



Floodplain Development Permit

Doddridge County, WV Floodplain Management

This permit gives approval for the development/ project listed that impacts the FEMA-designated floodplain and/or floodway of Doddridge County, WV, pursuant to the rules and regulations established by all applicable Federal, State and local laws and ordinances, including the Doddridge County Floodplain Ordinance. This permit must be posted at the site of work as to be clearly visible and must remain posted during entirety of development.

Permit: #22-610

Date Approved: March 7, 2022

Expires: March 7, 2023

Issued to: Antero Resources

POC: John Angiulli

Company Address: 535 White Oaks Blvd. Bridgeport, WV 26330

Project Address: Sugar Run Road Road West Union, WV 26456

Firm: 54017C0225C

Lat/Long: 39.205872N, -80.865064W

Purpose of Development: Renewal (Original Permit #21-591)

Issued by: George C. Eidel, CFM, OEM Director/Doddridge County FPM (or designee)

Date: March 7, 2022

For additional information regarding this permit, please contact
Doddridge County Floodplain Manager at 304.873.2631, or via email at
doddridgecountyfpm@gmail.com
118 East Court Street; West Union, WV 26456

FLOODPLAIN PERMIT #22-610

Antero Resources, Sugar Run Road Improvement Project (renewal of 21-591) 39.205872, -80865064

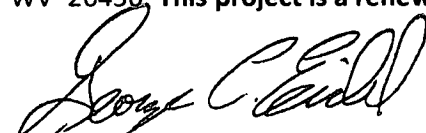
TASK	COMPLETE (DATE)	NOTES
CHECK RECEIVED	2/9/22	
US ARMY CORP. ENGINEERS (USACE)		
US FISH & WILDLIFE SERVICES (USFWS)		
WV DEPT. NATURAL RESOURCES (WVDNR)		
WV DEPT. ENVIROMENTAL PROTECTION (WVDEP)		
STATE HISTORIC & PRESERVATION OFFICE (SHPO)		
OFFICE of LAND & STREAM (OLS)		
WVDOH		
Elevation Certificate		
DATE OF COMMISSION READING	2/15/2022	
DATE AVAILABLE TO BE GRANTED	3/7/2022	
PERMIT GRANTED		
COMPLETE		



Doddridge County Floodplain Permits

(Week of February 14, 2022)

Please take notice that on the (9th) of (February), 2022, (Antero Resources) filed an application for a Floodplain Permit (#22-610) to develop land located at or about (Sugar Run Road Improvement); **Coordinates: 39.205872, -80.865064**. The Application is on file with the Floodplain Manager of the County and may be inspected or copied during regular business hours in accordance to WV Code Chapter 29B Freedom of Information, Article 1 Public Records and county policy and procedures. Any interested persons who desire to comment shall present the same in writing by (March 7 2022) (20 calendar days after the announcement at the regularly scheduled Doddridge County Commission Meeting) delivered to the Floodplain Manager of the County at 105 Court Street, Suite #3, West Union, WV 26456. **This project is a renewal of Permit 21-591 Road Improvement**



GEORGE C. EIDEL, CFM

Doddridge County Floodplain Manager



ATTACHMENT A FLOODPLAIN APPLICATION



Permit#	22-610
Project	Sugar Run Rd Improvement
Permittees Name:	Antero Resources Renewal of 21-691

FEB 9 02 01:22 PM

Doddridge County, WV

Floodplain Development Permit Application

This document is to be used for projects that impact/potentially impact the FEMA---designated floodplain and/or floodway of Doddridge County, WV pursuant to the rules and regulations established by all applicable Federal, State and local laws and ordinances, including the Doddridge County Floodplain Ordinance.

SECTION 1: GENERAL PROVISIONS (APPLICANT TO READ AND SIGN)

1. No work may start until a permit is issued.
2. The permit may be revoked if any false statements are made herein.
3. If revoked, all work must cease until permit is re-issued.
4. The permit will expire if no work is commenced within six months of issuance.
5. Applicant is hereby informed that other permits may be required to fulfill local, state, and federal requirements.
6. Applicant hereby gives consent to the Floodplain Administrator/Manager or his/her representative to make inspections to verify compliance.
7. I THE APPLICANT CERTIFY THAT ALL STATEMENTS HEREIN AND IN ATTACHMENTS TO THIS APPLICATION ARE, TO THE BEST OF MY KNOWLEDGE, TRUE AND ACCURATE.

APPLICANT'S SIGNATURE John M. Angiulli

DATE 2/8/2022

Doddridge County Commercial/Industrial
Floodplain Development Permit Application

Applicant Information:

Please provide all pertinent data.

Applicant Information		
Responsible Company Name: Antero Resources Corporation		
Corporate Mailing Address: 1615 Wynkoop Street		
City: Denver	State: CO	Zip: 80202
Corporate Point of Contact (POC): N/A		
Corporate POC Title: N/A		
Corporate POC Primary Phone: N/A		
Corporate POC Primary Email: N/A		
Corporate FEIN: N/A	Corporate DUNS: N/A	
Corporate Website: www.anteroresources.com		
Local Mailing Address: 535 White Oaks Blvd		
City: Bridgeport	State: WV	Zip: 26330
Local Project Manager (PM): John Angiulli		
Local PM Primary Phone: (304) 842-4139		
Local PM Secondary Phone: N/A		
Local PM Primary Email: jangiulli@anteroresources.com		
Person Filing Application: John Angiulli		
Applicant Title: Environmental Specialist II		
Applicant Primary Phone: (304) 842-4139		
Applicant Secondary Phone: N/A		
Applicant Primary Email: jangiulli@anteroresources.com		

Doddridge County Commercial/Industrial
Floodplain Development Permit Application

Project Narrative:

Describe in detail the proposed development including project name/title, type of development, estimated start and completion timeline, and its potential impact on the floodplain. Use additional copies of this page as needed.

Project Narrative:
Permit # 21-591 – Renewal and Modification Request
<p>Renewal:</p> <p>The following project narrative was submitted with a floodplain permit application dated 03/01/2021. The floodplain permit was issued in a letter dated 04/05/2021 (Attachment G) and is set to expire on 04/05/2022. Due to project priority and schedule changes, the work has been delayed. Therefore, Antero is requesting a permit renewal for the following:</p> <p>Antero Resources Corporation (Antero) is proposing improvements to approximately 2.40-miles of Sugar Run Road (CR-52), known as the Sugar Run Road (CR-52) Roadway Improvements (Roadway Improvements). The Roadway Improvements will support larger vehicle traffic near the town of West Union in Doddridge County, West Virginia (WV). The northern terminus of the Roadway Improvements is located at 39.205891, -80.864813 and the southern terminus is located at 39.178374, -80.849874. The Roadway Improvements will utilize the existing county road which will support access to current and future Antero-operated sites.</p> <p>The proposed Roadway Improvements will result in a limit of disturbance (LOD) of approximately 10.03 acres, of which 0.70-acres (7.0%) is located within the limits of the South Fork Hughes River regulated floodplain. The Roadway Improvements within the regulated floodplain will consist of but are not limited to roadway widening and overlay, culvert replacements, construction workspaces, tree clearing, and temporary erosion and sediment controls. The Roadway Improvements do not propose permanent fill above the existing floodplain elevation; therefore, no adverse effects to the floodplain are anticipated. A No-Rise Certificate has been completed by the engineering firm (Hammontree & Associates, LTD).</p>
<p>Modification # 1</p> <p>On August 25, 2021 an email notification was submitted to you summarizing design changes that occurred, which resulted in the modification of the LOD within the floodplain. These design changes generally included an LOD expansion for the purposes of pavement transitions and grading at the intersection of Sugar Run Road (CR-52) and Oxford Road (CR-9) and LOD reductions to remove a proposed pull-off/staging area and avoid an existing structure. These changes resulted in the LOD increasing from 10.031 acres to 10.055 acres. An updated floodplain permit application dated September 15, 2021 was subsequently provided for the design changes, which you approved on September 28, 2021 (Attachment G).</p>

Doddridge County Commercial/Industrial
Floodplain Development Permit Application

Project Narrative:

Modification # 2

On September 29, 2021 an email notification was submitted to you which indicated removal of the proposed pull-off/staging area that was outlined in the August 25, 2021 email notification and subsequent September 15, 2021 floodplain permit application was being re-included due to ongoing landowner negotiations. As a result, the LOD increased from 10.055 acres to 10.184 acres. This change was approved by you on September 30, 2021 (Attachment G).

Modification #3:

Since receipt of Permit # 21-591 and approvals for Modifications #1 and #2, Antero is proposing the addition of a 0.55-acre staging area with subsequent ingress and egress near the intersection of Sugar Run Road (CR-52) and Oxford Road (CR-9) within Doddridge County, WV. The addition of the proposed gravel staging area will consist of but is not limited to installation of erosion and sediment perimeter controls for construction activities, tree clearing, excavation, and imported stone fill; however, since the proposed staging area is located entirely within the designated FEMA 100-year floodzone (Attachments C & D), no fill will be placed above any existing elevations, as described in the no rise certificate (Attachment F). Furthermore, LOD reductions are proposed to remove the previously described pull-off/staging area as well as reducing portions of the previously added LOD at the intersection of Sugar Run Road (CR-52) and Oxford Road (CR-9). Excavated material will be temporarily stored at the designated stockpile for the road project (~39.178638, -80.850301) before being transferred to the designated stockpile associated with Antero's Cashew Well Pad; located outside of a designated floodplain.

Cumulatively, the additional road improvements will result in an approximately 10.44-acre LOD, with approximately 1.1-acres of LOD located within the South Fork Hughes River regulated floodplain.

Doddridge County Commercial/Industrial
Floodplain Development Permit Application

Proposed Development:

Please check all elements of the proposed project that apply.

DESCRIPTION OF WORK (CHECK ALL APPLICABLE BOXES)

A. STRUCTURAL DEVELOPMENT

<u>ACTIVITY</u>		<u>STRUCTURAL TYPE</u>	
<input type="checkbox"/>	New Structure	<input type="checkbox"/>	Residential (1 – 4 Family)
<input type="checkbox"/>	Addition	<input type="checkbox"/>	Residential (more than 4 Family)
<input type="checkbox"/>	Alteration	<input type="checkbox"/>	Non-residential (floodproofing)
<input type="checkbox"/>	Relocation	<input type="checkbox"/>	Combined Use (res. & com.)
<input type="checkbox"/>	Demolition	<input type="checkbox"/>	Replacement
<input type="checkbox"/>	Manufactured/Mobil Home		

B. OTHER DEVELOPMENT ACTIVITIES:

- Fill Mining Drilling Pipelining
- Grading
- Excavation (except for STRUCTURAL DEVELOPMENT checked above)
- Watercourse Alteration (including dredging and channel modification)
- Drainage Improvements (including culvert work)
- Road, Street, or Bridge Construction
- Subdivision (including new expansion)
- Individual Water or Sewer System
- Other (please specify)

Doddridge County Commercial/Industrial
Floodplain Development Permit Application

Development Site/Property Information:

Please provide physical description of the site/property, along with pertinent ownership (surface and mineral rights) data as applicable. Attach appropriate maps from the WV Flood Tool showing location of proposed development. Use additional copies of this page if development spans multiple property boundaries. Designate each property by number (i.e. Property 1 of 1, Property 2 of 7, etc.)

Property Designation: 1 of 1

Site/Property Information:		
Legal Description: Sugar Run Road (CR-52) Roadway Improvements		
Physical Address/911 Address: County Route 52		
Decimal Latitude/Longitude: 39.204838		
DMS Latitude/Longitude: -80.864770		
District: 7 (Southwest)	Map: 4	Parcel: N/A
Land Book Description: N/A		
Deed Book Reference: N/A		
Tax Map Reference: N/A		
Existing Buildings/Use of Property: Sugar Run Road (CR-52)		

Floodplain Location Data: (to be completed by Floodplain Manager or designee)			
Community:	Number:	Panel:	Suffix:
Location (Lat/Long):		Approximate Elevation:	
		Estimated BFE:	
Is the development in the floodway? <input type="checkbox"/> Yes <input type="checkbox"/> No		Is the development in the floodplain? <input type="checkbox"/> Yes <input type="checkbox"/> No Zone: _____	
Notes:			

Doddridge County Commercial/Industrial
Floodplain Development Permit Application

Property Owner Data:

Please provide data on current site/property landowner(s), both surface and mineral rights (as applicable). Use additional copies of this page as needed. Designate each page in relation to each property listed above.

Property Designation: 1 of 1

Property Owner Data:		
Name of Primary Owner (PO): Sugar Run Road (CR-52)		
PO Address: N/A		
City: N/A	State: N/A	Zip: N/A
PO Primary Phone: N/A		
PO Secondary Phone: N/A		
PO Primary Email: N/A		

Surface Rights Owner Data:		
Name of Primary Owner (PO): See Table of Adjacent Property Owners (Attachment B)		
PO Address:		
City:	State:	Zip:
PO Primary Phone:		
PO Secondary Phone:		
PO Primary Email:		

Mineral Rights Owner Data: (As Applicable)		
Name of Primary Owner (PO): N/A		
PO Address: N/A		
City: N/A	State: N/A	Zip: N/A
PO Primary Phone: N/A		
PO Secondary Phone: N/A		
PO Primary Email: N/A		

Doddridge County Commercial/Industrial
Floodplain Development Permit Application

Contractor Data:

Please provide all pertinent data for contractors and sub---contractors that may be participating in this project. Use additional copies of this page as needed. Designate each page in relation to each property listed above.

Property Designation: 1 of 1

Contractor/Sub--Contractor (C/SC) Information:		
C/SC Company Name: One contractor to be selected from the following: JF Allen (WV000376), Doss Enterprises (WV027217), OH/WV Excavating (WV005911), Wolfe's Excavating (WV043545), Preston Contractors Inc (WV001285), RDR Energy Resources LLC (WV047502), Energy Transportation LLC (WV053927).		
C/SC Company Name: See Above		
C/SC WV License Number: See Above		
C/SC FEIN: TBD	C/SC DUNS: TBD	
Local C/SC Point of Contact (POC): TBD		
Local C/SC POC Title: TBD		
C/SC Mailing Address: TBD		
City: TBD	State: TBD	Zip--Code: TBD
Local C/SC Office Phone: TBD		
Local C/SC POC Phone: TBD		
Local C/SC POC E--Mail: TBD		

Engineer Firm Information:		
Engineer Firm Name: Hammontree & Associates, LTD.		
Engineer WV License Number: 17912		
Engineer Firm FEIN: N/A	Engineer Firm DUNS: N/A	
Engineer Firm Primary Point of Contact (POC): Michael Thompson		
Engineer Firm Primary POC Title: Project Manager		
Engineer Firm Mailing Address: 104 Newell Avenue		
City: St. Clairsville	State: OH	Zip--Code: 43950
Engineer Firm Office Phone: 740-695-7237		
Engineer Firm Primary POC Phone: 740-275-1576		
Engineer Firm Primary POC E--Mail: mthompson@hammontree-engineers.com		

Adjacent and/or Affected Landowners Data

Please provide data for all adjacent and/or affected surface owners (both up and down stream) whose property may be impacted by proposed development as demonstrated by a floodplain study or survey. Use additional copies of this page as needed.

Adjacent Property Owner Data: Upstream		
Name of Primary Owner (PO): See Table of Adjacent Property Owners (Attachment B)		
Physical Address:		
City:	State:	Zip:
PO Primary Phone:		
PO Secondary Phone:		
PO Primary Email:		

Adjacent Property Owner Data: Upstream		
Name of Primary Owner (PO):		
Physical Address:		
City:	State:	Zip:
PO Primary Phone:		
PO Secondary Phone:		
PO Primary Email:		

Adjacent Property Owner Data: Downstream		
Name of Primary Owner (PO):		
Physical Address:		
City:	State:	Zip:
PO Primary Phone:		
PO Secondary Phone:		
PO Primary Email:		

Adjacent Property Owner Data: Downstream		
Name of Primary Owner (PO):		
Physical Address:		
City:	State:	Zip:
PO Primary Phone:		
PO Secondary Phone:		
PO Primary Email:		

Site Plan

A Site Plan is an accurate and detailed map of the proposed development for this project. It shows the size, shape, location and special features of the project property, and the size and location of any development planned to the property, especially as that development will impact the floodplain and/or floodway. Site plans show what currently exists on the project property, and any changes or improvements you are proposing to make. **A certified and licensed engineering firm should complete site plans.**

A SITE PLAN MUST CONTAIN THE FOLLOWING INFORMATION:

1. Legal description of the parcel, north arrow and scale
2. All property lines and their dimensions
3. Names of adjacent roads, location of driveways
4. Location of sloughs, tributaries, streams, rivers, wetlands, ponds, and lakes, with setbacks indicated, and including FEMA floodplain data based on most updated FIRM.
5. Location, size, shape of all buildings, existing and proposed, with elevation of lowest floor indicated.
6. Location and dimensions of existing or proposed on-site sewage systems.
7. Location of all propane tanks, fuel tanks or other liquid storage tanks whether above ground or below ground level.
8. Location and dimensions of any proposed pipeline placement(s) into floodplain/floodway.
9. Location and dimensions of any roadway development into floodplain/floodway.
(Includes initial development accessroads)
10. Location and dimensions of any bridge and/or culvert development into floodplain/floodway.
11. Location and dimensions of any storage yard or facility into the floodplain/floodway.
12. Location of any existing utilities and/or proposed utility placement and/or displacement.
13. Location, dimensions and depth of any existing or proposed fill on site.
14. A survey showing the **existing ground elevations** of at least location on the building site. **ELEVATION NOTE:** All vertical datum will reference either NGVD 29 or NAVD 88. Assumed datum will not be acceptable unless the property is located in an area where vertical datum has not been published. For those areas where vertical datum has not been established, a site plan with contours, elevations using assumed datum, high water marks and existing water levels of sloughs, rivers, lakes or streams and proposed lowest floor elevation.

Applicant

Please read print name, sign and date below:

- I certify that I am authorized to submit this application for the primary project developer.
- I certify that the information included in this application is to the best of my knowledge true and complete.
- I certify that all required Federal, State, and local permits required by law and/or ordinance for the above described development of this project have will be properly attained, are current and valid, and must be presented prior to a Doddridge County Floodplain Permit being issued.
- I understand that if in the course of the development project additional permits become required that were not needed during the initial proposal, the primary developer must notify the Doddridge County Floodplain Manager within 48 hours of such need, and that a "Stop Work" order may be issued for all project work directly impacting the floodplain or floodway, until such time the required additional permits are acquired.
- I understand that once the floodplain permit is submitted, the application will be entered into official public record at the next regularly scheduled Doddridge County Commission meeting after the date of submittal.
- I understand that from the date of submittal of the fully completed permit application, the Doddridge County Floodplain Manager has ninety (90) days to make a determination to either grant or deny said permit application. During this approval period, the Doddridge County Floodplain Manager may, at his or her discretion, conduct a review and/or additional study of provided documentation by means of an independent engineering firm. All costs associated with said review and/or study must be reimbursed to the County before issuance of approved permit.
- I understand that during the approval period, the Doddridge County Floodplain Manager of designee may at his or her discretion conduct site visits and document conditions of proposed development pursuant to the permit application.
- I understand that once the Floodplain Permit is granted, the permit will be entered into official public record. Appeals to the permit may be made no later than twenty (20) days after said issuance. If a valid appeal is submitted, as determined by the Doddridge County Floodplain Manager, a "Stop Work" order will be issued for all project development directly involving the floodplain or floodway. A public hearing by the Doddridge County Appeals Board will be scheduled no less than ten (10) days after the next regularly scheduled Doddridge County Commission meeting.
- I understand that all decisions of the Doddridge County Appeals Board shall be final.
- **I understand issuance of a Floodplain Permit authorizes me to proceed with construction as proposed.**
- In signing this application, the primary developer hereby grants the Doddridge County Floodplain Manager or designee the right to enter onto the above---described location to inspect the development work proposed, in progress, and/or completed.
- I understand that if I do not follow exactly the site---plan submitted and approved by this permit that a "Stop Work" order may be issued by the Doddridge County Floodplain Manager and that I must stop all construction immediately until discrepancies of actual work vs. proposed work is resolved.

Applicant Signature: John M. Angiulli Date: 2/8/2022

Applicant Printed Name: John M. Angiulli



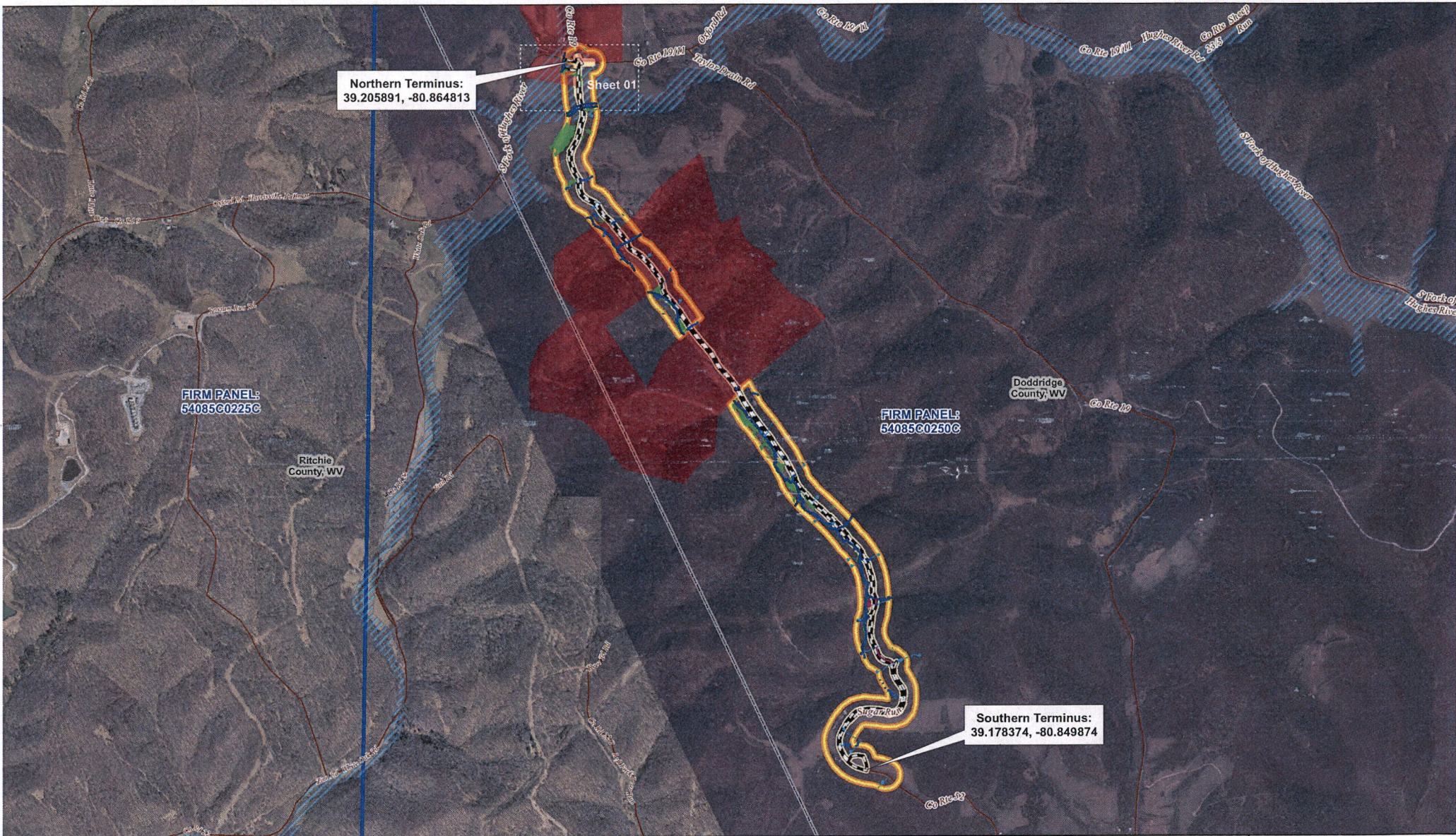
ATTACHMENT B
TABLE OF ADJACENT PROPERTY OWNERS

Table of Adjacent Property Owners

PROPERTY OWNER	PARCEL ID NUMBER	E-911 ADDRESS	PROPERTY OWNER ADDRESS	IN FLOODPLAIN
WEBB JAMES E (LIFE)	09-07-0004-0016-0000	2315 JOY CABIN RUN RD, WEST UNION, WV, 26456	813 CABIN RUN RD, WEST UNION, WV 26456	Yes
LEGGETT JUANITA M	09-07-0004-0014-0000	6199 OXFORD RD, WEST UNION, WV, 26456 4597 JOY CABIN RUN RD, WEST UNION, WV, 26456 5819 OXFORD RD, WEST UNION, WV, 26456 5763 OXFORD RD, WEST UNION, WV, 26456 4613 JOY CABIN RUN RD, WEST UNION, WV, 26456 6131 OXFORD RD, WEST UNION, WV, 26456 5735 OXFORD RD, WEST UNION, WV, 26456 5819 OXFORD RD, WEST UNION, WV, 26456 5761 OXFORD RD, WEST UNION, WV, 26456 5805 OXFORD RD, WEST UNION, WV, 26456	6131 OXFORD RD, WEST UNION, WV 26456	Yes
WINEMILLER RICKY BLAIN	09-07-0004-0010-0001	14 SUGAR RUN RD, WEST UNION, WV 26456 5732 OXFORD RD, WEST UNION, WV, 26456 4511 SUGAR RUN RD, WEST UNION, WV, 26456 18 SUGAR RUN RD, WEST UNION, WV, 26456	14 SUGAR RUN RD, WEST UNION, WV 26456	Yes
OXFORD M E CHURCH	09-07-0004-0012-0000	5715 OXFORD RD, WEST UNION, WV, 26456	Route 23	Yes
OXFORD COMMUNITY BLDG	09-07-0004-0019-0001	5689 OXFORD RD, WEST UNION, WV, 26456	Route 23	Yes
WEBB JAMES E	09-07-0004-0010-0000	4469 SUGAR RUN RD, WEST UNION, WV, 26456 4475 SUGAR RUN RD, WEST UNION, WV, 26456	813 CABIN RUN RD, WEST UNION, WV 26456	Yes
STANSBERRY GEORGE J	09-07-0004-0020-0000	NO E-911 ADDRESS FOUND AT THIS PARCEL	290 SUGAR RUN RD, WEST UNION, WV 26456	Yes
STANSBERRY GEORGE J	09-07-0004-0021-0000	290 SUGAR RUN RD, WEST UNION, WV 26456 4219 SUGAR RUN RD, WEST UNION, WV 26456 4329 SUGAR RUN RD, WEST UNION, WV 26456 4202 SUGAR RUN RD, WEST UNION, WV 26456	290 SUGAR RUN RD, WEST UNION, WV 26456	Yes
CNG TRANSMISSION CORP	09-07-0004-0019-0003	5645 OXFORD RD, WEST UNION, WV, 26456	DOMINION TRANSMISSION, 625 LIBERTY AV MAIL DROP 18-01, PITTSBURGH, PA 15221	Yes
CHIPPS STANLEY L & JENNIFER J (SURV)	09-07-0004-0025-0001	5934 OXFORD RD, WEST UNION, WV, 26456 93 SUGAR RUN RD, WEST UNION, WV, 26456	2256 SUGAR RUN RD, WEST UNION, WV 26456	Yes



ATTACHMENT C Floodplain Map



Northern Terminus:
39.205891, -80.864813

Southern Terminus:
39.178374, -80.849874

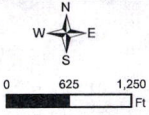
FIRM PANEL:
54085C0225C

FIRM PANEL:
54085C0250C

Ritchie
County, WV

Doddridge
County, WV

PROJECT NO. 20203227
DRAWN BY: SMW
CHECKED BY: JAL
FILE NAME:
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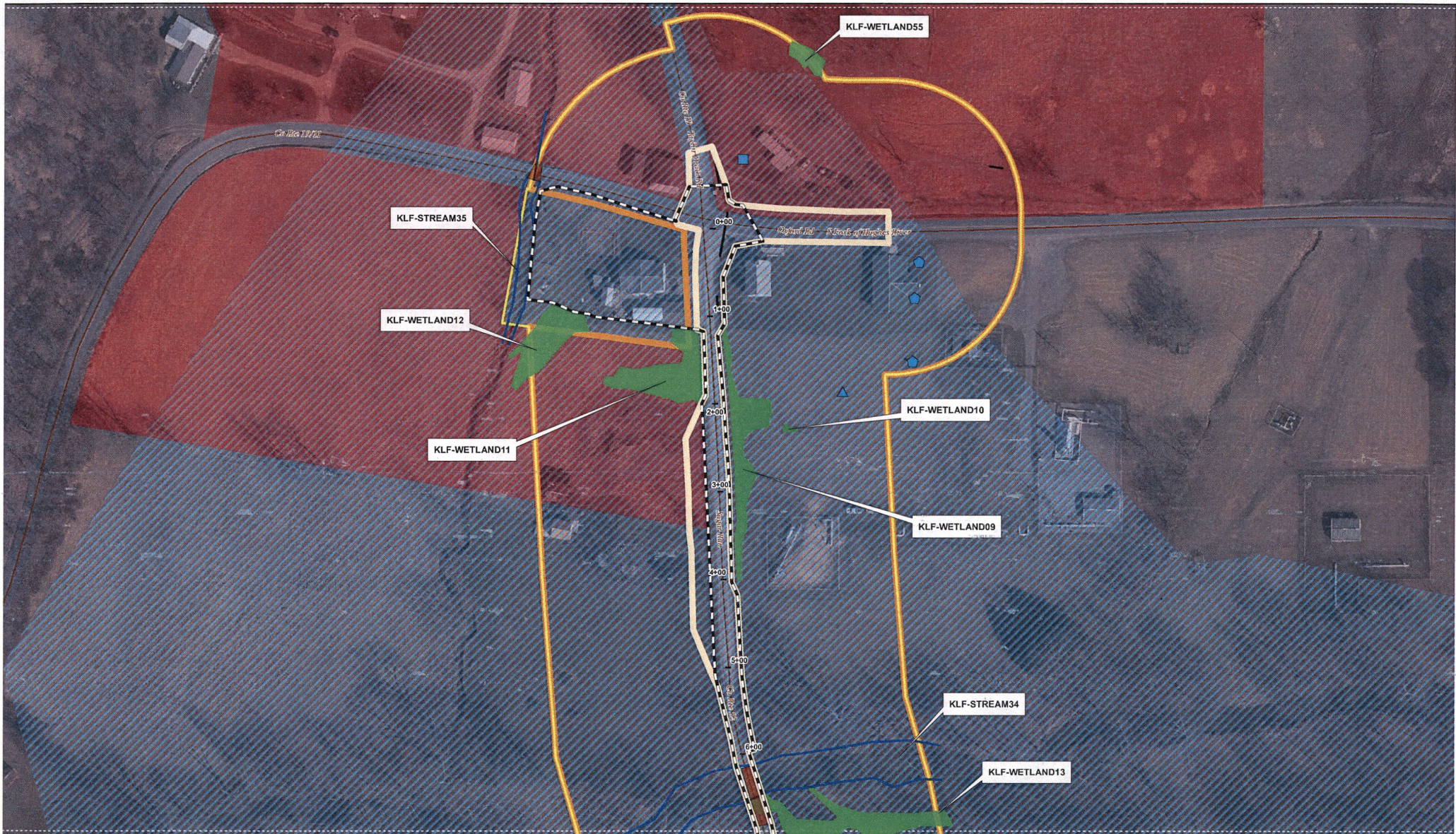


**Doddridge
County
West Virginia**
Aerial Imagery, ESRI

- Proposed AOI (114.10 ac)
- Proposed LOD (10.44 ac)
- Previously Permitted AOI (113.44 ac)
- Previously Permitted LOD (10.18)
- Ditch
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
- PEM Wetland
- PFO Wetland
- PSS Wetland
- PUB Wetland
- Unacquired Parcel
- FEMA 100 Year Floodplain
- FEMA Firm Panel
- Existing Road
- County Boundary

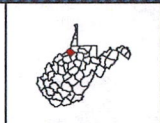
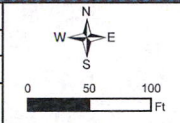
Antero Resources Corporation
Attachment C
Floodplain Map
Sugar Run Road (CR-52)
Roadway Improvements
Date: 2/9/2022 Index Map

*1.1 ac of LOD is located within the FEMA 100 Year Floodplain



KLEINFELDER
 Better People. Right Locations.
 www.kleinfelder.com

PROJECT NO. 20203227
 DRAWN BY: SMW
 CHECKED BY: JAL
 FILE NAME:
 Floodplan_SugarRun_Fig1_Mod3



**Doddridge County
 West Virginia**
 Aerial Imagery: ESRI

- Proposed AOI (114.10 ac)
- Proposed LOD (10.44 ac)*
- Previously Permitted AOI (113.44 ac)
- Previously Permitted LOD (10.18)
- Bridge

- Existing Culvert
- ▲ Groundwater - Seep
- ◆ Groundwater - Well
- Domestic Water Well
- Perennial Stream
- PEM Wetland
- Unacquired Parcel
- Existing Road
- FEMA 100 Year Floodplain

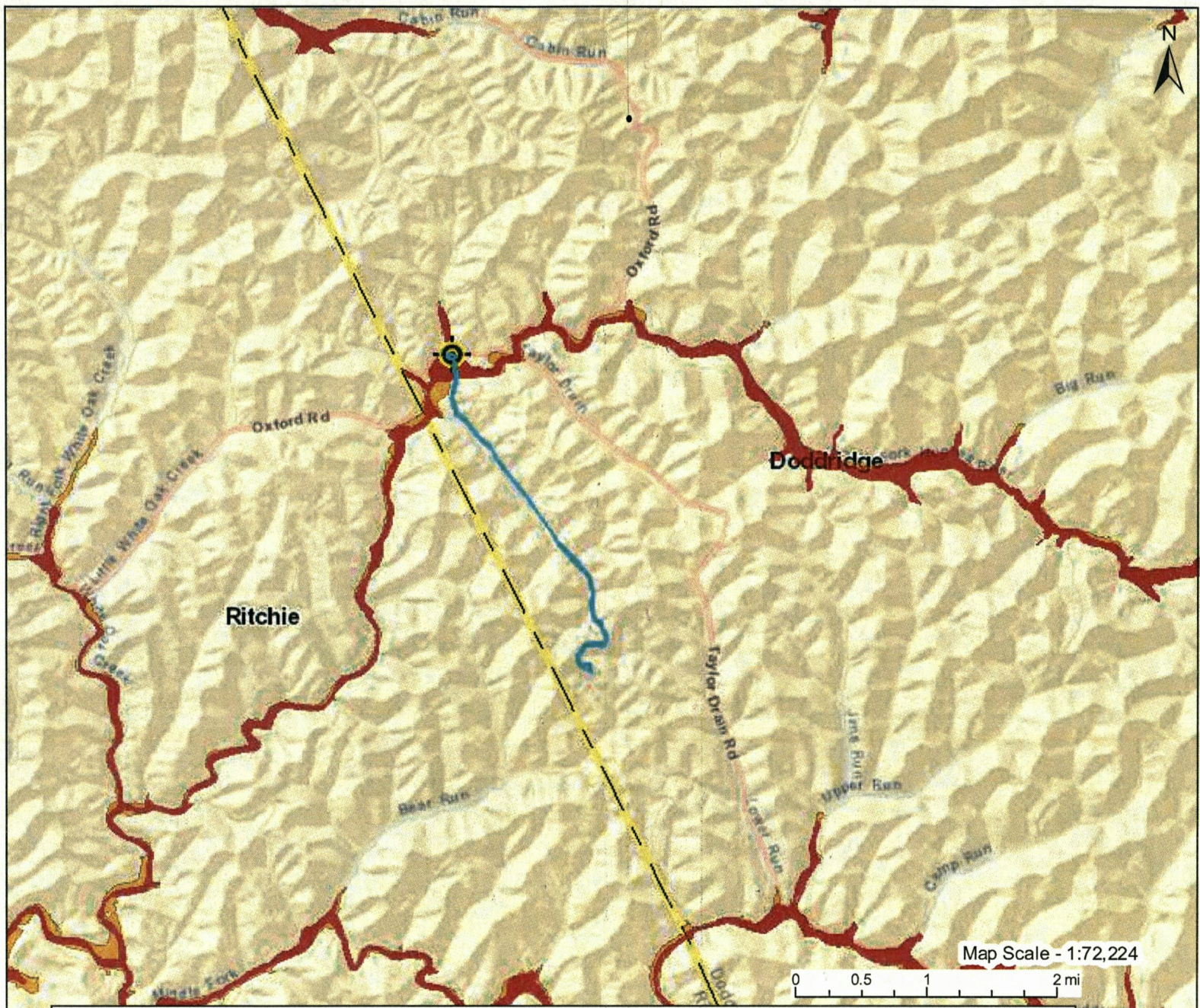
Antero Resources Corporation
 Attachment C
 Floodplain Map
 Sugar Run Road (CR-52)
 Roadway Improvements
 Date: 2/9/2022 Sheet 1 of 1

*1.1 ac of LOD is located within the FEMA 100 Year Floodplain



ATTACHMENT D
LOCATION EXHIBIT




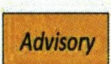
Sugar Run Road (CR-52) Location Map



This map is not the official regulatory FIRM or DFIRM. Its purpose is to assist with determining potential flood risk for the selected location.


H
I
G
H

R
I
S
K

	Regulatory Floodway
	1-Percent-Annual-Chance Flood Hazard Area With Base Flood Elevation (BFE)
	1-Percent-Annual-Chance Flood Hazard Area Without BFE (may have Advisory Flood Heights)
	1-Percent-Annual-Chance Future Conditions (High Risk Advisory Flood Zones)

Download the Full Legend for all flood tool symbols
https://www.mapwv.gov/flood/map/docs/wv_flood_tool_legend.pdf

Disclaimer:
 The online map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. Refer to the official Flood Insurance Study (FIS) for detailed flood elevation data in flood profiles and data tables. WV Flood Tool (<https://www.MapWV.gov/flood>) is supported by FEMA, WV NFIP Office, and WV GIS Technical Center.

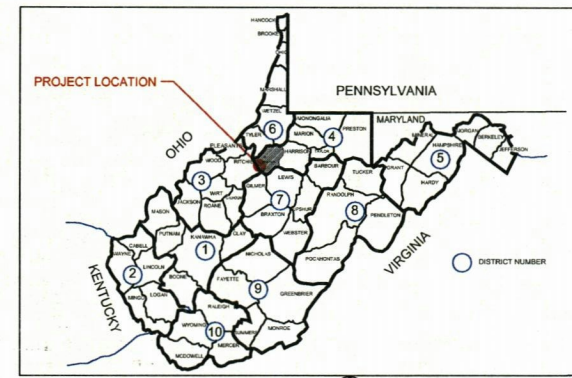
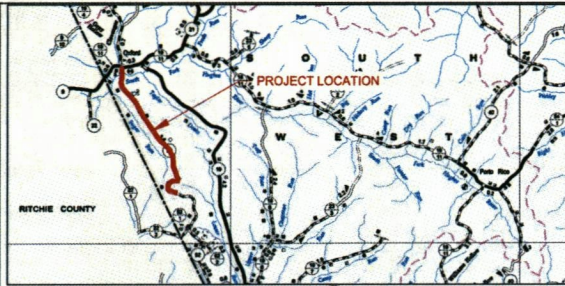
	Flood Info Location	Map created on 2/7/2022
User Notes		
Flood Hazard Area	Location is WITHIN the FEMA 100-year floodplain.	
Flood Zone	A	
Stream	Tributary to South Fork Hughes River	
Watershed (HUC8)	Little Kanawha (5030203)	
Flood Height	Flood Height 6b None	
Water Depth		
Elevation	816.3 ft (Source: FEMA 2018-20) (NAVD88)	
Community & ID	Doddridge County (ID: 540024)	
FEMA Map & Date	54017C0225C; Effective Date: 10/4/2011	
Location (lat, long)	(39.205872, -80.865064) (WGS84)	
Parcel ID	09-07-0004-0014-0000	
E-911 Address	multiple addresses	



ATTACHMENT E
SITE PLANS

FINAL DESIGN

Antero Resources
**SUGAR RUN ROAD (CR-52)
 ROADWAY IMPROVEMENTS**
 DISTRICT 4
 DODDRIDGE COUNTY, WEST VIRGINIA
 JANUARY 2022



PROJECT NOTES:
 THIS PROJECT IS THE REVIEW OF CR-52 (SUGAR RUN RD.). THE ROAD LENGTH FOR CR-52 (SUGAR RUN RD.) IS 12.670; (2.40 MILES).
GIS DATA:
 CONTOURS WERE OBTAINED FROM WEST VIRGINIA GIS SERVICES. AERIAL IMAGERY WAS OBTAINED BY ONLINE SERVICES FROM BAKERY.
PROPERTY DATA:
 PROPERTY LINES AND OWNER INFORMATION WERE OBTAINED FROM DODDRIDGE COUNTY ASSESSORS WEBSITE.
GEOTECHNICAL DATA:
 GEOTECHNICAL RECOMMENDATIONS WERE PROVIDED BY GTA IN A REPORT DATED FEBRUARY 4TH 2019.
WETLAND:
 WETLAND AND STREAMS WERE LOCATED BY KLEINFELDER AND ARE SHOWN IN THE PLANS BASED ON THE SHAPEFILES PROVIDED.
RIGHT-OF-WAY:
 THE RIGHT OF WAY FOR THE PROPOSED ROUTE IS 30' FOR CR-52 BASED ON INFORMATION FROM THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION.



Surface Easements Outside Right of Way						
Description	Owner	Parcel ID	Type of Easement	Total Easement S.F.	Station	Station
CULVERT REPLACEMENT	WEBB JAMES E	07 4001650000000	GRADING	2,109	0+00	0+00
CULVERT REPLACEMENT	OXFORD M E CHURCH	07 4001200000000	GRADING	1,433	0+10	10+56
CULVERT REPLACEMENT	STANSBERRY GEORGE J	07 4002100000000	GRADING	208	12+95	13+10
CULVERT REPLACEMENT	STANSBERRY GEORGE J	07 4002100000000	GRADING	203	17+60	17+73
CULVERT REPLACEMENT	UNKNOWN	UNKNOWN	GRADING	91	22+00	22+50
CULVERT REPLACEMENT	STANSBERRY GEORGE J	07 4002100000000	GRADING	124	22+30	22+35
CULVERT REPLACEMENT	DAVIS BRADLEY	07 4003100000000	GRADING	342	39+10	41+60
CULVERT REPLACEMENT	MOORE VICKI D	07 4003100000000	GRADING	72	44+24	44+33
CULVERT REPLACEMENT	BROWN RICHARD & ELIZABETH	07 8000100000000	GRADING	72	55+25	55+35
CULVERT REPLACEMENT	RUSSELL RANDALL & LISA	07 8000300000000	GRADING	52	63+00	63+15
CULVERT REPLACEMENT	RUSSELL RANDALL & LISA	07 8000400000000	GRADING	87	66+95	67+10
CULVERT REPLACEMENT	RUSSELL RANDALL & LISA	07 8000300000000	GRADING	211	70+20	70+30
CULVERT REPLACEMENT	GRAY JOHN M HRS ETAL	07 8000400000000	GRADING	40	74+90	75+10
PULLOFF/GRADING	GRAY JOHN M HRS ETAL	07 8000400000000	PULLOFF/GRADING	8,848	77+85	84+62
CULVERT REPLACEMENT	GRAY JOHN M HRS ETAL	07 8000400000000	GRADING	94	78+85	79+00
CULVERT REPLACEMENT	GRAY JOHN M HRS ETAL	07 8000400000000	GRADING	50	80+10	80+25
CULVERT REPLACEMENT	GRAY JOHN M HRS ETAL	07 8000400000000	GRADING	42	84+10	84+25
CULVERT REPLACEMENT	GRAY JOHN M HRS ETAL	07 8000400000000	GRADING	53	86+15	86+30
CULVERT REPLACEMENT	GRAY JOHN M HRS ETAL	07 8000400000000	GRADING	133	91+60	91+80
CULVERT REPLACEMENT	GRAY JOHN M HRS ETAL	07 8000400000000	GRADING	115	94+10	94+35
CULVERT REPLACEMENT	GRAY JOHN M HRS ETAL	07 8000400000000	GRADING	114	98+75	99+05
CULVERT REPLACEMENT	GRAY JOHN M HRS ETAL	07 8000400000000	GRADING	3,074	100+10	104+15
WIDENING	GANDER LARRY & LOIS	10 0015000500000	GRADING	466	104+15	105+05
PULLOFF/WIDENING	GANDER LARRY	07 8000500000000	PULLOFF	13,961	109+30	117+15
PULLOFF/WIDENING	GANDER LARRY & LOIS	10 0015000500000	PULLOFF	2,048	114+20	117+40
WIDENING	GANDER LARRY	07 8000600000000	GRADING	67	117+40	117+65
WASTE SITE	GANDER LARRY	07 8000500000000	GRADING	31,764	123+75	128+70

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JURISDICTIONAL DITCH IMPACTS			
DESCRIPTION	PERMANENT IMPACTS (FT)	TEMPORARY IMPACTS (FT)	TOTAL IMPACTS (FT)
KLF-DITCH 01	0	48	48
KLF-DITCH 02	0	349	349

EPHEMERAL STREAM IMPACTS			
DESCRIPTION	PERMANENT IMPACTS (FT)	TEMPORARY IMPACTS (FT)	TOTAL IMPACTS (FT)
KLF-STREAM 37	6	0	6
KLF-STREAM 30	30	3	33
KLF-STREAM 27	34	3	37
KLF-STREAM 53	9	2	11
KLF-STREAM 25	27	7	34
KLF-STREAM 46	14	1	15
KLF-STREAM 19	36	6	42
KLF-STREAM 56	12	4	16
WEST WP-STREAM 11	101	0	101

INTERMITTENT STREAM IMPACTS			
DESCRIPTION	PERMANENT IMPACTS (FT)	TEMPORARY IMPACTS (FT)	TOTAL IMPACTS (FT)
KLF-STREAM 33	36	9	45
KLF-STREAM 29	37	3	40
KLF-STREAM 26	38	3	42
KLF-STREAM 23	29	6	35

PERENNIAL STREAM IMPACTS			
DESCRIPTION	PERMANENT IMPACTS (FT)	TEMPORARY IMPACTS (FT)	TOTAL IMPACTS (FT)
KLF-STREAM 31	26	5	31
KLF-STREAM 24	46	7	53
KLF-STREAM 22	39	6	45
KLF-STREAM 21 CROSSING 1	6	6	12
KLF-STREAM 21 CROSSING 2	21	0	21
KLF-STREAM 21 CROSSING 3	7	10	17
KLF-STREAM 28	39	10	49

WETLAND IMPACTS			
DESCRIPTION	PERMANENT IMPACTS (SF)	TEMPORARY IMPACTS (SF)	TOTAL IMPACTS (SF)
KLF-WETLAND 05 CROSSING 1	32	189	221
KLF-WETLAND 05 CROSSING 2	13	20	33

ENGINEER/SURVEYOR
 HAMMONTREE & ASSOCIATES, LIMITED
 104 NEWELL AVENUE
 ST. CLAIRSVILLE, OH 43950
 ATTN: MIKE THOMPSON, PE
 PHONE: (740) 695-7237 (OH)
 mthompson@hammontree-engineers.com

OWNER/DEVELOPER
 ANTERO RESOURCES CORPORATION
 535 WHITE OAK BLVD.
 BRIDGEPORT, WV 26330
 ROADWAY ENGINEER MANAGER
 ATTN: JOHN DEPOY
 PHONE: (740) 760-1087
 jdepo@anteroresources.com

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THE ENGINEER ASSUMES NO RESPONSIBILITY FOR ANY CHANGES IN DESIGN PLANS UNLESS WRITTEN CONSENT IS GIVEN BY THE ENGINEER. THE CONTRACTOR AND/OR THE OWNER WILL BE HELD RESPONSIBLE FOR ANY FIELD MODIFICATIONS MADE WITHOUT THE WRITTEN CONSENT OF THE ENGINEER AND NECESSARY APPROVALS BY PERMITTING AGENCIES.

THE LOCATION OF EXISTING UTILITIES WERE TAKEN FROM RECORDS AND MARKING PROVIDED BY OTHERS AND OBSERVED EVIDENCE. THE LOCATIONS SHOWN MAY BE APPROXIMATE. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE EXACT LOCATIONS, SIZES AND DEPTH OF ALL UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL EXERCISE CARE TO AVOID DAMAGE TO ALL EXISTING UTILITIES.



CALL BEFORE YOU DIG
 IN WEST VIRGINIA
 1-800-245-4548
 WV STATE LAW REQUIRES 2 WORKING DAYS NOTICE

KNOW WHAT'S BELOW
 CALL BEFORE YOU DIG
 THE GENERAL CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES INVOLVED IN THE SITE NO MORE THAN TEN DAYS AND NO LESS THAN 48 HOURS IN ADVANCE OF EXCAVATION
 (WV CHAPTER 24C-1-4, UNDERGROUND FACILITY DAMAGE PREVENTION ACT)

LOD Iteration / Revision Cloud Reference #	Area (Acres)	Corresponding Design Sheet Page Number	Description
Original	30.03	N/A	DEP authorization received June 30, 2020. LOD reductions (0.19 acre) *Station 0+25: LOD reduction to avoid Oxford Church (0.02 acre). *Station 1+00 to 4+00: LOD reduction to avoid KLF-WETLAND09 (0.04 acre). *Station 2+00 to 5+00: Removal of proposed pull-off / staging area as a result of landowner constraints. LOD reduced to WV DOH right-of-way (0.13 acre).
DEP Modification #1 (LOD changes total greater than 0.5 acre)	30.44	14, 45, 57, 58	LOD expansions (0.60 acre) *Station 0+00: LOD increase at the intersection of Sugar Run Rd & Oxford Rd / South Fork of Hughes River Rd for the purposes of pavement transitions, grading, culvert replacements, culvert installations, and rock installation (0.05 acre). *Station 0+00 to 1+25: LOD increase for a proposed gravel staging area (0.55 acre).

TREE CLEARING	
TOTAL TREE CLEARING AREA (SF)	ACRES
24797	0.810



HAMMONTREE & ASSOCIATES, LTD.
 ENGINEERS, PLANNERS, SURVEYORS
 104 NEWELL AVENUE
 ST. CLAIRSVILLE, OH 43950
 PHONE: (740) 695-7237
 WWW.HAMMONTREE-ENGINEERS.COM



REV. BY: [DATE] [INITIALS] DESCRIPTION: SURFACE EASEMENT CHANGES
 REV. BY: [DATE] [INITIALS] DESCRIPTION: TREE CLEARING CHANGES
 REV. BY: [DATE] [INITIALS] DESCRIPTION: PULL OFF LOD
 REV. BY: [DATE] [INITIALS] DESCRIPTION: ADD REVISION LOG LINE
 REV. BY: [DATE] [INITIALS] DESCRIPTION: UPDATE REVISION LOG LINE

DESIGN BY: [DATE] [INITIALS]
 DRAWN BY: [DATE] [INITIALS]
 RWD BY: [DATE] [INITIALS]
 FLD BY: [DATE] [INITIALS]
 BK PG: [DATE] [INITIALS]
 DATE: 02/23/2022

SUGAR RUN ROAD (CR-52) ROADWAY IMPROVEMENTS
 DISTRICT 4
 DODDRIDGE COUNTY, WEST VIRGINIA

CONSTRUCTION SEQUENCE

- 1. FIRST, INSTALL EES CONTROLS ACCORDING TO THE PLANS.
2. RISE ALL EES CONTROLS ARE IN PLACE, BEGIN DITCH AND SHOULDER MAINTENANCE TO PROVIDE POSITIVE DRAINAGE.
3. PERFORM WIDENING AND PLACE STONE IN PREPARATION FOR CEMENT STABILIZATION.
4. PRIOR TO CEMENT STABILIZATION REPLACE ALL CURBS WITH STABILIZATION.
5. PERFORM CEMENT STABILIZATION ON ENTIRE ROADWAY.
6. REPEAT DITCH AND SHOULDER MAINTENANCE TO REPAIR ANY DAMAGES CAUSED BY CEMENT STABILIZATION.
7. PLACE THE PROPOSED ASPHALT PAVEMENT SECTION ACCORDING TO THE TYPICAL SECTIONS IN THIS PLAN.
8. SEED AND MULCH ALL DISTURBED AREAS THROUGHOUT THE PROJECT LIMITS.
9. ONCE 70% VEGETATION IS ESTABLISHED, REMOVE ALL TEMPORARY EES CONTROLS.

PLANS

THESE PLANS PRESENT THE PROPOSED LINES, GRADES, AND DETAILS NECESSARY TO COMPLETE THE PROJECT. ALL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS TO ACCOMPLISH THE WORK. THE CONTRACTOR IS TO USE BEST MANAGEMENT PRACTICES (BMPs) AS REQUIRED BY FEDERAL, STATE, AND COUNTY AUTHORITIES.

GOVERNING SPECIFICATIONS AND STANDARD CONSTRUCTION DRAWINGS

THE GOVERNING SPECIFICATIONS FOR THIS PROJECT ARE THE ENGINEERS SPECIFICATIONS THAT ARE INCLUDED WITHIN THESE PLANS. ANY ITEMS NOT COVERED IN THE ENGINEERS SPECIFICATIONS SHALL BE COVERED BY THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION, DIVISION OF HIGHWAYS STANDARD SPECIFICATIONS, ROADS AND BRIDGES, LATEST VERSION OF INCLUDING THE MOST CURRENT CORRECTIONS AND AMENDMENTS BY THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION, DIVISION OF HIGHWAYS, LATEST EDITION AND THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION, DIVISION OF HIGHWAYS, LATEST EDITION OF STANDARD DETAILS BOOKS. (WOODHOLM SPECIFICATIONS SHALL BE USED FOR TECHNICAL ASSISTANCE ONLY).

EXISTING CONDITIONS

TOPOGRAPHIC FEATURES, CONTOURS, AND SURVEY REFERENCE STATIONS USED FOR THIS PROJECT ARE FROM ENGINEERS FIELD SURVEY CONDUCTED IN DECEMBER 2018. EXISTING ROADS, DRIVEWAYS, AND STRUCTURES SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. NECESSARY PRECAUTIONS SHALL BE TAKEN BY THE CONTRACTOR TO LOCATE AND PROTECT EXISTING UTILITIES SERVICES AND MAINS. ANY DISCREPANCIES BETWEEN THE PLANS AND ACTUAL FIELD CONDITIONS SHALL BE REPORTED TO THE FIELD ENGINEER PRIOR TO CONSTRUCTION.

CONTRACTORS RESPONSIBILITY

FAILURE TO SPECIFICALLY MENTION ANY WORK WHICH WOULD NORMALLY BE REQUIRED TO COMPLETE THE PROJECT SHALL NOT BE THE CONTRACTOR'S RESPONSIBILITY TO PERFORM SUCH WORK. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE CONSTRUCTION METHODS, METHODS, TECHNIQUES, SEQUENCES, PROCEDURES, AND SAFETY PRECAUTIONS AND PROGRAMS. THE CONTRACTOR IS RESPONSIBLE FOR TRANSITIONS TO DRIVEWAYS, DRAINAGE STRUCTURES AND OTHER ROADSIDE FEATURES. METAL TRENCH PLATES ARE REQUIRED FOR ALL JOBS INVOLVING CURB REPLACEMENT. TRENCH PLATES MUST BE PRESENT ON SITE AND READY FOR IMMEDIATE USE PRIOR TO ROADWAY EXCAVATION.

MATERIAL

ALL MATERIALS USED FOR THE PROJECT SHALL MEET WOODHOLM SPECIFICATIONS.

UTILITIES NOTIFICATION

PER WY 811 STANDARDS, AT LEAST SEVENTY-TWO (72) HOURS PRIOR TO COMMENCING CONSTRUCTION OPERATIONS IN AN AREA, THE CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER, THE REGISTERED UTILITY PROTECTION SERVICE, AND THE OWNERS OF EACH UNDERGROUND UTILITY. NECESSARY PRECAUTIONS SHALL BE TAKEN BY THE CONTRACTOR TO LOCATE AND PROTECT EXISTING UTILITIES SERVICES AND MAINS. ANY DISCREPANCIES BETWEEN THE PLANS AND ACTUAL FIELD CONDITIONS SHALL BE REPORTED TO THE FIELD ENGINEER PRIOR TO CONSTRUCTION.

WORK LIMITS

THE WORK LIMITS SHOWN ON THESE PLANS ARE FOR PHYSICAL CONSTRUCTION LOCATION ONLY. CONTRACTOR SHALL PROVIDE THE INSTALLATION AND OPERATION OF ALL WORK ZONE TRAFFIC CONTROL AND WORK ZONE TRAFFIC CONTROL DEVICES REQUIRED BY THESE PLANS WHETHER INSIDE OR OUTSIDE THESE WORK LIMITS AT THE CONTRACTORS EXPENSE.

CONSTRUCT ALL ACTIVITIES, EQUIPMENT STORAGE, AND STAGING TO WITHIN THE CONSTRUCTION LIMITS, UNLESS OTHERWISE SPECIFIED IN THE PLANS OR PROPOSAL. THE CONSTRUCTION LIMITS ARE MAINTAINED WITHIN THE RIGHT OF WAY OR AS NOTED ON THE PLANS.

ACTIVITIES AND LAND USE WITHIN THE CONSTRUCTION LIMITS ARE MAINTAINED WITHIN THE RIGHT OF WAY OR AS NOTED ON THE PLANS. SUBMIT A WRITTEN REQUEST TO THE PROJECT ENGINEER TO USE ANY AREA OUTSIDE THESE LIMITS. THE DOCUMENT SUBMITTED MUST CLEARLY IDENTIFY THE AREA AND EXPLAIN THE PROPOSED USE AND RESTORATION OF THE AREA. USE OF THESE AREAS FOR DISPOSAL OF WASTE MATERIAL AND CONSTRUCTION DEBRIS, EXCAVATION OF BORROW MATERIAL AND PLACEMENT OF PORTABLE PLANTS IS PROHIBITED. THE REQUEST MUST BE APPROVED, IN WRITING, BEFORE THE CONTRACTOR HAS PERMISSION TO USE THE AREA.

SHOULDER AND DITCH WORK SHALL NOT BE PERFORMED BEYOND THESE WORK LIMITS.

ANY ITEMS DAMAGED BEYOND THE CONSTRUCTION LIMITS AS DEFINED ABOVE WILL BE REPLACED BY THE CONTRACTOR, IN KIND OR AS APPROVED BY THE PROJECT ENGINEER AT NO EXPENSE TO THE PROPERTY OWNER AND ANTERO RESOURCES.

ANY CONSTRUCTION EQUIPMENT THAT MAY DAMAGE ROADWAY INTEGRITY SHALL BE PROHIBITED FROM TRAVELING ON ROAD UNLESS PROPER PROTECTION (E.G. STEEL ROAD PLATES, PLYWOOD, ETC.) IS USED, OR WRITTEN APPROVAL IS OBTAINED FROM STATE, COUNTY, OR LOCAL AUTHORITY. ANY DAMAGE FROM FAILURE TO COMPLY WILL RESULT IN ROAD BEING RECONSTRUCTED AT CONTRACTORS EXPENSE.

PROTECTION OF RIGHT-OF-WAY LANDSCAPING

CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ANY DAMAGE TO EXISTING FEATURES SCHEDULED TO REMAIN AT NO EXPENSE TO ANTERO RESOURCES.

CONSTRUCTION NOISE

ACTIVITIES AND LAND USE ADJACENT TO THIS PROJECT MAY BE AFFECTED BY CONSTRUCTION NOISE. IN ORDER TO MINIMIZE ANY ADVERSE CONSTRUCTION NOISE IMPACTS, DO NOT OPERATE POWER-OPERATED CONSTRUCTION-TYPE DEVICES BETWEEN THE HOURS OF 11 PM AND 7 AM. IN ADDITION, DO NOT OPERATE AT ANY TIME ANY DEVICE IN SUCH A MANNER THAT THE NOISE CREATED SUBSTANTIALLY EXCEEDS THE NOISE CUSTODIARY AND NECESSARILY ATTENDANT TO THE REASONABLE AND EFFICIENT PERFORMANCE OF SUCH EQUIPMENT.

WORK SCHEDULE / COORDINATION OF WORK

THE CONTRACTOR SHALL CONTACT EACH RESIDENCE AND BUSINESS LOCATED WITHIN THE PROJECT LIMITS TO ADVISE OF CONSTRUCTION SCHEDULE AND PARKING RESTRICTIONS NEEDED FOR CONSTRUCTION ACCESS. THE CONTRACTOR SHALL ALSO CONTACT LOCAL SCHOOLS AND EMERGENCY SERVICES TO COORDINATE ANY TIMES THAT CONSTRUCTION SHOULD NOT TAKE PLACE.

ITEM 606 TRAFFIC CONTROL DEVICES

TWO-WAY TRAFFIC SHALL BE MAINTAINED AT ALL TIMES DURING NON-WORKING HOURS. THE LANE CLOSURE OF TWO-WAY TRAFFIC SHOULD BE AVOIDED, BUT IF NECESSARY, SHALL BE LIMITED TO NO LONGER THAN 30 MINUTES PER THE WEST VIRGINIA MANUAL ON TEMPORARY TRAFFIC CONTROL FOR STREETS AND HIGHWAYS (CURRENT EDITION). THE CLOSURE OF ONE LANE SHALL BE PERMITTED DURING PARTS OF THE PROJECT. HOWEVER, CLOSURE SHALL BE LIMITED TO CONSTRUCTION RESIDING CLOSURE. HIGHWAYS AND EGRESS TO ALL DRIVEWAYS SHALL BE MAINTAINED AT ALL TIMES. THE WEST VIRGINIA MANUAL ON TEMPORARY TRAFFIC CONTROL FOR STREETS AND HIGHWAYS, CURRENT EDITION, SHALL BE ENFORCED DURING THE ENTIRE LIFE OF CONSTRUCTION. SIGNS AND BARRICADES SHALL BE IN ACCORDANCE WITH THE MANUAL. ALL COSTS FOR SIGNS, FLASHING, OR STEADY BURN LIGHTS, CONES, DRUMS, ETC. NEEDED TO MAINTAIN TRAFFIC THRU OR ADJACENT TO THE PROJECT LIMITS SHALL BE INCLUDED IN THIS ITEM.

TRAFFIC SIGNS AND SUPPORTS

SIGN AND SUPPORT INSTALLATION SHALL BE IN ACCORDANCE WITH THE WEST VIRGINIA MANUAL ON TEMPORARY TRAFFIC CONTROL FOR STREETS AND HIGHWAYS, CURRENT EDITION.

CONSTRUCTION RIGHT-OF-WAY

THE TOTAL CONSTRUCTION RIGHT-OF-WAY WIDTH ON CR-52 IS 30 FT (15 FT EACH WAY FROM CENTERLINE). THE CONTRACTOR SHALL STAY WITHIN THESE LIMITS FOR ALL WORK PERFORMED ON THIS PROJECT EXCEPT PLACES CALLED OUT IN THESE PLANS.

MATERIAL WASTE SITE

THE MATERIAL WASTE SITE FOR THIS PROJECT IS LOCATED AT THE NEAR STATION 12+40.0L.

MATERIAL DISPOSAL

CONTRACTOR SHALL DISPOSE OF ALL MATERIALS RESPONSIBLY FROM EXCAVATION, SHOULDER AND DITCH WORK, EARTH AND STONE REMOVED BELOW THE PAVEMENT REPLACEMENT AND PAVEMENT REPAIR AREAS ARE TO BE DISPOSED OF AT THE PROJECT WASTE SITE.

DURING THE EXCAVATION AND DITCHING PROCESS, SHOULD MATERIAL BE ENCOUNTERED THAT CONTAINS A SIGNIFICANT AMOUNT OR SIZE OF ORGANIC MATERIAL, TRASH, HYDROCARBONS AND/OR OTHER MATERIALS THAT COULD PRESENT AN ENVIRONMENTAL RISK, THE CONTRACTOR SHALL NOTIFY THE ENGINEER. THE ENGINEER WILL REVIEW AND DETERMINE WHETHER THE MATERIAL CAN BE

MOBILIZATION

MOBILIZATION HAS BEEN INCLUDED IN THIS CONTRACT FOR THE PURPOSE OF MOBILIZATION OF ALL EQUIPMENT AND MATERIALS NECESSARY FOR THE COMPLETION OF THIS CONTRACT.

RECYCLING AND WASTE DISPOSAL

THE WASTE SITE SHALL BE REQUIRED TO MEET ALL LOCAL, STATE, AND FEDERAL GUIDELINES AND REGULATIONS FOR DISPOSAL OF MATERIALS. THE WASTE SITE SHALL HAVE ALL EROSION CONTROL FEATURES REQUIRED BY THE REGULATIONS IN PLACE PRIOR TO WASTING ANY MATERIALS. ONCE ALL WORK IS COMPLETE THE WASTE SITE SHALL BE GRADED TO MEET THE GRADES OF THE SURROUNDING AREAS AND BE REVEGETATED WITH SEED AND MULCH IN ACCORDANCE WITH THESE PLANS.

MATERIALS THAT ARE RECYCLABLE SUCH AS OLD CURB PIPES ARE TO BE TAKEN TO AN APPROVED RECYCLING LOCATION RATHER THAN BE BURIED IN THE WASTE SITE.

ALL COSTS FOR THE WASTE SITE, GRADING, EROSION CONTROL, SEEDING AND MULCHING, TRANSPORTATION AND RECYCLING COSTS ARE TO BE INCLUDED IN THE VARIOUS BID ITEMS THAT WILL HAVE TO BE RECYCLED OR DISPOSED OF. CONTROL POINTS AND CAD DATA WILL BE PROVIDED BY THE CONSULTANT AS REQUESTED.

CONSTRUCTION LAYOUT STAKES

CONSTRUCTION LAYOUT STAKES IS INCLUDED TO MAINTAIN STAKES AND PROVIDE NEW STAKING NECESSARY TO ACCURATELY PLACE DESIGN ITEMS. ALL COST FOR THIS WORK IS TO BE INCLUDED IN CONSTRUCTION LAYOUT STAKES. CAD DATA AND CONTROL POINTS WILL BE PROVIDED BY THE CONSULTANT.

REMOVE/RESET GROUND UNLINED SIGN

THIS ITEM HAS BEEN INCLUDED IN THE PLANS FOR REMOVAL AND REINSTALLATION OF THE EXISTING SIGN OR SIGNS. SHOULD A NEW SIGN POST BE NEEDED FOR THIS WORK THE CONTRACTOR SHALL SUPPLY THE APPROPRIATE SIGN POST OR POSTS NEEDED IN THE BID COST FOR THE SIGN REINSTALLATION. ALL PAYMENT FOR THIS WORK IS TO BE INCLUDED IN THE BID COST FOR THIS ITEM PAID BY EACH.

TEMPORARY SEEDING AND MULCHING

ALL CUT, FILL, SHOULDER, AND DITCHLINE AREAS ARE TO BE TEMPORARILY SEEDDED AND MULCHED NO LONGER THAN 7 DAYS AFTER THE AREA IS REVEGETATED. CONTRACTOR SHALL PLACE WORK OPERATIONS TO BE SURE EXCAVATED AREAS ARE SEEDDED AND MULCHED IN A TIMELY MANNER. THIS WILL REQUIRE MULTIPLE MOBILIZATIONS AS NEEDED TO PROVIDE EROSION CONTROL. SEE THE SEEDING CHARTS AND NOTES IN THE EROSION AND SEDIMENT CONTROL SHEETS FOR ADDITIONAL INFORMATION. PAYMENT FOR THIS WORK WILL BE PAID BY THE ACRE.

PERMANENT SEEDING AND MULCHING

ALL DISTURBED AREAS ALONG DITCHES AND SHOULDER INCLUDING THE WASTE SITE ARE TO BE SEEDDED AND MULCHED WITH FLEETER ADDED TO THE HYDROSEDER AS SOON AS PRACTICAL TO PROVIDE PERMANENT EROSION CONTROL. ALL EROSION & SEDIMENTATION CONTROLS ARE TO REMAIN IN PLACE UNTIL THERE IS 70% GROWTH OVER THE ENTIRE AREA. AREAS WHICH DO NOT GROW ARE TO BE RESEEDDED AND MULCHED UNTIL A GOOD GRASS GROWTH IS OBTAINED. A HIGH QUALITY LAWN MIX GRASS SEED IS TO BE USED ON ALL RESIDENTIAL LAWNS. SEE THE SEEDING CHARTS AND NOTES IN THE EROSION AND SEDIMENT CONTROL SHEETS FOR ADDITIONAL INFORMATION. PAYMENT FOR THIS WORK WILL BE PAID BY THE ACRE.

