	Homa grinder pump 3 phase electric required. 180 ft head @ 80 gpm	
16.)	cost of three phase electric $15,000 + $10,000 each mile to site	$45,000.00 rough estimate
17.)	2 - 13 hp Homa Pumps grinders with control panel	$80,000
18.)	Concrete lift station with emergency holding	$60,000
19.)	Cost to install 4" force main per running foot	$21
20.)	Assumed installed cost of force main	$77,700
21.)	Cost of required easements cannot be quantified	
22.)	Highway Road Boring Under Highway BB	$60,000.00
23.)	rough estimated cost of a pressure force main to Twin Lakes Sub	$322,700


Septic Tank Absorption Fields—Franklin County, Missouri
(site)
73094
73090
73135
73090
73090
73094
67140
73090
73135
Map Scale: 1:3,340 if printed on A portrait (8.5" x 11") sheet.
Meters
0
45
90
180
270
Feet
0
150
300
600
900
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84
USDA
Natural Resources
Conservation Service
National Cooperative Soil Survey
6/18/2018
Page 1 of 6

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Background
- Aerial Photography

Soils

Soil Rating Polygons
- Very limited
- Somewhat limited
- Not limited
- Not rated or not available

Soil Rating Lines
- Very limited
- Somewhat limited
- Not limited
- Not rated or not available

Soil Rating Points
- Very limited
- Somewhat limited
- Not limited
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Franklin County, Missouri
Survey Area Data: Version 20, Sep 15, 2017

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 22, 2014—Mar 17, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Septic Tank Absorption Fields

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
67140	Gladden-Midco complex, 1 to 3 percent slopes, frequently flooded	Very limited	Gladden (65%)	Flooding (1.00)	0.1	0.3%
				Seepage, bottom layer (1.00)		
				Slow water movement (0.50)		
			Midco (20%)	Flooding (1.00)		
				Seepage, bottom layer (1.00)		
			Twomile (5%)	Depth to saturated zone (1.00)		
				Slow water movement (1.00)		
				Flooding (0.40)		
73090	Useful silt loam, 3 to 8 percent slopes	Very limited	Useful (90%)	Depth to saturated zone (1.00)	9.7	26.3%
				Slow water movement (1.00)		
				Depth to bedrock (0.62)		
73094	Gatewood very gravelly silt loam, 15 to 35 percent slopes, stony	Very limited	Gatewood (85%)	Depth to bedrock (1.00)	24.1	64.9%
				Depth to saturated zone (1.00)		
				Slow water movement (1.00)		
				Slope (1.00)		
73135	Union silt loam, 3 to 8 percent slopes	Very limited	Union (90%)	Depth to saturated zone (1.00)	3.2	8.6%
				Slow water movement (1.00)		
			Glenstad (5%)	Depth to saturated zone (1.00)		

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Slow water movement (1.00)		
			Mariosa (3%)	Depth to saturated zone (1.00)		
				Slow water movement (1.00)		
Totals for Area of Interest					37.1	100.0%

Rating	Acres in AOI	Percent of AOI
Very limited	37.1	100.0%
Totals for Area of Interest	37.1	100.0%

Description

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 60 inches is evaluated. The ratings are based on the soil properties that affect absorption of the effluent, construction and maintenance of the system, and public health. Saturated hydraulic conductivity (Ksat), depth to a water table, ponding, depth to bedrock or a cemented pan, and flooding affect absorption of the effluent. Stones and boulders, ice, and bedrock or a cemented pan interfere with installation. Subsidence interferes with installation and maintenance. Excessive slope may cause lateral seepage and surfacing of the effluent in downslope areas.

