

**STATE OF MISSOURI**  
**DEPARTMENT OF NATURAL RESOURCES**  
**MISSOURI CLEAN WATER COMMISSION**



**CONSTRUCTION PERMIT**

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

Village of Ludlow  
Ludlow WWTF  
P.O. Box 215  
Ludlow, MO 64656

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.

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.

September 9, 2024  
Effective Date

September 8, 2026  
Expiration Date

  
\_\_\_\_\_  
John Holt, Director, Water Protection Program

## **CONSTRUCTION PERMIT**

### **I. CONSTRUCTION DESCRIPTION**

The proposed project will connect the Southwest Livingston County R-1 school to the Ludlow Wastewater Treatment Plant (WWTF). The construction activities will aid the school in meeting effluent quality requirements through regionalization. Once the connection is made, the operating permit for the school will terminate after the closure of the plant. These activities will be in the vicinity and south of Route DD in Ludlow, Livingston County and discharge to an existing sewer system to be treated at the Ludlow WWTF, Missouri State Operating Permit No. MO-0130869.

The proposed wastewater collection system additions will consist of a conventional gravity sewer system along with a lift station and force mains, which will carry raw wastewater to the receiving Ludlow WWTF.

Construction and installation of approximately 620 linear feet (lf) of 6-inch diameter and approximately 100 lf of 8-inch diameter polyvinyl chloride (PVC) Standard Dimension Ratio (SDR)-35 gravity sewer, 4 gravity sewer manholes, 7,290 lf of 3-inch diameter PVC SDR-21 force mains with cleanouts and air release valves, 1 duplex lift station with each pump capable of operating at 60 gallons per minute (gpm) at 73 feet of total dynamic head (TDH), lift station wet well and valve vault, one portable generator, replace 4-foot diameter lagoon manhole, existing and new PVC force main that tie into the new lagoon manhole, and all necessary appurtenances to make a complete and usable wastewater collection system to serve an estimated population equivalent of 24 and an estimated design average flow of 1,890 gallons per day. The project also includes the sand filter closure, removal of the septic tank on the school grounds, removal of the concrete holding tank at football field bathroom, connection from the football field bathroom to the new manhole, and connection of the school's existing clay tile line to a new manhole. The project will also include general site work appropriate to the scope and purpose of the project.

### **II. 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 Great River Engineering on June 19, 2024, and June 4, 2024, respectively; signed and sealed by Connie Walden, P.E. on June 19, 2024, and June 4, 2024, respectively; and approved by the department on September 9, 2024.
3. Regulation 10 CSR 20-4.040(18)(B)1 requires that projects be publicly advertised, allowing sufficient time for bids to be prepared and submitted. Projects should be advertised at least 30 days prior to bid opening.

4. 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 project or any design parameter that is addressed by 10 CSR 20-8, in accordance with 10 CSR 20-8.110(11).
5. As per 10 CSR 20-4.040, all changes in contract price or time within the approved scope of work must be by change order in accordance with Section 19 of this rule.
6. Manholes shall be located with the top access at or above grade level.
7. 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 electronic Sanitary Sewer Overflow/Bypass Reporting system at <https://dnr.mo.gov/mogem/> or Northeast Regional Office per 10 CSR 20-7.015(9)(G).
8. Protection of drinking water supplies shall be in accordance with 10 CSR 20-8.120(5), which includes by reference the provisions of 10 CSR 23-3.010. Separation distance requirements between water mains and sanitary sewers in 10 CSR 60-10.010 are also applicable.
9. 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 <https://dnr.mo.gov/data-e-services/missouri-gateway-environmental-management-mogem>. See <https://dnr.mo.gov/data-e-services/water/electronic-permitting-epermitting> for more information.
10. A United States Army Corps of Engineers (USACE) Section 404 Department of Army permit (§404) along with the department's Section 401 Water Quality Certification or waiver (§401) 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 likely be required. Since the USACE makes determinations on what is jurisdictional, you must contact the USACE to determine permitting requirements. See <https://dnr.mo.gov/water/business-industry-other-entities/permits-certification-engineering-fees/section-401-water-quality> for more information or you may contact the department's Water Protection Program at 573-522-4502 or [wpsc401cert@dnr.mo.gov](mailto:wpsc401cert@dnr.mo.gov).
11. The project will eliminate the Southwest Livingston County R-1 School District Wastewater Treatment Plant (WWTP), Missouri State Operating Permit No. MO-0081345. A full closure plan shall be submitted with a Facility Closure Request Form, MO 780-2512 to the department's Northeast Regional Office for review and

approval. In accordance with 10 CSR 20-6.010(12), the closure plan must meet the requirements outlined in Standard Conditions Part III of the Missouri State Operating Permit. Closure shall not commence until the submitted closure plan is approved by the department.

