

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION



CONSTRUCTION PERMIT

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

Elm Hills Utility Company, Inc.
Rainbow Acres Subdivision
Northeast 15 Road
Knob Noster, MO 65336

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.

August 28, 2018
Effective Date

March 5, 2019
Modification Date

August 27, 2020
Expiration Date


Edward B. Galbraith, Director, Division of Environmental Quality


Chris Wieberg, Director, Water Protection Program

CONSTRUCTION PERMIT

I. CONSTRUCTION DESCRIPTION

This is a **DEMONSTRATION** project and additional monitoring requirements are included in the operating permit in accordance with the Approval Process for Innovative Technology Factsheet. The facility is proposing to add aeration to the lagoon cell #2, then install a Triplepoint Water Technologies, LLC NitrOx™ system followed by a clarifier and chlorine disinfection to meet the schedule of compliance to achieve compliance with ammonia and *E. Coli* effluent limits. The facility will utilize the existing lagoon cells for flow equalization and reduce the design average flow to 9,900 gpd.

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. Lagoon cell #3 will be closed as part of this construction.

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 21 Design Group on January 26, 2018 and revised June 18, 2018.
3. The Department must be contacted in writing prior to making any changes to the approved 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(8).
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 Kansas City Regional Office per 10 CSR 20-7.015(9)(E)2.
5. The wastewater treatment facility shall be located at least fifty feet (50') from any dwelling or establishment.
6. The wastewater treatment facility shall be located above the twenty-five (25)-year flood level.
7. Wastewater treatment facility shall not be located within one hundred feet (100'), and preferably three hundred feet (300') of any water well or water supply structure.
8. 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.
9. 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.

10. Upon completion of construction:

- A. Elm Hills Utility Company, Inc. will become the continuing authority for operation, maintenance, and modernization of these facilities;
- B. Submit an electronic copy of the as built's 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)(D) and request the operating permit modification be issued.

IV. REVIEW SUMMARY

1. CONSTRUCTION PURPOSE

Rainbow Acres needs to upgrade to meet final ammonia and *E. Coli* effluent limits. The ammonia effluent limits are in effect and the *E. Coli* effluent limits become effective December 2019. The upgrade will be a demonstration project for the patent pending NitrOx™ Reactor System developed by Triplepoint Environmental. The upgrade will have lagoon cells 1 and 2 proceed the NitrOx™ 2-stage covered Moving Bed Biological Reactor (MBBR), followed by a clarifier and chlorine disinfection.

2. FACILITY DESCRIPTION

The Rainbow Acres Subdivision WWTF is located at Northeast 15 Road, Knob Noster, in Johnson County, Missouri. The facility currently has a design average flow of 27,500 gpd and serves a hydraulic population equivalent of approximately 275 people. The existing facility is a three cell aerated lagoon. As part of the upgrade the facility is proposing reducing the design average flow to 9,900 gpd based on flows received at the plant. The subdivision is built out with 44 connections averaging less than 200 gpd per connection (8800 gpd). The permit was renewed December 1, 2017 with a schedule of compliance to meet final ammonia and *E. Coli* effluent limits by December 1, 2019. Below is a summary of the existing facility's performance.

Parameter	Units	Permit Monthly Effluent Limit	Average discharge*
Flow	MGD	*	0.0049
Biochemical Oxygen Demand ₅	mg/L	45	14.32
Total Suspended Solids	mg/L	65	23.35
Ammonia as N-summer	mg/L	*/1.4	5.5
Ammonia as N-winter	mg/L	*/2.9	10.36

* monitoring only

*discharge monitoring reports January 1, 2012 through December 31, 2017.

3. COMPLIANCE PARAMETERS

The final effluent limits the project is required to meet are established in the Rainbow Acres Subdivision's operating permit, MO-0113271 which was issued on December 1, 2017. With the addition of the Nitrox system and clarifier, the facility no longer qualifies for equivalent to secondary effluent limits for biochemical oxygen demand (BOD) or total suspended solids (TSS).