Some soils are underlain by loose sand and gravel or fractured bedrock at a depth of less than 4 feet below the distribution lines. In these soils the absorption field may not adequately filter the effluent, particularly when the system is new. As a result, the ground water may become contaminated.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: *None Specified*

Tie-break Rule: Higher

AP 30843
CP 0002033

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM

APPLICATION FOR CONSTRUCTION PERMIT – WASTEWATER FACILITY

RECEIVED
OCT 04 2018
Water Protection Program

FOR DEPARTMENT USE ONLY	
APP NO.	CP NO.
FEE RECEIVED 400.00	CHECK NO. 1792
DATE RECEIVED 10-4-18	

APPLICATION OVERVIEW

The Application for Construction Permit – Wastewater Facility form is for construction pertaining to domestic wastewater treatment facilities, agrichemical facilities, and components thereof. This form has been developed in a modular format and consists of Part A and B. **All applicants must complete Part A.** Part B should be completed for applicants who currently land-apply wastewater or propose land application for wastewater treatment. **Please read the accompanying instructions before completing this form. Submittal of an incomplete application may result in the application being returned.**

PART A – BASIC INFORMATION

1.0 APPLICATION INFORMATION (Note – If any of the questions in this section are answered NO, this application may be considered incomplete and returned.)

1.1 Is this a Federal/State funded project? ☐ YES ☑ N/A Funding Agency: _____ Project #: _____

1.2 Is this an application for an agrichemical? ☐ YES (See instructions.) ☐ N/A

1.3 Has the Missouri Department of Natural Resources approved the proposed project's antidegradation review?
☐ YES Date of Approval: _____

1.4 Has the department approved the proposed project's facility plan*?
☐ YES Date of Approval: _____ ☐ NO ☑ N/A (If Not Applicable, complete No. 1.5.)

1.5 [Complete only if answered Not Applicable on No. 1.4] Is a copy of the engineering report* for wastewater treatment facilities with a design flow less than 22,500 gpd included with this application?
☑ YES ☐ NO

1.6 Is a copy of the appropriate plans* and specifications* included with this application?
☑ YES Denote which form is submitted: ☐ Hard copy ☑ Electronic copy (See instructions.) ☐ NO

1.7 Is a summary of design* included with this application? ☑ YES ☐ NO

1.8 Is a general operating permit applicable?
☐ YES Submit the appropriate operating permit application to the Regional Office at least 60 days prior to operation.
☑ NO Enclose the appropriate operating permit application and fee submittal. Denote which form: ☑ B ☐ B2

1.9 Is the facility currently under enforcement with the department or the Environmental Protection Agency? ☑ YES ☐ NO

1.10 Is the appropriate fee included with this application? ☑ YES ☐ NO (See instructions for appropriate fee.)

* Must be affixed with a Missouri registered professional engineer's seal, signature and date.

2.0 PROJECT INFORMATION

2.1 NAME OF PROJECT
Westview Mobile Home Park

2.2 PROJECT DESCRIPTION
Adding additional primary tanks along with two Aquapoint Bioclere aerated trickling filters and a Aqua azul ultraviolet disinfection unit to the existing facility equipment will allow the upgraded facility to meet the current permitted discharge limits.

2.3 SLUDGE HANDLING, USE AND DISPOSAL DESCRIPTION
hauled by a licensed contract hauler

2.4 DESIGN INFORMATION
A. Current population: _____; Design population: 156
B. Actual Flow: 7,000 gpd; Design Average Flow: 9,000 gpd;
Actual Peak Daily Flow: _____ gpd; Design Maximum Daily Flow: _____ gpd;
Design Wet Weather Event: _____

2.5 ADDITIONAL INFORMATION
A. Is a topographic map attached? ☑ YES ☐ NO
B. Is a process flow diagram attached? ☑ YES ☐ NO

2.6 ESTIMATED PROJECT CONSTRUCTION COST
$ 155,000.00

3.0 WASTEWATER TREATMENT FACILITY

NAME	TELEPHONE NUMBER WITH AREA CODE	EMAIL ADDRESS
Westview Mobile Home Park		

ADDRESS (PHYSICAL)	CITY	STATE	ZIP CODE	COUNTY
712 Star Circle	Union	MO	63084	Franklin

Wastewater Treatment Facility: Mo- 0111902 (Outfall 1 Of 1)

3.1 Legal Description: ¼, SE ¼, NW ¼, Sec. 30 , T 43 , R 1W
(Use additional pages if construction of more than one outfall is proposed.)