12. Upon completion of construction:

- A. The City of Ludlow will become the continuing authority for operation and maintenance of these facilities;
- B. Submit an electronic copy of the as-builts if the project was not constructed in accordance with previously submitted plans and specifications; and
- C. Submit the enclosed Statement of Work Completed form to the department in accordance with 10 CSR 20-6.010(5)(N). When the receiving facility applies for their next operating permit renewal, they will be expected to include updated information about the sanitary sewer collection system on their application.

Angie Garcia, E.I.  
Financial Assistance Center  
[Angie.garcia@dnr.mo.gov](mailto:Angie.garcia@dnr.mo.gov)

APPENDICES

- Summary of Design

## **APPENDIX – SUMMARY OF DESIGN**



Customer Project name

**Pump Performance Datasheet**  
Encompass 2.0 - 23.4.1

Item Number/ Tags : Default  
 Service :  
 Quantity : 1  
 Quote number :

Size : Myers - VH50  
 Stages : 1  
 Based on curve number : SUB\_G\_O\_AH\_00011\_D\_2 Rev 2016-12-07  
 Date last saved : 13 Feb 2024 9:45 AM

**Operating Conditions**

Flow, rated : 60.00 USgpm  
 Differential head/ pressure, rated (requested) : 63.00 ft  
 Differential head/ pressure, rated (actual) : 73.71 ft  
 Suction pressure, rated / max : 0.00 / 0.00 psi.g  
 NPSH available, rated : Ample  
 Site Supply Frequency : 60 Hz

**Performance**

Speed criteria : Synchronous  
 Speed, rated : 3500 rpm  
 Impeller diameter, rated : 4.75 in  
 Impeller diameter, maximum : 5.38 in  
 Impeller diameter, minimum : 3.75 in  
 Efficiency :  
 NPSH required/ margin required : - / 0.00 ft  
 nq (imp. eye flow) / S (imp. eye flow) : 19 / - Metric units  
 Minimum Continuous Stable Flow :  
 Head, maximum, rated diameter : 80.17 ft  
 Head rise to shutoff : 27.26 %  
 Flow, best eff. point :  
 Flow ratio, rated / BEP :  
 Diameter ratio (rated/ max) : 88.29 %  
 Head ratio (rated dia / max dia) : 62.22 %  
 Cq/Ch/Ce/Cn [ANSI/HI 9.6.7-2010] : 1.00/ 1.00/ 1.00/ 1.00  
 Selection status : Acceptable

**Liquid**

Liquid type : Water  
 Additional liquid description :  
 Solids diameter, max : 0.00 in  
 Solids diameter limit : 0.00 in  
 Solids concentration, by volume : 0.00 %  
 Temperature, max : 68.00 deg F  
 Fluid density, rated / max : 1.000 / 1.000 SG  
 Viscosity, rated : 1.00cP  
 Vapor pressure, rated : 0.34 psi.a

**Material**

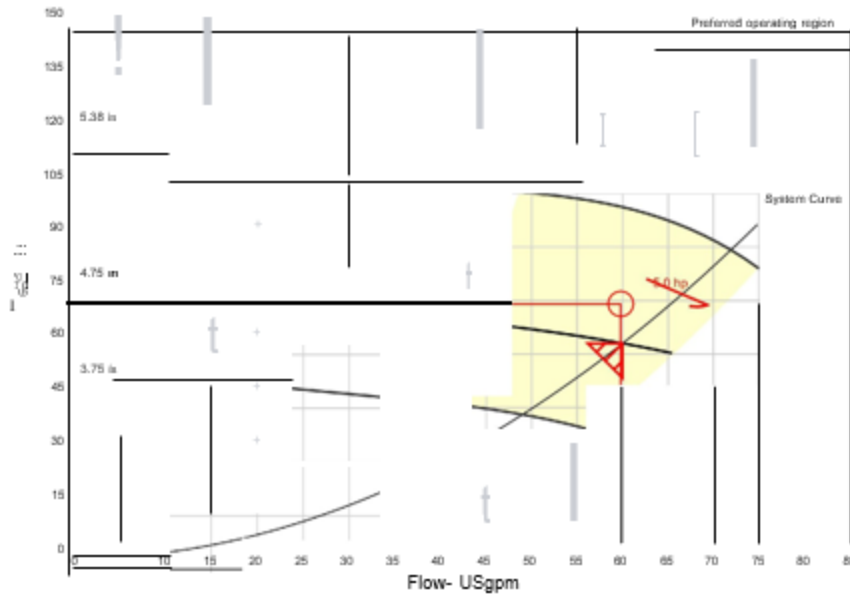
Material selected : Standard

**Pressure Data**

Maximum working pressure : 34.70 psi.g  
 Maximum allowable working pressure : N/A  
 Maximum allowable suction pressure : N/A  
 Hydrostatic test pressure : N/A