POTHOLING

A CONTINGENCY ITEM HAS BEEN INCLUDED IN THE PLANS FOR TEST DIGGING OR POTHOLING IN LOCATIONS WHERE EXISTING GAS OR UTILITY LINES MAY BE BURIED AND NEEDED TO BE LOCATED.

THE CONTRACTOR SHALL POTHOLE BY HAND DIGGING, VAC TRUCK, OR EXCAVATOR AS NEEDED TO DETERMINE THE LOCATION AND DEPTH OF EXISTING UTILITIES ALONG THE PROJECT. THIS ITEM WILL BE PAID FOR BY THE HOUR AND SHALL INCLUDE ALL COSTS FOR LABOR, EQUIPMENT, AND MATERIALS NEEDED TO BACKFILL AND COMPACT THE POTHOLED LOCATION BACK TO ORIGINAL CONDITION AFTER WORK IS COMPLETED.

ITEM 201 CLEARING AND GRUBBING (TREES & BRUSH)

THERE ARE AREAS WITHIN THESE PLANS THAT REQUIRE ALL STUMPS, TREE BRANCHES, AND BRUSH TO BE REMOVED PRIOR TO MAKING THE NEW ROADWAY OR EMBAKMENT CUTS. STUMP REMOVAL CONSISTS OF MECHANICAL REMOVAL AND DISPOSAL OF THE STUMP AND ROOT BALL. THE CONTRACTOR SHALL REMOVE ALL WOODY DEBRIS FROM THIS OPERATION AND DISPOSE OF IT IN A MANNER THAT MEETS STATE REQUIREMENTS. WOODY DEBRIS FROM THIS ITEM IS NOT TO BE INCORPORATED INTO THE MATERIAL WASTESITE OR NEW ROADWAY FILL AREAS. ALL COSTS FOR CUTTING AND REMOVING TREES, BRANCHES, BRUSH, AND STUMPS IN THESE AREAS ARE TO BE INCLUDED IN THE BID ITEM 201 CLEARING AND GRUBBING PAID FOR IN ACRES.

ITEM 207 UNCLASSIFIED EXCAVATION

UNCLASSIFIED EXCAVATION IS TO BE PERFORMED TO ALTER THE EXISTING GRADE TO MEET THE DESIGN ELEVATIONS SHOWN ON THE PLANS. ALL TOPSOIL REMOVED FROM THE AREA IS TO BE STOCKPILED AND THEN REPLACED AT A MAX DEPTH OF 4" OVER THE FINAL GRADES SHOWN TO PROVIDE ADEQUATE GRASS GROWTH. THE CONTRACTOR SHALL COMPACT ALL FILL MATERIALS TO NOT LESS THAN 95% OF MAXIMUM DRY DENSITY AND 1-2% OPTIMUM MOISTURE CONTENT AS DETERMINED BY ASTM D1557 TO PROVIDE STABILITY AND REDUCE SETTLEMENT.

ALL COSTS FOR THESE LOCATIONS, INCLUDING CUTS, FILLS, REMOVAL, STOCKPILING AND REPLACEMENT OF TOPSOIL, SHOULDER AND DITCH GRADING AND FINAL COMPACT OF THE ROADWAY SUBGRADE IS TO BE INCLUDED IN THE UNIT BID PRICE FOR ITEM 207 IN THESE LOCATIONS. FINAL PAYMENT WILL BE THE TOTAL NUMBER OF CUBIC YARDS IN THE PLAN QUANTITY. PLAN QUANTITY MAY BE ADJUSTED DUE TO DESIGN CHANGES PRIOR TO OR DURING CONSTRUCTION.

ITEM SPECIAL 12" SOL CEMENT @ 7% CEMENT

THIS ITEM HAS BEEN INCLUDED FOR ALL LABOR, EQUIPMENT AND MATERIALS NECESSARY INCLUDING CEMENT TO PLACE A SOL CEMENT BASE AS SHOWN IN THE DETAILS AND TABLES SHOWN IN THESE PLANS. COSTS FOR PLACING, GRADING, PROOVING AND PLACING CEMENT, MIXING, FINE GRADING AND CURE COAT ARE TO BE INCLUDED IN THE UNIT BID PRICE FOR FOR AND IS TO BE PAID FOR BY THE S.Y. COMPLETE IN PLACE.

PRIOR TO PDR, A PAVEMENT FILL WITH A FULLY LOADED TRUCK (AT LEAST 80,000 LBS) SHALL BE PERFORMED TO VERIFY SUBGRADE IS SUITABLE. IF AN AREA FAILS PROOF ROLL, TREAT AS BASE FAILURE.

THE FOR IS TO BE PERFORMED BY USING TWO PULVERIZING PASSES. FIRST THE ROADWAY IS TO BE PULVERIZED, THEN SPREAD CEMENT AND MIX WITH THE SECOND PASS.

RESIDUAL PULVERIZED MATERIAL AND/OR CEMENT WILL BE REMOVED AT THE END OF EACH DAY, AT A MINIMUM OR IMMEDIATELY IF RAIN IS PENDING.

IF HIGH PLASTICITY SOILS ARE ENCOUNTERED, ADDITIONAL MIXING PASSES MAY BE NECESSARY TO ADEQUATELY MIX THE SOILS OR TO ADJUST MOISTURE AS NECESSARY. THE EXTRA PULVERIZATION PASS BID ITEM HAS BEEN INCLUDED IN THE CONTRACT SHOULD ADDITIONAL PASSES BE NEEDED.

ITEM 707 CURE COAT

A CURE COAT IS TO BE PLACED ON THE NEW SOL CEMENT SURFACE AS WELL IN CURING AND IS TO BE INCLUDED IN THE UNIT BID PRICE FOR ITEM 707. CURE COAT IS TO BE ASPHALT EMULSION AS REQUIRED BY WOODHOLM. ALL COST FOR ITEM 707 IS TO BE INCLUDED IN PAY ITEM SPECIAL 12" SOL CEMENT.

UNDERCUT EXCAVATION (BASE FAILURE REPAIR)

THIS ITEM HAS BEEN INCLUDED IN THE CONTRACT TO EXCAVATE / ROTOMULL THE EXISTING ROADWAY BASE FAILURE LOCATIONS. ROTOMULLING DEPTH SHALL BE A MINIMUM OF 14" UNLESS UNSUITABLE MATERIAL IS DISCOVERED BELOW THIS ELEVATION AND AN ADDITIONAL EXCAVATION AT A MINIMUM DEPTH OF 30" MAY BE REQUIRED TO REMOVE THE UNSUITABLE MATERIAL AND REACH A SUITABLE SUBGRADE ELEVATION. THE NEW SUBGRADE ELEVATION SHALL BE COMPACTED PRIOR TO STONE AGGREGATE PLACEMENT. ONCE A SUITABLE SUBGRADE IS REACHED AND COMPACTED, THE AREA SHALL BE PROOF ROLLED WITH A LOADED TRUCK OF AT LEAST 80,000 LBS TO VERIFY THAT ALL UNSUITABLE MATERIAL HAS BEEN REMOVED. ONCE THE BASE FAILURE AREAS ARE COMPLETE AND PRIOR TO FOR CONTRACTOR SHALL PERFORM ANOTHER FINAL PROOF ROLL OF THE PROJECT. FINAL PAYMENT FOR THIS WORK WILL BE QUANTITY OF MATERIAL REMOVED PAID IN CUBIC YARDS BASED ON CALCULATIONS OF THE ROTOMULLED AREAS. FINAL PAYMENT IS TO INCLUDE ALL INCIDENTAL MATERIALS NEEDED. A CONTINGENCY QUANTITY HAS BEEN INCLUDED IN THE PLANS FOR THIS WORK.

BASE FAILURE AREAS OUTSIDE OF THE PROPOSED WHEEL PATH AREA MAY BE PLACED WITHOUT GEOGRID UNDERLAYMENT AND AT VARYING DEPTH AT THE DISCRETION OF THE ENGINEER.

UNDERCUT EXCAVATION (MIDWING)

THIS ITEM HAS BEEN INCLUDED IN THE CONTRACT TO EXCAVATE / ROTOMULL THE MIDWING LOCATIONS. ROTOMULLING DEPTH SHALL BE A MINIMUM OF 12" DEEP UNLESS UNSUITABLE MATERIAL IS DISCOVERED BELOW THIS ELEVATION. IF UNSUITABLE MATERIAL IS UNCOVERED, TREAT AS UNDERCUT EXCAVATION (BASE FAILURE REPAIRS). FINAL PAYMENT FOR THIS WORK WILL BE THE QUANTITY OF MATERIALS REMOVED PAID IN CUBIC YARDS. FINAL PAYMENT IS TO INCLUDE ALL INCIDENTAL MATERIALS NEEDED.

DITCH CHECK DAMS ITEM #42

ROCK CHECK DAMS ARE TO BE PLACED IN THE DITCHLINES FOR SEDIMENT CONTROL DURING CONSTRUCTION OPERATIONS. A ROCK CHECK DAM IS TO BE PLACED IN THE DITCHLINE NEAR THE EXISTING PIPE INLETS AND ARE TO BE PLACED AS SHOWN IN DETAILS ALONG DITCHLINES WHERE EXCAVATION HAS TAKEN PLACE. PAYMENT IS FOR EACH AND IS TO INCLUDE PLACEMENT AND REMOVAL ONCE 70% GRASS GROWTH IS PRESENT.

MURPHY 85500 GEOTEXTILE

MURPHY 85500 GEOTEXTILE OR EQUIVALENT IS TO BE PLACED BELOW THE BASE STONE IN THE ROADWAY BASE FAILURE AREAS TO RESTRICT FINES FROM ENTERING AGGREGATE AND TO PROVIDE ADDITIONAL STRENGTH FOR PAVEMENT STRUCTURE. PAYMENT WILL BE INCLUDED IN ITEM BASE FAILURE REPAIRS.

FRENCH DRAINS (WEED DRAINS)

7" WIDE AND VARIABLE LENGTH FRENCH DRAINS ARE TO BE INSTALLED ALONG AGGREGATE BASE REPAIRS TO DRAIN THE BASE STONE AT ALL LOW AREAS TO REDUCE WATER ACCUMULATION BELOW THE NEW PAVEMENT SECTION. FRENCH DRAINS ARE TO BE CUT EVERY 25' AS ALLOWABLE ALONG THE PAVEMENT SECTION TO FACILITATE DRAINAGE. ALL COST FOR THIS WORK IS TO BE INCLUDED IN THE BID ITEM BASE FAILURE REPAIRS (SEE BASE FAILURE DETAIL FOR INSTALLATION)

ITEM 226 LINEAR GRADING (DAYLIGHTING SHOULDERS)

THIS DETAIL HAS BEEN INCLUDED IN THE CONTRACT FOR THE PURPOSE OF DAYLIGHTING THE EXISTING SHOULDERS AS SHOWN IN THE DETAILS. ALL COSTS FOR LINEAR GRADING AND DISPOSAL OF MATERIAL IS TO BE INCLUDED IN ITEM 226 LINEAR GRADING PAID BY L.F.

ITEM 229 DITCH CLEANOUT

THIS DETAIL HAS BEEN INCLUDED IN THE CONTRACT TO CLEAN OUT THE EXISTING DITCHES AS NEEDED ALONG THE PROJECT AND IN THE WIDENING AREAS (SEE QUANTITY TABLES FOR LOCATIONS). ALL DITCHES CUT SHALL BE SEEDDED AND MULCHED AS CALLED FOR IN THE PLANS.) QUANTITY IS DOUBLED TO ALLOW FOR DITCH CLEANOUT BOTH PRIOR AND AFTER FILL. ALL COSTS FOR DITCH CLEANOUT AND DISPOSAL OF MATERIAL IS TO BE INCLUDED IN THE COSTS FOR ITEM 229 DITCH CLEANOUT PAID BY L.F.

ITEM 401 HMA ASPHALT BASE COURSE, TYPE 1B

PLACE HMA BASE COURSE AS SHOWN IN THE TABLES AND DETAILS. ALL COSTS FOR MATERIALS, LABOR, AND EQUIPMENT IS TO BE INCLUDED IN THE COST FOR ITEM 401. THIS ITEM WILL BE PAID BY THE TON.

ITEM 307 AGGREGATE BASE COURSE, CLASS 9

THIS ITEM IS TO BE USED TO PLACE AGGREGATE AS SHOWN IN THE DETAILS AND QUANTITIES ARE OULINED IN THE TABLES PROVIDED IN THE PLANS. ALL STONE NEEDED FOR THIS ITEM WILL BE PROVIDED BY ANTERO AND THE CONTRACTOR WILL BE PAID FOR PLACEMENT BY THE TON. PLACEMENT OF AGGREGATE SHALL BE WITH A PAVER OR SPREADER BOX. AGGREGATE SHALL BE WETTED TO 40% IN COMPACTION.

ITEM 406 TACK COAT

THIS ITEM IS TO BE USED TO TACK COAT BETWEEN LAYERS OF ASPHALT. TACK IS TO BE APPLIED AT A RATE OF 0.03 GAL/SY WHEN APPLIED BETWEEN NEW PAVEMENT COURSES, WHEN APPLIED ON OLD PAVEMENT, TACK IS TO BE APPLIED AT A RATE OF 0.075 GAL/SY. THIS ITEM WILL BE PAID BY THE GALLON.

ITEM 401 HMA WEARING COURSE, TYPE 12.5

PLACE HMA ASPHALT WEARING COURSE AS SHOWN IN THE DETAILS AND TABLES. ALL COSTS FOR MATERIALS, LABOR, AND EQUIPMENT IS TO BE INCLUDED IN THE COST FOR ITEM 401. THIS ITEM WILL BE PAID BY THE TON.

SAFETY EDGE

A SAFETY EDGE SHALL BE PLACED ON THE PAVEMENT TO SHAPE THE OUTSIDE EDGE OF THE PAVEMENT TO BE A MAXIMUM OF 30° AS SHOWN IN THE DETAIL IN THE PLANS. ALL ASPHALT PLACED ON THIS JOB SHALL HAVE A SAFETY EDGE.

ITEM 218 RP RAP

DAMPED ROCK IS TO BE PLACED AT THE OUTLET OF EACH NEW PIPE PLACED ON THIS PROJECT TO PREVENT EROSION OF THE OUTLET DITCH. DAMPED ROCK IS TO BE PLACED IN DEEP DITCHES. ADDITIONAL QUANTITY HAS BEEN ADDED AS A CONTINGENCY. ALL STONE NEEDED FOR THIS ITEM WILL BE PROVIDED BY ANTERO AND THE CONTRACTOR WILL BE PAID FOR PLACEMENT. FINAL PAY ITEM IS IN TON. (SEE DETAIL FOR DIMENSIONS.)

ITEM 606 UNDERDRAINS

QUANTITY FOR UNDERDRAINS HAS BEEN INCLUDED IN THE PLANS FOR SUBSURFACE WATER REMOVAL FROM BELOW THE FULLY DEPTH OF EXCAVATION, OR HILLSIDE CUT AREAS ON THE ROADWAY. SHOULD A SPRING OR SUBSURFACE WATER BE FOUND IN THESE AREAS AN UNDERDRAIN SHALL BE PLACED TO DRAIN THE WATER UNDER THE ROADWAY OR CUT AREA TO THE CURVE, DITCH, OR NEARBY DRAINAGE FEATURE. (SEE DETAILS IN PLANS). ALL WORK FOR INSTALLATION OF THE UNDERDRAIN INCLUDING ALL MATERIALS, GEOTEXTILE (ITEM 203), AGGREGATE, PIPE, EQUIPMENT AND LABOR NECESSARY IS TO BE INCLUDED IN THE UNIT BID PRICE PER LINEAR FOOT FOR ITEM 606.

ITEM 606 FARM FIELD FENCE (WOODEN WISE)

THIS ITEM HAS BEEN INCLUDED IN THE PLANS FOR REMOVAL AND REPLACEMENT OF FARM FIELD FENCE WHICH HAD TO BE REMOVED DUE TO THE ROADWAY WIDENING. SHOULD TEMPORARY FENCING BE NEEDED ADDITIONAL PAYMENT WILL BE MADE FOR THE TEMPORARY FENCE. ONCE THE FINAL CUT IS MADE AND SEEDDED AND MULCHED THE FINAL FENCING WILL BE PLACED AND PAID FOR. ALL FENCE IS TO BE REPLACED WITH SIMILAR TYPE FENCING ACCEPTABLE TO THE LANDOWNER AND IS TO BE PAID FOR BY THE LINEAL FOOT CORRUGATED AS SHOWN IN THE PLANS.

ITEM 004 CORRUGATED PLASTIC PIPE (ADS TYPE N-12)

ALL PIPES REPLACED ON THIS PROJECT SHALL BE CORRUGATED DOUBLE WALL HDPE PIPE WITH A SMOOTH WALL INTERIOR. ALL ROADWAY PIPES SHALL BE BACKFILLED WITH FLOWABLE FILL WITH A MINIMUM OF 2000 PDS FOR THE WIDTH OF THE ROADWAY INCLUDING SHOULDERS. THE PIPE IS TO BE ENCASED A MINIMUM OF 4" ON ALL SIDES UP TO ROADWAY SURFACE. ALL HDPE CURBPIPE WILL BE PROVIDED BY ANTERO. ALL COSTS FOR FLOWABLE FILL IS TO BE INCLUDED IN THE COST OF THE PIPE AND PAID FOR IN LF. DRIVEWAY CURBPIPE WILL BE BACKFILLED WITH ITEM 307 AGGREGATE AS SHOWN IN THE DETAIL. ALL 307 AGGREGATE NEEDED FOR DRIVEWAY CURBPIPE IS TO BE INCLUDED IN THE PRICE OF THE CURBPIPE.

IF A CURBPIPE MUST BE REPLACED IN AN EXISTING STREAM THE CONTRACTOR MUST USE BEST MANAGEMENT PRACTICES TO MINIMIZE SOILS EROSION DURING THE REPLACEMENT. STREAMS WITH LOW TO HIGH FLOWS SHALL BE DIVERTED DURING REPLACEMENT TO REDUCE EROSION.

THE CONTRACTOR SHALL PROVIDE A DETAILED PLAN FOR PIPE REPLACEMENT IN STREAMS. THE PLAN SHALL LIST METHODS USED FOR REPLACEMENT, SUCH AS BLOCKING THE STREAM AND PUMPING THE WATER AROUND THE EXCAVATION. USE OF A TEMPORARY PIPE, USE OF A DEWATERING BAG TO FILTER THE PUMPED WATER, ETC. THE CURBPIPE REPLACEMENT PLAN SHALL BE GIVEN TO THE PROJECT ENGINEER FOR REVIEW 1 WEEK PRIOR TO INSTALLATION OF ANY PIPE PLACED IN A STREAM.

ITEM 636 FLAGGERS

FLAGGERS SHALL BE USED AS NEEDED FOR TRAFFIC CONTROL IN WORK AREAS. FLAGGER AHEAD SIGNS SHALL BE USED AND COVERED OR REMOVED WHEN NO FLAGGER IS NEEDED. TWO-WAY ROADWAYS SHOULD BE AVAILABLE AT ALL TIMES.

ITEM 307 AGGREGATE BASE COURSE, STONE, CLASS 10

WOODHOLM ITEM 307 IS TO BE USED AS SHOULDER STONE ALONG THE EDGES OF THE ROADWAY. STONE IS TO BE PLACED AS SHOWN IN THE DETAILS AND QUANTITIES ARE OULINED IN THE TABLES PROVIDED IN THE PLANS. ALL STONE FOR THE ITEM WILL BE PROVIDED BY ANTERO AND CONTRACTOR WILL BE PAID FOR PLACEMENT BY THE TON.

GEOTEXTILE FABRIC

ANY GEOTEXTILE FABRIC REQUIRED FOR EES CONTROLS, ROCK GUTTERS, AND UNDERDRAINS IS TO BE WOODHOLM APPROVED FILTER FABRIC WEST VIRGINIA STANDARD SPECIFICATIONS. SHALL BE NON-WOVEN & GDSY RPT PROOF POLYMERIC FABRICS. COST FOR THIS ITEM IS INCIDENTAL TO OTHER WORK ITEMS.

FILTER SOCKS

FILTER SOCKS SHALL BE USED FOR EROSION PROTECTION WHERE CONSTRUCTION COULD CAUSE THE SOIL DISTURBED TO LEAVE THE PROJECT RIGHT OF WAY. ALSO FILTER SOCKS ARE TO BE USED AT THE WASTE SITE TO PROVIDE SEDIMENT CONTROL. A QUANTITY HAS BEEN ESTIMATED IN THE PLANS FOR USE AS NEEDED.

MAILBOX RELOCATION

IF THERE ARE MAILBOXES WITHIN THE PROJECT LIMITS WHICH MUST BE RELOCATED, THE CONTRACTOR IS TO CONTACT THE PROPERTY OWNER AND SELECT A SUITABLE LOCATION FOR FINAL PLACEMENT OF THE MAILBOX. SHOULD ANY DAMAGE BE MADE TO THE ORIGINAL MAILBOX, A NEW EQUIVALENT MAILBOX IS TO BE INSTALLED IN ITS PLACE. FINAL PAYMENT FOR ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY FOR THIS WORK IS TO BE INCLUDED IN THE BID PRICE FOR CANTEILNER MAILBOX SUPPORT, ITEM 62003-001.

MANAUVRE & ASSOCIATES, LTD.
ARCHITECTURE, PLANNING, SURVEYING
1100 W. MARKET STREET, SUITE 100
ST. CHARLES, OHIO 43080
PHONE: (614) 885-2277
WWW.MANAUVRE.COM



Antero Resources

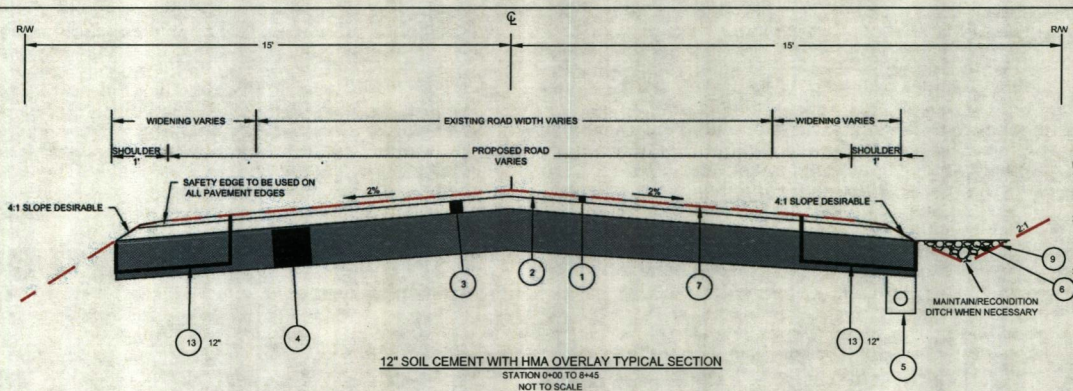
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GENERAL NOTES
SUGAR RUN ROAD (CR-52) ROADWAY IMPROVEMENTS
ANTERO RESOURCES INC.
DOODRIDGE COUNTY, WEST VIRGINIA

REV. NO.	DATE	DESCRIPTION
1	08-18-2022	ISSUE WIDENING TABLE
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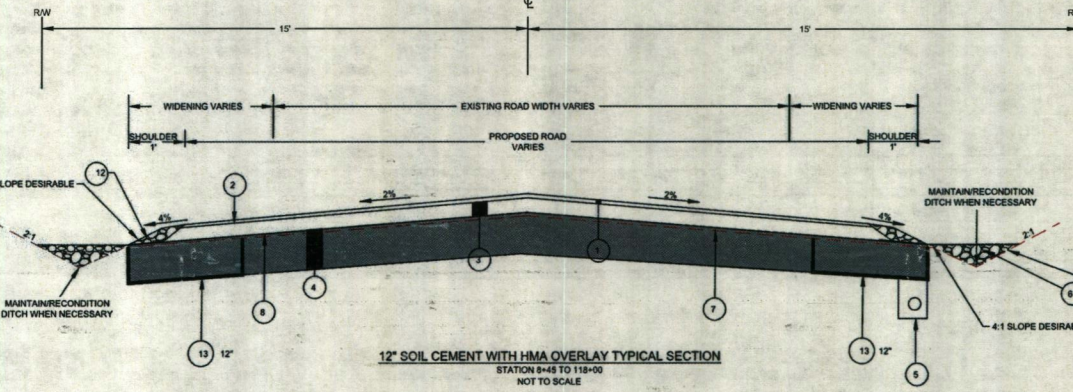


- NOTES:
1. SLOT MILLING PROCESS IS TO BE UTILIZED IN ALL AREAS WITHIN THE FLOODPLAIN AND DRAINAGE EASEMENT.
 2. AN AVERAGE OF 12" DEPTH X 4" WIDE TO BE EXCAVATED FROM EACH SIDE OF THE ROADWAY. THIS WILL ALLOW THE ROAD BASE ELEVATION TO BE DROPPED 4.5".
 3. AFTER CEMENT AND ASPHALT ARE ADDED TO THE ROAD BASE THE FINAL ELEVATION SHOULD MATCH THE EXISTING ELEVATION. NO CHANGE IN ELEVATION TO AREAS WITHIN DRAINAGE EASEMENT WILL BE ACCEPTED.

LEGEND

- | NO. | ITEM | DESCRIPTION |
|-----|------|-------------------------------------|
| 1 | 401 | 1.5" HMA WEARING COURSE, TYPE 12.5 |
| 2 | 408 | TACK COAT, 0.03 GAL/SY |
| 3 | 401 | 2.25" HMA BASE COURSE, TYPE 19 |
| 4 | — | 12" SOIL CEMENT @ 7% CEMENT |
| 5 | 606 | UNDERDRAINS (AS NEEDED) |
| 6 | 704 | STONE FOR DEEP DITCHES (R-4 RIPRAP) |
| 7 | — | EXISTING SURFACE |
| 8 | 707 | CURING COAT |
| 9 | 229 | DITCH CLEANOUT |
| 10 | 207 | 12" UNCLASSIFIED EXCAVATION |
| 11 | 703 | 12" AGGREGATE BASE (CLASS 9) |
| 12 | 307 | SHOULDER STONE (CLASS 10) |
| 13 | — | ROTMILLING OR EXCAVATION |

*CONTRACTOR IS TO MAINTAIN EXISTING SUPER ELEVATION GRADES IN CURVES.



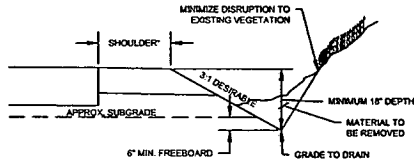
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2+00	17.6			17.6
3+00	18.8	2.2		21
4+00	15.7	2.9		18.6
5+00	15.2			15.2
6+00	12.5			12.5
7+00	13.1			13.1
8+00	12.4			12.4
9+00	12.3	3.1		15.4
10+00	12.2	2.4		14.6
11+00	12.1	3.2		15.3
12+00	13.1	1.9		15.0
13+00	13.4	1.1		14.5
14+00	14.6	1.8		16.4
15+00	14.7	0.6		15.3
16+00	13.8	1		14.8
17+00	13.1	2.2		15.3
18+00	12.1	3.8		15.9
19+00	15.4	1.2		16.6
20+00	14	0.4		14.4
21+00	12.9	1.7		14.6
22+00	14.8	1.9		16.7
23+00	14.9	2		16.9
24+00	13.7	2		15.7
25+00	12.2	2		14.2
26+00	12	2		14
27+00	12.9	1.6		14.5
28+00	13.1	2.6		15.7
29+00	14.6	1.9		16.5
30+00	12.2	1.3		13.5

31+00	13.9	1.2	2.8	17.9
32+00	13	0.6	4.9	18.5
33+00	12.8	0.8	4.9	18.5
34+00	12.8	1	4.7	18.5
35+00	12.7	0.6	4.3	17.6
36+00	13.7	1.5	1.8	17
37+00	12.9	1.6	3.6	18.1
38+00	13.3	1.2	2.7	17.2
39+00	13	1.4	2.5	17.2
40+00	12.2	1.7	2	15.9
41+00	13.5	1.5	4.5	19.5
42+00	14.8	1.1	3.7	19.6
43+00	13	1.7	4.6	19.3
44+00	13	1.9	5.7	20.6
45+00	14.4	1.6	4.9	20.9
46+00	13.8	1.6	5	20.4
47+00	13.2	1.8	4.1	19.1
48+00	13.6	1.4	3.7	18.7
49+00	12.6	1.8	1.5	15.9
50+00	15.1	0.5	3.6	19.2
51+00	15.4	1.3	3.6	20.3
52+00	14.4	1.2	4.3	19.9
53+00	13.7	1.4	2.9	18
54+00	13.3	1	4.5	18.8
55+00	14	1.8	3.8	19.6
56+00	15.8	3.3	2.1	21.2
57+00	13.4	5.1	3.6	22.1
58+00	13.7	4.4	4	22.1
59+00	14.5	5	2.5	22
60+00	14.3	3.1	3.7	21.1
61+00	14.6	2.2	3.3	20.1
62+00	14.2	0.9	1.7	16.8
63+00	10	2.3	0.5	12.8

64+00	14.5	0.7	3.2	18.4
65+00	15.5	1.6	2.8	19.9
66+00	16.6	1.4	1.7	19.7
67+00	14.9	3.2	2.3	18.4
68+00	14	1	1.4	16.4
69+00	14.5	1.8	2	18.3
70+00	14.6	1.9	0.8	17.3
71+00	13.4	1.5	1.6	16.5
72+00	12.8	1.9	1.7	16.4
73+00	13	0.7	2.5	16.2
74+00	12.6	1	1.6	15.2
75+00	13.7	0.5	1.8	16
76+00	13.4	0.9	2.7	17
77+00	14.8	1.2	2.9	18.9
78+00	13	1	4.5	18.5
79+00	13.7	3.3	3.8	21.8
80+00	13.8	11.3	3.6	28.7
81+00	16.5	13.8	2	32.3
82+00	14	1.3	4.1	19.4
83+00	12.2	1.1	5	18.3
84+00	11.9	1.3	2.7	15.9
85+00	12	1	2.9	15.9
86+00	13.2	1.6	2.1	16.9
87+00	14.1	1	3.4	18.5
88+00	14.3	0.8	4	19.1
89+00	16.8	1.4	1.8	20
90+00	12.8	2.4	3.6	18.8
91+00	12.9	1.6	3.5	18
92+00	13	2.6	3	18.6
93+00	14	0.9	4	18.9
94+00	14.9	1.6	3	19.5
95+00	16	1	2.9	19.9
96+00	12.7	1.4	3.4	17.5

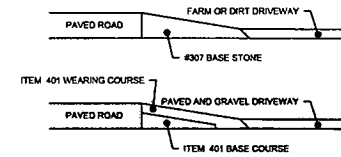
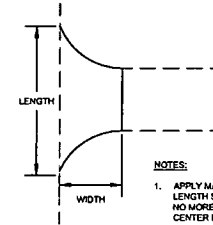
97+00	15.6	0.9	3.4	20.9
98+00	13	1.4	4.2	18.6
99+00	11.2	2	2.6	15.8
100+00	13.3	1.6	4	18.9
101+00	15	4.7	3.3	23
102+00	18.5	2	1.8	22.3
103+00	19.4	0.5	2.6	22.5
104+00	16.6	2	4	21.6
105+00	12.7	1.6	2.6	21.9
106+00	24.6	2.4	-1.2	25.8
107+00	29.8	2.6	-6	26.4
108+00	25.7		-1.1	24.6
109+00	21	2.2	-1.5	21.7
110+00	22	1.5	0.4	23.9
111+00	18.8	4	1.2	24
112+00	22.7		5.7	28.4
113+00	17	0.6	10.6	28.2

- *NOTES:**
- WIDTH, SLOPE, AND MATERIAL AS SPECIFIED ON TYPICAL SECTIONS AND SHOULDER RECONSTRUCTION DETAIL.
 - FINAL QUANTITY WILL DOUBLE TO ALLOW FOR CLEANING PRE AND POST FOR.
- *SEE QUANTITY TABLES AND PLANS FOR LOCATIONS

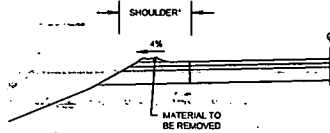


SCHEDULE FOR ITEM 229 (Ditch Cleanup)							SCHEDULE FOR ITEM 229 (Ditch Cleanup)						
SUGAR RUN ROAD (CR-52)							SUGAR RUN ROAD (CR-52)						
STATION	TO	STATION	RT./LT.	LENGTH (FT.)	AVG. WIDTH (FT.)	Temporary Seeding (S.Y.)	STATION	TO	STATION	RT./LT.	LENGTH (FT.)	AVG. WIDTH (FT.)	Temporary Seeding (S.Y.)
0+00	-	0+80	LT	80	3	27	8+00	-	9+00	RT	60	3	20
0+95	-	4+10	LT	315	3	105	15+25	-	19+07	RT	82	3	27
4+30	-	5+40	LT	110	4	49	37+20	-	38+90	RT	170	3	57
7+50	-	16+25	LT	855	3	295	43+20	-	44+75	RT	155	3	52
15+50	-	22+00	LT	540	3	180	45+20	-	45+20	RT	300	3	100
22+40	-	28+75	LT	6550	3	1217	50+85	-	51+80	RT	91	3	30
29+25	-	56+45	LT	720	3	240	59+00	-	60+00	RT	100	3	33
37+25	-	44+38	LT	713	3	238	80+90	-	83+95	RT	305	3	102
44+57	-	53+10	LT	853	4	379	96+40	-	99+50	RT	110	3	37
53+30	-	55+92	LT	262	3	87	100+10	-	102+20	RT	210	3	70
56+20	-	70+10	LT	1350	3	453	103+70	-	116+40	RT	1270	3	473
70+55	-	71+10	LT	55	3	18	116+90	-	118+00	RT	110	3	37
71+15	-	80+25	LT	910	3	303							
80+60	-	92+65	LT	1225	3	408							
93+25	-	103+10	LT	985	3	328							
103+50	-	112+10	LT	860	3	287							
112+35	-	115+90	LT	355	3	118							
116+10	-	117+00	LT	90	3	30							
SUBTOTAL				13998		4773	SUBTOTAL				2963		958

DITCH CLEANOUT
N.T.S.



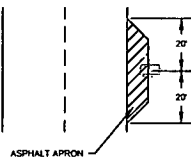
SCHEDULE FOR ITEM 229 (LINEAR GRADING)						SCHEDULE FOR ITEM 229 (LINEAR GRADING)							
SUGAR RUN ROAD (CR-52)						SUGAR RUN ROAD (CR-52)							
STATION	TO	STATION	RT./LT.	LENGTH (FT.)	AVG. WIDTH (FT.)	Temporary Seeding (S.Y.)	STATION	TO	STATION	RT./LT.	LENGTH (FT.)	AVG. WIDTH (FT.)	Temporary Seeding (S.Y.)
117+00	-	118+00	LT	100	4	44	1+00	-	2+60	RT	160	4	71
SUBTOTAL				100		44	2+75	-	3+65	RT	90	4	40
							3+80	-	5+75	RT	145	4	64
							9+00	-	13+30	RT	430	4	191
							13+55	-	16+30	RT	275	4	122
							16+60	-	18+75	RT	165	4	73
							19+07	-	20+60	RT	153	4	68
							20+80	-	29+30	RT	850	4	378
							29+65	-	31+60	RT	195	4	87
							31+85	-	37+20	RT	535	4	238
							38+80	-	43+05	RT	315	4	140
							43+40	-	43+20	RT	80	4	36
							44+75	-	45+20	RT	45	4	20
							48+20	-	50+80	RT	270	4	120
							51+80	-	56+30	RT	450	4	200
							56+60	-	58+60	RT	240	4	107
							60+00	-	69+68	RT	968	4	430
							70+50	-	80+80	RT	1040	4	462
							83+95	-	93+30	RT	925	4	411
							93+95	-	98+40	RT	445	4	198
							99+50	-	100+10	RT	60	4	27
							102+80	-	103+70	RT	90	4	40
							SUBTOTAL				7926		3523



- *NOTES:**
- WIDTH, SLOPE, AND MATERIAL AS SPECIFIED ON TYPICAL SECTIONS AND SHOULDER RECONSTRUCTION DETAIL.
- *SEE QUANTITY TABLES AND PLANS FOR LOCATIONS

LINEAR GRADING (DAYLIGHT SHOULDER)
N.T.S.

MAILBOX APPROACHES					
SUGAR RUN ROAD (CR-52)					
RT./LT.	Station	Length Ft.	Width Ft.	Aggregate Base (cu ft)	
RT	14+00	40	3	13	2.2
RT	21+30	40	3	13	2.2
RT	29+68	40	3	13	2.2
RT	42+25	40	3	13	2.2
RT	52+68	40	3	13	2.2
RT	56+46	40	3	13	2.2
RT	115+52	40	3	13	2.2
Totals =				91	15.6



MAILBOX APPROACHES TYPICAL
NOT TO SCALE

Driveway Summary									
CR-52									
Start Sta.	End Sta.	Existing Surface	Length (FT.)	Width (FT.)	Area (S.Y.)	Item 307 Aggregate (Ton)	Base Asphalt (Ton)	Wearing Asphalt (Ton)	Tack Coat (Gal)
0+80	0+95	LT Farm	15	5	8.3	2.8			
4+10	4+30	LT Farm	20	5	11.1	3.1			
16+35	16+60	LT Farm	25	5	13.9	3.9			
22+00	22+40	LT Stone	40	5	22.2		2.5	1.9	0.6
28+75	29+25	LT Farm	50	5	27.8	2.7			
36+45	37+25	LT Stone	80	5	44.4		4.9	3.7	1.1
44+38	44+57	LT Farm	19	5	10.6	2.9			
53+10	53+30	LT Stone	20	5	11.1		1.7	0.9	0.3
55+92	56+20	LT Stone	28	5	15.6		1.7	1.3	0.4
63+70	63+85	LT Farm	15	5	8.3	2.3			
69+75	70+10	LT Farm	35	5	19.4	5.4			
71+00	71+15	LT Stone	15	5	8.3		0.9	0.7	0.2
80+25	80+60	LT Stone	35	5	19.4		2.2	1.6	0.5
92+85	93+25	LT Farm	40	5	22.2	6.2			
103+10	103+50	LT Farm	40	5	22.2	6.2			
112+10	112+35	LT Stone	25	5	13.9		1.5	1.2	0.3
115+40	116+07	LT Farm	67	5	37.2	10.3			
0+00	1+00	RT Stone	100	5	55.6		6.2	4.6	1.4
2+00	2+75	RT Farm	75	5	41.3	2.3			
3+45	4+00	RT Farm	55	5	30.3	2.3			
7+55	8+40	RT Stone	85	5	47.2		5.3	3.9	1.2
13+30	13+55	RT Stone	25	5	13.9		1.5	1.2	0.3
15+30	16+60	RT Farm	30	5	16.7	4.6			
20+60	20+83	RT Farm	23	15	38.3	10.6			
29+30	29+68	RT Stone	38	5	19.4		2.2	1.6	0.5
31+60	31+88	RT Farm	28	15	46.7	13.0			
38+75	39+00	RT Farm	25	5	13.9	3.9			
42+05	42+40	RT Stone	35	5	19.4		2.2	1.6	0.5
47+75	48+00	RT Farm	25	5	13.9	3.9			
56+30	56+60	RT Stone	30	5	16.7		1.9	1.4	0.4
60+68	70+50	RT Stone	62	5	45.6		5.1	3.8	1.1
78+20	78+40	RT Farm	20	5	11.1	3.1			
93+20	93+95	RT Stone	75	5	41.7		4.6	3.5	1.0
116+40	116+90	RT Stone	50	5	27.8		3.1	2.3	0.7
					761	96.0	46.9	35.2	10.6

DRIVEWAY AND SIDE ROAD TREATMENT TYPICAL
NOT TO SCALE

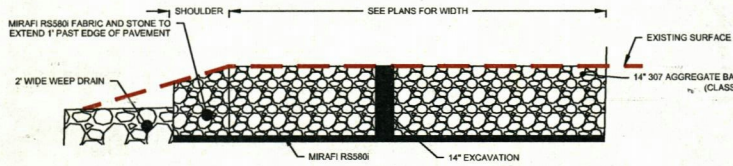
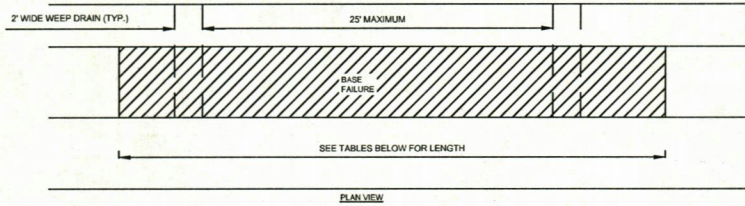
0 1' 1" 2'
IF SCALE BAR DOES NOT MEASURE 1" DRAWING NOT PLOTTED TO SCALE

HAMMONTREE & ASSOCIATES, LTD.
ARCHITECTS, PLANNERS, SURVEYORS
10 N.W. 11th AVENUE
ST. CHARLES, OHIO 43081
PH: (614) 881-7227
WWW.HAMMONTREE.COM



DESIGN BY: JUST DATE: 02/23/2023
DRAWN BY: JAS REV BY: DATE: 02/23/2023
FLD BK: REV BY: DATE: 02/23/2023
BK PK: REV BY: DATE: 02/23/2023

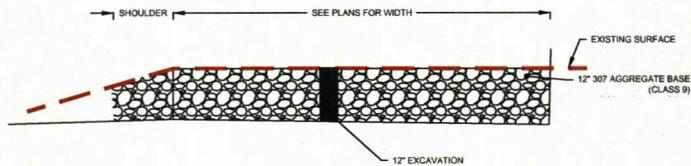
TYPICAL SECTIONS
SUGAR RUN ROAD CR-52 ROADWAY IMPROVEMENTS
ANTERO RESOURCES
DISTRICT 4
DORRIDGE COUNTY, WEST VIRGINIA



NOTES:

- TRENCH EXCAVATION SHALL BE SHAPED TO FORM A SQUARE OR RECTANGLE WHOSE SIDES ARE PARALLEL WITH AND AT RIGHT ANGLES TO THE DIRECTION OF TRAFFIC. PAVEMENT SHALL BE SAW CUT AND SIDES OF TRENCH EXCAVATED TO AS NEAR VERTICAL AS POSSIBLE. ALL LOOSE MATERIAL SHALL BE REMOVED FROM THE TRENCH BOTTOM PRIOR TO PLACING FABRIC.
- THICKNESS OF STONE, TO BE AS DIRECTED BY THE ENGINEER (ESTIMATED AT 12" OF #1 & 2 STONE, AND 2' 307 AGGREGATE BASE)
- WEEP DRAINS SHALL BE LOCATED AT ALL LOW POINTS IN TRENCH. MAXIMUM SPACING BETWEEN WEEP DRAINS SHALL BE TWENTY FIVE (25) FEET. DRAINS MAY BE SKEWED WHERE NECESSARY TO MAINTAIN SLOPE AWAY FROM THE TRENCH AREA.
- WHEEL PATH BASE FAILURE AREAS ARE TO BE EXCAVATED TO A GREATER DEPTH (MAXIMUM OF 36") IF SOIL AT 14" DOES NOT PASS A PROOF ROLL WITH A FULLY LOADED STONE TRUCK. #1 & 2 STONE WILL BE USED TO FILL IN THE ADDITIONAL DEPTH EXCAVATED.

WHEEL PATH BASE FAILURE REPAIR
N.T.S.



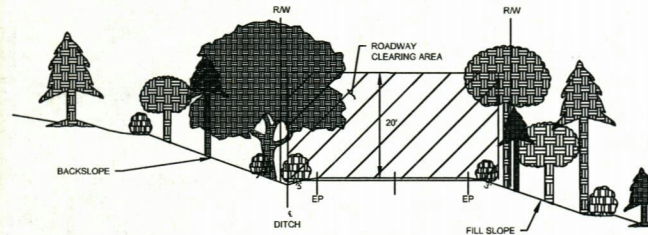
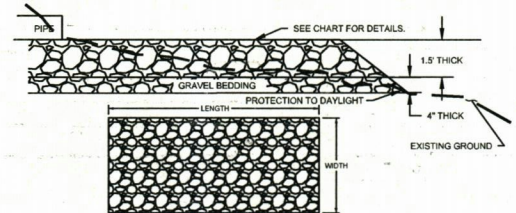
NOTES:

- TRENCH EXCAVATION SHALL BE SHAPED TO FORM A SQUARE OR RECTANGLE WHOSE SIDES ARE PARALLEL WITH AND AT RIGHT ANGLES TO THE DIRECTION OF TRAFFIC. PAVEMENT SHALL BE SAW CUT AND SIDES OF TRENCH EXCAVATED TO AS NEAR VERTICAL AS POSSIBLE. ALL LOOSE MATERIAL SHALL BE REMOVED FROM THE TRENCH BOTTOM PRIOR TO PLACING FABRIC.
- THICKNESS OF STONE, TO BE AS DIRECTED BY THE ENGINEER (ESTIMATED AT 12' 307 AGGREGATE BASE)

NON- WHEEL PATH BASE FAILURE REPAIR
N.T.S.

ROCK OUTLET PROTECTION						
Culvert #	Culvert Size IN	Length FT.	Width FT.	Rock Size	Depth FT.	Rip Rap Ton
1	18" CPP	7	5.5	4-12"	1.5	4.3
2	18" CPP	7	5.5	4-12"	1.5	4.3
3	18" CPP	7	5.5	4-12"	1.5	4.3
6	18" CPP	6	5.5	4-12"	1.5	3.7
9	18" CPP	5.5	5.5	4-12"	1.5	3.4
10	18" CPP	4.5	5.5	4-12"	1.5	2.8
11	18" CPP	3.5	5.5	4-12"	1.5	2.1
12	36" CPP	7	5.5	4-12"	1.5	4.3
14	24" CPP	7	5.5	4-12"	1.5	4.3
15	24" CPP	6	6	4-12"	1.5	3.7
16	18" CPP	4	5.5	4-12"	1.5	2.4
17	18" CPP	4.5	5.5	4-12"	1.5	2.8
19	18" CPP	4	5.5	4-12"	1.5	2.4
20	18" CPP	6	5.5	4-12"	1.5	3.7
21	24" CPP	5	6	4-12"	1.5	3.3
22	18" CPP	3.5	5.5	4-12"	1.5	2.1
23	24" CPP	4.5	6	4-12"	1.5	3.0
24	24" CPP	5.5	6	4-12"	1.5	3.7
25	18" CPP	5.5	5.5	4-12"	1.5	3.4
26	18" CPP	6	5.5	4-12"	1.5	3.7
27	24" CPP	7	6	4-12"	1.5	4.7
TOTALS						72.4

ROCK OUTLET PROTECTION
NOT TO SCALE



- ALL TREES AND BRUSH WITHIN THE ROADWAY CLEARING AREA WILL BE REMOVED AS SHOWN IN DETAIL.
- IN AREAS WHERE ADEQUATE SIGHT DISTANCE IS NOT MET, TREE TRIMMING MAY TAKE PLACE UP TO THE RIGHT-OF-WAY LIMITS. (SEE TABLE FOR LOCATIONS)
- TREE AND BRUSH ARE TO BE TRIMMED BACK TO EITHER THE EDGE OF SHOULDERS OR RIGHT-OF-WAY (FOR SITE DISTANCE IMPROVEMENT) ACCORDING TO TABLES BELOW.
- ALL TRIMMED TREES AND BRANCHES SHALL BE CLEARED AND Hauled OFF-SITE IMMEDIATELY AFTER CLEARING/TRIMMING TO PREVENT TRAFFIC DISTURBANCES.

CLEARING LIMITS TYPICAL
N.T.S.

NOTES:

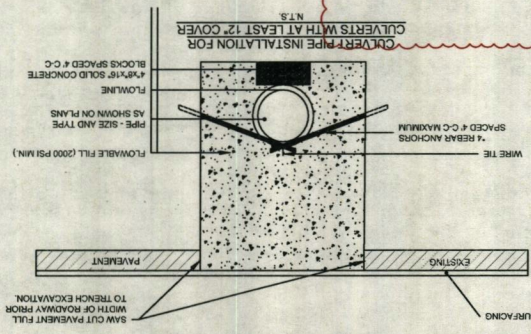
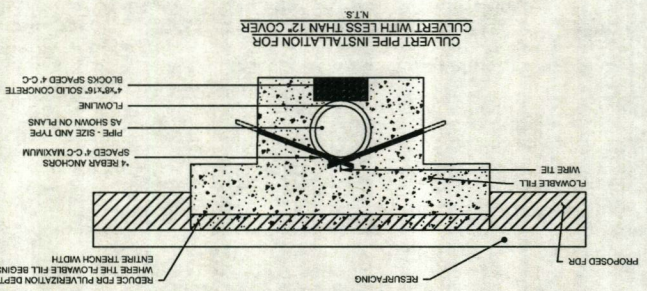
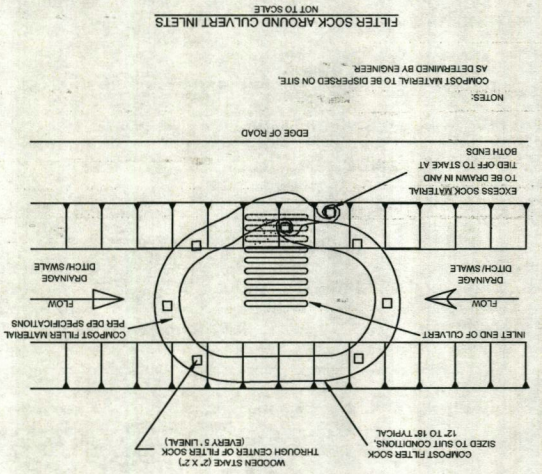
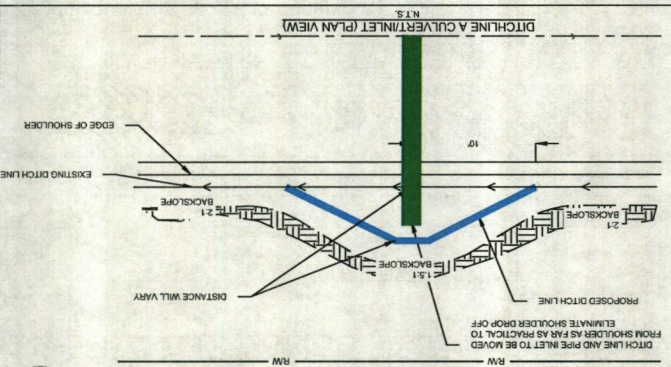
- SUBGRADE FOR THE FILTER OR BEDDING AND RIPRAP SHALL BE PREPARED TO THE REQUIRED LINES AND GRADES AS SHOWN ON THE PLAN. THE SUBGRADE SHALL BE CLEARED OF ALL TREES, STUMPS, ROOTS, SOD, LOOSE ROCK, OR OTHER MATERIAL.
- RIPRAP SHALL CONFORM TO THE GRADING LIMITS AS SHOWN ON THE PLAN.
- GEOTEXTILE SHALL BE SECURELY ANCHORED ACCORDING TO MANUFACTURERS RECOMMENDATIONS.
- GEOTEXTILE SHALL BE LAID WITH THE LONG DIMENSION PARALLEL TO THE DIRECTION OF FLOW AND SHALL BE LAID LOOSELY BUT WITHOUT WRINKLES AND CREASES. WHERE JOINTS ARE NECESSARY STRIPS SHALL BE PLACED TO PROVIDE A 12-IN. MINIMUM OVERLAP. WITH THE UPSTREAM STRIP OVERLAPPING THE DOWNSTREAM STRIP.
- RIPRAP MAY BE PLACED BY EQUIPMENT BUT SHALL BE PLACED IN A MANNER TO PREVENT SLIPPAGE OR DAMAGE TO THE GEOTEXTILE.
- RIPRAP SHALL BE PLACED BY A METHOD THAT DOES NOT CAUSE SEGREGATION OF SIZES. EXTENSIVE PUSHING WITH A DOZER CAUSES SEGREGATION AND SHALL BE AVOIDED BY DELIVERING RIPRAP NEAR ITS FINAL LOCATION WITHIN THE CHANNEL.
- CONSTRUCTION SHALL BE SEQUENCED SO THAT OUTLET PROTECTION IS PLACED AND FUNCTIONAL WHEN THE STORM DRAIN, CULVERT, OR OPEN CHANNEL ABOVE IT BECOMES OPERATIONAL.
- ALL DISTURBED AREAS WILL BE VEGETATED AS SOON AS PRACTICAL.
- CULVERT SLOPE MAY BE FIELD ADJUSTED WITH ENGINEER'S APPROVAL. (SLOPE SHALL NOT BE LESS THAN THE MINIMUM SLOPE SHOWN IN PROPOSED CULVERT DETAIL OR NOTED ON PLANS.)
- LENGTH OF OUTLET PROTECTION SHALL EXTEND BEYOND THE TOE OF ANY FILL SLOPE SO AS TO DISCHARGE ONTO UNDISTURBED GROUND.
- ALL DISTURBED AREAS WILL BE SEEDED & MULCHED AS SOON AS PRACTICAL.

HAMMONTREE & ASSOCIATES, LTD.
ENGINEERS, PLANNERS, SURVEYORS
10 DANIEL AVENUE
ST. CHARLES, OHIO 45386
PH: (614) 967-7277
WWW.HAMMONTREE.COM

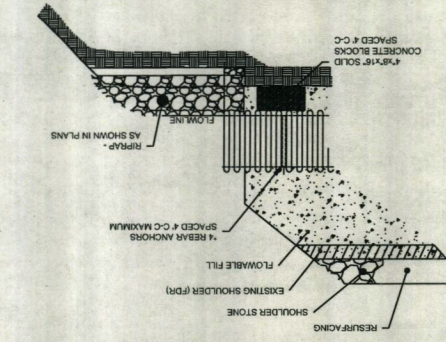
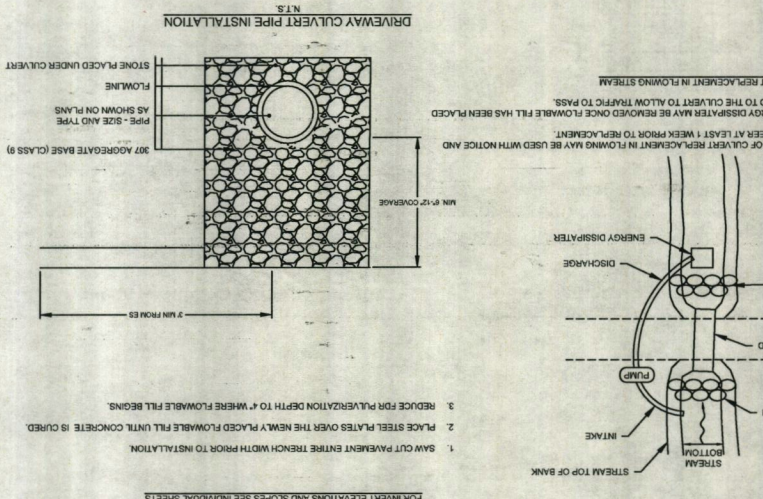
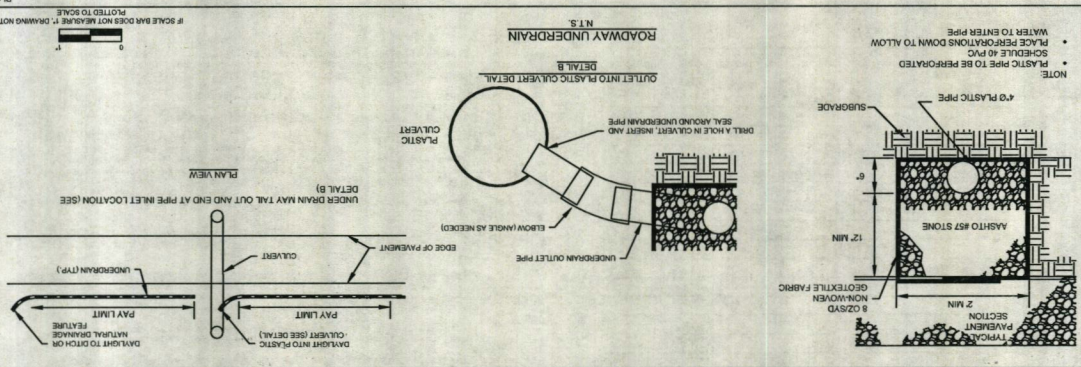


DESIGN BY:	DATE:	DESC:
REV. BY:	DATE:	DESC:
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TYPICAL SECTIONS
SUGAR RUN ROAD (CR-52) ROADWAY IMPROVEMENTS
ANTERO RESOURCES
DISTRICT 4
DODDRIEGE COUNTY, WEST VIRGINIA



Culvert Station	Proposed Structure Length (ft)	Culvert Station	Proposed Structure Length (ft)
1	100	16	100
2	100	17	100
3	100	18	100
4	100	19	100
5	100	20	100
6	100	21	100
7	100	22	100
8	100	23	100
9	100	24	100
10	100	25	100
11	100	26	100
12	100	27	100
13	100	28	100
14	100	29	100
15	100	30	100
16	100	31	100
17	100	32	100
18	100	33	100
19	100	34	100
20	100	35	100
21	100	36	100
22	100	37	100
23	100	38	100
24	100	39	100
25	100	40	100
26	100	41	100
27	100	42	100
28	100	43	100
29	100	44	100
30	100	45	100
31	100	46	100
32	100	47	100
33	100	48	100
34	100	49	100
35	100	50	100
36	100	51	100
37	100	52	100
38	100	53	100
39	100	54	100
40	100	55	100
41	100	56	100
42	100	57	100
43	100	58	100
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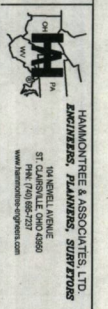


8
SUGAR RUN ROAD (CR-52) ROADWAY IMPROVEMENTS
ANTONIO RESOURCES
DISTRICT 4
DODDRIEGE COUNTY, WEST VIRGINIA

DESIGN BY: JAC
DRAWN BY: JAC
CHECKED BY: JAC
DATE: 02/27/2023

REVISIONS
NO. DATE DESCRIPTION
1 08-18-2023 JAC
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ENGINEERS, PLANNERS, SURVEYORS
1000 WEST MAIN STREET, SUITE 100
CHARLESTON, WV 25301
PHONE: (304) 766-2333
WWW.HAMMONDTREE.COM



NOTES

UNLESS OTHERWISE SPECIFIED ON THE PLANS, TYPE B INLETS MAY BE CONSTRUCTED IN ANY OF THE SHAPES SHOWN WHEN THE OUTLET PIPE DIAMETERS IS 24" OR LESS AND THE ADJACENT PAVEMENT IS CONCRETE.

IF THE OUTLET PIPE DIAMETER IS 24" OR THE ADJACENT PAVEMENT IS HOT MIX ASPHALT, ONLY THE SQUARE STYLE WITH THE DEEP FRAME WILL BE USED. THE INSIDE OPENING OF THE INLET WILL BE ADJUSTED TO ACCOMMODATE THE 24" PIPE.

CONSTRUCTION MAY BE CAST-IN-PLACE, PRECAST IN ONE OR MULTIPLE SECTIONS, OR ANY COMBINATION OF CAST-IN-PLACE AND PRECAST.

OPTIONAL CONSTRUCTION JOINTS LABELED "CJ" MAY BE ROUGHENED CONCRETE, NEEDED OR DOWELED AS PER THE TYPICAL DETAILS SHOWN HEREIN OR AS APPROVED BY THE ENGINEER. HIGH SHRINK GROUT MEETING THE REQUIREMENTS OF SUBSECTION 715.5 OF THE SPECIFICATIONS MAY BE USED TO A DEPTH OF 1/2" FOR LEVELING BETWEEN PRECAST SECTIONS. THICKER DEPTHS WILL BE ALLOWED AS PER THE MANUFACTURER'S RECOMMENDATIONS.

THE FINAL INSTALLED TOP SURFACE OF INLET AND GRATE SHALL BE FLUSH WITH ADJACENT FINISHED SURFACES SUCH AS PAVEMENT, CUTTERS, CURBS, AND SIDEWALKS. TOP OF GRATE ELEVATION, IF SHOWN ON THE PLANS, IS FOR INFORMATION ONLY.

REBARS ARE TO BE INSTALLED AT THE QUARTER POINTS TO CONNECT CURB TO INLET. REBARS ARE NOT REQUIRED IF CURB IS POURED MONOLITHICALLY WITH THE INLET OR IF TYPE V OR V-MEDIAN IS SPECIFIED ON THE PLANS.

FOR DETAILS OF GRATES AND FRAMES, SEE INLET CASTING STANDARD SHEET DR6-K.

THE CONTRACTOR MAY, AT HIS OPTION, OMIT USE OF THE SHALLOW FRAME BY FORMING A LEDGE IN THE CONCRETE.

SPECIAL CARE SHALL BE EXERCISED IN FORMING THE 2" WIDE CONCRETE LEDGE TO PROVIDE A SMOOTH, EVEN SURFACE FOR SUPPORTING THE GRATE. IF A FRAME IS NOT USED, NO PROJECTIONS SHALL EXIST ON THE GRATE AND THE GRATE SHALL SEAT ON THE LEDGE, WITHOUT ROCKING.

FIBRE FORM SHALL BE REMOVED PRIOR TO COMPLETION OF THE PROJECT.

PC-MINIMUM PIPE COVER SHALL BE 12" BELOW INLET TOP FOR PIPES PLACED UNDER SIDEWALK OR GRASSED AREA OR 24" BELOW INLET TOP FOR PIPES PLACED UNDER PAVEMENT OR SHOULDER.

CURB, IF SPECIFIED, MAY BE EITHER CONCRETE PLACED ON THE INLET BACKWALL AS DETAILED HEREIN OR AN APPROVED CURB BOX AS MANUFACTURED WITH THE GRATE AND FRAME. DIMENSIONS OF THE CURB BOX SHOULD REASONABLY CONFORM TO THE STANDARD CURB AS SPECIFIED ON THE PLANS. THE CURB WILL BE PAID FOR PER SECTION 610, IN EITHER CASE.

THIS INLET SHALL NOT BE PLACED IN A PEDESTRIAN CROSS WALK.

THE MINIMUM DISTANCE FROM THE TOP OF ANY PIPE OPENING TO ANY CONSTRUCTION JOINT ABOVE THE OPENING SHALL BE FOUR (4) INCHES.

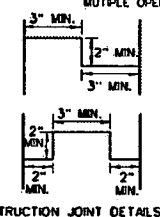
THE NUMBER AND LOCATION OF PIPE OPENINGS SHALL BE AS SHOWN IN THE PLANS. THE CONTRACTOR AT NO ADDITIONAL COST, SHALL BE RESPONSIBLE FOR ANY TEMPORARY BRACING REQUIRED TO TRANSPORT PRECAST INLET SECTIONS DUE TO MULTIPLE OPENINGS.

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
STANDARD DETAIL

PREPARED 7-11-91
REVISION DATE

TYPE B INLET

STANDARD SHEET DR6-B



IF SCALE BAR DOES NOT MEASURE 1" DRAWING NOT PLOTTED TO SCALE

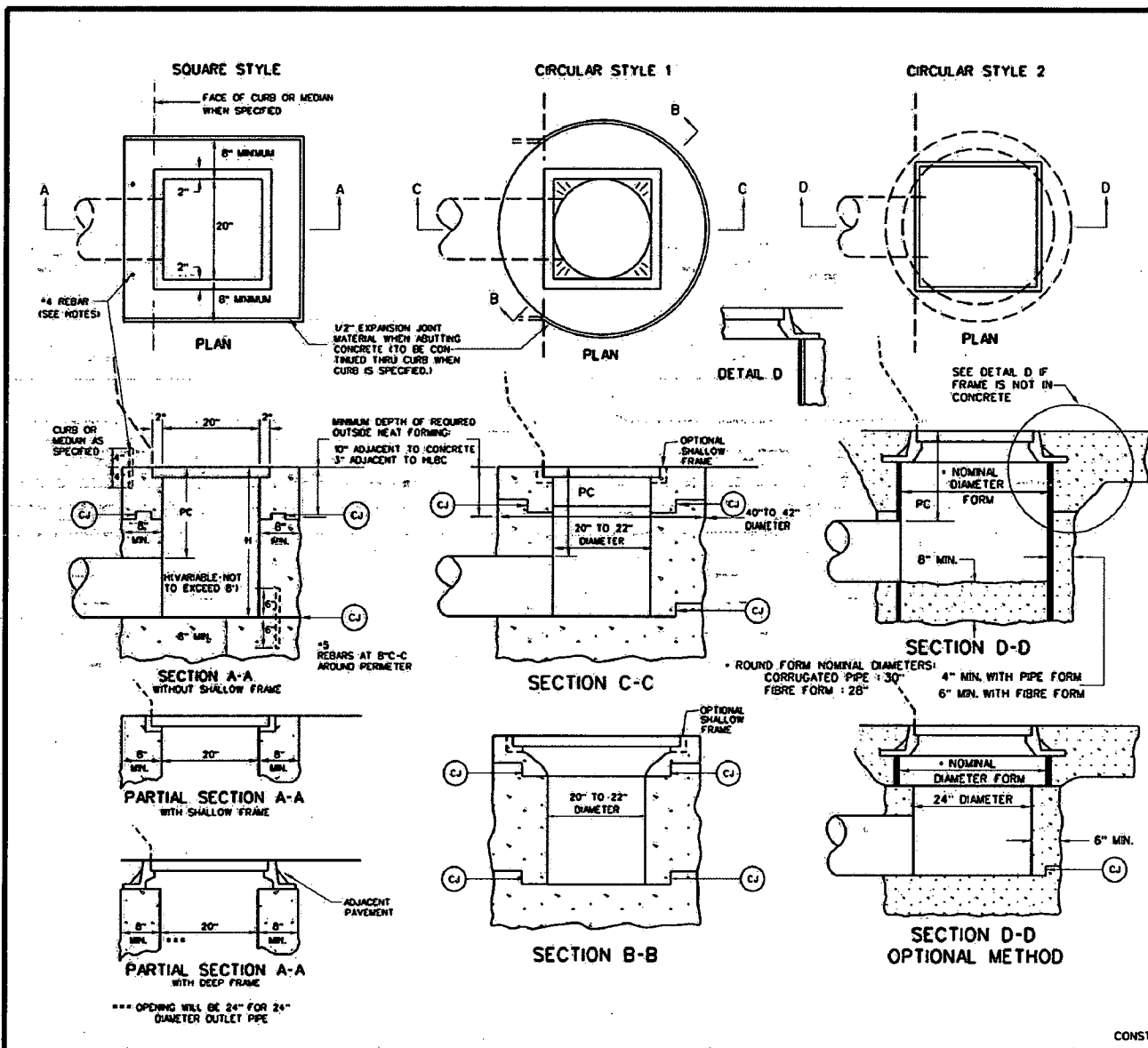
PLOT DATE: January 31, 202

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ENGINEERS, PLANNERS, SURVEYORS
1000 MARSHALL AVENUE
ST. CHARLES, OHIO 43080
PH: (716) 862-2727
WWW.HAMONTREE.COM

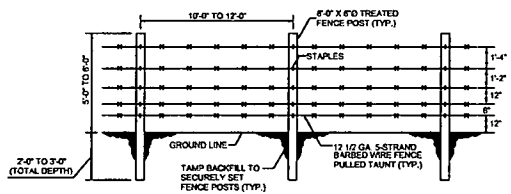


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DETAILS SHEET
SUGAR RUN ROAD (CR-52) ROADWAY IMPROVEMENTS
ANTERO RESOURCES
DISTRICT 4
DOODRIDGE COUNTY, WEST VIRGINIA



*** OPENING WILL BE 24" FOR 24" DIAMETER OUTLET PIPE

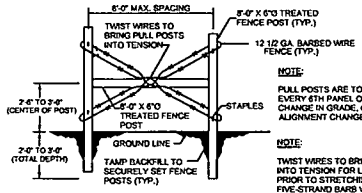


FARM FENCE DETAIL
NOT TO SCALE

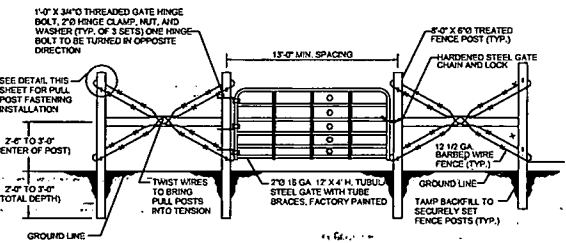


- 1 CONTRACTOR TO EXTEND BARS WIRE FENCE BEYOND FENCE POST
- 2 CONTRACTOR TO STAPLE BARS WIRE FENCE TO FENCE POST AFTER FOLDING BARS WIRE OVER (NOTE: STAPLE TO BE INSTALLED IN SAME DIRECTION AS BARS WIRE FENCE)
- 3 CONTRACTOR TO INSTALL ADDITIONAL STAPLE (TWO IF NECESSARY) TO SECURE FOLDED BARS WIRE FENCE TO FENCE POST
- 4 CONTRACTOR TO CONTINUE WITH TIGHTENING OF BARS WIRE FENCE TO BRING PULL POSTS INTO TENSION

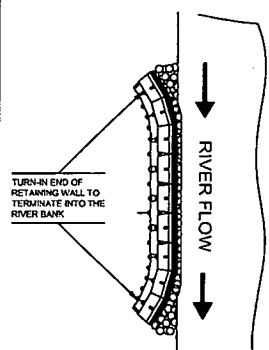
PULL POST FASTENING DETAIL
NOT TO SCALE



PULL POST DETAIL
NOT TO SCALE



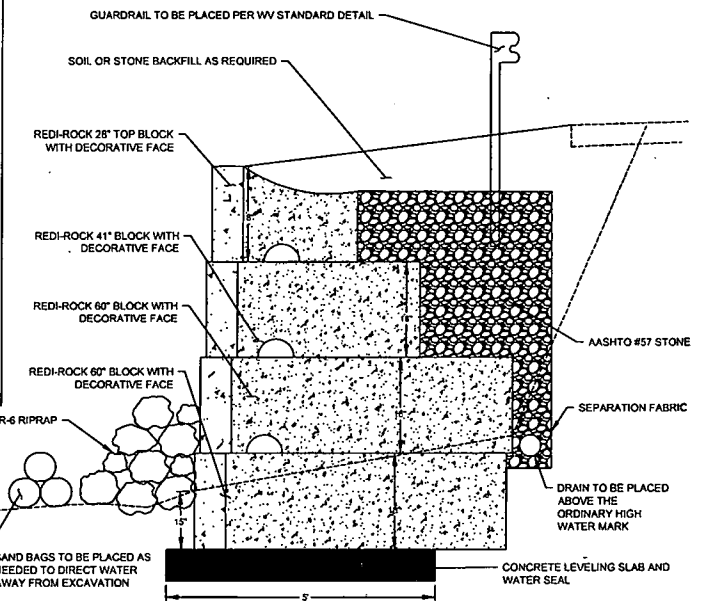
FARM GATE DETAIL
NOT TO SCALE



STREAM SEAWALL RADIAL TERMINATION INTO BANK DETAIL
NOT TO SCALE

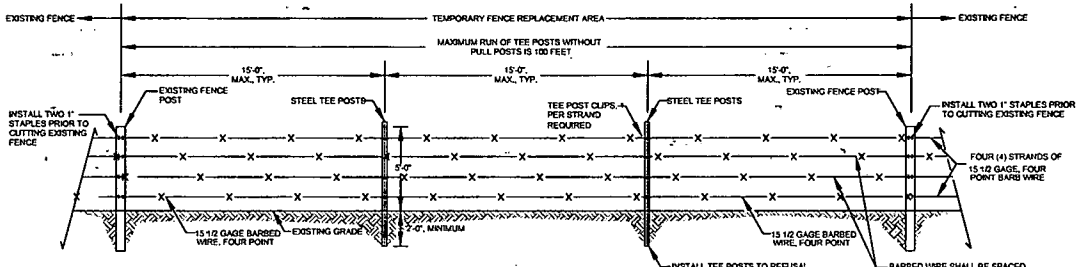
DESIGN MUST ADEQUATELY ADDRESS TURNING WALLS INTO THE BANK AT BOTH ENDS TO ASSURE WATER WILL NOT ERODE MATERIAL FROM BEHIND THE WALL.

