



MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

MISSOURI AIR CONSERVATION COMMISSION

PERMIT TO CONSTRUCT

Under the authority of RSMo 643 and the Federal Clean Air Act the applicant is authorized to construct the air contaminant source(s) described below, in accordance with the laws, rules and conditions as set forth herein.

Permit Number:

122016 - 006

Project Number: 2016-11-019

Installation Number: 173-0047

Parent Company: Hannibal Board of Public Works

Parent Company Address: 3 Industrial Loop Drive, Hannibal, MO 63401-1589

Installation Name: Hannibal Board of Public Works

Installation Address: 3 Industrial Loop Drive, Hannibal, MO 63401-1589

Location Information: Ralls County, S1/2, T56/57N, R4/5W

Application for Authority to Construct was made for:
Installation of ten compression ignition reciprocating internal combustion engines. This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060 *Construction Permits Required*.

Standard Conditions (on reverse) are applicable to this permit.

Standard Conditions (on reverse) and Special Conditions are applicable to this permit.



Prepared by
Alana Hess
New Source Review Unit



Director of Designee
Department of Natural Resources

DEC 16 2016

Effective Date

STANDARD CONDITIONS:

Permission to construct may be revoked if you fail to begin construction or modification within two years from the effective date of this permit. Permittee should notify the Enforcement and Compliance Section of the Air Pollution Control Program if construction or modification is not started within two years after the effective date of this permit, or if construction or modification is suspended for one year or more.

You will be in violation of 10 CSR 10-6.060 if you fail to adhere to the specifications and conditions listed in your application, this permit and the project review. In the event that there is a discrepancy between the permit application and this permit, the conditions of this permit shall take precedence. Specifically, all air contaminant control devices shall be operated and maintained as specified in the application, associated plans and specifications.

You must notify the Enforcement and Compliance Section of the Department's Air Pollution Control Program of the anticipated date of start up of these air contaminant source(s). The information must be made available within 30 days of actual startup. Also, you must notify the Department's Northeast Regional Office within 15 days after the actual start up of these air contaminant source(s).

A copy of the permit application and this permit and permit review shall be kept at the installation address and shall be made available to Department's personnel upon request.

You may appeal this permit or any of the listed special conditions to the Administrative Hearing Commission (AHC), P.O. Box 1557, Jefferson City, MO 65102, as provided in RSMo 643.075.6 and 621.250.3. If you choose to appeal, you must file a petition with the AHC within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed. If it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC.

If you choose not to appeal, this certificate, the project review and your application and associated correspondence constitutes your permit to construct. The permit allows you to construct and operate your air contaminant source(s), but in no way relieves you of your obligation to comply with all applicable provisions of the Missouri Air Conservation Law, regulations of the Missouri Department of Natural Resources and other applicable federal, state and local laws and ordinances.

The Air Pollution Control Program invites your questions regarding this air pollution permit. Please contact the Construction Permit Unit using the contact information below.

Contact Information:
Missouri Department of Natural Resources
Air Pollution Control Program
P.O. Box 176
Jefferson City, MO 65102-0176
(573) 751-4817

The regional office information can be found at the following website:
<http://dnr.mo.gov/regions/>

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

The special conditions listed in this permit were included based on the authority granted the Missouri Air Pollution Control Program by the Missouri Air Conservation Law (specifically 643.075) and by the Missouri Rules listed in Title 10, Division 10 of the Code of State Regulations (specifically 10 CSR 10-6.060). For specific details regarding conditions, see 10 CSR 10-6.060(12)(A)10. "Conditions required by permitting authority."

Hannibal Board of Public Works
Ralls County, S1/2, T56/57N, R4/5W
Marion County, S20, T57N, R4W
Marion County, S32, T57N, R4W

1. NO_x Emission Limitation

- A. Hannibal Board of Public Works shall emit less than 40.0 tons of NO_x in any consecutive 12-month period from the ten compression ignition (CI) reciprocating internal combustion engines (RICE) as listed in Table 1.