**Driver & Power Data (@Max density)**

Driver sizing specification : Maximum power  
 Margin over specification : 0.00 %  
 Service factor : 1.00  
 Power, hydraulic : 0.95 hp  
 Power, rated : 4.97 hp  
 Power, maximum, rated diameter : 4.97 hp  
 Motor rating : 5.00 hp/ 3.73 kW (Fixed)



MYERS

PHONE: FAX:

# **CALCULATION PACKAGE**

## **VILLAGE OF LUDLOW SEWERAGE CONNECTION TO SOUTHWEST LIVINGSTON COUNTY R-1 SCHOOL**

**LUDLOW, MISSOURI**

**MARCH 2024**

**SOUTHWEST LIVINGSTON COUNTY R-1 SCHOOL ACTUAL WATER USAGE (GAL.)**

	<b>20-21</b>	<b>21-22</b>	<b>22-23</b>	<b>23-24</b>
<b>JUNE</b>	7207	5847	1540	6552
<b>JULY</b>	8795	9886	8901	7939
<b>AUGUST</b>	12313	19213	18271	18851
<b>SEPTEMBER</b>	43096	41914	42972	34874
<b>OCTOBER</b>	41316	38915	35438	38081
<b>NOVEMBER</b>	34852	27552	28793	26996
<b>DECEMBER</b>	23143	22351	27266	
<b>JANUARY</b>	22305	22196	29642	
<b>FEBRUARY</b>	26095	24117	20152	
<b>MARCH</b>	39050	27950	30443	
<b>APRIL</b>	27001	22384	26398	
<b>MAY</b>	31077	24728	23842	
<b>SCHOOL YEAR TOTAL (9 MONTHS)</b>	287935	252107	264946	268329
<b>DAYS PER SCHOOL YEAR</b>	142	142	142	142
<b>AVERAGE SCHOOL DAY USAGE</b>	2027.711	1775.401	1865.817	1890 (DESIGN)
<b>HOURS PER SCHOOL DAY</b>	9	9	9	9
<b>AVERAGE HOURLY DEMAND</b>	225.3013	197.2668	207.313	210



2 Anderson Hall  
3 Anderson Harlow

Southwest Livingston Co. R-1  
 4944 Highway DD  
 Ludlow, MO 64656-8122

20-21

Dated : 11/2/2022 2022-2023  
 Time : 14:05 Page 1

Invoices for Livingston Co PWS #1 - All Invoices, Current Year

Invoice #	Invoice Date	Check #	Check Date	Total Amt	Status	PO #	Description	Included in VFA File	VFA Date
517-4	7/15/2020	2894	07/20/2020	116.31	Cleared		Water 7207 Gal Used	<input type="checkbox"/>	
517-5	8/11/2020	2945	08/17/2020	139.24	Cleared		Water 6795 Gal	<input type="checkbox"/>	
517-6	9/17/2020	3011	09/21/2020	185.60	Cleared		Water 12313 Gal Used	<input type="checkbox"/>	
517-7	10/9/2020	3089	10/19/2020	591.32	Cleared		Water 43096 Gal Used	<input type="checkbox"/>	
517-8	11/19/2020	3169	11/23/2020	567.86	Cleared		Water 41316 Gal Used	<input type="checkbox"/>	
517-9	12/17/2020	3250	12/21/2020	482.67	Cleared		Water 34852 Gal Used	<input type="checkbox"/>	
517-10	1/14/2021	3283	01/19/2021	328.34	Cleared		Water 23143 Gal Used	<input type="checkbox"/>	
517-11	2/10/2021	3362	02/15/2021	317.30	Cleared		Water 22305 Gal Used	<input type="checkbox"/>	
517-12	3/11/2021	3428	03/15/2021	370.49	Cleared		Water 26095 Gal Used	<input type="checkbox"/>	
517-13	4/14/2021	3500	04/19/2021	538.00	Cleared		Water 39050 Gal Used	<input type="checkbox"/>	
517-14	5/10/2021	3575	05/17/2021	379.19	Cleared		Water 27001 Gal Used	<input type="checkbox"/>	
517-15	6/16/2021	3677	06/21/2021	432.91	Cleared		Water 31077 Gal Used	<input type="checkbox"/>	
Totals:				4,451.23				<input type="checkbox"/>	

