

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION



CONSTRUCTION PERMIT

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

United Services, Inc.
Indian Ridge WWTF
Intersection of Highway 169 North and County Road 351
St. Joseph, MO 64506

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.

February 15, 2019
Effective Date

Edward B. Galbraith
Edward B. Galbraith, Director, Division of Environmental Quality

February 14, 2021
Expiration Date

Chris Wieberg
Chris Wieberg, Director, Water Protection Program

CONSTRUCTION PERMIT

I. CONSTRUCTION DESCRIPTION

The proposed construction will be the installation of a chlorine/dechlorination disinfection system. The chlorine disinfection system will be sized to handle a peak flow of 78,142 gpd and to meet the design average flow of 41,440 gpd. Construction will include installation of 2 Norweco Bio-dynamic XT-2000 tablet chlorinators and a 1500 gallon septic tank with serpentine piping allowing for a 50:1 length to width ratio and a 15 minute contact time at peak flow. Sodium bisulfite for dechlorination will be dosed into the basin to provide 30 seconds of contact time. The design average flow will remain at 41,440 gpd and serve a population equivalent of approximately 414.

This project will also include general site work appropriate to the scope and purpose of the project and all necessary appurtenances to make a complete and usable wastewater treatment facility.

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 White Cloud Engineering & Construction on April 16, 2018 and revised on January 22, 2019.
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(11).
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 Kansas City Regional Office per 10 CSR 20-7.015(9)(G).
5. 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 dnr.mo.gov/env/wpp/epermit/help.htm. See dnr.mo.gov/env/wpp/stormwater/sw-land-disturb-permits.htm for more information.
6. 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 dnr.mo.gov/env/wpp/401/ for more information.
7. Upon completion of construction:
 - A. United Services, Inc. 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 form Statement of Work Completed to the Department in accordance with 10 CSR 20-6.010(5)(N) and request the operating permit modification be issued .

IV. REVIEW SUMMARY

1. CONSTRUCTION PURPOSE

The facility is installing chlorine disinfection and dechlorination to achieve final compliance with the *E. Coli* effluent limits that went in effect on September 1, 2016. The chlorine disinfection system will be sized to handle a peak flow of 78,142 gpd and to meet the design average flow of 41,440 gpd.

2. FACILITY DESCRIPTION

The Indian Ridge WWTF is located at the Intersection of Highway 196 North and County Road 351, in Andrew County County, Missouri. The facility has a design average flow of 41,440 gpd and serves a hydraulic population equivalent of approximately 414 people.

The existing Indian Ridge facility includes a septic tank, followed by a recirculating sand filter and recirculation tank with sludge removed by contract hauler. This construction is to add chlorine disinfection to the system. Below is a summary of the facility's existing discharge monitoring reports (DMRs) from January 2013 to January 2019.

Parameter	Unit	Average Monthly Effluent Limit	Average from DMRs 2013-2019
Flow	MGD	*	0.004183
BOD5	mg/L	30	7.73
TSS	mg/L	30	3.64
Ammonia as N-summer	mg/L	1.4	2.15
Ammonia as N-winter	mg/L	2.9	2.62
pH	SU	6.5-9.0	7.45
<i>E. Coli</i>	#/100 mL	206	101.9

*monitoring only

3. COMPLIANCE PARAMETERS

The proposed project is required to meet final effluent limits of 206 #/100 mL for *E. Coli* that became effective on September 1, 2016 as established in Operating Permit MO-0134406. The facility is proposing to meet final *E. Coli* effluent limits with the addition of chlorine disinfection and dechlorination. The limits following the completion of construction will be applicable to the facility:

Parameter	Units	Daily Maximum	Weekly Average	Monthly Average Limit
<i>E. Coli</i>	#/100mL		1030	206
Total Residual Chlorine	µg/L	<130		<130
Dissolved Oxygen	mg/L	*		*

* monitoring only

4. REVIEW of MAJOR TREATMENT DESIGN CRITERIA

Existing major components which will remain in use include the following:

- Septic Tank
- Recirculating Sand Filter
- Design average flow will remain at 41,440 gallons per day.