3.2 UTM Coordinates Easting (X): 667829 Northing (Y): 4257510
For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)

3.3 Name of receiving streams: Trib. to Audrain Branch (u)

4.0 PROJECT OWNER

NAME	TELEPHONE NUMBER WITH AREA CODE	EMAIL ADDRESS
Chris Thompson	(636) 262-6020	thompson@unionfd.org

ADDRESS	CITY	STATE	ZIP CODE
755 Koko Loop	Union	MO	63084

5.0 CONTINUING AUTHORITY: Permanent organization that will serve as the continuing authority for the operation, maintenance and modernization of the wastewater collection system.

NAME	TELEPHONE NUMBER WITH AREA CODE	EMAIL ADDRESS
Same as Above		

ADDRESS	CITY	STATE	ZIP CODE

5.1 A letter from the continuing authority, if different than the owner, is included with this application. ☐ YES ☐ NO ☑ N/A

5.2 COMPLETE THE FOLLOWING IF THE CONTINUING AUTHORITY IS A MISSOURI PUBLIC SERVICE COMMISSION REGULATED ENTITY.

A. Is a copy of the certificate of convenience and necessity included with this application? ☐ YES ☑ NO

5.3 COMPLETE THE FOLLOWING IF THE CONTINUING AUTHORITY IS A PROPERTY OWNERS ASSOCIATION.

A. Is a copy of the as-filed restrictions and covenants included with this application? ☐ YES ☑ NO

B. Is a copy of the as-filed warranty deed, quitclaim deed or other legal instrument which transfers ownership of the land for the wastewater treatment facility to the association included with this application? ☐ YES ☑ NO

C. Is a copy of the as-filed legal instrument (typically the plat) that provides the association with valid easements for all sewers included with this application? ☐ YES ☑ NO

D. Is a copy of the Missouri Secretary of State's nonprofit corporation certificate included with this application? ☐ YES ☑ NO

6.0 ENGINEER

ENGINEER NAME / COMPANY NAME	TELEPHONE NUMBER WITH AREA CODE	EMAIL ADDRESS
Kirby Scheer, P.E.; Scheer Design Group, LLC	(573) 459-2611	kirbs@fidnet.com

ADDRESS	CITY	STATE	ZIP CODE
8584 Hwy YY	New Haven	MO	63068

7.0 PROJECT OWNER: I hereby certify that I am familiar with the information contained in this application and to the best of my knowledge and belief such information is true, complete, and accurate, and if granted this permit, I agree to abide by the Missouri Clean Water Law and all rules, regulations, orders, and decisions, subject to any legitimate appeal available to applicant under Missouri Clean Water Law. I also understand the issuance of the construction permit does not guarantee the proposed wastewater treatment will meet the required effluent limitations of the issued Missouri State Operating Permit for this facility.

PROJECT OWNER SIGNATURE

PRINTED NAME	DATE
Chris Thompson	9-21-2018

TITLE OR CORPORATE POSITION	TELEPHONE NUMBER WITH AREA CODE	EMAIL ADDRESS
Owner	636 262 6020	thompson@unionfd.org

Mail completed copy to:

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM
P.O. BOX 176
JEFFERSON CITY, MO 65102-0176

END OF PART A.
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHETHER PART B NEEDS TO BE COMPLETE.

PART B – LAND APPLICATION ONLY
(Submit only if the proposed construction project includes land application of wastewater.)

