

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION



GENERAL PERMIT for SEWER EXTENSION CONSTRUCTION

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

Construction Permit ID: MOGC00007
Title of Project: Collection System Basin F-0001 Improveme
Owner: City of Cameron
Address: 205 N. Main Street
Cameron, MO 64429

The project will also include general site work appropriate to the scope and purpose of the project and will include all the necessary appurtenances to make a complete and usable collection system. The construction of this project will be in the vicinity of the county below and discharge to Receiving Permit ID below:

County: DeKalb Receiving Permit ID: MO0104299

for the construction of (described construction project):

Construction consists of the replacement of approximately 1,800 lf of 10-inch PVC with 15-inch PVC SDR-35 gravity sewer lines with approximately 8 manholes. The replacement does not add new flow to the system.

Project is in the vicinity of Harris Street from the intersection with 8th Street to the intersection with Business 36 Avenue in Cameron, MO in DeKalb County and discharges to an existing system to be treated at the Cameron WWTF, MO-0104299.

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.

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

June 12, 2015

Issue Date

Handwritten signature of Sara Parker Pauley in black ink.

Sara Parker Pauley, Director
Department of Natural Resources

June 11, 2017

Expiration Date

Handwritten signature of John Madras in black ink.

John Madras
Director, Water Protection Program

APPLICABILITY

1. This permit authorizes the construction of gravity sewer extensions, force mains, and lift stations. Storage basins, considered part of the collection system, are also included. Earthen basins are not included under this General Sewer Extension Construction permit.
2. A Sewer Extension Construction Permit may be required by the department due to compliance and enforcement actions.
3. This permit does not apply to:
 - A. Earthen storage basins;
 - B. Projects located within an Approved Sewer Program. These include the City of Blue Springs, City of Columbia, City of Kansas City, City of Jefferson City, City of Joplin, City of Lebanon, City of Springfield, City of St. Peters, Duckett Creek Sewer District, and Metropolitan St. Louis Sewer District;
 - C. Projects funded by the Department of Natural Resources;
 - D. Projects that substantially deviate from the Design Guides in 10 CSR 20-8; and
 - E. Exempt projects unless requested by the applicant or required by enforcement.

PREREQUISITES:

1. The General Sewer Extension Construction Permit application, appropriate fee, and a schedule for construction with the date on which construction will begin and anticipated completion date.
2. The engineering report, as required, plans and specifications each signed and sealed by a professional engineer registered in the State of Missouri. A Summary of Design is an acceptable substitute for the engineering report required by this permit prerequisite.
3. The Design Certification form signed and sealed by a professional engineer registered in the State of Missouri certifying the design of the system was done in accordance with 10 CSR 20-6 and 10 CSR 20-8.
4. A statement from the continuing authority was received accepting the wastewater for treatment.
5. A statement from the continuing authority was received accepting the responsibility for operation, maintenance, and modernization of these facilities

PERMIT CONDITIONS:

1. Contact the department's appropriate regional office 48 hours prior to starting construction. Contact information can be found at <http://dnr.mo.gov/regions/regions.htm>.
2. This permit authorizes the activities and scope of work detailed in the plans and specifications submitted with the request.
3. The construction must be in accordance with the design certification stating the plans and specifications comply with 10 CSR 20-6 and 10 CSR 20-8.

PERMIT CONDITIONS: (continued)

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 regional office per 10 CSR 20-7.015(9)(E)2.
5. 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."
 - A. 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.
 - B. Sewer mains shall be laid at least ten feet (10') 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 ten foot (10') 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.
 - C. Manholes shall be located with the top access at or above grade level.
 - D. Manholes should be located at least ten feet (10') horizontally from any existing or proposed water main.
 - E. 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:
 - 1) 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
 - 2) Either the water main or sewer line may be continuously encased or enclosed in a watertight carrier pipe which extends ten feet (10') 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.

PERMIT CONDITIONS: (continued)

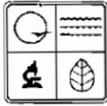
6. In addition to the requirements for a construction permit, 10 CSR 20-6.200 requires land disturbance activities of one acre or more to obtain a Missouri State Operating Permit to discharge stormwater. The permit requires Best Management Practices sufficient to control runoff and sedimentation to protect 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.

7. 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.

8. If this project eliminates a wastewater treatment facility, then a full closure plan shall be submitted to the department's appropriate regional office for review and approval of any permitted wastewater treatment system being replaced. In accordance with 10 CSR 20-6.010(12), the closure plan must meet the requirements outlined in Standard Conditions Part III, Section I, of the Missouri State Operating Permit. Closure shall not commence until the submitted closure plan is approved by the department. Form J – Request for Termination of a State Operating Permit, shall be submitted to the department's appropriate Regional Office for termination of any existing Missouri State Operating Permit, once closure is completed in accordance with the approved closure plan.
9. Submit a Statement of Work Completed Form to the department following completion of construction. Submit an electronic copy of the as built plans if the project was not constructed in accordance with previously submitted plans and specifications.



