

EFFINGHAM COUNTY 30-INCH FPVC FINISHED WATER TRANSMISSION LINE WITH 48-INCH STEEL PIPELINE CASING

MELDRIM, GEORGIA

FEBRUARY 2026



GMC

Goodwyn Mills Cawood

**WATER UTILITY
ENCROACHMENT ENGINEERING REPORT
AND BASIS OF DESIGN
FOR
CROSSING OF THE G&W RAILROAD BY HORIZONTAL
DIRECTIONAL DRILL OF A
48 – INCH OUTSIDE DIAMETER STEEL CASING WITH
A 30 – INCH DR 18 FUSIBLE FPVC TRANSMISSION
WATERLINE CARRIER PIPE INSERTED**

EFFINGHAM COUNTY

MELDRIM, GEORGIA

**ISSUED FOR G&W RAILROAD
PERMITTING REVIEW**

FEBRUARY 2026

**NOT RELEASED FOR CONSTRUCTION
PENDING PERMIT REVIEW AND
GEOTECH REPORTS**

Prepared By



Goodwyn Mills Cawood, LLC.
Fred Hanna, P.E.
T 803.446.4913 cell
www.gmcnetwork.com

GMC PROJECT NUMBER: CSAV250002

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EXECUTIVE SUMMARY

Effingham County is completing a major water system project to improve drinking water infrastructure, water supply, water capacity, and provide safe drinking water for existing and future customers in the Coastal Savannah River Area. The project will provide economic development benefits, safe drinking water, and fire protection, to industrial, commercial, and residential customers in the region.

Effingham County proposes to install a 30- inch Fusible FPVC water transmission line for the entire finished water pipeline route and proposes to encase the 30 – inch FPVC in a 48 – inch steel casing under the G&W Railroad for both the current and planned G&W facilities as indicated on the drawings and plans.

GMC has reviewed the G&W requirements for a water line subgrade crossing and has designed the crossing and conducted stress calculations for this sub-grade casing and carrier pipeline installation.

GMC is completing civil and geotechnical surveys for the HDD.

GMC prepared HDD Design geometry for input into the pipe and pipe stress analysis calculations using industry approved design tools.

A qualified construction contractor and HDD drilling sub- contractor will be selected and will be responsible for the final construction of the HDD within the parameters of the HDD design and specifications.

Project Objective Summary

Listed below are the project objectives for the Project:

- **SAFETY AND HEALTH**
Achieve a work environment free of injuries and occupational illnesses.
- **ENVIRONMENT/REGULATORY/PERMITTING/CODE COMPLIANCE**
Conduct business in compliance with company policies and applicable laws, codes, regulations and industry best engineering and construction standards.
- **QUALITY**
Install facilities that achieve approval from both Effingham County and G&W Railroad project, construction, cost, and operational requirements.
- **SCHEDULE**
Meet project schedule milestones and identify schedule risks, mitigations, and opportunities in a timely manner.
- **OPERABILITY**
Build project components that can be operated safely and reliably for the long term.

Regulatory Considerations

The Project is designed and constructed in accordance with current and applicable federal, state, and local laws, regulations, ordinances, and design codes, and is seeking G&W Railroad approval for the project as designed.

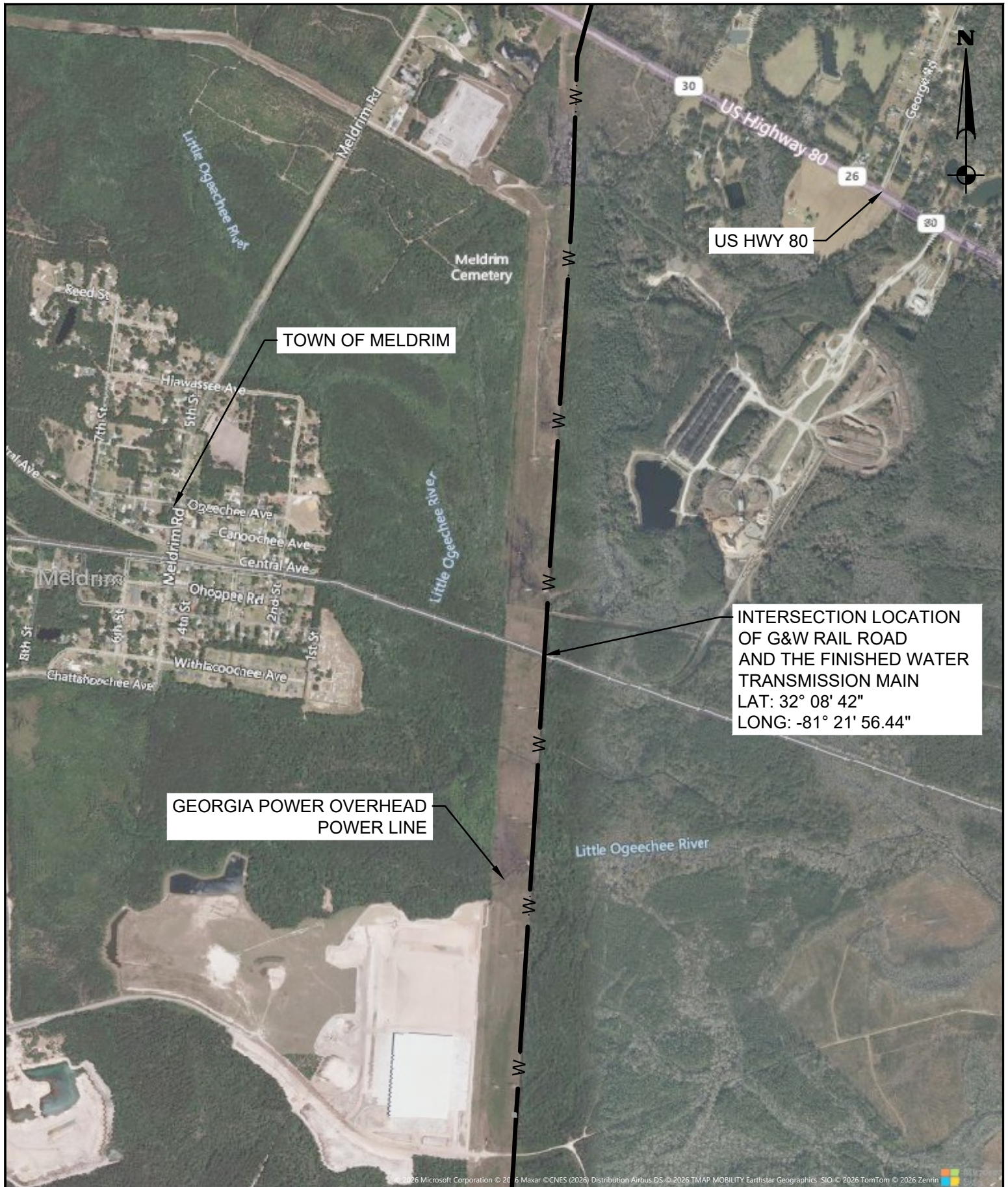
Codes and Standards

Where applicable the pipeline installation is designed to conform to or exceed the latest drinking water standards and codes and the below HDD methodology.