8.0 FACILITY INFORMATION

8.1 Type of wastewater to be irrigated: ☐ Domestic ☐ State/National Park ☐ Seasonal business
☐ Municipal ☐ Municipal with a pretreatment program or significant industrial users
☐ Other (explain)

8.2 Months when the business or enterprise will operate or generate wastewater:
☐ 12 months per year ☐ Part of the year (list months):

8.3 This system is designed for:
☐ No-discharge ☐ Subsurface
☐ Partial irrigation when feasible and discharge rest of time
☐ Irrigation during recreational season, April – October, and discharge during November – March
☐ Other (explain)

9.0 STORAGE BASINS

9.1 Number of storage basins: _____ (Use additional pages if greater than two basins.)

9.2 Type of basins: ☐ Steel ☐ Concrete ☐ Fiberglass ☐ Earthen ☐ Earthen with membrane liner

9.3 Storage basin dimensions at inside top of berm (feet). Report freeboard as feet from top of berm to emergency spillway or overflow pipe.
Basin #1: Length _____ Width _____ Depth _____ Freeboard _____ Depth _____ Safety _____ % Slope _____
Basin #2: Length _____ Width _____ Depth _____ Freeboard _____ Depth _____ Safety _____ % Slope _____

9.4 Storage Basin operating levels (report as feet below emergency overflow level).
Basin #1: Maximum operating water level _____ ft Minimum operating water level _____ ft
Basin #2: Maximum operating water level _____ ft Minimum operating water level _____ ft

9.5 Design depth of sludge in storage basins.
Basin #1: _____ ft Basin #2: _____ ft

9.6 Existing sludge depth, if the basins are currently in operation.
Basin #1: _____ ft Basin #2: _____ ft

9.7 Total design sludge storage: _____ dry tons and _____ cubic feet

10.0 LAND APPLICATION SYSTEM

10.1 Type of land application: ☐ Fixed Head Sprinklers ☐ Center Pivot ☐ Traveling Gun ☐ Drip Dispersal
☐ Subsurface Low Pressure Pipe ☐ Other (describe) _____

10.2 Number of irrigation sites _____ Total Acres _____ Maximum % field slopes _____
Location: _____ ¼, _____ ¼, _____ ¼, _____ Sec. _____ T _____ R _____ County _____ Acres
Location: _____ ¼, _____ ¼, _____ ¼, _____ Sec. _____ T _____ R _____ County _____ Acres
Location: _____ ¼, _____ ¼, _____ ¼, _____ Sec. _____ T _____ R _____ County _____ Acres
(Use additional pages if greater than three irrigation sites.)

10.3 Type of vegetation: ☐ Grass hay ☐ Pasture ☐ Timber ☐ Row crops
☐ Other (describe)

10.4 Wastewater flow (dry weather) gallons per day: Average annual _____
Seasonal _____ Off-season _____

10.5 Land application rate (design flow including 1-in-10 year storm water flows):
Design: _____ inches/year _____ inches/hour _____ inches/day _____ inches/week
Actual: _____ inches/year _____ inches/hour _____ inches/day _____ inches/week

10.6 Total irrigation per year (gallons): Design: _____ gal Actual: _____ gal

10.7 Actual months used for irrigation (check all that apply):
☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec

10.8 Land application rate is based on:
☐ Hydraulic Loading ☐ Other (describe) _____
☐ Nutrient Management Plan (N and P) If N and P is selected, is the plan included? ☐ YES ☐ NO

INSTRUCTIONS FOR COMPLETING
APPLICATION FOR CONSTRUCTION PERMIT – WASTEWATER TREATMENT FACILITIES

All blanks must be filled in when the application is submitted to the Missouri Department of Natural Resources. This includes the **required signature**.

Note: Use the form Application for Construction Permit – Sewer Extension, MO 780-1632, if **only** collection system component(s) are to be constructed. This form is available at dnr.mo.gov/forms/780-1632-f.pdf.