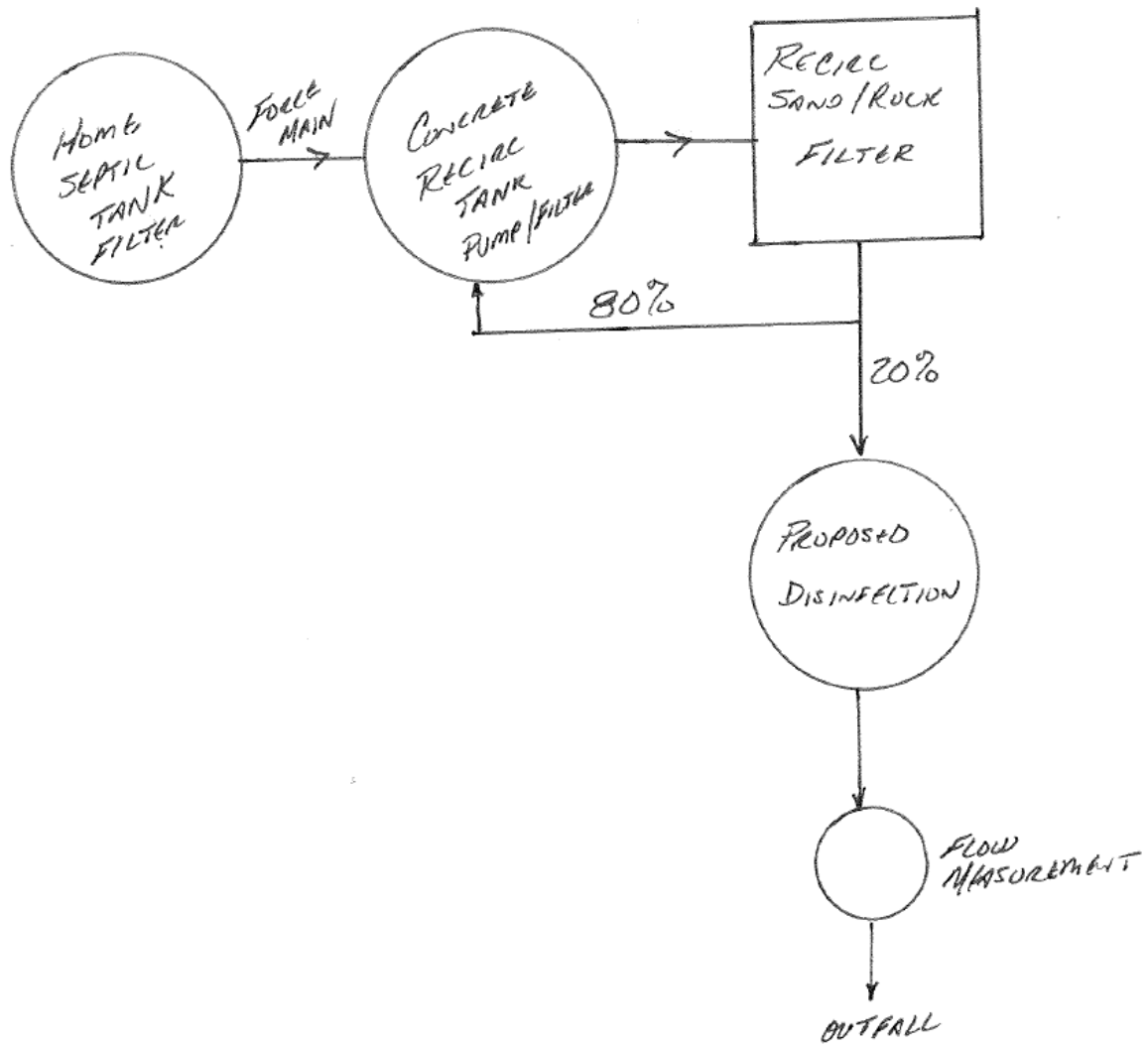
Construction will cover the following items:

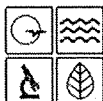
- Disinfection – Disinfection is the process of removal, deactivation, or killing or pathogenic microorganisms.
 - Tablet Chlorinator – Installation of a tablet Norweco Bio-dynamic XT-2000 chlorination chamber receiving clarified effluent and prior to the chlorine contact tank.
 - The tablet chlorinator shall have a design flow of 78,142 gpd and a maximum flow of 100,000 gpd. The system will dispense hypochlorite as the wastewater comes into contact with the tablets.
 - The 78,142 gpd includes the volume of water that would fall on the filter bed, plus a twenty percent factor on the design average flow of 41,440 gpd.
 - From the tablet chlorinator, the water will flow into a 2 compartment, 1500 gallon septic tank with 25 ft of serpentine piping allowing for a 50:1 length to width ratio. This tank will allow for a 15 minute contact time during a peak flow of 78,142 gpd.
 - Tablet Dechlorinator – Installation of a tablet Norweco Bio-dynamic XT-2000 dechlorination chamber receiving the chlorinated effluent and prior to Outfall No. 001. The tablet dechlorinator shall have a design flow of 78,142 gpd and a maximum flow of 100,000 gpd. The system will dispense sodium sulfite as the wastewater comes into contact with the tablets
 - The facility will have a 2 month supply of tablets on hand.

5. OPERATING PERMIT

Operating permit MO-0134406 will require a modification to reflect the construction activities. The modified Indian Ridge WWTF will be public noticed to add total residual chlorine (TRC) effluent limits and dissolved oxygen monitoring. Submit the Statement of Work Completed to the Department in accordance with 10 CSR 20-6.010(5)(N) and request the operating permit modification be issued. The renewal application is currently under review with the Department.

APPENDIX – PROCESS DIAGRAM





MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM
**APPLICATION FOR CONSTRUCTION PERMIT -
WASTEWATER FACILITY**

RECEIVED

APR 16 2018

AP29753

CP0001986

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

APPLICATION OVERVIEW

The Application for Construction Permit - Wastewater Facility form is for construction pertaining to domestic wastewater treatment facilities, agrichemical facilities, and components thereof. This 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 Is this an application for an agrichemical? ☐ YES (See instructions.) ☒ N/A
- 1.3 Has the Missouri Department of Natural Resources approved the proposed project's antidegradation review?
☒ YES Date of Approval: _____
- 1.4 Has the department approved the proposed project's facility plan*?
☐ YES Date of Approval: _____ ☒ NO ☐ N/A (If Not Applicable, complete No. 1.5.)
- 1.5 [Complete only if answered Not Applicable on No. 1.4] 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
- 1.6 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
- 1.7 Is a summary of design* included with this application? ☒ YES ☐ NO
- 1.8 Is a general operating permit applicable?
☐ YES Submit the appropriate operating permit application to the Regional Office at least 60 days prior to operation.
☒ NO Enclose the appropriate operating permit application and fee submittal. Denote which form: ☐ B ☐ B2
- 1.9 Is the facility currently under enforcement with the department or the Environmental Protection Agency? ☐ YES ☒ NO
- 1.10 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

INDIAN RIDGE SUBDIVISION

2.2 PROJECT DESCRIPTION

DISINFECTION

2.3 SLUDGE HANDLING, USE AND DISPOSAL DESCRIPTION

STEP/RSF SYSTEM, SLUDGE RETAINED IN HOME SEPTIC TANKS, REMOVED BY CONTINUING AUTHORITY AS NEEDED

2.4 DESIGN INFORMATION

- A. Current population: 124; Design population: 414
- B. Actual Flow: 5500 gpd; Design Average Flow: 125000 gpd;
Actual Peak Daily Flow: 10,300 gpd; Design Maximum Daily Flow: 78142 gpd;
Design Wet Weather Event: 78142 gpd

2.5 ADDITIONAL INFORMATION

- A. Is a topographic map attached? ☒ YES ☐ NO
- B. Is a process flow diagram attached? ☒ YES ☐ NO