Horizontal Directional Drilling by David Willoughby, McGraw-Hill, copyright 2005

Pipeline Research Council International (1995). "Installation of Pipelines by Horizontal Directional Drilling an Engineering Design Guide." Contract No. PR-227-9424. PRCI.

CROSSING LOCATION MAP



DRAWING FILE: T:\1 Projects\GA Effingham County\CSAV250002 Effingham Co Regional Water Supply - PH\10 DWG\1 PLANS\HDD\CSAV250002\HDD_Base_2 Deeper_With Long Radius.dwg
PLOTTED: Jan 27, 2026 - 3:21pm

EFFINGHAM COUNTY REGIONAL
WATER SUPPLY
EFFINGHAM, GA

GENESSEE & WYOMING RAIL ROAD
LOCATION MAP

LOCATION MAP

GMC # CSAV250002
DATE: 01/27/2026
DRAWN BY: RBS

915 Lady Street, Suite C
Columbia, SC 29201
T 803.766.1235
GMCNETWORK.COM



DESIGN OVERVIEW

Carrier and Casing Pipeline Characteristics

The casing pipeline characteristics will be:

- Size OD 48-inch outside diameter
- Grade ASTM A 139 Grade B
- Wall Thickness 0.688 – Inch Minimum
- ID 46.624 – inch inside diameter
- Material Steel
- SMYS 35,000 PSIG

- Coating Bare

- Joints Welded to G&W RR Requirements

- Annular Clearance 7.312 - INCHES
 - ID CASING 46.624 - INCHES
 - OD CARRIER PIPE 32 - INCHES

- Annular Void / Casing Seal Low Density Cellular Grout*

* For grout we propose low density cellular grout due to the volume of the annular space, length of casing, in order to reduce the effects of the heat of hydration during curing and avoid temperatures which could impact FPVC pipeline integrity.

The carrier pipeline characteristics will be:

- Size OD 32-inch outside diameter
- Grade FPVC FUSIBLE C-900 DR 18
- Wall Thickness 1.885 - Inch
- Material FPVC FUSIBLE C-900 DIPS
- Bend Radius 667 FEET
- Tensile Strength 7,000 PSIG
- Safe Pull Stress 2,800 PSIG
- Pressure Rating 235 PSIG
- Critical Buckling 190 PSIG
- Joints Butt Fusion by Qualified Technicians and Fusion Data Logger
- Annular Clearance
 - ID CASING 46.624 - INCHES
 - OD CARRIER PIPE 32 - INCHES

Operating Characteristics

- Carrier Pipe Design Pressure 235 PSIG

VALVES AND MARKERS

Mainline Valves, Gas Pipeline Markers, Casing Vents and Grout

There will be two (2) isolation valves installed as indicated on the plans for isolation of the crossing in the event of an emergency.

Due to wetlands and the depth requirements for the horizontal directional drill to meet G&W RR clearances and specifications access to these valves will be located as indicated on the drawings and bore plan.

Due to the depth of the casing, we propose to fill and seal the casing with low density cellular grout and request a waiver for vent pipes.

Pipeline Markers and Signs will be installed as noted on plans at the edge of the railroad right of way and as indicated in the drawings.

G&W APPLICATION

Genesee & Wyoming Railroad Services, Inc.

Real Estate Department, 13901 Sutton Park Dr., S, Suite 270, Jacksonville, FL 32224

APPLICATION FOR UNDERGROUND PIPELINE CROSSING OR PARALLELISM OF RAILROAD PROPERTY AND OR TRACK

Incomplete or Inaccurate Information will delay application request

Section 1 - Applicant Data

Complete Legal Name of Applicant to
appear on License Agreement
(Facility Owner):

Effingham County Board of Commissioners

Applicant Mailing Address:

804 S. Laurel Street

Springfield, GA 31329

Applicant Overnight Address:

804 S. Laurel Street

Springfield, GA 31329

Accounts Payable Address:

804 S. Laurel Street

Springfield, GA 31329

Applicant Contact
Name & Title:

David Smith - Senior Design Professional

Telephone Number:

**770-544-0323
DIRECT**

Email
Address:

david.smith@gmcnetwork.com

Emergency Contact (in case of
derailment or fallen/wire pole etc.):

Tre Wilkins, PE

Emergency
Telephone Number:

912-754-8068

Type of Entity:

☒ Corporation

☐ Partnership

☐ Sole Proprietor

☐ Individual

☐ Municipality

☐ Developer

☐ Other*

*If other please explain:

State of
Incorporation or
Partnership:

Contact during Application Process:

Name:

David Smith, Senior Design Professional

Contact Telephone
Number:

**770-952-2481
DIRECT**

Email Address:

david.smith@gmcnetwork.com

Section 2 - Location Data

Railroad Name: Genesee + Wyoming Railroad Services, Inc. Estimated Start Date TBD

Nearest City: Meldrim County: Effingham State: Georgia

REQUIRED: Latitude/Longitude (Convert to Decimal Format) (ex 12.3456789/-64.101112): 32.082534/ -81.215644

Address of proposed worksite: N/A
(city, state and zip code):

Railroad Subdivision - if known US DOT/AAR Crossing Number - if available

Section 3 - Pipeline Data

Crossing or Parallelism?

