STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

MISSOURI CLEAN WATER COMMISSION

CONSTRUCTION PERMIT

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

Heart of America Council – Boy Scouts of America
10210 Holmes Rd.
Kansas City, MO 64131

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.

April 13, 2016
Effective Date

Sara Parker Pauley, Director, Department of Natural Resources

April 12, 2018
Expiration Date

John Madras, Director, Water Protection Program

CONSTRUCTION PERMIT

I. CONSTRUCTION DESCRIPTION

The project consists of converting the existing two-cell discharging lagoon that currently serves Piercing Arrow campground at Bartle Scout Reservation in St. Clair County, to a no discharge system. The facility will serve a design PE of 600 with a design flow of 15,099 gpd. The construction will eliminate the existing outfall and make the facility a no discharge system by means of a pump station with PVC forcemain and impact irrigation sprinklers.

The berm height in the second cell of the lagoon will be raised 1 foot to increase capacity but still allow 2 feet of freeboard. The water from the lagoon will be pumped to and through the fixed sprinkler irrigation system by a single vertical turbine pump with a design flow rate of 94 gallons per minute (gpm) and total dynamic head of 99 feet. THe pump will have a screened intake in order to prevent clogging. The 5 foot diameter pump station will have a highwater alarm consisting of a light that illuminates both at the top of pump station and at the main road so that it does not go overlooked.

The forcemain to carry the water to the sprinklers will be approximately 2,010 linear feet of 4-inch PVC SDR-21 with thrust blocking at all bends. Land application will be carried out over the approximately 3.1 acres of cool-season grasses and mature trees with 20 fixed sprinklers. Each sprinkler has a radius of 46 feet and a flow rate of 4.7 gpm. It is expected that the facility will land apply 0.07 inches per hour, 0.5 inches per day, and 2.7 inches per week.

The project will also include general site work appropriate to the scope and purpose of the project.

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 Shafer, Kline & Warren Inc. on March 18, 2016.

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 Southwest Regional Office per 10 CSR 20-7.015(9)(E)2.

5. This construction permit is invalid for projects required to comply with the requirements contained in 10 CSR 20-4, "Grants and Loans"

6. Protection of drinking water supplies shall be in accordance with 10 CSR 20-8.120(10). "There shall be no physical connections between a public or private potable water supply system and a sewer, or appurtenance thereto which would permit the passage of any wastewater or polluted water into the potable supply. No water pipe shall pass through or come in contact with any part of a sewer manhole."

7. Sewers in relation to water works structures shall meet the requirements of 10 CSR 23-3.010 with respect to minimum distances from public water supply wells or other water supply sources and structures.

   A. Sewer mains shall be laid at least 10 feet horizontally from any existing or proposed water main. The distances shall be measured edge-to-edge. In cases where it is not practical to maintain a 10 foot separation, the department may allow a deviation on a case-by-case basis, if supported by data from the design engineer. Such a deviation may allow installation of the sewer closer to a water main, provided that the water main is in a separate trench or on an undisturbed earth shelf located on either side of the sewer and at an elevation so the bottom of the water main is at least 18 inches above the top of the sewer. If it is impossible to obtain proper horizontal and vertical separation as described above for sewers, the sewer must be constructed of slip-on or mechanical joint pipe or continuously encased and be pressure tested to 150 pounds per square inch to assure water tightness.

   B. Manholes should be located at least 10 feet horizontally from any existing or proposed water main.

   C. Manholes shall be located with the top access at or above grade level.

D. Sewers crossing water mains shall be laid to provide a minimum vertical distance of 18 inches between the outside of the water main and the outside of the sewer. This shall be the case where the water main is either above or below the sewer. The crossing shall be arranged so that the sewer joints will be equidistant and as far as possible from the water main joints. Where a water main crosses under a sewer, adequate structural support shall be provided for the sewer to maintain line and grade. When it is impossible to obtain proper vertical separation as stipulated above, one of the following methods must be specified:

a. The sewer shall be designed and constructed equal to the water pipe and shall be pressure tested to assure water tightness prior to backfilling; or

b. Either the water main or sewer line may be continuously encased or enclosed in a watertight carrier pipe which extends 10 feet on both sides of the crossing, measured perpendicular to the water main. The carrier pipe shall be of materials approved by the department for use in water main construction.

8. In addition to the requirements for a construction permit, 10 CSR 20-6.200 requires land disturbance activities of one 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 www.dnr.mo.gov/env/wpp/epermit/help.htm. See www.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 www.dnr.mo.gov/env/wpp/401/ for more information.