REDI-ROCK WALLS ARE AN EFFECTIVE CHANNEL HARDSCAPE PRODUCT WHEN PROPERLY DESIGNED AND INSTALLED.

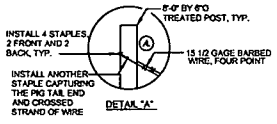


REDI-ROCK WALL DETAIL STA. (71+25-71+90)
NOT TO SCALE

- NOTE:
- IF WALL HEIGHTS EXCEEDS DETAIL SHOWN ADDITIONAL ROWS OF 60\"/>
 - REDIROCK SHOWN IN DETAIL. APPROVED ALTERNATE MAY BE ACCEPTED.



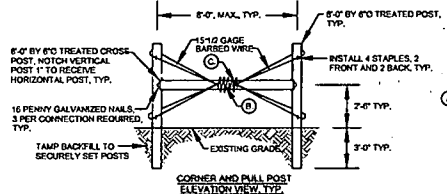
TEMPORARY FENCE ELEVATION VIEW, TYP.



DETAIL "A"

- NOTES:
1. THE MAXIMUM RUN OF STEEL "TEE" POSTS SHALL BE 100 FEET. PULL POSTS AS DETAIL SHOWN SHALL BE INSTALLED IN THE TEMPORARY FENCE AT 100 FOOT INTERVALS AND HIGH OR LOW POINTS AS DESIGNATED BY THE ENGINEER. CORNER POINTS SHALL BE INSTALLED AT ANGLE POINTS AS DESIGNATED BY THE ENGINEER.
 2. TEMPORARY ELECTRIC FENCE INSTALLATIONS REQUIRE FIBER OPTICS (FLUOROC) POSTS SPACED THIRTY FEET ON CENTER, 8 FT. TALL (21\"/>

TEMPORARY FENCE
NOT TO SCALE



CORNER AND PULL POST ELEVATION VIEW, TYP.

- A WRAP FENCE AROUND EACH PULL POST EXTENDING FROM 6\"/>
- B PLACE A STEEL BAR AT THE "X" INTERSECTION ADJACENT TO THE HORIZONTAL SUPPORT POST. TWIST THE FENCE STRINGS TOGETHER TO BRING THE PULL POSTS INTO TENSION.
- C INSTALL TWO 1\"/>

Fencing Summary				
Sta. Start	Sta. Stop	Location	Total Fence Placed (ft)	
CR-62				
2+00	3+65	RT	165	
26+00	28+30	RT	230	
		Total	395	

SCALE BAR DOES NOT MEASURE 1\"/>

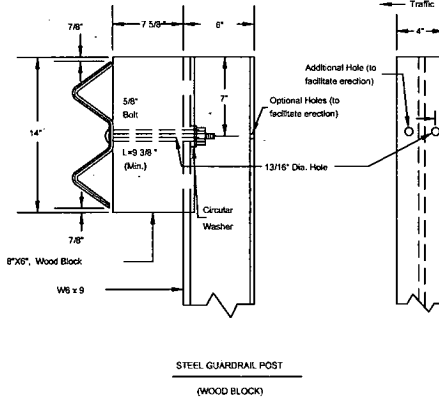
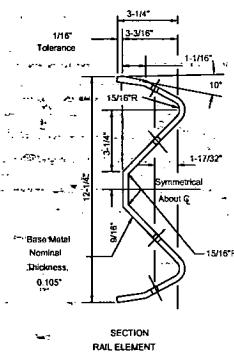
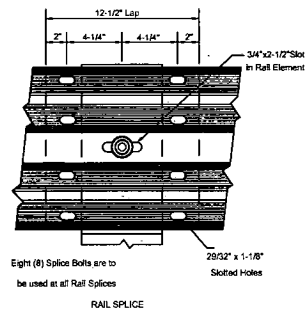
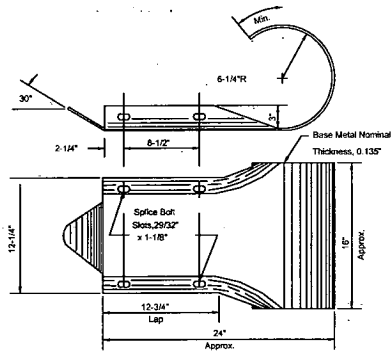
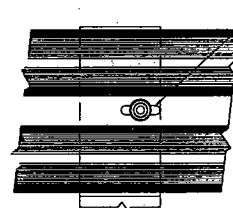
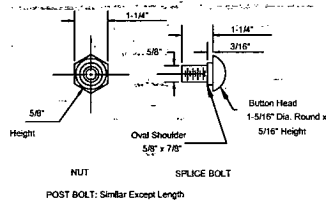
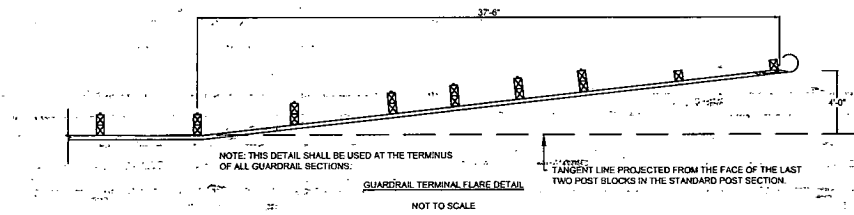
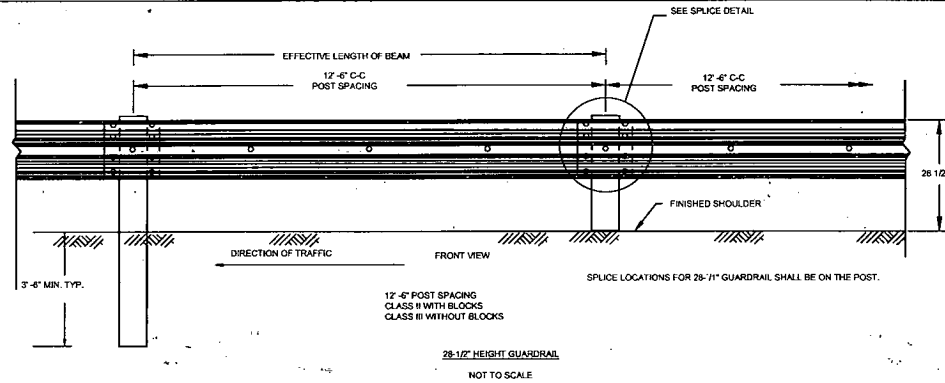
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ARCHITECTS, PLANNERS, SURVEYORS
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PH: (714) 986-3237
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DETAILS SHEET
SUGAR RUN ROAD (CR-52) ROADWAY IMPROVEMENTS
ANTERO RESOURCES
DISTRICT 7
DODDRIEGE COUNTY, WEST VIRGINIA



GENERAL:

GUARDRAIL SYSTEMS ON NHS ROUTES MUST MEET CURRENT NCHRP 250 OR THE MOST CURRENT AASHTO MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) CRASH TESTING CRITERIA AND HAVE AN FHWA ELIGIBILITY LETTER TO BE USED ON WOOD PROJECTS.

ONLY FHWA APPROVED GUARDRAIL SYSTEMS UTILIZING WOOD OR APPROVED ALTERNATE BLOCK-OUTS SHOWN ON THE DIVISION'S APPROVED SOURCE/PRODUCT LISTING SHALL BE USED. STEEL 'W' SHAPES SHALL NOT BE USED FOR BLOCK-OUTS. ONLY ONE TYPE OF BLOCK SHALL BE USED FOR BLOCK-OUTS THROUGHOUT ANY PROJECT, UNLESS OTHERWISE SPECIFIED.

BLOCKS FOR BLOCK-OUTS SHALL BE USED ON ALL POSTS EXCEPT WHEN OTHERWISE NOTED ON PLANS. WHEN BLOCKS ARE NOT PROVIDED, THE POST DETAILS WILL BE AS SHOWN HEREIN, EXCEPT THE 5/8" BOLT MINIMUM LENGTH WILL BE REDUCED AS REQUIRED, AND NAILS FOR BLOCK STABILITY WILL NOT BE NEEDED. FOR STEEL POSTS WITHOUT BLOCKS, DETAILS OF THE POSTS SHALL CONFORM TO THE 'STEEL GUARDRAIL POST (WOOD BLOCK)' DETAIL HEREIN, WITH THE ADDITIONAL HOLES (TO FACILITATE ERECTION) BEING OPTIONAL.

THE CIRCULAR WASHERS SHALL BE MADE OF STEEL AND GALVANIZED IN ACCORDANCE WITH THE REQUIREMENTS OF AASHTO M232.

STEEL POSTS:

BLOCKS SHALL BE CENTERED ON THEIR POSTS AND THE CENTER OF THE BLOCK HOLES. FOR BOLTS CONNECTING RAILS TO BLOCKS, SHALL BE HORIZONTALLY OFFSET 1-1/8" FROM THE CENTER OF THE STEEL POSTS TOWARD THE POST EDGE FACING APPROACHING TRAFFIC FOR BOTH POLYMER AND WOOD BLOCKS, AS SHOWN FOR WOOD BLOCKS ON THE PLAN VIEW OF THE BLOCK STOP DETAIL. POST LENGTH WILL BE 6" ± 1/2" UNLESS OTHERWISE NOTED.

WOOD BLOCKS:

THE TYPE (SPECIES) OF WOOD BLOCKS IS TO BE ONE OF THE TYPES (SPECIES) PERMITTED BY SPECIFICATIONS FOR WOOD POSTS. WOOD BLOCKS SHALL BE PRESSURE-TREATED IN CONFORMANCE WITH THE REQUIREMENTS FOR WOOD POSTS. HOWEVER, CREOSOTE OIL IS NOT PERMITTED AS A PRESERVATIVE IN THE PRESSURE TREATMENT OF WOOD BLOCKS TO BE ERICED ON STEEL POSTS. 6" x 6" WOOD BLOCKS SHALL BE POSITIONED SO THAT THE 6" x 14" FACES OF THE BLOCKS ARE THE CONTACT FACES FOR THE RAIL ELEMENTS AND THE POSTS IN ORDER TO ACHIEVE THE BLOCKOUT DIMENSION SHOWN. WHEN WOOD BLOCK IS USED ADJACENT TO A WOOD POST, THE BLOCK SHALL BE NAILED TO THE POST WITH A GALVANIZED STEEL 100 COMMON NAIL. THE NAIL IS TO BE DRIVEN INTO THE CENTER OF THE TOP OR BOTTOM OF THE BLOCK.

NOTES:

GUARDRAIL SYSTEMS ON NHS ROUTES MUST MEET NCHRP 350 OR THE MOST CURRENT AASHTO MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) CRASH TESTING CRITERIA AND HAVE AN ELIGIBILITY LETTER TO BE USED ON WOOD PROJECTS.

GUARDRAIL SHALL BE SECURED TO THE BLOCKS, POST AND OTHER ELEMENTS BY 5/8" DIA. BOLTS AND NUTS CONFORMING TO THE DETAILS ON SHIT, GR1 20F2 AND TO THE REQUIREMENTS OF 712.4 OF THE STANDARD SPECIFICATIONS. NUTS SHALL CONFORM TO ASTM 563, GRADE A OR BETTER.

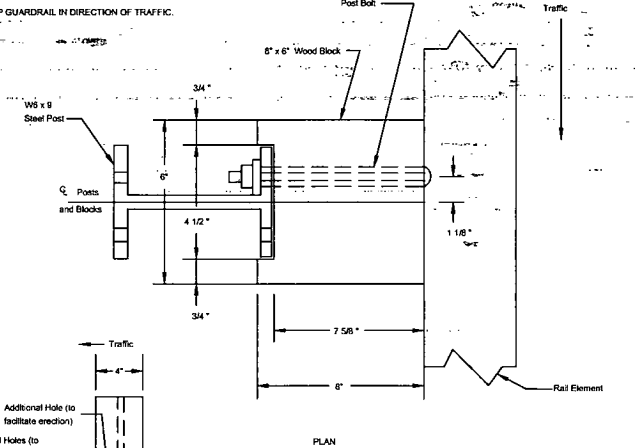
APPROACH AND TRAILING END TREATMENTS SHALL BE AS SPECIFIED ON THE PLANS OR DIRECTED BY THE ENGINEER. SHOWN OR

THE PAY QUANTITY OF GUARDRAIL WILL BE THE LINEAR FEET OF GUARDRAIL MEASURED ALONG THE FACE OF THE RAIL FROM CENTER TO CENTER OF END POSTS. COST OF THE TERMINAL SECTION BUFFER END (IF ANY) SHALL BE INCLUDED IN THE COST OF THE GUARDRAIL.

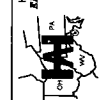
THE APPROACH SLOPE TO THE FACE OF ALL GUARDRAIL SHALL BE 10:1 OR FLATTER.

THE TYPE, CLASS, AND HEIGHT OF GUARDRAIL SHALL BE SHOWN IN THE PLANS.

LAP GUARDRAIL IN DIRECTION OF TRAFFIC.



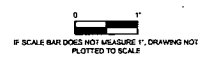
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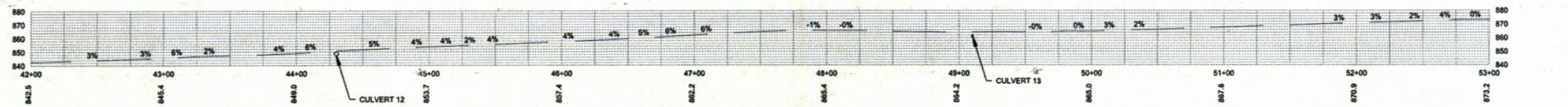
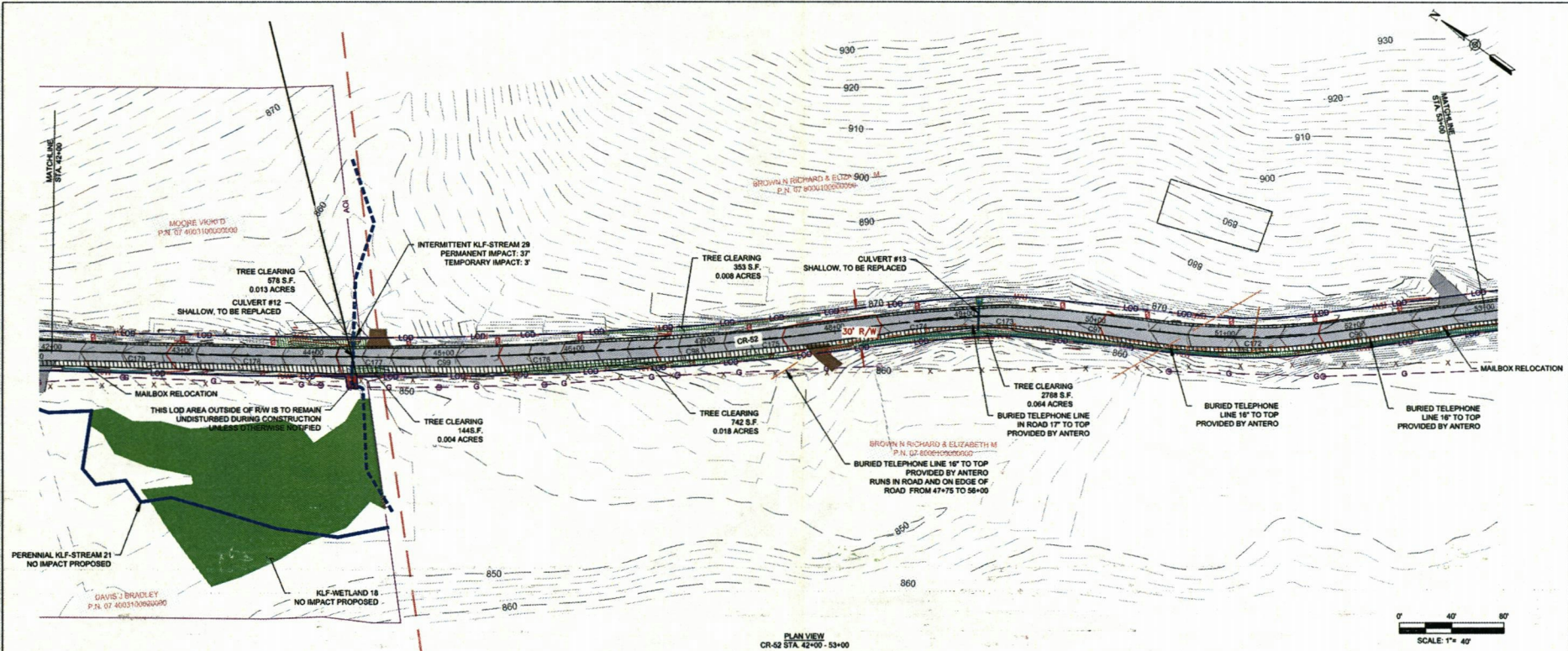


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DETAILS SHEET
SUGAR RUN ROAD (CR-52) ROADWAY IMPROVEMENTS
ANTERO RESOURCES
DISTRICT 4
DODDRIEGE COUNTY, WEST VIRGINIA





CURVE DATA TABLE

CURVE #	RADIUS	ARC LENGTH	DELTA ANGLE	TANGENT	MID ORDINATE	DEGREE OF CURVE	PI
C179	1000.00'	3.90'	0°13'25"	1.99'	0.00	5.4348	42+65.39
C178	1000.00'	15.84'	0°54'28"	7.92'	0.03	5.4348	43+53.49
C177	1000.00'	9.47'	0°32'33"	4.73'	0.01	5.4348	44+46.73
C176	1000.00'	30.81'	1°49'56"	15.41'	0.12	5.4348	45+74.82
C88	50.00'	1.34'	1°32'17"	0.67'	0.00	114.3530	46+90.22
C175	1000.00'	39.34'	2°15'14"	19.67'	0.19	5.4348	47+50.18
C174	1000.00'	59.39'	3°24'11"	29.71'	0.44	5.4348	37+03.40
C173	350.00'	31.57'	9°02'42"	15.82'	0.62	28.3852	49+30.78
C97	50.00'	0.79'	0°54'06"	0.39'	0.00	114.3530	50+00.16
C172	408.55'	95.94'	13°27'16"	48.19'	2.51	14.0127	51+21.84
C86	50.00'	0.29'	0°20'11"	0.19'	0.00	114.3530	51+99.98

Overhead Utility Clearance

Pole #	TO	Pole #	Station	Location	Height
UNMARKED	UNMARKED	50+73	CL	26'	
UNMARKED	UNMARKED	51+22	CL	28'	

Culvert Table

Culvert	Existing Culvert					Proposed Culvert					NOTES		
	Structure	Station	Length (FT.)	Slope	Cover (IN.)	Proposed Structure	Length (FT.)	Slope	Inlet FL Elevation	Outlet FL Elevation		Cover (IN.)	
12	36" CMP	44+30	20	3.1%	1	REPLACE	36" CPP	30	2.3%	847.0	846.7	6	N/A
13	18" RCP	49+10	20	9.5%	18	REPLACE	18" CPP	22	4.0%	861.6	860.7	14	Inlet

LEGEND

- ACI - AREA OF INTEREST
- R/W - RIGHT OF WAY
- LOD - ORIGINAL LIMITS OF DISTURBANCE
- EXISTING CONTOURS
- PROPOSED CONTOURS
- FEMA 100 YEAR FLOODPLAIN
- PROPERTY LINES
- TELEPHONE LINES
- OVERHEAD POWERLINES
- GAS LINES
- EXISTING GRAVEL ROADWAY
- EXISTING DIRT ROADWAY
- 18" FILTER SOCK
- PHASE 2 FENCING
- FENCE
- PROPOSED CULVERT
- EXISTING CULVERT
- PROPOSED ROADWAY
- JURISDICTIONAL DITCH
- INTERMITTENT STREAM
- PERENNIAL STREAM
- EPHEMERAL STREAM
- WETLAND
- EXISTING BUILDING
- GAS SYMBOL
- WATER MARKER
- MAILBOX
- ROCK CHECK DAM
- OUTLET PROTECTION
- TELEPHONE SYMBOL
- GUY WIRE
- TELEPHONE BOX
- ELECTRIC SYMBOL

FINAL PLAN

0 10 20
SCALE BAR DOES NOT MEASURE 1". DRAWING NOT PLOTTED TO SCALE

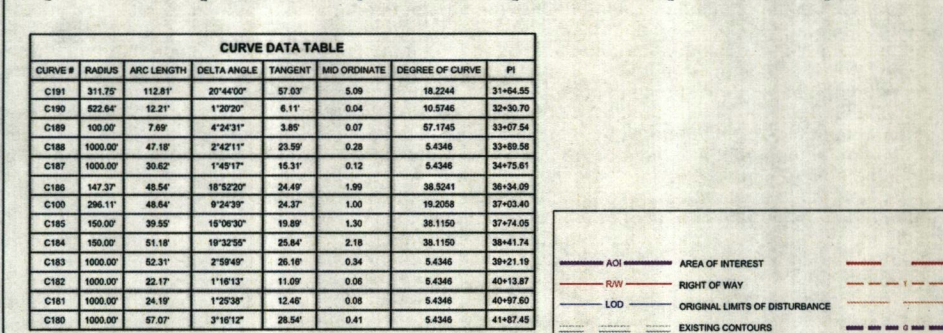
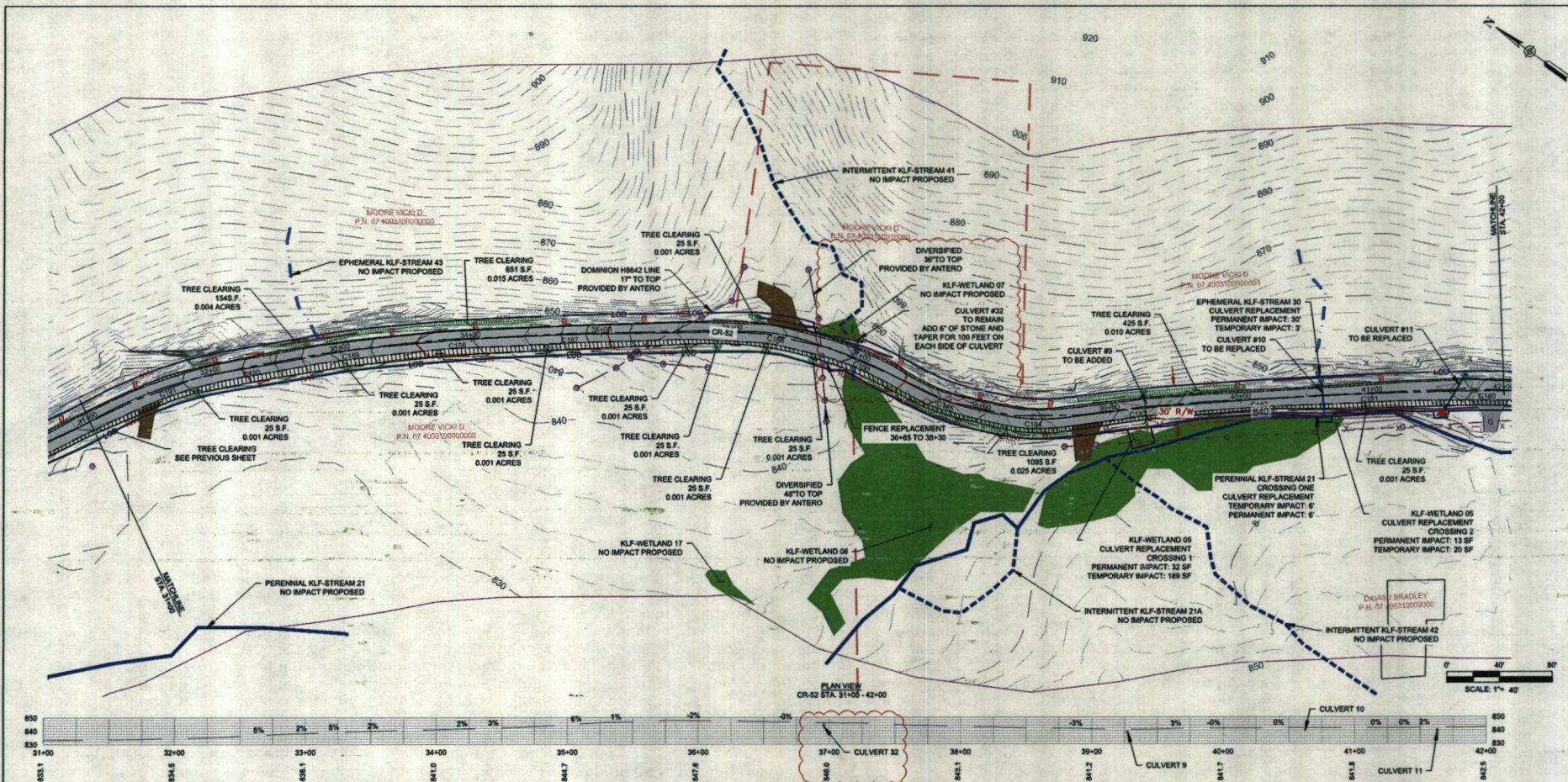
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141 WHEEL AVENUE
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Phone: (614) 949-1227
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DESIGN BY: JMB
DRAWN BY: JMB
CHECKED BY: JMB
DATE: 02/28/2028

REV BY: DATE: REVISIONS

STA. 42+00 TO 53+00
SUGAR RUN ROAD (CR-52) ROADWAY IMPROVEMENTS
ANTERO RESOURCES
DODDORGE COUNTY, WEST VIRGINIA



CURVE DATA TABLE							
CURVE #	RADIUS	ARC LENGTH	DELTA ANGLE	TANGENT	MID ORDINATE	DEGREE OF CURVE	PI
C191	311.75	112.81	20°44'00"	57.03	5.09	18.2244	31+64.55
C190	522.64	12.21	1°20'20"	6.11	0.04	10.5746	32+30.70
C189	100.00	7.89	4°24'31"	3.85	0.07	57.1745	33+07.54
C188	1000.00	47.18	2°42'11"	23.99	0.28	5.4346	33+89.58
C187	1000.00	30.62	1°45'17"	15.31	0.12	5.4346	34+75.81
C186	147.37	48.54	18°52'20"	24.49	1.99	38.5241	36+34.09
C100	296.11	48.64	9°24'39"	24.37	1.00	19.2008	37+03.40
C185	150.00	39.55	15°08'30"	19.89	1.30	38.1150	37+74.05
C184	150.00	51.18	19°32'59"	25.84	2.18	38.1150	38+41.74
C183	1000.00	52.31	2°59'40"	25.18	0.34	5.4346	38+21.19
C182	1000.00	22.17	1°16'13"	11.09	0.08	5.4346	40+13.87
C181	1000.00	24.19	1°29'38"	12.48	0.08	5.4346	40+87.60
C180	1000.00	57.07	3°16'12"	28.54	0.41	5.4346	41+87.45

Culvert Table													
Existing Culvert						Proposed Culvert							
Culvert	Existing Structure	Station	Length (FT.)	Slope	Cover (IN.)	Activity Proposed	Proposed Structure	Length (FT.)	Slope	Inlet FL Elevation	Outlet FL Elevation	Cover (IN.)	Notes
9	N/A	39-27	N/A	N/A	N/A	ADD	18" CPP	34	2.9	838.6	837.6	8.0	Shallow
10	8" STEEL	40-62	19	5.5%	12	REPLACE	18" CPP	28	3.9	839.2	838.1	14	
11	18" RCP	41-63	29	2.1%	10	REPLACE	18" CPP	33	1.5	839.7	839.2	9.6	Shallow
32	24" CPP	36-96	31	4.3%	9	TO REMAIN							

LEGEND

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- EXISTING BUILDING
- EXISTING WETLAND
- TELEPHONE SYMBOL
- GAS SYMBOL
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- MAILBOX
- ROCK CHECK DAM
- OUTLET PROTECTION
- GUY WIRE
- TELEPHONE BOX
- ELECTRIC SYMBOL

FINAL PLAN

0' 10' 20'
 1" = 40'
 SCALE BAR DOES NOT MEASURE 1" DRAWING NOT PLOTTED TO SCALE

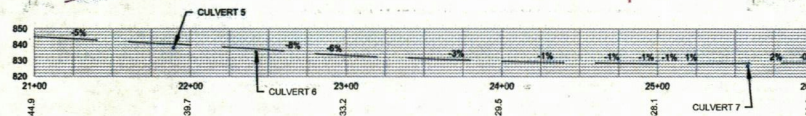
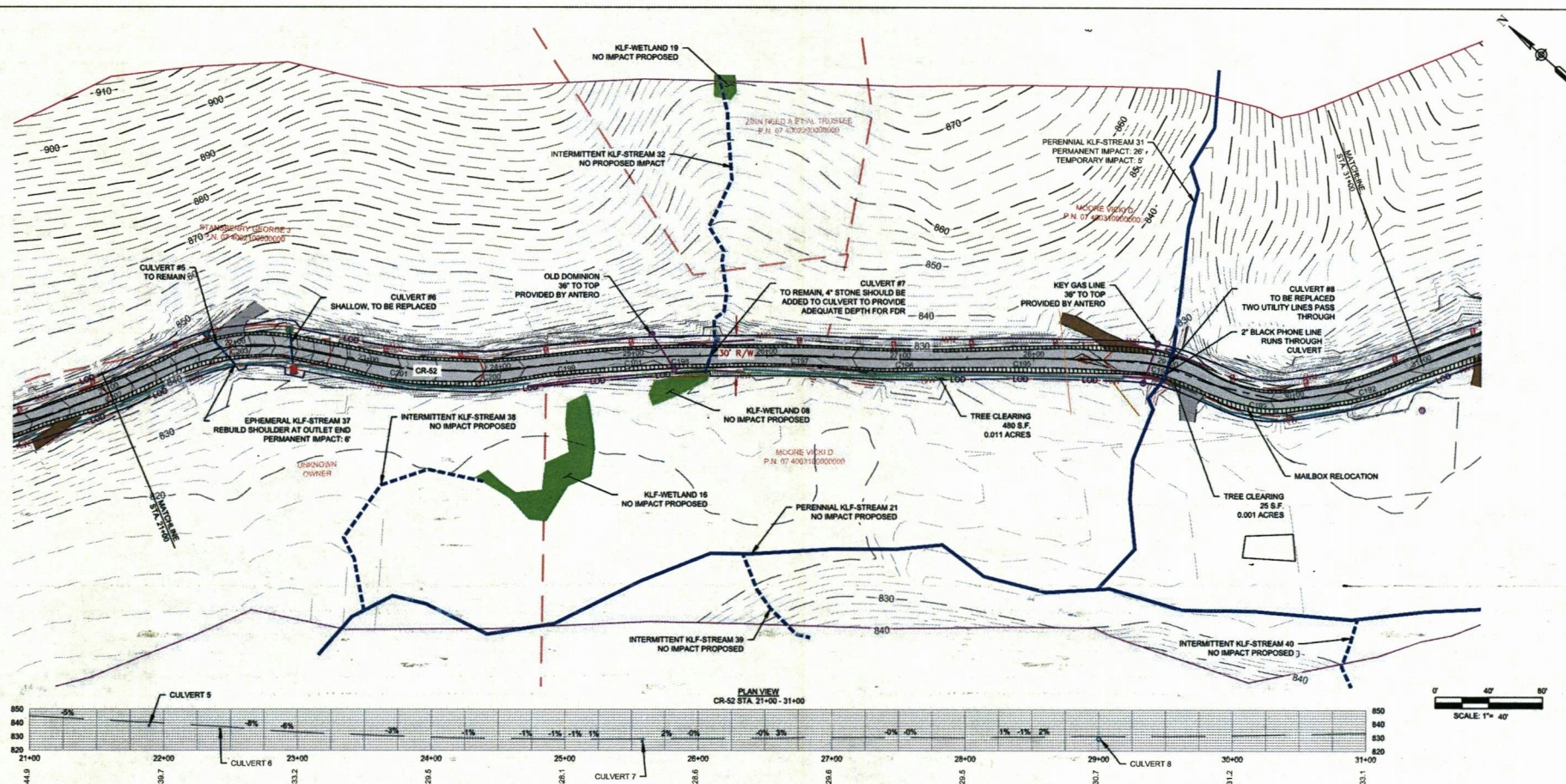
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 ST. CHARLES, MISSOURI 63070
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Antero Resources

DESIGN BY: JMB DATE: 05-18-2020 REVISION: CULVERT ELEV. ADDED
 DRAWN BY: JMB DATE: 05-18-2020
 FIELD BY: JMB DATE: 05-18-2020
 BK PR: JMB DATE: 05-18-2020

STA. 31+00 TO 42+00
 SUGAR RUN ROAD (CR-52) ROADWAY IMPROVEMENTS
 ANTERO RESOURCES
 DISTRICT 4
 DODDGE COUNTY, WEST VIRGINIA



CURVE #	RADIUS	ARC LENGTH	DELTA ANGLE	TANGENT	MID ORDINATE	DEGREE OF CURVE	PI
C202	500.00'	25.63'	2°56'13"	12.82'	0.16	11.2733	21+01.31
C203	135.05'	80.97'	34°21'09"	41.75'	6.02	42.2527	22+03.77
C201	313.25'	51.36'	9°23'39"	25.74'	1.05	18.1726	23+24.03
C200	150.00'	22.44'	8°34'11"	11.24'	0.42	38.1150	23+93.30
C199	500.00'	18.64'	2°09'32"	9.42'	0.09	11.2733	24+49.29
C101	50.00'	2.45'	2°48'45"	1.23'	0.02	114.3530	24+99.36
C198	500.00'	12.15'	1°23'33"	6.08'	0.04	11.2733	25+35.03
C197	500.00'	28.57'	3°16'27"	14.29'	0.20	11.2733	26+24.82
C196	1000.00'	70.99'	4°04'04"	35.51'	0.63	5.4346	27+03.12
C195	1000.00'	48.54'	2°46'51"	24.27'	0.29	5.4346	27+91.39
C194	143.12'	54.09'	21°39'14"	27.37'	2.55	40.0156	28+96.00
C193	78.12'	41.18'	30°12'16"	21.08'	2.07	73.2044	29+73.69
C192	350.60'	104.27'	17°02'23"	52.52'	3.87	16.2031	30+55.12

Pole #	TO	Pole #	Station	Location	Height
UNMARKED	UNMARKED	UNMARKED	28+23	CL	26'

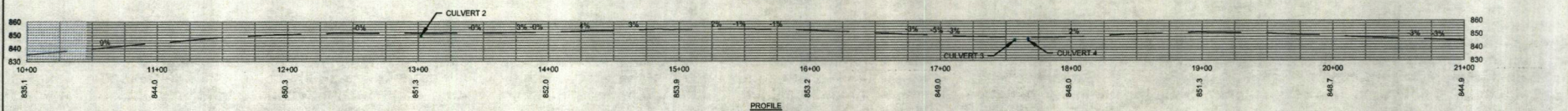
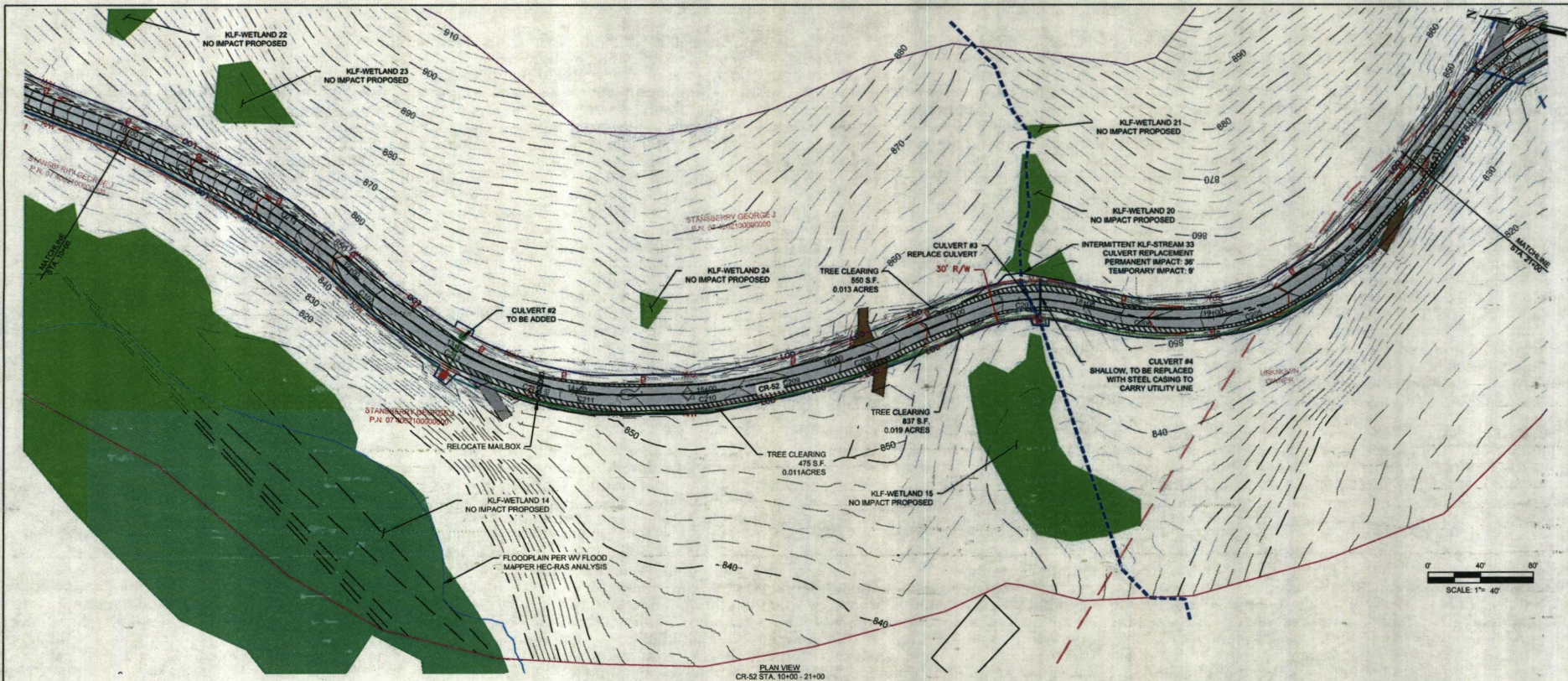
Culvert	Existing Culvert					Proposed Culvert					Notes		
	Existing Structure	Station	Length (FT.)	Slope	Cover (IN.)	Activity Proposed	Proposed Structure	Length (FT.)	Slope	Inlet FL Elevation		Outlet FL Elevation	Cover (IN.)
5	18" CPP	21+89	31	11.2%	16	TO REMAIN	N/A	N/A	N/A	N/A	N/A	N/A	Shallow
6	18" CPP	22+42	25	14.8%	6	REPLACE	18" CPP	28	3.9	835.1	834.0		Inlet
7	18" CPP	25+58	26	1.6%	10	TO REMAIN	N/A	N/A	N/A	N/A	N/A	N/A	Shallow
8	36" CPP	29+00	21	7.5%	1	REPLACE	36" CPP	26	2.0	827.6	827.1	2.5	Shallow

LEGEND

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- OUTLET PROTECTION

FINAL PLAN

1" SCALE BAR DOES NOT MEASURE 1". DRAWING NOT PLOTTED TO SCALE



CURVE #	RADIUS	ARC LENGTH	DELTA ANGLE	TANGENT	MID ORDINATE	DEGREE OF CURVE	PI
C216	1000.00'	81.17'	4°39'03"	40.61'	0.82	5.4346	9+99.37
C215	200.00'	4.68'	1°20'24"	2.34'	0.01	28.3652	10+51.51
C214	506.09'	141.29'	15°59'44"	71.11'	4.82	11.1917	11+38.86
C102	10.00'	1.31'	7°30'24"	0.66'	0.02	572.5728	12+21.77
C213	235.19'	56.84'	13°50'54"	28.56'	1.72	24.2143	13+00.86
C212	100.00'	16.09'	9°13'13"	8.08'	0.32	57.1745	13+65.53
C211	100.00'	22.29'	12°46'13"	11.19'	0.62	57.1745	14+07.23
C210	50.02'	9.56'	10°57'18"	4.80'	0.23	114.3226	14+99.87
C209	100.00'	6.27'	3°35'36"	3.14'	0.05	57.1745	15+64.79
C208	500.00'	58.30'	6°40'49"	29.16'	0.85	11.2733	16+21.40
C207	122.80'	76.79'	35°48'14"	39.70'	5.85	46.3934	17+54.55
C206	202.84'	61.76'	17°28'42"	31.12'	2.35	28.1451	18+46.58
C205	125.48'	63.13'	28°49'34"	32.25'	3.95	45.3942	19+30.72
C204	197.41'	62.29'	16°04'49"	31.41'	2.45	29.0125	20+17.16

Culvert	Existing Culvert					Activity Proposed	Proposed Culvert						
	Existing Structure	Station	Length (FT.)	Slope	Cover (IN.)		Proposed Structure	Length (FT.)	Slope	Inlet FL Elevation	Outlet FL Elevation	Cover (IN.)	Notes
2	N/A	13+02	N/A	N/A	N/A	ADD	18" CPP	29	3.4%	848.6	847.6	14.0	Inlet
3	18" CMP	17+57	19	4.1%	12	REPLACE	18" CPP	29	4.0%	845.4	844.3	8.5	Shallow
4	18" CMP	17+68	18	11.2%	1	REPLACE	6" Steel Casing	25	4.0%	845.9	844.9	14.0	Field ft

FINAL PLAN

IF SCALE BAR DOES NOT MEASURE 1" DRAWING NOT PLOTTED TO SCALE

LEGEND

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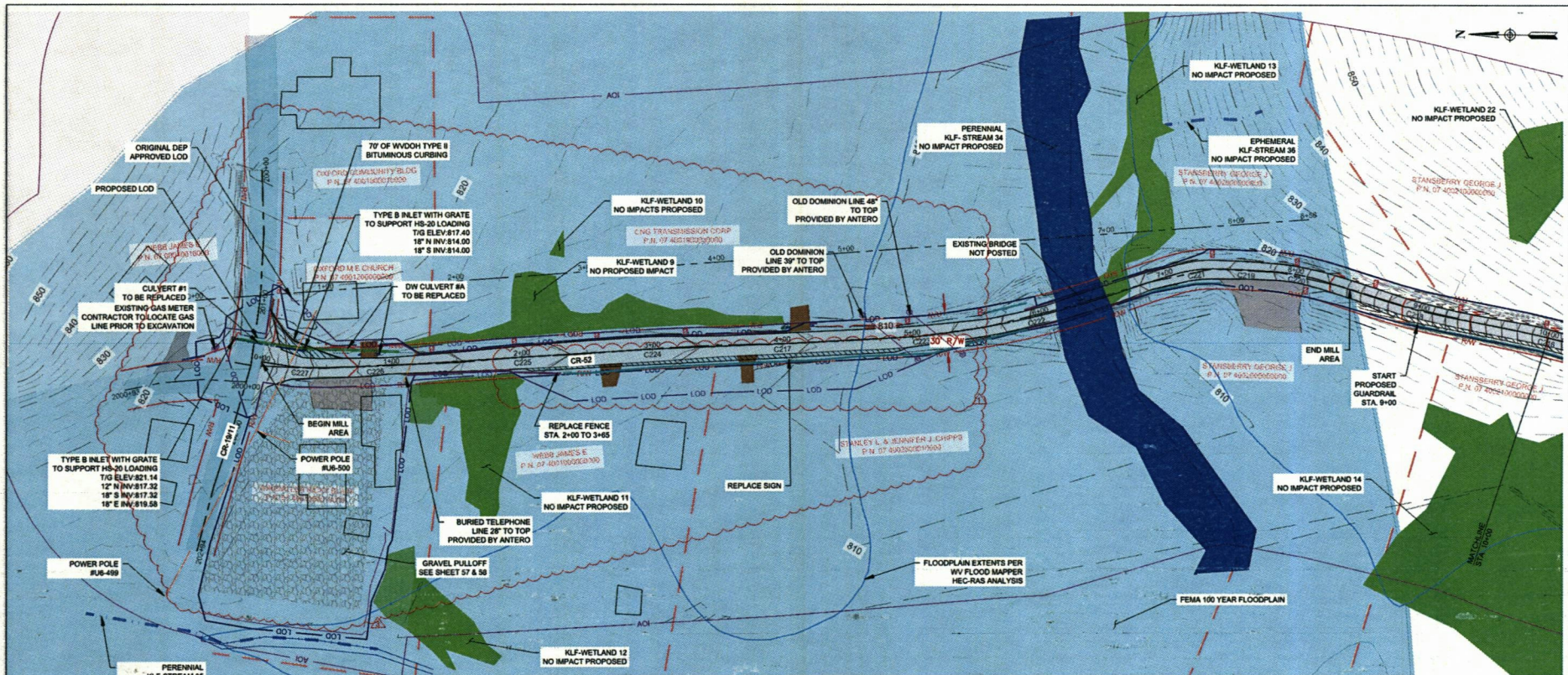
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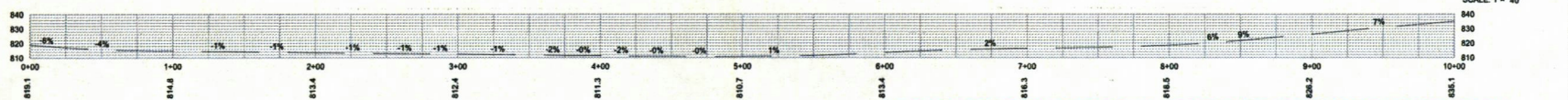
DESIGN BY: JMT
DRAWN BY: JMT
CHECKED BY: JMT
DATE: 02/28/2022

REVISIONS:
REV. BY: JMT
DATE: 02/28/2022
DESC: 100% FINAL

STA. 10+00 TO 21+00
SUGAR RUN ROAD (CR-52) ROADWAY IMPROVEMENTS
DISTRICT 1
DODDRIEGE COUNTY, WEST VIRGINIA



PLAN VIEW
CR-52 STA. 0+00 - 10+00



PROFILE
STA. 0+00 - 10+00
HORIZONTAL SCALE: 1"=40'
VERTICAL SCALE: 1"=40'

CURVE DATA TABLE							
CURVE #	RADIUS	ARC LENGTH	DELTA ANGLE	TANGENT	MID ORDINATE	DEGREE OF CURVE	PI
C227	103.54'	17.29'	9°33'55"	8.89'	0.36	55.2004	0+30.01
C228	1290.49'	83.70'	2°49'41"	31.89'	0.39	4.2623	0+87.42
C229	1000.00'	3.17'	0°16'54"	1.58'	0.00	5.4346	2+00.37
C224	480.72'	9.98'	1°11'19"	4.98'	0.03	11.5508	2+99.97
C217	50.00'	0.67'	0°49'48"	0.33'	0.00	114.3530	3+99.96
C223	227.39'	18.33'	4°33'10"	9.17'	0.18	25.1148	5+08.59
C222	699.82'	133.49'	10°59'48"	66.99'	3.18	8.1114	5+95.65
C221	100.00'	33.05'	18°56'06"	16.88'	1.38	57.1745	7+23.44
C219	147.14'	2.41'	0°56'23"	1.21'	0.00	38.5627	7+62.40
C220	183.44'	46.85'	14°38'00"	23.55'	1.49	31.1402	8+01.87
C218	523.00'	83.02'	8°54'14"	31.59'	0.95	10.5719	8+96.49

Overhead Utility Clearance				
Pole #	TO	Pole #	Station	Location
UNMARKED		US-500	0+22	LT EP

Culvert Table												
Culvert	Existing Culvert				Activity Proposed	Proposed Culvert						
	Station	Length (FT.)	Slope	Cover (IN.)		Proposed Structure	Length (FT.)	Inlet FL Elevation	Outlet FL Elevation	Cover (IN.)		
1	18' CPP	0+00	54	3.2%	22	REPLACE	18' CPP	55	3.6%	817.3	814.0	15.0
34		200+00				ADD	18' CPP	128	3.5%	822.5	817.3	15.0
A	12' CPP	0+80	16	5.3%		REPLACE	18' CPP	72	1.8%	814.0	812.7	
C	12' CPP	200+73	44	2.4%		REPLACE	12' CPP	70	3.6%	819.8	817.3	

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FINAL PLAN

IF SCALE BAR DOES NOT MEASURE 1" DRAWING NOT PLOTTED TO SCALE

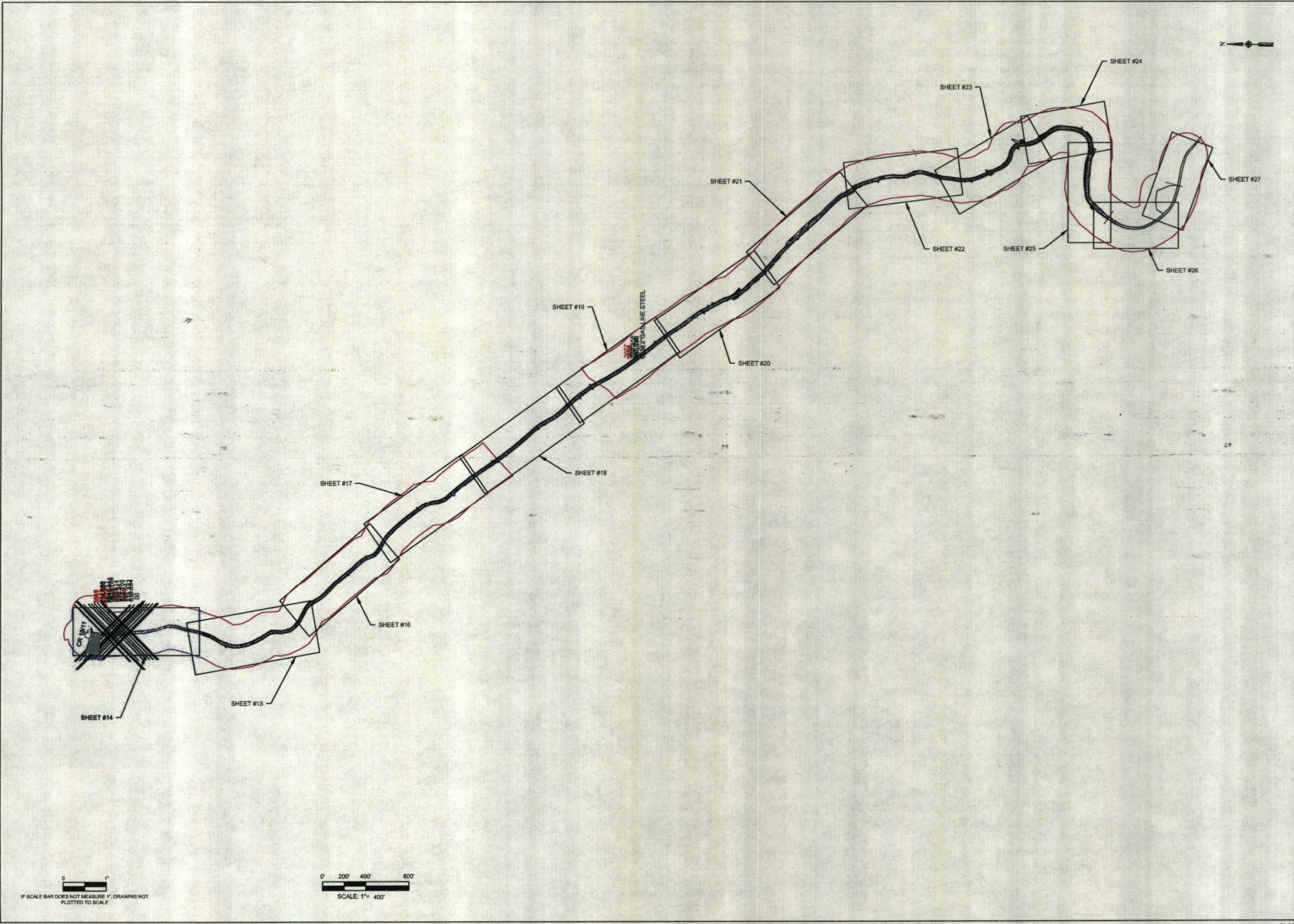
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101 WHEEL WALK
ST. CHARLES, MISSOURI 63305
PHONE: (314) 981-2227
WWW.HANCONTRREE.COM



REVISIONS

NO.	DATE	BY	DESCRIPTION
1	02/26/2022	AMB	ISSUE FOR CONSTRUCTION

STA. 0+00 TO 10+00
SUGAR RUN ROAD (CR-52) ROADWAY IMPROVEMENTS
ANTERO RESOURCES
DODDGE COUNTY, WEST VIRGINIA

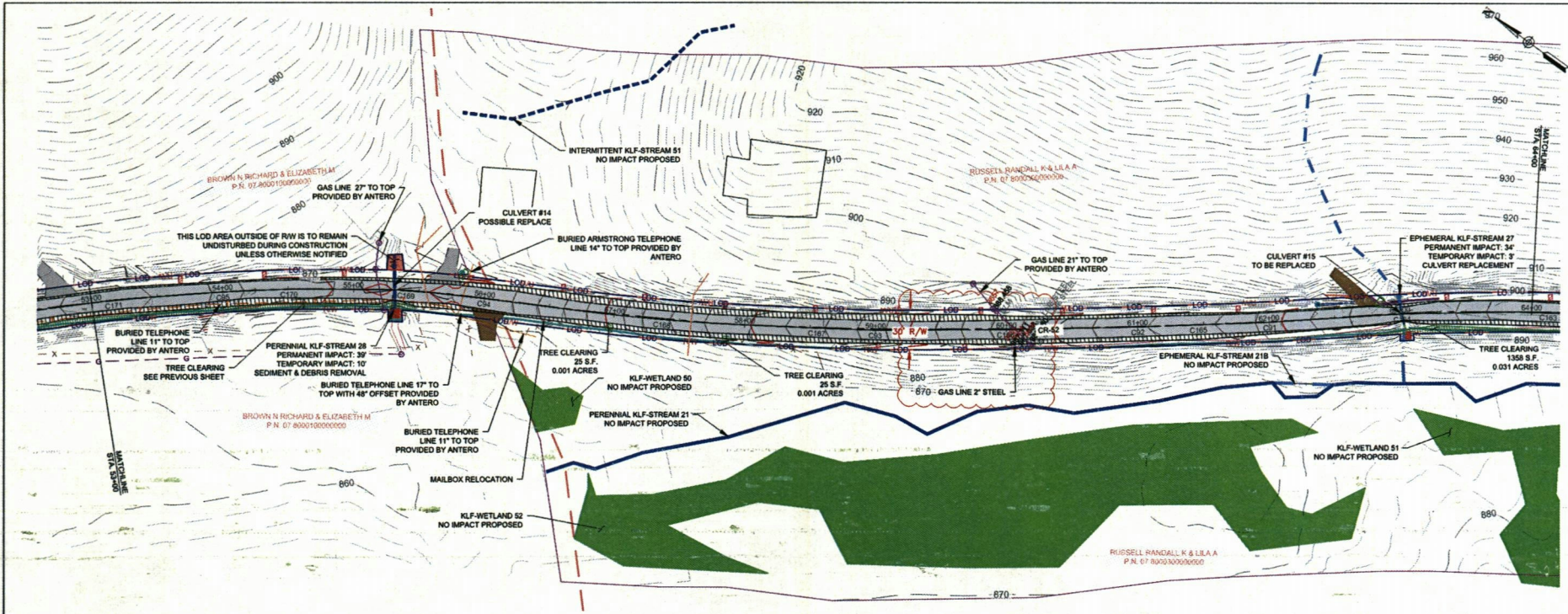


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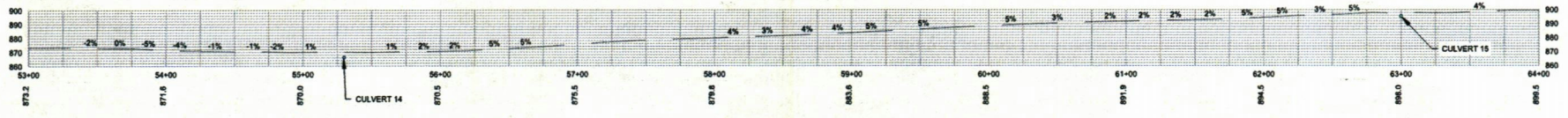
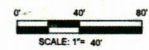


DESIGN BY:	DATE:	DESC:
JMT		
DRWN BY:	DATE:	DESC:
JMT		
TRWD BY:	DATE:	DESC:
JMR		
FLD BK:	DATE:	DESC:
CHK PC:	DATE:	DESC:
DATE:	DATE:	DATE:
02/28/2020		

OVERVIEW
SUGAR RUN ROAD (CR-52) ROADWAY IMPROVEMENTS
 ANTERO RESOURCES
 DISTRICT 4
 DODDORGE COUNTY, WEST VIRGINIA



PLAN VIEW
CR-52 STA. 53+00 - 64+00



PROFILE
STA. 53+00 - 64+00
HORIZONTAL SCALE: 1"=40'
VERTICAL SCALE: 1"=40'

CURVE DATA TABLE							
CURVE #	RADIUS	ARC LENGTH	DELTA ANGLE	TANGENT	MID ORDINATE	DEGREE OF CURVE	PI
C171	800.00'	30.16'	3°27'20"	18.00'	0.23	11.2733	53+18.13
C85	90.00'	1.41'	1°36'38"	0.70'	0.00	114.3530	53+99.97
C170	250.00'	12.07'	2°45'58"	8.04'	0.07	22.8508	54+50.81
C169	343.39'	36.29'	6°03'16"	18.16'	0.48	16.4108	55+40.22
C94	80.00'	0.94'	0°44'15"	0.32'	0.00	114.3530	56+00.12
C188	1900.00'	129.56'	4°38'24"	64.82'	1.31	3.3452	57+36.94
C187	1000.00'	6.99'	0°24'01"	3.49'	0.01	5.4346	58+55.16
C83	90.00'	2.07'	2°22'32"	1.04'	0.01	114.3530	58+99.83
C186	1000.00'	16.08'	0°58'17"	8.07'	0.03	5.4346	59+99.38
C92	80.00'	0.89'	0°58'10"	0.42'	0.00	114.3530	61+00.05
C165	900.00'	1.04'	0°07'08"	0.52'	0.00	11.2733	61+48.04
C81	90.00'	1.37'	1°34'06"	0.68'	0.00	114.3530	61+99.97
C184	900.00'	22.56'	2°35'06"	11.28'	0.13	11.2733	63+01.38

Overhead Utility Clearance				
Pole #	TO Pole #	Station	Location	Height
UNMARKED	U6-643	55+65	RT EP	20' 2"
UNMARKED	UNMARKED	57+56	RT EP	21' 10"

Culvert Table													
Culvert	Existing Culvert					Activity Proposed	Proposed Culvert						
	Existing Structure	Station	Length (FT.)	Slope	Cover (IN.)		Proposed Structure	Length (FT.)	Slope	Inlet FL Elevation	Outlet FL Elevation	Cover (IN.)	Notes
14	24" RCP	55+30	30	5.5%	24	REPLACE	24" CPP	32'	2%	N/A	N/A	15 MN.	N/A
15	24" RCP	63+00	21	4.2%	10	REPLACE	24" CPP	23'	3.9%	894.8	893.9	14	

FINAL PLAN

IF SCALE BAR DOES NOT MEASURE 1", DRAWING NOT PLOTTED TO SCALE

LEGEND

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ST. CHARLES, MO 63043
TEL: (314) 687-1237
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DESIGN BY: JMB DATE: 8-26-2021 DESC: ADDED GAS LINE
DRAWN BY: JMB DATE: 8-26-2021 DESC: ADDED GAS LINE
FIELD BY: JMB DATE: 8-26-2021 DESC: ADDED GAS LINE
CHK PLOT: JMB DATE: 8-26-2021 DESC: ADDED GAS LINE

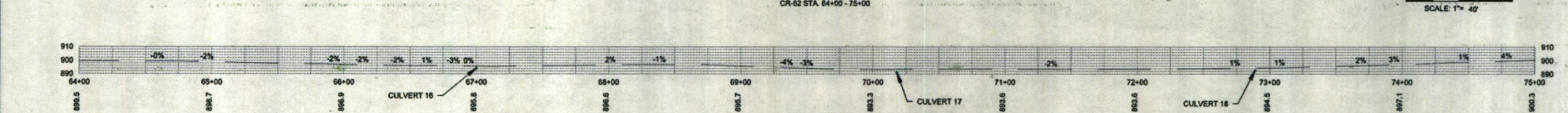
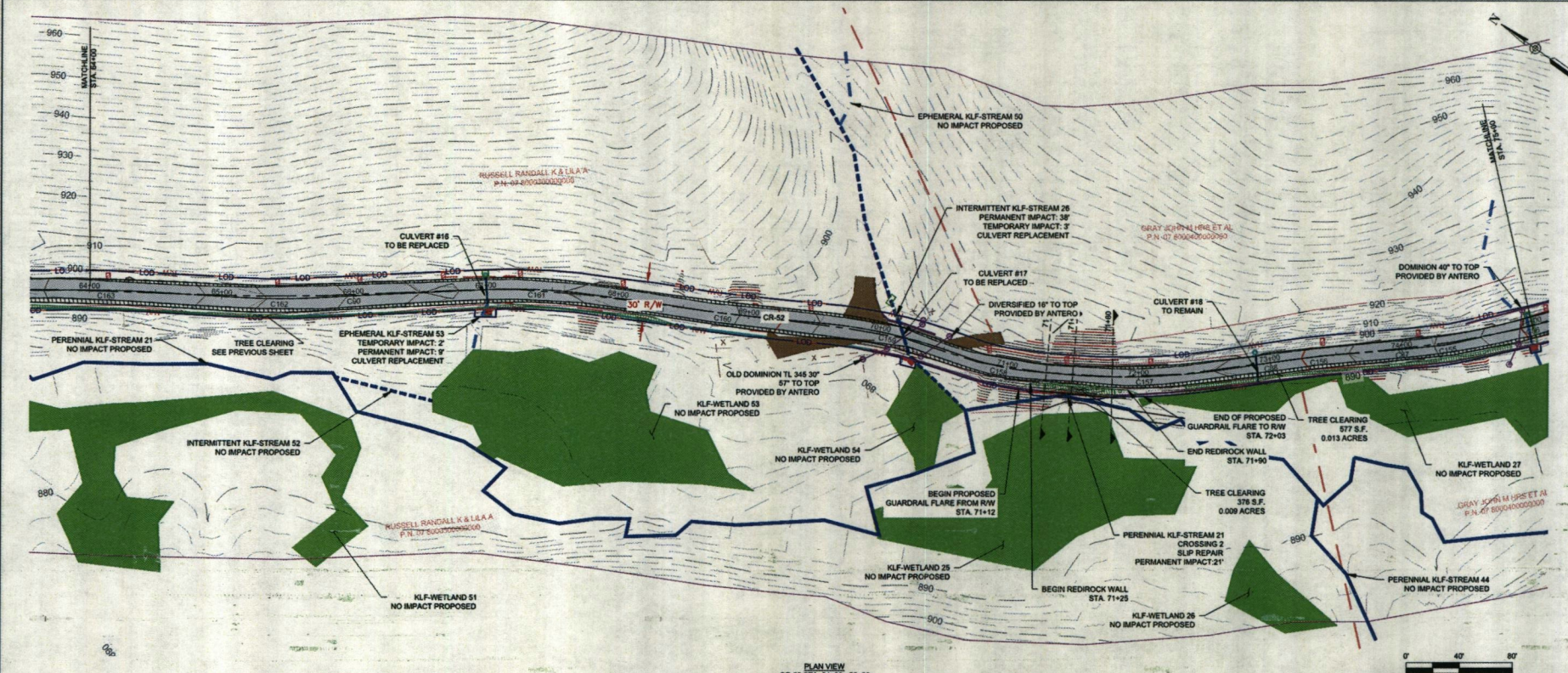
STA. 53+00 TO 64+00
SUGAR RUN ROAD (CR-52) ROADWAY IMPROVEMENTS
ANTERO RESOURCES
DISTRICT 1
DODDRIDGE COUNTY, WEST VIRGINIA



DESIGN BY:	DATE:	DESC:
DRAWN BY:	DATE:	DESC:
FIELD BY:	DATE:	DESC:
CHK BY:	DATE:	DESC:
DATE:	DATE:	DESC:

JUST	DATE:	DESC:
JUST	DATE:	DESC:
JUST	DATE:	DESC:
JUST	DATE:	DESC:

STA. 64+00 TO 75+00
 SUGAR RUN ROAD (CR-52) ROADWAY IMPROVEMENTS
 ANTERO RESOURCES
 DISTRICT 4
 DODDRIEGE COUNTY, WEST VIRGINIA