☒ Crossing If Crossing complete sections 3 and 4 ☐ Parallelism If Parallelism complete sections 3 and 5

☒ New ☐ Maintenance *** ☐ Upgrade *** ☐ Replacement**** ☐ Other **

Method of Installation (Required): ☐ Jack & Bore ☒ Horizontal Directional Drill * ☐ Open Cut (typically not allowed)

**(Bore plan and frac out plan required with submittal for Horizontal Directional Drill method of installation)*

**** Explain other** See attached

***** If maintenance or upgrade on an existing crossing please provide agreement number (required with submittal)** N/A

***** If replacement of existing pipeline provide agreement number for existing crossing. (If abandoning existing pipeline in place include procedure for proposed abandonment on plans for new pipeline installation - Required)** N/A

Product to be Conveyed: ☒ Water ☐ Sewer/Storm Sewer/Culvert ☐ Oil ☐ Gas

Type of Service: (Choose one) ☒ Transmission ☐ Distribution ☐ Service ☐ Other*

***Explain Other** N/A

Will facility be exclusively used by Applicant? ☒ Yes ☐ No***

*****If no, list all entities who will be using this facility:** N/A

Section 4 Pipeline Specifications

	Carrier Pipe	Casing Pipe (Required)
Material Specifications and Grade	C900 DR 18 FPVC (235 psi)	Steel (Jack & Bore) ASTM A139 Grade B
Minimum Yield Strength of material (PSI)	7,000	35,000
Inside Diameter	28.23 in.	46.624 in.
Outside Diameter	32 in.	48.0 in.
Wall Thickness	1.885 in.	0.688 in.
Type of Seam	Extruded (Seamless)	Seamless
Laying Lengths	20 ft.	20 ft.
Type of Joints	Fused	Welded

Angle of Pipe Line Crossing the Track: 74.22° Degrees 0

Vents: none/ grouted entire casing length Number: _____ Size: _____
 Seals: Both Ends: _____ One End: _____

**Cathode Protection: ☐ Yes ☒ No **Protective Coating: ☐ Yes ☒ No

** Kind _____

Type, size, and spacing of insulators or supports: _____

Location of Shut-Off Valves: Each side of RR R/W Number of Manholes: 0

Maximum Operating Pressure 90 psi operating ; 235 psi max

Describe in detail the manner and method of installation on Railroad Property: Install 460 linear feet of steel casing and insert 500 linear feet of carrier pipe by horizontal directional drilling methods under railroad at a minimum depth of 25 feet from rail. Total length within the ROW is 260 linear ft (see profile).

Number of Tracks Crossed: 1 main, with future additional tracks proposed

Total Buried Length on Railroad Right of Way: 260 feet Bury: Base of Rail to Top of Casing: Feet and Inches: 34 feet

Location of Boring Pits adjacent to Track: HDD entry pit 250 feet _____

Launching Pit: 250 feet Receiving Pit: 2571 feet

Section 5 - Parallelism Data**REQUIRED: Begin Parallelism**

Latitude/Longitude (Convert to Decimal) :

N/A

Beginning Milepost if Available:

N/A**REQUIRED: End Parallelism**

Latitude/Longitude (Convert to Decimal) :

N/A

Ending Milepost if Available:

N/A

Total Linear Feet longitudinal occupancy will occupy on Railroad property:

N/A**Section 6 - Department of Transportation (D.O.T.)**

Is this installation associated with a Department of Transportation project?

☐ Yes☒ No

If Yes, complete the following:

D.O.T. Contract Number:

N/A

D.O.T. Project Number:

N/A

D.O.T. Project Name:

N/A

D.O.T. Contact Information:

Name:

N/A

Address:

N/A

City:

N/A

State:

N/A

Zip Code:

N/A

Phone Number

N/A

Email Address:

N/A***Some important items to note when completing the application:*****Checklist prior to submittal**☒

If method of installation is HDD - frac out and bore plans included

☒

Latitude & longitudinal information converted to digital decimal format

N/A ☐

If installing fiber - indicate on the plans it has a metallic ribbon or wire (armored sheath acceptable) for locating purposes

☒

The plans show utility warning signs will be installed above the pipe at each edge of right of way

☐

Payment for fees included - check payable to specific railroad

☐

If paying fees by credit card a completed signed credit card release is included - only Visa, MasterCard or Discover can be accepted - US Roads only

☐

Applications can be emailed with a copy of the check in order to start the approval process. Only the check for the doc prep fees needs to be mailed or overnighted when the complete application packet is emailed. Include a copy of the application to make sure the payment is matched to the correct project.

Section 7 - Insurance Requirements - US Roads

Insurance Requirements prior to any construction project - Both the Utility Owner and the Contractor completing installation are required to provide proof of current Commercial General Liability Insurance. Prior to construction the Contractor is required to provide current proof of Railroad Protective Liability Insurance.

General Liability insurance must meet the minimum requirements of \$2M per occurrence and \$6M aggregate per the terms of the written contract.

Automobile Insurance must meet the minimum requirements of \$1M bodily injury and property damage per occurrence.

The General Liability certificate is required to show proof of **CG2417 or its equivalent**. (*Contractual Liability Railroads*)

Evidence of **Workers Compensation** must be provided on certificate and meet the minimum requirements of \$1M. Certificate Holder naming (*Specified Railroad*) ****Specified Railroad names can be found at www.gwrr.com****

General Liability, Automobile Liability and Umbrella/Excess Liability provides additional insured status to the certificate holder and any other party(ies) specified in or required by written contract between the named insured and the certificate holder.

Where applicable and permitted by law, all policies include a blanket automatic waiver of subrogation endorsement that provides this feature in favor of the certificate holder and any other party(ies) specified in or required by written contract between the named insured and the certificate holder.

Prior to Construction or any access within 50' of Railroad a current **Certificate of Railroad Protective Liability insurance (RPL)** which shows the **specific Railroad** as named Insured. If the Contractor does not carry a policy of Railroad Protective Liability insurance, this coverage can be secured through the railroad. An application and current Fee structure for this coverage is available upon request.

****Insurance Requirements for potentially hazardous pipelines such as natural gas, oil, petroleum, etc. to be amended as shown below****

General Liability Insurance which names the **specific Railroad** as additional insured and must meet the limits of **\$5M per occurrence and \$10M aggregate**. Such policy shall be endorsed to provide Waiver of Subrogation in favor of the certificate holder per written contract.

Pollution Legal Liability Insurance with minimum limits of **Five Million Dollars (\$5,000,000)** per occurrence naming the **certificate holder** as additional insured per written contract. Such policy shall be endorsed to provide Waiver of Subrogation in favor of the certificate holder per written contract.

Section 8 - Insurance requirements - Canadian Roads

Insurance Requirements prior to any construction project - Both the Utility Owner and the Contractor completing installation are required to provide proof of current Commercial General Liability Insurance.

General Liability insurance must meet the minimum requirements of \$2M per occurrence and \$2M aggregate per the terms of the written contract.

Automobile Insurance must meet the minimum requirements of \$1M bodily injury and property damage per occurrence.

Where applicable, the General Liability certificate is required to show proof of **CG2417 or its equivalent.**
(Contractual Liability Railroads)

Evidence of **Workers Compensation** must be provided on certificate and meet the minimum requirements of \$1M. Certificate Holder naming **(Specified Railroad)** ****Specified Railroad names can be found at www.gwrr.com****

General Liability, Automobile Liability and Umbrella/Excess Liability provides additional insured status to the certificate holder and any other party(ies) specified in or required by written contract between the named insured and the certificate holder.