Table 1: Emission Sources subject to NO_x Limit

Emission Source	Description	Location
EP-01	2,000 kW diesel CI RICE	Oakwood Substation, 3601 Warren Barrett Dr.
EP-02	2,000 kW diesel CI RICE	
EP-03	2,000 kW diesel CI RICE	
EP-04	2,000 kW diesel CI RICE	
EP-05	2,000 kW diesel CI RICE	
EP-06	2,000 kW diesel CI RICE	
EP-07	2,000 kW diesel CI RICE	
EP-08	2,000 kW diesel CI RICE	
EP-09	2,000 kW diesel CI RICE	Water Treatment Plant, 1 Riverview Park Dr.
EP-10	2,000 kW diesel CI RICE	Wastewater Treatment Plant, 700 South Arch St.

- B. Attachment A or an equivalent form, such as an electronic form, approved by the Air Pollution Control Program shall be used to demonstrate compliance with Special Condition 1.A.

2. Record Keeping and Reporting Requirements

- A. Hannibal Board of Public Works shall maintain all records required by this permit for not less than five years and shall make them available immediately to any Missouri Department of Natural Resources' personnel upon request.

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

- B. Hannibal Board of Public Works shall report to the Air Pollution Control Program's Compliance/Enforcement Section, P.O. Box 176, Jefferson City, MO 65102, no later than 10 days after the end of the month during which any record required by this permit shows an exceedance of a limitation imposed by this permit.

REVIEW OF APPLICATION FOR AUTHORITY TO CONSTRUCT AND OPERATE
SECTION (5) REVIEW

Project Number: 2016-11-019
Installation ID Number: 173-0047
Permit Number: 122016-006

Installation Address:

Oakwood Substation
3601 Warren Barrett Dr.
Hannibal, MO 63401
Ralls County, S1/2, T56/57N, R4/5W

Parent Company:

Hannibal Board of Public Works
3 Industrial Loop Dr.
Hannibal, MO 63401-1589

Water Treatment Plant

1 Riverview Park Dr.
Hannibal, MO 63401
Marion County, S20, T57N, R4W

Wastewater Treatment Plant

700 South Arch Street
Hannibal, MO 63401
Marion County, S32, T57N, R4W

REVIEW SUMMARY

- Hannibal Board of Public Works has applied for authority to install eight CI RICE at their Oakwood Substation, one CI RICE at their Water Treatment Plant, and one CI RICE at their Wastewater Treatment Plant.
- The application was deemed complete on November 7, 2016.
- HAP emissions are expected from the proposed equipment. HAPs emitted from the combustion of diesel in the RICE.
- 40 CFR Part 60, Subpart IIII – *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines* applies to the CI RICE. The RICE are required to meet the non-emergency engine standards as they will be operated for peak shaving and demand response purposes. These engines are being removed from one existing location and reinstalled at these new locations; therefore, they are not required to meet the Tier 4 requirements at 40 CFR 1039 per §60.4208(i).
- 40 CFR Part 63, Subpart ZZZZ – *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines* applies to the CI RICE, compliance is demonstrated by complying with NSPS IIII per §63.6590(c).

- No air pollution control equipment is being used in association with the new equipment.
- This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060 *Construction Permits Required*. Potential emissions of NO_x are conditioned below de minimis levels.
- This installation is located in Ralls and Marion Counties, attainment areas for all criteria pollutants.
- This installation is not on the List of Named Installations found in 10 CSR 10-6.020(3)(B), Table 2. The installation's major source level is 250 tons per year and fugitive emissions are not counted toward major source applicability.
- Ambient air quality modeling was not performed since conditioned potential emissions of the application are below de minimis levels.
- Emissions testing is not required for the equipment as a part of this permit. If the installation does not install, configure, operate, and maintain the RICE according to the manufacturer's emission-related written instructions or the installation changes emission-related settings in a way that is not permitted by the manufacturer, emissions testing is required per §60.4211(g)(3).
- No Operating Permit is required for this installation.
- Approval of this permit is recommended with special conditions.

INSTALLATION/PROJECT DESCRIPTION

Hannibal Board of Public Works has requested to install eight RICE at their Oakwood Substation, one RICE at their Water Treatment Plant, and one RICE at their Wastewater Treatment Plant. The Hannibal Board of Public Works Office is located at 3 Industrial Loop Drive, Hannibal, MO 63401. The Oakwood Substation, Water Treatment Plant, and Wastewater Treatment Plant are considered one installation for permitting purposes as they share the same two digit SIC code (49: Electric, Gas, and Sanitary Services), are located on one or more contiguous or adjacent properties (all of the engines will be controlled from the Hannibal Board of Public Works office, the Oakwood Substation, Wastewater Treatment Plant, and Water Treatment plant are all within 4.3 miles of one another), and are under common control (Hannibal Board of Public Works).