CURVE #	RADIUS	ARC LENGTH	DELTA ANGLE	TANGENT	MID ORDINATE	DEGREE OF CURVE	PI
C163	832.57	70.47	4°19'48"	35.25'	0.67	6.0838	64+12.65
C162	500.00	57.14	6°32'52"	28.60'	0.82	11.2733	65+43.81
C90	50.00	0.43	0°29'37"	0.22'	0.00	114.3530	66+89.99
C161	425.10	75.39	10°09'43"	37.80'	1.87	13.2842	67+38.07
C89	50.00	1.44	1°39'05"	0.72'	0.01	114.3530	68+30.65
C160	1071.48	71.12	3°48'11"	35.57'	0.99	5.2050	68+80.81
C159	407.92	98.84	13°51'18"	49.56'	2.98	14.0248	70+06.92
C158	219.84	64.13	14°06'25"	27.20'	1.86	26.0348	70+84.61
C157	900.00	119.28	13°40'06"	58.92'	3.55	11.2733	72+04.74
C88	50.00	0.80	0°54'43"	0.40'	0.00	114.3530	72+99.98
C156	500.00	26.85	3°04'38"	13.43'	0.18	11.2733	73+36.60
C87	50.00	0.94	1°04'38"	0.47'	0.00	114.3530	73+98.91
C155	76.84	9.08	8°44'48"	4.53'	0.13	74.2802	74+34.19
C86	50.00	1.85	2°14'02"	0.97'	0.01	114.3530	74+99.53

Culvert	Existing Culvert				Activity Proposed	Proposed Culvert				Notes			
	Station	Length (FT.)	Slope	Cover (IN.)		Proposed Structure	Length (FT.)	Slope	Inlet FL Elevation		Outlet FL Elevation		
16	15' CMP	67+00	20	6.7%	1	REPLACE	18' CPP	28	3.9%	893.1	892.0	14	Inlet
17	15' CPP	70+18	21	5.2%	18	REPLACE	18' CPP	33	3.9%	890.7	888.4	14	
18	15' CPP	72+88	20	4.4%	10	TO REMAIN	N/A	N/A	N/A	N/A	N/A	N/A	Shallow

FINAL PLAN

1" = 40'

IF SCALE BAR DOES NOT MEASURE 1", DRAWING NOT PLOTTED TO SCALE

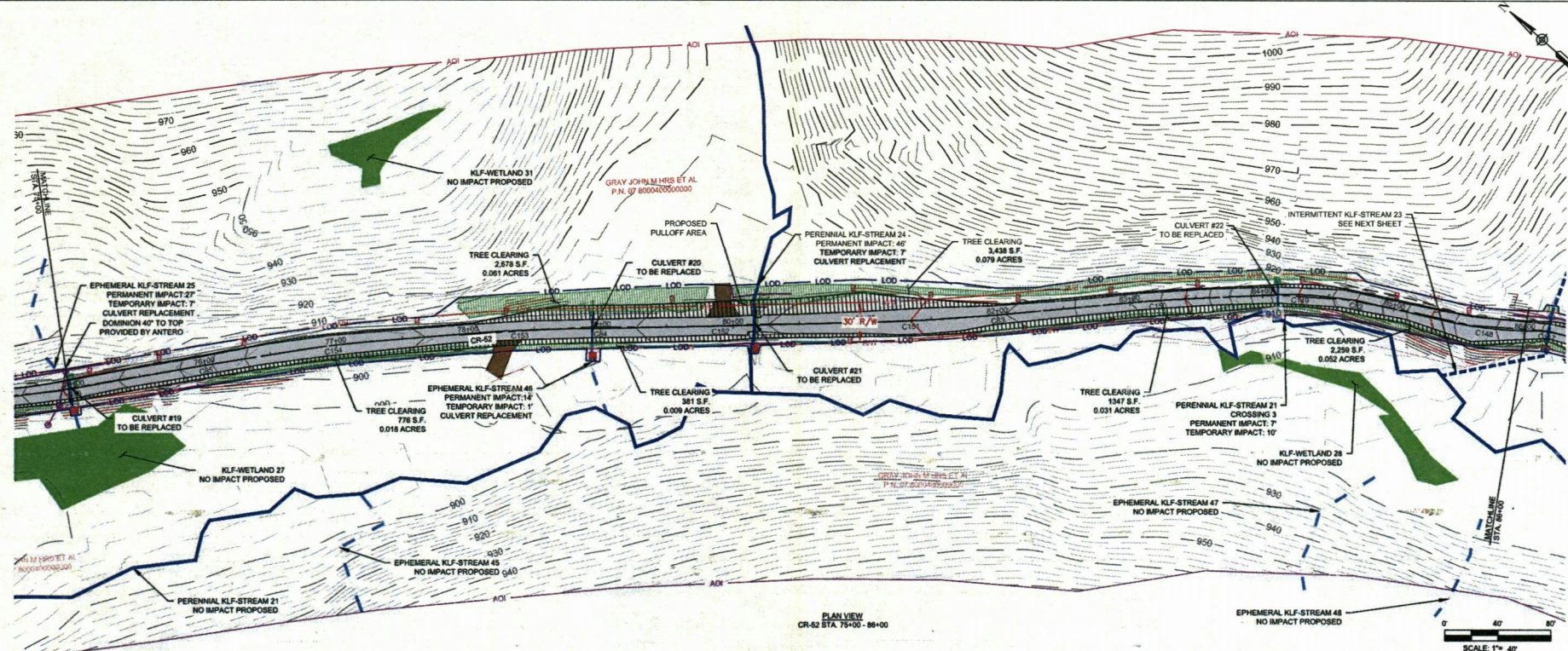
LEGEND

- ACI - AREA OF INTEREST
- R/W - RIGHT OF WAY
- LOD - ORIGINAL LIMITS OF DISTURBANCE
- EXISTING CONTOURS
- PROPOSED CONTOURS
- FEMA 100 YEAR FLOODPLAIN
- PROPERTY LINES
- TELEPHONE LINES
- OVERHEAD POWERLINES
- GAS LINES
- EXISTING GRAVEL ROADWAY
- EXISTING DIRT ROADWAY
- 18" FILTER SOCK
- PHASE 2 FENCING
- FENCE
- EXISTING CULVERT
- PROPOSED ROADWAY
- JURISDICTIONAL DITCH
- INTERMITTENT STREAM
- PERENNIAL STREAM
- EPHEMERAL STREAM
- WETLAND
- EXISTING BUILDING
- GAS SYMBOL
- WATER MARKER
- MAILBOX
- ROCK CHECK DAM
- OUTLET PROTECTION
- TELEPHONE SYMBOL
- GUY WIRE
- TELEPHONE BOX
- ELECTRIC SYMBOL

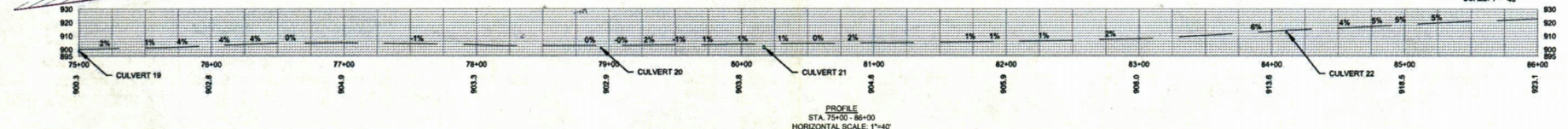
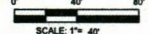


DESIGN BY:	DATE:	DESIGN BY:	DATE:
DRWN BY:	DATE:	DRWN BY:	DATE:
CHKD BY:	DATE:	CHKD BY:	DATE:
APP'D BY:	DATE:	APP'D BY:	DATE:

STA. 75+00 TO 86+00
 SUGAR RUN ROAD (CR-52) ROADWAY IMPROVEMENTS
 ANTERO RESOURCES
 DISTRICT 4
 DODDRIEGE COUNTY, WEST VIRGINIA



PLAN VIEW
 CR-52 STA. 75+00 - 86+00



PROFILE
 STA. 75+00 - 86+00
 HORIZONTAL SCALE: 1"=40'
 VERTICAL SCALE: 1"=40'

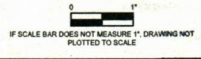
CURVE #	RADIUS	ARC LENGTH	DELTA ANGLE	TANGENT	MID ORDINATE	DEGREE OF CURVE	PI
C85	50.00'	5.33'	6°06'13"	2.67'	0.07	114.3530	76+00.14
C154	668.51'	49.91'	4°16'41"	24.97'	0.47	8.3415	76+97.45
C153	1098.85'	78.27'	4°04'52"	39.15'	0.70	5.1251	78+38.89
C152	1466.43'	5.31'	0°12'26"	2.66'	0.00	3.5357	79+90.40
C151	1081.75'	52.68'	2°47'25"	26.35'	0.32	5.1748	81.33.81
C83	50.00'	0.92'	1°03'11"	0.46'	0.00	114.3530	82+00.03
C150	1000.00'	43.70'	2°30'14"	21.85'	0.24	5.4346	83+20.85
C149	250.00'	41.25'	9°27'14"	20.67'	0.85	22.5906	84+28.52
C82	50.00'	0.66'	0°46'44"	0.34'	0.00	114.3530	84+71.55
C148	300.01'	61.71'	11°47'07"	30.96'	1.59	19.0553	85+89.91

Culvert	Existing Culvert				Activity Proposed	Proposed Culvert					Notes		
	Existing Structure	Station	Length (FT.)	Slope		Proposed Structure	Length (FT.)	Slope	Inlet FL Elevation	Outlet FL Elevation		Cover (IN.)	
19	12" CMP	75+00	20	2.9%	5	REPLACE	18" CPP	23	3.0	897.2	896.5	14	Inlet
20	12" CMP	78+94	20	1.5%	10	REPLACE	18" CPP	39	1.8%	900.0	899.3	14	
21	24" CMP	80+17	20	6.3%	16	REPLACE	24" CPP	41	2.4%	901.0	900.0	8	Shallow
22	18" CMP	84+11	21	9.1%	1	REPLACE	18" CPP	26	3.8%	911.7	910.7	14	Inlet

LEGEND

- AOI — AREA OF INTEREST
- R/W — RIGHT OF WAY
- LOO — ORIGINAL LIMITS OF DISTURBANCE
- — — EXISTING CONTOURS
- — — PROPOSED CONTOURS
- — — FEMA 100 YEAR FLOODPLAIN
- — — PROPERTY LINES
- — — TELEPHONE LINES
- — — OVERHEAD POWERLINES
- — — GAS LINES
- — — EXISTING GRAVEL ROADWAY
- — — EXISTING DIRT ROADWAY
- — — 18" FILTER SOCK
- — — JURISDICTIONAL DITCH
- — — INTERMITTENT STREAM
- — — PERENNIAL STREAM
- — — EPHEMERAL STREAM
- — — EXISTING CULVERT
- — — PROPOSED CULVERT
- — — PROPOSED ROADWAY
- — — EXISTING BUILDING
- — — GAS SYMBOL
- — — WATER MARKER
- — — MAILBOX
- — — ROCK CHECK DAM
- — — OUTLET PROTECTION
- — — TELEPHONE SYMBOL
- — — GUY WIRE
- — — TELEPHONE BOX
- — — ELECTRIC SYMBOL

FINAL PLAN

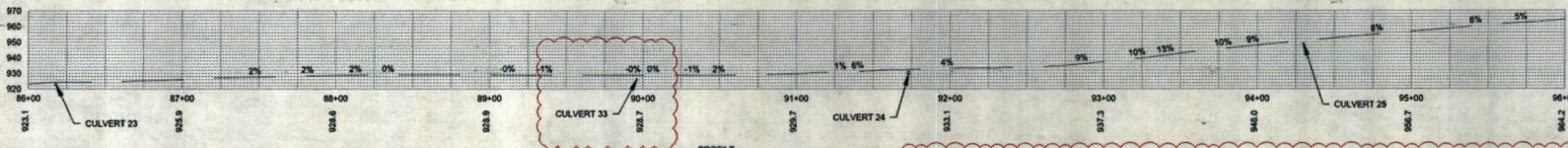
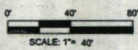
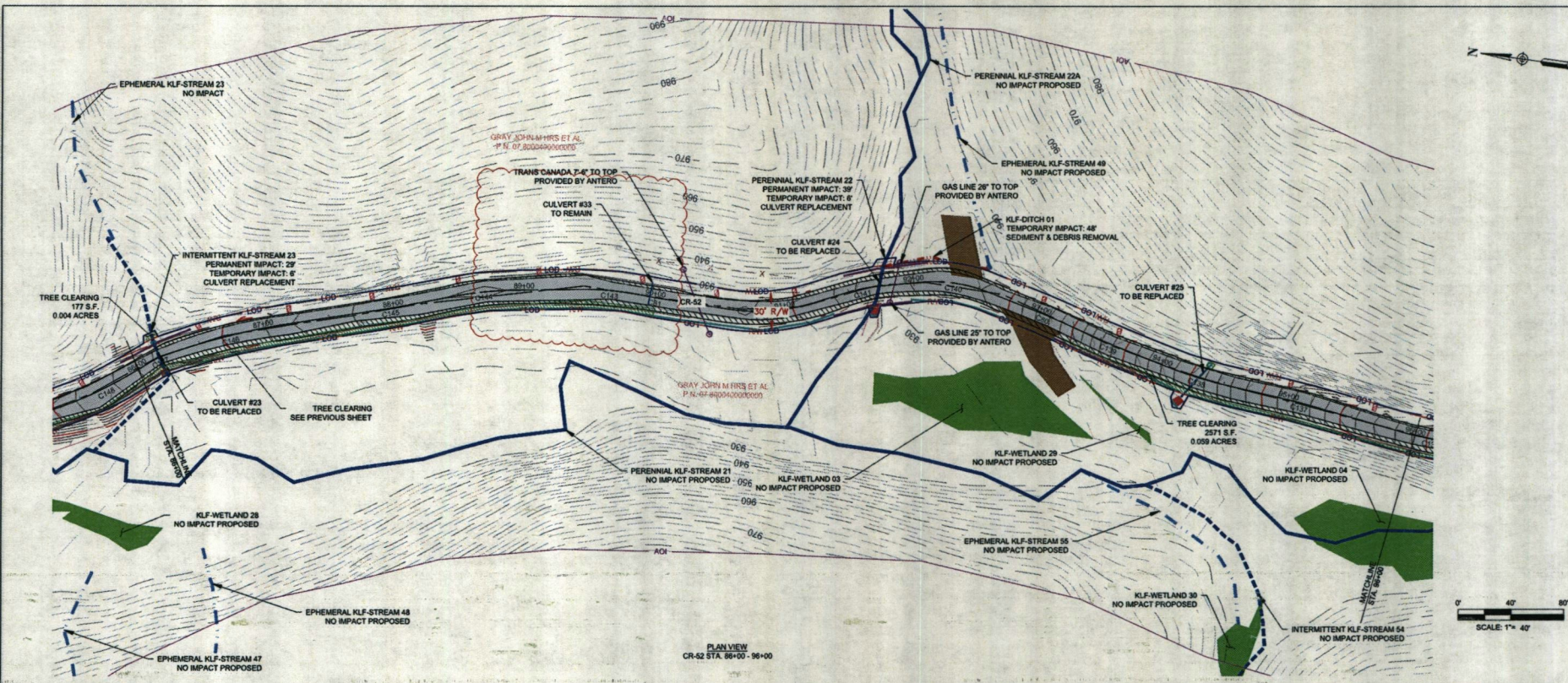




CULVERT #33 ADDRESS

DESIGN BY:	JMB	DATE:	08-18-2023
DRAWN BY:	JMB	DATE:	
REVIEW BY:	JMB	DATE:	
FIELD BY:		DATE:	
CHK BY:		DATE:	
DATE:	02/28/2024		

STA. 86+00 TO 96+00
 SUGAR RUN ROAD (CR-52) ROADWAY IMPROVEMENTS
 ANTERO RESOURCES
 DISTRICT 7
 DODDRIEGE COUNTY, WEST VIRGINIA



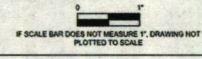
CURVE #	RADIUS	ARC LENGTH	DELTA ANGLE	TANGENT	MID ORGINATE	DEGREE OF CURVE	PI
C147	59.59'	13.53'	13°00'29"	6.79'	0.38	06.0827	86+17.11
C146	800.00'	90.87'	10°24'46"	45.56'	2.06	11.2733	86+73.70
C145	903.03'	20.41'	2°19'29"	10.21'	0.10	11.2324	87+97.00
C144	280.43'	49.50'	10°07'25"	24.85'	1.09	20.2553	88+08.16
C143	222.21'	45.10'	11°37'41"	22.63'	1.14	25.4702	89+05.32
C81	50.00'	1.80'	2°03'39"	0.90'	0.01	114.3530	90+00.13
C142	147.46'	67.33'	26°09'41"	34.26'	3.83	38.5123	90+90.05
C141	137.06'	28.30'	11°49'55"	14.20'	0.73	41.4811	91+59.85
C140	113.22'	53.49'	27°04'01"	27.25'	3.14	50.3823	92+31.26
C80	500.00'	1.85'	2°07'11"	0.93'	0.01	114.3530	93+03.39
C139	500.00'	18.34'	2°06'04"	9.17'	0.08	11.2733	93+58.10
C138	300.00'	45.24'	8°38'28"	22.66'	0.85	19.0555	94+29.78
C137	500.00'	26.18'	2°59'58"	13.09'	0.17	11.2733	95+09.88

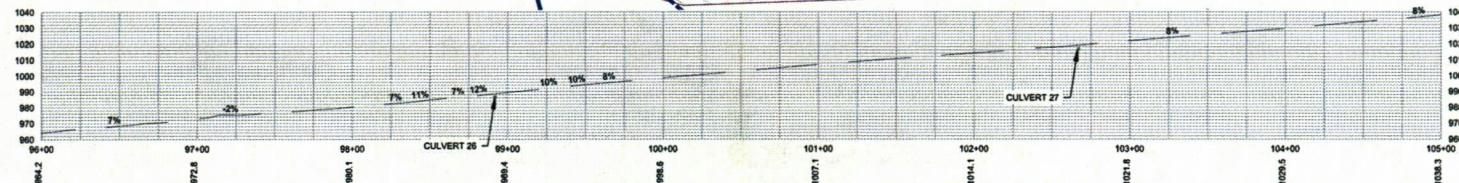
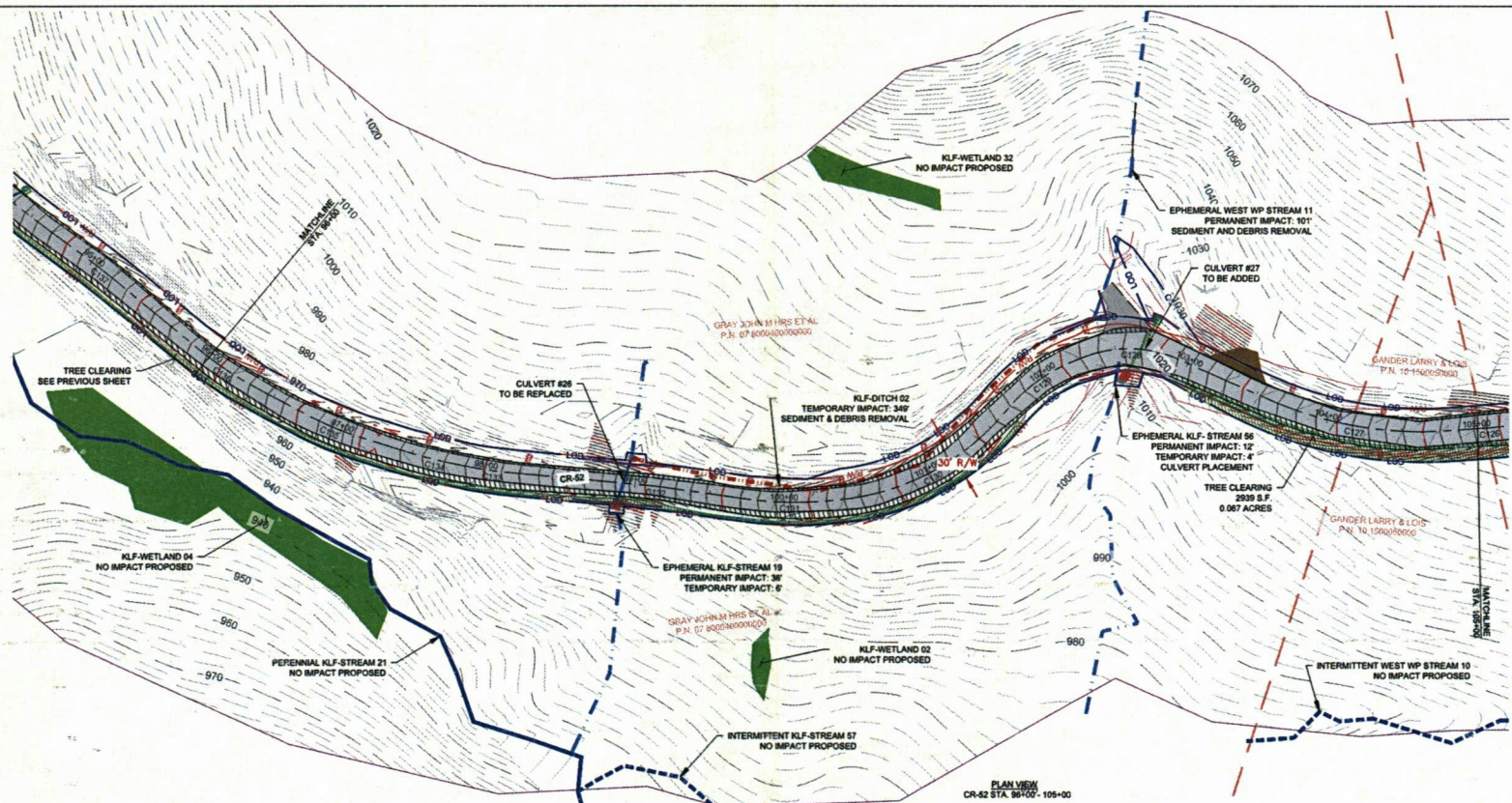
Culvert	Existing Culvert			Activity Proposed	Proposed Culvert				Notes				
	Station	Length (FT.)	Slope		Proposed Structure	Length (FT.)	Slope	Inlet FL Elevation		Outlet FL Elevation			
23	24" CMP	86+18	22	2.1%	8	REPLACE	24" CPP	24	2.1%	921.7	921.2	6	Shallow
24	24" RCP	91+73	25	2.3%	15	REPLACE	24" CPP	33	2.1%	929.7	929.0	9	Shallow
25	15" CPP	94+30	31	7.9%	5	REPLACE	18" CPP	32	3.7%	948.2	947.0	14	Inlet
33	8" STEEL	89+98	17	0.5%	26	TO REMAIN							

LEGEND

ACI	AREA OF INTEREST	PROPERTY LINES	18" FILTER SOCK	PROPOSED ROADWAY	EXISTING BUILDING	TELEPHONE SYMBOL
RWY	RIGHT OF WAY	TELEPHONE LINES	JURISDICTIONAL DITCH	GAS SYMBOL	GUY WIRE	ELECTRIC SYMBOL
LOD	ORIGINAL LIMITS OF DISTURBANCE	OVERHEAD POWERLINES	INTERMITTENT STREAM	WATER MARKER	TELEPHONE BOX	
EXISTING CONTOURS	GAS LINES	FENCE	PERENNIAL STREAM	MAILBOX	ROCK CHECK DAM	
PROPOSED CONTOURS	EXISTING GRAVEL ROADWAY	PROPOSED CULVERT	EPHEMERAL STREAM	OUTLET PROTECTION		
FEMA 100 YEAR FLOODPLAIN	EXISTING DIRT ROADWAY	EXISTING CULVERT	WETLAND			

FINAL PLAN





CURVE DATA TABLE							
CURVE #	RADIUS	ARC LENGTH	DELTA ANGLE	TANGENT	MID ORDINATE	DEGREE OF CURVE	PI
C136	250.00'	47.51'	10°52'16"	23.83'	1.13	22.5506	96+13.07
C135	200.00'	38.03'	10°53'46"	19.07'	0.90	28.3852	96+93.83
C134	400.00'	51.81'	7°25'19"	25.94'	0.84	14.1926	97+66.45
C133	200.00'	15.82'	4°28'31"	7.81'	0.15	28.3852	96+04.97
C132	200.00'	9.08'	2°30'05"	4.54'	0.05	28.3852	99+14.10
C131	248.00'	59.76'	13°46'15"	30.02'	1.80	23.0603	100+03.52
C130	183.82'	122.85'	43°01'13"	64.48'	11.40	35.0107	101+03.57
C129	106.30'	51.16'	27°34'25"	26.08'	3.06	53.5404	101+95.71
C128	83.19'	65.49'	45°06'34"	34.53'	6.36	68.5435	102+82.83
C127	250.00'	120.29'	27°34'06"	61.33'	7.20	22.5506	104+20.07
C126	250.00'	8.73'	2°00'05"	4.37'	0.04	22.5506	105+07.91

Culvert Table													
Culvert	Existing Culvert					Proposed Culvert							
	Existing Structure	Station	Length (FT.)	Slope	Cover (IN.)	Activity Proposed	Proposed Structure	Length (FT.)	Slope	Inlet FL Elevation	Outlet FL Elevation	Cover (IN.)	Notes
26	18" CMP	96+92	27	4.8%	12	REPLACE	16" CPP	30	4.0%	986.4	955.2	14	
27	N/A	102+47	N/A	N/A	N/A	ADD	16" CPP	38	4.0%	1018.4	1014.8	14	Inlet

LEGEND

- AOI - AREA OF INTEREST
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- PROPERTY LINES
- TELEPHONE LINES
- OVER-HEAD POWERLINES
- GAS LINES
- EXISTING GRAVEL ROADWAY
- EXISTING DIRT ROADWAY
- 18" FILTER SOCK
- PHASE 2 FENCING
- FENCE
- PROPOSED CULVERT
- EXISTING CULVERT
- PROPOSED ROADWAY
- JURISDICTIONAL DITCH
- INTERMITTENT DITCH
- PERENNIAL STREAM
- EPHEMERAL STREAM
- EXISTING BUILDING
- GAS SYMBOL
- WATER MARKER
- MAILBOX
- ROCK CHECK DAM
- OUTLET PROTECTION
- TELEPHONE SYMBOL
- GUY WIRE
- TELEPHONE BOX
- ELECTRIC SYMBOL
- WETLAND

FINAL PLAN

IF SCALE BAR DOES NOT MEASURE 1" DRAWING NOT PLOTTED TO SCALE

HAMMONTREE & ASSOCIATES, LTD.
ENGINEERS, PLANNERS, SURVEYORS
1400 W. MAIN AVENUE
ST. CHARLES, MO 63043
PH: (636) 938-2227
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DESIGN BY: JMS
DRAWN BY: JMS
FIELD BY: JMS
CHECK BY: JMS
DATE: 02/26/2025

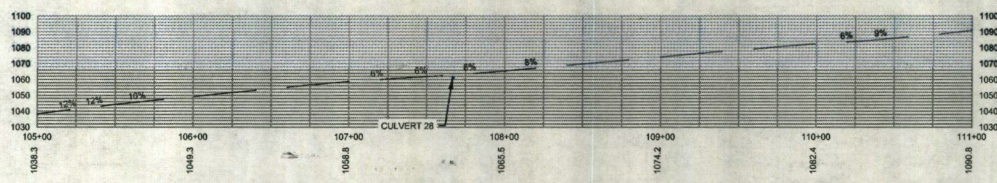
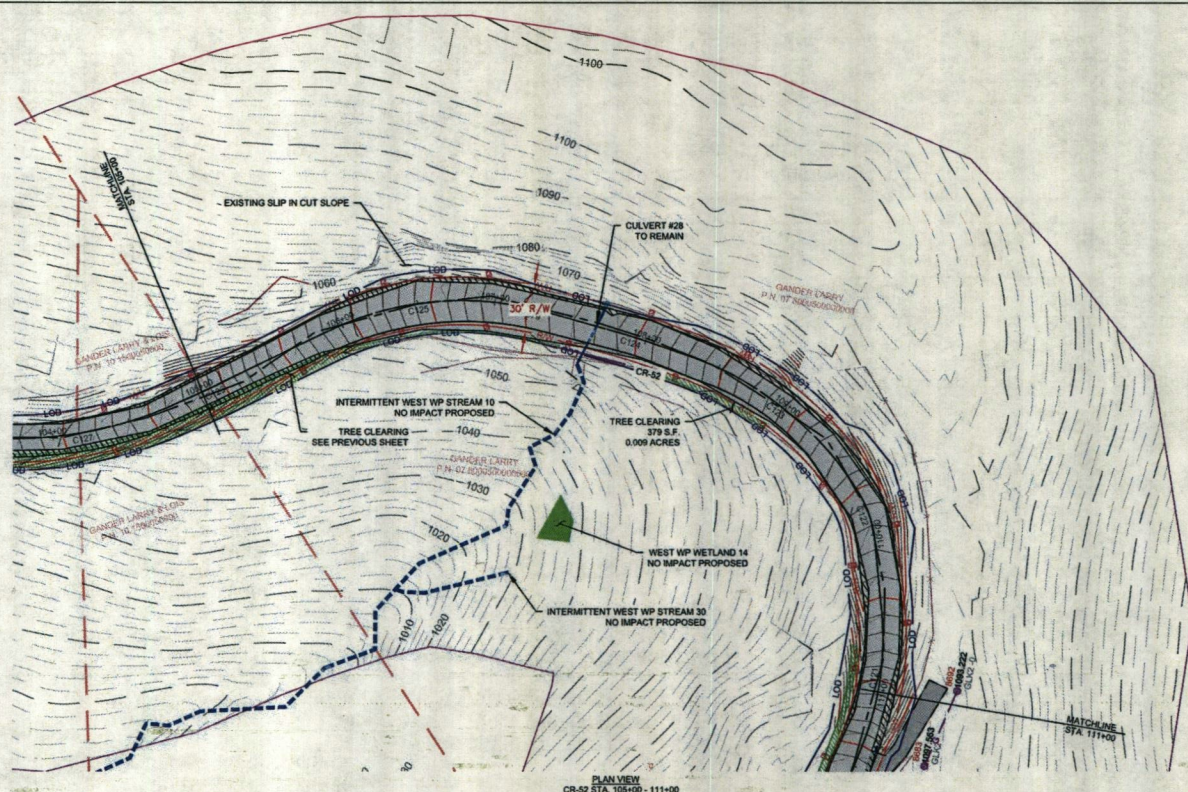
REVISIONS:

NO.	DATE	DESCRIPTION
1	02/26/2025	ISSUE FOR PERMITTING

STA. 96+00 TO 105+00
SUGAR RUN ROAD (CR-52) ROADWAY IMPROVEMENTS
ANTERO RESOURCES
DISTRICT 4
DODDRIEGE COUNTY, WEST VIRGINIA

23

PLOT DATE: January 31, 2025



PROFILE
STA. 105+00 - 111+00
HORIZONTAL SCALE: 1"=40'
VERTICAL SCALE: 1"=40'

Culvert Table						
Existing Culvert						
Culvert	Existing Structure	Station	Length (FT.)	Slope	Cover (IN.)	Activity Proposed
28	18" CPP	107+67	41	5.8%	10	TO REMAIN

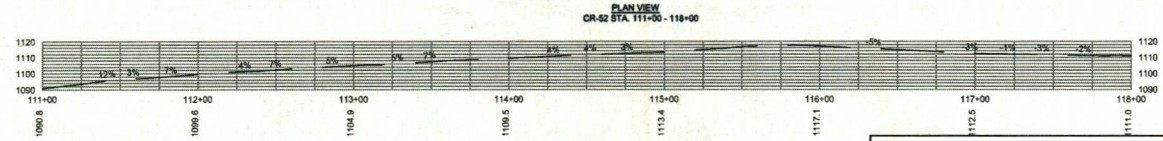
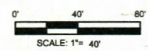
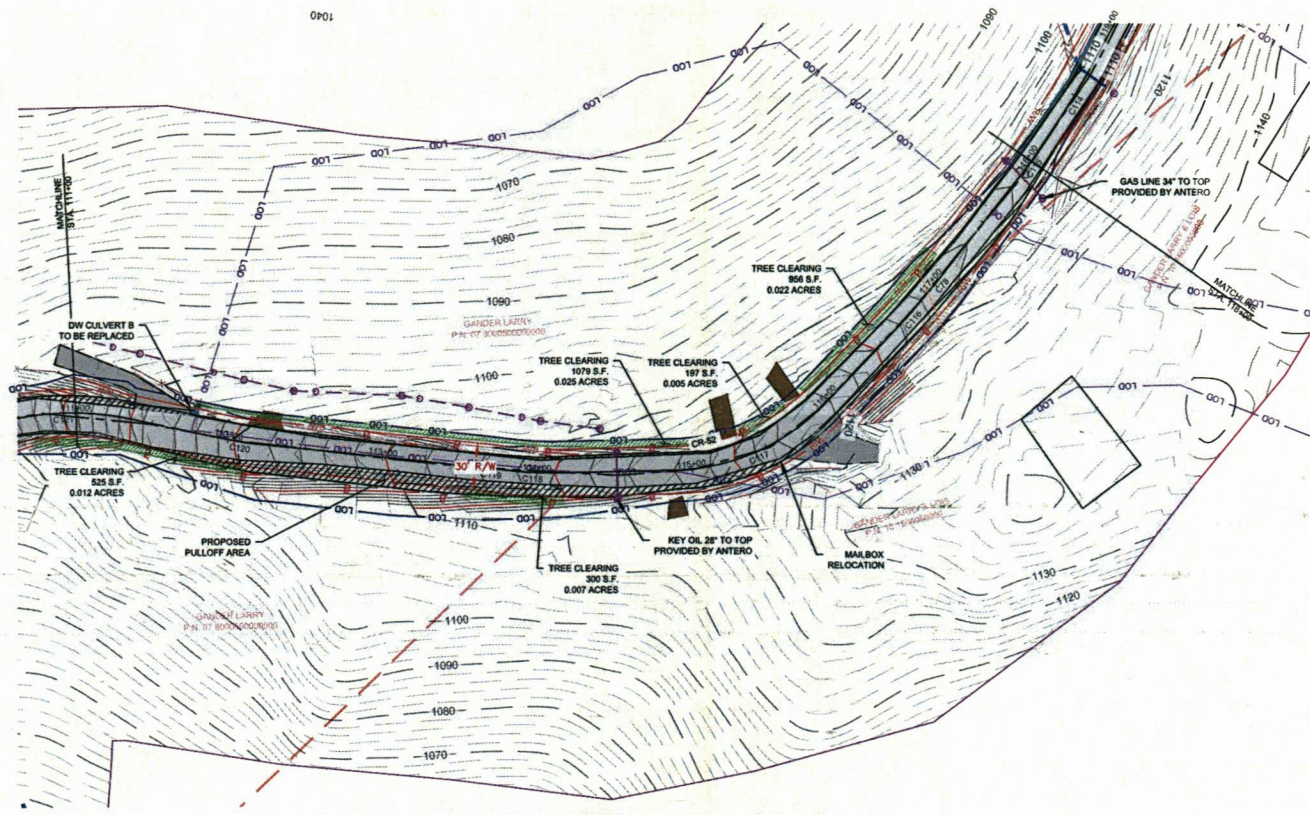
CURVE DATA TABLE						
CURVE #	RADIUS	ARC LENGTH	DELTA ANGLE	TANGENT	MID ORDINATE	DEGREE OF CURVE
C125	202.21'	125.61'	35°35'29"	64.90'	9.68'	28.2006
C79	50.00'	4.91'	5°37'41"	2.46'	0.06'	114.3530
C124	250.00'	16.12'	3°41'38"	8.06'	0.13'	22.5506
C123	213.01'	134.51'	36°10'44"	69.58'	10.53'	26.5352
C122	71.99'	36.36'	28°55'58"	18.57'	2.28'	79.3502
C121	181.20'	87.35'	27°37'15"	44.54'	5.24'	31.3715

LEGEND

AREA OF INTEREST	PROPERTY LINES	18" FILTER SOCK	PROPOSED ROADWAY	EXISTING BUILDING	TELEPHONE SYMBOL
RIGHT OF WAY	TELEPHONE LINES	PHASE 2 FENCING	JURISDICTIONAL DITCH	GAS SYMBOL	GUY WIRE
ORIGINAL LIMITS OF DISTURBANCE	OVERHEAD POWERLINES	FENCE	INTERMITTENT STREAM	WATER MARKER	TELEPHONE BOX
EXISTING CONTOURS	GAS LINES	PROPOSED CULVERT	PERENNIAL STREAM	MAILBOX	ELECTRIC SYMBOL
PROPOSED CONTOURS	EXISTING GRAVEL ROADWAY	EXISTING CULVERT	EPHEMERAL STREAM	ROCK CHECK DAM	OUTLET PROTECTION
FEMA 100 YEAR FLOODPLAIN	EXISTING DIRT ROADWAY	WETLAND			

FINAL PLAN

IF SCALE BAR DOES NOT MEASURE 1", DRAWING NOT PLOTTED TO SCALE



Culvert Table											
Existing Culvert					Proposed Culvert						
Culvert	Existing Structure	Station	Length (FT.)	Slope	Cover (IN.)	Activity Proposed	Proposed Structure	Length (FT.)	Slope	Inlet FL Elevation	Outlet FL Elevation
B	15' RCP	111+50	43	4.0%		REPLACE	15' CPP	43	4.0%	1095.8	1094.1

Overhead Utility Clearance					
Pole #	TO	Pole #	Station	Location	Height
U6-659		UNMARKED	116+93	LT EP	22'

CURVE DATA TABLE							
CURVE #	RADIUS	ARC LENGTH	DELTA ANGLE	TANGENT	MID ORDINATE	DEGREE OF CURVE	PI
C120	250.00'	25.86'	5°53'32"	12.94'	0.33	22.5506	112+08.34
C119	250.00'	6.35'	1°27'22"	3.16'	0.02	22.5506	113+70.68
C118	250.00'	37.85'	8°40'28"	18.96'	0.72	22.5506	113+97.32
C117	139.80'	109.37'	44°49'31"	57.66'	10.56	40.5904	115+46.06
C116	143.31'	7.10'	2°50'17"	3.55'	0.04	39.5846	116+74.55
C78	50.00'	2.02'	2°19'12"	1.01'	0.01	114.3530	117+02.65
C115	113.38'	8.76'	4°25'33"	4.38'	0.08	50.3209	117+97.10

LEGEND

- ACI: AREA OF INTEREST
- RW: RIGHT OF WAY
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- OUTLET PROTECTION
- TELEPHONE SYMBOL
- GLY WIRE
- TELEPHONE BOX
- ELECTRIC SYMBOL

FINAL PLAN

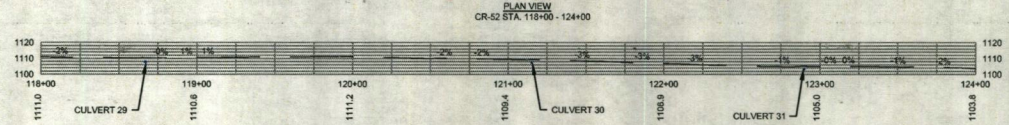
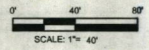
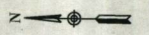
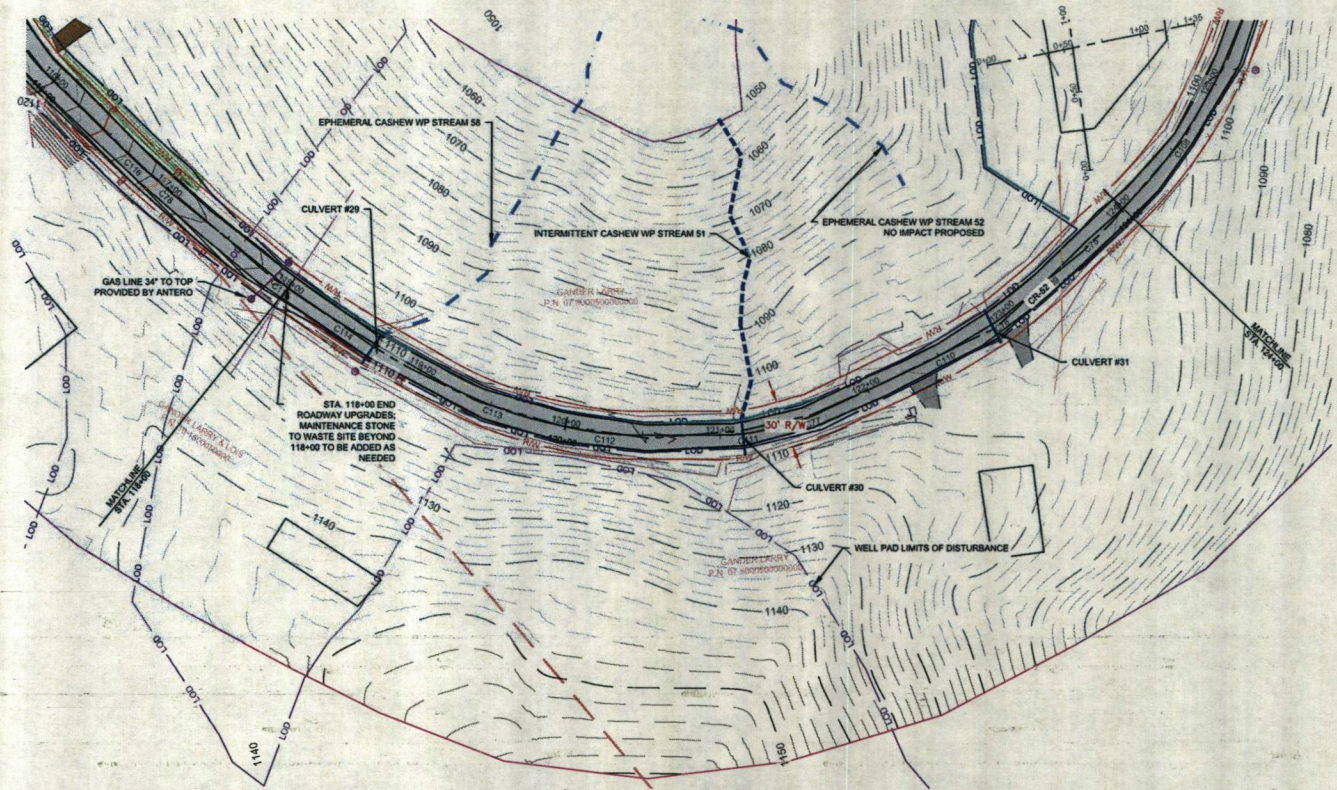
IF SCALE BAR DOES NOT MEASURE 1", DRAWING NOT PLOTTED TO SCALE

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DATE: 02/23/2023
REV. BY: [REDACTED] DATE: [REDACTED] DESC: [REDACTED]
REV. BY: [REDACTED] DATE: [REDACTED] DESC: [REDACTED]
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REV. BY: [REDACTED] DATE: [REDACTED] DESC: [REDACTED]
DRAWN BY: [REDACTED]
FLD INK: [REDACTED]
DATE: 02/23/2023

STA. 111+00 TO 118+00
SUGAR RUN ROAD (CR-52) ROADWAY IMPROVEMENTS
ANTERO RESOURCES
DISTRICT 4
DODDRIDGE COUNTY, WEST VIRGINIA



CURVE DATA TABLE							
CURVE #	RADIUS	ARC LENGTH	DELTA ANGLE	TANGENT	MID ORDINATE	DEGREE OF CURVE	PI
C114	500.00'	44.14'	5°03'31"	22.09'	0.49	11.2733	118+45.04
C113	260.73'	78.86'	17°19'47"	39.73'	2.98	21.5830	119+53.26
C112	201.24'	42.04'	11°58'05"	21.09'	1.10	28.2815	120+26.13
C111	120.22'	32.55'	15°30'52"	16.38'	1.10	47.3935	121+17.19
C77	30.00'	8.39'	9°37'05"	4.21'	0.18	114.3530	121+59.54
C110	593.69'	30.35'	5°55'17"	15.19'	0.39	19.3033	122+53.02
C76	50.00'	7.45'	8°32'22"	3.73'	0.14	114.3530	122+94.46
C109	250.00'	20.58'	4°43'04"	10.30'	0.21	22.5506	123+33.94
C75	50.00'	2.40'	2°44'57"	1.20'	0.01	114.3530	123+70.41

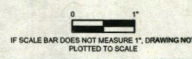
Overhead Utility Clearance					
Pole #	TO	Station	Location	Height	
U6-662	-	UNMARKED	123+50	LT EP	24' 3"

Culvert Table					
Existing Culvert					
Culvert	Existing Structure	Station	Length (FT.)	Slope	Cover (IN.)
29	12" RCP	118+67	21	2.9%	24
30	6" STEEL	121+15	22	8.3%	18
31	8" STEEL	122+90	23	3.3%	13

LEGEND

AOI	AREA OF INTEREST	PROPERTY LINES	18" FILTER SOCK	PROPOSED ROADWAY	EXISTING BUILDING	TELEPHONE SYMBOL
R/W	RIGHT OF WAY	TELEPHONE LINES	PHASE 2 FENCING	JURISDICTIONAL DITCH	GAS SYMBOL	GUY WIRE
LOD	ORIGINAL LIMITS OF DISTURBANCE	OVERHEAD POWERLINES	FENCE	INTERMITTENT STREAM	WATER MARKER	TELEPHONE BOX
EXISTING CONTOURS	EXISTING CONTOURS	GAS LINES	PERENNIAL STREAM	PERENNIAL STREAM	MAILBOX	ELECTRIC SYMBOL
PROPOSED CONTOURS	PROPOSED CONTOURS	EXISTING GRAVEL ROADWAY	EPHEMERAL STREAM	EPHEMERAL STREAM	ROCK CHECK DAM	OUTLET PROTECTION
FEMA 100 YEAR FLOODPLAIN	FEMA 100 YEAR FLOODPLAIN	EXISTING DIRT ROADWAY	EXISTING CULVERT	WETLAND		

FINAL PLAN



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DRAWN BY: JAS
FIELD BY: JAS
CHK BY: JAS
DATE: 02/23/2022

REV. BY: JMT
DATE: 02/23/2022

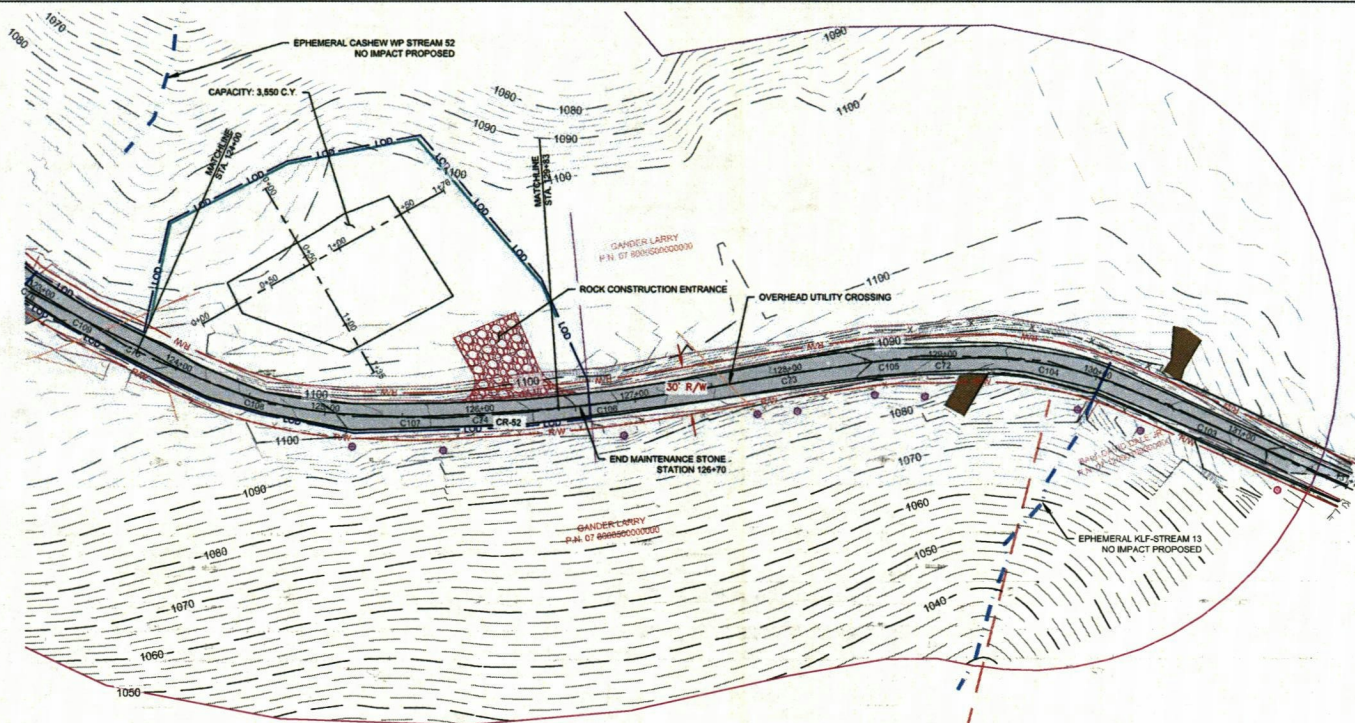
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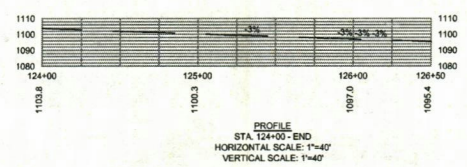
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DATE: 02/23/2022

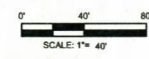
STA. 118+00 TO 124+00
SUGAR RUN ROAD (CR-52) ROADWAY IMPROVEMENTS
ANTERO RESOURCES
DISTRICT 4
DODDRIEGE COUNTY, WEST VIRGINIA



PLAN VIEW
CR-52 STA. 124+00 - END



PROFILE
STA. 124+00 - END
HORIZONTAL SCALE: 1"=40'
VERTICAL SCALE: 1"=40'



CURVE DATA TABLE							
CURVE #	RADIUS	ARC LENGTH	DELTA ANGLE	TANGENT	MID ORDINATE	DEGREE OF CURVE	PI
C108	291.41'	130.35	25°37'41"	66.26'	7.26	19.3941	124+55.78
C107	250.00'	21.66'	5°00'35"	10.94'	0.24	22.5506	125+55.16
C74	1880.78'	66.70'	2°01'59"	33.36'	0.30	3.0247	125+99.99

Overhead Utility Clearance					
Pole #	TO	Pole #	Station	Location	Height
U6-663		UNMARKED	127+60	CL	26'

FINAL PLAN

IF SCALE BAR DOES NOT MEASURE 1", DRAWING NOT PLOTTED TO SCALE

LEGEND

AREA OF INTEREST	PROPERTY LINES	18" FILTER SOCK	PROPOSED ROADWAY	EXISTING BUILDING	TELEPHONE SYMBOL
RIGHT OF WAY	TELEPHONE LINES	JURISDICTIONAL DITCH	GAS SYMBOL	GUY WIRE	
ORIGINAL LIMITS OF DISTURBANCE	OVERHEAD POWERLINES	INTERMITTENT STREAM	WATER MARKER	TELEPHONE BOX	
EXISTING CONTOURS	GAS LINES	PERENNIAL STREAM	MAILBOX	ELECTRIC SYMBOL	
PROPOSED CONTOURS	EXISTING GRAVEL ROADWAY	EPHEMERAL STREAM	ROCK CHECK DAM	OUTLET PROTECTION	
FEMA 100 YEAR FLOODPLAIN	EXISTING DIRT ROADWAY	PROPOSED CULVERT	WETLAND		
		EXISTING CULVERT			

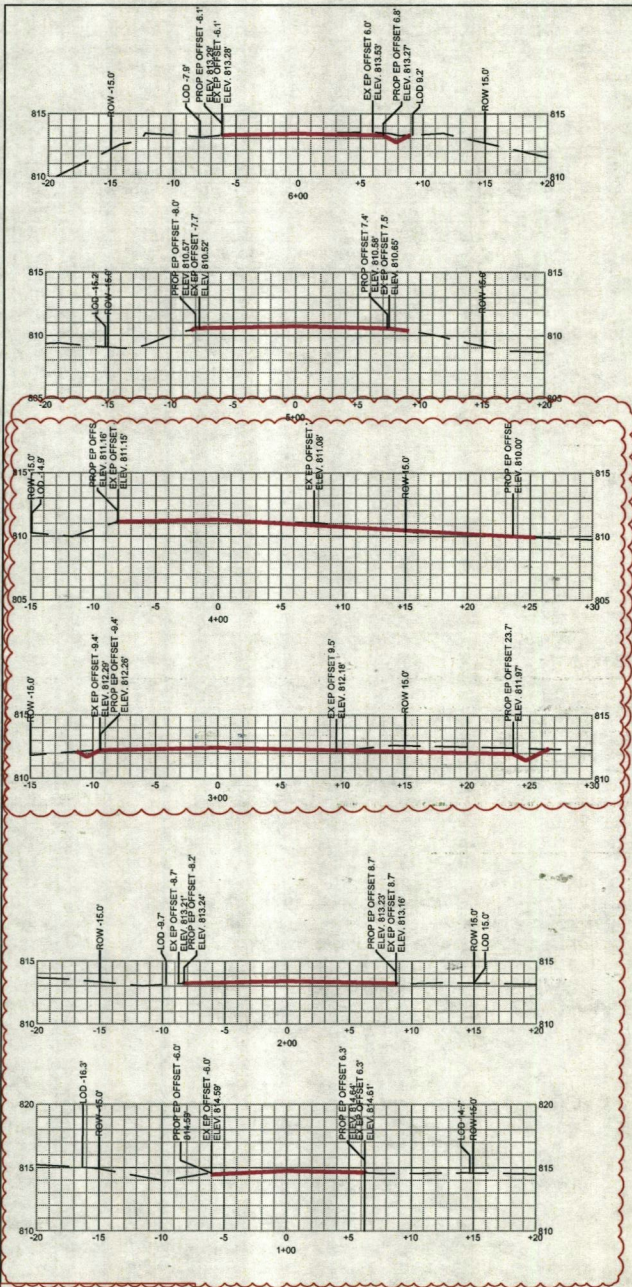
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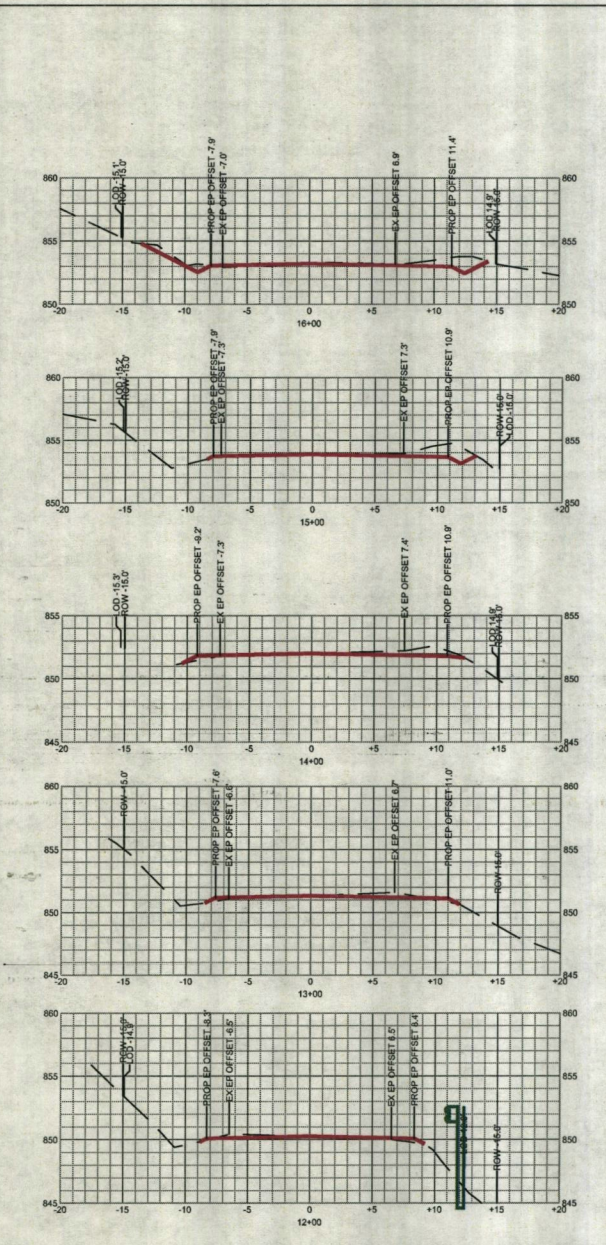
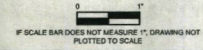
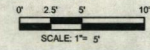
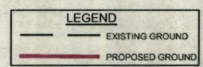
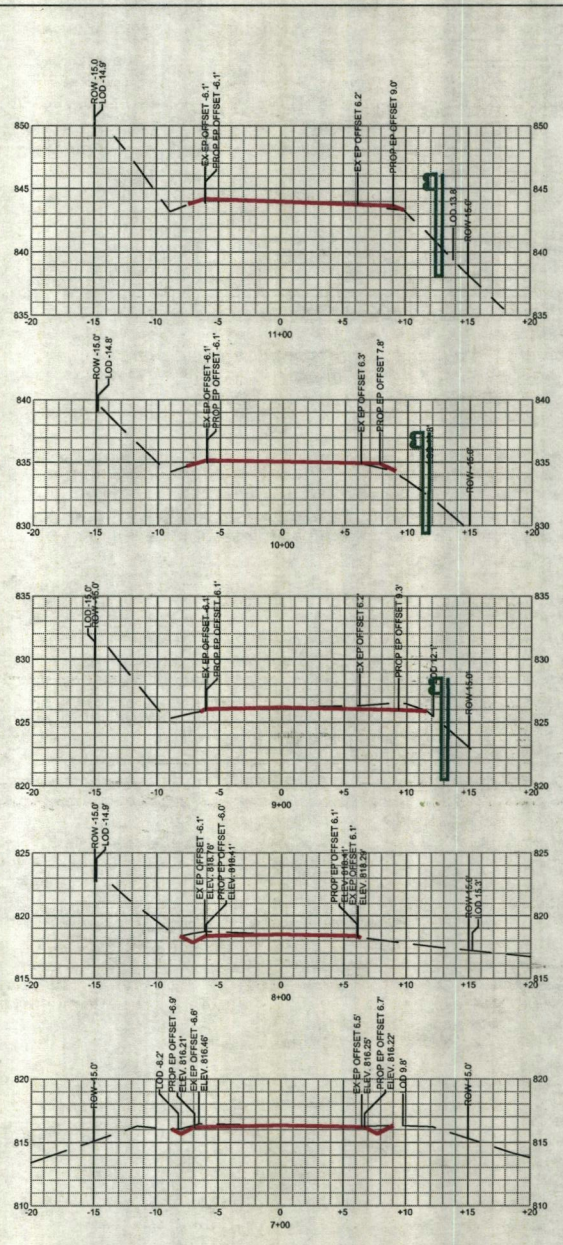
ANTERO RESOURCES
DISTRICT 4
DODDRIEGE COUNTY, WEST VIRGINIA

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REV. BY: [REDACTED] DATE: [REDACTED]
DRAWN BY: [REDACTED] DATE: [REDACTED]
RWD BY: [REDACTED] DATE: [REDACTED]
FLD BK: [REDACTED] DATE: [REDACTED]
BK PK: [REDACTED] DATE: [REDACTED]
DATE: 02/23/2020

STA. 124+00 TO END
SUGAR RUN ROAD (CR-52) ROADWAY IMPROVEMENTS
ANTERO RESOURCES
DISTRICT 4
DODDRIEGE COUNTY, WEST VIRGINIA



FINAL PLAN



CROSS SECTIONS STATION 1+00 TO 16+00
 SUGAR RUN ROAD CR-50 ROADWAY IMPROVEMENTS
 DISTRICT 4
 DODDRIDGE COUNTY, WEST VIRGINIA

DESIGN BY: JMT
 DRAWN BY: JMS
 FIELD BY: JMS
 BK PC: JMS
 DATE: 02/26/2022

REV BY: JMT
 DATE: 02/26/2022

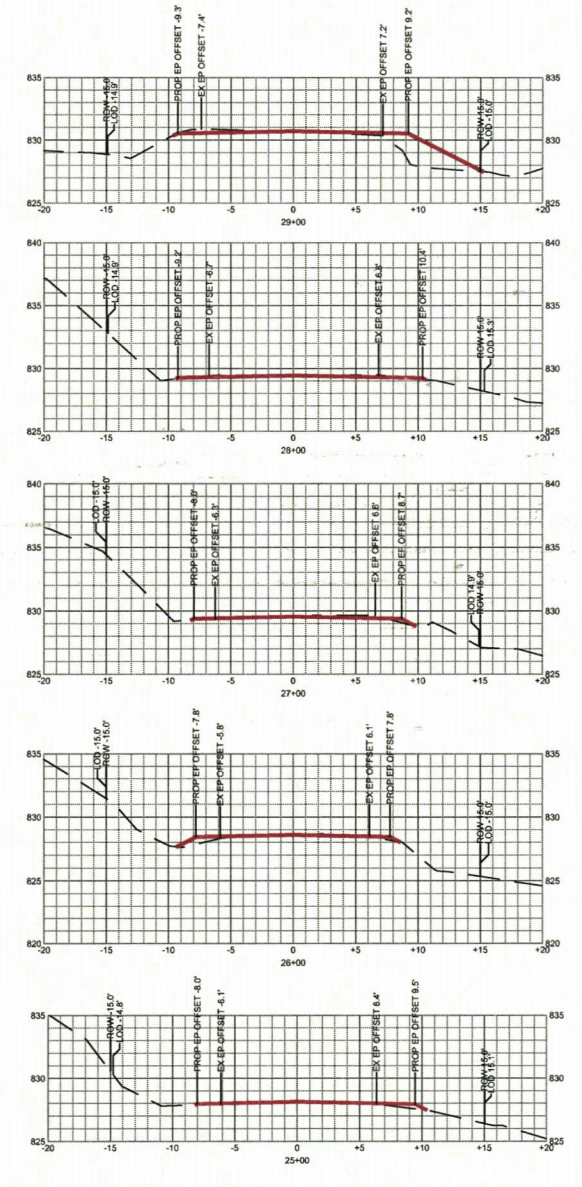
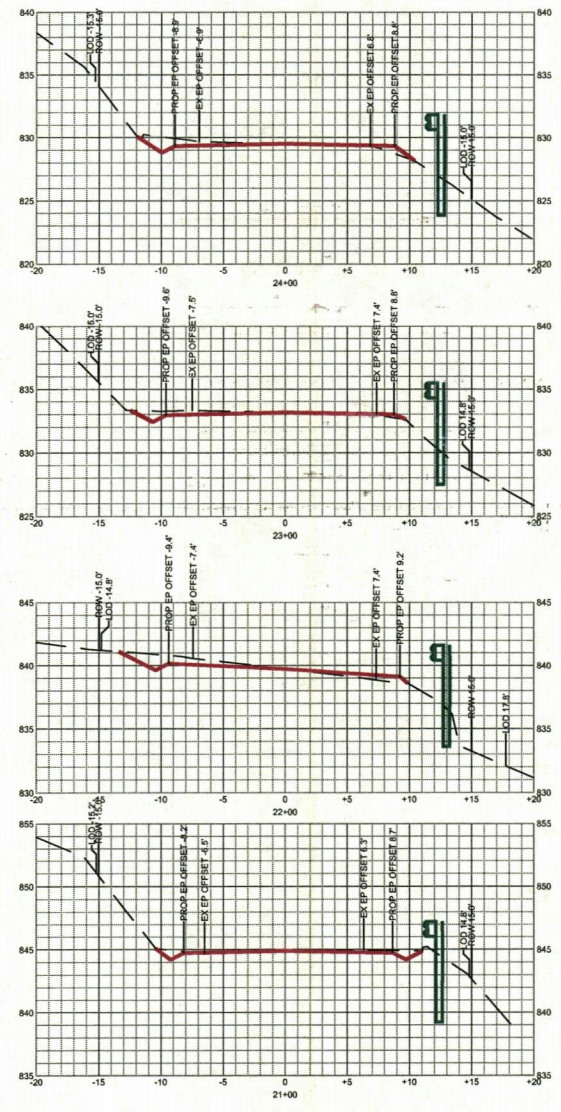
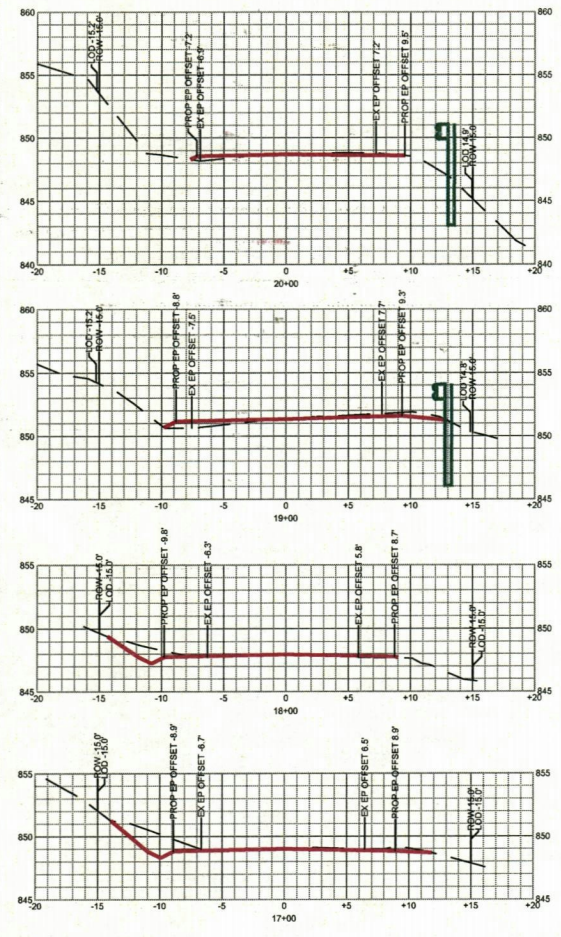
REVISIONS:
 02-18-2022 DESC: UPDATE CROSS SECTIONS
 02-22-2022 DESC: REVERSE CROSS SECTION

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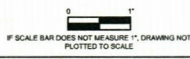
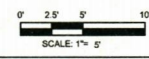
28
 PLOT DATE: January 31, 2022