Where applicable and permitted by law, all policies include a blanket automatic waiver of subrogation endorsement that provides this feature in favor of the certificate holder and any other party(ies) specified in or required by written contract between the named insured and the certificate holder.

IMPORTANT

Prior to application submittal, Questions can be answered and additional contact information obtained by visiting the website at www.gwrr.com - select the specific railroad and click on the link for Real Estate.

Plans for proposed installations shall be submitted to and approved by the Railroad, on behalf of itself, its subsidiaries, and affiliates, and designated engineer before work can begin! Applications submitted not meeting current specifications as outlined in the General Specifications for Sub-grade and Above grade Utility Crossings of Railway's Right-of-Way will be returned and may incur additional engineering review fees. For your convenience a copy of these specifications can be found on the website at www.gwrr.com.

Materials and installations are to be in strict accordance with specifications of National Electrical Safety Code, AREMA, current edition, and requirements of the Railroad.

Upon application approval, applicant agrees to reimburse Railroad for any cost incurred by Railroad incident to the installation, maintenance and/or supervision necessitated by the installation. Applicant further agrees to assume all liability for accidents or injuries that arise as a result of this installation.

This section must be completed in full, signed and dated prior to submittal to the Real Estate Department for processing. Unsigned applications, incomplete or inaccurate Information will delay application request and may incur additional fees.

Date:	<u>N/A</u>	Signature:	<u>N/A</u>
Phone Number:	<u>N/A</u>	Printed Name:	<u>N/A</u>
Fax Number:	<u>N/A</u>	Title:	<u>N/A</u>

Please make check payable to the specific Railroad where proposed work is to occur . A list of Genesee & Wyoming, Inc. subsidiary railroads can be found at: www.gwrr.com . W-9 information available upon request.

Mail the application for proposed project, along with the applicable non-refundable fee(s) in U.S. Funds (Canadian Applicants please pay all fee in Canadian Funds plus HST) to:

Genesee & Wyoming Railroad Services, Inc.
Attn: Real Estate Department
13901 Sutton Park Dr. S., Suite 270
Jacksonville, FL 32224

*In order for the application to be complete **ALL** required details pertinent to the proposed installation must be completed in full and submitted along with the following fees:*

	# of Copies	Amount Due	Description
☐	1	\$1,000	Completed Pipeline Application
☐	1	\$1,750	Engineer review fee, plans/drawings, no larger than 11 x 17. Larger drawings may incur additional engineering fees.
☐	1	\$1,750	Completed Contractor's Access/Occupancy Application and Fee required with ALL application submittals. If the contractor is unknown at time of submittal just check the box under the heading on the form.
☐		\$4,500	Full amount due with submittal for new utility installations - Unless prior arrangements are made, applications received without payment will not be processed until receipt of payment. This could extend the time frame for the processing of your request.

Standard Application processing takes approximately 6-8 weeks. **PLEASE READ IN FULL** - "Expedited processing" is available and will reduce the processing time to between 1-2 weeks at an additional cost of \$2,500. For **all expedited requests** the application and plans submitted must meet engineering specifications and be approved in order for the applicable agreement(s) to be forwarded to the applicant for signature within 2 weeks **from receipt of all required information and full payment of required fees**. It is important to note that an incomplete application and plans submitted that do not meeting engineering specifications will cause a delay in the processing of expedited request and the two week guarantee no longer applies if revisions are required to be made by the applicant in order for them to meet engineering specs for engineering to approve the request.

The expedited processing of an application does not apply to the final review and execution phase of the agreement process. Once a signed agreement has been received and ALL required fees and insurance has been submitted the agreement(s) is(are) forwarded for final review by a VP of Real Estate, Legal and the signatory for the Railroad. This final review and execution process can take up to 2 weeks from receipt of **all required documentation and fees**. This part of the agreement process cannot be expedited.

At this time we are unable to expedite requests for the installation of new private grade crossings, industrial track agreements, and track leases. The process for these requests varies somewhat from the review and approval process for new utilities and takes a little longer to secure all required approvals.

Entering or working on the railroad right of way or any other railroad property without the permission of the railroad is trespassing and illegal. Violators risk the possibility of serious, even fatal injury and will be prosecuted.

BORE PLAN DRAWINGS
FOR
HORIZONTAL DIRECTIONAL DRILLING

DRAWING FILE: T:\Projects\CSA\Effingham County\CSA\250002 Effingham Co Regional Water Supply - PH\10 DWG\1 PLANS\HDD\CSAV250002 HDD_Base_2 Dwg.dwg
PLOTTED: Feb 05, 2025 - 10:28am



GENESEE & WYOMING
RAILROAD SERVICES, INC
REAL ESTATE DEPARTMENT, 13901 SUTTON PARK DR.,
S. SUITE 270, JACKSONVILLE, FL 32224

GENESEE & WYOMING
NAME OF RAILROAD (REQUIRED)
SPRINGFIELD, EFFINGHAM, GEORGIA
CITY, COUNTY, STATE (REQUIRED)