The construction is to meet more protective effluent limits. As this is a demonstration project, for the first year of operation following construction, additional monitoring will be required before and after the MBBR. The limits following the completion of construction will be applicable to the facility:

Parameter	Units	Monthly average limit
Biochemical Oxygen Demand ₅	mg/L	30
Total Suspended Solids	mg/L	30
Ammonia as N-summer	mg/L	1.4
Ammonia as N-winter	mg/L	2.8
pH	SU	6.5-9.0
Total Residual Chlorine	µg/L	8 (130 ML)
<i>E. Coli</i>	#/100mL	206

4. REVIEW of MAJOR TREATMENT DESIGN CRITERIA

The current design guides, 10 CSR 20-8, do not contain design parameters for the innovative NitrOx™ Moving Bed Bioreactor process. As a **DEMONSTRATION** project, the data gathered with the operating permit will be used to help develop design criteria for future projects.

The facility proposes to reduce the design average flow based on the discharge monitoring reports for the last five years, drinking water reports of 6,400 gpd, the lack of new connections and growth, and with the lagoon providing flow equalization, the upgrades to the treatment facility reduce the design average flow to 9,900 gpd. In Appendix A is the facility flow diagram with the upgrades in place.

Existing major components which will remain in use include the following:

- Lagoon Cell No. 1 –Lagoon Cell No. 1 has a surface area of 1.35 acres and a wastewater volume of 1.1 million gallons (MG), providing approximately 105.1 days of retention at the design flow.
- Lagoon Cell Nos. 2 – Lagoon Cell No. 2 is currently non-aerated and has a surface area of 0.29 acres and a wastewater volume of 0.3 MG. This provides approximately 25.3 total days of retention at the proposed design flow.

Construction will cover the following items:

- Lagoon Cell No. 3 will be closed as part of this construction project.
- Aeration will be added to the lagoon cell #2 as part of the construction. The facility is proposing to use Triplepoint MARS aeration system or equivalent with fine bubble diffusion to increase mixing.
- Triplepoint Water Technologies, LLC NitrOx™ – The lagoon treated effluent will flow by gravity to the NitrOx™ system. The NitrOx™ system is capable of treating a design average flow of 10,000 gpd and a peak flow of 35,000 gpd.
 - The system is composed of one tank with approximately 7 ft diameter and a side water depth of 7 ft. Total volume of the tank is 2,015 gallons.
 - The average flow hydraulic retention time is 3.9 hours and the peak flow hydraulic retention time is 1.8 hours.
 - A floating insulating cover shall be installed on the tank. An immersion tank heater will be installed to maintain a minimum wastewater temperature of 39°F.
 - The tank shall be filled approximately 65% with high surface area HDPE media.
 - Total media surface area available is 26,188 ft² which is greater than the required is 25,930 ft².
 - Aeration by means of two tri-lobe positive displacement blowers each capable of supplying 29 scfm with 3.0 HP motors.
 - The effluent from the NitrOx™ will flow by gravity to the clarifier for polishing prior to disinfection and discharge.
- Hopper Style Clarifier- The hopper type clarifier will have a surface area of 50.27 square feet. The volume of the clarifier is 12,990 gallons with an average overflow rate of 197 gpd/square foot.
 - The hydraulic retention time is 4.32 hours at design average flow which meets the minimum requirements of 10 CSR 20-8.020(13)(B)7 or 1.08 hours at a peak flow of 39,600 gpd.
 - The clarifier has the dimensions of 8 ft diameter by 3 ft depth in the cylinder section with a sidewater depth of 9.06 feet.
 - The detention capacity of the hopper, using only the top third (by height) per 10 CSR 20-8.020(13)(B)7.C is 654.4 gallons.
- Disinfection – Disinfection is the process of removal, deactivation, or killing or pathogenic microorganisms.
 - Tablet Chlorinator – Installation of a tablet Norweco Bio-Dynamic XT2000 or equivalent chlorination chamber receiving clarified effluent and prior to the chlorine contact tank. The tablet chlorinator shall have a design flow of 20,000 gpd and a maximum flow of 100,000 gpd. The system will dispense hypochlorite as the wastewater comes into contact with the tablets.
 - Tablet Dechlorinator – Installation of a Norweco Bio-Dynamic XT2000 or equivalent dechlorination chamber receiving the chlorinated effluent and prior to Outfall No. 001. The tablet dechlorinator shall have a design flow of 20,000 gpd and a maximum flow of 100,000 gpd. The system will dispense sodium sulfite as the wastewater comes into contact with the tablets.