FINAL PLAN



LEGEND

- EXISTING GROUND
- PROPOSED GROUND



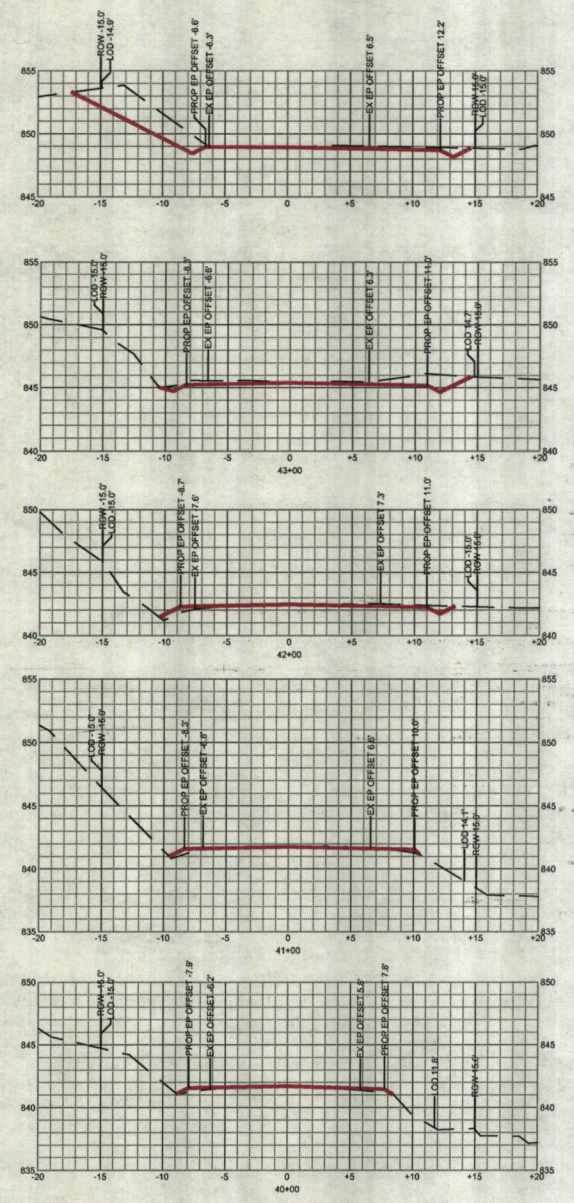
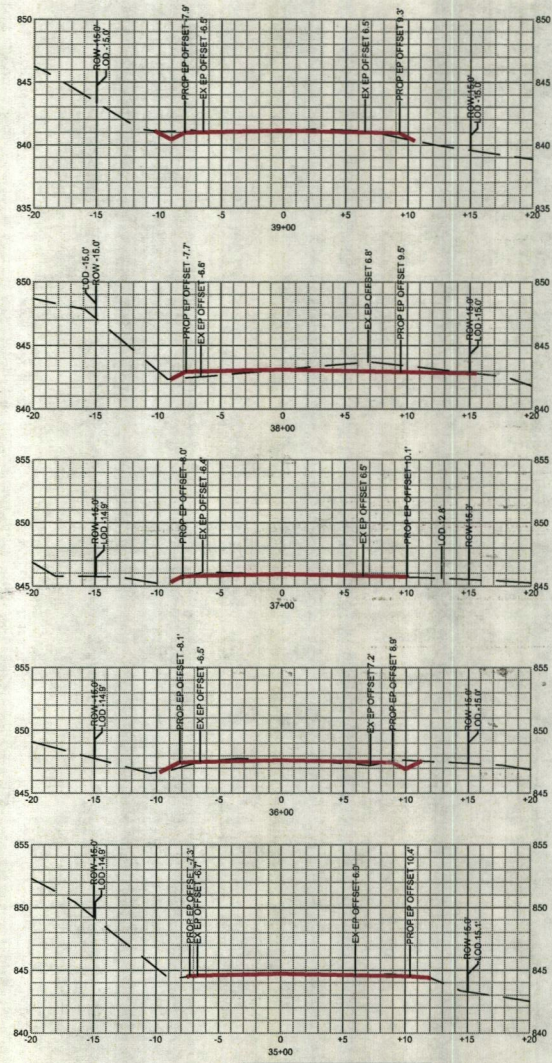
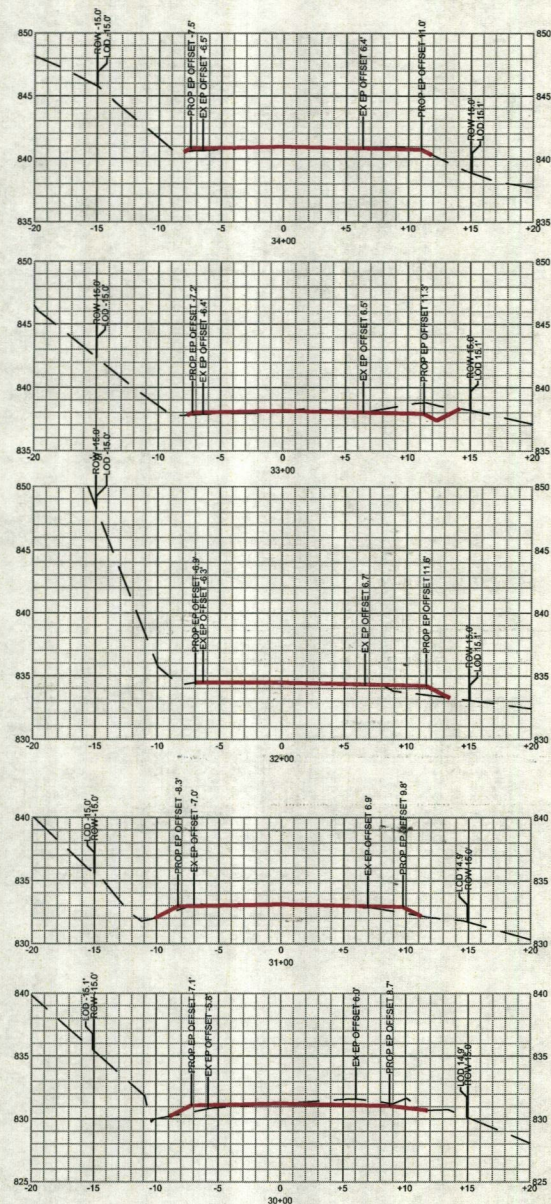
CROSS SECTIONS STATION 17+00 TO 29+00
SUGAR RUN ROAD (CR-52) ROADWAY IMPROVEMENTS
ANTERO RESOURCES
DISTRICT 4
DODDRIEGE COUNTY, WEST VIRGINIA

DESIGN BY: JMT DATE: _____ DESC: _____
 DRAWN BY: JMT DATE: _____ DESC: _____
 FLD BK: ABE REV BY: _____ DATE: _____ DESC: _____
 BK PD: _____ REV BY: _____ DATE: _____ DESC: _____
 DATE: 02/23/2023

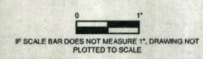
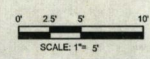
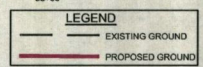
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29

PLOT DATE: January 31, 2022



FINAL PLAN



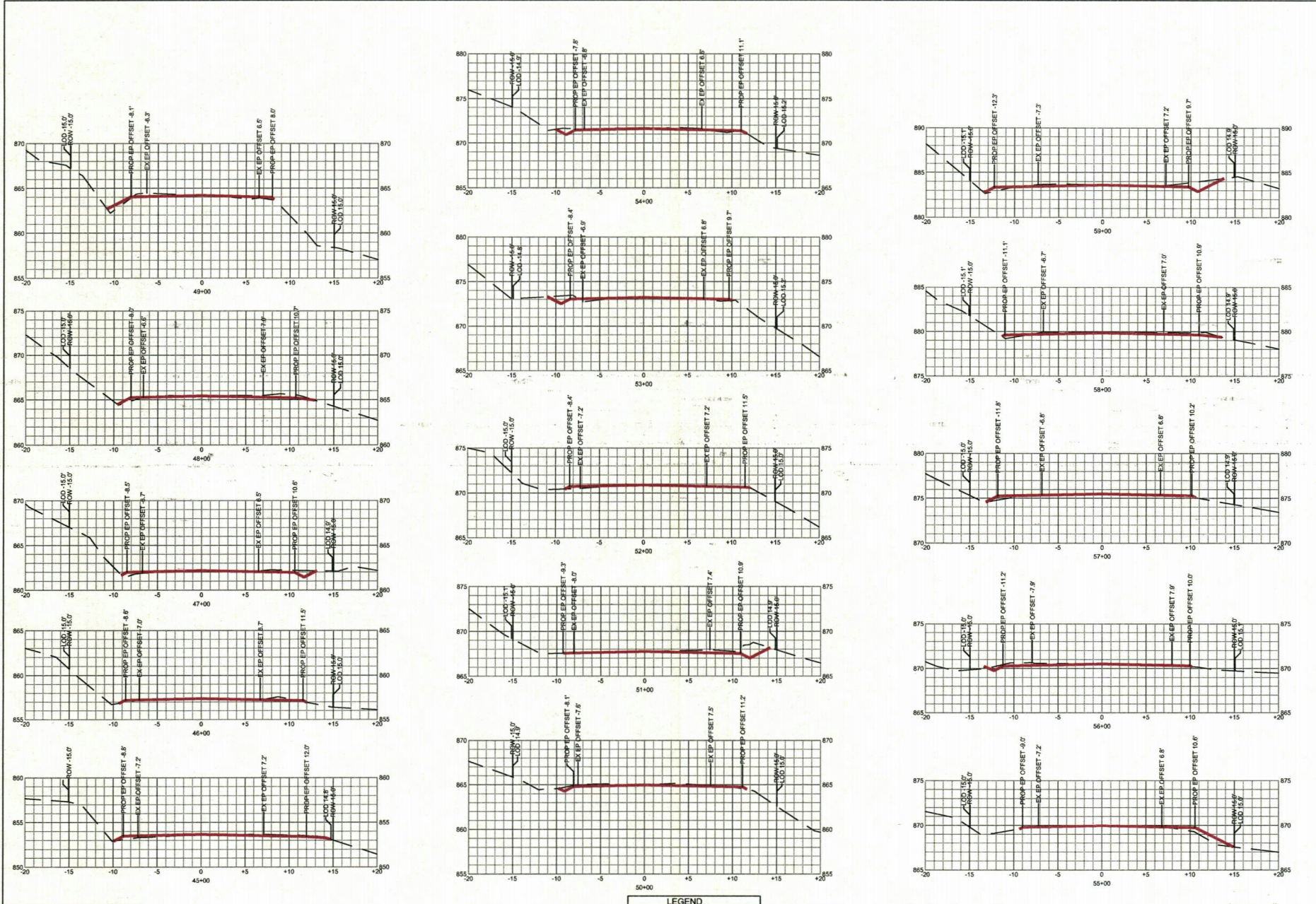
CROSS SECTIONS STATION 30+00 TO 44+00
 SUGAR RUN ROAD (R-50) ROADWAY IMPROVEMENTS
 ANTERO RESOURCES
 DISTRICT 4
 DODDORIDGE COUNTY, WEST VIRGINIA

DATE: 02/26/2025
 DESIGNED BY: JMT
 DRAWN BY: JMB
 FIELD BY: JMB
 CHECKED BY: JMB
 DATE: 02/26/2025
 REV. BY: JMT
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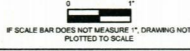
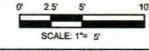
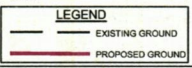
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 PLOT DATE: January 31, 2025



FINAL PLAN

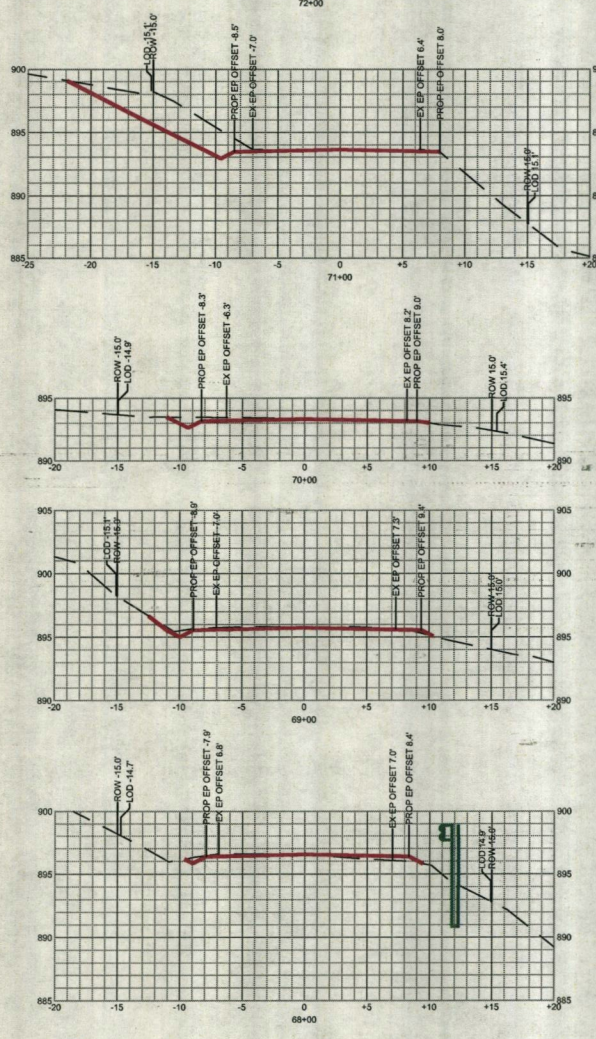
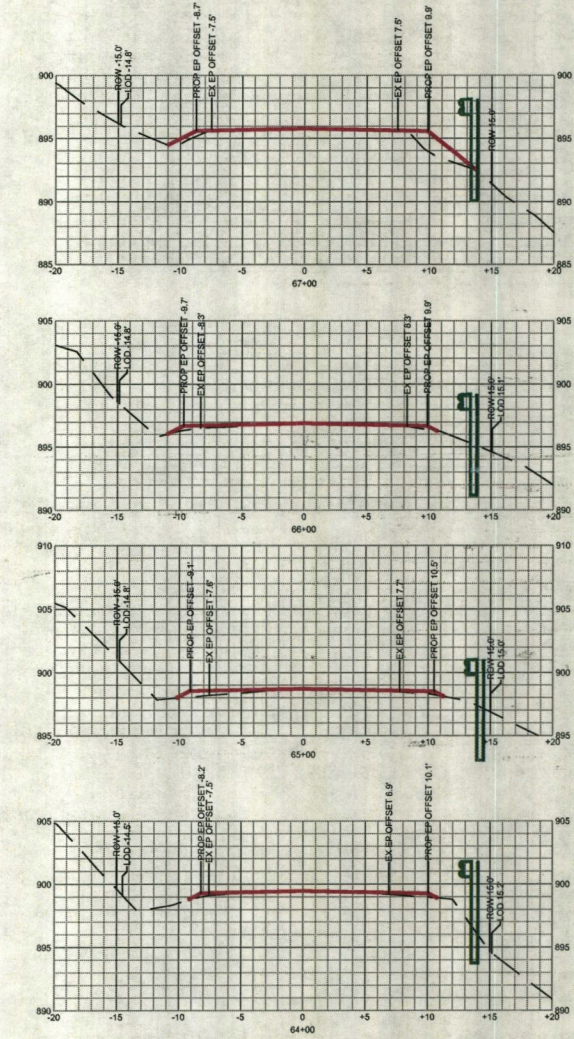
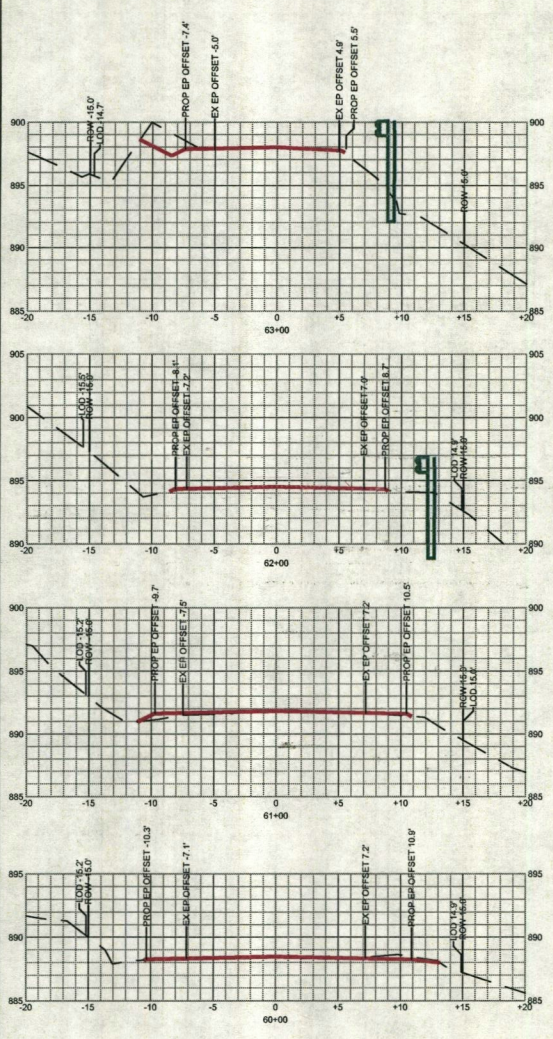


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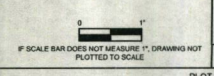
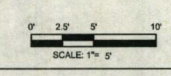
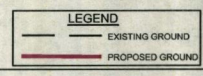


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AMT		

CROSS SECTIONS STATION 44+00 TO 59+00
 SUGAR RUN ROAD (CR-52) ROADWAY IMPROVEMENTS
 ANTERO RESOURCES
 DISTRICT 4
 DODDRIEGE COUNTY, WEST VIRGINIA



FINAL PLAN

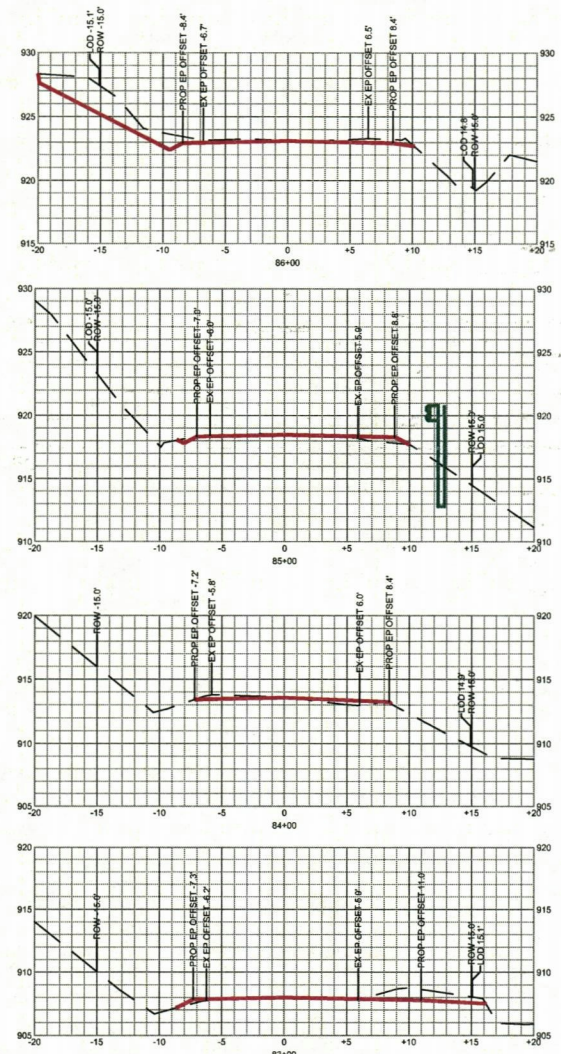
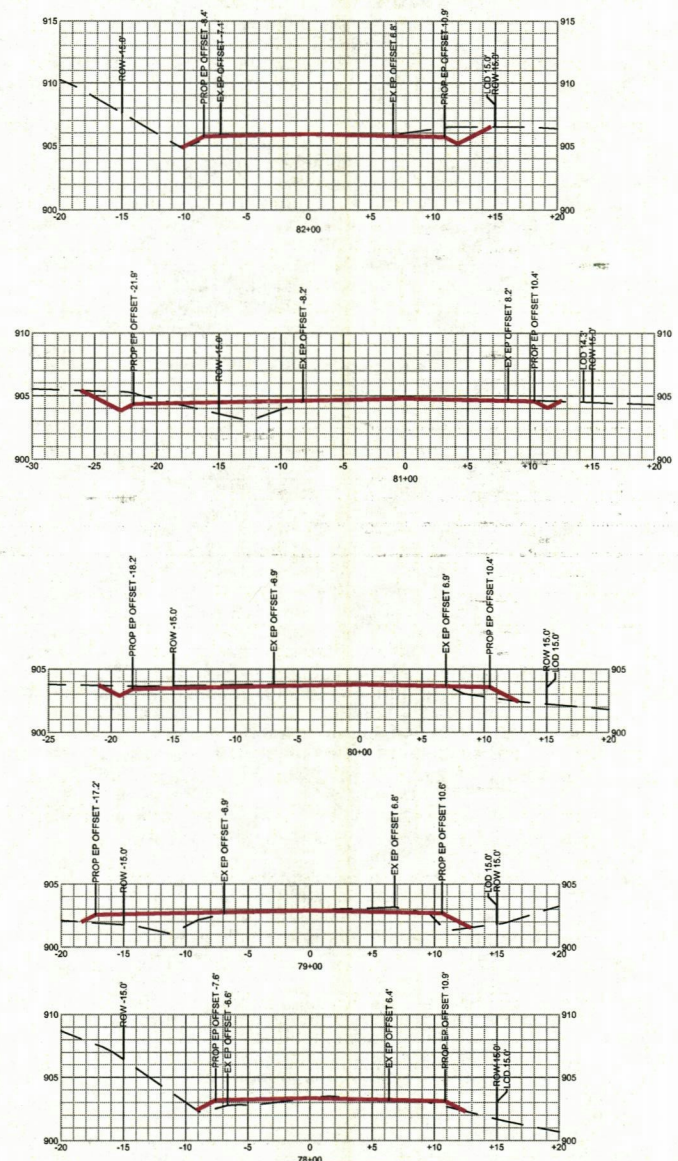
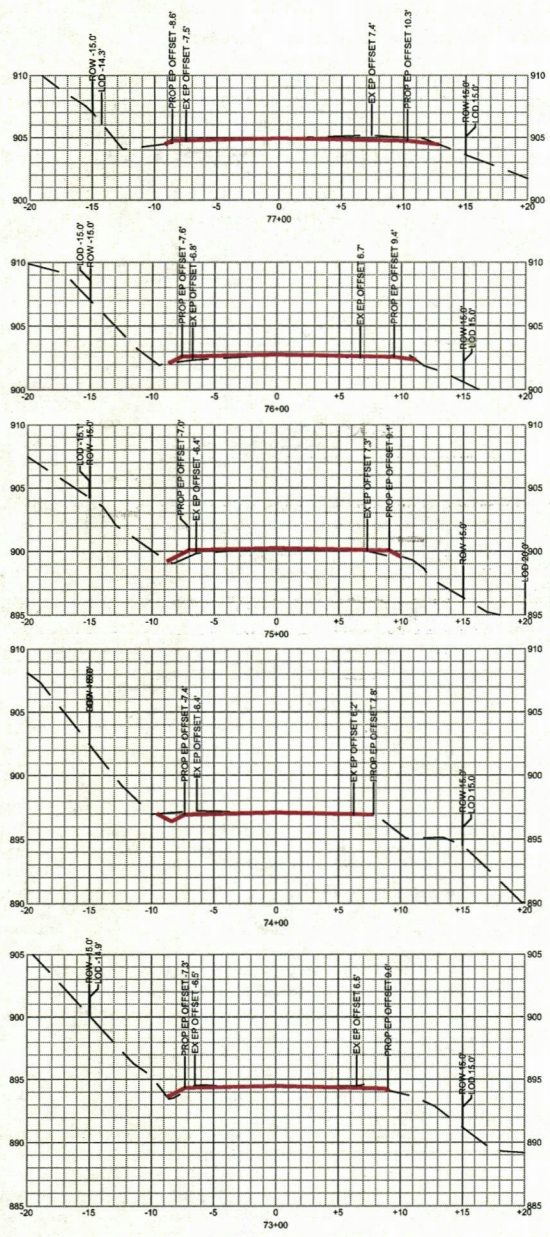


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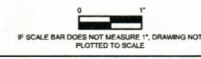
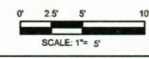
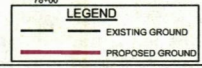


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JML		
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AM		
FLD BK: <td></td> <td></td>		
BK PC: <td></td> <td></td>		
DATE:	02/28/2022	

CROSS SECTIONS STATION 60+00 TO 74+00
SUGAR RUN ROAD (CR-52) ROADWAY IMPROVEMENTS
ANTERO RESOURCES
DISTRICT 4
DODDRIDGE COUNTY, WEST VIRGINIA



FINAL PLAN



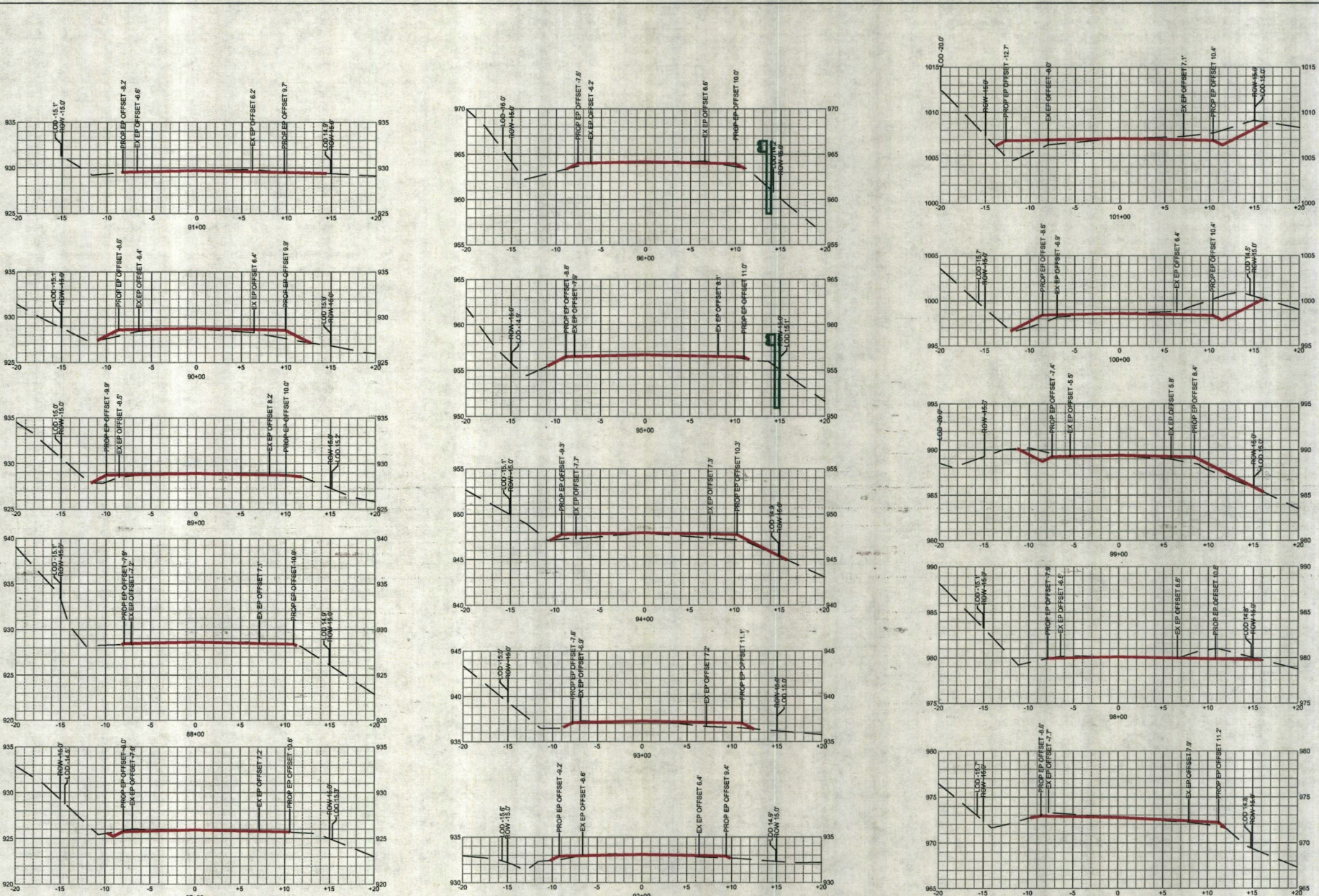
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DESIGN BY:	DATE:	DESC:
JMT	02/28/2028	SUGAR RUN ROAD (CR 52) ROADWAY IMPROVEMENTS
REV BY:	DATE:	DESC:
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AMB		
JMT		
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JMT		
AMB		

CROSS SECTIONS STATION 74+00 TO 86+00
SUGAR RUN ROAD (CR 52) ROADWAY IMPROVEMENTS
ANTERO RESOURCES
DISTRICT 4
DODDRIEGE COUNTY, WEST VIRGINIA

FINAL PLAN



LEGEND
 - - - - - EXISTING GROUND
 ——— PROPOSED GROUND

0' 2.5' 5' 10'
 SCALE: 1" = 5'

IF SCALE BAR DOES NOT MEASURE 1", DRAWING NOT PLOTTED TO SCALE

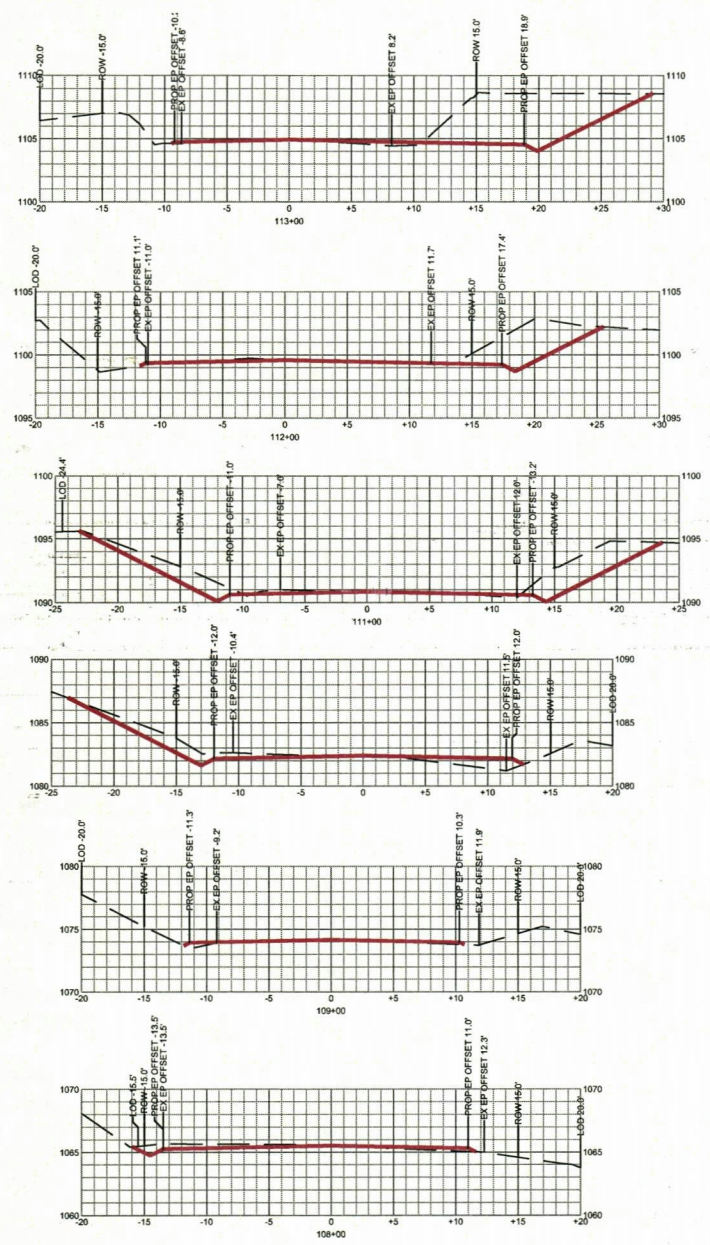
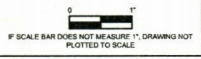
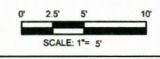
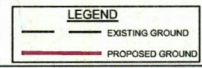
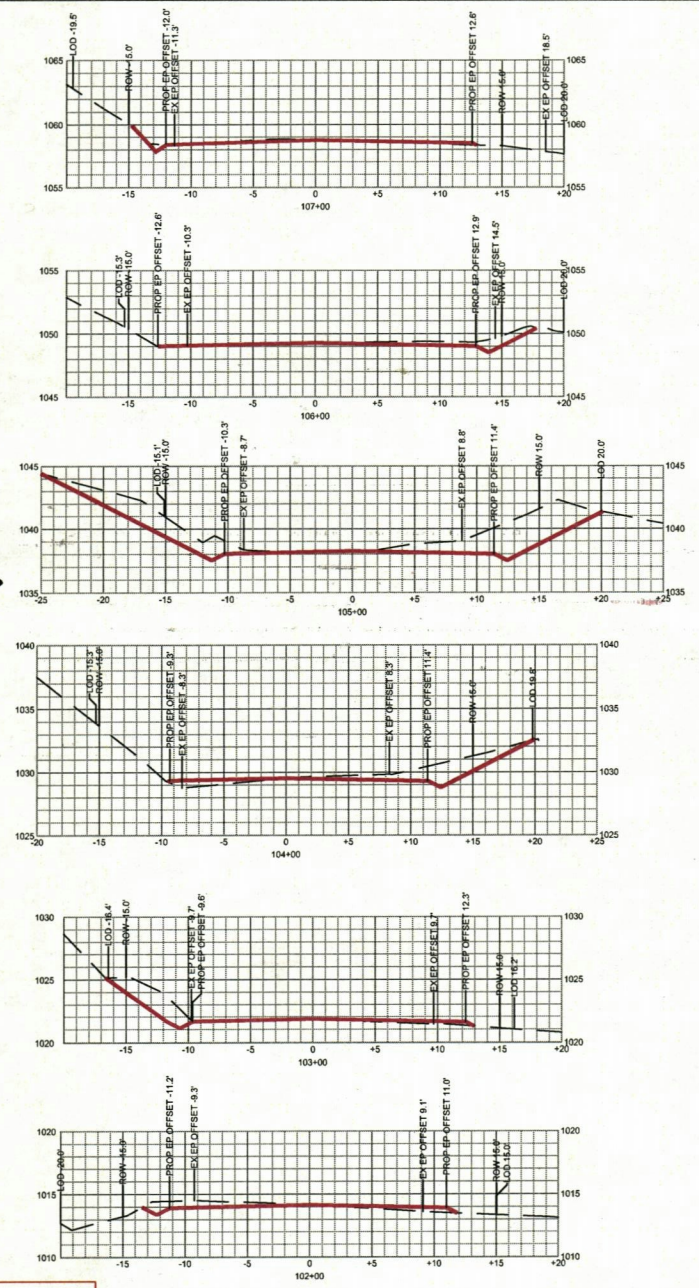
CROSS SECTIONS STATION 87+00 TO 102+00
 SUGAR RUN ROAD (CR-52) ROADWAY IMPROVEMENTS
 ANTERO RESOURCES
 DISTRICT 4
 DODDORIDGE COUNTY, WEST VIRGINIA

DESIGN BY:	JMT	REV. BY:	DATE:	DESC:
DRAWN BY:	JMT	REV. BY:	DATE:	DESC:
FLD BY:	AM	REV. BY:	DATE:	DESC:
BK P.C.:		REV. BY:	DATE:	DESC:
DATE:	02/28/2020			

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FINAL PLAN



CROSS SECTIONS STATION 102+00 TO 113+00
 SUGAR RUN ROAD (CR 52) ROADWAY IMPROVEMENTS
 ANTERO RESOURCES
 DISTRICT 4
 DODDREDGE COUNTY, WEST VIRGINIA

DESIGN BY: JMT DATE: 02/28/2022
 DRAWN BY: AJB
 FIELD BY:
 BK PG.
 DATE:

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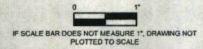
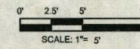
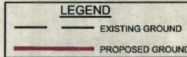
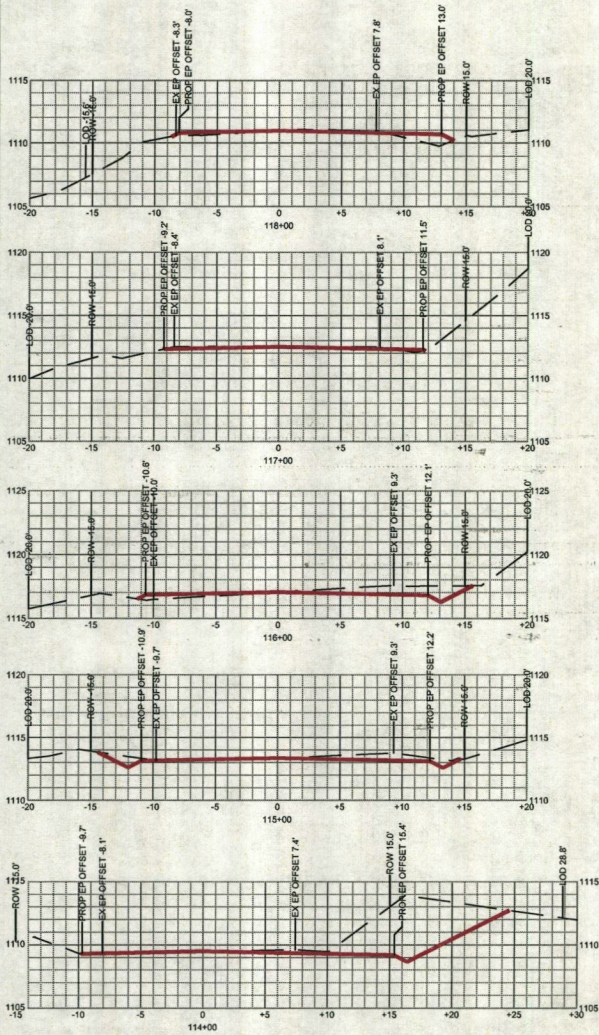
WWW.ANTERO.COM
 10 ANNEVILLE AVENUE
 ST CHARLES, OHIO 45306
 PH: 703.985.5727
 WWW.ANTERO.COM

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 ENGINEERS, PLANNERS, SURVEYORS

Antero
 RESOURCES

35
 PLOT DATE: January 31, 2022

FINAL PLAN



CROSS SECTIONS STATION 114+00 TO 119+00
 SUGAR RUN ROAD (CS-52) ROADWAY IMPROVEMENTS
 ANTERO RESOURCES
 DISTRICT 4
 DODDORIDGE COUNTY, WEST VIRGINIA

DESIGN BY: JMT
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 FIELD BY: JMB
 BK PG: 4
 DATE: 02/28/2020

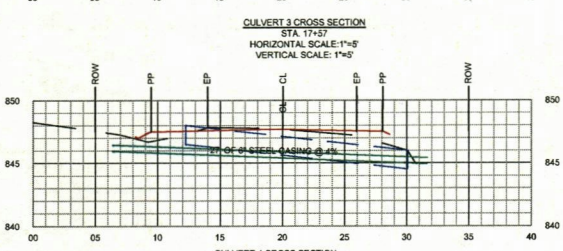
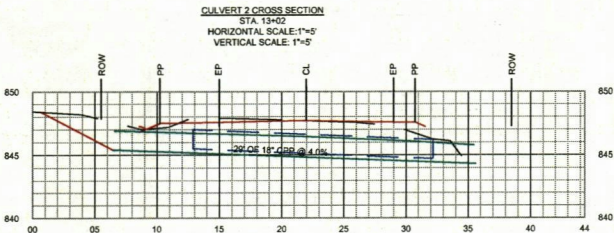
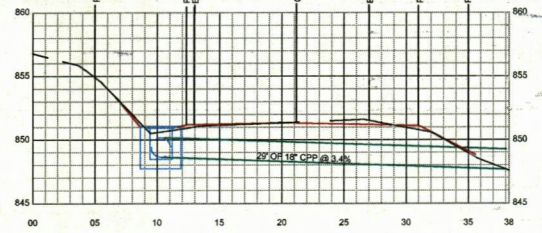
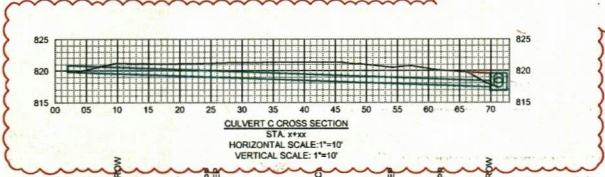
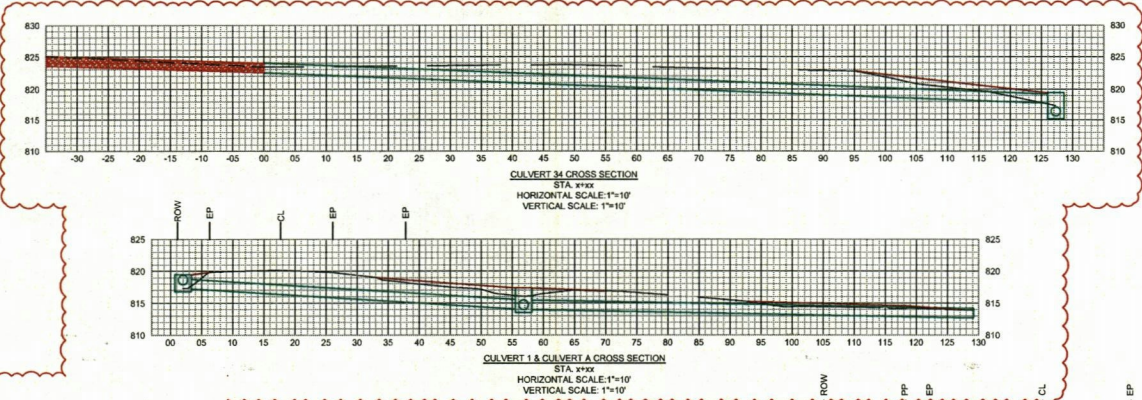
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 DATE: 02/28/2020

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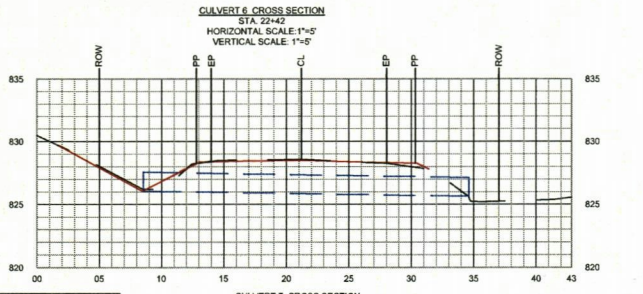
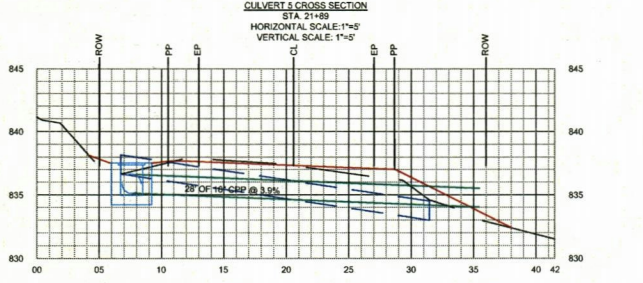
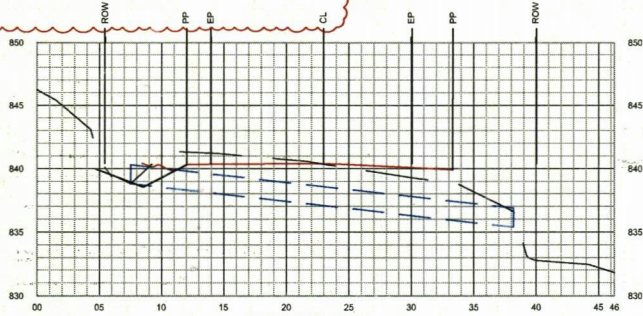
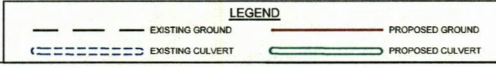
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FINAL PLAN



CULVERT 4 CROSS SECTION
STA. 17+80
HORIZONTAL SCALE: 1"=5'
VERTICAL SCALE: 1"=5'



CULVERT 7 CROSS SECTION
STA. 25+58
HORIZONTAL SCALE: 1"=5'
VERTICAL SCALE: 1"=5'



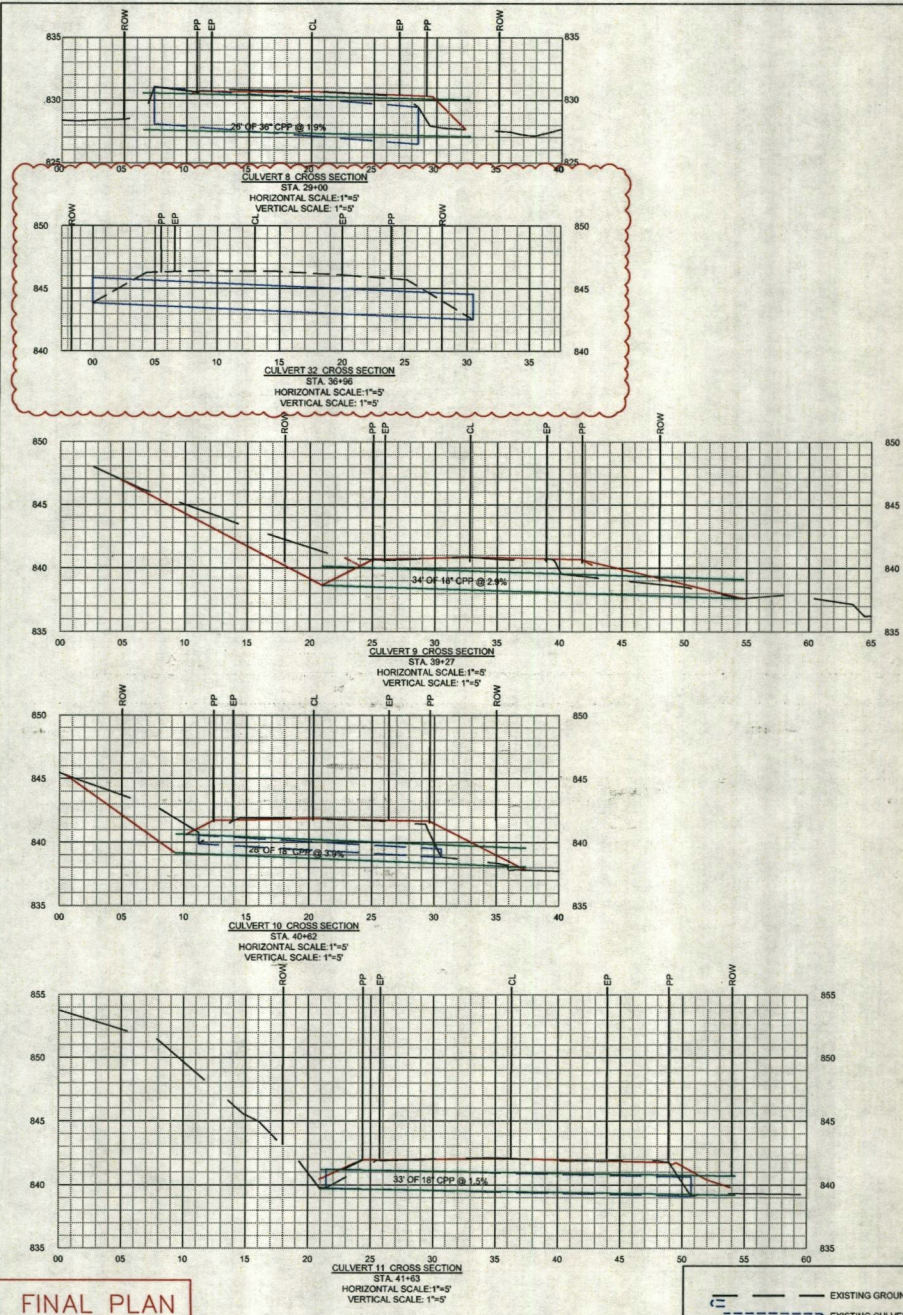
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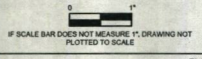
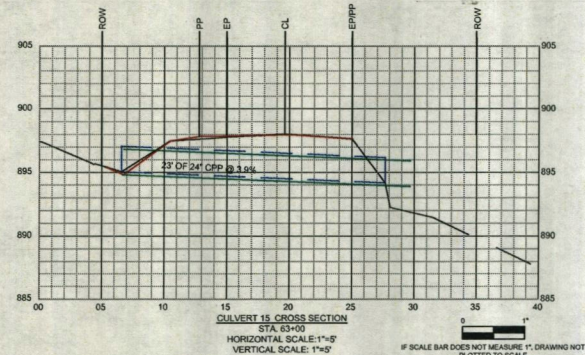
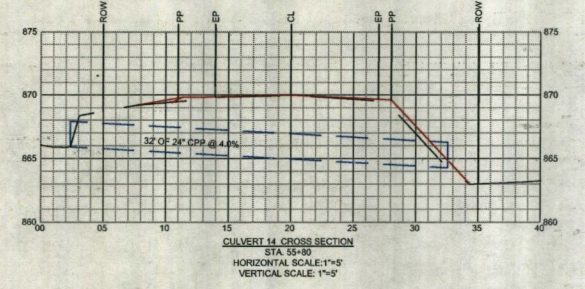
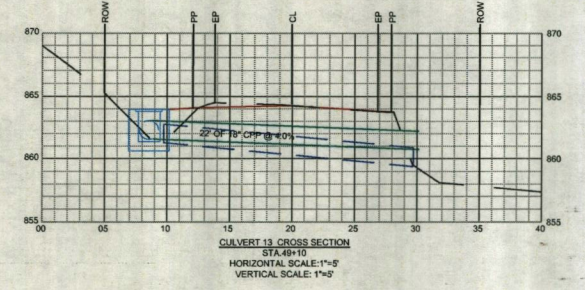
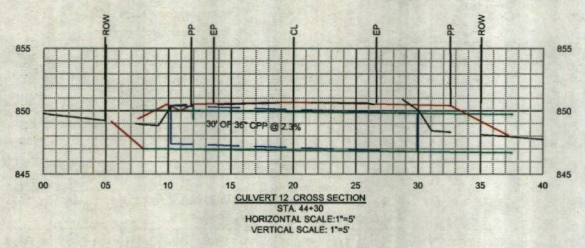
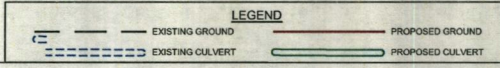
Antero
RESOURCES

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AMT		AMT		
AMT		AMT		
AMT		AMT		

CULVERT CROSS SECTIONS
SUGAR RUN ROAD (CR-52) ROADWAY IMPROVEMENTS
DISTRICT 4
ANTERO RESOURCES
DODDRIDGE COUNTY, WEST VIRGINIA



FINAL PLAN

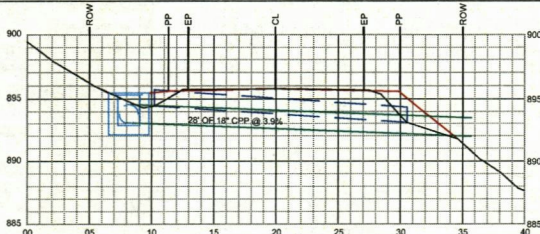


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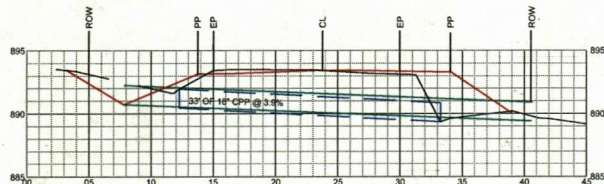


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FIELD BY: <td>JMB</td> <td>DATE: <td></td> <td>DESC: <td></td> </td></td>	JMB	DATE: <td></td> <td>DESC: <td></td> </td>		DESC: <td></td>	
CHK'D BY: <td></td> <td>DATE: <td></td> <td>DESC: <td></td> </td></td>		DATE: <td></td> <td>DESC: <td></td> </td>		DESC: <td></td>	
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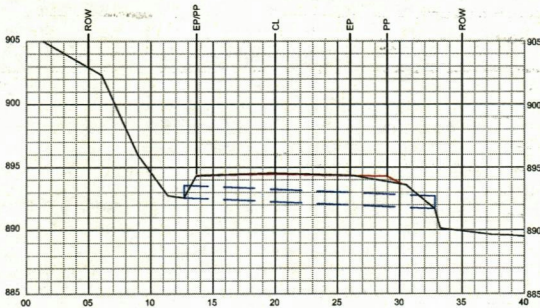
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SUGAR RUN ROAD (CR-52) ROADWAY IMPROVEMENTS
ANTERO RESOURCES
DISTRICT 4
DODDRIEGE COUNTY, WEST VIRGINIA



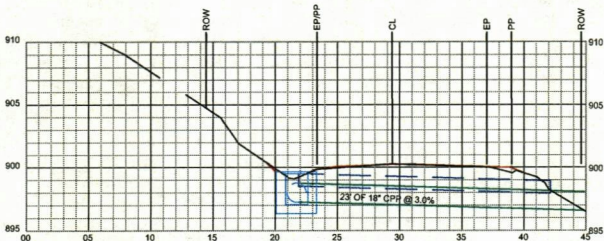
CULVERT 16 CROSS SECTION
STA. 67+00
HORIZONTAL SCALE: 1"=5'
VERTICAL SCALE: 1"=5'



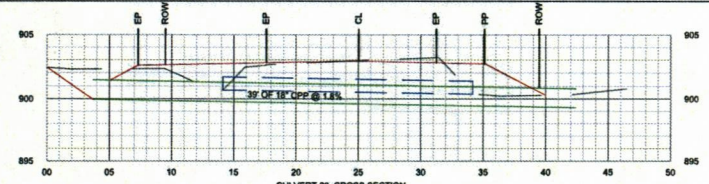
CULVERT 17 CROSS SECTION
STA. 70+15
HORIZONTAL SCALE: 1"=5'
VERTICAL SCALE: 1"=5'



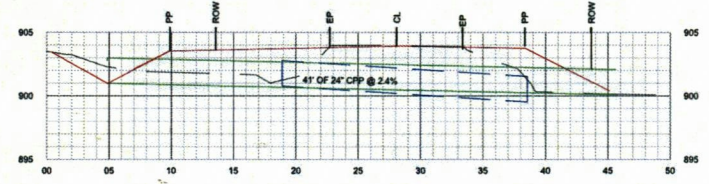
CULVERT 18 CROSS SECTION
STA. 72+58
HORIZONTAL SCALE: 1"=5'
VERTICAL SCALE: 1"=5'



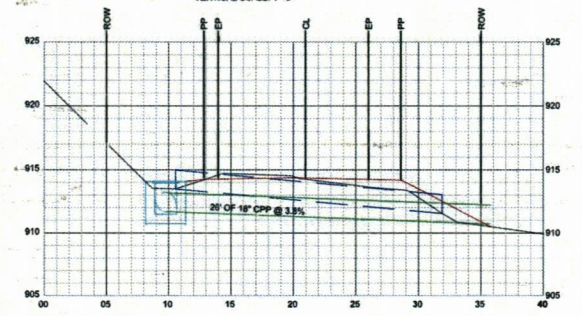
CULVERT 19 CROSS SECTION
STA. 75+00
HORIZONTAL SCALE: 1"=5'
VERTICAL SCALE: 1"=5'



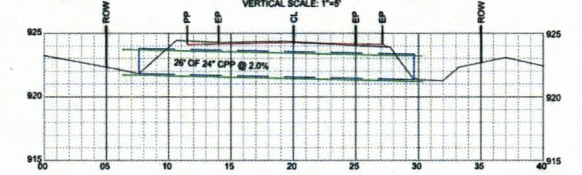
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STA. 78+34
HORIZONTAL SCALE: 1"=5'
VERTICAL SCALE: 1"=5'



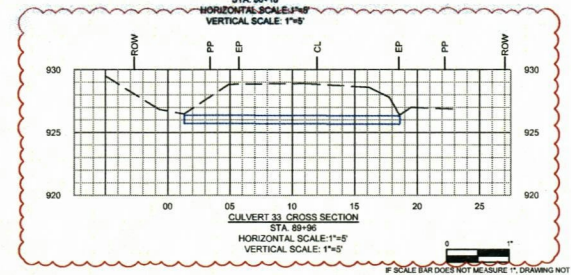
CULVERT 21 CROSS SECTION
STA. 83+17
HORIZONTAL SCALE: 1"=5'
VERTICAL SCALE: 1"=5'



CULVERT 22 CROSS SECTION
STA. 84+11
HORIZONTAL SCALE: 1"=5'
VERTICAL SCALE: 1"=5'



CULVERT 23 CROSS SECTION
STA. 85+15
HORIZONTAL SCALE: 1"=5'
VERTICAL SCALE: 1"=5'



CULVERT 33 CROSS SECTION
STA. 88+06
HORIZONTAL SCALE: 1"=5'
VERTICAL SCALE: 1"=5'

LEGEND

- — — — — EXISTING GROUND
- — — — — EXISTING CULVERT
- — — — — PROPOSED GROUND
- — — — — PROPOSED CULVERT

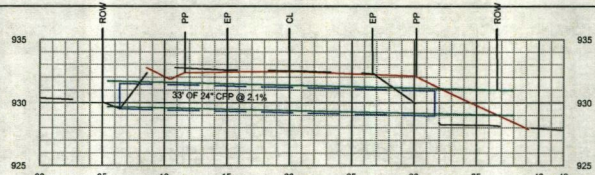
FINAL PLAN

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TEL: (513) 763-1100
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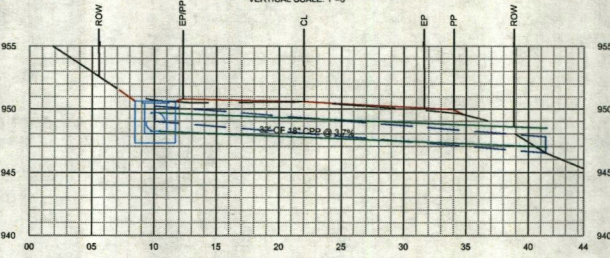


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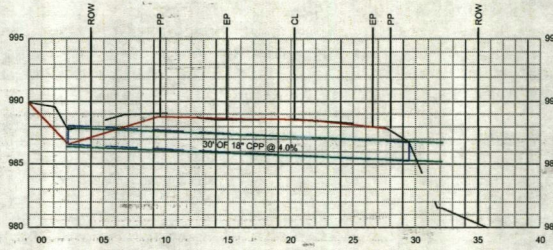
CULVERT CROSS SECTIONS
SUGAR RUN ROAD (CR-52) ROADWAY IMPROVEMENTS
ANTERO RESOURCES
DISTRICT 4
DODDRIEGE COUNTY, WEST VIRGINIA



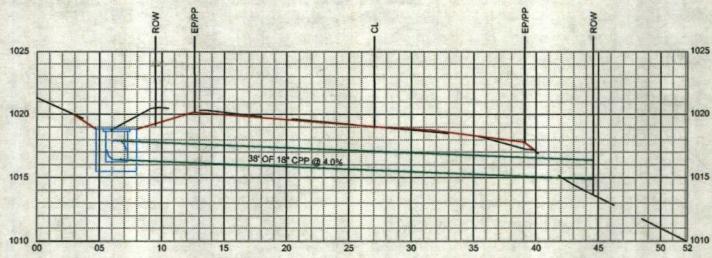
CULVERT 24 CROSS SECTION
STA. 91+73
HORIZONTAL SCALE: 1"=5'
VERTICAL SCALE: 1"=5'



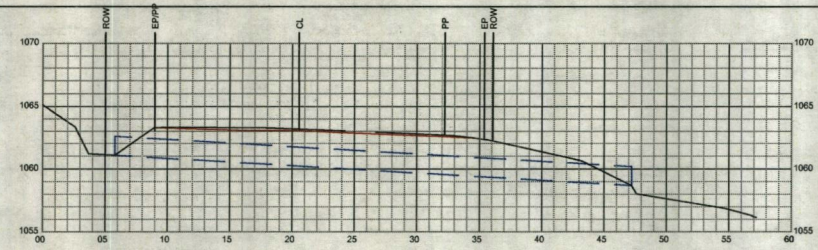
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STA. 94+30
HORIZONTAL SCALE: 1"=5'
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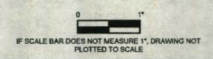
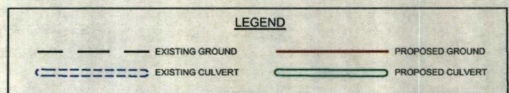
CULVERT 26 CROSS SECTION
STA. 98+02
HORIZONTAL SCALE: 1"=5'
VERTICAL SCALE: 1"=5'



CULVERT 27 CROSS SECTION
STA. 102+67
HORIZONTAL SCALE: 1"=5'
VERTICAL SCALE: 1"=5'



CULVERT 28 CROSS SECTION
STA. 107+67
HORIZONTAL SCALE: 1"=5'
VERTICAL SCALE: 1"=5'



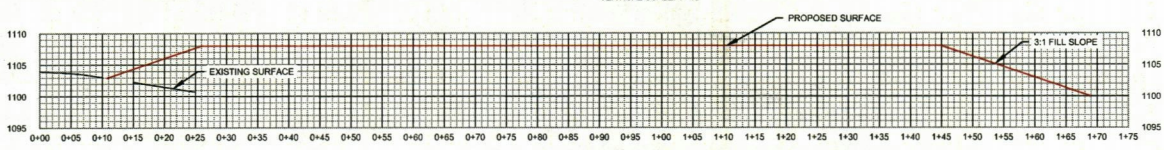
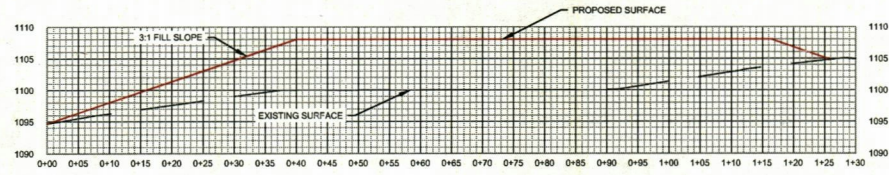
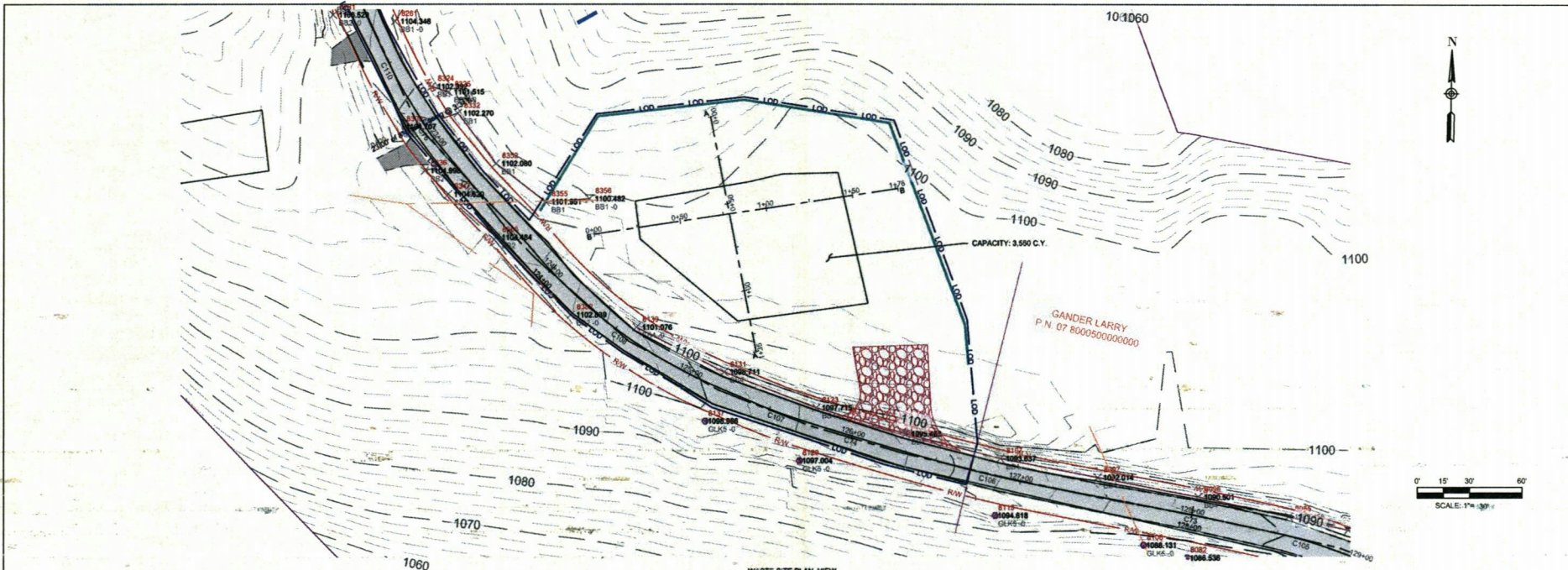
FINAL PLAN

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ST. CLAIRSVILLE, OHIO 45066
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DESIGN BY:	DATE:	DESC:	REV. BY:	DATE:	DESC:
JMJ			JMJ		
DRWN BY:			DRWN BY:		
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FLD BK:			FLD BK:		
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DATE:	02/26/2022		DATE:		

CULVERT CROSS SECTIONS
SUGAR RUN ROAD (CR-52) ROADWAY IMPROVEMENTS
ANTERO RESOURCES
DISTRICT 4
DODDORIDGE COUNTY, WEST VIRGINIA



LEGEND			
AREA OF INTEREST	PROPERTY LINES	18" FILTER SOCK	PROPOSED ROADWAY
RIGHT OF WAY	TELEPHONE LINES	JURISDICTIONAL DITCH	EXISTING BUILDING
ORIGINAL LIMITS OF DISTURBANCE	OVERHEAD POWERLINES	INTERMITTENT STREAM	GAS SYMBOL
EXISTING CONTOURS	GAS LINES	PERENNIAL STREAM	WATER MARKER
PROPOSED CONTOURS	EXISTING GRAVEL ROADWAY	EPHEMERAL STREAM	MAILBOX
FEMA 100 YEAR FLOODPLAIN	EXISTING DIRT ROADWAY	PROPOSED CULVERT	ROCK CHECK DAM
		EXISTING GULVERT	OUTLET PROTECTION
			TELEPHONE SYMBOL
			GUY WIRE
			TELEPHONE BOX
			ELECTRIC SYMBOL

FINAL PLAN

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Waste Site
SUGAR RUN ROAD (CR-52) ROADWAY IMPROVEMENTS
ANTERO RESOURCES
DISTRICT 1
DODDRIEGE COUNTY, WEST VIRGINIA

EROSION CONTROL NOTES

- EROSION AND SEDIMENT CONTROL NEEDS-404'S (ANTERO INSTALLED EROSION AND SEDIMENT CONTROLS) WILL BE INSTALLED BEFORE ANY WORK IS TO TAKE PLACE. THESE CONTROLS MAY VARY AND CONTRACTOR SHALL CONFIRM WITH ANTERO RESOURCES THAT ALL 404'S ARE IN PLACE AND FUNCTIONAL BEFORE THEY COMMENCE WITH CONSTRUCTION.
- ALL PROPERTIES ADJACENT TO THE SITE OF SOIL-DISTURBING ACTIVITY SHALL BE PROTECTED TO THE MAXIMUM EXTENT PRACTICABLE. FORM SOIL EROSION AND SEDIMENT RUNOFF AND DRAINAGE, INCLUDING, BUT NOT LIMITED TO PRIVATE PROPERTIES, NATURAL, ARTIFICIAL WATERWAYS, WETLANDS, STORM SEWERS AND PUBLIC LANDS.
- CONSTRUCTION SITE EROSION AND SEDIMENT CONTROL PRACTICES USED TO SATISFY THIS REQUIREMENT SHALL CONFORM, AS A MINIMUM, TO STATE OF WEST VIRGINIA STANDARDS AS SET FORTH IN THE MOST CURRENT EDITION OF THE WEST VIRGINIA BEST MANAGEMENT PRACTICES MANUAL, DEFINED BY THE WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION.
- (INSERT ENGINEER NAME) ANTICIPATES OBTAINING, WITH A REASONABLE DEGREE OF CERTAINTY EROSION AND SEDIMENT CONTROL PLAN APPROVALS IN ACCORDANCE WITH THESE RULES, AND ALL OTHER NECESSARY PERMITS AND OR APPROVALS FROM FEDERAL STATE, AND/OR COUNTY AGENCIES. IF REQUIREMENTS VARY, THE MOST STRINGENT REQUIREMENTS SHALL BE FOLLOWED.
- EROSION AND SEDIMENT CONTROL PRACTICES AT THE SITE, AND AS IDENTIFIED IN THE ESC PLAN SHALL COMPLY WITH THE FOLLOWING:
 - AN APPROVED EROSION AND SEDIMENT CONTROL PLAN OR APPROVAL LETTER FROM THE WV DEP SHALL BE LOCATED ON SITE FOR REVIEW.
 - LIMITS TO CLEARING AND GRADING SHALL BE SHOWN ON ESC PLANS. LIMITS TO CLEARING AND GRADING SHALL BE CLEARLY MARKED ON SITE WITH SIGNAGE, FLAGGING, AND/OR FENCING ETC.
 - INSTALL EROSION AND SEDIMENT PERMIET CONTROLS AS A FIRST ACTION OF CONSTRUCTION AS SPECIFIED BY CONSTRUCTION SEQUENCE. THIS SHALL INCLUDE AND IS NOT LIMITED TO PROTECTIVE BUMPS FOR STREAM CORRIDORS AND CROSSINGS, WETLANDS, SITE ENTRANCE, SEDIMENT TRAPS & BASINS, BARRIERS, AND DIVERSION DUMPS.
 - CONCENTRATED STORM WATER RUNOFF SHALL PASS THROUGH A SEDIMENT CONTROL DEVICE BEFORE EXITING THE SITE BOUNDARIES. CONCENTRATED RUNOFF FROM BARE SOIL AREAS SHALL BE DIVERTED INTO A SETTLING POND OR SEDIMENT CONTROL STRUCTURE, OR OTHER APPROVED SEDIMENT BARRIER BEFORE LEAVING THE SITE.
 - EARTHEN STRUCTURES SUCH AS DAMS, BASINS, STREAM MODIFICATIONS AND WATER DIVERSIONS SHALL BE SEEDED AND MULCHED WITHIN SEVEN (7) DAYS OF THE COMPLETION OF INSTALLATION. DAMS SHALL CONFORM TO THE WEST VIRGINIA DAM SAFETY LAWS (WV CODE CHAPTER 22, ARTICLE 14, DAM CONTROL AND SAFETY ACT)
 - STABILIZATION OF CRITICAL AREAS WITHIN 50 FEET OF ANY STREAM OR WETLAND SHALL BE TEMPORARILY STABILIZED WITHIN TWO (2) DAYS OF DISTURBANCE IF AREA WILL REMAIN INACTIVE FOR SEVEN (7) DAYS OR LONGER. CONSTRUCTION VEHICLES SHALL AVOID STREAMS AND THE 50 FOOT BUFFER AREAS. IF AN ACTIVE DRAINAGE WAY MUST BE CROSSED BY CONSTRUCTION VEHICLES REPEATEDLY DURING CONSTRUCTION, A TEMPORARY STREAM CROSSING SHALL BE CONSTRUCTED ACCORDING TO THE SPECIFICATIONS IN THE WEST VIRGINIA BEST MANAGEMENT PRACTICES MANUAL. CONSTRUCTION OF BRIDGES, CULVERTS OR SEDIMENT CONTROL STRUCTURES SHALL NOT PLACE SOIL, DEBRIS AND OTHER FINE PARTICULATE MATERIAL INTO OR CLOSE TO THE WATER RESOURCE IN SUCH A MANNER THAT IT MAY SLOUGH, SLIP OR ERODE.
 - STORM SEWER INLETS SHALL BE PROTECTED SO THAT SEDIMENT-LADEN RUNOFF WILL NOT ENTER THE STORM SEWER SYSTEM WITHOUT FIRST BEING FILTERED AND/OR TREATED. SANITARY SEWER MANHOLES SHALL BE PROTECTED SO THAT NO STORM RUNOFF WILL ENTER THE SANITARY SEWER SYSTEM.
 - RE-VEGETATE SOIL. TEMPORARY SOIL STABILIZATION SHALL OCCUR WITHIN SEVEN (7) DAYS AFTER ROUGH GRADING IF THE AREA WILL REMAIN IDLE LONGER THAN TWENTY-ONE (21) DAYS. PERMANENT SOIL STABILIZATION SHALL BE INSTALLED WITHIN SEVEN (7) DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE. PERMANENT VEGETATION IS A GROUND COVER DENSE ENOUGH TO COVER 80% OF THE SOIL SURFACE AND MATURE ENOUGH TO SURVIVE WINTER WEATHER CONDITIONS.
 - SOIL STOCKPILES SHALL BE STABILIZED OR PROTECTED TO PREVENT SOIL LOSS. STABILIZATION SHALL BE REQUIRED IF STOCKPILES ARE LOCATED WITHIN CRITICAL AREAS NEAR STREAMS OR WETLANDS, OR IF DETERMINED BY THE WV DEP THAT SEDIMENT FROM STOCKPILES WILL LEAVE THE SITE.
 - UNSTABLE SOILS PRONE TO SLIPPING OR SLOUGHING SHALL NOT BE CLEARED, GRADED, EXCAVATED, FILLED OR HAVE LOADS IMPOSED UPON THEM UNLESS THE WORK IS PLANNED BY A QUALIFIED PROFESSIONAL ENGINEER AND INSTALLED IN ACCORDANCE WITH THE ESC PLAN. CUT AND FILL SLOPES SHOULD BE DESIGNED TO MINIMIZE EROSION PROBLEMS. ADEQUATE SLOPE DESIGN INCLUDES USE OF ROUGH SOIL SURFACE ALONG THE FACE OF THE SLOPE; WATER DIVERSION ALONG THE TOP OF THE SLOPE AWAY FROM THE FACE; TERRACES TO REDUCE SLOPE LENGTH; DELIVERY OF CONCENTRATED STORM WATER FLOWS TO THE VASE OF THE SLOPE VIA ADEQUATE CHANNEL OR PIPE; AND DRAINAGE FOR WATER SEEPS IN THE SLOPE THAT ENDANGER SLOPE STABILITY.
 - SOIL SHALL BE REMOVED FROM PAVED SURFACES AND/OR PUBLIC ROADS AT THE END OF EACH DAY IN SUCH A MANNER THAT DOES NOT CREATE OFF-SITE SEDIMENTATION IN ORDER TO ENSURE SAFETY AND ABATE OFF-SITE SOIL LOSS. COLLECTED SEDIMENTS SHALL BE PLACED IN A STABLE LOCATION ON SITE OR TAKEN OFF-SITE TO A STABLE LOCATION.
 - STABILIZE DISTURBED OR MODIFIED DRAINAGE WAYS. REDUCE EROSION EFFECTS OF STORM WATER BY USING AND/OR MAINTAINING GRASSSED SWALES, INFILTRATED STRUCTURES, OR WATER DIVERSIONS.
 - ENHANCED BMP MEASURES SHALL BE IMPLEMENTED ON THIS PROJECT. AT MINIMUM ANY FILTER SOCK PLACED SHALL BE 18" IN DIAMETER.
 - SEDIMENT AND EROSION CONTROLS SHALL BE INSPECTED ONCE EVERY SEVEN (7) DAYS AND WITHIN 24 HOURS OF A 0.25" OR GREATER RAINFALL EVENT. A WRITTEN LOG OF THESE INSPECTIONS AND IMPROVEMENTS TO CONTROLS SHALL BE KEPT ON SITE. THE INSPECTIONS SHALL INCLUDE THE DATE OF INSPECTION, NAME OF INSPECTOR, WEATHER CONDITIONS, OBSERVATIONS, ACTIONS TAKEN TO CORRECT AND PROBLEMS AND THE DATE CORRECTIVE ACTIONS WERE TAKEN.
 - TRENCHES FOR UNDERGROUND UTILITY LINES AND PIPES SHALL BE TEMPORARILY STABILIZED WITHIN SEVEN (7) DAYS IF THE ARE TO REMAIN INACTIVE FOR THIRTY (30) DAYS. TRENCH DEWATERING DEVICES SHALL DISCHARGE IN A MANNER THAT FILTERS SOIL-LADEN WATER BEFORE DISCHARGING IT TO A RECEIVING DRAINAGE DITCH OR POND, IF SEEDING, MULCHING, OR OTHER EROSION AND SEDIMENT CONTROL MEASURES WERE PREVIOUSLY INSTALLED, THESE PROTECTIVE MEASURES SHALL BE REINSTALLED.
 - DISTURBED AREAS WHICH WILL REMAIN UNWORKED FOR A PERIOD OF 21 DAYS OR MORE SHALL BE STABILIZED WITH SEEDING AND MULCHING OR OTHER APPROPRIATE MEANS WITHIN 7 DAYS.
 - SOLID, SANITARY AND TOXIC WASTE MUST BE DISPOSED OF IN A PROPER MANNER IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS. IT IS PROHIBITED TO BURN, BURY OR POUR OUT ONTO THE GROUND OR INTO THE STORM SEWER ANY SOLVENTS, PAINTS, STAINS, GASOLINE, DIESEL FUEL, USED MOTOR OIL, HYDRAULIC FLUID, ANTIFREEZE, CEMENT CURING COMPOUNDS AND OTHER SUCH TOXIC OR HAZARDOUS WASTES. STORAGE TANKS SHOULD BE LOCATED IN DINKED AREAS AWAY FROM ANY DRAINAGE CHANNELS. THE DINKED AREA SHOULD HOLD A VOLUME 110% OF THE LARGEST TANK.
 - OFF-SITE VEHICLE TRACKING SEDIMENT SHALL BE MINIMIZED. CONSTRUCTION VEHICLES ARE LIMITED TO THE CONSTRUCTION ACCESS ROAD(S) NOTED ON THE PLAN. OFF-SITE SEDIMENT TRACKING SHALL BE CONTROLLED BY REGULARLY SCHEDULED SWEEPING OF OFFSITE ACCESS ROADS AND MAINTENANCE OF ROCK CONSTRUCTION ENTRANCE.
 - ALL EROSION AND SEDIMENT CONTROL PRACTICES MUST MEET THE STANDARDS AND SPECIFICATIONS OF THE WEST VIRGINIA BEST MANAGEMENT PRACTICES MANUAL (LATEST EDITION)
 - OTHER EROSION AND SEDIMENT CONTROL ITEMS MAY BE NECESSARY DUE TO ENVIRONMENTAL CONDITIONS.
 - WINTERIZATION - ANY DISTURBED AREA THAT IS NOT GOING TO BE WORKED FOR 21 DAYS OR MORE MUST BE SEEDED AND MULCHED BY NOVEMBER 1 OR MUST HAVE A DORMANT SEEDING OR MULCH COVER APPLIED BETWEEN NOVEMBER 1 AND MARCH 1.
 - CONCRETE CEMENT IS TO BE TAKEN BACK TO PLANT FOR WASHOUT AND RECYCLING OR DESIGNATED AREAS ON SITE FOR CONCRETE WASHOUT ARE TO BE USED.