FUTURE RAILROAD SPUR R/W LINE

RAILROAD R/W LINE

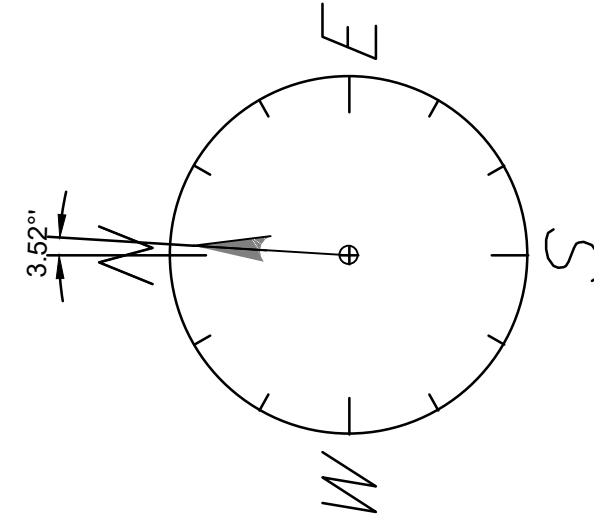
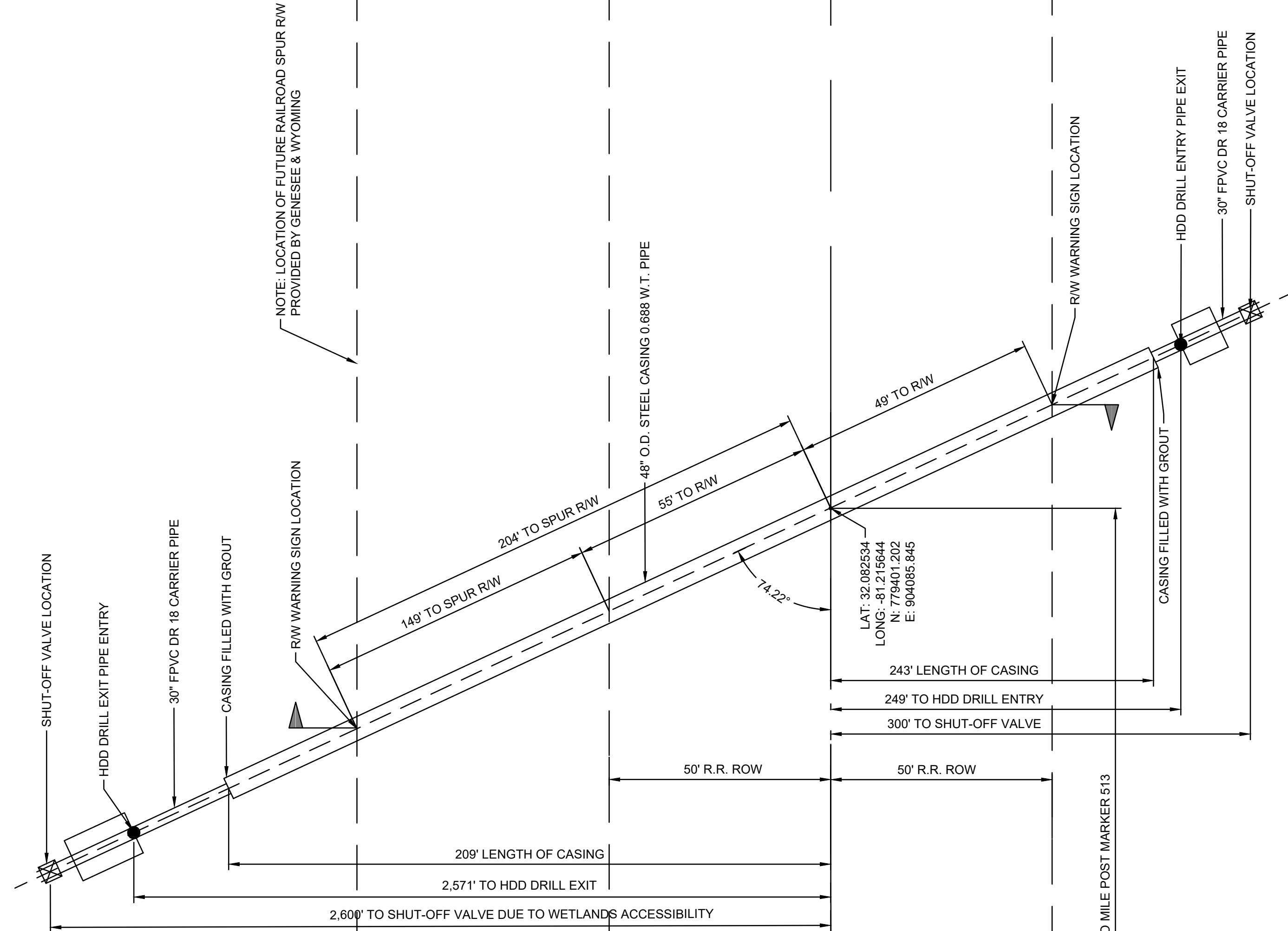
RAILROAD TRACK

RAILROAD R/W LINE

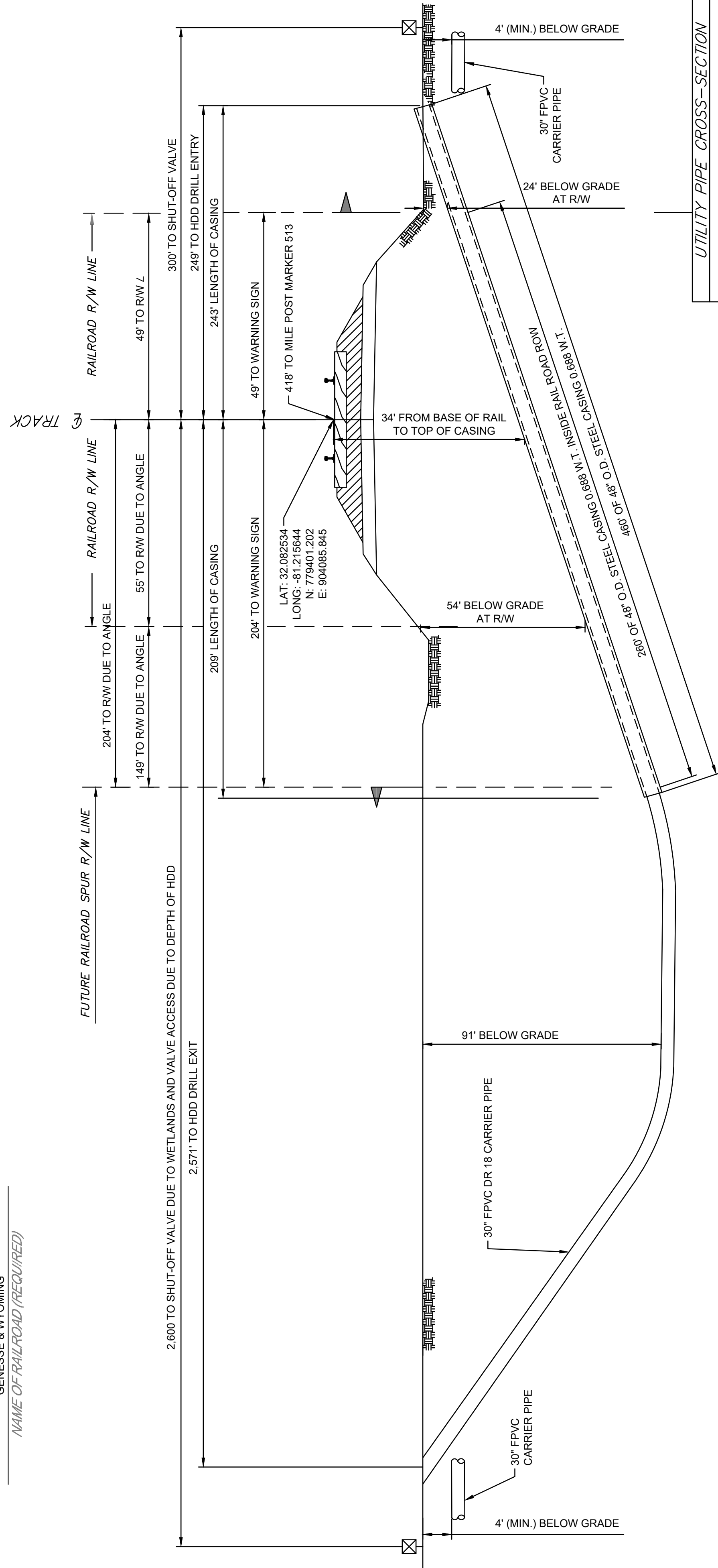
The material and equipment shown herein must meet or exceed all quality requirements. Any deviation from these standards must be submitted in writing and approved by the AVP of Engineering Services prior to use.

