

LWE22071
Warren County

March 22, 2022

Shannon Stang
41 Hutchins Dr
Portland, ME 04012

RE: Wright City South Wastewater Treatment Facility

Dear Shannon Stang:

On February 04, 2022, the Missouri Geological Survey received a request to perform a geohydrologic evaluation for the above referenced project located in Warren County. Included with this letter is a report that details the geologic and hydrologic conditions at the site and the potential for groundwater contamination in the event of wastewater treatment failure.

Thank you for the evaluation request. If you are in need of further assistance or have questions regarding the report, please contact our office at P.O Box 250, Rolla, Mo 65402-0250, by telephone at 573-368-2100 or gspg@dnr.mo.gov.

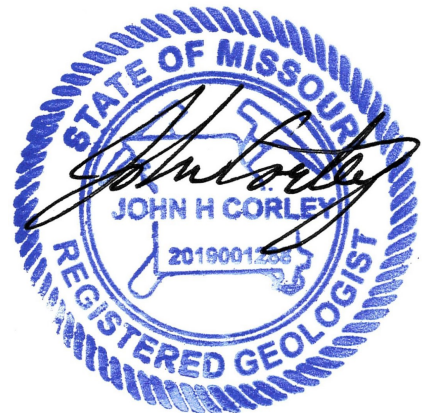
Sincerely,

MISSOURI GEOLOGICAL SURVEY



John Corley
Geologist
Environmental Geology Section

c: Chris Horvath
WPP
St. Louis Regional Office



03/22/2022

**Missouri Department Of Natural Resources**

Missouri Geological Survey
Geological Survey Program
Environmental Geology Section

Project ID Number

LWE22071

County

Warren**Request Details**

Project: Wright City South Wastewater
Treatment Facility

Legal Description: 22 T47N R01W

Quadrangle: WRIGHT CITY

Latitude: 38 49 8.64

Longitude: -91 0 20.68

Organization Official

Name: Chris Horvath

Address: 100 Water Drive

City: O'Fallon

State: MO Zip: 63368

Phone: 636-561-3737

Email: chorvath@waterdistrict2.com

Preparer

Name: Shannon Stang

Address: 41 Hutchins Dr

City: Portland

State: ME Zip: 04012

Phone: 207-558-3744

Email: sstang@woodardcurran.com

Project Details**Report Date:** 03/22/2022**Date of Field Visit:** 03/02/2022**Previous Reports:** Not Applicable**Facility Type**☐ Mechanical treatment plant☐ Recirculating filter bed☐ Land application☒ Lagoon or storage basin☐ Subsurface soil absorption system☐ Lagoon or storage basin W/Land App☐ Lagoon or storage basin W/SSAS☐ Other type of facility**Type of Waste**☐ Animal☒ Human☐ Process or industrial☐ Leachate☐ Other waste type**Funding Source**☒ IWT☐ WWL-SRF**Additional Information**☒ Plans were submitted☐ Site was investigated by NRCS☐ Soil or geotechnical data were
submitted**Geologic Stream Classification:** ☒ Gaining ☐ Losing ☐ No discharge**Overall Geologic Limitations**☐ Slight☒ Moderate☐ Severe**Collapse Potential**☐ Not applicable☒ Slight☐ Moderate☐ Severe**Topography**☒ <4%☐ 4% to 8%☐ 8% to 15%☐ >15%**Landscape Position**☐ Broad uplands☐ Floodplain☐ Ridgetop☒ Alluvial plain☐ Hillslope☐ Terrace☐ Narrow ravine☐ Sinkhole**Bedrock:**

Bedrock consists of Mississippian-age Burlington-Keokuk Limestone.

Surficial Materials:

Surficial materials consist of moderate to highly permeable sandy, silty, and gravelly alluvium.

**Missouri Department Of Natural Resources**

Missouri Geological Survey
Geological Survey Program
Environmental Geology Section

Project ID Number

LWE22071

County

Warren**Recommended Construction Procedures
for Earthen Facility**☒ Installation of clay pad and Compaction☐ Diversion of subsurface flow☐ Artificial sealing☐ Rock excavation☐ Limit excavation depth**Determine Overburden Properties**☒ Particle size analysis☒ Atterberg limits☒ 95% Max. dry density test method☐ Overburden thickness☐ Permeability coefficient-undisturbed☒ Permeability coefficient-remolded**Determine Hydrologic Conditions**☐ Groundwater elevation☐ Direction of groundwater flow☐ 25-Year flood level☒ 100-Year flood level**Remarks:**

On March 2, 2022, a geologist with the Geological Survey Program (GSP) performed a geohydrologic evaluation for the proposed mechanical wastewater treatment plant that will serve Wright City, Missouri. It is proposed that the existing lagoons at the Wright City South Wastewater Treatment Facility will act as flow equalization basins when the new mechanical treatment plant is operational. The purpose of the site visit was to observe the geologic and hydrologic elements, determine geologic limitations and collapse potential of the proposed and existing treatment facilities on site, and determine the potential for groundwater contamination in the event of wastewater treatment failure. This report (LWE22071) regards the existing lagoons; report LWE22083 regards the proposed mechanical treatment plant.

No bedrock was observed at the site, but previous mapping indicates that bedrock consists of Mississippian-age Burlington-Keokuk Limestone. The Burlington-Keokuk Limestone is a coarsely crystalline limestone that exhibits low primary porosity, but can exhibit secondary porosity if solution weathering has created conduits in the bedrock. Surficial materials onsite consist of loess and alluvial material, which may include lenses of silts/clays, sands, and gravels of varying permeabilities. Based on logs of nearby wells, surficial material thickness in this area is approximately 100 feet.

The facility's existing outfall discharges to a tributary of Peruque Creek, in which the tributary and Peruque Creek exhibited gaining characteristics and will be classified as such. In the event of wastewater treatment failure, shallow groundwater and surface waters of Peruque Creek and its tributaries may be adversely impacted. The existing lagoons receive a moderate geologic limitations rating primarily due to the lagoons' placement on an alluvial plain, and receive a slight collapse potential rating.