- Emergency Power – the facility will be equipped for emergency back-up power connection via access to a portable trailer mounted generator on hand to install at the plant in case of a power outage.

5. OPERATING PERMIT

Operating permit MO-0113271 will require a modification to reflect the construction activities. The modification and upgrades to the treatment plant removes the schedule of compliance from the operating permit. The modified Rainbow Acres WWTF, MO-0113271 was successfully public noticed from July 5, 2018 to August 6, 2018 with no comments received. Submit the Statement of Work Completed to the Department in accordance with 10 CSR 20-6.010(5)(D) and request the operating permit modification be issued. The facility has already paid for the operating permit modification.

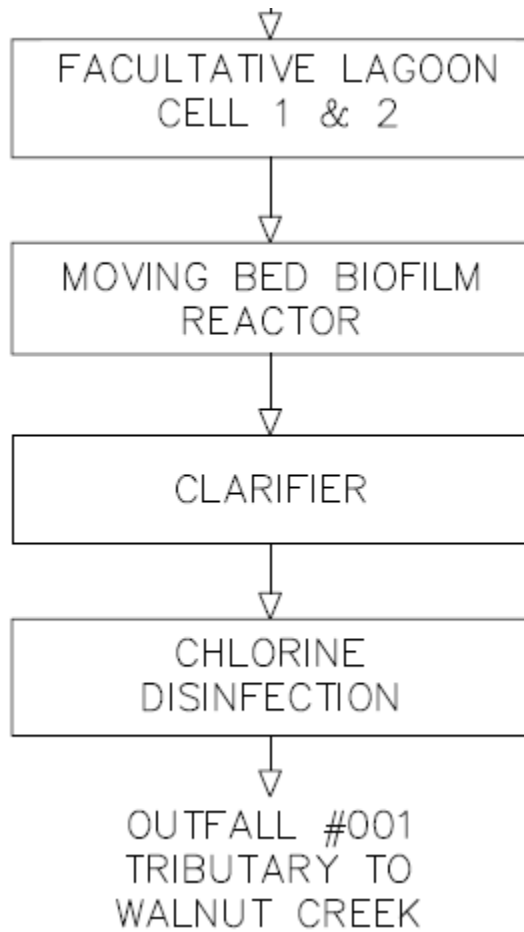
6. CONSTRUCTION PERMIT MODIFICATION

On February 19, 2019, Elms Hills Utility Operating Company, Inc. submitted an ownership transfer. The construction permit has been updated to reflect the new owner and continuing authority. Permit condition #10 was updated to reflect the new continuing authority. The operating permit modification will be issued to Elm Hills Utility Operating Company, Inc.

Leasue Meyers, EI
Engineering Section
leasue.meyers@dnr.mo.gov

Cindy LePage, P.E.
Engineering Section
cindy.lepage@dnr.mo.gov

Appendix A: Process Flow Diagram



31797

RECEIVED

FEB 19 2019



MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM
APPLICATION FOR TRANSFER OF OPERATING PERMIT

Water Protection Program

FOR AGENCY USE ONLY	
CHECK NO.	1231
DATE RECEIVED	2-19-19
FEE SUBMITTED	\$100.00

SB

THE FOLLOWING ITEMS (1 - 4) ARE TO BE COMPLETED BY THE CURRENT OWNER.
SEE INSTRUCTIONS FOR APPROPRIATE FEE TO BE SUBMITTED WITH APPLICATION.