10. Upon completion of construction;
    A. The Heart of America Council – Boy Scouts of America will become the continuing authority for operation, maintenance, and modernization of these facilities;

    B. Submit the enclosed form Statement of Work Completed to the department in accordance with 10 CSR 20-6.010(5)(D);

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

D. Submit a Form B - Application for an Operating Permit for Domestic or Municipal Wastewater (≤100,000 gallons per day) along with the modification fee to the Regional Office.

E. Submit a Form J - Request for Termination of a State Operating Permit, Form—MO 780-1576.

IV. REVIEW SUMMARY

1. AMMONIA

The Water Protection Program 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 has initiated stakeholder discussions on this topic and at this time, there is no firm target date for starting the rulemaking to adopt new standards. More information can be found at http://dnr.mo.gov/pubs/pub2481.pdf .

This construction will make the system no discharge and will therefore not have permit limits for ammonia.

2. CONSTRUCTION PURPOSE

This construction allows the facility to comply with their operating permit's schedule of compliance to meet effluent limits for Ammonia as N by March 1, 2017.

3. FACILITY DESCRIPTION

The construction will result in a modification of the existing discharging two cell lagoon with a design flow of 15,500 gpd to a no discharge system with a design flow of 15,099 gpd. Land application will be carried out with 20 sprinklers over approximately 3.1 acres.

4. COMPLIANCE PARAMETERS

This construction allows the facility to comply with its schedule of compliance to meet final effluent limitations for Ammonia as N no later than March 1, 2017. The no discharge system will also help the facility to comply with current and future discharge limitations.

5. REVIEW of MAJOR TREATMENT DESIGN CRITERIA

The Piercing Arrow Camp has 13 separate campsites with a total rated capacity of 634 campers. About 15% of campers have access to wastewater and the remainder use pit latrines. There are also eight washing machines at the facility.

The facility's design flow was revised from 15,500 gpd to 15,099 gpd with this project. The proposed dry weather seasonal design flow of 13,053 gpd coordinates with the provided occupancies and the design flows listed in the Chapter 8 Design Guides.

The facility is seasonal and only operates about 70 days during the year, from May to August. In accordance with 10 CSR 20-8.020(15)(F)2, a storage capacity of 45 days or the flow generated during the period of operation, whichever is less, must be provided. The lagoon has a storage volume of 1,588,604 gallons. At the dry weather design flow of 13,053 gpd storage is available for approximately 122 days and at the seasonal design flow of 15,099 gpd (1-in-10 year design including net rainfall minus evaporation) storage is available for 105 days.

Rachel Schneider, E.I.
Engineering Section
rachel.schneider@dnr.mo.gov

MO-0102067 CP0001829
AP23177 c15954

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM

APPLICATION FOR CONSTRUCTION PERMIT – WASTEWATER TREATMENT FACILITY

FOR DEPARTMENT USE ONLY	
APP NO.	CP NO.
FEE RECEIVED $1000.00	CHECK NO. 126855
DATE RECEIVED 3/18/16	

APPLICATION OVERVIEW

The Application for Construction Permit – Wastewater Treatment Facility 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 Has the Missouri Department of Natural Resources approved the proposed project's antidegradation review?
☐ YES Date of Approval: N/A

1.3 Has the department approved the proposed project's facility plan*?
☑ YES Date of Approval: 10/5/2015 ☐ NO ☐ N/A (If Not Applicable, complete No. 1.4.)

1.4 [Complete only if answered Not Applicable on No. 1.3.] 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

1.5 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

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

1.7 Has the appropriate operating permit application (A, B, or B2) been submitted to the department?
☐ YES Date of submittal: _____
☐ Enclosed is the appropriate operating permit application submittal. Denote which form: ☐ A ☐ B ☐ B2
☑ N/A Please explain: GP

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

1.9 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

H. Roe Bartle Scout Reservation WWTF Improvements Piercing Arrow Lagoons

2.2 PROJECT DESCRIPTION

Converting an existing discharging lagoon system to a no discharge system by constructing a pump station with PVC forcemain and impact irrigation sprinklers for the land application.

2.3 SLUDGE HANDLING, USE AND DISPOSAL DESCRIPTION

To be retained in the lagoon.