26354 gal mon

Dated : 11/2/2022 2022-2023  
 Time : 14:05 Page 1

21-22

Southwest Livingston Co. R-1  
 4944 Highway DD  
 Ludlow, MO 64656-8122

Invoices for Livingston Co PWSD #1 - All Invoices, Current Year

Invoice #	Invoice Date	Check #	Check Date	Total Amt	Status	PO #	Description	Included in VPA File	VPA Date
517-16	7/14/2021	3725	07/19/2021	69.23	Cleared		Water 5847 Gal Used	<input type="checkbox"/>	
517-17	8/11/2021	3783	08/16/2021	252.65	Cleared		Water 9886 Gal Used	<input type="checkbox"/>	
517-18	8/18/2021	3862	09/23/2021	177.32	Cleared		Water 19213 Gal Used	<input type="checkbox"/>	
517-19	10/14/2021	3942	10/18/2021	575.75	Cleared		Water 41914 Gal Used	<input type="checkbox"/>	
517-20	11/10/2021	4030	11/15/2021	536.22	Cleared		Water Bill 36015 Gal Used	<input type="checkbox"/>	
517-21	12/15/2021	4110	12/20/2021	386.45	Cleared		Water Bill 27552 Gal	<input type="checkbox"/>	
517-22	1/13/2022	4201	01/17/2022	317.91	Cleared		Water 22351 Gal Used	<input type="checkbox"/>	
517-23	2/10/2022	4275	02/21/2022	320.46	Cleared		Water 22195 Gal Used	<input type="checkbox"/>	
517-24	3/18/2022	4352	03/21/2022	341.18	Cleared		Water 24117 Gal Used	<input type="checkbox"/>	
517-25	4/7/2022	4416	04/18/2022	391.70	Cleared		Water 27950 Gal Used	<input type="checkbox"/>	
517-26	5/12/2022	4498	05/19/2022	317.34	Cleared		Water 22384 Gal Used	<input type="checkbox"/>	
517-27	6/8/2022	4569	06/20/2022	348.23	Cleared		Water 24728 Gal Used	<input type="checkbox"/>	
Totals:				4,064.64				<input type="checkbox"/>	

23921 gal month

Southwest Livingston Co. R-1  
 4944 Highway DD  
 Ludlow, MO 64656-8122

Dated : 1/11/2024 2022-2023  
 Time : 10:01 Page 1

*Invoices for Livingston Co PWSD #1 - All Invoices, Current Year*

Invoice #	Invoice Date	Check #	Check Date	Total Amt	Status	PO #	Description	Included in VFA File	VFA Date
517-28	7/13/2022	4638	07/18/2022	36.16	Cleared		Water 1540 Gal Used	<input type="checkbox"/>	
517-29	8/15/2022	4727	08/22/2022	139.63	Cleared		Water 8901 Gal Used	<input type="checkbox"/>	
517-30	9/15/2022	4786	09/19/2022	283.13	Cleared		Water 18271 Gal	<input type="checkbox"/>	
517-31	10/13/2022	4863	10/17/2022	586.69	Cleared		Water Bill 42372 Gal Used	<input type="checkbox"/>	
517-32	11/17/2022	4967	11/21/2022	489.39	Cleared		Water 35438 Gal Used	<input type="checkbox"/>	
517-33	12/15/2022	5062	12/19/2022	401.81	Cleared		Water 28730 Gal Used	<input type="checkbox"/>	
517-34	1/11/2023	5122	01/16/2023	400.60	Cleared		Water Bill 27286 Gal Used	<input type="checkbox"/>	
517-35	2/14/2023	5194	02/20/2023	433.48	Cleared		Water 29642 Gal	<input type="checkbox"/>	
517-36	3/16/2023	5258	03/21/2023	307.42	Cleared		Water 20152 Gal Used	<input type="checkbox"/>	
517-37	4/13/2023	5318	04/17/2023	444.57	Cleared		Water 30443 Gal Used	<input type="checkbox"/>	
517-38	5/12/2023	5383	05/16/2023	388.59	Cleared		Water 25368 Gal Used	<input type="checkbox"/>	
517-39	6/13/2023	5444	06/20/2023	353.21	Cleared		Water 23842 Gal Used	<input type="checkbox"/>	
Totals:				4,248.68				<input type="checkbox"/>	