APPLICATION FOR UNDERGROUND PIPELINE CROSSING OF
RAILROAD PROPERTY AND OR TRACK

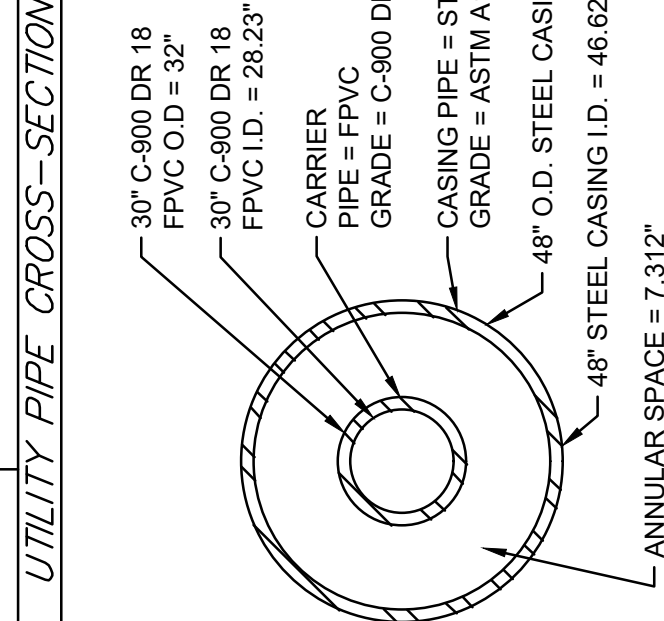
DRAWING SCALE: N.T.S.



GENESEE & WYOMING
NAME OF RAILROAD (REQUIRED)



ALL CASING PIPE JOINTS WELDED
TO AISC SPECIFICATIONS



HDD RAILROAD BORE
APPLICATION EXHIBIT

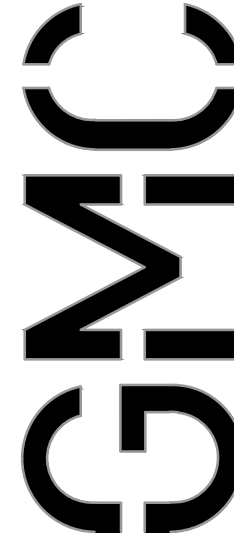


EFFINGHAM COUNTY
REGIONAL WATER SUPPLY

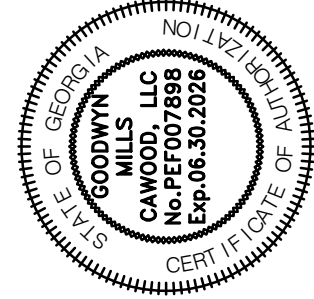
EFFINGHAM, GA

CSAV250002

ISSUE	DATE
ISSUED FOR PERMITTING	02/28/2026
DESIGNER:	RBS
DRAWN BY:	FH



915 Lady Street, Suite C
Columbia, SC 29201
T 803.766.1235



NOTICE: BURIED WATER PIPELINE

**OWNER: EFFINGHAM COUNTY BOARD OF
COMMISSIONERS
804 LAUREL ST. SPRINGFIELD, GA 31329**

**CONTENTS OF PIPE:
FINISHED WATER
MAX DESIGN PRESSURE: 235 PSI**

**DEPTH OF COVER:
24-FEET APPROXIMATE
(CALL 811 TO LOCATE)**

IN EVENT OF RUPTURE CALL: (912) 754-8068

**WEATHERPROOF SIGN WHITE
BACKGROUND W/ ORANGE OR
BLACK 1-1/2" TALL LETTERS.**

**SIGN TO MEET RAIL ROAD
REQUIREMENTS**

**EFFINGHAM CO REGIONAL
WATER SUPPLY
EFFINGHAM COUNTY, GA**

**WATERLINE LOCATION SIGN AT
RAIL ROAD RIGHT-OF-WAYS**

**SIGN NO. 1 ON NORTH SIDE
OF R.R. ROW**

**GMC # CSAV250002
DATE: 02/26/2026
DRAWN BY: RBS**

**915 Lady Street, Suite C
Columbia, SC 29201
T 803.766.1235
GMCNETWORK.COM**

GMC

NOTICE: BURIED WATER PIPELINE

**OWNER: EFFINGHAM COUNTY BOARD OF
COMMISSIONERS
804 LAUREL ST. SPRINGFIELD, GA 31329**

**CONTENTS OF PIPE:
FINISHED WATER
MAX DESIGN PRESSURE: 235 PSI**

**DEPTH OF COVER:
54-FEET APPROXIMATE
(CALL 811 TO LOCATE)**

IN EVENT OF RUPTURE CALL: (912) 754-8068

**WEATHERPROOF SIGN WHITE
BACKGROUND W/ ORANGE OR
BLACK 1-1/2" TALL LETTERS**

**SIGN TO MEET RAIL ROAD
REQUIREMENTS**

**EFFINGHAM CO REGIONAL
WATER SUPPLY
EFFINGHAM COUNTY, GA**

**WATERLINE LOCATION SIGN AT
RAIL ROAD RIGHT-OF-WAYS**

**SIGN NO. 2 ON SOUTH SIDE
OF R.R. ROW**

**GMC # CSAV250002
DATE: 02/26/2026
DRAWN BY: RBS**

**915 Lady Street, Suite C
Columbia, SC 29201
T 803.766.1235
GMCNETWORK.COM**

GMC

FRAC OUT MITIGATION PLAN

FRAC-OUT CONTINGENCY PLAN (FCP)

Prevention of Inadvertent Fluid Losses and spills, and Contingencies for Rapid Cleanup