A land disturbance permit is required if construction will result in the disturbance of one or more acres of land. A land disturbance permit is available through the department's ePermitting system at dnr.mo.gov/env/wpp/epermit/help.htm. A permit fee in accordance with 10 CSR 20-6.011(2)(F)1. is required.

After receiving a complete application, the Department enters the application information into the Missouri Clean Water Information System. You may search for the status of a construction permit online at dnr.mo.gov/mocwis_public/applicationInprocessSearch.do.

Part A – Basic Application Information

1.0 If any questions in this section are answered no, this application may be considered incomplete and returned to applicant.

1.1 Check the appropriate box. If the project is funded with federal or state monies, supply the funding agency name and project number.

1.2 Check the appropriate box. Agrichemical facilities complete sections 1.6, 1.10, 2.1, 2.2, 3.1-3.3, 5.0, 6.0, and 7.0.

1.3 Check the appropriate box. Provide the date of department approval for the antidegradation report. Include a copy of the approved *Water Quality and Antidegradation Review* with this application. Not every construction project may require an antidegradation review. For more information, guidance documents and forms concerning antidegradation visit dnr.mo.gov/env/wpp/permits/antideg-implementation.htm.

1.4 Check the appropriate box and provide the date of department approval. Per 10 CSR 20-8.110(3)(C), facility plans must be approved by the department prior to the submittal of plans and specifications and a construction permit application. "Facility plans must be completed for projects involving wastewater treatment facility projects and projects receiving funding through the grant and loan programs under 10 CSR 20-4" in accordance with 10 CSR 20-8.110(4)(A)4. The department has developed a fact sheet to aid in the development of an approvable facility plan. This document is available online at dnr.mo.gov/pubs/pub2416.htm.

1.5 Complete only if No. 1.3 is answered Not Applicable. Check the appropriate box. For wastewater treatment facilities with a design flow under 22,500 gallons per day, or gpd, an engineering report may be required by the department in accordance with 10 CSR 20-6.010(4)(D)1 and 10 CSR 20-8.020(3). The department will require an engineering report for any new wastewater treatment facilities and for any major modifications to an existing wastewater treatment facility.

1.6 Check the appropriate box. Provide a copy of the appropriate plans and specifications for department review when applying for a construction permit per 10 CSR 20-8.110(3)(C), 10 CSR 20-8.020(5) and 10 CSR 20-8.020(6). A Missouri registered professional engineering seal, signature and date is required on each sheet of the plans and the cover of the technical specifications.

The department will accept plans and specifications in electronic form on a CD and in the Adobe® PDF searchable format. If the plans are scanned, set the resolution to a minimum of 200 dpi at 17 by 22 inches.

Note: Additional sets of plans and specifications may be required by the department for final approval and issuance of the construction permit. See 10 CSR 20-8.110(6)(A)1.

1.7 Check the appropriate box. A summary of design shall accompany the plans and specifications when applying for a construction permit, per 10 CSR 20-8.110(5) and 10 CSR 20-8.020(7). A fact sheet to aid in the development of an acceptable summary of design is available online at dnr.mo.gov/pubs/pub2417.htm. For wastewater treatment facilities with a design flow under 22,500 gpd, a summary of design may not be required by the department.

1.8 Check the appropriate box. Include the applicable operating permit application when seeking a site-specific operating permit or modification of an existing operating permit. Facilities that qualify for a general operating permit may submit the operating permit application to the appropriate regional office at least 60 days prior to operation.

- Form B for facilities ≤ 100,000 gpd is available online at dnr.mo.gov/forms/780-1512-f.pdf.
- Form B2 for facilities > 100,000 gpd is available online at dnr.mo.gov/forms/780-1805-f.pdf.

Include the appropriate fee with your application. For more fee information, visit: http://s1.sos.mo.gov/cmsimages/adrules/csr/current/10csr/10c20-6.pdf.