LUDLOW

MARCH 2024

1 OF 3

SOUTHWEST LIVINGSTON COUNTY R-1 SCHOOL DISTRICT						
DATE:	3/25/2024					
<b>ENROLLMENT AND MINIMUM DESIGN LOADING (MoDNR TABLE 1-1.)</b>						
83	ELEMENTARY SCHOOL ENROLLMENT					
14	HYDRAULIC CAPACITY (GPD - WITH CAFETERIA, NO SHOWERS)					
1162	DAILY HYDRAULIC LOAD					
10	ELEMENTARY SCHOOL STAFF					
15	HYDRAULIC CAPACITY (GPD - WITH CAFETERIA, NO SHOWERS)					
150	DAILY HYDRAULIC LOAD					
97	HIGH SCHOOL ENROLLMENT					
24	HYDRAULIC CAPACITY (GPD - WITH CAFETERIA AND SHOWERS)					
2328	DAILY HYDRAULIC LOAD					
20	HIGH SCHOOL STAFF					
15	HYDRAULIC CAPACITY (GPD - WITH CAFETERIA, NO SHOWERS)					
300	DAILY HYDRAULIC LOAD					
3940	<b>TOTAL DAILY LOAD (CALCULATED - GPD)</b>				<b>TOO HIGH</b>	
1890	<b>TOTAL DAILY HYDRAULIC LOAD FROM ACTUAL USAGE TABLE</b>					
80	ASSUMED AVERAGE HYDRAULIC CAPACITY PER RESIDENT (MoDNR: 75-100 GPD)					
24	EQUIVALENT POPULATION (CURRENT WHICH IS LESS THAN 56 USED IN THE FACILITY PLAN)					
9	ASSUMED LENGTH OF SCHOOL DAY (HOURS - DIURNAL CONSIDERATIONS)					
210	<b>AVERAGE HOURLY HYDRAULIC LOAD (GPH)</b>					
<b>PEAKING FACTOR</b>						
210	AVERAGE HOURLY HYDRAULIC LOAD (GPH)				3.5 GPM	
0.024	POPULATION IN THOUSANDS					
4.37	PEAKING FACTOR					
918	PEAK HOURLY FLOW (GPH)					
3671	4 HOUR RETENTION OF THE PEAK HOURLY FLOW (GALLONS)					
491	4 HOUR RETENTION OF THE PEAK HOURLY FLOW (CU. FT.)					

LUDLOW

MARCH 2024

2 OF 3

	<b>STATIC HEAD DATA</b>								
755.00	ELEVATION OF FLOOR OF SCHOOL								
754.00	ELEVATION OF FLOOR DRAIN								
745.00	TOP OF MANHOLE AT LAGOON								
740.50	PIPE TO LAGOON								
741.00	OUTLET AT MANHOLE AT LAGOON (FOR HEAD CALCULATIONS)								
	<b>MANHOLE 1: CALCULATIONS</b>								
746.4	ELEVATION OF EXISTING CLAY TILE FLOW LINE AT EXISTING SEPTIC TANK								
746.2	ELEVATION OF 8" PVC OUT								
746.5	ELEVATION OF 6" PVC INTO MANHOLE 1								
	<b>WET CELL CALCULATIONS</b>								
748.00	ELEVATION OF GRAVEL SURFACE								
748.66	TOP OF WET WELL								
744.00	MAXIMUM FLOWLINE OF 8" PVC SEWER LINE								
100	DISTANCE TO MH 1								
2.20%	CALCULATED SLOPE MH-1 TO WET WELL								
2.20%	SLOPE TO USE FROM MH-1 TO WET WELL								
744.00	ACTUAL FLOWLINE OF 8" PVC SEWER LINE AT WET WELL								
748.00	MAXIMUM ELEVATION OF 4 HOUR RETENTION								
3671.21	STORAGE CAPACITY REQUIRED (4 TIMES PEAK HOUR - GALLONS)								
490.80	STORAGE CAPACITY REQUIRED (4 TIMES PEAK HOUR - CU. FT.)								
10	WET WELL DIAMETER								
5	WET WELL RADIUS								
587.18	STORAGE PER FOOT (GALLONS)								
6.25	DEPTH FOR STORAGE (FEET)								
748.00	MAXIMUM ELEVATION OF 4 HOUR RETENTION								
741.75	HIGH ALARM <span style="float: right;">GOOD</span>								
740.75	SECOND PUMP ON								
739.75	FIRST PUMP ON								
738.75	PUMP OFF								
737.75	LOW LEVEL ALARM								
735.75	FLOOR OF WET WELL								
741.00	OUTLET AT LAGOON MH								
2.25	STATIC HEAD								
12.91	DEPTH OF WET CELL <span style="float: right;">GOOD</span>								





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

FOR DEPARTMENT USE ONLY	
APP NO.	CP NO.
FEE RECEIVED 300	CHECK NO. 1038
DATE RECEIVED 3-28-24	MH

**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: SRF Project #: C295079-01
- 1.2 Has the Department of Natural Resources approved the proposed project's engineering report\*?  YES Date of Approval: 5/11/2022  NO  N/A
- 1.3 Is a copy of the appropriate plans\* and specifications\* included with this application?  YES  NO  
If the project is using standard specifications, name of community: N/A
- 1.4 Is a summary of design\* included with this application?  YES  NO
- 1.5 Is the appropriate fee or JetPay confirmation included with this application?  YES  NO  
See Section 7.0

\* Must be affixed with a Missouri registered professional engineer's seal, signature and date.