2.4 DESIGN INFORMATION

A. Current population: 522; Design population: 600

B. Actual Flow: 3094 gpd; Design Average Flow: 13053 gpd;
Actual Peak Daily Flow: 13053 gpd; Design Maximum Daily Flow: 15099 gpd; Design Wet Weather Event: 1 in 10

2.5 ADDITIONAL INFORMATION

A. Is a topographic map attached? ☑ YES ☐ NO

B. Is a process flow diagram attached? ☑ YES ☐ NO

3.0 WASTEWATER TREATMENT FACILITY

NAME	TELEPHONE NUMBER WITH AREA CODE	E-MAIL ADDRESS
H. Roe Bartle Scout Reservation - Piercing Arrow	417-646-8115	

ADDRESS (PHYSICAL)	CITY	STATE	ZIP CODE	COUNTY
5525 NE Scout Camp Rd.	Osceola	MO	64776	St. Clair

Wastewater Treatment Facility: Mo- 0102067 (Outfall Of)

3.1 Legal Description: ____ ¼, SE ¼, NW ¼, Sec. 34, T 39N, R 24W
(Use additional pages if construction of more than one outfall is proposed.)

3.2 UTM Coordinates Easting (X): 451847 Northing (Y): 4216966
For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)

3.3 Name of receiving streams: unnamed Tributary to Briley Creek

4.0 PROJECT OWNER

NAME	TELEPHONE NUMBER WITH AREA CODE	E-MAIL ADDRESS
Heart of America Council - Boy Scouts of America	(816) 942-9333	

ADDRESS	CITY	STATE	ZIP CODE
10210 Holmes Rd.	Kansas City	MO	64131

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	E-MAIL ADDRESS
Heart of America Council - Boy Scouts of America	(816) 942-9333	

ADDRESS	CITY	STATE	ZIP CODE
10210 Holmes Rd.	Kansas City	MO	64131

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	E-MAIL ADDRESS
Barbara Li - Shafer, Kline & Warren, Inc.	(573) 234-2609	Barbara.Li@skw-inc.com

ADDRESS	CITY	STATE	ZIP CODE
3200 Penn Terrace, Suite 100	Columbia	MO	65202

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
Rick Ledgerwood	3/17/2016

TITLE OR CORPORATE POSITION	TELEPHONE NUMBER WITH AREA CODE	E-MAIL ADDRESS
Property Superintendent	(913) 422-1035	rledgerw@bsamail.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) Dom. Seasonal

8.2 Months when the business or enterprise will operate or generate wastewater:
☐ 12 months per year ☑ Part of the year (list months): May ,June, July & August

8.3 This system is designed for:
☑ No-discharge.
☐ 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: 2 (Use additional pages if greater than three 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.

	Length	Width	Depth	Freeboard	Depth	Safety	% Slope
Basin #1:	297	258	6	1	6	1	33
Basin #2:	198	150	7.5	1	7.5	1	33
Basin #3:							

9.4 Storage Basin operating levels (report as feet below emergency overflow level).
Basin #1: Maximum operating water level 1 ft Minimum operating water level 3 ft
Basin #2: Maximum operating water level 1 ft Minimum operating water level 4.5 ft
Basin #3: Maximum operating water level _____ ft Minimum operating water level _____ ft

9.5 Design depth of sludge in storage basins.
Basin #1: 2 ft Basin #2: 2 ft Basin #3: _____ ft

9.6 Existing sludge depth, if the basins are currently in operation.
Basin #1: <0.5 ft Basin #2: <0.5 ft Basin #3: _____ ft

9.7 Total design sludge storage: _____ dry tons and 150k cubic feet

10.0 LAND APPLICATION SYSTEM

10.1 Number of irrigation sites 1 Total Acres 3.1 Maximum % field slopes 4%

Location:	¼, NE	¼, SW	¼, 34	Sec. 39N	T 24W	R St. Cl	County 3.1	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.)

10.2 Type of vegetation: ☑ Grass hay ☐ Pasture ☑ Timber ☐ Row crops
☐ Other (describe) _____

10.3 Wastewater flow (dry weather) gallons per day: Average annual 3,094 Seasonal 13,053 Off-season 0

10.4 Land application rate (design flow including 1-in-10 year storm water flows):

Design:	28 inches/year	0.07 inches/hour	0.5 inches/day	2.7 inches/week
Actual:	24 inches/year	0.07 inches/hour	0.5 inches/day	2.7 inches/week

10.5 Total irrigation per year (gallons): Design: _____ gal Actual: _____ gal 2,352,790

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

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