ADDITIONAL CONSTRUCTION SITE POLLUTION CONTROLS

- CONSTRUCTION PERSONNEL, INCLUDING SUBCONTRACTORS WHO MAY USE OR HANDLE HAZARDOUS OR TOXIC MATERIALS, SHALL BE MADE AWARE OF THE FOLLOWING GENERAL GUIDELINES REGARDING DISPOSAL AND HANDLING OF HAZARDOUS AND CONSTRUCTION WASTES:
 - PREVENT SPILLS
 - FOLLOW LABEL DIRECTIONS FOR DISPOSAL
 - RECYCLE WASTES WHENEVER POSSIBLE
 - DO NOT BURY CHEMICALS OR CONTAINERS
 - DO NOT BURN CHEMICALS OR CONTAINERS
 - DO NOT MIX CHEMICALS TOGETHER
- CONTAINERS SHALL BE PROVIDED FOR THE PROPER COLLECTION OF ALL WASTE MATERIAL, INCLUDING CONSTRUCTION DEBRIS, TRASH, PETROLEUM PRODUCTS AND ANY HAZARDOUS MATERIALS USED ON-SITE. CONTAINERS SHALL BE COVERED AND NOT LEAKING. ALL WASTE MATERIAL SHALL BE DISPOSED OF AT FACILITIES APPROVED FOR THAT MATERIAL. CONSTRUCTION DEMOLITION AND DEBRIS (CDDA) WASTE MUST BE DISPOSED OF AT AN WEST VIRGINIA DEP APPROVED CDDA LANDFILL.
- NO CONSTRUCTION RELATED WASTE MATERIALS ARE TO BE BURIED ON-SITE. BY EXCEPTION, CLEAN FILL (BRICKS, HARDENED CONCRETE, SOIL) MAY BE UTILIZED IN A WAY WHICH DOES NOT ENROACH UPON NATURAL WETLANDS, STREAMS OR FLOODPLAINS OR RESULT IN THE CONTAMINATION OF WATERS OF THE STATE.
- HANDLING CONSTRUCTION CHEMICALS: MIXING, PUMPING, TRANSFERRING OR OTHER HANDLING OF CONSTRUCTION CHEMICALS SUCH AS FERTILIZER, LIME, ASPHALT, CONCRETE DRYING COMPOUNDS, AND ALL OTHER POTENTIALLY HAZARDOUS MATERIALS SHALL BE PERFORMED IN AN AREA AWAY FROM ANY WATERCOURSE, DITCH OR STORM DRAIN.
- EQUIPMENT FUELING AND MAINTENANCE, OIL CHANGING, ETC. SHALL BE PERFORMED AWAY FROM WATERCOURSES, DITCHES OR STORM DRAINS, IN AN AREA DESIGNATED FOR THAT PURPOSE. THE DESIGNATED AREA SHALL BE EQUIPPED FOR RECYCLING OIL AND CATCHING SPILLS. SECONDARY CONTAINMENT SHALL BE PROVIDED FOR ALL FUEL OIL STORAGE TANKS. THESE AREAS MUST BE INSPECTED EVERY SEVEN DAYS AND WITHIN 24 HRS. OF A 0.5 INCH OR GREATER RAIN EVENT TO ENSURE THERE ARE NO EXPOSED MATERIALS WHICH WOULD CONTAMINATE STORM WATER. SITE OPERATORS MUST BE AWARE THAT SPILL PREVENTION CONTROL AND COUNTERMEASURES (SPCC) REQUIREMENTS MAY APPLY. AN SPCC PLAN IS REQUIRED FOR SITES WITH ONE SINGLE ABOVE GROUND TANK OF 660 GALLONS OR MORE, ACCUMULATIVE ABOVE GROUND STORAGE OF 1130 GALLONS OR MORE, OR 42,000 GALLONS OF UNDERGROUND STORAGE. CONTAMINATED SOILS MUST BE DISPOSED OF IN ACCORDANCE WITH ITEM 8.
- CONCRETE WASH WATER SHALL NOT BE ALLOWED TO FLOW TO STREAMS, DITCHES, STORM DRAINS, OR ANY OTHER WATER CONVEYANCE. A SUMP OR PIT WITH NO POTENTIAL FOR DISCHARGE SHALL BE CONSTRUCTED IF NEEDED TO CONTAIN CONCRETE WASH WATER. FIELD TILE OR OTHER SUBSURFACE DRAINAGE STRUCTURES WITHIN 10 FT. OF THE SUMP SHALL BE CUT AND PLUGGED. FOR SMALL PROJECTS, TRUCK CRATES MAY BE RINSED AWAY FROM ANY WATER CONVEYANCES.
- SPILL REPORTING REQUIREMENTS: SPILLS ON PAVEMENT SHALL BE ABSORBED WITH SAWDUST OR KITTY LITTER AND DISPOSED OF WITH THE TRASH AT A LICENSED SANITARY LANDFILL. HAZARDOUS OR INDUSTRIAL WASTES SUCH AS MOST SOLVENTS, GASOLINE, OIL-BASED PAINTS, AND CEMENT CURING COMPOUNDS REQUIRE SPECIAL HANDLING. SPILLS SHALL BE REPORTED TO WEST VIRGINIA DEP (1-800-642-3774). SPILLS OF 25 GALLONS OR MORE OF PETROLEUM PRODUCTS SHALL BE REPORTED TO WEST VIRGINIA DEP, THE LOCAL FIRE DEPARTMENT, AND THE LOCAL EMERGENCY PLANNING COMMITTEE WITHIN 30 MIN. OF THE DISCOVERY OF THE RELEASE. ALL SPILLS WHICH CONTACT WATERS OF THE STATE MUST BE REPORTED TO WEST VIRGINIA DEP.
- CONTAMINATED SOILS: SUBSTANCES SUCH AS OIL, DIESEL FUEL, HYDRAULIC FLUID, ANTIFREEZE, ETC. ARE SPILLED, LEADED, OR RELEASED ONTO THE SOIL, THE SOIL SHOULD BE DUG UP AND DISPOSED OF AT LICENSED SANITARY LANDFILL OR OTHER APPROVED PETROLEUM CONTAMINATED SOIL REMEDIATION FACILITY. (NOT A CONSTRUCTION/DEMOLITION DEBRIS LANDFILL). NOTE THAT STORM WATER RUN OFF ASSOCIATED WITH CONTAMINATED SOILS ARE NOT TO BE AUTHORIZED UNDER WEST VIRGINIA'S GENERAL STORM WATER PERMIT ASSOCIATED WITH CONSTRUCTION ACTIVITIES.
- OPEN BURNING: NO MATERIALS CONTAINING RUBBER, GREASE, ASPHALT, OR PETROLEUM PRODUCTS, SUCH AS TIRES, AUTO PARTS, PLASTICS OR PLASTIC COATED WIRE MAY BE BURNED (WV 45C55B). OPEN BURNING IS NOT ALLOWED IN RESTRICTED AREAS, WHICH ARE DEFINED AS: 1) WITHIN CORPORATION LIMITS; 2) WITHIN 1000 FEET OUTSIDE A MUNICIPAL CORPORATION HAVING A POPULATION OF 1000 TO 10,000; AND 3) A ONE MILE ZONE OUTSIDE OF A CORPORATION OF 10,000 OR MORE. OUTSIDE OF RESTRICTED AREAS, NO OPEN BURNING IS ALLOWED WITHIN A 1000 FEET OF AN INHABITED BUILDING ON ANOTHER PROPERTY. OPEN BURNING IS PERMISSIBLE IN A RESTRICTED AREA FOR: HEATING TAR, WELDING, SAUCE POTS AND SIMILAR OCCUPATIONAL NEEDS, AND HEATING FOR WARMTH OR OUTDOOR BARBEQUES. OUTSIDE OF RESTRICTED AREAS, OPEN BURNING IS PERMISSIBLE FOR LANDSCAPE OR LAND-CLEARING WASTES (PLANT MATERIAL, WITH PRIOR WRITTEN PERMISSION FROM WEST VIRGINIA DEP), AND AGRICULTURAL WASTES, EXCLUDING BUILDINGS.
- DUST CONTROL OR DUST SUPPRESSION: SHALL BE USED TO PREVENT NUISANCE CONDITIONS, IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND IN A MANNER, WHICH PREVENT A DISCHARGE TO WATERS OF THE STATE. SUFFICIENT DISTANCE MUST BE PROVIDED BETWEEN APPLICATIONS AND NEARBY BROGGS, CATCH BASINS, AND OTHER WATERWAYS. APPLICATION (EXCLUDING WATER) MAY NOT OCCUR WHEN RAIN IS IMMINENT AS NOTED IN THE SHORT TERM FORECAST. USED OIL MAY NOT BE APPLIED FOR DUST CONTROL.
- OTHER AIR PERMITTING REQUIREMENTS: CERTAIN ACTIVITIES ASSOCIATED WITH CONSTRUCTION WILL REQUIRE AIR PERMITS INCLUDING BUT NOT LIMITED TO: MOBILE CONCRETE BATCH PLANTS, MOBILE ASPHALT PLANTS, CONCRETE CRUSHERS, LARGE GENERATORS, ETC. THESE ACTIVITIES WILL REQUIRE SPECIFIC WEST VIRGINIA DEP AIR PERMITS FOR INSTALLATION AND OPERATION. OPERATORS MUST SEEK AUTHORIZATION FROM THE CORRESPONDING DISTRICT OF WEST VIRGINIA DEP. FOR DEMOLITION OF ALL COMMERCIAL SITES, A NOTIFICATION FOR RESTORATION AND DEMOLITION MUST BE SUBMITTED TO WEST VIRGINIA DEP TO DETERMINE IF ASBESTOS CORRECTIVE ACTIONS ARE REQUIRED.
- PROCESS WASTE WATER/LEACHATE MANAGEMENT: WEST VIRGINIA DEP'S CONSTRUCTION GENERAL PERMIT ONLY ALLOWS THE DISCHARGE OF STORM WATER AND DOES NOT INCLUDE OTHER WASTE STREAMS/SUBSTANCES SUCH AS VEHICLE AND/OR EQUIPMENT WASHING, ON-SITE SEPTIC LEACHATE CONCRETE WASH OUTS, WHICH ARE CONSIDERED PROCESS WASTEWATERS. ALL PROCESS WASTEWATERS MUST BE COLLECTED AND PROPERLY DISPOSED AT AN APPROVED DISPOSAL FACILITY. IN THE EVENT, LEACHATE OR SEPTAGE IS DISCHARGED, IT MUST BE ISOLATED FOR COLLECTION AND PROPER DISPOSAL AND CORRECTIVE ACTIONS TAKEN TO ELIMINATE THE SOURCE OF WASTE WATER.

**EROSION & SEDIMENT CONTROL PLAN
SUGAR RUN ROAD (CR-52)
PRELIMINARY PLAN**

DISTRICT 4, DOODRIDGE COUNTY, WEST VIRGINIA
FEBRUARY 2020

CONSTRUCTION SEQUENCE

- FIRST, INSTALL E&S CONTROLS ACCORDING TO THE PLANS.
- ONCE ALL E&S CONTROLS ARE IN PLACE, BEGIN DITCH AND SHOULDER MAINTENANCE TO PROVIDE POSITIVE DRAINAGE.
- PERFORM WIDENING AND PLACE STONE IN PREPARATION FOR CEMENT STABILIZATION.
- PERFORM CEMENT STABILIZATION ON ENTIRE ROADWAY.
- REPEAT DITCH AND SHOULDER MAINTENANCE TO REPAIR ANY DAMAGES CAUSED BY CEMENT STABILIZATION.
- PLACE THE PROPOSED ASPHALT PAVEMENT SECTION ACCORDING TO THE TYPICAL SECTIONS IN THIS PLAN.
- SEED AND MULCH ALL DISTURBED AREAS THROUGHOUT THE PROJECT LIMITS.
- ONCE 70% VEGETATION IS ESTABLISHED, REMOVE ALL TEMPORARY E&S CONTROLS.

SITE INFO

SITE DESCRIPTION
EXISTING - CR-52

DEVELOPER

ANTERO RESOURCES CORPORATION
335 WHITE OAKS BOULEVARD
SHREVEPORT, WV 26330

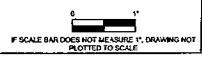
ENGINEER

HAMBROTHREE & ASSOCIATES
154 NEWELL AVE
ST. CLAIRSVILLE, OH 43080

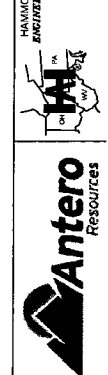
SCHEDULE OF MAJOR CONSTRUCTION
COMPLETION

DESIGN BY:	DATE:	ASST:	DATE:
DRAWN BY:	DATE:	REV. BY:	DATE:
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ENR PG:	DATE:	REV. BY:	DATE:
DATE:	DATE:	REV. BY:	DATE:

EROSION AND SEDIMENT CONTROL DETAILS
SUGAR RUN ROAD (CR-52) ROADWAY IMPROVEMENTS
ANTERO RESOURCES
DISTRICT 4
DOODRIDGE COUNTY, WEST VIRGINIA



HAMBROTHREE & ASSOCIATES, LTD.
ENGINEERS, PLANNERS, SURVEYORS
154 NEWELL AVENUE
ST. CLAIRSVILLE, OH 43080
PH: (740) 837-2727
WWW.H3A.COM



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ENR PG:	DATE:	REV. BY:	DATE:
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EROSION AND SEDIMENT CONTROL DETAILS
SUGAR RUN ROAD (CR-52) ROADWAY IMPROVEMENTS
ANTERO RESOURCES
DISTRICT 4
DOODRIDGE COUNTY, WEST VIRGINIA

Table 1-1 Recommended seeding dates for permanent and temporary cover unless otherwise specified

Planting Dates	Stability
March 1 - April 15 and August 1 - October 1	Best seeding periods
April 15 - August 1	HIGH RISK - moisture stress likely
October 1 - Dec. 1	HIGH RISK - freeze damage to young seedlings
Dec. 1 - March 1	Good seeding period. Dormant seeding.

Table 2. Acceptable fertilization recommendation in absence of a soil test.

Species	N (lbs/ac)	P2O5 (lbs/ac)	K2O (lbs/ac)	Example Rec. (per acre)
Cool Season Grass	40	80	80	400 lbs. 10-20-20
CS Grass & Legume	30	60	60	300 lbs. 10-20-20
Temporary Cover	40	40	40	200 lbs. 10-10-10

Table 3. Temporary cover suitable for establishment in West Virginia.

Species	Seeding Rate (lb/acre)	Optimum Seeding Date	Drainage	pH Range
Annual Ryegrass	40	3/1 - 6/15 or 9/15 - 9/15	Well - Poorly	5.5 - 7.5
Field Bromegrass	40	3/1 - 6/15 or 9/15 - 9/15	Well - Mod. Well	6.0 - 7.0
Spring Oats	95	3/1 - 6/15	Well - Poorly	6.5 - 7.0
Buttergrass	40	5/15 - 6/15	Well - Poorly	5.5 - 7.5
Water Rye	165	6/15 - 10/15	Well - Poorly	5.5 - 7.5
Winter Wheat	180	6/15 - 11/15	Well - Mod. Well	5.5 - 7.0
Japanese Millet	30	6/15 - 8/15	Well	4.5 - 7.0
Redtop	5	3/1 - 6/15	Well	4.0 - 7.5
Annual Ryegrass	26	3/1 - 6/15	Well - Poorly	5.5 - 7.5
Spring Oats	84	3/1 - 6/15	Well - Poorly	5.5 - 7.5

NOTE: These rates should be increased by 50% if planted April 15 - August 1 and October 1 - March 1.

- STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES SUCH AS DIVERSIONS AND SEDIMENT TRAPS SHALL BE INSTALLED AND STABILIZED WITH TEMPORARY SEEDING PRIOR TO GRADING THE REST OF THE CONSTRUCTION SITE.
- TEMPORARY SEED SHALL BE APPLIED BEFORE CONSTRUCTION OPERATIONS ON SOIL THAT WILL NOT BE GRADED OR REWORKED FOR 21 DAYS OR GREATER. THESE IDLE AREAS SHALL BE SEEDDED WITHIN 7 DAYS AFTER GRADING.
- THE SEEDDED SHOULD BE PULVERIZED AND LOOSE TO ENSURE THE SUCCESS OF ESTABLISHING VEGETATION. TEMPORARY SEEDING SHOULD NOT BE POSTPONED IF IDEAL SEEDBED PREPARATION IS NOT POSSIBLE.
- SOIL AMENDMENTS-TEMPORARY VEGETATION SEEDING RATES SHALL ESTABLISH ADEQUATE STANDS OF VEGETATION, WHICH MAY REQUIRE THE USE OF SOIL AMENDMENTS. BASE RATES FOR LIME AND FERTILIZER SHALL BE USED.
- SEEDING METHOD-SEED SHALL BE APPLIED UNIFORMLY WITH A CYCLONE SPREADER, DRILL, CULTIPACKER SEEDER, OR HYDROSEEDER. WHEN FEASIBLE, SEED THAT HAS BEEN BROADCAST SHALL BE COVERED BY RAKING OR DRAGGING AND THEN LIGHTLY TAMPAED INTO PLACE USING A ROLLER OR CULTIPACKER. IF HYDROSEEDING IS USED, THE SEED AND FERTILIZER WILL BE MIXED ON-SITE AND THE SEEDING SHALL BE DONE IMMEDIATELY AND WITHOUT INTERRUPTION.

- MULCHING TEMPORARY SEEDING**
- APPLICATIONS OF TEMPORARY SEEDING SHALL INCLUDE MULCH, WHICH SHALL BE APPLIED DURING OR IMMEDIATELY AFTER SEEDING. SEEDINGS MADE DURING OPTIMUM SEEDING DATES ON FAVORABLE, VERY FLAT SOIL CONDITIONS MAY NOT NEED MULCH TO ACHIEVE ADEQUATE STABILIZATION.
 - MATERIALS:**
 - STRAW-IF STRAW IS USED, IT SHALL BE UNROLLED SMALL-GRAIN STRAW APPLIED AT A RATE OF 2 TONS PER ACRE OR 90 LBS./1,000 SQ. FT. (3 BALES).
 - HYDROSEEDERS-IF WOOD CELLULOSE FIBER IS USED, IT SHALL BE USED AT 2000 LBS./AC. OR 46 LB./1,000 SQ. FT.
 - OTHER-OTHER ACCEPTABLE MULCHES INCLUDE MULCH MATTINGS APPLIED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS OR WOOD CHIPS APPLIED AT 6 TON/AC.
 - STRAW MULCH SHALL BE ANCHORED IMMEDIATELY TO MINIMIZE LOSS BY WIND OR WATER. ANCHORING METHODS:
 - MECHANICAL-A DISK, CRUMPER, OR SIMILAR TYPE TOOL SHALL BE SET STRAIGHT TO PUNCH OR ANCHOR THE MULCH MATERIAL INTO THE SOIL. STRAW MECHANICALLY ANCHORED SHALL NOT BE FINELY CHOPPED BUT LEFT TO A LENGTH OF APPROXIMATELY 6 INCHES.
 - MULCH NETTING-NETTING SHALL BE USED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS. NETTING MAY BE NECESSARY TO HOLD MULCH IN PLACE IN AREAS OF CONCENTRATED RUNOFF AND ON CRITICAL SLOPES.
 - SYNTHETIC BINDERS-SYNTHETIC BINDERS SUCH AS ACRYLIC DLR (AGRI-TAC), DCA-70, PETROSET, TERRA TRACK OR EQUIVALENT MAY BE USED AT RATES RECOMMENDED BY THE MANUFACTURER.
 - WOOD CELLULOSE FIBER-WOOD CELLULOSE FIBER BINDER SHALL BE APPLIED AT A NET DRY WT. OF 750 LB./AC. THE WOOD CELLULOSE FIBER SHALL BE MIXED WITH WATER AND THE MIXTURE SHALL CONTAIN A MAXIMUM OF 90 LB./100 GAL.

- CUT SLOPES-GREATER THAN 3:1 SLOPES**
- STAIR-STEP GRADING MAY BE CARRIED OUT ON ANY MATERIAL SOFT ENOUGH TO BE RIPPED WITH A BULLDOZER. THE RATIO OF THE HORIZONTAL DISTANCE TO THE VERTICAL CUT DISTANCE SHALL BE FLATTER THAN 1:1 AND THE HORIZONTAL PORTION OF THE "STEP" SHALL SLOPE TOWARD THE VERTICAL WALL. INDIVIDUAL VERTICAL CUTS SHALL NOT BE MORE THAN 24 INCHES ON SOFT SOIL MATERIALS AND NOT MORE THAN 36 INCHES IN ROCKY MATERIALS.
 - GRADING MAY BE MADE WITH ANY APPROPRIATE IMPLEMENT WHICH CAN BE SAFELY OPERATED ON THE SLOPE AND WHICH WILL NOT CAUSE UNDESIRABLE COMPACTION. SUGGESTED IMPLEMENTS INCLUDE DISCS, TILLERS, SPRING HARROWS, AND THE TEETH ON A FRONT-END LOADER BUCKET. SUCH GROOVES SHALL NOT BE LESS THAN 3 INCHES DEEP NOR FURTHER THAN 15 INCHES APART.

- FILL SLOPES-GREATER THAN 3:1 SLOPES**
- FILL SLOPES STEEPER THAN 3:1 SHALL BE GROOVED OR ALLOWED TO REMAIN ROUGH AS THEY ARE CONSTRUCTED USING METHOD (1) OR (2) BELOW.

- GRADING MAY BE MADE WITH ANY APPROPRIATE IMPLEMENT WHICH CAN BE SAFELY OPERATED ON THE SLOPE AND WHICH WILL NOT CAUSE UNDESIRABLE COMPACTION SUCH AS DISCS, TILLERS, SPRING HARROWS, AND THE TEETH ON A FRONT-END LOADER BUCKET. GROOVES LEFT SHALL NOT BE LESS THAN 3 INCHES DEEP NOR FURTHER THAN 15 INCHES APART.
- AS LIFTS OF THE FILL ARE CONSTRUCTED, SOIL AND ROCK MATERIALS MAY BE ALLOWED TO FALL NATURALLY ONTO THE SLOPE SURFACE. AT NO TIME SHALL SLOPES BE BLADED OR SCRAPPED TO PRODUCE A SMOOTH, HARD SURFACE.

- CUTS, FILLS, AND GRADED AREAS WHICH WILL BE MOWED**
- MOWED SLOPES SHOULD NOT BE STEEPER THAN 3:1 AND SHALL AVOID EXCESSIVE ROUGHNESS. THESE AREAS MAY BE ROUGHENED WITH SHALLOW GROOVES SUCH AS THOSE, WHICH REMAIN AFTER TILLING, DISCING, HARROWING, RAKING, OR USE OF A CULTIPACKER-SEEDER. THE FINAL PASS OF ANY SUCH TILLAGE IMPLEMENT SHALL BE ON THE CONTOUR (PERPENDICULAR TO THE SLOPE).
 - GROOVES FORMED BY IMPLEMENTS SHALL BE NOT LESS THAN 1 INCH DEEP AND NOT FURTHER THAN 12 INCHES APART. FILL SLOPES THAT ARE LEFT ROUGH DURING CONSTRUCTION MAY BE SMOOTHED WITH A CHAIN HARROW OR SIMILAR IMPLEMENT TO FACILITATE MOWING.

SITE PREPARATION

- SUBSOILER, PLOW, OR OTHER IMPLEMENT SHALL BE USED TO REDUCE SOIL COMPACTION AND ALLOW MAXIMUM INFILTRATION. MAXIMIZING INFILTRATION WILL HELP CONTROL BOTH RUNOFF RATE AND WATER QUALITY. SUBSOILING SHOULD BE DONE WHEN THE SOIL MOISTURE IS LOW ENOUGH TO ALLOW THE SOIL TO CRACK OR FRACTURE. SUBSOILING SHALL NOT BE DONE ON SLIP-PRONE AREAS WHERE SOIL PREPARATION SHOULD BE LIMITED TO WHAT IS NECESSARY FOR ESTABLISHING VEGETATION.
- THE SITE SHALL BE GRADED AS NEEDED TO PERMIT THE USE OF CONVENTIONAL EQUIPMENT FOR SEEDBED PREPARATION AND SEEDING.
- TOPSOIL SHALL BE APPLIED WHERE NEEDED TO ESTABLISH VEGETATION.

SEEDBED PREPARATION

- LIME-AGRICULTURAL GROUND LIMESTONE SHALL BE APPLIED TO ACID SOIL AS RECOMMENDED BY A SOIL TEST. IN LIEU OF A SOIL TEST, LIME SHALL BE APPLIED AT THE RATE OF 150 POUNDS PER 1,000-SQ. FT. OR 3 TONS PER ACRE.
- FERTILIZER-FERTILIZER SHALL BE APPLIED AS RECOMMENDED BY A SOIL TEST. IN PLACE OF A SOIL TEST, FERTILIZER SHALL BE APPLIED AT A RATE OF 12 POUNDS PER 1,000-SQ. FT. OR 500 POUNDS PER ACRE OF A 10-20-20 OR EQUIVALENT.
- THE LIME AND FERTILIZER SHALL BE WORKED INTO THE SOIL WITH A DISK HARROW, SPRING-TOOTH HARROW, OR OTHER SUITABLE FIELD IMPLEMENT TO A DEPTH OF 3 INCHES. ON SLOPING LAND, THE SOIL SHALL BE WORKED ON THE CONTOUR.

SEEDING DATES AND SOIL CONDITIONS

SEEDING SHOULD BE DONE MARCH 1 TO APRIL 15 OR AUGUST 1 TO OCTOBER 1. IF SEEDING OCCURS APRIL 15 - AUGUST 1, AND OCTOBER 1 - MARCH 1, INCREASE SEEDING RATES BY 50%. TILLAGE FOR SEEDBED PREPARATION SHOULD BE DONE WHEN THE SOIL IS DRY ENOUGH TO CRUMBLE AND NOT FORM RIBBONS WHEN COMPRESSED BY HAND. FOR WINTER SEEDING, SEE THE FOLLOWING SECTION ON DORMANT SEEDING.

DORMANT SEEDINGS

- SEEDINGS CAN BE MADE FROM DECEMBER 1 THROUGH MARCH 1. DURING THIS PERIOD, THE SEEDS ARE LIKELY TO GERMINATE BUT MAY NOT BE ABLE TO SURVIVE THE WINTER.
- THE FOLLOWING METHODS MAY BE USED FOR "DORMANT SEEDING":
 - FROM DECEMBER 1 THROUGH MARCH 1, PREPARE THE SEEDBED, ADD THE REQUIRED AMOUNTS OF LIME AND FERTILIZER, THEN MULCH AND ANCHOR. INCREASE SEEDING RATES BY 50%.

MULCHING

- MULCH MATERIAL SHALL BE APPLIED IMMEDIATELY AFTER SEEDING. DORMANT SEEDING SHALL BE MULCHED. 100% OF THE GROUND SURFACE SHALL BE COVERED WITH AN APPROVED MATERIAL.
- MATERIALS:**
 - STRAW-IF STRAW IS USED IT SHALL BE UNROLLED SMALL-GRAIN STRAW APPLIED AT THE RATE OF 2-3 TONS PER ACRE OR 135 POUNDS (THREE TO FOUR BALES) PER 1,000-SQ. FT. THE MULCH SHALL BE SPREAD UNIFORMLY BY HAND OR MECHANICALLY APPLIED SO THE SOIL SURFACE IS COVERED. FOR UNIFORM DISTRIBUTION OF HAND-SPREAD MULCH, DIVIDE AREA INTO APPROXIMATELY 1,000-SQ. FT. SECTIONS AND SPREAD THREE 45-LB. BALES OF STRAW IN EACH SECTION.
 - HYDROSEEDERS-IF WOOD CELLULOSE FIBER IS USED, IT SHALL BE APPLIED AT 1,500 LB./AC. OR 35 LB./1,000 SQ. FT.
 - OTHER-OTHER ACCEPTABLE MULCHES INCLUDE ROLLED EROSION CONTROL MATTINGS OR BLANKETS APPLIED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS OR WOOD CHIPS APPLIED AT 6 TONS PER ACRE.

STRAW AND MULCH ANCHORING METHODS

- STRAW MULCH SHALL BE ANCHORED IMMEDIATELY TO MINIMIZE LOSS BY WIND OR WATER.
- MECHANICAL-A DISK, CRUMPER, OR SIMILAR TYPE TOOL SHALL BE SET STRAIGHT TO PUNCH OR ANCHOR THE MULCH MATERIAL INTO THE SOIL. STRAW MECHANICALLY ANCHORED SHALL NOT BE FINELY CHOPPED BUT, GENERALLY, BE LEFT LONGER THAN 6 INCHES.
- MULCH NETTING-NETTING SHALL BE USED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS. NETTING MAY BE NECESSARY TO HOLD MULCH IN PLACE IN AREAS OF CONCENTRATED RUNOFF AND ON CRITICAL SLOPES.
- ASPHALT EMULSION ASPHALT SHALL BE APPLIED AS RECOMMENDED BY THE MANUFACTURER OR AT THE RATE OF 160 GALLONS PER ACRE.

SYNTHETIC BINDERS-SYNTHETIC BINDERS SUCH AS ACRYLIC DLR (AGRI-TAC), DCA-70, PETROSET, TERRA TACK OR EQUIVALENT MAY BE USED AT RATES SPECIFIED BY THE MANUFACTURER.

- WOOD CELLULOSE FIBER-WOOD CELLULOSE FIBER SHALL BE APPLIED AT A NET DRY WEIGHT OF 1,500 POUNDS PER ACRE. THE WOOD CELLULOSE FIBER SHALL BE MIXED WITH WATER WITH THE MIXTURE CONTAINING A MAXIMUM OF 90 POUNDS CELLULOSE PER 100 GALLONS OF WATER.

IRRIGATION

PERMANENT SEEDING SHALL INCLUDE IRRIGATION TO ESTABLISH VEGETATION DURING DRY WEATHER OR ON ADVERSE SITE CONDITIONS, WHICH REQUIRE ADEQUATE MOISTURE FOR SEED GERMINATION AND PLANT GROWTH.

IRRIGATION RATES SHALL BE MONITORED TO PREVENT EROSION AND DAMAGE TO SEEDED AREAS FROM EXCESSIVE RUNOFF.

TOPSOILING

- SALVAGING AND STOCKPILING**
- DETERMINE THE DEPTH AND SUITABILITY OF TOPSOIL AT THE SITE. (FOR HELP, CONTACT YOUR NRCS OFFICE TO OBTAIN A COUNTY SOIL SURVEY REPORT).
 - PRIOR TO STRIPPING TOPSOIL, INSTALL APPROPRIATE DOWNSLOPE EROSION AND SEDIMENTATION CONTROLS SUCH AS SEDIMENT TRAPS AND BASINS.
 - REMOVE THE SOIL MATERIAL NO DEEPER THAN WHAT THE COUNTY SOIL SURVEY DESCRIBES AS "SURFACE SOIL" (IE. A OR A₁ HORIZON).
 - CONSTRUCT STOCKPILES IN ACCESSIBLE LOCATIONS THAT DO NOT INTERFERE WITH NATURAL DRAINAGE. INSTALL APPROPRIATE SEDIMENT CONTROLS TO TRAP SEDIMENT SUCH AS SILT FENCE IMMEDIATELY ADJACENT TO THE STOCKPILE OR SEDIMENT TRAPS OR BASINS DOWNSTREAM OF THE STOCKPILE. STOCKPILE SIDE SLOPES SHALL NOT EXCEED A RATION OF 2:1.
 - IF TOPSOIL IS STORED FOR MORE THAN 21 DAYS, IT SHOULD BE TEMPORARILY SEEDDED, OR COVERED WITH A TARP.

SPREADING THE TOPSOIL

- PRIOR TO APPLYING TOPSOIL, THE TOPSOIL SHOULD BE PULVERIZED.
- TO ENSURE BONDING, GRADE THE SUBSOIL AND ROUGHEN THE TOP 3-4 IN. BY DISKING.
- DO NOT APPLY WHEN SITE IS WET, MUDDY, OR FROZEN, BECAUSE IT MAKES SPREADING DIFFICULT, CAUSES COMPACTION PROBLEMS, AND INHIBITS BONDING WITH SUBSOIL.
- APPLY TOPSOIL EVENLY TO A DEPTH OF AT LEAST 4 INCHES AND COMPACT SLIGHTLY TO IMPROVE CONTACT WITH SUBSOIL.
- AFTER SPREADING, GRADE AND STABILIZE WITH SEEDING OR APPROPRIATE VEGETATION.

Table 4a. Permanent seeding mixtures suitable for establishment in WV.

Species/Mixture	Seeding Rate (lb/acre)	Soil Drainage Preference	pH Range
Crownvetch/ Tall Fescue	10 - 15	Well - Mod. Well	6.0 - 7.5
Crownvetch/ Perennial Ryegrass	30	Well - Mod. Well	6.0 - 7.5
Platycodon or Perennial Pea/ Tall Fescue	20 15	Well - Mod. Well	4.0 - 8.0
Ladino Clover/ Sericea Lespedeza/ Tall Fescue	25 30 2	Well - Mod. Well	4.5 - 7.5
Ladino Clover/ Redtop	40 3	Well - Mod. Well	5.0 - 7.5
Crownvetch/ Tall Fescue/ Redtop	30 20 3	Well - Mod. Well	5.0 - 7.5
Birdfoot Trefoil/ Redtop	10 3	Well - Mod. Well	5.0 - 7.5
Sericea Lespedeza/ Tall Fescue/ Redtop	25 30 3	Well - Mod. Well	4.5 - 7.5
Redtop/ Tall Fescue/ Creeping Red	30 3 50	Well - Mod. Well	5.0 - 7.5
Tall Fescue/ Creeping Red	50	Well - Poorly	4.5 - 7.5
Perennial Ryegrass/ Tall Fescue/ Lathro Flat Pea*	10 15 20	Well - Poorly	5.0 - 8.0

Table IV-4 takes from Natural Resources Conservation Service Manual Critical Area Planning

Table 4b. Mixtures in the table below are more wildlife and farm friendly.

Species/Mixture	Seeding Rate (lb/acre)	Soil Drainage Preference	pH Range
WV Bluegrass/ Redtop	20 3	Well - Mod. Well	5.5 - 7.5
Ladino Clover or Birdfoot Trefoil	2/10		
Timothy/ Alicia	12 8	Well - Mod. Well	6.5 - 8.0
Timothy/ Birdfoot Trefoil	8 8	Well - Poorly	5.5 - 7.5
Orchardgrass/ Ladino Clover/ Redtop	10 2 3	Well - Mod. Well	5.5 - 7.5
Orchardgrass/ Ladino Clover	2 2	Well - Mod. Well	5.5 - 7.5
Orchardgrass/ Perennial Ryegrass	20	Well - Mod. Well	5.5 - 7.5
Creeping Red Fescue/ Perennial Ryegrass	30 30	Well - Mod. Well	5.5 - 7.5
Orchardgrass or Kentucky Bluegrass	20	Well - Mod. Well	6.0 - 7.5
Birdfoot Trefoil/ Redtop	10 5	Well - Mod. Well	5.5 - 7.5
Orchardgrass/ Lathro Flat Pea/ Perennial Ryegrass	30 30 20	Well - Mod. Well	5.5 - 7.5

Mixtures listed in bold are suitable for use in shaded woodland settings. Those in italics are suitable for use in filter strips.
*Lathro Flat Pea is particularly palatable to some livestock. All legumes should be planted with proper inoculants prior to seeding for maximum seedling or seedling survival in the optimum conditions, and 50% more seed to the specified rate.

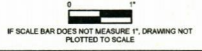
Table IV-5 Lime and Fertilizer Application Table

pH of Soil	Lime in Tons Per Acre	Fertilizer, Lbs. per Acre	10-20-20 or Equivalent
Above 6.0	2	500	
5.0 to 6.0	3	500	
Below 5.0	4	500	

The pH can be determined with a portable pH testing kit or by sending the soil samples to a soil testing laboratory. When 4 tons of lime per acre are applied it may be incorporated into the soil by disking, harrowing or tilling or over the slope.

Table IV-6 Mulch Materials Rates and Uses

Material	Minimum Rates Per Acre	Coverage	Remarks
Hay or Straw	2 to 3 Tons	100 to 150 Bales	Cover 75% to 80% of Surface or washing unless fed down
Wood Fiber	1000 to 1500 lbs	Cover all	For Hydroseeding
Pulp Fiber		Disturbed Areas	
Wood Cellulose			
Recycled Paper			



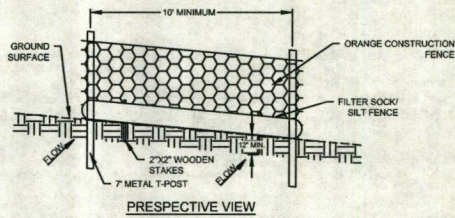
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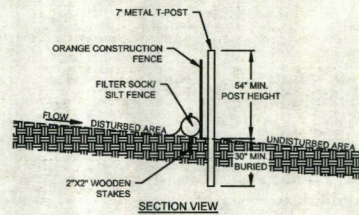
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EROSION AND SEDIMENT CONTROL DETAILS
 SUGAR RUN ROAD (CR-52) ROADWAY IMPROVEMENTS
 ANTERO RESOURCES
 DISTRICT 4
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PERSPECTIVE VIEW



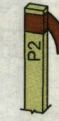
SECTION VIEW

- NOTES:
1. ALL MATERIAL SHOULD BE INSTALLED PER MANUFACTURERS RECOMMENDATIONS.
 2. SILT FENCE MAY BE SUBSTITUTED FOR FILTER SOCK AT THE DISCRETION OF THE ON-SITE ENVIRONMENTAL FIELD COORDINATOR.

PHASE 2-ORANGE CONSTRUCTION FENCE, & SILT FENCE/FILTER SOCK
N.T.S.

GENERAL GUIDELINES FOR INSTALLATION

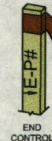
1. ALL FEATURES WHICH ARE INSIDE OR IMMEDIATELY ADJACENT TO THE WORK AREA/LOD SHALL BE PROTECTED.
2. HEADWATERS OF ANY STREAM(S) INSIDE THE LOD SHOULD BE HORSESHOED WITH THE PROJECTION EXTENDING DOWN TO THE LOD AND FLARED OUT A MINIMUM OF 50'.
3. ALL WETLANDS NOT SLATED FOR IMPACT INSIDE THE LOD SHOULD BE COMPLETELY WRAPPED WITH PROTECTION.
4. ALL STREAMS WHICH BEGIN OUTSIDE THE LOD OR ARE PARALLEL TO THE LOD WILL HAVE PROTECTIONS ANYTIME THE FEATURE IS WITHIN 100 FEET OF THE LOD AND CONSTRUCTION ACTIVITY.
5. ALL WETLANDS WITHIN CLOSE PROXIMITY TO THE LOD SHOULD HAVE PROTECTIONS INSTALLED ALONG THE LOD TO PROTECT THE FEATURE.
6. NO IMPACTS ARE AUTHORIZED TO ANY FEATURES OUTSIDE THE LOD.
7. PROTECTIONS SHOULD BE PROVIDED FOR ANY AND ALL SPECIAL SITUATIONS (I.E. NEARBY CEMETERIES, HOUSES, TREE(S) TO BE SAVED, WATER WELL, ETC.)



PHASE 2 CONTROL



BEGIN CONTROL



END CONTROL

404 CONTROL STAKING DETAILS
N.T.S.

STREAM AND WETLAND FLAGGING PROTOCOL

- JURISDICTIONAL AQUATIC FEATURES THAT ARE LOCATED WITHIN THE LOD AND WITHIN THE PROPOSED GRADING LIMITS AND HAVE BEEN AUTHORIZED FOR THE DISCHARGE OF PERMANENT FILL OR DREDGED MATERIAL SHOULD BE STAKED AND MARKED WITH LIME GREEN-PERMANENT IMPACT EXTENT FLAGGING AS SHOWN IN FIGURE 1. ADDITIONALLY, STAKES INSTALLED AT THE AUTHORIZED EXTENTS (UPSTREAM AND DOWNSTREAM) SHOULD BE CONNECTED BY LIME GREEN-PERMANENT IMPACT EXTENT FLAGGING AS SHOWN IN THE TYPICAL FLAGGING SCHEME (FIGURE 5).**
- JURISDICTIONAL AQUATIC FEATURES THAT ARE LOCATED WITHIN THE LOD, BUT ARE LOCATED OUTSIDE OF THE PROPOSED GRADING LIMITS AND HAVE NOT BEEN AUTHORIZED FOR THE DISCHARGE OF PERMANENT FILL OR DREDGED MATERIAL BUT MAY BE SUBJECT TO TEMPORARY DISTURBANCE RESULTING FROM CONSTRUCTION ACTIVITIES. THESE FEATURES SHOULD BE STAKED AND MARKED WITH RED-TEMPORARY DISTURBANCE FLAGGING AS SHOWN IN FIGURE 2. ADDITIONALLY, STAKES INSTALLED AT THE EDGE OF THE LOD SHOULD BE CONNECTED BY RED-TEMPORARY DISTURBANCE FLAGGING AS SHOWN IN THE TYPICAL FLAGGING SCHEME (FIGURE 5). IF TEMPORARY DISTURBANCE TO THESE FEATURES IS UNAVOIDABLE DURING CONSTRUCTION, THEY MUST BE PROTECTED BY TEMPORARY MATTING AND EROSION AND SEDIMENT CONTROL MEASURES AND RETURNED TO RE-CONSTRUCTION CONDITIONS ONCE THE TEMPORARY DISTURBANCE HAS CEASED.**
- JURISDICTIONAL AQUATIC FEATURES THAT ARE LOCATED OUTSIDE OF THE LOD HAVE NOT BEEN AUTHORIZED FOR THE DISCHARGE OF PERMANENT FILL OR DREDGED MATERIAL AND SHOULD BE AVOIDED. FEATURES THAT ARE WITHIN 100 FEET OF THE LOD SHOULD BE STAKED AND MARKED WITH PINK-WETLAND DELINEATION FLAGGING AS SHOWN IN FIGURE 3. STAKES INSTALLED ON THESE FEATURES WITHIN 25 FEET OF THE LOD SHOULD BE CONNECTED WITH VISIBLE PINK-WETLAND DELINEATION FLAGGING.**
- THE LOD AROUND AQUATIC FEATURES SHOULD BE CLEARLY STAKED AND MARKED WITH BLUE AND WHITE STRIPED FLAGGING AS SHOWN IN FIGURE 4. STAKES INSTALLED AS THE LOD MARKER SHOULD BE CONNECTED WITH BLUE AND WHITE STRIPED FLAGGING AS SHOWN IN THE TYPICAL FLAGGING SCHEME (FIGURE 5). FEATURES LOCATED BEYOND THE LOD FLAGGING SHOULD BE PROTECTED UPSTREAM WITH PROPER EROSION AND SEDIMENT CONTROL MEASURES TO PREVENT THE TRANSPORT OF SEDIMENT INTO DOWNSTREAM WATERS OF THE UNITED STATES.**

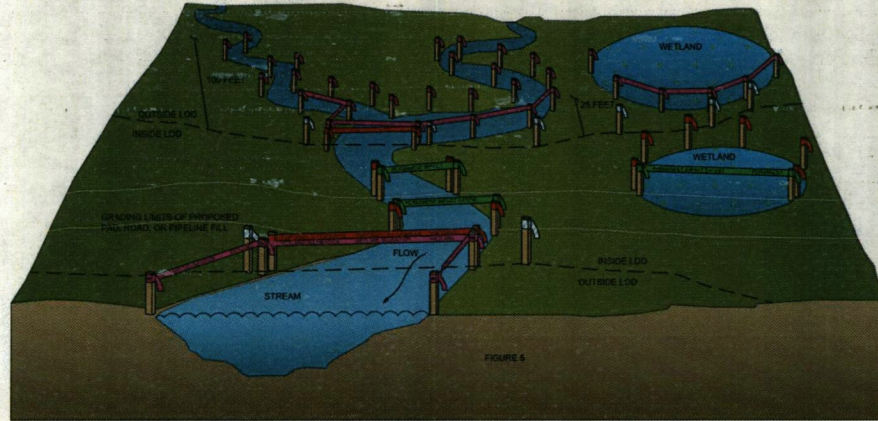


FIGURE 5

FIGURE 1



FIGURE 2

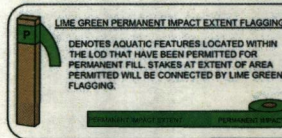


FIGURE 3

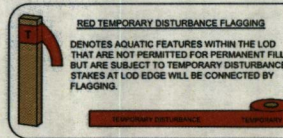
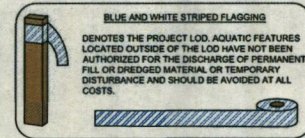


FIGURE 4

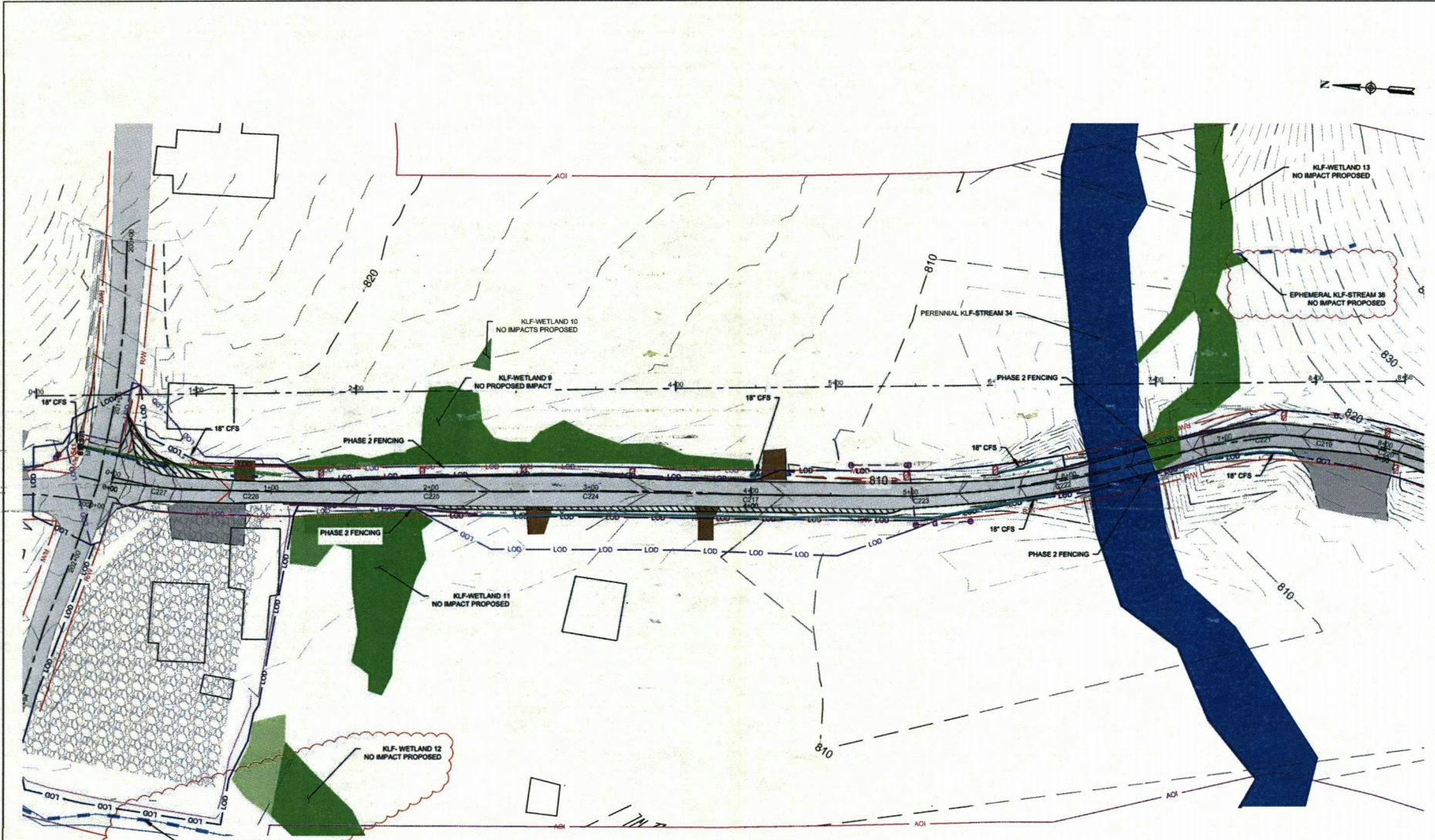


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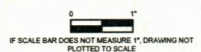
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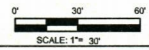


PLAN VIEW
CR-52 STA 0+00 - 8+00

FINAL PLAN



LEGEND			
	AREA OF INTEREST		EDGE OF SHOULDER
	LIMITS OF DISTURBANCE		EPHEMERAL STREAM
	EXISTING CONTOURS		INTERMITTENT STREAM
	PROPOSED CONTOURS		PERENNIAL STREAM
	JURISDICTIONAL DITCH		18" FILTER SOCK
	PROPOSED WIDENING		EXISTING CULVERT
	EXISTING VEGETATION		PHASE 2 FENCING
	DRAINAGE AREA		PROPOSED CULVERT
	FABRIC CHECK DAM		ROCK CHECK DAM
	LEVEL SPREADER		OUTLET PROTECTION

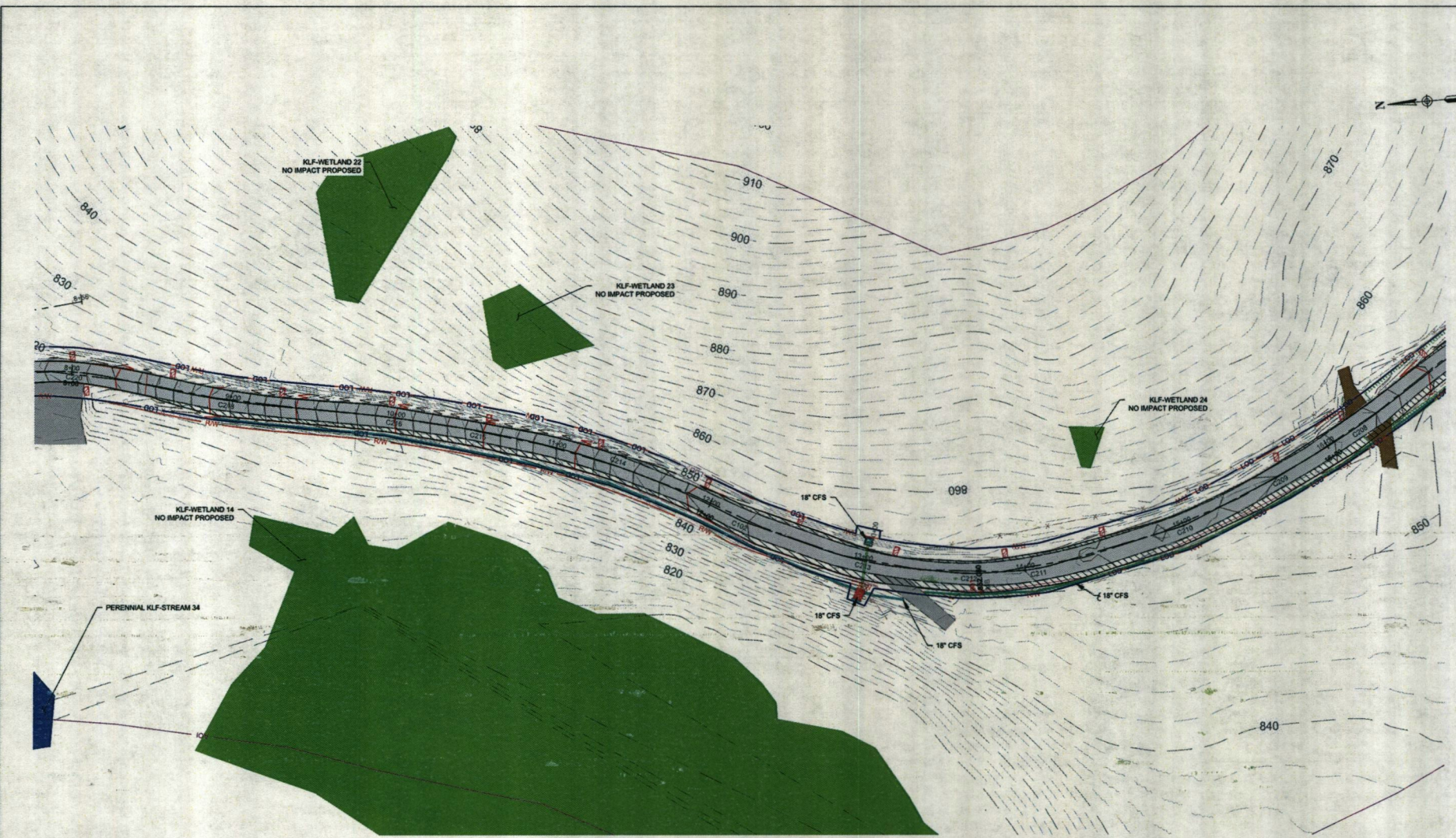


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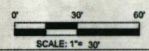


PLAN VIEW
CR-52 STA. 8+00 - 16+00

FINAL PLAN

IF SCALE BAR DOES NOT MEASURE 1" DRAWINGS NOT PLOTTED TO SCALE

LEGEND			
	AREA OF INTEREST		EDGE OF SHOULDER
	LIMITS OF DISTURBANCE		EPHEMERAL STREAM
	EXISTING CONTOURS		INTERMITTENT STREAM
	PROPOSED CONTOURS		PERENNIAL STREAM
	JURISDICTIONAL DITCH		PROPOSED WIDENING
	EXISTING VEGETATION		PHASE 2 FENCING
	DRAINAGE AREA		PROPOSED CULVERT
	18" FILTER SOCK		EXISTING CULVERT
	FABRIC CHECK DAM		ROCK CHECK DAM
	LEVEL SPREADER		OUTLET PROTECTION

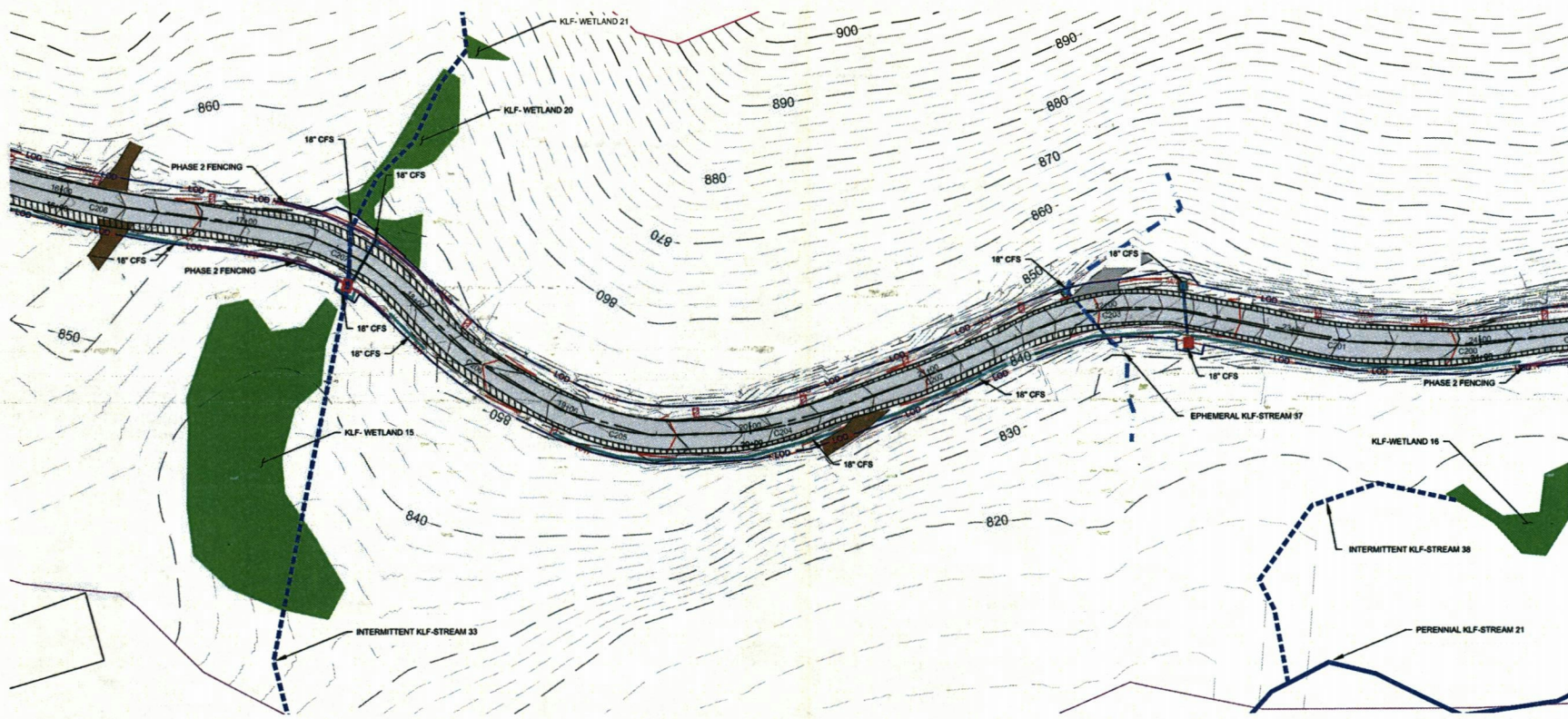


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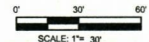


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DODDGE COUNTY, WEST VIRGINIA



PLAN VIEW
CR-52 STA. 16+00 - 24+00



FINAL PLAN

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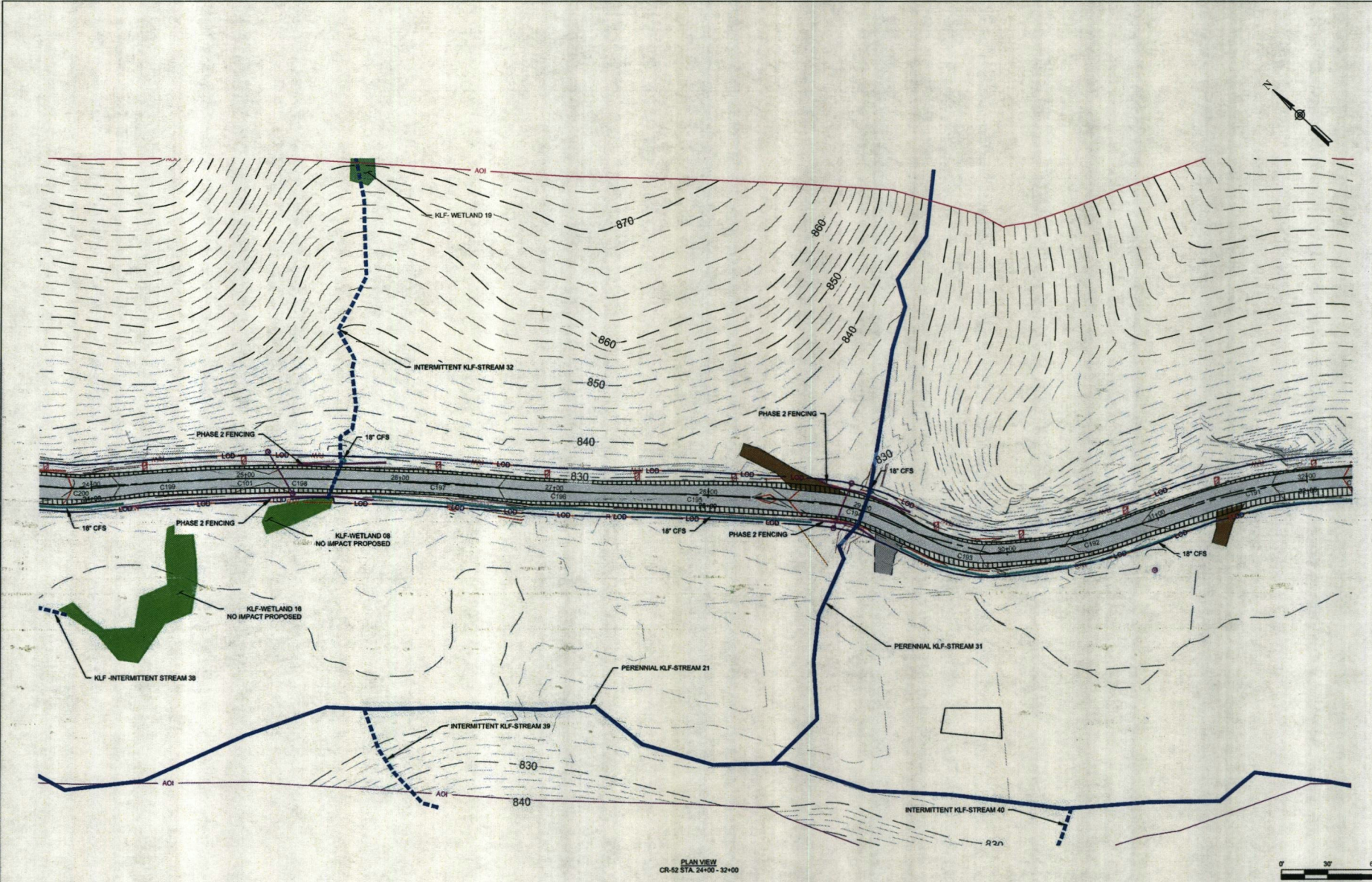
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	LIMITS OF DISTURBANCE		EPHEMERAL STREAM
	EXISTING CONTOURS		INTERMITTENT STREAM
	PROPOSED CONTOURS		PERENNIAL STREAM
	JURISDICTIONAL DITCH		18" FILTER SOCK
	PROPOSED WIDENING		EXISTING CULVERT
	EXISTING VEGETATION		FABRIC CHECK DAM
	DRAINAGE AREA		LEVEL SPREADER
	PHASE 2 FENCING		ROCK CHECK DAM
	PROPOSED CULVERT		OUTLET PROTECTION