**2.0 PROJECT INFORMATION**

2.1 NAME OF PROJECT

Sewerage Connections for the Southwest Livingston County R-1 School

ADDRESS	CITY	STATE	ZIP CODE	COUNTY
4944 Highway D	Ludlow	MO	64656	Livingston

2.2 Legal Description: SE ¼, SE ¼, SE ¼, Sec. 10, T 56N, R 25W

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 purpose of this project is to provide adequate treatment of sewage generated by the Southwest Livingston County R-1 School by means of connecting to the wastewater treatment facility, consisting of a three-cell waste stabilization lagoon system, owned and operated by the Village of Ludlow. The connection will consist of 7,820 linear feet of 3-inch force main and a 60 gpm sewage pumping station with valve vault, dual pumps, aerator, portable pump, access drive and fencing. This proposed sewage connection will permit the elimination of an outdated sand filter treatment system that was constructed in 1959. A second sewage connection will consist of 720 linear feet of gravity sewer main and three manholes to connect the sewage main for the restrooms located at the sports complex. The second sewage connection will eliminate the pumping of sludge from a septic tank that is required several times per year according to school district officials. The Village of Ludlow will own and maintain the wastewater pumping station and force main.

2.5 DESIGN INFORMATION

- A. Population or number of lots to be served by this extension: School District Facilities with a Population Equivalent of 24.
- B. Estimated flow to be contributed by this extension: Design Average Flow: 1890 gpd Design Peak Hourly Flow: 918 gph
- C. Industrial Wastes: Type: N/A Flow: gpd
- D. Receiving Sewer: Size: 8 inches Capacity: 800 gpm
- E. Does this project (check all that apply):  Connect to an existing treatment plant  Resolve enforcement issue  Eliminate or consolidate an existing treatment plant
- F. Estimated number of onsite systems being removed: 1
- G. Estimated costs associated with piping: \$ 400,000 Estimated costs associated with lift station(s): \$ 120,000

**3.0 PROJECT OWNER**

NAME Village of Ludlow		TELEPHONE NUMBER WITH AREA CODE (660) 646-8431	EMAIL ADDRESS timothyhein@yahoo.com
ADDRESS P.O. Box 215	CITY Ludlow	STATE MO	ZIP CODE 64656

CHARTER NUMBER (SECRETARY OF STATE) or REGISTERED AGENT

Timothy Hein, Mayor

**4.0 CONTINUING AUTHORITY:** A continuing authority is a company, business, entity, or person(s) that will be legally responsible for ensuring compliance with the permit requirements and provide continuous stable oversight of the permitted facility or activity. The Continuing authority should be a relatively permanent entity responsible for the ongoing operation, maintenance and modernization, when needed, of the permitted facility or activity. A continuing authority is not, however, an entity or individual that is contractually hired by the permittee to sample or operate and maintain the system for a defined time period, such as a certified operator or analytical laboratory. To access the regulatory requirement regarding continuing authority, 10 CSR 20-6.010(2), please visit [Clean Water Commission Chapter 6](#). A continuing authority's name must be listed exactly as it appears on the Missouri Secretary of State's (SoS's) webpage: [Missouri Secretary of State](#), unless the continuing authority is an individual(s), government entity, or otherwise not required to register with the SoS.

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

CHARTER NUMBER (SECRETARY OF STATE)

4.1 Has appropriate continuing authority acceptance been provided as follows:  
A letter from the continuing authority accepting responsibility for continued maintenance of the sewer (if the continuing authority is different than the original owner of the construction), or a properly executed "Continuing Authority and Receiving Wastewater Treatment Facility Acceptance" Form 780-2584.  YES  NO  N/A

**5.0 ENGINEER**

ENGINEER NAME / COMPANY NAME John Mann / Rhodes Engineering Company, Inc.		TELEPHONE NUMBER WITH AREA CODE 660-258-7745	EMAIL ADDRESS rhodeseng@cvalley.net
ADDRESS 401 West Helm Street	CITY Brookfield	STATE MO	ZIP CODE 64628

**6.0 RECEIVING WASTEWATER TREATMENT FACILITY**

NAME Village of Ludlow		TELEPHONE NUMBER WITH AREA CODE (660) 646-8431	EMAIL ADDRESS timothyhein@yahoo.com
MISSOURI STATE OPERATING PERMIT # MO-0130869	COUNTY Livingston	REMAINING CAPACITY (GPD) 2,100	