$200 for modifications to a Publicly Owned Treatment Works (POTW) operating permit accompanied by the appropriate operating permit form per 10 CSR 20-6.011(2)(H), if applicable.

$100 for modifications of name changes, address changes, or other nonsubstantive changes or for a modification of a general permit accompanied by the appropriate general permit form per 10 CSR 20-6.011(2)(H)1., if applicable.

25 Percent Annual Operating Fee for modifications to a Non-POTW operating permit accompanied by the appropriate operating permit form per 10 CSR 20-6.011(2)(H)2., if applicable.

Annual Operating Fee for issuing a new Non-POTW operating permit accompanied by the appropriate operating permit form, if applicable.

1.9 Check the appropriate box. More information about the Compliance and Enforcement Water Protection Program is available online at dnr.mo.gov/env/wpp/enf/index.html.

1.10 Check the appropriate box. Include the fee with your application.

$1,000 for a wastewater treatment facility with a design flow of less than 500,000 gpd per 10 CSR 20-6.011(2)(K)1.

$3,000 for a wastewater treatment facility with a design flow of 500,000 gpd or greater per 10 CSR 20-6.011(2)(K)2.

Note: Incomplete permit applications or related engineering documents will be returned by the department if they are not completed in the time frame established by the department in a comment letter to the project owner. Permit fees for returned applications shall be forfeited. See 10 CSR 20-6.010(4)(E). Permit fees for applications being processed by the department that are withdrawn by the applicant shall be forfeited. See 10 CSR 20-6.011(5)(B).

2.1 Provide the name of the proposed construction project.

2.2 Briefly describe the construction project by providing the number and capacity of each new unit.

2.3 Briefly describe the method of sludge handling, use and disposal at the treatment facility.

2.4 Provide the project design information and when required in the units specified.

A. Provide the current population and the design population to be served by the wastewater treatment facility.

B. Provide the estimated design flow information in accordance with 10 CSR 20-8.110(4)(C)4.A.

Design average flow – The design average flow is the average of the daily volumes to be received for a continuous 12 month period expressed as a volume per unit time. However, the design average flow for facilities having critical seasonal high hydraulic loading periods (e.g., recreational areas, campuses and industrial facilities) shall be based on the daily average flow during the seasonal period. (Expected daily average flow the facility is designed to treat.)

Design peak hourly flow – The design peak hourly flow is the largest volume of flow to be received during a one hour period expressed as a volume per unit time.

Design maximum daily flow – The design maximum daily flow is the largest volume of flow to be received during a continuous 24-hour period expressed as a volume per unit time. (Flow during the peak wet weather event the facility is designed to treat.)

Design Wet Weather Event –The wet weather event chosen for the design.

2.5 Provide the additional project information.

A. Attach a topographic map of the area extending at least one mile beyond the facility property boundaries. This map must show the outline of the facility and the following information. A topographic map is available online at dnr.mo.gov/internetmapviewer or from the Department of Natural Resources' Missouri Geological Survey in Rolla, Mo., at 573-368-2125. (Submittals of more than one map may be necessary to show the entire area.)

1. The area surrounding the wastewater treatment facility, including all unit processes.
2. The major pipes or other structures through which wastewater enters the treatment facility and the pipes or other structures through which treated wastewater is discharged from the treatment facility. Include outfalls from bypass piping, if applicable.
3. The actual point of discharge.
4. Wells, springs, other surface water bodies and drinking water wells that are: 1) within ¼ mile of the property boundaries of the treatment facility and 2) listed in public record or otherwise known to the applicant.
5. Any areas where biosolids produced by the treatment facility are treated, stored, or disposed.
6. If the treatment facility receives waste classified as hazardous under the Resource Conservation and Recovery Act, or RCRA, by truck, rail, or special pipe, show on the map where hazardous waste enters the treatment works and where it is treated, stored or disposed.
7. Outline any wastewater land application sites.