The RICE will be used for emergency electrical service and peak shaving purposes. Each of the ten RICE is rated at 2,000 kW (2,912 bHP) and are capable of combusting 136.8 gallons of diesel fuel per hour. The engines have model years ranging from 2008 to 2010. Each engine is subject to NSPS IIII which requires them to meet Tier 2

emissions standards and combust diesel with a maximum sulfur content of 15 ppm. The installation will comply with NSPS IIII by purchasing certified engines, if the installation does not install, configure, operate, and maintain the RICE according to the manufacturer's emission-related written instructions or the installation changes emission-related settings in a way that is not permitted by the manufacturer, emissions testing is required per §60.4211(g)(3).

The installation will be complying with a 40 tpy de minimis NO_x limit to avoid PSD permitting requirements, NO_x modeling, and operating permit requirements.

This project also includes the installation of ten diesel storage tanks (one per RICE) each with a capacity of 1,250 gallons.

This is a new installation; therefore, no permits have previously been issued to Hannibal Board of Public Works by the Air Pollution Control Program.

EMISSIONS/CONTROLS EVALUATION

Emissions of NO_x, VOC, CO, and PM from the RICE were determined using the manufacturer's performance testing included with each engine's NSPS IIII certification.

Emissions of SO_x were calculated using the NSPS IIII diesel sulfur content limit of 15 ppm and the emission factor equation in EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition, Section 3.4 "Large Stationary Diesel and All Stationary Dual-fuel Engines" (October 1996).

Emissions of individual HAPs from the RICE were determined using emission factors obtained from AP-42, Section 3.4 "Large Stationary Diesel and All Stationary Dual-fuel Engines" (October 1996).

VOC emissions from the diesel storage tanks were conservatively calculated using emission factors obtained from EPA's WebFIRE for Process SCCs 40301020 and 40301021.

The following table provides an emissions summary for this project. No existing potential emissions or existing actual emissions are available as this is a new installation. Potential emissions of the application represent the potential of the new equipment, assuming continuous operation (8760 hours per year). Conditioned installation potential emissions reflect the 40 tpy NO_x limit in Special Condition 1.

Table 2: Emissions Summary (tpy)

Pollutant	Regulatory De Minimis Levels	Potential Emissions of the Project	Conditioned Installation Potential Emissions
PM	25.0	38.42	0.84
PM ₁₀	15.0	38.42	0.84
PM _{2.5}	10.0	38.42	0.84
SO _x	40.0	1.24	0.03
NO _x	40.0	1,839.16	<40.0
VOC	40.0	48.62	1.06
CO	100.0	672.29	14.62
HAP	25.0	1.29	0.03

PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060 *Construction Permits Required*. Potential emissions of NO_x are conditioned below de minimis levels.

REGULATORY APPLICABILITY

Hannibal Board of Public Works shall comply with the following applicable requirements. The Missouri Air Conservation Laws and Regulations should be consulted for specific record keeping, monitoring, and reporting requirements. Compliance with these emission standards, based on information submitted in the application, has been verified at the time this application was approved.

GENERAL REQUIREMENTS APPLICABILITY

- 10 CSR 10-6.065 *Operating Permits*
 - The installation is not required to obtain an operating permit at this time.
- 10 CSR 10-6.110 *Submission of Emission Data, Emission Fees and Process Information*
 - The installation is required to submit a full EIQ for the first full calendar year after initial startup of the RICE.
- 10 CSR 10-6.165 *Restriction of Emission of Odors*
- 10 CSR 10-6.170 *Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin*

SPECIFIC REQUIREMENTS APPLICABILITY

- 10 CSR 10-6.070 *New Source Performance Regulations*
 - 40 CFR Part 60, Subpart IIII – *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines*
 - The installation shall purchase RICE certified to the Tier 2 emission standards.
 - The installation shall install, configure, and operate the RICE according to the manufacturer's emission-related specifications or conduct performance testing.
 - The installation shall only combust diesel fuel meeting the requirements of 40 CFR 80.510(b) for nonroad diesel fuel in the RICE.

- 10 CSR 10-6.075 *Maximum Achievable Control Technology Regulations*
 - 40 CFR Part 63, Subpart ZZZZ – *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*
 - This regulation is applicable to the RICE. Compliance is demonstrated by complying with NSPS III per §63.6590(c).