2.6 ESTIMATED PROJECT CONSTRUCTION COST

\$ 9300

3.0 WASTEWATER TREATMENT FACILITY					
NAME <i>INDIAN ROCK SUBDIVISION</i>		TELEPHONE NUMBER WITH AREA CODE <i>800-748</i>		EMAIL ADDRESS <i>pwalter@ueci.coop</i>	
ADDRESS (PHYSICAL) <i>HWY 169 N / Q. ROAD 351</i>		CITY <i>ST JOSEPH</i>	STATE <i>MO</i>	ZIP CODE <i>64506</i>	COUNTY <i>ANDREW</i>
Wastewater Treatment Facility: Mo-6134406 (Outfall 1 of 1)					
3.1 Legal Description: <i>SE 1/4, SW 1/4, NE 1/4, Sec. 14, T 58, R 35</i> (Use additional pages if construction of more than one outfall is proposed.)					
3.2 UTM Coordinates Easting (X): <i>3950380</i> Northing (Y): <i>09447032</i> For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)					
3.3 Name of receiving streams: <i>UNN. TRIB TO 102 RIVER</i>					
4.0 PROJECT OWNER					
NAME <i>UNITED SERVICES</i>		TELEPHONE NUMBER WITH AREA CODE <i>800 748 1488</i>		EMAIL ADDRESS <i>pwalter@ueci.coop</i>	
ADDRESS <i>PO Box 319</i>		CITY <i>SAVANNAH</i>	STATE <i>MO</i>	ZIP CODE <i>64485</i>	
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 <i>SAME</i>		TELEPHONE NUMBER WITH AREA CODE		EMAIL ADDRESS	
ADDRESS		CITY	STATE	ZIP CODE	
5.1 A letter from the continuing authority, if different than the owner, is included with this application. <input type="checkbox"/> YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> 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? <input type="checkbox"/> YES <input type="checkbox"/> 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? <input type="checkbox"/> YES <input type="checkbox"/> 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? <input type="checkbox"/> YES <input type="checkbox"/> 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? <input type="checkbox"/> YES <input type="checkbox"/> NO					
D. Is a copy of the Missouri Secretary of State's nonprofit corporation certificate included with this application? <input type="checkbox"/> YES <input type="checkbox"/> NO					
6.0 ENGINEER					
ENGINEER NAME / COMPANY NAME <i>WHITE CLOUD ENG. + CONST.</i>		TELEPHONE NUMBER WITH AREA CODE <i>660 582 4111</i>		EMAIL ADDRESS <i>whitecloud@unitedsky.net</i>	
ADDRESS <i>PO Box 468</i>		CITY <i>MAAPVILLE</i>	STATE <i>MO</i>	ZIP CODE <i>64468</i>	
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 <i>Pat Walter</i>					
PRINTED NAME <i>Pat Walter</i>				DATE <i>4/9/18</i>	
TITLE OR CORPORATE POSITION <i>Member Service Manager</i>		TELEPHONE NUMBER WITH AREA CODE <i>800-748-1488</i>		EMAIL ADDRESS <i>pwalter@ueci.coop</i>	
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) _____

8.2 Months when the business or enterprise will operate or generate wastewater:
☐ 12 months per year ☐ Part of the year (list months): _____

8.3 This system is designed for:
☐ No-discharge ☐ Subsurface
☐ 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: _____ (Use additional pages if greater than two 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.
Basin #1: Length _____ Width _____ Depth _____ Freeboard _____ Depth _____ Safety _____ % Slope _____
Basin #2: Length _____ Width _____ Depth _____ Freeboard _____ Depth _____ Safety _____ % Slope _____

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

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

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

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

10.0 LAND APPLICATION SYSTEM

10.1 Type of land application: ☐ Fixed Head Sprinklers ☐ Center Pivot ☐ Traveling Gun ☐ Drip Dispersal
☐ Subsurface Low Pressure Pipe ☐ Other (describe) _____

10.2 Number of irrigation sites _____ Total Acres _____ Maximum % field slopes _____
Location: _____ ¼, _____ ¼, _____ ¼, _____ Sec. _____ T _____ R _____ County _____ 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.)