6.1 If different from the owner, has a letter been provided from the receiving treatment facility demonstrating that they agree to accept the expanded flow or has a properly executed Continuing Authority and Receiving Wastewater Treatment Facility Acceptance MO 780-2584 form been provided?  YES  NO  N/A

6.2 A letter from the receiving wastewater treatment facility, if different than the continuing authority, is included with this application.  
 YES  NO  N/A

6.3 If the receiving treatment plant or continuing authority is regulated by the Public Service Commission (PSC) for sewer activities, a Certificate of Convenience and Necessity has been received?  Yes - Date:  No  N/A

**OPTIONAL QUESTIONS REGARDING MILITARY SERVICE**

Have you or an immediate family member ever served in the U.S. Armed Forces?	<input checked="" type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
If yes, would you like information about military-related services in Missouri?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

**7.0 Application Fee**

<input checked="" type="checkbox"/> Check Number <b>1038</b>	<input type="checkbox"/> JetPay Confirmation Number
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**8.0 PROJECT OWNER:** I certify under penalty of law this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

PROJECT OWNER SIGNATURE 

PRINTED NAME Timothy Hein	DATE 3-22-2024
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TITLE OR CORPORATE POSITION Mayor	TELEPHONE NUMBER WITH AREA CODE (660) 646-8431	EMAIL ADDRESS timothyhein@yahoo.com
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Mail completed copy to:  <b>MISSOURI DEPARTMENT OF NATURAL RESOURCES WATER PROTECTION PROGRAM PO BOX 176 JEFFERSON CITY, MO 65102-0176</b>	Submit completed electronic copy to:  Missouri Department of Natural Resources at <a href="mailto:DNR.WPPEngineerSection@dnr.mo.gov">DNR.WPPEngineerSection@dnr.mo.gov</a>
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**9.0 SEWER EXTENSION CHECKLIST**

**SEWER EXTENSION DESIGN CERTIFICATION:** Answer all questions yes or N/A. Answer N/A only if the question is clearly not applicable to the design of the proposed sewer extension.

	REGULATION		YES	N/A
1.	8.110(3)(A)	Is the design flow based on actual flow data for an existing system?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2.	8.110(3)(B)	Are average design flows, peak hourly flows and I&I contributions for new systems calculated?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3.	8.110(9)(B)	Is there a detailed plan showing tributary area, boundaries, pertinent elevations, topography, existing and proposed facilities?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4.	8.120(2)	Does the sewer exclude water from roofs, streets, groundwater from foundation drains and combined wastewater?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5.	8.120(3)(A)	Is the pipe installation, embedment and backfill designed to prevent damage to the pipe and its joints?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6.	8.120(3) (A)1	Is all sewer pipe constructed with a slope to obtain mean velocities of not less than 2 feet per second?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7.	8.120(3)(A)2	Is the pipe covered with at least 36" of soil or sufficiently insulated to prevent freezing?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
8.	8.120(3)(B)	Is deflection testing specified to ensure no pipe exceeds a deflection of 5% of the inside diameter?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
9.	8.120(4)(A)	Are manholes located at the end of each line, at all changes in grade, size or alignment and at all intersections?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
10.	8.120(4)(C)	Are manholes at least 42 inches in diameter with a clear opening of 22 inches on sewer line larger than 8"?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
11.	8.120(4)(C)	Where cleanouts are used at the end of a lateral instead of a manhole, they are a minimum diameter of 8 inches or larger and equal to the diameter for pipes < 8"?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
12.	8.120(4)(E)	Are the manholes watertight, constructed and installed in accordance with the manufacturer's recommendations and procedures?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
13.	8.120(4)(F)	Do the specifications include a requirement for inspection and testing for manholes?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
14.	8.120(5)(A)	Is the sewer free from physical connections to a potable water supply system and no water pipes come in contact with a sewer manhole?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
15.	8.120(5)(B)	Are sewers and manholes located at least 50 feet horizontally from any existing or proposed water supply well, sources, structures?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**10.0 PRESSURE SEWERS, GRINDER PUMP, STEP AND STEG SEWER CHECKLIST**