1. FACILITY

NAME Rainbow Acres Subdivision		TELEPHONE NUMBER WITH AREA CODE (660) 864-7714	
ADDRESS (PHYSICAL) Northeast 15 Road	CITY Knob Noster	STATE MO	ZIP 65336
PERMIT NUMBER #MO- 0113271	COUNTY Johnson		

2. CURRENT OWNER

NAME Rainbow Acres Homeowners' Association, Inc.		EMAIL ADDRESS swelly@charter.net		TELEPHONE NUMBER WITH AREA CODE (660) 864-7714	
ADDRESS P.O. Box 264	CITY Knob Noster	STATE MO	ZIP 65336		

3. CONTINUING AUTHORITY: Permanent organization that will serve as the continuing authority for the operation, maintenance and modernization of the facility. (If same as current owner, respond "same")

NAME Same		EMAIL ADDRESS		TELEPHONE NUMBER WITH AREA CODE	
ADDRESS	CITY	STATE	ZIP		

4. CERTIFICATION

I certify I am familiar with the information contained in the application, that to the best of my knowledge and belief such information is true, complete and accurate, and upon transfer approval, I agree to abide by the Missouri Clean Water Law and all rules, regulations, orders and decisions, subject to any legitimate appeal available under the Missouri Clean Water Law. Further, I certify I have read the existing permit and agree to abide by the terms and conditions once the transfer is complete.

NAME (TYPE OR PRINT) Darrin Tobias		OFFICIAL TITLE President		TELEPHONE NUMBER WITH AREA CODE (660) 864-7714	
SIGNATURE 				DATE SIGNED December 14, 2018	

THE FOLLOWING ITEMS (5 – 10) WILL APPLY AFTER THE COMPLETION OF TRANSFER (SALE) AND ARE TO BE COMPLETED BY THE APPLICANT FOR TRANSFER OF OPERATING PERMIT (BUYER) OR AUTHORIZED AGENT.

5. FACILITY (IF DIFFERENT THAN ABOVE)

NAME	TELEPHONE NUMBER WITH AREA CODE
------	---------------------------------

6. FUTURE OWNER

NAME	EMAIL ADDRESS	TELEPHONE NUMBER WITH AREA CODE
Elm Hills Utility Operating Company, Inc.	jcox@cswrgroup.com	(314) 283-7316

ADDRESS	CITY	STATE	ZIP
500 Northwest Plaza Dr. Suite 500	St. Ann	MO	63074

7. CONTINUING AUTHORITY: Permanent organization that will serve as the continuing authority for the operation, maintenance and modernization of the facility. (If same as future owner, respond "same")

NAME	EMAIL ADDRESS	TELEPHONE NUMBER WITH AREA CODE
------	---------------	---------------------------------

same		
ADDRESS	CITY	STATE ZIP

8. FACILITY CONTACT

NAME	TITLE
Josiah Cox	President

EMAIL ADDRESS	TELEPHONE NUMBER WITH AREA CODE
jcox@cswrgroup.com	(314) 283-7316

ADDRESS	CITY	STATE	ZIP
500 Northwest Plaza Dr. Suite 500	St. Ann	MO	63074

9. ADDITIONAL INFORMATION

9.1 Anticipated effective date of transfer of ownership: December 14, 2018

9.2 Are any changes in production, in raw materials, or in the quantity of discharges from this facility planned or anticipated?
☐ Yes ☐ No If yes, explain (Attach sheets as necessary)

10. ELECTRONIC DISCHARGE MONITORING REPORT (eDMR) SUBMISSION SYSTEM

Per 40 CFR Part 127 National Pollutant Discharge Elimination System (NPDES) Electronic Reporting Rule, reporting of effluent limits and monitoring shall be submitted by the permittee via an electronic system to ensure timely, complete, accurate, and nationally-consistent set of data. **One of the following must be checked in order for this application to be considered complete.** Please visit <http://dnr.mo.gov/env/wpp/edmr.htm> to access the Facility Participation Package.

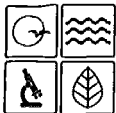
- ☐ - You have completed and submitted with this permit application the required documentation to participate in the eDMR system.
- ☐ - You have previously submitted the required documentation to participate in the eDMR system and/or you are currently using the eDMR system.
- ☐ - You have submitted a written request for a waiver from electronic reporting. See instructions for further information regarding waivers.