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

10.4 Wastewater flow (dry weather) gallons per day: Average annual _____
Seasonal _____ Off-season _____

10.5 Land application rate (design flow including 1-in-10 year storm water flows):
Design: _____ inches/year _____ inches/hour _____ inches/day _____ inches/week
Actual: _____ inches/year _____ inches/hour _____ inches/day _____ inches/week

10.6 Total irrigation per year (gallons): Design: _____ gal Actual: _____ gal

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

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



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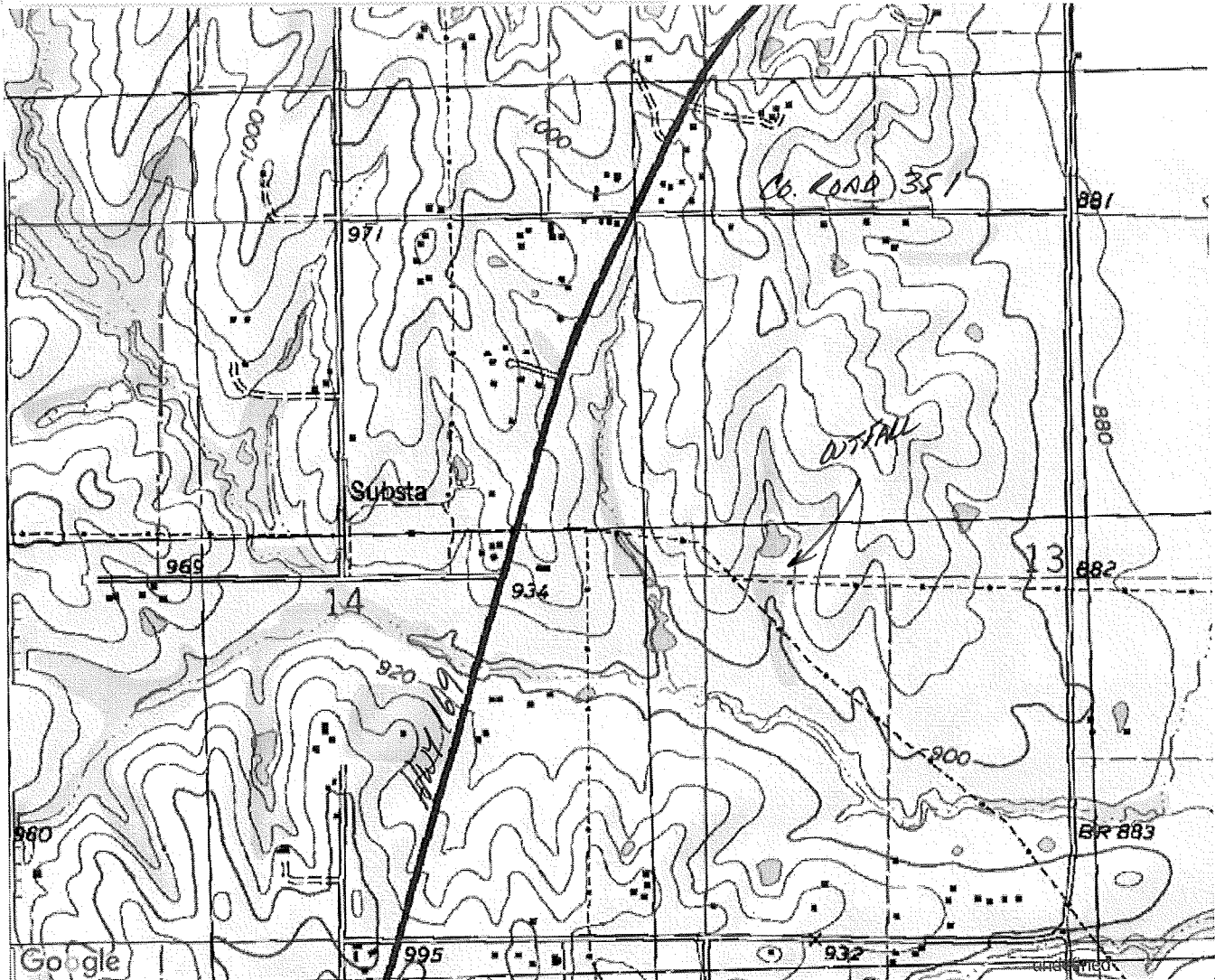
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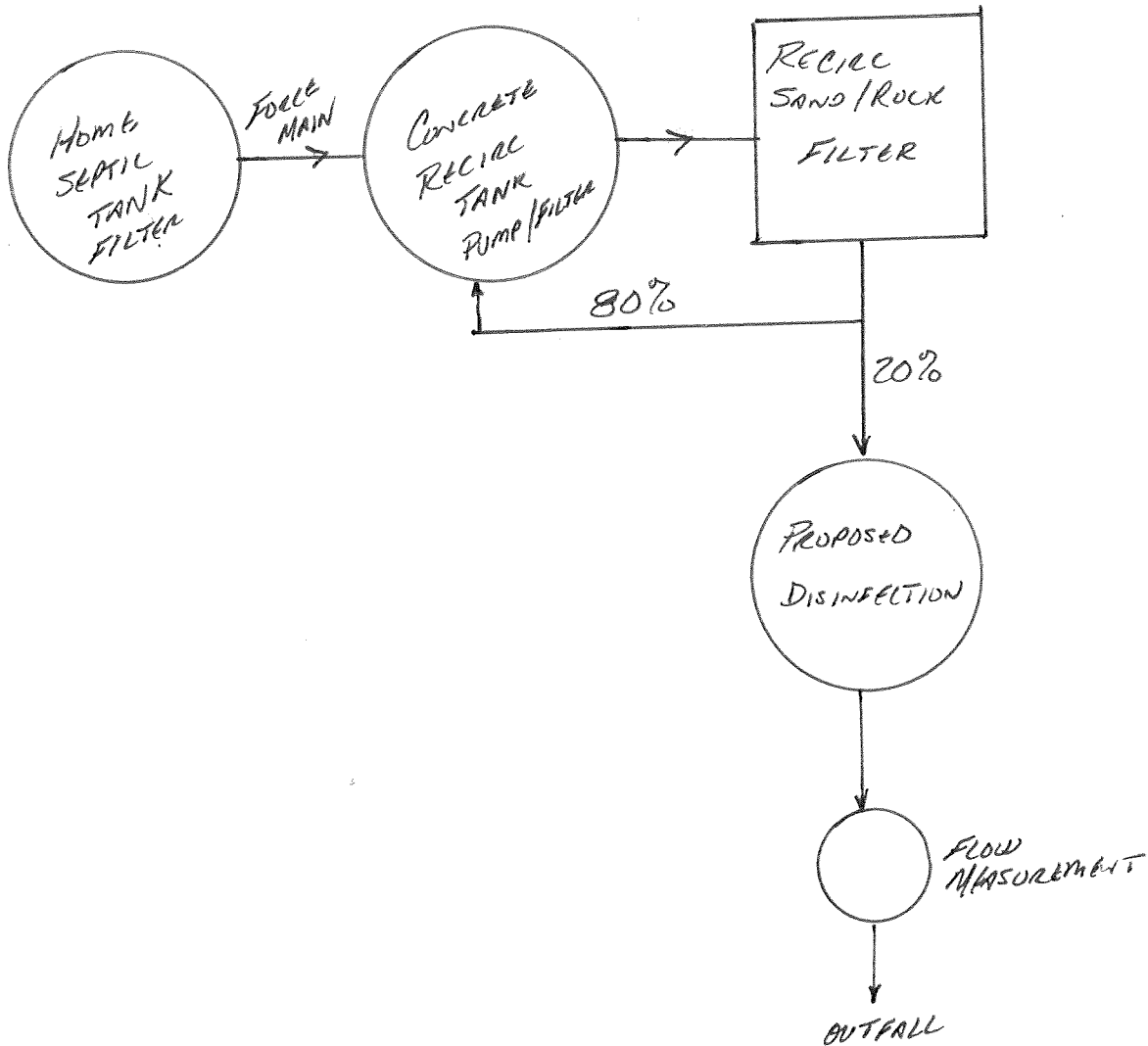
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One South Broadway
Billings, MT 59101

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7. DESCRIPTION OF FACILITY

7.1 Process Flow Diagram or Schematic: Provide a diagram showing the processes of the treatment plant. Show all of the treatment units, including disinfection (e.g. – chlorination and dechlorination), influents, and outfalls. Specify where samples are taken. Indicate any treatment process changes in the routing of wastewater during dry weather and peak wet weather. Include a brief narrative description of the diagram.
Attach sheets as necessary.



7.2 Attach an aerial photograph or USGS topographic map showing the location of the facility and outfall.