	REGULATION		YES	N/A
16.	8.125(5)(A)1.	Does the cleaning velocity of $\geq 2$ ft/s happen more than once per day?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
17.	8.125(5)(A)2.	Is the diameter of the pressure sewer main pipe at least 1.5"?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
18.	8.125(5)(B)	Are appurtenances compatible with the piping system?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
19.	8.125(5)(B)2.	Are isolation valves located: upstream of major pipe intersections; both sides of stream, bridge and RR crossings; at terminal end of system?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
20.	8.125(5)(C)	Do service line pipes have a minimum diameter of 1.25"?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
21.	8.125(5)(D)1.A	Do simplex grinder pump stations service only a single equivalent dwelling unit (EDU)? i.e. 1 residence -- 1 grinder pump.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
22.	8.125(5)(D)1.B	Are multiple unit pump stations owned, operated and maintained by an approved continuing authority?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
23.	8.125(5)(D)3.	Is there at least 70 gallons of storage in the grinder pump unit?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
24.	8.125(5)(D)4.	Do grinder pump stations have shutoff valves, check valves and anti-siphon valves (where siphoning could occur) that are accessible from the ground surface?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
25.	8.125(5)(D)7., 8.130(3)(B)2.	Are units serviceable and replaceable under wet conditions without electrical hazard and is electrical equipment suitable for hazardous locations (National Electrical Code, Class I, Group D, Division 1 location)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
26.	8.125(5)(D)8., 8.125(2)(F)6.	Are provisions in place to avoid interruption of service due to mechanical or power failure by providing standby power, storage capacity, or interconnection with another disposal system?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
27.	8.125(6)(D)	In a STEP system is at least one septic tank (1,000 gallons or more) provided for each EDU with 20% of tank volume dedicated to freeboard and ventilation?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
28.	8.125(6)(F)	Are duplex pumps provided for the design flow of 1,500 gallons or greater?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

MO 780-1632 (10-22)

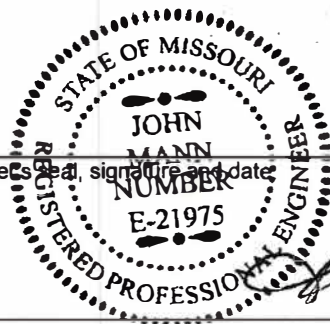
11.0 PUMP STATION CHECKLIST				
	REGULATION		YES	N/A
29.	8.125(7)(C)	Is the minimum diameter sewer main pipe and service line of STEG sewer at least 4"?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
30.	8.130(2)(A) 8.140(2)(B)	Is the pump station designed to withstand the 100-year flood?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
31.	8.130(3)(A)	Is the dry well completely separate from the wet well and is a suitable and safe means of access provided to each?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
32.	8.130(3)(B)	If the design flow is 1,500 gpd or more, are there at least 2 pumps or pneumatic ejectors provided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
33.	8.130(3)(D)	Are valves located outside wet well unless integral to a pump or its housing?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
34.	8.130(3)(F) 8.140(8)(J)	Do wet and dry wells have separate ventilation systems?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
35.	8.130(3)(G)	Does all potable water brought to pump stations comply with 8.140(7)(D)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
36.	8.130(6)	Is an alarm system provided with uninterrupted power?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
37.	8.130(7)(A)	Is there 2 hours retention of the peak hourly flow for a design flow > 100,000 gpd or 4 hrs retention of the peak hourly flow for a design flow < 100,000 gpd?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
38.	8.130(7)(B)	Are there independent utility substations provided for emergency power capable of starting and operating the pump station at its rated capacity?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
39.	8.130(8)(A)	Is the force main velocity of $\geq 2$ ft/s maintained?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
40.	8.130	Are there complete operation instructions for the pumping stations provided that include emergency procedures, maintenance schedules, special tools and spare parts that may be necessary?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

12.0 SUCTION LIFT PUMP AND SUBMERSIBLE PUMP STATION CHECKLIST				
	REGULATION		YES	N/A
41.	8.130(4)	Are the suction lift pumps of the self priming or vacuum priming type?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
42.	8.130(4)(A)	Is the combined total of dynamic suction lift at the "pump off" elevation and required net positive suction head at design operating conditions less than or equal to 22 feet?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
43.	8.130(4)(B)	Are there dual vacuum pumps capable of removing air from the suction lift pump?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
44.	8.130(5)(A)	Are submersible pumps readily removable and replaceable without personnel entering, or disconnecting any pipe in the wet well?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**13.0 SEWER EXTENSION CHECKLIST – CERTIFICATION STATEMENT**

For any questions answered "N/A" provide an explanation. Also provide any useful general comments regarding design for review engineer.

- 21. The proposed pump station is not a simplex grinder pump station.
- 27. The existing or proposed sewerage systems are not a part of STEG type of system.
- 29. The existing or proposed sewerage systems are not a part of STEG type of system.
- 35. There is not a potable water supply at the pump station.
- 38. Other than the existing electrical service provider, there is not a independent substation provided for emergency power.



*John Mann* 3/27/24

Missouri Professional Engineer Seal, signature and date

Name: John Mann, P.E.

Address: 401 West Helm Street

City: Brookfield

State: MO

ZIP Code: 64628

Telephone Number with Area Code: (573) 239-5555

Email: rhodeseng@cvalley.net