Introduction and Purpose

Directional bore operations have a potential to release drilling fluids into the surface environment through frac-outs (A frac-out is the condition where drilling mud is released through fractured bedrock into the surrounding rock and sand and travels toward the surface.) Because drilling muds consist largely of a bentonite clay-water mixture, they are not classified as toxic or hazardous substances. However, if it is released into water bodies, bentonite has the potential to adversely impact fish and invertebrates. While drilling fluid seepage associated with a frac-out is most likely to occur near the bore entry and exit points where the drill head is shallow, frac-outs can occur in any location along a directional bore. This Frac-Out Contingency Plan (FCP) establishes operational procedures and responsibilities for the prevention, containment, and cleanup of frac-outs associated with the proposed directional drilling utility project. All personnel and Sub-Contractors responsible for the work must adhere to this plan during the directional drilling process. The specific objectives of this plan are to: 1. Minimize the potential for a frac-out associated with directional drilling activities; 2. Provide for the timely detection of frac-outs; 3. Protect the environmentally sensitive riverbed and associated riparian vegetation; 4. Ensure an organized, timely, and "minimum-impact" response in the event of a frac-out and release of drilling bentonite; and 5. Ensure that all appropriate notifications are made immediately to the customer, management and safety personnel.

Description of Work

Drilling operations will be halted by the drill rig operators immediately upon detection of a drop in drilling pressure or other evidence of a frac-out. The drilling contractor will have a Vacuum Truck onsite during all bore crossings in case of frac-out. On site will be turbidity curtains long enough to reach the water body floor at the deepest points and necessary clean up tools to contain a frac-out should one be presented. The team will notify all teams and clean-up of all spills shall begin immediately. Management and safety department shall be notified immediately of any spills and shall be consulted regarding clean-up procedures. A spill kit shall be onsite and used if a frac-out occurs. A vacuum truck and containment materials, such as straw bales, floating turbidity barriers, and silt fence shall also be on-site prior to and during all operations. The Site Supervisor will be immediately notified. In the event of a frac-out, the on-site foreman/supervisor will conduct an evaluation of the situation and direct recommended mitigation actions, based on the following guidelines:

- a. If the frac-out is minor, easily contained, has not reached the surface and is not threatening sensitive resources, drilling operations may resume after use of a leak stopping compound or redirection of the bore.
- b. If the frac-out has reached the surface, any material contaminated with Bentonite shall be removed by hand to a depth of 2-feet, contained and properly disposed of, as required by law. The drilling contractor shall be responsible for ensuring that the bentonite is either properly disposed of at an approved disposal facility or properly recycled in an approved manner. The Site Supervisor shall notify and take any necessary follow-up response actions in coordination with agency representatives. The Site Supervisor will coordinate the mobilization of equipment stored at off-site locations (e.g., vacuum trucks) on an as needed basis.

Site Supervisor/Foremen Responsibilities

The Site Supervisor/Foremen has overall responsibility for implementing this FCP. The Site Supervisor/Foremen will ensure that all employees are trained prior to all drilling. The Site Supervisor/Foremen shall be notified immediately when a frac-out is detected. The Site Supervisor/Foremen will be responsible for ensuring that the safety department is aware of the frac-out, coordinating personnel, response, cleanup, regulatory agency notification and coordination to ensure proper clean-up, disposal of recovered material and timely reporting of the incident. The Site Supervisor/Foremen shall ensure all waste materials are properly containerized, labeled, and removed from the site to an approved disposal facility by personnel experienced in the removal, transport and disposal of drilling mud. The Site Supervisor/Foremen shall be familiar with all aspects of the drilling activity, the contents of this Frac-out Contingency Plan and the conditions of approval under which the activity is permitted to take place. The Site Supervisor/Foremen shall have the authority to stop work and commit the resources (personnel and equipment) necessary to implement this plan. The Site Supervisor/Foremen shall assure that a

copy of this plan is available (onsite) and accessible to all construction personnel. The Site Supervisor/Foremen shall ensure that all workers are properly trained and familiar with the necessary procedures for response to a frac-out, prior to commencement of drilling operations.

Equipment

The Site Supervisor shall ensure that:

- All equipment and vehicles are checked and maintained daily to prevent leaks of hazardous materials
- Spill kits and spill containment materials are always available on-site and that the equipment is in good working order
- Equipment required to contain and clean up a frac-out release will either be available at the work site or readily available at an offsite location within 10 minutes of the bore site; and
- If equipment is required to be operated near a riverbed, absorbent pads and plastic sheeting for placement beneath motorized equipment shall be used to protect the riverbed from engine fluids.

Training

Prior to the start of construction, the Site Supervisor/Foremen, shall ensure that the crew members receive training in the following:

- The provisions of the Frac-out Contingency Plan, equipment maintenance and site-specific permit and monitoring requirements
- Inspection procedures for release prevention and containment equipment and materials
- Contractor/crew obligation to immediately stop the drilling operation upon first evidence of the occurrence of a frac-out and to immediately report any frac-out releases
- Contractor/crew member responsibilities in the event of a release
- Operation of release prevention and control equipment and the location of release control materials, as necessary and appropriate; and
- Protocols for communication with agency representatives who might be on-site during the clean-up effort.

Drilling Procedures

The following procedures shall be followed each day, prior to the start of work. The Frac-out Contingency Plan shall be available on-site during all construction. The Site Supervisor/Foremen shall be on-site at any time that drilling is occurring or is planned to occur. The Site Supervisor/Foremen shall ensure that a Job Briefing meeting is held at the start of each day of drilling to review the appropriate procedures to be followed in case of a frac-out. Questions shall be answered and clarification given on any point over which the drilling crew or other project staff has concerns. Drilling pressures shall be closely monitored so they do not exceed those needed to penetrate the formation. Pressure levels shall be monitored randomly by the operator. Pressure levels shall be set at a minimum level to prevent frac-outs. During the pilot bore, maintain the drilled annulus. Cutters and reamers will be pulled back into previously drilled sections after each new joint of pipe is added. Exit and entry pits shall be enclosed by silt fences and straw. A spill kit shall be on-site and used if a frac-out occurs. A vacuum truck shall be readily available on-site prior to and during all drilling operations. Containment materials (Straw, silt fencing, sandbags, frac-out spill kits, etc.) shall be staged on-site at location where they are readily available and easily mobilized for immediate use in the event of an accidental release of drilling mud (frac-out). If necessary, barriers (straw bales or sedimentation fences) between the bore site and the edge of the water source, shall be constructed, prior to drilling, to prevent released bentonite material from reaching the water. Once the drill rig is in place, and drilling begins, the drill operator shall stop work whenever the pressure in the drill rig drops, or there is a lack of returns in the entrance pit. At this time the Site Supervisor/Foremen shall be informed of the potential frac-out. The Site Supervisor/Foremen and the drill rig operator(s) shall work to coordinate the likely location of the frac-out. The location of the frac-out shall be recorded and notes made on the location and measures taken to address the concern. The following subsections shall be adhered to when addressing a frac-out situation. Water containing mud, silt, bentonite, or other pollutants from equipment washing or other activities, shall not be allowed to enter a lake, flowing stream or any other water source. The Bentonite used in the drilling process shall be either disposed of at an approved disposal facility or recycled in an approved manner. Other construction materials and wastes shall be recycled, or disposed of, as appropriate.