MISSOURI DEPARTMENT OF NATURAL RESOURCES
 WATER PROTECTION PROGRAM
**APPLICATION FOR CONSTRUCTION PERMIT –
 SEWER EXTENSION**

RECEIVED

MAY 13 2015

FOR DEPARTMENT USE ONLY	
APP NO.	CP NO.
EEE RECEIVED	CHECK NO.
DATE RECEIVED	

NOTE ► PLEASE READ THE ACCOMPANYING INSTRUCTIONS BEFORE COMPLETING THIS FORM

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 Department of Natural Resources approved the proposed project's engineering report*?
 YES Date of Approval: _____ NO N/A
- 1.3 Is a copy of the appropriate plans* and specifications* included with this application? YES NO
- 1.4 Is a summary of design* included with this application? YES NO
- 1.5 Is the appropriate fee included with this application? (See instructions for appropriate fee.) YES NO
- * Must be affixed with a Missouri registered professional engineer's seal, signature and date.

2.0 PROJECT INFORMATION

2.1 NAME OF PROJECT

Collection System Basin F-0001 Improvements

ADDRESS	CITY	STATE	ZIP CODE	COUNTY
Vicinity of Business 36 Ave. & N Harris St.	Cameron	MO		DeKalb

2.2 Legal Description: ¼, ¼, ¼, Sec. 23, T 57N, R 30W

2.3 Project Components (check all that apply):
 Gravity sewers Pumping stations Force mains Alternative sewer system Other (Describe below.)

2.4 PROJECT DESCRIPTION

The project includes the replacement of approximately 1,600 L.F. of existing 10" sanitary sewer with new 15" sanitary sewer; and the replacement of 8 manholes.

2.5 DESIGN INFORMATION

- A. Population or number of lots to be served by this extension: Approximately 500 lots.
- B. Estimated flow to be contributed by this extension: Design Average Flow: 190K gpd Design Peak Hourly Flow: 115K gph
- C. Industrial Wastes: Type: N/A Flow: 0 gpd
- D. Receiving Sewer: Size: 12 inches Capacity: 2250 gpm

3.0 PROJECT OWNER

NAME	TELEPHONE NUMBER WITH AREA CODE	E-MAIL ADDRESS	
City of Cameron, MO	(816) 632-2177	director@cameronmo.com	
ADDRESS	CITY	STATE	ZIP CODE
205 N. Main Street	Cameron	MO	64429

4.0 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	
Same as above.			
ADDRESS	CITY	STATE	ZIP CODE

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

5.0 ENGINEER

ENGINEER NAME / COMPANY NAME	TELEPHONE NUMBER WITH AREA CODE	E-MAIL ADDRESS	
Bryce Banion / HDR, Inc.	(816) 347-1100	bryce.banion@hdrinc.com	
ADDRESS	CITY	STATE	ZIP CODE
3741 NE Troon Dr.	Lee's Summit	MO	64064

6.0 RECEIVING WASTEWATER TREATMENT FACILITY

NAME	TELEPHONE NUMBER WITH AREA CODE	E-MAIL ADDRESS
Cameron Wastewater Treatment Plant	(816) 632-2177	director@cameronmo.com

MISSOURI STATE OPERATING PERMIT # MO-0104299		REMAINING CAPACITY (GPD) (1.6 MGD-1.0 MGD) = 0.6 MGD	
6.1 Has the receiving treatment facility agreed to accept the additional wastewater flow? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			
6.2 A letter from the receiving wastewater treatment facility, if different than the continuing authority, is included with this application. <input type="checkbox"/> YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> N/A			
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.			
PROJECT OWNER SIGNATURE 			
PRINTED NAME Mark Gaugh		DATE 4-20-2015	
TITLE OR CORPORATE POSITION City Manager	TELEPHONE NUMBER WITH AREA CODE (816) 632-2177	E-MAIL ADDRESS director@cameronmo.com	
Mail completed copy to: MISSOURI DEPARTMENT OF NATURAL RESOURCES WATER PROTECTION PROGRAM P.O. BOX 176 JEFFERSON CITY, MO 65102-0176			

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HDR

MAY 13 2015

Memo

Date: Tuesday, February 24, 2015
Project: Cameron, MO Collection System Improvements
To: Mark Gaugh, City Manager
From: Lorrie Hill, HDR
Subject: Harris Street Sewer Replacement - Design Considerations

WATER PROTECTION PROGRAM



Project Purpose

A goal of the current Capital Improvements Plan for the collection system is to eliminate wet weather overflows that occur within the City's collection system. This document specifically focuses on the proposed Harris Street Sewer Replacement project that intends to address reoccurring overflows near the intersection of 8th Street and Harris. The goal of the Harris Street Sewer Replacement is to increase the capacity of the gravity sewer line on Harris Street north of 8th Street to eliminate an existing constriction in the system. North of Harris Street the 12" sewer transitions to a 10" sewer for 1800 feet; the existing sewer line is not capable of conveying the design flow to Lift Station No. 1 downstream, resulting in system overflows.