B. Provide a process flow diagram with the influent and effluent design average flow and peak flow capabilities. Also, depict all of the treatment facility components and the corresponding hydraulic capacities of each component. In addition, include all recycle flows in the diagram. If land application is used, depict all irrigation equipment and application sites.

2.6 Provide the estimated project construction cost. This information will be useful to the department in conducting affordability analyses.

3.0 Complete the Wastewater Treatment Facility information. Include the Missouri State Operation Permit number, outfall number, physical location, and other appropriate contact information.

3.1 Provide the project legal description. The department's mapping system is available online at dnr.mo.gov/internetmapviewer.

3.2 A Global Positioning System, or GPS, is a satellite-based navigation system. The department prefers that a GPS receiver is used and the displayed coordinates submitted. If access to a GPS receiver is not available, use a mapping system to approximate the coordinates.

3.3 Provide the name of the receiving stream(s) to which the discharge is directed and any subsequent tributary until a continuous flowing stream is reached.

4.0 Complete Project Owner information. Include the legal name, address, phone number with area code and email address.

5.0 Complete Continuing Authority contact information. If same as the Project Owner, write "Same as above".

Include the permanent organization that will serve as the continuing authority for the operation, maintenance and modernization of the wastewater collection system. See 10 CSR 20-6.010(3) for the regulatory requirement regarding continuing authority.

5.1 Check the appropriate box. Include a letter signed by the continuing authority (if not same as the project owner) stating they will "accept, operate and maintain" the wastewater treatment facility after successful construction. The continuing authority may also complete the Continuing Authority and Receiving Wastewater Treatment Facility Acceptance form in lieu of a letter.

5.2 Complete if the continuing authority is a Missouri Public Service Commission, or PSC, regulated entity. See 10 CSR 20-6.010(3)(B)3 for more information. This information is not necessary for existing wastewater treatment facilities currently permitted with a PSC entity as owner and continuing authority.

5.3 Complete if the continuing authority is a property owners association. See 10 CSR 20-6.010(3) (B)5 for more information. This information is not necessary for existing wastewater treatment facilities currently permitted with the property owners association as owner and continuing authority.

6.0 Complete Engineer contact information.

7.0 All applications must be signed as follows in accordance with 10 CSR 20-6.010(2)(B) and the signatures must be original:

A. For a corporation, by an officer having responsibility for the overall operation of the regulated facility or activity or for environmental matters.

B. For a partnership or sole proprietorship, by a general partner or the proprietor.

C. For a municipal, state, federal or other public facility, by either a principal executive officer or by an individual having overall responsibility for environmental matters at the facility.

Part B – Land Application

Complete Part B only if the proposed construction project includes land application of wastewater from a treatment facility.

8.0 Provide the applicable Facility Information land application information. Check the appropriate boxes.

9.0 Provide the applicable Storage Basins information. Check the appropriate boxes.

- Freeboard – The depth from the top of the berm to the emergency spillway. Minimum depth is one foot.
- Total Depth – The depth from the top of the berm to the bottom of the basin.
- Safety Volume – The depth to contain the 25-year, 24-hour storm event. Minimum depth is one foot.
- Maximum Operating Water Level – The water level at the bottom of the safety volume. Minimum depth is two feet below the top of the berm.
- Minimum Operating Water Level – The water level above the bottom of the lagoon basin for seal protection. Minimum depth is two feet and may be greater when additional treatment volume is included.
- Total Depth is from the top of the berm to the bottom of the lagoon basin including freeboard.

10.0 Provide the applicable Land Application System information. Check the appropriate boxes.

10.8 Check the appropriate box. If the land application rate is based on a Nutrient Management Plan, or N and P, include the plan with this application for department review.

Mail the completed form and applicable fee to the department.

If there are any questions concerning this form, please contact the Department of Natural Resources, Water Protection Program at 800-361-4827 or 573-751-1300 or visit dnr.mo.gov/env/wpp/permits/ww-construction-permitting.htm.