Vac-Truck

A vacuum truck shall be staged at a location from which it can be mobilized and relocated so that any place along the drill shot, can be reached by the apparatus, within 10 minutes of a frac-out.

Field Response to Frac-out Occurrence

Response of the field crew to a frac-out release shall be immediate and in accordance with procedures identified in this Plan. All appropriate emergency actions that do not pose additional threats to sensitive resources will be taken, as follows:

- a. Directional boring will stop immediately
- b. The bore stem will be pulled back to relieve pressure on frac-out
- c. The Site Supervisor/Foremen will be notified to ensure that management and the safety department is notified, adequate response actions are taken and notifications made
- d. The Site Supervisor/Foremen shall evaluate the situation and recommend the type and level of response warranted, including the level of notification required
- e. If the frac-out is minor, easily contained, has not reached the surface and is not threatening sensitive resources, a leak stopping compound shall be used to block the frac-out. If the use of leak stopping compound is not fully successful, the bore stem shall be redirected to a new location along the desired drill path where a frac-out has not occurred
- f. If the frac-out has reached the surface, any material contaminated with Bentonite shall be removed by hand, to a depth of 2-feet, contained and properly disposed of, as required by law. A dike or berm may be constructed around the frac-out to entrap released drilling fluid, if necessary. Clean sand shall be placed and the area returned to pre-project contours; and
- g. If a frac-out occurs, reaches the surface and becomes widespread, the Site Supervisor/Foremen shall authorize a readily accessible vacuum truck and bulldozer stored off-site to be mobilized. The vacuum truck may be either positioned at either end of the line of the drill so that the frac-out can be reached by crews on foot, or may be pulled by a bulldozer, so that contaminated soils can be vacuumed up.

Response Close-out Procedures

When the release has been contained and cleaned up, response closeout activities will be conducted at the direction of the Site Supervisor/Foremen and shall include the following:

- a. The recovered drilling fluid will either be recycled or hauled to an approved facility for disposal. No recovered drilling fluids will be discharged into streams, storm drains or any other water source
- b. All frac-out excavation and clean-up sites will be returned to pre-project contours using clean fill, as necessary; and
- c. All containment measures (fiber rolls, straw bale, etc.) will be removed, unless otherwise specified by the Site Supervisor/Foremen.

Construction Re-start

For small releases not requiring external notification, drilling may continue, if 100 percent containment is achieved using a leak stopping compound or redirection of the bore and the clean-up crew remains at the frac-out location throughout the construction period. For releases requiring external notification and/or other agencies, construction activities will not restart without prior approval from the safety department.

Bore Abandonment

Abandonment of the bore will only be required when all efforts to control the frac-out within the existing directional bore have failed.

Notification

In the event of a Frac-out that reaches a water source, the Site Supervisor/Foremen will notify safety department so they can notify the appropriate resource agencies. All agency notifications will occur within 24 hours and

proper documentation will be accomplished in a timely and complete manner. The following information will be provided:

1. Name and telephone number of person reporting
2. Location of the release
3. Date and time of release
4. Type and quantity, estimated size of release
5. How the release occurred
6. The type of activity that was occurring around the area of the frac-out
7. Description of any sensitive areas, and their location in relation to the frac-out
8. Description of the methods used to clean up or secure the site; and
9. Listing of the current permits obtained for the project.

Communicating with Regulatory Agency Personnel

All employees and subcontractors will adhere to the following protocols when permitting Regulatory Agency Personnel arrive on site. Regulatory Agency Personnel will be required to comply with appropriate safety rules. Only the Site Supervisor/Foremen and the safety department are to coordinate communication with Regulatory Agency Personnel.

Documentation

The Site Supervisor/Foremen shall record the frac-out event in his or her daily log. The log will include the following: Details on the release event, including an estimate of the amount of bentonite released, the location and time of release, the size of the area impacted, and the success of the clean-up action. The log report shall also include the: Name and telephone number of person reporting; Date, How the release occurred; The type of activity that was occurring around the area of the frac-out: Description of any sensitive areas, and their location in relation to the frac-out: Description of the methods used to clean up or secure the site; and a listing of the current permits obtained for the project.

Project Completion and Clean-up

- a. All materials and any rubbish-construction debris shall be removed from the construction zone at the end of each workday
- b. Sump pits at bore entry and exits will be filled and returned to natural grade
- c. All protective measures (fiber rolls, straw bale, silt fence, etc.) will be removed unless otherwise specified by the Site Supervisor/Foremen.

GEOTECH BORING PLAN

The G&W Railroad crossing is HDD 4 and includes Geotech borings as indicated on each side of the G&W Railroad outside of the Railroad Right of Way.



Project: Effingham County 30" FPVC Finished Waterline

Project Engineer: Fred Hanna P.E.

Geotech Firms: SME

Legend	
C	Complete
P	Proposed

HDD 4

Geotech Firm Data	Status	HDD #	Soil Boring #	Depth (FT)	Access Permission	Approx. LAT.	Approx. LONG.	Drill Type
SME	P	4	HDD4_BH 1	85	Effingham Co/GA Power	32.1335	-81.3663	Amphibious
SME	P	4	HDD4_BH 2	100	Effingham Co/GA Power	32.1360	-81.3661	Amphibious
SME	P	4	HDD4_BH 3	100	Effingham Co/GA Power	32.1364	-81.3659	Amphibious
SME	P	4	HDD4_BH 4	85	int paper/GA Power	32.0829	-81.2156	Amphibious



HDD 4 (1"=1,150 FT)
Effingham Co
GMC#: XXXX000000
DATE: 2/6/2026
DRAWN BY: HCA



117 Welborn Street
Greenville, SC 29601
T: 864.527.0460
GMCNETWORK.COM

This product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or

END OF REPORT

Prepared By



Goodwyn Mills Cawood, LLC.

Fred Hanna, P.E.

T 803.446.4913 cell

www.gmcnetwork.com

GMC PROJECT NUMBER: CSAV250002