- 10 CSR 10-6.390 *Control of NO_x Emissions From Large Stationary Internal Combustion Engines*
 - As these RICE do not meet the NO_x limit in 10 CSR 10-6.390(3)(B)3, each RICE may emit 25.0 tons or less of NO_x each year during the period from May 1 through September 30.
 - Reporting Requirements. Hannibal Board of Public Works shall comply with the following requirements:
 - Hannibal Board of Public Works shall submit an annual report documenting for each RICE the total NO_x emissions from May 1 through September 30 of each year to the Director by November 1 of that year.
 - Record-Keeping Requirements. Hannibal Board of Public Works shall maintain all records necessary to demonstrate compliance for a period of five years at the plant at which the RICE is located. The records shall be made available to the Director upon request. Hannibal Board of Public Works shall maintain records of the following information for each day of the control period (May 1 through September 30) the RICE is operated:
 - The identification number of each RICE and the name and address of the plant where the RICE is located;
 - The calendar date of record;
 - The number of hours the RICE is operated during each day including start-ups, shutdowns, malfunctions, and the type and duration of maintenance and repair;
 - The date and results of each emissions inspection;
 - A summary of any emissions corrective maintenance taken; and
 - The results of all compliance tests.

STAFF RECOMMENDATION

On the basis of this review conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060 *Construction Permits Required*, it is recommended that this permit be granted with special conditions.

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated November 4, 2016, received November 7, 2016, designating Hannibal Board of Public Works as the owner and operator of the installation.

Attachment A –De Minimis NO_x Compliance Worksheet

Hannibal Board of Public Works
 Ralls County, S1/2, T56/57N, R4/5W
 Marion County, S20, T57N, R4W
 Marion County, S32, T57N, R4W
 Project Number: 2016-11-019
 Installation ID Number: 173-0047
 Permit Number:

122016 - 006

This sheet covers the period from _____ to _____.
(month, year) (month, year)

Emission Source	Description	Monthly Diesel Usage (Mgal)	Monthly NO _x Emissions ¹ (tons)
EP-01	Oakwood Substation RICE #1		
EP-02	Oakwood Substation RICE #2		
EP-03	Oakwood Substation RICE #3		
EP-04	Oakwood Substation RICE #4		
EP-05	Oakwood Substation RICE #5		
EP-06	Oakwood Substation RICE #6		
EP-07	Oakwood Substation RICE #7		
EP-08	Oakwood Substation RICE #8		
EP-09	Water Treatment Plant RICE		
EP-10	Wastewater Treatment Plant RICE		
Monthly Start-up, Shutdown, & Malfunction (SSM) NO_x Emissions from EP-01 through EP-10² (tons):			
Installation Monthly NO_x Emissions³ (tons):			
12-Month Rolling Total Installation NO_x Emissions⁴ (tons):			

¹ Monthly NO_x Emissions (tons) from each RICE = Monthly Diesel Usage (Mgal) x 306.94 lb/Mgal x 0.0005 (tons/lb). Where 306.94 lb/Mgal is the maximum NO_x emission rate for the engines from the manufacturer's emissions and general performance data.

² Monthly SSM NO_x Emissions from EP-01 through EP-10 = the sum of all SSM NO_x emissions reported to the Air Pollution Control Program's Compliance/Enforcement Section during the calendar month to comply with 10 CSR 10-6.050.

³ Installation Monthly NO_x Emissions (tons) = the sum of each RICE's Monthly NO_x Emissions (tons) + Monthly SSM NO_x Emissions from EP-01 through EP-10 (tons).

⁴ 12-Month Rolling Total Installation NO_x Emissions (tons) = the sum of the 12 most recent Installation Monthly NO_x Emissions (tons). **12-Month Rolling Total Installation NO_x Emissions of less than 40.0 tons indicates compliance with Special Condition 1.A.**