11. CERTIFICATION

I certify I am familiar with the information contained in the application, that to the best of my knowledge and belief such information is true, complete and accurate, and upon transfer approval, I agree to abide by the Missouri Clean Water Law and all rules, regulations, orders and decisions, subject to any legitimate appeal available under the Missouri Clean Water Law. Further, I certify I have read the existing permit and agree to abide by the terms and conditions once the transfer is complete.

NAME (TYPE OR PRINT)	OFFICIAL TITLE	TELEPHONE NUMBER WITH AREA CODE
Josiah Cox	President	(314) 283-7316

SIGNATURE	DATE SIGNED
-----------	-------------



MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM

**APPLICATION FOR CONSTRUCTION PERMIT
WASTEWATER FACILITY**

SCANNED

RECEIVED

FEB 14 2018

Water Protection Program

00001972

AP29285

FOR DEPARTMENT USE ONLY

APP NO.

CP NO.

SEE RECEIVED

CHECK NO.

DATE RECEIVED

2-14-18

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: N/A
- 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

Rainbow Acres Subdivision WWTF Improvements

2.2 PROJECT DESCRIPTION

Improvements to the facility consist of installation of an MBBR and disinfection unit.

2.3 SLUDGE HANDLING, USE AND DISPOSAL DESCRIPTION

Sludge storage is in the lagoon cells

2.4 DESIGN INFORMATION


- A. Current population: 132; Design population: 275
- B. Actual Flow: 8,400 gpd; Design Average Flow: 9,900 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

\$

3.0 WASTEWATER TREATMENT FACILITY				
NAME Rainbow Acres Subdivision		TELEPHONE NUMBER WITH AREA CODE		EMAIL ADDRESS
ADDRESS (PHYSICAL) NE 15 Rd	CITY Knob Noster	STATE MO	ZIP CODE 65336	COUNTY Johnson
Wastewater Treatment Facility: Mo- 0113271 (Outfall 1 Of 1)				
3.1 Legal Description: NE ¼, SE ¼, ¼, Sec. 23 , T 46 , R 24W (Use additional pages if construction of more than one outfall is proposed.)				
3.2 UTM Coordinates Easting (X): 454400 Northing (Y): 4290087 For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)				
3.3 Name of receiving streams: Unnamed Tributary to Walnut Creek				
4.0 PROJECT OWNER				
NAME Rainbow Acres Homeowners Association, Inc.		TELEPHONE NUMBER WITH AREA CODE (660) 563-3807		EMAIL ADDRESS swelly@charter.net
ADDRESS NE 15 Rd	CITY Knob Noster	STATE MO	ZIP CODE 65336	
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 Same		TELEPHONE NUMBER WITH AREA CODE		EMAIL ADDRESS
ADDRESS	CITY	STATE	ZIP CODE	
5.1 A letter from the continuing authority, if different than the owner, is included with this application. <input type="checkbox"/> YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> 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? <input type="checkbox"/> YES <input checked="" type="checkbox"/> 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? <input type="checkbox"/> YES <input checked="" type="checkbox"/> 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? <input type="checkbox"/> YES <input checked="" type="checkbox"/> 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? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO				
D. Is a copy of the Missouri Secretary of State's nonprofit corporation certificate included with this application? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO				
6.0 ENGINEER				
ENGINEER NAME / COMPANY NAME Benjamin Kuenzel, 21 Design Group, Inc.		TELEPHONE NUMBER WITH AREA CODE (636) 432-2144		EMAIL ADDRESS ben@21designgroup.net
ADDRESS 1351 Jefferson, Suite 301	CITY Washington	STATE MO	ZIP CODE 63090	
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 Darrin Tobias			DATE 02/07/18	
TITLE OR CORPORATE POSITION HOA President		TELEPHONE NUMBER WITH AREA CODE (660) 563-3807		EMAIL ADDRESS swelly@charter.net
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: _____ 1/4, _____ 1/4, _____ 1/4, _____ Sec. _____ T _____ R _____ County _____ Acres

Location: _____ 1/4, _____ 1/4, _____ 1/4, _____ Sec. _____ T _____ R _____ County _____ Acres

Location: _____ 1/4, _____ 1/4, _____ 1/4, _____ 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