Although *at this time the project will not eliminate all overflows in the basin*, it will be capable of carrying the design flow downstream to the pump station. The design flow is defined as the estimated flow rate resulting from a 10-year storm event and is described in more detail below. Overflows may still occur at Lift Station No. 1 until the future project to upsize the lift station is completed. Once the Harris Street sewer is replaced and Lift Station No. 1 is upsized in the future, the system should be capable of conveying flow for up to a 10-year storm. Storm events that produce rainfall and flow rates greater than a 10-year storm will still exceed the capacity of the system and result in overflows.

Project Background and Sizing

Preliminary engineering done as part of the SESS for Sub-Basin 1 and Capital Improvements Plan determined flow rates for the basin.

- Average dry weather flows (ADWF) were based on population within the basin multiplied by 100 gpcd, with additional flow added for commercial/industrial establishments. The ADWF estimated for the entirety of Basin F-0001, contributed to Lift Station No. 1, is 130 gpm.
- A 1-year storm event flow was determined based on flow metering in the basin; a 1 year storm event had a peak I/I factor of 12:1 compared to the ADWF. The 1-year storm event flow rate for the basin contributed to Lift Station No. 1 is 1,561 gpm.

- A 10-year storm event flow was calculated based on experience and found to have a peak I/I factor of 18.5: 1. The 10-year storm event flow rate for the basin contributed to Lift Station No. 1 is 2,404 gpm.
- Cost effective I/I was determined for the basin with a resulting flow reduction to the lift station to 1,921 gpm.

The cost effective I/I removal is only considered on the public side; no private I/I reduction is included. Public sector I/I removal includes repairs to manholes, sewer lines, and service line connections to reduction inflow and infiltration. More than 60% of I/I is thought to be from the private sector, which includes roof drain discharges, sump pump discharges, and other illicit discharges from within private property.

Based on a 10-year storm event with no I/I removal and a basin flow rate of 2,404 gpm, the Harris Street line is undersized and results in overflows. A new 15" pipe to replace the existing 10" sewer is required to eliminate overflows for the 10-year storm event.

Based on a 10-year storm event with cost-effective I/I removal and a basin flow rate of 1,921 gpm, the Harris Street line is still undersized and results in overflows. A new 12" pipe to replace the existing 10" sewer is required to eliminate overflows for the 10-year storm event.

Cost-effective I/I removal will be conducted within the basin concurrently with the construction of the Harris Street sewer. Since this is the pilot basin for I/I removal within the City's collection system, whether the anticipated removal rates are achieved will not be known until the end of the project. Therefore, at this time, HDR believes the option would be to install a 15" line along Harris Street so that if the level of I/I removal within the public sector is not obtained, the new Harris Street sewer would be capable of conveying the design flow rate.

Considerations:

The following conditions have been considered:

- The existing line has not been televised, and therefore the condition of the entire pipe segment is largely unknown. It is primarily vitrified clay pipe. The visual pipe inspections on file indicate the pipe, where shown, is in mostly good condition up to the first joint away from each manhole.
- There are an unknown number of services that would need to be reconnected to the sewer.

Alternatives

HDR has looked at three alternatives related to the Harris Street sewer replacement. The alternatives, estimated costs, and considerations are as follows:

1. Pull the existing 10" sewer and replace with new 15" sewer in its current location in Harris Street.
 - a. Estimated cost: \$315,000

- b. Unknown number of service connections to connect to new sewer; a conservative estimate will be included on the bid form.
 - c. This is the best option in terms of working in and around other utilities along Harris Street.
 - d. The maximum distance between manholes is 400 feet. We anticipate that it would take approximately 3-4 days to set up bypass pumping, construct the line, and make connections to manholes for the longest segment. The Contractor shall schedule replacement of each segment with consideration given to weather; bypass pumping shall only be conducted during periods of dry weather.
2. CIPP the existing sewer (if necessary) and construct a 12" relief sewer on east side of Harris Street
- a. Estimated cost: \$318,000
 - b. Construction would be close to overhead power poles and easements may be needed for working space.
 - c. Existing service lines can remain connected to the existing sewer.
 - d. Bypass pumping would still be required to make connections to existing manholes, but not to the extent required in Option 1.
 - e. The line would have to be televised to review the condition and structural integrity of the pipe.
3. CIPP the existing sewer (if necessary) and construct a 12" relief sewer on the west side of Harris Street
- a. Estimated cost: \$393,000
 - b. Construction would have to be under the concrete channel and may require easements for working space.
 - c. Existing service lines can remain connected to the existing sewer.
 - d. Bypass pumping would still be required to make connections to existing manholes, but not to the extent required in Option 1.
 - e. The line would have to be televised to review the condition and structural integrity of the pipe.

Recommendations:

HDR recommends to proceed with Option 1 and remove the existing 10" sewer line and replace it in place with a 15" sewer line for bidding. The reasoning for this recommendation is 1) known cost impacts at this time, 2) less risk in working around other utilities in the area, and 3) allows for only one sewer line to maintain in the future.