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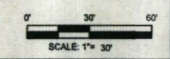


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ANTERO RESOURCES
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PLAN VIEW
CR-52 STA. 24+00 - 32+00



FINAL PLAN

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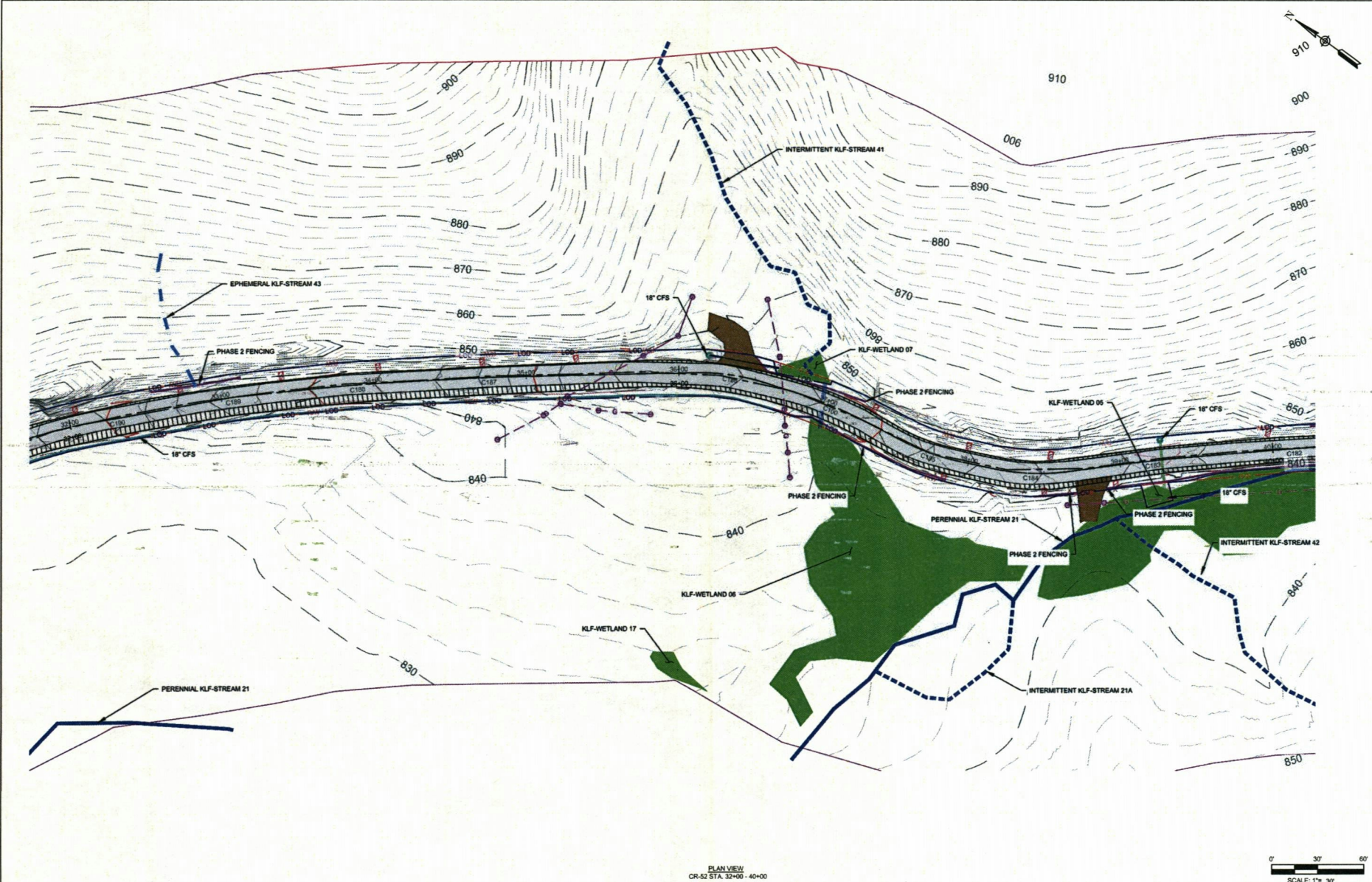
LEGEND			
AOI	AREA OF INTEREST	EDGE OF SHOULDER	JURISDICTIONAL DITCH
LOD	LIMITS OF DISTURBANCE	EPHEMERAL STREAM	18" FILTER SOCK
EXISTING CONTOURS	EXISTING CONTOURS	INTERMITTENT STREAM	EXISTING CULVERT
PROPOSED CONTOURS	PROPOSED CONTOURS	PERENNIAL STREAM	FABRIC CHECK DAM
PROPOSED WIDENING	PROPOSED WIDENING	PERENNIAL STREAM	LEVEL SPREADER
EXISTING VEGETATION	EXISTING VEGETATION	PERENNIAL STREAM	ROCK CHECK DAM
DRAINAGE AREA	DRAINAGE AREA	PERENNIAL STREAM	OUTLET PROTECTION
PHASE 2 FENCING	PHASE 2 FENCING	PERENNIAL STREAM	
PROPOSED CULVERT	PROPOSED CULVERT		

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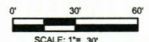


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STA. 16+00 TO 34+00
SUGAR RUN ROAD (CR-52) ROADWAY IMPROVEMENTS
ANTERO RESOURCES
DISTRICT 4, WEST VIRGINIA
DODDRIEGE COUNTY, WEST VIRGINIA



PLAN VIEW
CR-52 STA. 32+00 - 40+00



FINAL PLAN

0 1'
IF SCALE BAR DOES NOT MEASURE 1" DRAWING NOT PLOTTED TO SCALE

LEGEND			
AOI	AREA OF INTEREST	EPHEMERAL STREAM	18" FILTER SOCK
LOD	LIMITS OF DISTURBANCE	INTERMITTENT STREAM	EXISTING CULVERT
EXISTING CONTOURS		PERENNIAL STREAM	FABRIC CHECK DAM
PROPOSED CONTOURS		JURISDICTIONAL DITCH	PHASE 2 FENCING
PROPOSED WIDENING		EXISTING VEGETATION	PROPOSED CULVERT
DRAINAGE AREA		ROCK CHECK DAM	OUTLET PROTECTION
EDGE OF SHOULDER		LEVEL SPREADER	

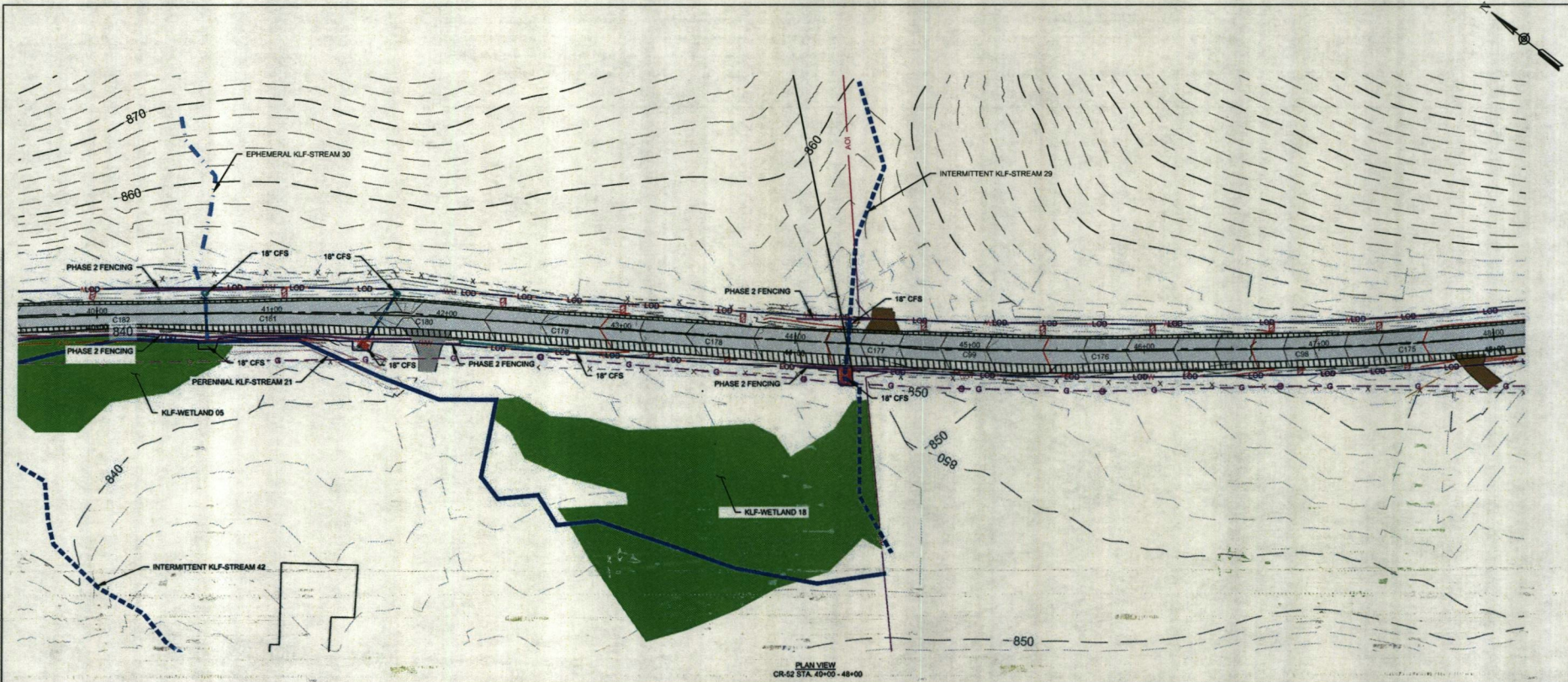
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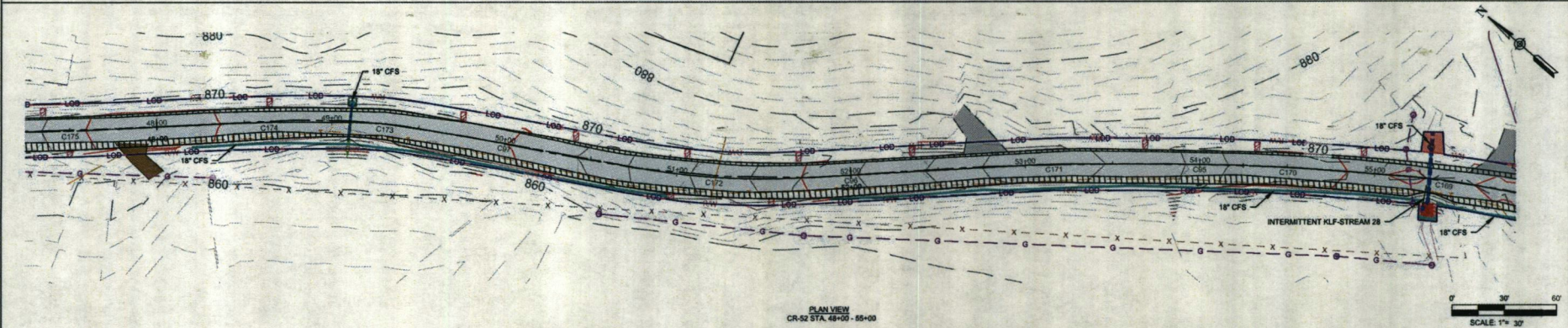
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STA. 32+00 TO 40+00
SUGAR RUN ROAD (CR-52) ROADWAY IMPROVEMENTS
ANTERO RESOURCES
DISTRICT 4
DODDRIDGE COUNTY, WEST VIRGINIA

PLOT DATE: January 31, 2022



PLAN VIEW
CR-52 STA. 40+00 - 48+00

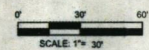


PLAN VIEW
CR-52 STA. 48+00 - 55+00

FINAL PLAN

1" SCALE BAR DOES NOT MEASURE 1". DRAWING NOT PLOTTED TO SCALE

LEGEND			
	AREA OF INTEREST		EDGE OF SHOULDER
	LIMITS OF DISTURBANCE		EPHEMERAL STREAM
	EXISTING CONTOURS		INTERMITTENT STREAM
	PROPOSED CONTOURS		PERENNIAL STREAM
	JURISDICTIONAL DITCH		18" FILTER SOCK
	PROPOSED WIDENING		PHASE 2 FENCING
	EXISTING VEGETATION		PROPOSED CULVERT
	DRAINAGE AREA		EXISTING CULVERT
	ROCK CHECK DAM		FABRIC CHECK DAM
	OUTLET PROTECTION		LEVEL SPREADER

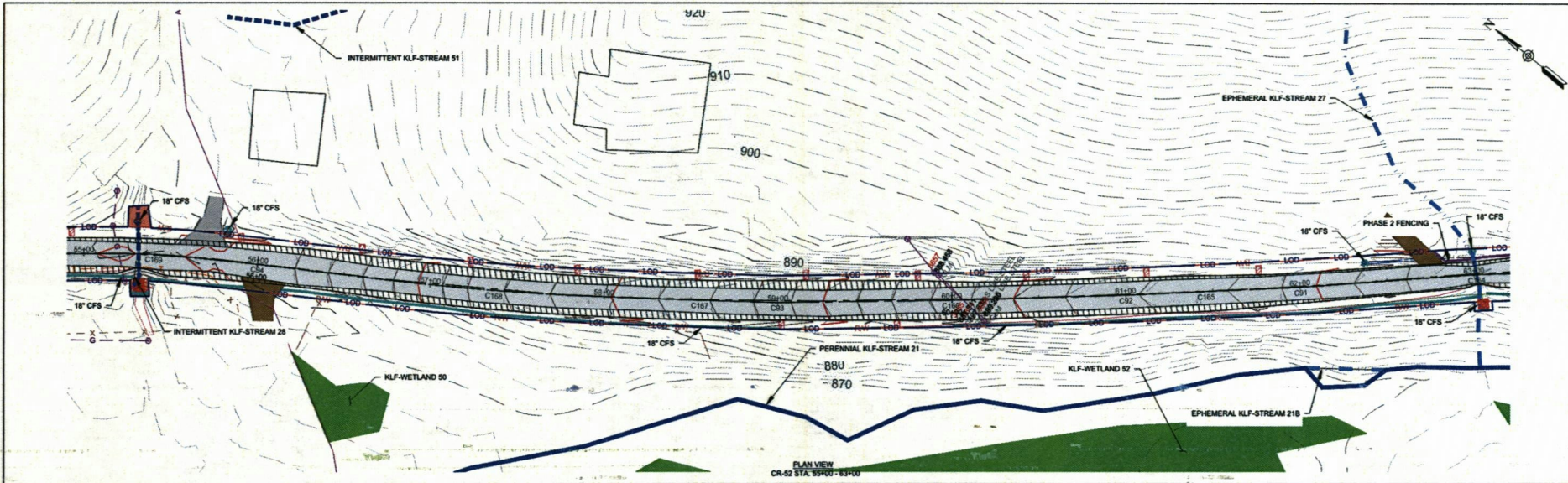


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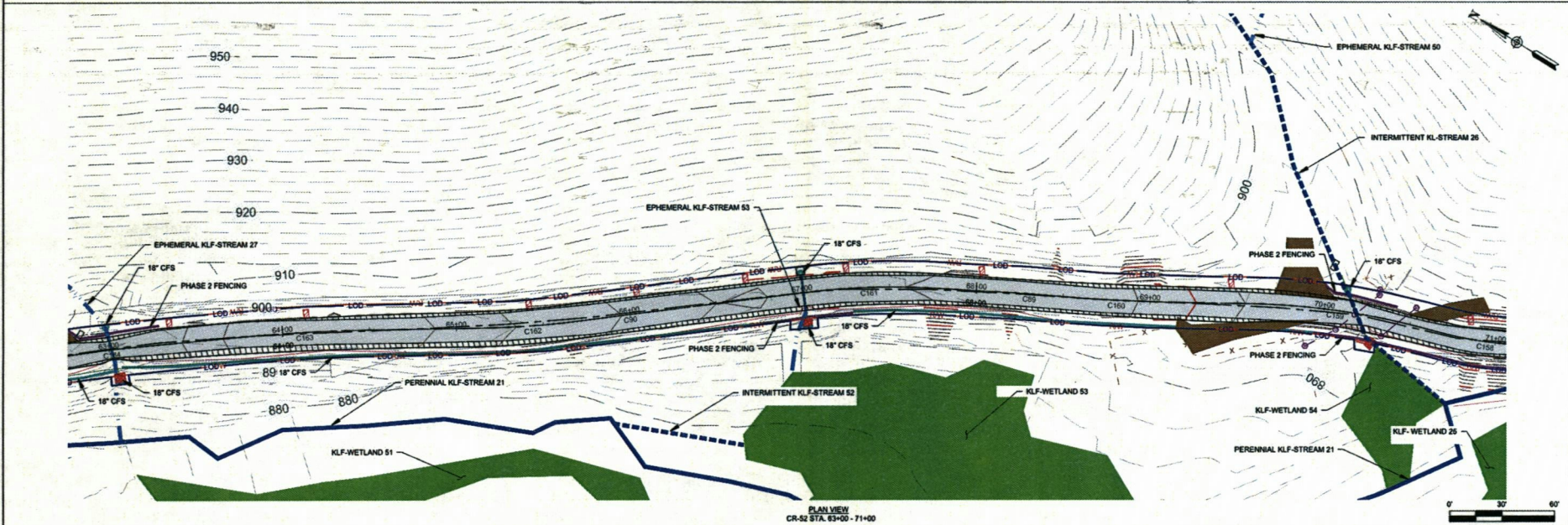


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STA. 40+00 TO 55+00
SUGAR RUN ROAD (CR-52) ROADWAY IMPROVEMENTS
ANTERO RESOURCES
DODDRIE COUNTY, WEST VIRGINIA



PLAN VIEW
CR-52 STA. 63+00 - 81+00



PLAN VIEW
CR-52 STA. 83+00 - 71+00

LEGEND

— AOI — AREA OF INTEREST	— EDGE OF SHOULDER	— JURISDICTIONAL DITCH	— 18" FILTER SOCK	— EXISTING CULVERT	— FABRIC CHECK DAM
— LOD — LIMITS OF DISTURBANCE	— EPHEMERAL STREAM	— PROPOSED WIDENING	— PHASE 2 FENCING	— ROCK CHECK DAM	— LEVEL SPREADER
— EXISTING CONTOURS	— INTERMITTENT STREAM	— EXISTING VEGETATION	— PROPOSED CULVERT	— OUTLET PROTECTION	
— PROPOSED CONTOURS	— PERENNIAL STREAM	— DRAINAGE AREA			

FINAL PLAN

1" = 30'
SCALE BAR DOES NOT MEASURE 1". DRAWING NOT PLOTTED TO SCALE

0' 30' 60'
SCALE: 1" = 30'

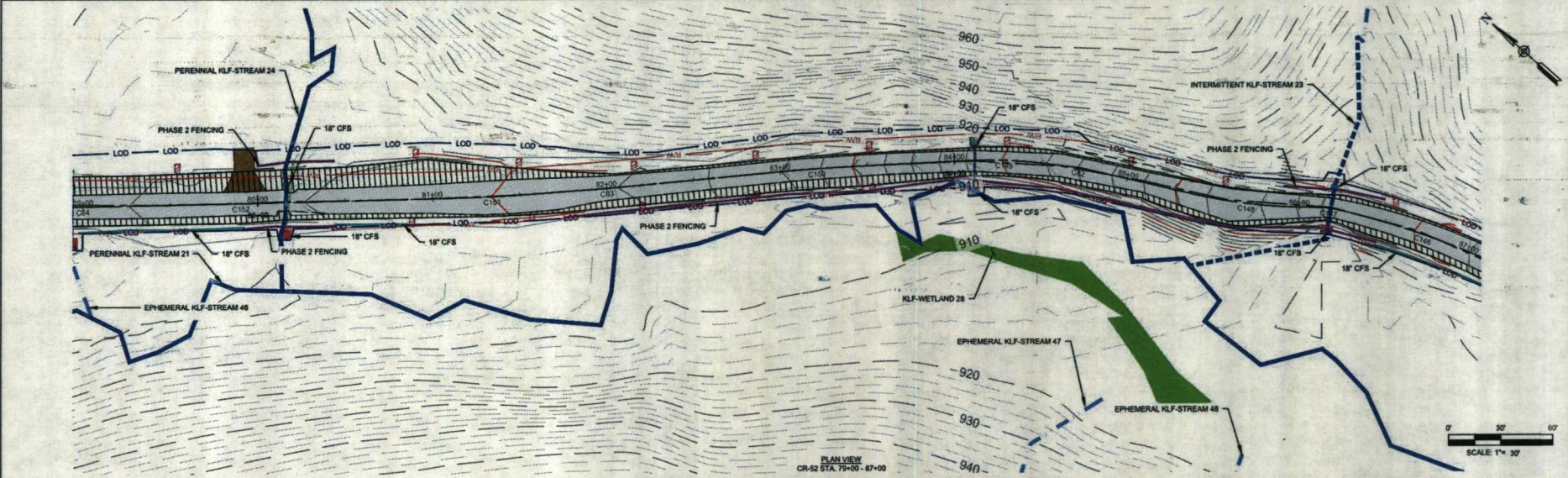
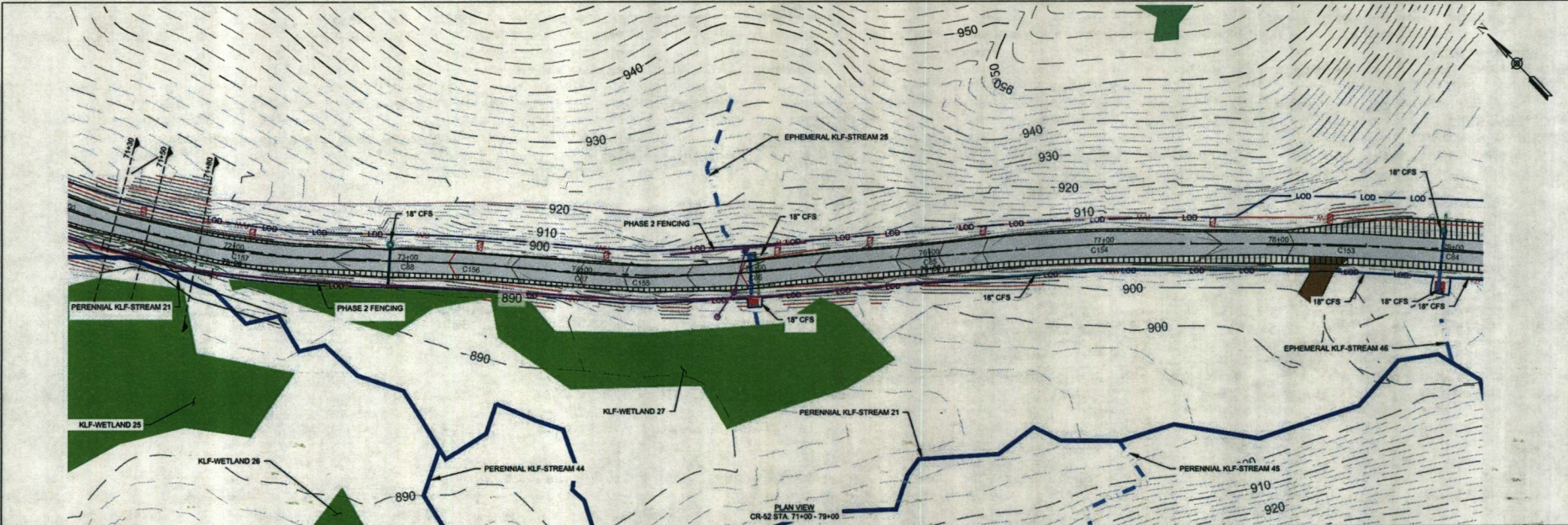
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STA. 55+00 TO 71+00
SUGAR RUN ROAD (CR-52) ROADWAY IMPROVEMENTS
ANTERO RESOURCES
DISTRICT 4
DODDRIEGE COUNTY, WEST VIRGINIA

51
PLOT DATE: January 31, 2022



FINAL PLAN

IF SCALE BAR DOES NOT MEASURE 1" DRAWING NOT PLOTTED TO SCALE

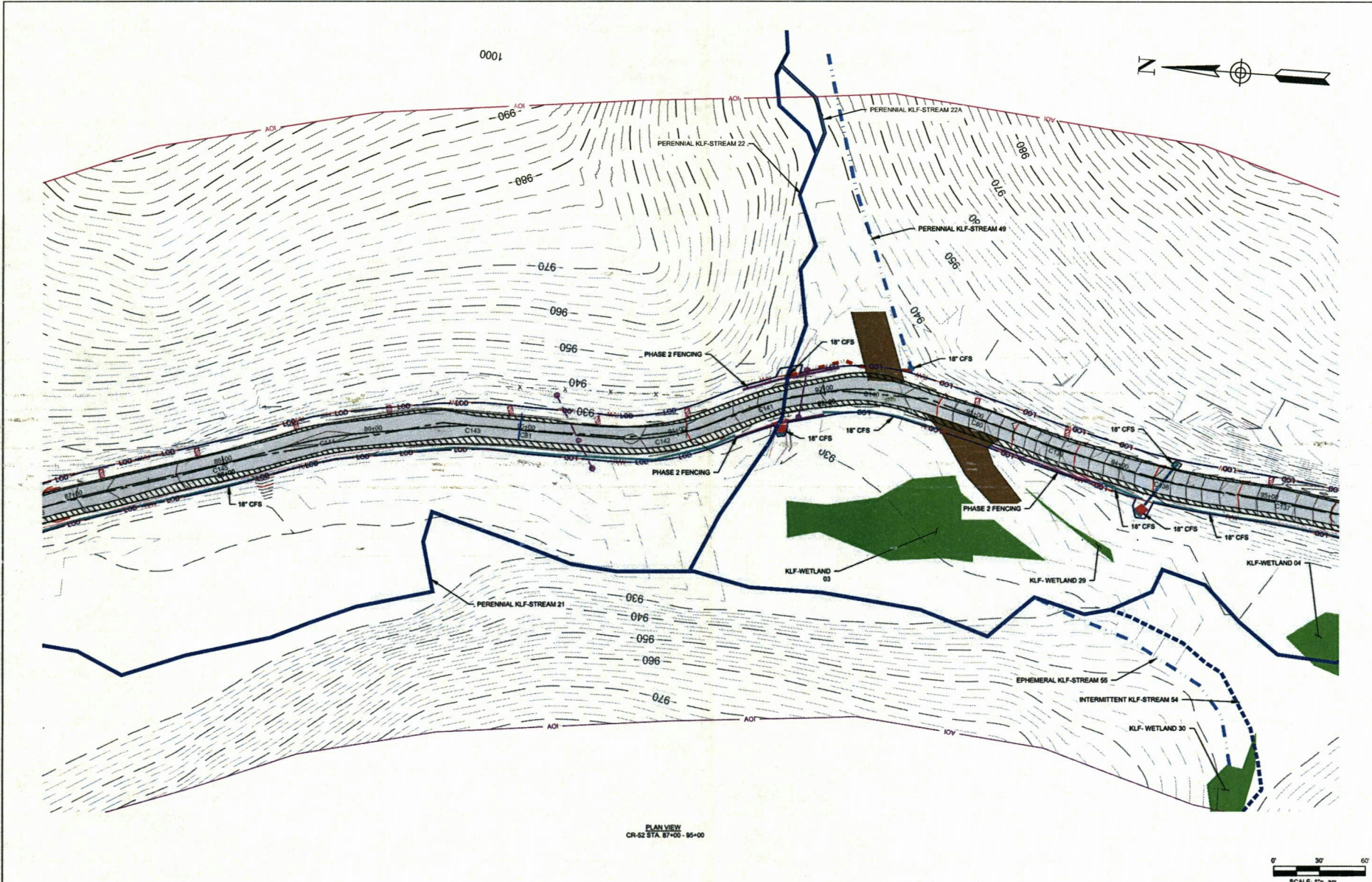
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	LIMITS OF DISTURBANCE		EPHEMERAL STREAM
	EXISTING CONTOURS		INTERMITTENT STREAM
	PROPOSED CONTOURS		PERENNIAL STREAM
	JURISDICTIONAL DITCH		PROPOSED WIDENING
	EXISTING VEGETATION		PHASE 2 FENCING
	DRAINAGE AREA		PROPOSED CULVERT
	18" FILTER SOCK		EXISTING CULVERT
	FABRIC CHECK DAM		ROCK CHECK DAM
	LEVEL SPREADER		OUTLET PROTECTION

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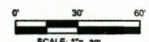


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STA. 71+00 TO 87+00
SUGAR RUN ROAD (CR-52) ROADWAY IMPROVEMENTS
ANTERO RESOURCES
DISTRICT 4
DODDORIDGE COUNTY, WEST VIRGINIA



PLAN VIEW
CR-52 STA. 87+00 - 95+00



FINAL PLAN

IF SCALE BAR DOES NOT MEASURE 1", DRAWING NOT PLOTTED TO SCALE

LEGEND				
	AOI	AREA OF INTEREST		EDGE OF SHOULDER
	LOD	LIMITS OF DISTURBANCE		EPHEMERAL STREAM
		EXISTING CONTOURS		INTERMITTENT STREAM
		PROPOSED CONTOURS		PERENNIAL STREAM
		JURISDICTIONAL DITCH		18" FILTER SOCK
		PROPOSED WIDENING		EXISTING CULVERT
		EXISTING VEGETATION		PHASE 2 FENCING
		DRAINAGE AREA		PROPOSED CULVERT
		ROCK CHECK DAM		FABRIC CHECK DAM
		OUTLET PROTECTION		LEVEL SPREADER

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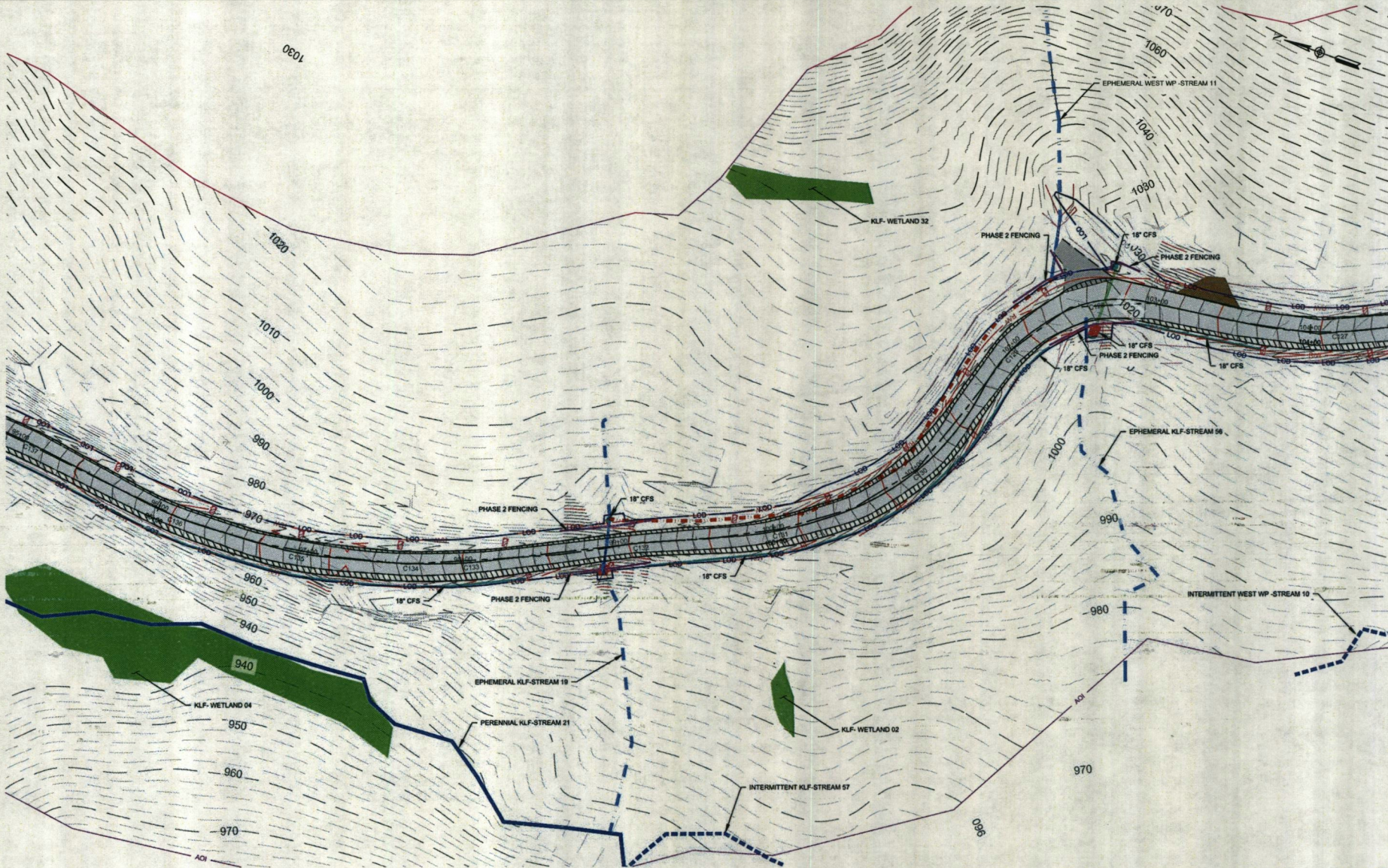


Antero Resources

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STA. 87+00 TO 95+00
SUGAR RUN ROAD (CR-52) ROADWAY IMPROVEMENTS
ANTERO RESOURCES
DISTRICT 4
DODDRIEGE COUNTY, WEST VIRGINIA

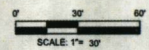
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FINAL PLAN

IF SCALE BAR DOES NOT MEASURE 1", DRAWING NOT PLOTTED TO SCALE

LEGEND				
	AOI	AREA OF INTEREST		EDGE OF SHOULDER
	LOD	LIMITS OF DISTURBANCE		EPHEMERAL STREAM
		EXISTING CONTOURS		INTERMITTENT STREAM
		PROPOSED CONTOURS		PERENNIAL STREAM
		JURISDICTIONAL DITCH		18" FILTER SOCK
		PROPOSED WIDENING		EXISTING CULVERT
		EXISTING VEGETATION		FABRIC CHECK DAM
		DRAINAGE AREA		LEVEL SPREADER
		PHASE 2 FENCING		ROCK CHECK DAM
		PROPOSED CULVERT		OUTLET PROTECTION



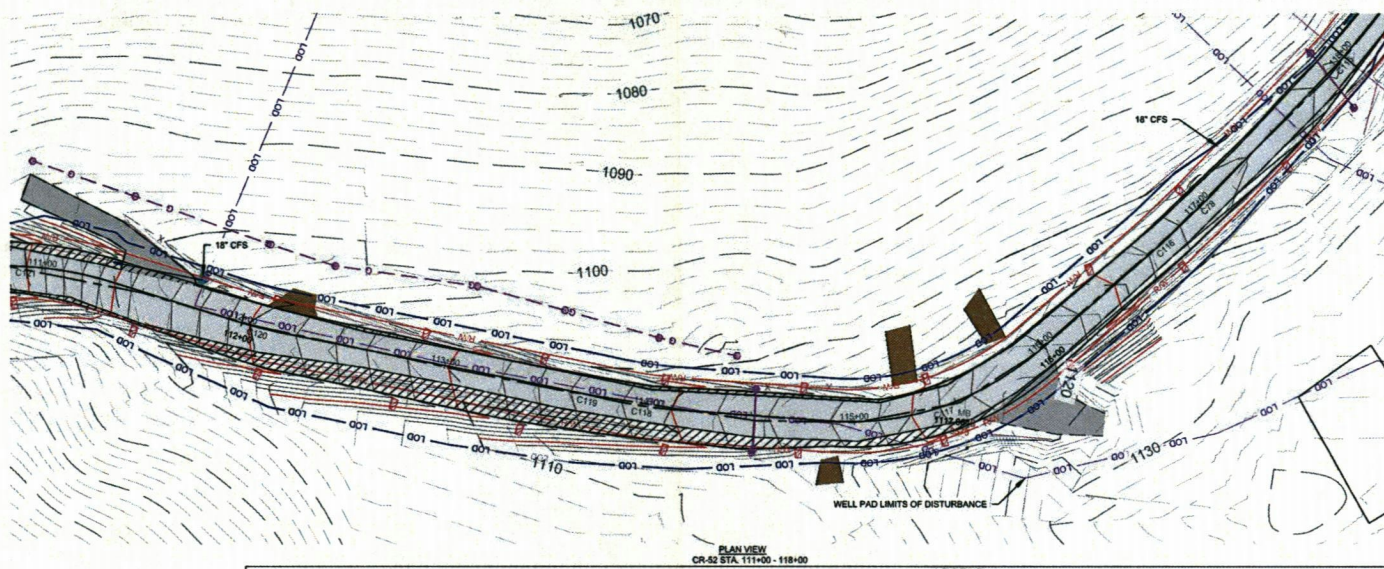
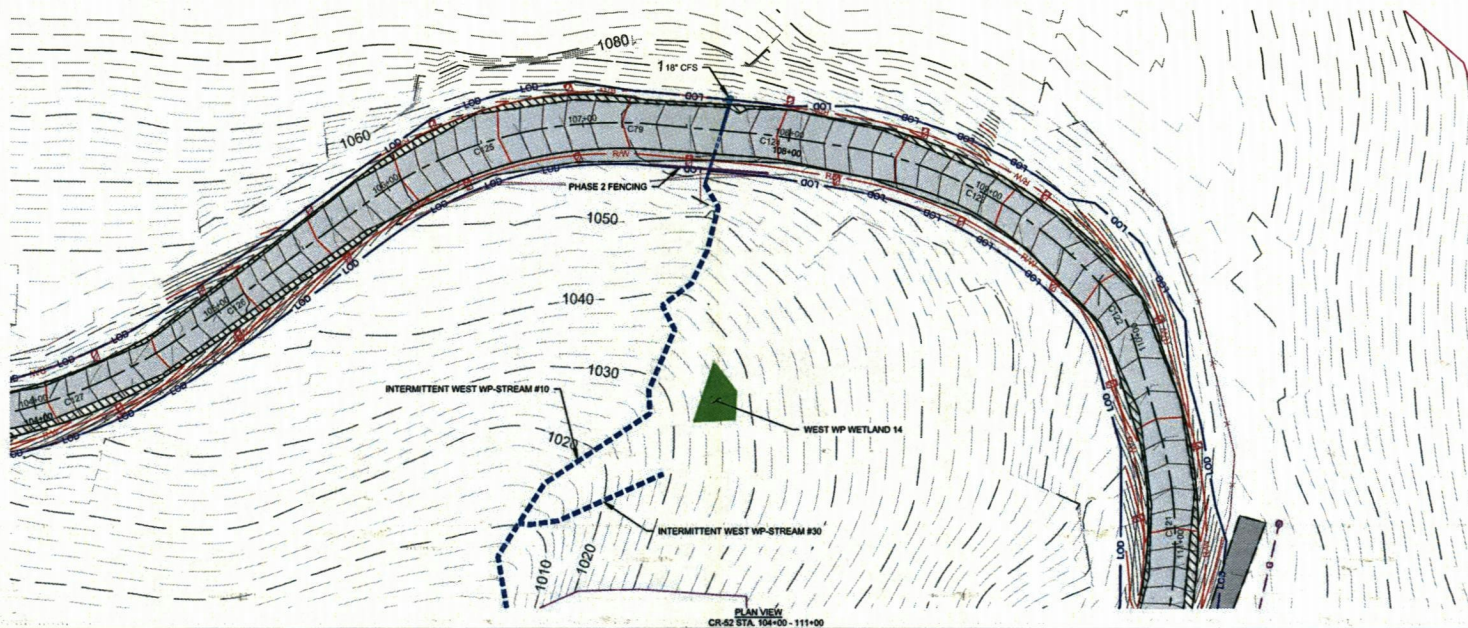
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JMT		
BK FIG.:	DATE:	DESC.:
	02/28/2020	

STA. 95+00 TO 105+00
SUGAR RUN ROAD (CR-52) ROADWAY IMPROVEMENTS
ANTERO RESOURCES
DISTRICT 4
DODDORGE COUNTY, WEST VIRGINIA



LEGEND

— A01 —	— AREA OF INTEREST	— EDGE OF SHOULDER	— JURISDICTIONAL DITCH	— 18' FILTER SOCK	— EXISTING CULVERT	— FABRIC CHECK DAM
— LOD —	— LIMITS OF DISTURBANCE	— EPHEMERAL STREAM	— PROPOSED WIDENING	— PHASE 2 FENCING	— ROCK CHECK DAM	— LEVEL SPREADER
— EXISTING CONTOURS	— PERENNIAL STREAM	— EXISTING VEGETATION	— DRAINAGE AREA	— PROPOSED CULVERT	— OUTLET PROTECTION	

FINAL PLAN

0 1'
IF SCALE BAR DOES NOT MEASURE 1", DRAWING NOT PLOTTED TO SCALE

0 30' 60'
SCALE: 1" = 30'

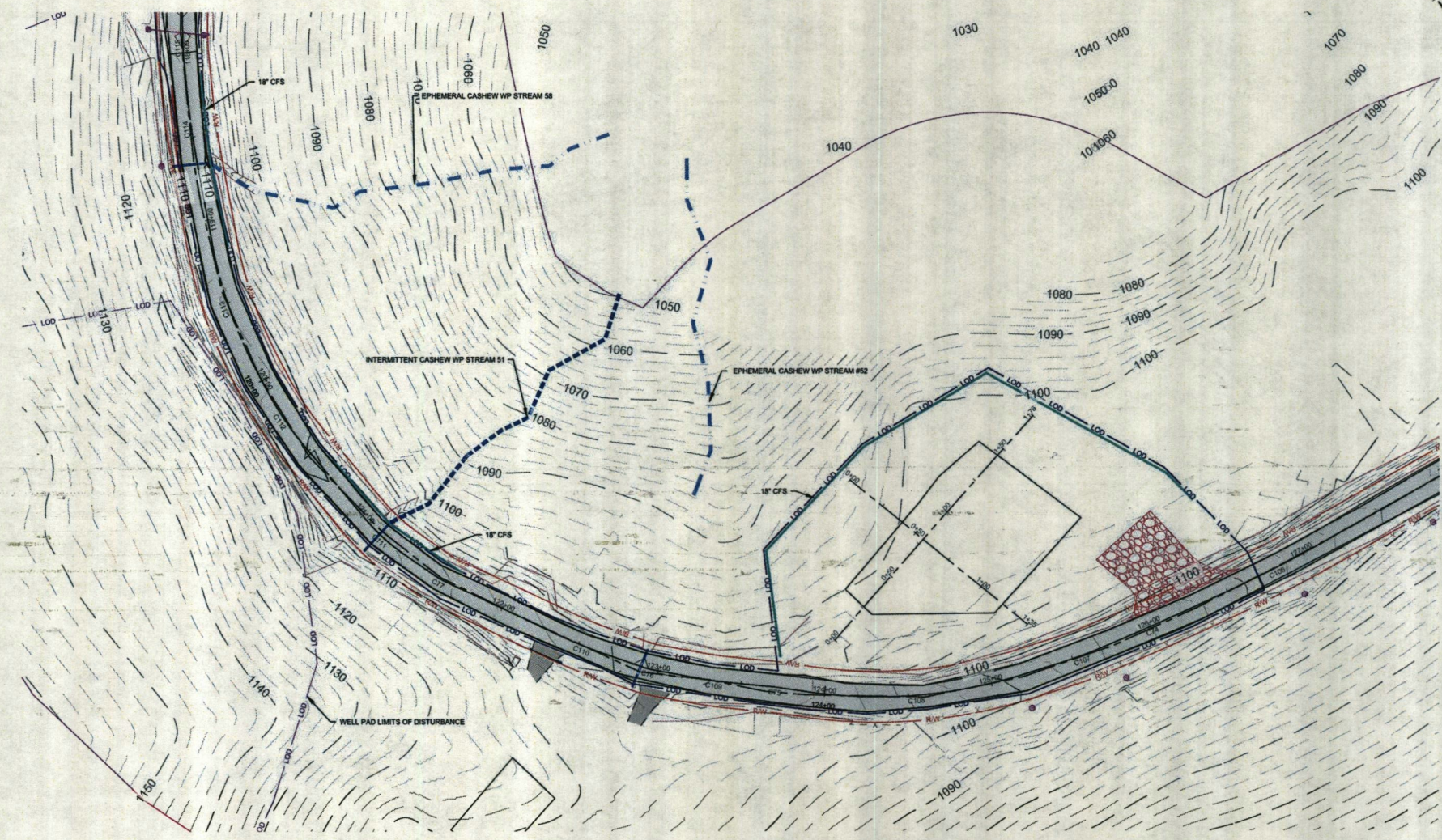
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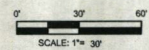
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STA. 104+00 TO 118+00
SUGAR RUN ROAD (CR-52) ROADWAY IMPROVEMENTS
ANTERO RESOURCES
DISTRICT 4
DODDRIEGE COUNTY, WEST VIRGINIA

55
PLOT DATE: January 31, 2022



PLAN VIEW
CR-52 STA. 118+00 - 127+00



FINAL PLAN

IF SCALE BAR DOES NOT MEASURE 1" DRAWING NOT PLOTTED TO SCALE

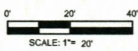
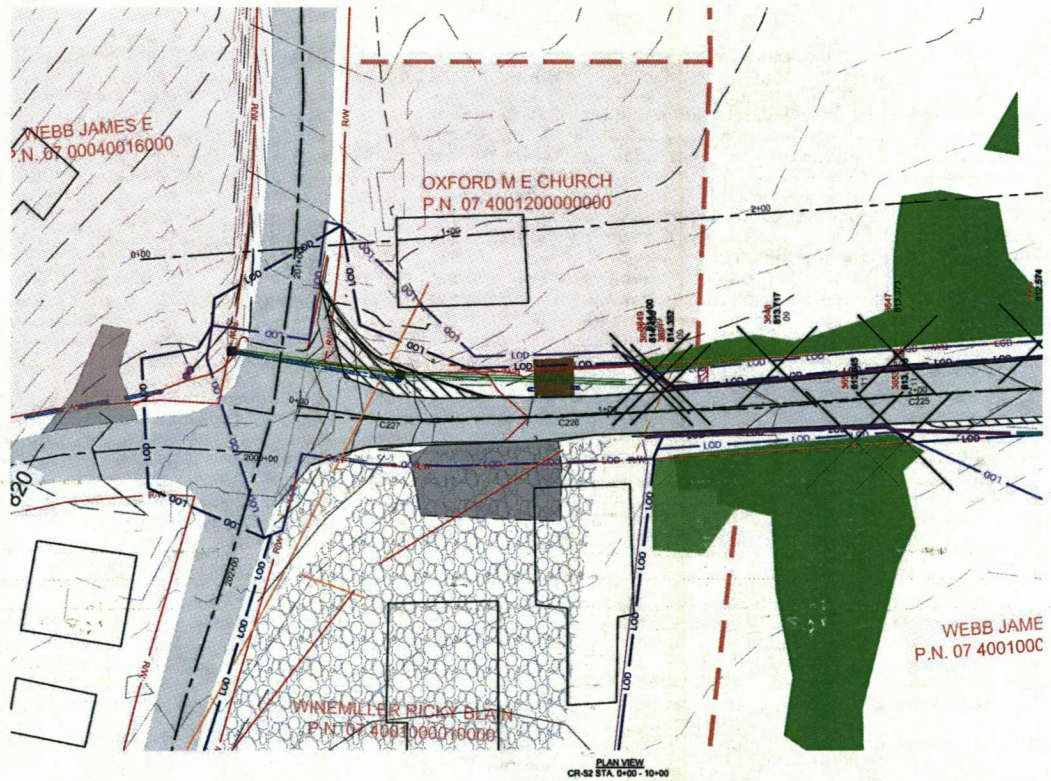
LEGEND			
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	LIMITS OF DISTURBANCE		EPHEMERAL STREAM
	EXISTING CONTOURS		INTERMITTENT STREAM
	PROPOSED CONTOURS		PERENNIAL STREAM
	JURISDICTIONAL DITCH		18" FILTER SOCK
	PROPOSED WIDENING		EXISTING CULVERT
	EXISTING VEGETATION		PHASE 2 FENCING
	DRAINAGE AREA		PROPOSED CULVERT
	FABRIC CHECK DAM		ROCK CHECK DAM
	LEVEL SPREADER		OUTLET PROTECTION

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STA. 119+00 TO 127+00
SUGAR RUN ROAD (CR-52) ROADWAY IMPROVEMENTS
ANTERO RESOURCES
DISTRICT
DODDGE COUNTY, WEST VIRGINIA



IF SCALE BAR DOES NOT MEASURE 1", DRAWING NOT PLOTTED TO SCALE

FINAL PLAN

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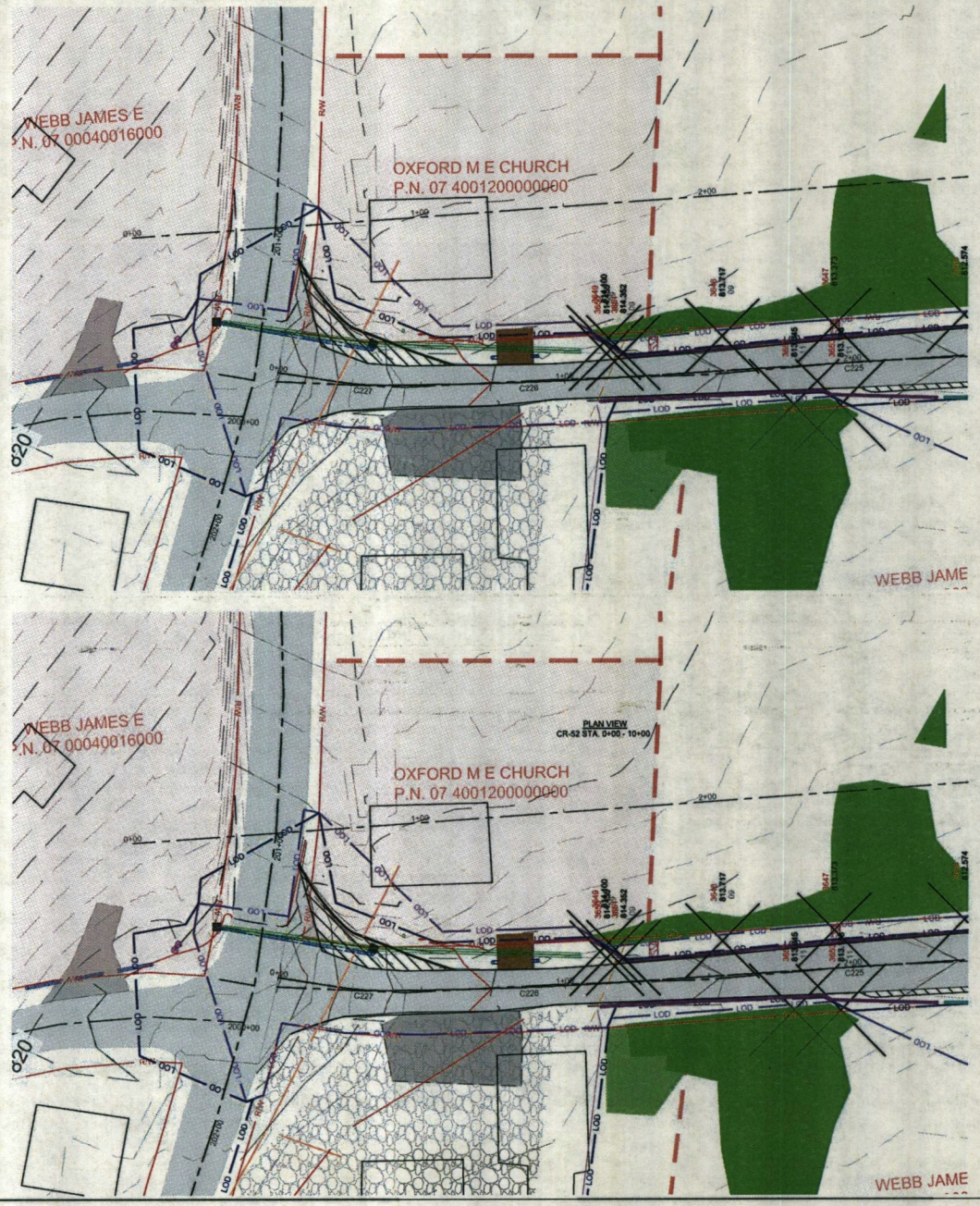


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STA. 0+00 TO 10+00
SUGAR RUN ROAD (CR-52) ROADWAY IMPROVEMENTS
 ANTERO RESOURCES
 DISTRICT 4
 DODDRIEGE COUNTY, WEST VIRGINIA

IF SCALE BAR DOES NOT MEASURE 1", DRAWING NOT PLOTTED TO SCALE

FINAL PLAN



SCALE: 1" = 20'

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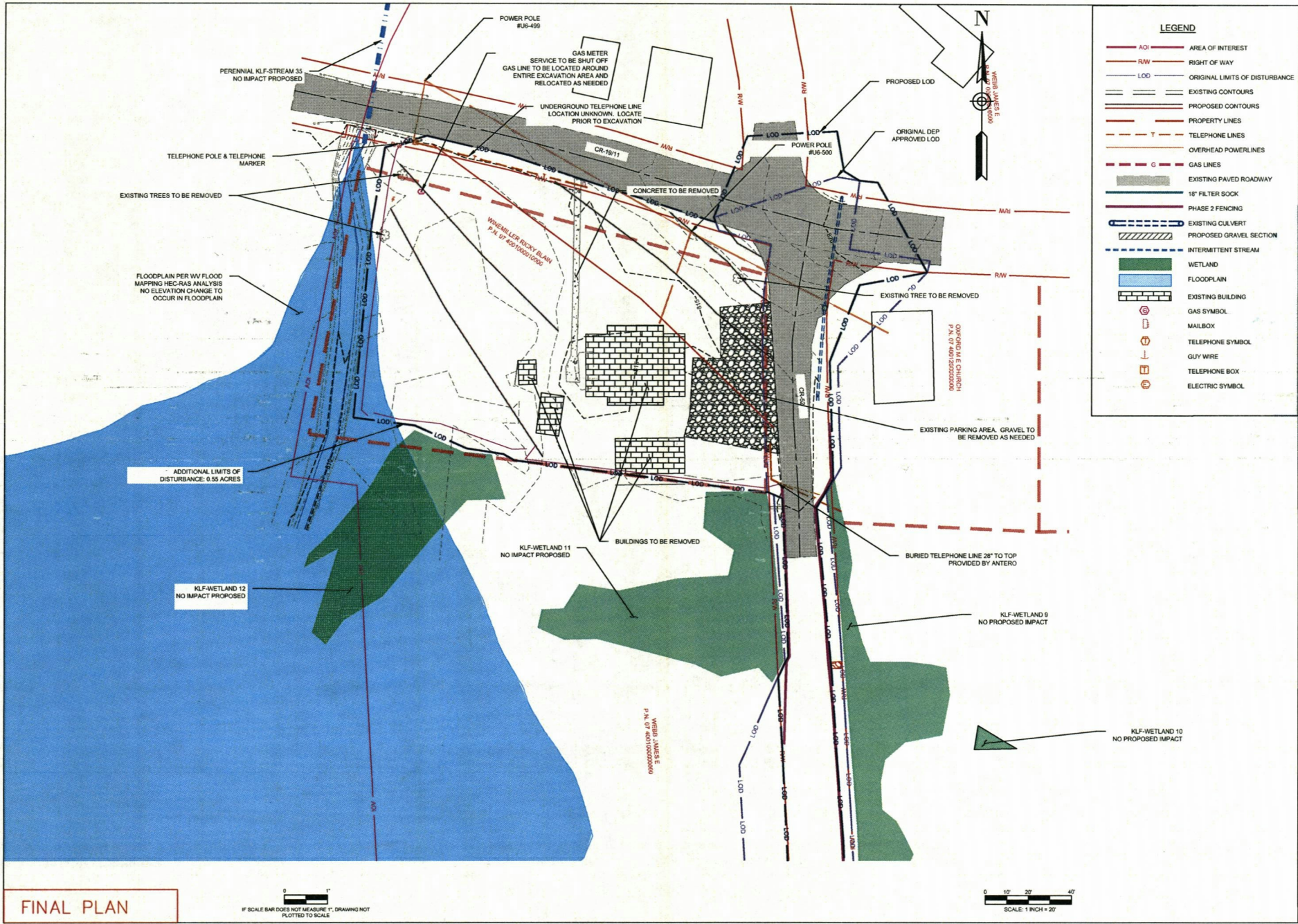
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REV. NO.	DATE	DESC.
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10	02/23/2020	ISSUE FOR PERMIT

STA. 0+00 TO 10+00
SUGAR RUN ROAD (CR-52) ROADWAY IMPROVEMENTS
ANTERO RESOURCES
DODDGE COUNTY, WEST VIRGINIA

14

PLOT DATE: January 31, 2022



LEGEND

- AOI AREA OF INTEREST
- RW RIGHT OF WAY
- LOD ORIGINAL LIMITS OF DISTURBANCE
- LOD PROPOSED LIMITS OF DISTURBANCE
- EXISTING CONTOURS
- PROPOSED CONTOURS
- PROPERTY LINES
- TELEPHONE LINES
- OVERHEAD POWERLINES
- G GAS LINES
- EXISTING PAVED ROADWAY
- 18" FILTER SOCK
- PHASE 2 FENCING
- EXISTING CULVERT
- PROPOSED GRAVEL SECTION
- INTERMITTENT STREAM
- WETLAND
- FLOODPLAIN
- EXISTING BUILDING
- GAS SYMBOL
- MAILBOX
- TELEPHONE SYMBOL
- GUY WIRE
- TELEPHONE BOX
- ELECTRIC SYMBOL



0 10 20 40
 IF SCALE BAR DOES NOT MEASURE 1", DRAWING NOT PLOTTED TO SCALE

0 10 20 40
 SCALE: 1 INCH = 20'

FINAL PLAN

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DESIGN BY:	DATE:	DESC:
DESIGN BY: JMT	DATE: 01/04/2022	DESC: SUGAR RUN ROAD (CR-52) ROADWAY IMPROVEMENTS
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REV. BY: JMT	DATE: 01/04/2022	DESC: SUGAR RUN ROAD (CR-52) ROADWAY IMPROVEMENTS

EXISTING CONDITIONS
 SUGAR RUN ROAD (CR-52) ROADWAY IMPROVEMENTS
 ANTERO RESOURCES
 DISTRICT 4
 DODDRIDGE COUNTY, WEST VIRGINIA

NOTES:

1. REMOVE ALL TOPSOIL PRIOR TO PLACEMENT OF STONE SECTION. TOPSOIL ESTIMATED AT 10' TO BE FIELD VERIFIED.
2. NO PLACEMENT OF MATERIAL ABOVE EXISTING ELEVATIONS WITHIN THE FLOODPLAIN AREAS SHOWN.
3. DURING CONSTRUCTION, IF WEAK BASE MATERIAL IS ENCOUNTERED, GEOTEXTILE FABRIC SHOULD BE USED AS APPROVED BY ANTERO.

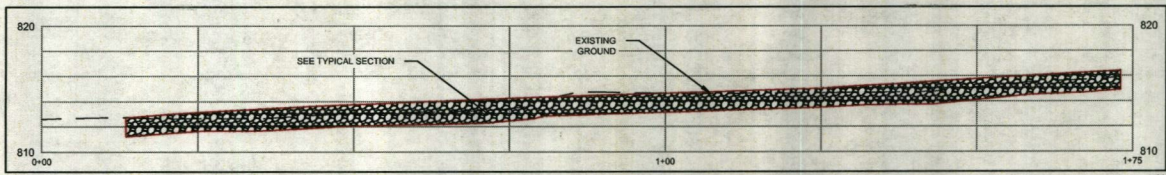
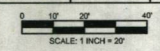


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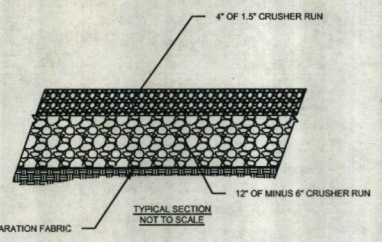
- AOI AREA OF INTEREST
- RW RIGHT OF WAY
- LOD ORIGINAL LIMITS OF DISTURBANCE
- LOD PROPOSED LIMITS OF DISTURBANCE
- EXISTING CONTOURS
- PROPOSED CONTOURS
- PROPERTY LINES
- T TELEPHONE LINES
- OVERHEAD POWERLINES
- G GAS LINES
- EXISTING PAVED ROADWAY
- 18" FILTER SOCK
- PHASE 2 FENCING
- EXISTING CULVERT
- PROPOSED GRAVEL SECTION
- INTERMITTENT STREAM
- WETLAND
- FLOODPLAIN
- EXISTING BUILDING
- G GAS SYMBOL
- M MAILBOX
- T TELEPHONE SYMBOL
- W GUY WIRE
- B TELEPHONE BOX
- E ELECTRIC SYMBOL

TOTAL QUANTITIES

ITEM	ITEM #	QUANTITY	UNITS
TOPSOIL REMOVAL	207	500	CUBIC YARDS
EXCAVATION	207	200	CUBIC YARDS
1.5" CRUSHER RUN	307	440	TON
MINUS 6" CRUSHER RUN	307	1120	TON
US200 SEPARATION FABRIC	206	1980	SQUARE YARDS
PHASE 2 FENCING		335	LINEAR FOOT



GRAVEL AREA
HORZ. SCALE: 1"=20'
VERT. SCALE: 1"=10'



IF SCALE BAR DOES NOT MEASURE 1", DRAWING NOT PLOTTED TO SCALE

FINAL PLAN

ANTEROSOURCE & ASSOCIATES, LTD.
REGISTERED PROFESSIONAL ENGINEERS - SURVEYORS
1400 SHELBY AVENUE
ST. CHARLES, MISSOURI 63309
PHONE: (314) 995-2327
WWW.ANTEROSOURCE.COM



REVISIONS:

NO.	DATE	BY	REASON
1	JUN 2018	ANT	ISSUE FOR PERMITS
2	JUN 2018	ANT	REVISED PERMITS
3	JUN 2018	ANT	REVISED PERMITS
4	JUN 2018	ANT	REVISED PERMITS
5	JUN 2018	ANT	REVISED PERMITS
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49	JUN 2018	ANT	REVISED PERMITS
50	JUN 2018	ANT	REVISED PERMITS

PROPOSED GRAVEL ADDITION
SUGAR RUN ROAD (CR-52) ROADWAY IMPROVEMENTS
ANTERO RESOURCES
DODDGE COUNTY, WEST VIRGINIA



ATTACHMENT F
NO-RISE CERTIFICATE


West Virginia Engineering No-Rise Certificate

<u>Doddridge</u> County	<u>1/31/2022</u> Date
<u>CR-52 (Sugar Run Road)</u> Road	<u>39.204838, -80.864770</u> Approx. Coordinates
<u>Parking Area</u> Description of work	

<u>5017C0225C</u> Panel Number	<u>October 4, 2011</u> Effective Date
-----------------------------------	--

There is no fill or material to be placed within the floodplain above any existing elevations. Flood plain shown on plans are based on the HEC-RAS analysis in WV Flood Mapper Tool.

This is to certify that I am a duly qualified engineer licensed to practice in the state of West Virginia. I further certify that the attached engineering data supports the fact the proposed development described above and within the construction drawings will not create any increase to the base flood heights during the occurrence of the base flood discharge (100-year flood) at published cross sections listed in the flood insurance study for the panel listed above dated 10/4/2011 and will not create any increase to the 100-year flood elevations at unpublished cross-section in the vicinity of the proposed development.

<u>Michael G. Thompson</u> Engineer Name	
<u>Hammontree & Associates</u> Company Name	<u>24797</u> License Number
 Signature	<u>2/2/2021</u> Date
<u>Project Manager</u> Title	





ATTACHMENT G PERMITTING AND COORDINATION

Permitting and Coordination

Permitting Agency	Permit/Coordination Required	Submitted	Received (Anticipated)	Status
USACE ¹	Nationwide Permit (NWP) 14	2/22/2021	7/19/2021	Approved
	NWP 14 Modification 1	8/25/2021	9/1/2021	Approved
	NWP 14 Modification 2	9/29/2021	10/15/2021	Approved
	NWP 14 Modification 3	To Be Submitted	To Be Submitted	To Be Submitted
USFWS ²	Threatened and Endangered Species Coordination	3/27/2020	6/2/2020	Approved
	LOD Modification Email Correspondence	4/21/2020		
WVSHPO ³	Section 106 Consultation	USACE to Initiate Consultation with WVSHPO. The Cultural Resources Assessment is Included in this Nationwide Permit Submittal (Attachment E).		Approved
WVDNR-OLS ⁴	Stream Activity Application	2/25/2021	2/26/2021	Approved
	Spawning Waiver	2/25/2021	3/1/2021	Approved
WVDNR-WRS ⁵	State Lands Threatened and Endangered Species Coordination	3/27/2020	4/3/2020	Approved
	LOD Modification Email Correspondence	4/9/2020	4/9/2020	
Doddridge County Floodplain Manager	Floodplain Permit	2/25/2021	4/5/2021	Approved
	Floodplain Permit Modification 1	8/25/2021	9/28/2021	Approved
	Floodplain Permit Modification 2	9/29/2021	9/30/2021	Approved
	Floodplain Permit Modification 3	2/8/2022	(3/7/2022)	Pending
WVDEP ⁶	Construction Stormwater General Permit	4/13/2020	6/16/2020	Approved
	Construction Stormwater General Permit Modification 1	To Be Submitted	To Be Submitted	To Be Submitted

- 1 United States Army Corps of Engineers
- 2 United States Fish and Wildlife Service
- 3 West Virginia Division of Culture and History, State Historic Preservation Office
- 4 West Virginia Division of Natural Resources - Office of Land and Streams
- 5 West Virginia Division of Natural Resources – Wildlife Resource Section
- 6 West Virginia Department of Environmental Protection

John Lewis

From: Staley, Michelle M CIV (USA) <Michelle.M.Staley@usace.army.mil>
Sent: Friday, October 15, 2021 7:42 AM
To: John Lewis
Cc: John Angiulli; Daniel Bulian; Matthew Albright
Subject: RE: [Non-DoD Source] LRH-2021-161-LKR-Sugar Run - Antero Resources Corporation: Sugar Run Road (CR-52) Roadway Improvements - NWP 14 Modification

External Email

Good Morning John,

Since the change to the LOD size will not result in additional impacts to waters of the U.S., the NWP 14 verification is still valid. I will update our administrative record with the new information. I appreciate the update!