APPENDIX A

Abbreviations and Acronyms

%	percent	m/s	meters per second
°F	degrees Fahrenheit	Mgal	1,000 gallons
acfm	actual cubic feet per minute	MW	megawatt
BACT	Best Available Control Technology	MHDR	maximum hourly design rate
BMPs	Best Management Practices	MMBtu ...	Million British thermal units
Btu	British thermal unit	MMCF	million cubic feet
CAM	Compliance Assurance Monitoring	MSDS	Material Safety Data Sheet
CAS	Chemical Abstracts Service	NAAQS ..	National Ambient Air Quality Standards
CEMS	Continuous Emission Monitor System	NESHAPs	National Emissions Standards for Hazardous Air Pollutants
CFR	Code of Federal Regulations	NO_x	nitrogen oxides
CO	carbon monoxide	NSPS	New Source Performance Standards
CO₂	carbon dioxide	NSR	New Source Review
CO_{2e}	carbon dioxide equivalent	PM	particulate matter
COMS	Continuous Opacity Monitoring System	PM_{2.5}	particulate matter less than 2.5 microns in aerodynamic diameter
CSR	Code of State Regulations	PM₁₀	particulate matter less than 10 microns in aerodynamic diameter
dscf	dry standard cubic feet	ppm	parts per million
EIQ	Emission Inventory Questionnaire	PSD	Prevention of Significant Deterioration
EP	Emission Point	PTE	potential to emit
EPA	Environmental Protection Agency	RACT	Reasonable Available Control Technology
EU	Emission Unit	RAL	Risk Assessment Level
fps	feet per second	SCC	Source Classification Code
ft	feet	scfm	standard cubic feet per minute
GACT	Generally Available Control Technology	SDS	Safety Data Sheet
GHG	Greenhouse Gas	SIC	Standard Industrial Classification
gpm	gallons per minute	SIP	State Implementation Plan
gr	grains	SMAL	Screening Model Action Levels
GWP	Global Warming Potential	SO_x	sulfur oxides
HAP	Hazardous Air Pollutant	SO₂	sulfur dioxide
hr	hour	tph	tons per hour
hp	horsepower	tpy	tons per year
lb	pound	VMT	vehicle miles traveled
lbs/hr	pounds per hour	VOC	Volatile Organic Compound
MACT	Maximum Achievable Control Technology		
µg/m³	micrograms per cubic meter		



Jeremiah W. (Jay) Nixon, Governor • Harry D. Bozoian, Director

DEPARTMENT OF NATURAL RESOURCES

dnr.mo.gov

DEC 16 2016

Mr. Robert W. Stevenson, P.E.
General Manager
Hannibal Board of Public Works
3 Industrial Loop Drive
Hannibal, MO 63401-1589

RE: New Source Review Permit - Project Number: 2016-11-019

Dear Mr. Stevenson:

Enclosed with this letter is your permit to construct. Please study it carefully and refer to Appendix A for a list of common abbreviations and acronyms used in the permit. Also, note the special conditions on the accompanying pages. The document entitled, "Review of Application for Authority to Construct," is part of the permit and should be kept with this permit in your files. Operation in accordance with these conditions and your new source review permit application is necessary for continued compliance. The reverse side of your permit certificate has important information concerning standard permit conditions and your rights and obligations under the laws and regulations of the State of Missouri.

This permit may include requirements with which you may not be familiar. If you would like the department to meet with you to discuss how to understand and satisfy the requirements contained in this permit, an appointment referred to as a Compliance Assistance Visit (CAV) can be set up with you. To request a CAV, please contact your local regional office or fill out an online request. The regional office contact information can be found at the following website: <http://dnr.mo.gov/regions/>. The online CAV request can be found at <http://dnr.mo.gov/cav/compliance.htm>.

If you were adversely affected by this permit decision, you may be entitled to pursue an appeal before the administrative hearing commission pursuant to §§621.250 and 643.075.6 RSMo. To appeal, you must file a petition with the administrative hearing commission within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed; if it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the administrative hearing commission, whose contact information is: Administrative Hearing Commission, United States Post Office Building, 131 West High Street, Third Floor, P.O. Box 1557, Jefferson City, Missouri 65102, phone: 573-751-2422, fax: 573-751-5018, website: www.oa.mo.gov/ahc.

Mr. Robert W. Stevenson
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If you have any questions regarding this permit, please do not hesitate to contact Alana Hess, at the Department of Natural Resources' Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102 or at (573) 751-4817. Thank you for your attention to this matter.

Sincerely,

AIR POLLUTION CONTROL PROGRAM



Susan Heckenkamp
New Source Review Unit Chief

SH:ahj

Enclosures

c: Northeast Regional Office
PAMS File: 2016-11-019

Permit Number: **122016-006**