Thank you,

Michelle M. Doolin
Regulatory Specialist (Biologist)
U.S. Army Corps of Engineers
Huntington District, Regulatory Division Energy Resource Branch
502 8th Street
Huntington, WV 25701
Tel - (304) 399-5273
Cell - (606) 254-5006
Fax - (304) 399-5085

<https://nam10.safelinks.protection.outlook.com/?url=http%3A%2F%2Fwww.lrh.usace.army.mil%2FMissions%2FRegulatory%2F&data=04%7C01%7CJALewis%40kleinfelder.com%7Cbe4a252d4f9f4a37da9408d98fd11021%7Cf47e3906f3d244ab9f1b76742a93945b%7C0%7C0%7C637698950370251162%7CUnknown%7CTWFpbGZsb3d8eyJWljiMC4wLjAwMDAiLCJQIjoiV2luMzliLCJBTiI6I1haWwiLCJXVCi6Mn0%3D%7C1000&sd=53dfjbK5VZYTqc2mKCBGZ8Pnqre2v%2FodqRCZx%2FAtvM%3D&reserved=0>

During the Coronavirus Health Emergency, the majority of the Regulatory staff are teleworking. For further details on corresponding with us, please view our COVID-19 special public notice at:

<https://nam10.safelinks.protection.outlook.com/?url=http%3A%2F%2Fwww.lrh.usace.army.mil%2FMissions%2FRegulatory%2FPublic-Notices%2FArticle%2F2110305%2Finformational-public-notice%2F&data=04%7C01%7CJALewis%40kleinfelder.com%7Cbe4a252d4f9f4a37da9408d98fd11021%7Cf47e3906f3d244ab9f1b76742a93945b%7C0%7C0%7C637698950370251162%7CUnknown%7CTWFpbGZsb3d8eyJWljiMC4wLjAwMDAiLCJQIjoiV2luMzliLCJBTiI6I1haWwiLCJXVCi6Mn0%3D%7C1000&sd=Y1GUtST1zMFbMcoiM5kkahRXpRnPz4exBoaHW2pNSJE%3D&reserved=0>

-----Original Message-----

From: John Lewis <JALewis@kleinfelder.com>
Sent: Wednesday, September 29, 2021 6:14 PM
To: Staley, Michelle M CIV (USA) <Michelle.M.Staley@usace.army.mil>
Cc: John Angiulli <jangiulli@anteroresources.com>; Daniel Bulian <dbulian@anteroresources.com>; Matthew Albright <MALbright@kleinfelder.com>

Subject: RE: [Non-DoD Source] LRH-2021-161-LKR-Sugar Run - Antero Resources Corporation: Sugar Run Road (CR-52) Roadway Improvements - NWP 14 Modification

Hi Michelle,

On August 25,, 2021 an email notification was submitted to the United States Army Corps of Engineers (USACE) summarizing design changes that occurred on the Sugar Run Road (CR-52) Roadway Improvements Project (LRH-2021-161-LKR-Sugar Run) that resulted in the modification of the limits of disturbance (LOD). On September 1, 2021 the USACE acknowledged the modification and confirmed the nationwide permit issued on July 19,, 2021 remained valid (email correspondence below).

Since receipt of the USACE confirmation email, a landowner along Sugar Run Road (CR-52) has come to an agreement with Antero that will allow for construction of the proposed pull-off/staging area between stations 2+00 and 5+00; which was removed in the August 25, 2021 email notification to the USACE.

Inclusion of this area will increase the LOD from 10.055 acres to 10.184 acres, but will not result in additional aquatic feature impacts. Furthermore, since this area was contained within the original LOD, any tree clearing that may be necessary has been approved by the June 2, 2020 United States Fish and Wildlife Service response letter (FWS File Number 2020-I-0667).

Please find attached the updated design sheet and impact map for your records.

Antero requests confirmation that the design changes are covered under the existing NWP and no additional coordination is required.

Thank you,

John A. Lewis, PWS

d| 724.200.7512

m| 412.848.7376

-----Original Message-----

From: Staley, Michelle M CIV (USA) <Michelle.M.Staley@usace.army.mil>

Sent: Wednesday, September 1, 2021 9:42 AM

To: John Lewis <JALewis@kleinfelder.com>

Cc: Daniel Bulian <dbulian@anteroresources.com>; Matthew Albright <MAlbright@kleinfelder.com>

Subject: RE: [Non-DoD Source] LRH-2021-161-LKR-Sugar Run - Antero Resources Corporation: Sugar Run Road (CR-52) Roadway Improvements - NWP 14 Modification

External Email

Good Morning John,

Since there will be no additional impacts to waters of the U.S. as well as no additional tree clearing, nothing further is needed from the Corps. The original NWP verification remains valid, however I will include the updated LOD information in the project's administrative record as documentation that Antero notified the Corps of the change. We appreciate you keeping us informed!

Thank you,

Michelle M. Staley

Regulatory Specialist (Biologist)

U.S. Army Corps of Engineers

Huntington District, Regulatory Division Energy Resource Branch

502 8th Street

Huntington, WV 25701

Tel - (304) 399-5273

Cell - (606) 254-5006

Fax - (304) 399-5085

<https://nam10.safelinks.protection.outlook.com/?url=http%3A%2F%2Fwww.lrh.usace.army.mil%2FMissions%2FRegulatory%2F&data=04%7C01%7CJALewis%40kleinfelder.com%7Cbe4a252d4f9f4a37da9408d98fd11021%7Cf47e3906f3>

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During the Coronavirus Health Emergency, the majority of the Regulatory staff are teleworking. For further details on corresponding with us, please view our COVID-19 special public notice at:

https://nam10.safelinks.protection.outlook.com/?url=http%3A%2F%2Fwww.lrh.usace.army.mil%2FMissions%2FRegulatory%2FPublic-Notices%2FArticle%2F2110305%2Finformational-public-notice%2F&data=04%7C01%7CJALewis%40kleinfelder.com%7Cbe4a252d4f9f4a37da9408d98fd11021%7Cf47e3906f3d244ab9f1b76742a93945b%7C0%7C0%7C637698950370251162%7CUnknown%7CTWFpbGZsb3d8eyJWljojMC4wLjAwMDAiLCJQIjoiV2luMzliLCJBTiI6Iik1haWwiLCJXVCI6Mn0%3D%7C1000&data=Y1GUtST1zMFBMcoiM5kkahRXpRnPx4exBoaHW2pNSJE%3D&reserved=0
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-----Original Message-----

From: John Lewis <JALewis@kleinfelder.com <mailto:JALewis@kleinfelder.com> >

Sent: Wednesday, August 25, 2021 12:47 PM

To: Staley, Michelle M CIV (USA) <Michelle.M.Staley@usace.army.mil <mailto:Michelle.M.Staley@usace.army.mil> >

Cc: Daniel Bulian <dbulian@anteroresources.com <mailto:dbulian@anteroresources.com> >; Matthew Albright <MALbright@kleinfelder.com <mailto:MALbright@kleinfelder.com> >

Subject: [Non-DoD Source] LRH-2021-161-LKR-Sugar Run - Antero Resources Corporation: Sugar Run Road (CR-52) Roadway Improvements - NWP 14 Modification

Hi Michelle,

On July 19, 2021 the United States Army Corps of Engineers (USACE) issued Antero Resources Corporation (Antero) a Nationwide Permit 14 (LRH-2021-161-LKR-Sugar Run) for authorization to discharge dredged and/or fill material into waters of the United States associated with the Sugar Run Road (CR-52) Roadway Improvements in Doddridge County, WV (see attached approval).

Since receipt of this approval, design changes have occurred resulting in the need to modify the limits-of-disturbance (LOD) as seen in the aerial imagery mapping and design plans (links provided below). The design changes include:

- * LOD reductions (0.19-acre)
 - * ~Station 0+25: LOD reduced to avoid the Oxford Church
 - * ~Station 2+00 to 5+00: Removal of proposed pull-off / staging area as a result of landowner constraints. LOD reduced to West Virginia Department of Highway's right-of-way.

- * LOD expansions (0.21-acre)
 - * ~ Station 0+00: LOD increase at the intersection of Sugar Run Road & South Fork of Hughes River Road for the purposes of pavement transitions, grading, culvert replacements, culvert installations, and rock installation.

Overall, the design changes will result in a LOD net increase of 0.02-acre. These design changes will not require additional tree clearing or result in additional discharges of fill material to waters of the United States (WoUS). Since the proposed LOD changes occur in upland areas with no additional discharges of fill material to WoUS, additional correspondence with USFWS should not be required.

Please note, a 150' LOD delineation buffer is not currently maintained at this time; however, land negotiations are ongoing and delineations will occur once land access is secured.

Antero is requesting USACE to review and acknowledge the proposed design changes. Please let us know if additional information is needed to update your project files.

1. 20210825_Sugar Run Road Improvement_NWP_AttB_Mod1_v0.pdf (4.04 MB) in Lewis_John_

<https://nam10.safelinks.protection.outlook.com/?url=https%3A%2F%2Fkleinfelder.filegenius.com%2FdownloadPublic%2F6myvtp852h657bc%2Fodba344v7pds4ct&data=04%7C01%7CJALewis%40kleinfelder.com%7Cbe4a252d4f9f4a37da9408d98fd11021%7Cf47e3906f3d244ab9f1b76742a93945b%7C0%7C0%7C637698950370256131%7CUnknown%7CTWFpbGZsb3d8eyJWljoiMC4wLjAwMDAiLCJQIjoiV2luMzliLCJBTiI6lk1haWwiLCJXVCI6Mn0%3D%7C1000&sdta=nUsHzKuSJYGogQQLRy0BYb%2F%2BMyAv614f7uS4mQ8%2FOkg%3D&reserved=0>
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2. 20210824_Sugar Run Road Improvement_Design Plans.pdf (14.76 MB) in Lewis_John_

<https://nam10.safelinks.protection.outlook.com/?url=https%3A%2F%2Fkleinfelder.filegenius.com%2FdownloadPublic%2Fy9mto1ykgw58cfu%2F3y7er89471yewm2&data=04%7C01%7CJALewis%40kleinfelder.com%7Cbe4a252d4f9f4a37da9408d98fd11021%7Cf47e3906f3d244ab9f1b76742a93945b%7C0%7C0%7C637698950370256131%7CUnknown%7CTWFpbGZsb3d8eyJWljoiMC4wLjAwMDAiLCJQIjoiV2luMzliLCJBTiI6lk1haWwiLCJXVCI6Mn0%3D%7C1000&sdta=%2B3N%2BMyUGLT2QYVelX4QYSoyEfuxrv%2Ft89UGN2Zm5JEg%3D&reserved=0>
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These links will expire on 09/04/21 at 08:43 am PDT

Thanks,

John A. Lewis, PWS

Project Professional

51 Dutilh Rd., Suite 240

Cranberry Township, PA 16066

d| 724.200.7512

o| 724.772.7072

m| 412.848.7376

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John Lewis

From: Staley, Michelle M CIV (USA) <Michelle.M.Staley@usace.army.mil>
Sent: Wednesday, September 1, 2021 9:42 AM
To: John Lewis
Cc: Daniel Bulian; Matthew Albright
Subject: RE: [Non-DoD Source] LRH-2021-161-LKR-Sugar Run - Antero Resources Corporation: Sugar Run Road (CR-52) Roadway Improvements - NWP 14 Modification

External Email

Good Morning John,

Since there will be no additional impacts to waters of the U.S. as well as no additional tree clearing, nothing further is needed from the Corps. The original NWP verification remains valid, however I will include the updated LOD information in the project's administrative record as documentation that Antero notified the Corps of the change. We appreciate you keeping us informed!

Thank you,

Michelle M. Staley
Regulatory Specialist (Biologist)
U.S. Army Corps of Engineers
Huntington District, Regulatory Division Energy Resource Branch
502 8th Street
Huntington, WV 25701
Tel - (304) 399-5273
Cell - (606) 254-5006
Fax - (304) 399-5085

<https://nam10.safelinks.protection.outlook.com/?url=http%3A%2F%2Fwww.lrh.usace.army.mil%2Fmissions%2Fregulatory%2F&data=04%7C01%7CJALewis%40kleinfelder.com%7Caf7f48da31342d9723f08d96d4e3e2e%7Cf47e3906f3d244ab9f1b76742a93945b%7C0%7C0%7C637661005099808998%7CUnknown%7CTWFpbGZsb3d8eyJWljoiMC4wLjAwMDAiLCJQIjoiV2luMzliLCJBTil6k1haWwiLCJXVCi6Mn0%3D%7C1000&sdata=ifZB6S4ftzB9oyVS4OpEsqLGCEwtVxfJwFfyFrbgK7Y%3D&reserved=0>

During the Coronavirus Health Emergency, the majority of the Regulatory staff are teleworking. For further details on corresponding with us, please view our COVID-19 special public notice at:
<https://nam10.safelinks.protection.outlook.com/?url=http%3A%2F%2Fwww.lrh.usace.army.mil%2Fmissions%2Fregulatory%2Fpublic-notices%2Farticle%2F2110305%2Finformational-public-notice%2F&data=04%7C01%7CJALewis%40kleinfelder.com%7Caf7f48da31342d9723f08d96d4e3e2e%7Cf47e3906f3d244ab9f1b76742a93945b%7C0%7C0%7C637661005099808998%7CUnknown%7CTWFpbGZsb3d8eyJWljoiMC4wLjAwMDAiLCJQIjoiV2luMzliLCJBTil6k1haWwiLCJXVCi6Mn0%3D%7C1000&sdata=QBL3j6eL%2FRXYqPKdm5OFUBDN9KyZ6baLbeN5Qex40ml%3D&reserved=0>

-----Original Message-----

From: John Lewis <JALewis@kleinfelder.com>
Sent: Wednesday, August 25, 2021 12:47 PM
To: Staley, Michelle M CIV (USA) <Michelle.M.Staley@usace.army.mil>
Cc: Daniel Bulian <dbulian@anteroresources.com>; Matthew Albright <MALbright@kleinfelder.com>

Subject: [Non-DoD Source] LRH-2021-161-LKR-Sugar Run - Antero Resources Corporation: Sugar Run Road (CR-52) Roadway Improvements - NWP 14 Modification

Hi Michelle,

On July 19, 2021 the United States Army Corps of Engineers (USACE) issued Antero Resources Corporation (Antero) a Nationwide Permit 14 (LRH-2021-161-LKR-Sugar Run) for authorization to discharge dredged and/or fill material into waters of the United States associated with the Sugar Run Road (CR-52) Roadway Improvements in Doddridge County, WV (see attached approval).

Since receipt of this approval, design changes have occurred resulting in the need to modify the limits-of-disturbance (LOD) as seen in the aerial imagery mapping and design plans (links provided below). The design changes include:

- * LOD reductions (0.19-acre)
 - * ~Station 0+25: LOD reduced to avoid the Oxford Church
 - * ~Station 2+00 to 5+00: Removal of proposed pull-off / staging area as a result of landowner constraints. LOD reduced to West Virginia Department of Highway's right-of-way.

- * LOD expansions (0.21-acre)
 - * ~ Station 0+00: LOD increase at the intersection of Sugar Run Road & South Fork of Hughes River Road for the purposes of pavement transitions, grading, culvert replacements, culvert installations, and rock installation.

Overall, the design changes will result in a LOD net increase of 0.02-acre. These design changes will not require additional tree clearing or result in additional discharges of fill material to waters of the United States (WoUS). Since the proposed LOD changes occur in upland areas with no additional discharges of fill material to WoUS, additional correspondence with USFWS should not be required.

Please note, a 150' LOD delineation buffer is not currently maintained at this time; however, land negotiations are ongoing and delineations will occur once land access is secured.

Antero is requesting USACE to review and acknowledge the proposed design changes. Please let us know if additional information is needed to update your project files.

1. 20210825_Sugar Run Road Improvement_NWP_AttB_Mod1_v0.pdf (4.04 MB) in Lewis_John_
<https://nam10.safelinks.protection.outlook.com/?url=https%3A%2F%2Fkleinfelder.filegenius.com%2FdownloadPublic%2F6myvtp852h657bc%2Fodba344v7pds4ct&data=04%7C01%7CJALewis%40kleinfelder.com%7Cafb7f48da31342d9723f08d96d4e3e2e%7Cf47e3906f3d244ab9f1b76742a93945b%7C0%7C0%7C637661005099818992%7CUnknown%7CTWFpbGZsb3d8eyJWljoImC4wLjAwMDAiLCJQIjoiV2luMzliLCJBTiI6Iik1haWwiLCJXVCI6Mn0%3D%7C1000&data=h52b>

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2. 20210824_Sugar Run Road Improvement_Design Plans.pdf (14.76 MB) in Lewis_John_

<https://nam10.safelinks.protection.outlook.com/?url=https%3A%2F%2Fkleinfelder.filegenius.com%2FdownloadPublic%2Fy9mto1ykgw58cfu%2F3y7er89471yewm2&data=04%7C01%7CJALewis%40kleinfelder.com%7Cafb7f48da31342d9723f08d96d4e3e2e%7Cf47e3906f3d244ab9f1b76742a93945b%7C0%7C0%7C637661005099818992%7CUnknown%7CTWFpbGZsb3d8eyJWljoiMC4wLjAwMDAiLCJQIjoiV2luMzliLCJBTil6Ik1haWwiLCJXVCI6Mn0%3D%7C1000&sdata=FbYHlnzB3Ey8HbTFausvR0AzMrgOIPJtUwEzuwqpP0%3D&reserved=0>

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These links will expire on 09/04/21 at 08:43 am PDT

Thanks,

John A. Lewis, PWS
Project Professional

51 Dutilh Rd., Suite 240
Cranberry Township, PA 16066
d| 724.200.7512
o| 724.772.7072
m| 412.848.7376

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REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
HUNTINGTON DISTRICT, CORPS OF ENGINEERS
502 EIGHTH STREET
HUNTINGTON, WEST VIRGINIA 25701-2070

July 19, 2021

Regulatory Division
Energy Resource Branch
LRH-2020-161-LKR-Sugar Run

NATIONWIDE PERMIT NO. 14 VERIFICATION

Mr. Daniel Bulian
Antero Resources Corporation
535 White Oaks Boulevard
Bridgeport, West Virginia 26330

Dear Mr. Bulian:

I refer to the pre-construction notification (PCN) requesting a Department of the Army (DA) authorization for the discharge of dredged and/or fill material into waters of the United States (U.S.) in association with the Sugar Run Road Roadway Improvements Project. The proposed project is located approximately eight (8) miles southwest of West Union in Doddridge County, West Virginia (northern terminus 39.205891, -80.864813 and southern terminus 39.178374, -80.849874). Waters on-site include Sugar Run, a perennial stream and an indirect tributary to the Little Kanawha River, a traditionally navigable water. Your PCN has been assigned the following file number: LRH-2020-161-LKR-Sugar Run. Please reference this file number on all future correspondence related to the subject proposal.

The United States Army Corps of Engineers' (Corps) authority to regulate waters of the U.S. is based on the definitions and limits of jurisdiction contained in 33 CFR 328 and 33 CFR 329. Section 404 of the Clean Water Act (Section 404) requires a DA permit be obtained prior to discharging dredged and/or fill material into waters of the U.S., including wetlands. Section 10 of the Rivers and Harbors Act of 1899 (Section 10) requires a DA permit be obtained for any work in, on, over or under a navigable water.

The proposed stream and wetland crossings, as described in the submitted DA permit application, have been reviewed in accordance with Section 404 and Section 10. Based on your description of the proposed work, and other information available to us, it has been determined that the roadway improvements project would involve activities subject to the requirements of Section 404.

In the submitted PCN materials, you have requested a DA authorization for the temporary discharge of dredged and/or fill material into approximately 91 linear feet (lf) of stream, 397 lf of ditch and 0.0048 acre of wetland, and the permanent discharge of dredged and/or fill material into approximately 593 lf of stream and 0.0010 acre of wetland at eighteen (18) single and complete project areas associated with the proposed Sugar Run Road Roadways Improvements Project. The discharge of dredged and/or fill material into waters of the U.S. is described in the

enclosed Table 1. Upon completion of the project, the temporarily affected waters of the U.S. will be restored to pre-disturbance contours. All work will be conducted in accordance with the PCN received in this office on February 22, 2021.

Based on the provided information, it has been determined the proposed discharges of dredged and/or fill material into waters of the U.S. in conjunction with the Sugar Run Road Roadway Improvements Project meet the criteria for Nationwide Permit (NWP) No. 14 (enclosed) under the January 6, 2017 Federal Register, Reissuance and Modification of NWPs (82 FR 1860) provided you comply with all terms and conditions of the NWPs, and the enclosed special conditions. Copies of this NWP can be found on our website at <http://www.lrh.usace.army.mil/Missions/Regulatory.aspx>

Please be aware the NWP verification does not obviate the requirement to obtain any federal, state, or local authorizations required by law for the activities. This verification is valid until the expiration date of the NWPs, unless the NWP authorization is modified, suspended, or revoked. The verification will remain valid if the NWP authorization is reissued without modification or the activity complies with any subsequent modification of the NWP authorization. The 2017 NWPs published January 6, 2017 in the Federal Register (82 FR 1860), are scheduled to be modified, reissued, or revoked on March 18, 2022. Prior to this date, it is not necessary to contact this office for re-verification of your project unless the plans for the proposed activity are modified. Furthermore, if you commence or under contract to commence this activity before March 18, 2022, you will have twelve (12) months from the date of the modification or revocation of the NWP to complete the activity under the present terms and conditions of this NWP.

Preliminary Jurisdictional Determination

You have requested a preliminary jurisdictional determination (PJD) in accordance with the Corps' Regulatory Guidance Letter (RGL) for Jurisdictional Determinations issued by the Corps on October 31, 2017 (RGL No. 16-01). The PJD boundary is approximately 112.26 acres and contains fifty-one streams (9 perennial, 19 intermittent, & 23 ephemeral), thirty-nine (39) wetlands (34 PEM, 3 PSS, 1 PFO & 1 PUB), and two (2) ditches. Refer to the enclosed *Preliminary Jurisdictional Determination Form*, dated July 14, 2021, for a detailed summary of potentially jurisdictional waters on-site. This office has determined the aforementioned waters **may** be jurisdictional waters of the U.S. in accordance with the RGL No. 16-01. As indicated in the guidance, this PJD is non-binding and cannot be appealed (33 CFR 331.2) and only provides a written indication that waters of the U.S., including wetlands, may be present on-site.

You have declined to exercise the option to obtain an approved jurisdictional determination (AJD) at this time for the aforementioned aquatic resources within the PJD boundary. For the purposes of the determination of impacts, compensatory mitigation, and other resource

protection measures for activities that require authorization from this office, the aquatic resources described in the enclosed PJD form will be evaluated as if they are waters of the U.S.

Enclosed please find two (2) copies of the PJD form. If you agree with the findings of this PJD and understand your options regarding the same, please sign and date one (1) copy of the PJD form and return it to this office within 30 days of receipt of this letter. You should submit the signed copy to the following address:

Ms. Michelle Staley (LRH-2020-849-OHR-Bear Creek)
U.S. Army Corps of Engineers, Huntington District
Attn: Energy Resource Branch
502 8th Street
Huntington, West Virginia 25701

A copy of the NWP and verification letter must be supplied to your project engineer responsible for construction activities. A copy of the verification letter must be kept at the site during construction. Upon completion of the work, the enclosed certification must be signed and returned to this office. If you have any questions concerning the above, please contact Ms. Michelle Staley of the Energy Resource Branch at 304-399-5273, by mail at the above address, or by email at: michelle.m.staley@usace.army.mil.

Sincerely,

Kimberly Courts-Brown

Kimberly Courts-Brown
Project Manager
Energy Resource Branch

Enclosure(s)

Table 1. Summary of Impacts to Waters of the U.S. for the Antero Resources Corporation, Sugar Run Road Roadway Improvements Project (LRH-2020-161-LKR-Sugar Run)

Water	Cowardin Class/Flow Regime	Location (Latitude, Longitude)	Temporary Impact	Permanent Impact	Description of Impact
Stream 33	intermittent	39.201188, -80.864647	9 lf (0.0005 ac)	36 lf (0.0021 ac)	culvert replacement, outlet protection (rip rap), E&S controls
Stream 37	ephemeral	39.200315, -80.863826	NA	6 lf (0.0002 ac)	repair washout area at culvert outlet
Stream 31	perennial	39.198825, -80.862223	5 lf (0.0006 ac)	26 lf (0.0030 ac)	culvert replacement, outlet protection (rip rap), E&S controls
Stream 21 (crossing 1)	perennial	39.196341, -80.859818	6 lf (0.0014 ac)	6 lf (0.0014 ac)	culvert replacement, outlet protection (rip rap), E&S controls
Stream 21 (crossing 2)	perennial	39.189456, -80.853588	NA	21 lf (0.0048 ac)	slip repair and culvert replacement
Stream 21 (crossing 3)	perennial	39.186989, -80.850477	10 lf (0.0023 ac)	7 lf (0.0016 ac)	culvert replacement, outlet protection (rip rap), E&S controls
Stream 30	ephemeral	39.196370, -80.859778	3 lf (0.0001 ac)	30 lf (0.0010 ac)	culvert replacement, outlet protection (rip rap), E&S controls
Stream 29	intermittent	39.195543, -80.859034	3 lf (0.0001 ac)	37 lf (0.0017 ac)	culvert replacement, outlet protection (rip rap), E&S controls
Stream 28	perennial	39.193177, -80.856630	10 lf (0.0008 ac)	39 lf (0.0031 ac)	culvert replacement, outlet protection (rip rap) E&S controls, debris removal
Stream 27	ephemeral	39.191432, -80.855101	3 lf (0.0001 ac)	34 lf (0.0012 ac)	culvert replacement, outlet protection (rip rap) E&S controls
Stream 53	ephemeral	39.190533, -80.854311	2 lf (0.0001 ac)	9 lf (0.0003 ac)	culvert replacement, outlet protection (rip rap), E&S controls
Stream 26	intermittent	39.189792, -80.853715	3 lf (0.0002 ac)	38 lf (0.0026 ac)	culvert replacement, outlet protection (rip rap), E&S controls
Stream 25	ephemeral	39.188757, -80.852716	7 lf (0.0003 ac)	27 lf (0.0012 ac)	culvert replacement, outlet protection (rip rap), E&S controls
Stream 46	ephemeral	39.187991, -80.851733	1 lf (<0.0001 ac)	14 lf (0.0006 ac)	culvert replacement, outlet protection (rip rap), E&S controls
Stream 24	perennial	39.187780, -80.851385	7 lf (0.0006 ac)	46 lf (0.0042 ac)	culvert replacement, outlet protection (rip rap), E&S controls
Stream 23	intermittent	39.186524, -80.850019	6 lf (0.0003 ac)	29 lf (0.0017 ac)	culvert replacement, outlet protection (rip rap), E&S controls
Stream 22	perennial	39.185054, -80.849576	6 lf (0.0006 ac)	39 lf (0.0036 ac)	culvert replacement, outlet protection (rip rap), E&S controls
Stream 19	ephemeral	39.183139, -80.849524	6 lf (0.0003 ac)	36 lf (0.0017 ac)	culvert replacement, outlet protection (rip rap), E&S controls
Stream 11	ephemeral	39.182503, -80.848507	NA	101 lf (0.0046 ac)	culvert installation & channel grading
Stream 56	ephemeral	39.182466, -80.848712	4 lf (0.0001 ac)	12 lf (0.0003 ac)	culvert installation, outlet protection (rip rap), E&S controls

Table 1. Continued

Water	Cowardin Class/Flow Regime	Location (Latitude, Longitude)	Temporary Impact	Permanent Impact	Description of Impact
Wetland 05	PEM	39.196630, -80.860159	0.0048 ac	0.0010 ac	Culvert installation & replacement, outlet protection (rip rap), E&S controls
Ditch 1	NA	39.196630, -80.849490	48 lf (0.0011 ac)	NA	Removal of accumulated sediment, E&S controls
Ditch 2	NA	39.182770, -80.849231	349 lf (0.0080 ac)	NA	Removal of accumulated sediment, E&S controls

**Nationwide Permit No. 14 Verification Special Conditions for the
Antero Resources Corporation – Sugar Run Road Roadway Improvements Project
LRH-2020-161-LKR-Sugar Run**

1 of 2

1. Enclosed is a copy of Nationwide Permit (NWP) 14 which will be kept at the site during construction. A copy of the NWP verification, special conditions, and the attached construction plans must be kept at the site during construction. The permittee will supply a copy of these documents to their project engineer responsible for construction activities.
2. Upon completion of the activity authorized by this NWP verification, the enclosed certification must be signed and returned to this office along with as-built drawings showing the location and configuration, as well as all pertinent dimensions and elevations of the activity authorized under this NWP verification.
3. Construction activities will be performed during low flow conditions to the maximum extent practicable. Appropriate site-specific best management practices (BMPs) for sediment and erosion control will be fully implemented during construction activities at the site, as described in the West Virginia Department of Environmental Protection 2006 Best Management Practices Manual.
4. The temporarily affected stream and/or wetland areas will be restored to pre-construction contours and conditions.
5. No area for which grading has been completed will be unseeded or unmulched for longer than fourteen (14) days. All disturbed areas will be seeded and/or revegetated with native species and approved seed mixes (where practicable) after completion of construction activities for stabilization and to help preclude the establishment of non-native invasive species.
6. Should new information regarding the scope and/or impacts of the project become available that was not submitted to this office during our review of the proposal, the permittee must submit written information concerning proposed modification(s) to this office for review and evaluation, as soon as practicable.
7. In the event any previously unknown historic or archaeological sites or human remains are uncovered while accomplishing the activity authorized by this nationwide permit authorization, the permittee must cease all work in waters of the U.S. immediately and contact local, state and county law enforcement offices (only contact law enforcement on findings of human remains), the Corps at (304) 399 - 5210 and West Virginia State Historic Preservation Office at (304) 558 -0220. The Corps will initiate the Federal, state and tribal coordination required to comply with the National Historic Preservation Act and applicable state and local laws and regulations. Federally recognized tribes are afforded a government-to-government status as sovereign nations and consultation is required under Executive Order 13175 and 36 CFR Part 800.
8. The project site lies within the range of the Indiana bat (*Myotis sodalis*), a federally-listed endangered species, northern long-eared bat (*Myotis septentrionalis*), a federally-listed

**Nationwide Permit No. 14 Verification Special Conditions for the
Antero Resources Corporation – Sugar Run Road Roadway Improvements Project
LRH-2020-161-LKR-Sugar Run
2 of 2**

threatened species, snuff box mussel (*Epioblasma triquetra*), a federally-listed endangered species, and the clubshell mussel (*Pleuroblasma clava*), a federally-listed endangered species. In accordance with the U.S. Fish and Wildlife Service's determination for FWS File #2020-I-0667, specific avoidance and minimization measures are required for this proposed project to minimize the potential to adversely affect these species. The applicant must adhere to the avoidance and minimization measures proposed in the PCN and outlined in the 2 June 2020 USFWS technical assistance letter.

9. Section 7 obligations under the Endangered Species Act (Section 7) must be reconsidered if new information reveals impacts of the project that may affect Federally-listed species or critical habitat in a manner not previously considered, the proposed project is subsequently modified to include activities which were not considered during Section 7 consultation with the U.S. Fish and Wildlife Service (USFWS), or new species are listed or critical habitat designated that might be affected by this proposed project.



United States Department of the Interior



FISH AND WILDLIFE SERVICE

West Virginia Field Office
6263 Appalachian Highway
Davis, West Virginia 26260

June 2, 2020

Mr. Tyler Streb
Antero Resources Corporation
1615 Wynkoop Street
Denver, Colorado 80202

Re: Antero Resources Corporation – Sugar Run Road (CR-52) Roadway Improvements Project, Doddridge County, West Virginia (FWS File Number 2020-I-0667)

Dear Mr. Streb:

This letter responds to your March 27, 2020, and April 21, 2020, request for information regarding the potential occurrence of federally listed endangered and threatened species and their designated critical habitats within the proposed project area. The project is located near the town of Oxford in Doddridge County, West Virginia.

It is the U.S. Fish and Wildlife Service's (Service) understanding that Antero Resources Corporation (Antero) proposes roadway improvements along Sugar Run Road (CR-52) to allow for larger truck traffic associated with the oil and gas operations in the area, specifically to provide access to the Cashew Well Pad project. The roadway improvements will require a 10.031-acre limit of disturbance, including approximately 0.80-acre of tree removal.

The comments below are provided pursuant to the Endangered Species Act (ESA) (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*). This project has been assigned FWS File Number 2020-I-0667 and all future correspondence should clearly reference this FWS File Number.

The Service has determined that the endangered Indiana bat (*Myotis sodalis*), snuffbox mussel (*Epioblasma triquetra*), and clubshell mussel (*Pleurobema clava*), and the threatened northern long-eared bat (*Myotis septentrionalis*) may occur within the project area and may be affected by the construction of this project.

Federally Listed Bats

The Indiana bat and northern long-eared bat may use the project area for foraging and roosting between April 1 and November 15. Indiana bat summer foraging habitats are generally defined as riparian, bottomland, upland forest, and old fields or pastures with scattered trees. Roosting and maternity habitat consists primarily of live or dead hardwood tree species which have exfoliating bark that provides space for bats to roost between the bark and the bole of the tree.

Tree cavities, crevices, splits, or hollow portions of tree boles and limbs also provide roost sites. In West Virginia, the Service considers all forested habitat containing trees greater than or equal to 5 inches in diameter at breast height to be potentially suitable as summer roosting and foraging habitat for the Indiana bat. Indiana bats feed on emerged aquatic and terrestrial flying insects. Moths, caddisflies, flies, mosquitoes, and midges are major prey items. Aquatic insects that have concentrated emergences or that form large mating aggregations above or near water appear to be preferred prey items. As a result, streams, wetlands, and associated riparian forests are often preferred foraging habitats for pregnant and lactating Indiana bats. Indiana bats also forage within the canopy of upland forests, over clearings with early successional vegetation (e.g., old fields), along the borders of croplands, along wooded fencerows, and over farm ponds in pastures. Increased erosion and sedimentation of streams reduces diversity and biomass of benthic insects, which are prey for both bat species.

Similar to the Indiana bat, northern long-eared bat foraging habitat includes forested hillsides and ridges, and small ponds or streams. Northern long-eared bat are typically associated with large tracts of mature, upland forests with more canopy cover than is preferred by Indiana bats. Northern long-eared bat seem to be flexible in selecting roosts. They choose roost trees based on suitability to retain bark or provide cavities or crevices, and this species is known to use a wider variety of roost types than the Indiana bat. Males and non-reproductive females may also roost in cooler places like caves and mines. Although rare, this bat has also been found roosting in structures like barns and sheds.

Indiana bats and northern long-eared bat use caves or mine portals for winter hibernation between November 15 and March 31. These species also use the hibernacula and the areas around them for fall-swarms and spring-staging activity (August 15 to November 14 and April 1 to May 14, respectively). Some males have been known to stay close to the hibernacula during the summer and may use the hibernacula as summer roosts. There may be other landscape features being used as hibernacula by northern long-eared bat during the winter that have yet to be documented.

The Service has reviewed the number of acres of potentially suitable foraging and roosting habitat on the West Virginia landscape available to each Indiana bat, versus the total acreage of forest. On that basis, we have determined that small projects, more than 10 miles from a known Priority 1 or 2 Indiana bat hibernaculum, more than five miles from a known Priority 3 or 4 Indiana bat hibernaculum, or more than 2.5 miles from any known maternity roost, or more than five miles from summer detection sites where no roosts were identified, that affect less than 17 acres of forested habitat, and will not affect any potential hibernacula, will have a very small chance of resulting in direct or indirect effects to the Indiana bat, and therefore these effects are considered discountable. As new information becomes available, the Service may review and update this assessment.

The Service does not anticipate that this project is likely to adversely affect the Indiana bat because your project: 1) will affect less than 17 acres of potential Indiana bat foraging or roosting habitat; 2) is not within any of the Indiana bat hibernacula or summer use buffers described above; 3) will not affect any potential caves or mines that could be used as hibernacula for this species; and 4) effects to aquatic features used for foraging habitat will be insignificant.

The northern long-eared bat may occur within the range of the proposed project, and may be affected by the proposed construction and operation of this project. Any take of northern long-eared bat occurring in conjunction with these activities that complies with the conservation measures (as outlined in the 4(d) rule), as necessary, is exempted from ESA Section 9 prohibitions by the 4(d) rule and does not require site specific incidental take authorization. Note that the 4(d) rule does not exempt take that may occur as a result of adverse effects to hibernacula and that no conservation measures are required as part of the 4(d) rule unless the proposed project: 1) involves tree removal within 0.25 miles of known northern long-eared bat hibernacula; or 2) cuts or destroys known, occupied maternity roost trees or any other trees within a 150-foot radius around known, occupied maternity tree during the pup season (June 1 to July 31). This proposed project is not located within any of these radii around known hibernacula or roost trees and will not affect any known northern long-eared bat hibernacula, therefore any take of northern long-eared bat associated with this project is exempted under the 4(d) rule and no conservation measures are required.

Freshwater Mussels

The proposed project occurs within the vicinity of the South Fork Hughes River, which provides habitat for the federally listed snuffbox and clubshell mussels. Freshwater mussels feed by filtering food particles from the water column. Juvenile and adult freshwater mussels have been documented to feed on detritus, diatoms, phytoplankton, and zooplankton. Freshwater mussels rely on fish to complete their lifecycles. When mussel larvae (glochidia) are released into the water by adult females, they must attach themselves within a few days to an appropriate fish host, which they then parasitize for a short time while developing into juvenile mussels. The loss of many historic populations and the continuing degradation of current populations are due to the impacts of impoundments, navigation projects, water quality degradation from agricultural and industrial wastes, and deforestation and other forms of habitat alteration, including gravel and sand dredging. Impacts that directly affect the species also include reduction or elimination of fish hosts.

Freshwater mussels play a key role in the health of aquatic environments by helping to maintain water quality, cycle nutrients, stabilize substrates, remove suspended sediments, and create habitat complexity (Anderson and Kreeger 2010). Mussels remove suspended particulates from water by filter-feeding, which involves straining water over gills to remove microscopic food particles. Filter-feeding makes mussels very sensitive to excessive sedimentation caused by runoff from streambank and upland activities. Excessive sedimentation into a stream reduces suitable habitat for mussels and can smother them, causing death. Excessive suspended sediments can also impair feeding processes of mussels, leading to acute short-term or chronic long-term stress. Both excessive sedimentation and excessive suspended sediments can lead to reduced populations of mussels and therefore reduced benefits to the ecosystem (Anderson and Kreeger 2010; Box and Mossa 1999; Ellis 1931; Ellis 1936; Houp 1993).

Due to the proximity of the project to the South Fork Hughes River, the project could cause increased sedimentation that could adversely affect mussels. In correspondence dated, March 27, 2020, and April 21, 2020, Antero stated their commitment to implement stringent erosion and sedimentation controls. These best management practices will help minimize the adverse effects of sedimentation and erosion to waterways that provide habitat to federally listed mussels near

Mr. Tyler Streb
June 2, 2020

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the project area. In addition, the applicant will comply with the requirements set forth in the West Virginia Department of Environmental Protections 2006 Best Management Protection Manual.

Based Antero's commitment to implement erosion and sedimentation controls, and because no fill is proposed within the South Fork Hughes River, the Service does not anticipate that this project is likely to adversely affect any federally listed mussels.

Summary

Based on the information provided, the Service does not anticipate this project is likely to adversely affect any federally listed species and that any take of northern long-eared bats associated with this project is exempted under the 4(d) rule.

This letter provides technical assistance only and does not serve as a completed ESA Section 7 consultation document. If there is a Federal nexus for the project (e.g., Federal funding provided, Federal permits required to construct), no tree clearing or any project construction activities on any portion of the parcel should occur until consultation under Section 7 of the ESA, between the Service and the Federal action agency, is completed. Section 7 consultation is not complete until the Federal action agency submits a determination of effects to this office, and the Service concurs with the Federal action agency's determination. If there is no Federal nexus associated with this project, then no further coordination with this office is required. All measures should be implemented as proposed.

If the project plans change or amendments be proposed that we have not considered in your proposed action, or if additional information on listed and proposed species becomes available, or if new species become listed or critical habitat is designated, this determination may be reconsidered.

If you have any questions regarding this letter, please contact Tiernan Lennon on my team at (304) 866-3858, Ext. 1615, or at the letterhead address.

Sincerely,



Jennifer L. Norris
Field Supervisor

LITERATURE CITED

- Anderson, R. M. and D. A. Kreeger. 2010. Potential for impairment of freshwater mussel populations in DRBC special protection waters as a consequence of natural gas exploratory well development. Unpublished report prepared for U.S. Fish and Wildlife Service and the Partnership for the Delaware Estuary. State College, Pennsylvania.
- Box, J. M. and J. Mossa. 1999. Sediment, land use, and freshwater mussels: prospects and problems. *Journal of the North American Benthological Society*. 18:99-117.
- Ellis, M. M. 1931. Some factors affecting the replacement of the commercial fresh-water mussels. U.S. Department of Commerce Bureau of Fisheries. *Fishery Circular*. 7:1-10.
- Ellis, M. M. 1936. Erosion silt as a factor in aquatic environments. *Ecology*. 17:29-42.
- Houp, R. E. 1993. Observations on long-term effects of sedimentation on freshwater mussels (*Molusca: Unionidae*) in the North Fork of Red River, Kentucky. *Transactions of the Kentucky Academy of Science*. 54:93-97.

Mr. Tyler Streb
June 2, 2020

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cc:

Project File

Reader File

ES:WVFO:TLenon:skd:6/2/2020

Filename: C:\Users\sheiladavis\Desktop\MAIL\Letters\June 2 2020\OneDrive_3_6-2-2020\2020-I-0667_Sugar Run Rd_4.27.20jln.docx



DIVISION OF NATURAL RESOURCES
324 4th Avenue, Room 342
South Charleston, West Virginia 25303-1228
Telephone 304-558-2754
Fax 304-558-2768
TDD 304-558-1439
TDD 800-354-6087

Stephen S. McDaniel
Director

February 26, 2021

Division of Natural Resources
Office of Land and Streams
LICENSE and RIGHT of ENTRY

Re: LS-21-VI/09-466

Antero Resources Corporation
Daniel Bulian
c/o Kleinfelder, Inc.
Attention: Matt Albright
51 Dutilh Road, Suite 240
Cranberry Township, PA 16066

Dear Mr. Bulian:

The West Virginia Division of Natural Resources (WVDNR) hereby grants to you for a term of ten (10) years, from the date hereof, a License and Right of Entry to install, maintain, and replacing culverts of various sizes, most crossings to include rip-rap outlet protection and erosion and sediment controls at eighteen separate locations; removing sediment and debris at one (1) location; and stream realignment at one (1) location (see Exhibit A -B) (Sugar Run Road, CR-52, Roadway Improvements) along Sugar Run and unnamed tributaries of Sugar Run, near Oxford in Doddridge County, West Virginia.

The issuance of this License and Right of Entry by the WVDNR does not preclude the necessity to obtain permits from the U.S. Army Corps of Engineers (USACE), W.V. Department of Environmental Protection (WVDEP), or the W.V. Division of Homeland Security and Emergency Management (WVDHSEM). The Right of Entry does not negate the need to comply with the West Virginia Water Pollution Control Act and/or the State Environmental Quality Board's administrative regulations.

The applicant must contact the following agencies and abide by the following conditions:

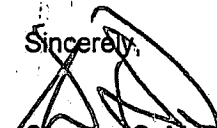
1. The USACE may require either an Individual Clean Water Act 404 permit or a Nationwide Permit. Contact the Huntington District (304-399-5210) or the Pittsburgh District (412-395-7155) from more information. Information can also be found at <http://www.lrh.usace.army.mil/Missions/Regulatory.aspx>
2. The WVDEP (304-926-0499) may require the following permits:
 - a. A Clean Water Act Section 401 Water Quality Certification
<http://www.dep.wv.gov/WWE/Programs/Pages/401Certification.aspx>

- b. Construction Stormwater Site Registration and Notice of Intent. Not needed if disturbance less than 1-acre
http://dep.wv.gov/WWE/Programs/stormwater/Pages/sw_home.aspx
3. The WVDEP Erosion and Sediment Control Best Management Practice Manual, Revised 2016, must be followed. Copies of those guidelines are available from the Division of Water and Waste Management, (304) 926-0495 or at
http://www.dep.wv.gov/WWE/Programs/stormwater/csw/Pages/ESC_BMP.aspx
4. The WVDHSEM may require a Floodplain Permit. WVDHSEM can be contacted at: (304) 957-2571
5. No in-stream work during the cold water and warm water fish spawning seasons (September 15-March 31 and April 1- June 30, respectively). If in-stream impacts cannot be avoided during the applicable fish spawning season, contact the WVDNR Environmental Coordination Unit at (304) 637-0245.
6. Threatened or Endangered aquatic species identified by the U.S. Fish and Wildlife Service are listed in Appendix A of the 2017 USACE Nationwide Permits. The U.S. Fish and Wildlife Service Field Office should be contacted (304) 636-6568 for any activity in waterways listed in Appendix A.
<http://www.lrp.usace.army.mil/Portals/72/docs/regulatory/2017%20Public%20Notices/West%20Virginia%20-%20NWP%20March%202017%20PN.pdf?ver=2017-03-22-095505-870>
7. Survey requirements for streams with mussel populations are described in the West Virginia Mussel Survey Protocols. Contact the WVDNR Environmental Coordination Unit for information concerning mussels at (304) 637-0245.
<http://www.wvdnr.gov/Mussels/West%20Virginia%20Mussel%20Survey%20Protocols%20APR2016.pdf>

Additionally, this Right of Entry does not provide for the applicant to work outside the requested boundaries. The State does not assume any liability for the applicant's/landowner's construction activities. By accepting this Right of Entry, the applicant/landowner assumes liability for any/all damages caused by this activity to both upstream and downstream landowners. This License and Right of Entry does not grant any rights or privileges, or permission to enter upon, or to cross the property of any other person, nor is permission granted to remove any material that lies upon the property of any other persons. Work should be completed in as brief a period as possible and within one year from the date of this letter. **In the event the applicant fails or refuses to comply with any of the terms or conditions herein, this License and Right of Entry will be canceled and considered null and void and the WVDNR may reject further applications.**

Your payment is now due and payable in the amount of \$1800.00 to the Division of Natural Resources covering the first year's annual fee of this agreement. Your agreement will be effective upon receipt of your payment in full. You must notify this office in writing when this installation has been transferred or removed.

Sincerely,



Stephen S. McDaniel
Director

SSM:cb

Antero Resources Corporation
LS-21-VI/09-466
Page 3
February 26, 2021

cc: Office of Land and Streams
DNR Fish Biologist
Jeremy Bandy, Environmental Enforcement
Natural Resources Police Officer
WV DNR Coordination Unit

LS-21-VI/09-466
Exhibit A

Table 1: Crossings of WVDNR-OLS Regulated Waters

Stream ID	Local Waterway	Stream Regime	County	Nearest City/Town	Latitude	Longitude	Temporary or Permanent	Proposed Date of Impact	Duration of the Stream Impacts (Working Days)	Purpose of Impact	Linear Feet of Impact	WHICHEVER APPLICABLE: Linear Feet of Bank Work, Culvert Bridge Width and Length, Pipe or Size	Description of Crossing	Comments
KLF-STREAM33 (INT)	UNT to Sugar Run	Intermittent	Doddridge	Oxford	39.201188	-80.864847	Permanent	July 2020	3	Structure	36	Proposed Culvert Replacement: CPP, Diameter 18", Length 29'	• Culvert Replacement Impact 29' - Corrugated Plastic Pipe (CPP), Diameter 18", Length 29' • Outlet Protection Impact 7' - Rip-Rap Installation	• Existing Culvert: Corrugated Metal Pipe (CMP), Diameter 18", Length 19'
							Temporary			Right of Entry	9'	9	• Temporary Erosion and Sediment (EAS) Perimeter Controls for Construction Activity	• Temporary Workspace and EAS Controls to Protect Aquatic Features • The Culvert Replacement may Utilize Temporary Ditch Checks, Filter Fabric, and/or Sand Bags, at the Discretion of the Contractor and Based on Current Field Conditions
KLF-STREAM37 (EPH)	UNT to Sugar Run	Ephemeral	Doddridge	Oxford	39.203315	-80.853829	Permanent	July 2020	3	Right of Entry	8	6	• Rebuild Shoulder of Road Impact 6' - Repair Washout Area at the Culvert Outlet Using Rip-Rap	• Existing Culvert: to Remain • The Culvert Replacement and Outlet Protection to Occur on KLF-STREAM37 • Rebuild Shoulder Using Rip-Rap and Dressing with Shoulder Stone
KLF-STREAM31 (PER)	UNT to Sugar Run	Perennial	Doddridge	Oxford	39.198825	-80.862223	Permanent	July 2020	3	Structure	25	Proposed Culvert Replacement: CPP, Diameter 36", Length 26'	• Culvert Replacement Impact 26' - CPP, Diameter 36", Length 26'	• Existing Culvert: CPP, Diameter 30", Length 21'
							Temporary			Right of Entry	5	6	• Temporary EAS Perimeter Controls for Construction Activity	• Temporary Workspace and EAS Controls to Protect Aquatic Features • The Culvert Replacement may Utilize Temporary Ditch Checks, Filter Fabric, and/or Sand Bags, at the Discretion of the Contractor and Based on Current Field Conditions
KLF-STREAM21 (PER) - Crossing 1	Sugar Run	Perennial	Doddridge	Oxford	39.196341	-80.859816	Permanent	July 2020	3	Structure	6	Proposed Culvert Replacement: CPP, Diameter 18", Length 29'	• Culvert Replacement Impact 1.5' - CPP, Diameter 18", Length 29' • Outlet Protection Impact 4.5' - Rip-Rap Installation	• Existing Culvert: Steel, Diameter 8", Length 19' • Culvert Replacement and Outlet Protection to Occur on KLF-STREAM30, which will Extend into the Confluence of this Stream (KLF-STREAM21)
							Temporary			Right of Entry	6	6	• Temporary EAS Perimeter Controls for Construction Activity	• Temporary Workspace and EAS Controls to Protect Aquatic Features • The Culvert Replacement may Utilize Temporary Ditch Checks, Filter Fabric, and/or Sand Bags, at the Discretion of the Contractor and Based on Current Field Conditions
KLF-STREAM30 (EPH)	UNT to Sugar Run	Ephemeral	Doddridge	Oxford	39.193370	-80.859778	Permanent	July 2020	3	Structure	30	Proposed Culvert Replacement: CPP, Diameter 18", Length 29'	• Culvert Replacement Impact 29' - CPP, Diameter 18", Length 29' • Outlet Protection Impact 2' - Rip-Rap Installation	• Existing Culvert: Steel, Diameter 8", Length 19' • Outlet Protection Accounted for on KLF-STREAM21 - Crossing 1 (FBI Discharge 1)
							Temporary			Right of Entry	3	3	• Temporary EAS Perimeter Controls for Construction Activity	• Temporary Workspace and EAS Controls to Protect Aquatic Features • The Culvert Replacement may Utilize Temporary Ditch Checks, Filter Fabric, and/or Sand Bags, at the Discretion of the Contractor and Based on Current Field Conditions
KLF-STREAM29 (INT)	UNT to Sugar Run	Intermittent	Doddridge	Oxford	39.185543	-80.859034	Permanent	July 2020	3	Structure	37	Proposed Culvert Replacement: CPP, Diameter 36", Length 37'	• Culvert Replacement Impact 30' - CPP, Diameter 36", Length 30' • Outlet Protection Impact 7' - Rip-Rap Installation	• Existing Culvert: CMP, Diameter 36", Length 27'
							Temporary			Right of Entry	3	3	• Temporary EAS Perimeter Controls for Construction Activity	• Temporary Workspace and EAS Controls to Protect Aquatic Features • The Culvert Replacement may Utilize Temporary Ditch Checks, Filter Fabric, and/or Sand Bags, at the Discretion of the Contractor and Based on Current Field Conditions
KLF-STREAM20 (PER)	UNT to Sugar Run	Perennial	Doddridge	Oxford	39.183177	-80.858830	Permanent	July 2020	3	Structure	39	Proposed Culvert Replacement: CPP, Diameter 24", Length 32'	• Culvert Replacement Impact 32' - CPP, Diameter 24", Length 32' • Outlet Protection Impact 7' - Rip-Rap Installation	• Existing Culvert: Reinforced Concrete Pipe (RCP), Diameter 24", Length 30' • Existing Culvert to Remain, Unless Culvert Conditions Significantly Deteriorate During Construction • Culvert Replacement is Also Contingent on Land Access
							Temporary			Right of Entry	10	10	• Temporary EAS Perimeter Controls for Construction Activity • Sediment and Debris Removal	• Temporary Workspace, EAS Controls, and Sediment and Debris Removal (Outlet Side of Culvert) to Protect Aquatic Features • The Culvert Replacement may Utilize Temporary Ditch Checks, Filter Fabric, and/or Sand Bags, at the Discretion of the Contractor and Based on Current Field Conditions
KLF-STREAM27 (EPH)	UNT to Sugar Run	Ephemeral	Doddridge	Oxford	39.181432	-80.855101	Permanent	July 2020	3	Structure	34	Proposed Culvert Replacement: CPP, Diameter 24", Length 28'	• Culvert Replacement Impact 28' - CPP, Diameter 24", Length 28' • Outlet Protection Impact 6' - Rip-Rap Installation	• Existing Culvert: Reinforced Concrete Pipe (RCP), Diameter 24", Length 21'
							Temporary			Right of Entry	3	3	• Temporary EAS Perimeter Controls for Construction Activity	• Temporary Workspace and EAS Controls (Inlet & Outlet Side of Culvert) to Protect Aquatic Features • The Culvert Replacement may Utilize Temporary Ditch Checks, Filter Fabric, and/or Sand Bags, at the Discretion of the Contractor and Based on Current Field Conditions
KLF-STREAM35 (EPH)	UNT to Sugar Run	Ephemeral	Doddridge	Oxford	39.180533	-80.854311	Permanent	July 2020	3	Structure	9	Proposed Culvert Replacement: CPP, Diameter 18", Length 29'	• Culvert Replacement Impact 9' - CPP, Diameter 18", Length 29' • Outlet Protection Impact 4' - Rip-Rap Installation	• Existing Culvert: CMP, Diameter 15", Length 20' • Headwater of Stream Originates at Outlet Side of Culvert
							Temporary			Right of Entry	2	2	• Temporary EAS Perimeter Controls for Construction Activity	• Temporary Workspace and EAS Controls (Inlet Side) to Protect Aquatic Features • The Culvert Replacement may Utilize Temporary Ditch Checks, Filter Fabric, and/or Sand Bags, at the Discretion of the Contractor and Based on Current Field Conditions
KLF-STREAM28 (INT)	UNT to Sugar Run	Intermittent	Doddridge	Oxford	39.187922	-80.853715	Permanent	July 2020	3	Structure	38	Proposed Culvert Replacement: CPP, Diameter 18", Length 33'	• Culvert Replacement Impact 33' - CPP, Diameter 18", Length 33' • Outlet Protection Impact 5' - Rip-Rap Installation	• Existing Culvert: CPP, Diameter 15", Length 21'
							Temporary			Right of Entry	3	3	• Temporary EAS Perimeter Controls for Construction Activity	• Temporary Workspace and EAS Controls to Protect Aquatic Features • The Culvert Replacement may Utilize Temporary Ditch Checks, Filter Fabric, and/or Sand Bags, at the Discretion of the Contractor and Based on Current Field Conditions
KLF-STREAM21 (PER) - Crossing 2	Sugar Run	Perennial	Doddridge	Oxford	39.189458	-80.853888	Permanent	July 2020	3	Right of Entry	21	21'	• Roadway Slip Repair Impact 21'	• Impact Associated with the Construction of a Retrock Wall to Repair an Existing Slip

LS-21-VI/09-466
Exhibit B

Table 1: Crossings of W/DNR-OLS Regulated Waters

Stream ID	Local Waterway	Stream Regime	County	Nearest City/Town	Latitude	Longitude	Temporary or Permanent	Proposed Date of Impact	Duration of the Stream Impacts (Working Days)	Purpose of Impact	Linear Feet of Impact	WHICHEVER APPLIES		Description of Crossing	Comments
												Linear Feet of Bank Work, Culvert, Bridge Width and Length/Pipeline Size			
KLF-STREAM25 (EPH)	UNT to Sugar Run	Ephemeral	Doddridge	Oxford	39.188757	-80.852716	Permanent	July 2020	3	Structure	27	Proposed Culvert Replacement: CPP, Diameter 18", Length 23'	Culvert Replacement Impact 23' - CPP, Diameter 18", Length 23'	• Culvert Replacement Impact 23' - CPP, Diameter 18", Length 23'	• Existing Culvert CMP, Diameter 12", Length 20'
							Temporary			Right of Entry	7				
KLF-STREAM46 (EPH)	UNT to Sugar Run	Ephemeral	Doddridge	Oxford	39.187891	-80.851733	Permanent	July 2020	3	Structure	14	Proposed Culvert Replacement: CPP, Diameter 18", Length 39'	Culvert Replacement Impact 6' - CPP, Diameter 18", Length 39'	• Culvert Replacement Impact 6' - CPP, Diameter 18", Length 39'	• Existing Culvert: CMP, Diameter 12", Length 20', Headwater of Stream Originates at Outlet Side of Culvert
							Temporary			Right of Entry	7				
KLF-STREAM24 (PER)	UNT to Sugar Run	Perennial	Doddridge	Oxford	39.187780	-80.851355	Permanent	July 2020	3	Structure	48	Proposed Culvert Replacement: CPP, Diameter 24", Length 41'	Culvert Replacement Impact 41' - CPP, Diameter 24", Length 41'	• Culvert Replacement Impact 41' - CPP, Diameter 24", Length 41'	• Existing Culvert: CMP, Diameter 24", Length 20'
							Temporary			Right of Entry	7				
KLF-STREAM21 (PER) - Crossing 3	Sugar Run	Perennial	Doddridge	Oxford	39.186939	-80.850471	Permanent	July 2020	3	Structure	7	Proposed Culvert Replacement: CPP, Diameter 18", Length 26'	Culvert Replacement Impact 34' - CPP, Diameter 18", Length 26'	• Culvert Replacement and Outlet Protection to Occur on Adjacent Ditch Relief Culvert, which will Enter into the Stream (KLF-STREAM21)	• Existing Culvert: CMP, Diameter 18", Length 21'
							Temporary			Right of Entry	10				
KLF-STREAM23 (INT)	UNT to Sugar Run	Intermittent	Doddridge	Oxford	39.186524	-80.850019	Permanent	July 2020	3	Structure	29	Proposed Culvert Replacement: CPP, Diameter 24", Length 24'	Culvert Replacement Impact 24' - CPP, Diameter 24", Length 24'	• Culvert Replacement Impact 24' - CPP, Diameter 24", Length 24'	• Existing Culvert: CMP, Diameter 24", Length 22'
							Temporary			Right of Entry	6				
KLF-STREAM22 (PER)	UNT to Sugar Run	Perennial	Doddridge	Oxford	39.185054	-80.848578	Permanent	July 2020	3	Structure	39	Proposed Culvert Replacement: CPP, Diameter 24", Length 23'	Culvert Replacement Impact 33' - CPP, Diameter 24", Length 23'	• Culvert Replacement Impact 33' - CPP, Diameter 24", Length 23'	• Existing Culvert: RCP, Diameter 24", Length 25'
							Temporary			Right of Entry	6				
KLF-STREAM19 (EPH)	UNT to Sugar Run	Ephemeral	Doddridge	Oxford	39.183139	-80.846534	Permanent	July 2020	3	Structure	36	Proposed Culvert Replacement: CPP, Diameter 18", Length 30'	Culvert Replacement Impact 30' - CPP, Diameter 18", Length 30'	• Culvert Replacement Impact 30' - CPP, Diameter 18", Length 30'	• Existing Culvert: CMP, Diameter 18", Length 27'
							Temporary			Right of Entry	6				
West WP STREAM11 (EPH)	UNT to Sugar Run	Ephemeral	Doddridge	Oxford	39.182503	-80.846507	Permanent	July 2020	3	Structure	101	Proposed Culvert Replacement: CPP, Diameter 18", Length 39'	Culvert Installation Impact 39' - CPP, Diameter 18", Length 39'	• Culvert Installation Impact 39' - CPP, Diameter 18", Length 39'	• Ephemeral Stream Flow from West WP STREAM11 is Captured by a Roadside Ditch (KLF-DITCH02) • The Culvert Installation Process to Reconnect Stream Flow from West WP STREAM11 (East of Sugar Run Rd) to KLF-STREAM56 (West of Sugar Run Rd) and Restore Stream Flow to Historic Conditions by Following the Natural Hillside Topographic Drainage Basin • Ephemeral Stream Flow from West WP STREAM11 will no Longer Flow into KLF-DITCH02
KLF-STREAM56 (EPH)	UNT to Sugar Run	Ephemeral	Doddridge	Oxford	39.182468	-80.846712	Permanent	July 2020	3	Structure	12	Proposed Culvert Installation: CPP, Diameter 18", Length 39'	Culvert Installation Impact 6' - CPP, Diameter 18", Length 39'	• Culvert Installation Impact 6' - CPP, Diameter 18", Length 39'	• Existing Culvert: None
							Temporary			Right of Entry	4				



DIVISION OF NATURAL RESOURCES
324 4th Avenue, Room 342
South Charleston, West Virginia 25303-1228
Telephone 304-558-2754
Fax 304-558-2768
TDD 304-558-1439
TDD 800-354-6087

Stephen S. McDaniel
Director

February 26, 2021

Division of Natural Resources
Office of Land and Streams
LICENSE and RIGHT of ENTRY

Re: R-21-VI/09-467

Antero Resources Corporation
Daniel Bulian
c/o Kleinfelder, Inc.
Attention: Matt Albright
51 Dutilh Road, Suite 240
Cranberry Township, PA 16066

Dear Mr. Bulian:

The West Virginia Division of Natural Resources (WVDNR) hereby grants to you for a term of one (1) years, from the date hereof, a License and Right of Entry for the purpose of installing six feet (6') of rip-rap and repairing a slip fir twenty-one feet (21') at separate locations (Sugar Run Road, CR-52, Roadway Improvements) along Sugar Run and an unnamed tributary of Sugar Run near Oxford in Doddridge County, West Virginia.

The issuance of this License and Right of Entry by the WVDNR does not preclude the necessity to obtain permits from the U.S. Army Corps of Engineers (USACE), W.V. Department of Environmental Protection (WVDEP), or the W.V. Division of Homeland Security and Emergency Management (WVDHSEM). The Right of Entry does not negate the need to comply with the West Virginia Water Pollution Control Act and/or the State Environmental Quality Board's administrative regulations.

The applicant must contact the following agencies and abide by the following conditions:

1. The USACE may require either an Individual Clean Water Act 404 permit or a Nationwide Permit. Contact the Huntington District (304-399-5210) or the Pittsburgh District (412-395-7155) from more information. Information can also be found at <http://www.lrh.usace.army.mil/Missions/Regulatory.aspx>


2. The WVDEP (304-926-0499) may require the following permits:
 - a. A Clean Water Act Section 401 Water Quality Certification
<http://www.dep.wv.gov/WWE/Programs/Pages/401Certification.aspx>
 - b. Construction Stormwater Site Registration and Notice of Intent. Not needed if disturbance less than 1-acre
http://dep.wv.gov/WWE/Programs/stormwater/Pages/sw_home.aspx
3. The WVDEP Erosion and Sediment Control Best Management Practice Manual, Revised 2016, must be followed. Copies of those guidelines are available from the Division of Water and Waste Management, (304) 926-0495 or at
http://www.dep.wv.gov/WWE/Programs/stormwater/csw/Pages/ESC_BMP.aspx
4. The WVDHSEM may require a Floodplain Permit. WVDHSEM can be contacted at: (304) 957-2571
5. No in-stream work during the cold water and warm water fish spawning seasons (September 15-March 31 and April 1- June 30, respectively). If in-stream impacts cannot be avoided during the applicable fish spawning season, contact the WVDNR Environmental Coordination Unit at (304) 637-0245.
6. Threatened or Endangered aquatic species identified by the U.S. Fish and Wildlife Service are listed in Appendix A of the 2017 USACE Nationwide Permits. The U.S. Fish and Wildlife Service Field Office should be contacted (304) 636-6568 for any activity in waterways listed in Appendix A.
<http://www.lrp.usace.army.mil/Portals/72/docs/regulatory/2017%20Public%20Notices/West%20Virginia%20-%20NWP%20March%202017%20PN.pdf?ver=2017-03-22-095505-870>
7. Survey requirements for streams with mussel populations are described in the West Virginia Mussel Survey Protocols. Contact the WVDNR Environmental Coordination Unit for information concerning mussels at (304) 637-0245.
<http://www.wvdnr.gov/Mussels/West%20Virginia%20Mussel%20Survey%20Protocols%20APR2016.pdf>

Additionally, this Right of Entry does not provide for the applicant to work outside the requested boundaries. The State does not assume any liability for the applicant's/landowner's construction activities. By accepting this Right of Entry, the applicant/landowner assumes liability for any/all damages caused by this activity to both upstream and downstream landowners. This License and Right of Entry does not grant any rights or privileges, or permission to enter upon, or to cross the property of any other person, nor is permission granted to remove any material that lies upon the property of any other persons. Work should be completed in as brief a period as possible and within one year from the date of this letter. **In the event the applicant fails or refuses to comply with any of the terms or conditions herein, this License and Right of Entry will be canceled and considered null and void and the WVDNR may reject further applications.**

Antero Resources Corporation
R-21-VI/09-467
Page 3
February 26, 2021

Your check in the amount of \$200.00 is now due and payable to the Division of Natural Resources covering the one-time fee for this agreement. Your agreement will be effective upon receipt of your payment in full.

Sincerely,



Stephen S. McDaniel
Director

SSM:cb

cc: Office of Land and Streams
DNR Fish Biologist
Jeremy Bandy, Environmental Enforcement
Natural Resources Police Officer
WV DNR Coordination Unit

John Lewis

From: Wakeford, Anne M <Anne.M.Wakeford@wv.gov>
Sent: Thursday, April 22, 2021 11:07 AM
To: John Lewis
Cc: DBulian@anteroresources.com; Bennett, Danny A; Matthew Albright
Subject: FW: SugarRunroad Doddridge County
Attachments: SugarRunroad (2) .csv

External Email

From: Wakeford, Anne M
Sent: Monday, March 01, 2021 10:59 AM
To: DBulian@anteroresources.com
Cc: Bennett, Danny A; Taylor, Nate D
Subject: FW: SugarRunroad Doddridge County

Dear Daniel Bulian,

Your fish spawning waivers have been approved.

This email serves as your approval.

Please contact me if you have any questions.

Regards,

Anne

Anne M. Wakeford

Anne M. Wakeford
Coordination Biologist
WV DNR Elkins Operation Center
PO Box 67 Ward Rd
Elkins WV 26241
Email: Anne.M.Wakeford@wv.gov
Phone 304-637-0245 ex 2035
Fax 304-637-0250

Hi Anne,

On behalf of Antero Resources Corporation (Antero), Kleinfelder, Inc. is submitting the attached Fish Spawning Waiver Request for intermittent and perennial stream crossings associated with the Sugar Run Road (CR-52) Roadway Improvements for your review. Please address your response to Daniel Bulian of Antero. He is cc'd on the email and his contact information is located below.

Daniel Bulian
Environmental Specialist III

Antero Resources Corporation
535 White Oaks Blvd
Bridgeport, WV 26330
(304) 842-4093
dbulian@anteroresources.com

Thanks,

Matt Albright
Project Manager
51 Dutilh Rd., Suite 240
Cranberry Township, PA 16066
m | 609.947.5296



This email may contain confidential information. If you have received this email—including any attachments—in error, please notify the sender promptly and delete the email and any attachments from all of your systems.

OBJECTID	ProjectID	ProjectName	Submitter	Date	StreamName	StreamRegime	County	YLat	XLong	Type	DateImpact	Duration	Purpose	StreamWd	Watershed	Fa Treatment	LicenseNumber	Rationale	Approval	
1	KLF-STREAM33 (INT) - Crossing 1	Sugar Run Road (CR-52) Roadway Improvements	Kleinfelder, Inc.	7/25/2021 0:00	UNT to Sugar Run	Intermittent	Doddridge	39.20188	-80.884647	Permanent	Sometime Between April 1 & June 30	3 days	• Culvert Replacement Impact 29' - Corrugated Plastic Pipe (C/P) • Diameter 18", Length 29' • Outlet Protection Impact 7' - Rip-Rap Installation	2.5	1.144	36	Seed & Mulch/Permanently Herbaceous Layer-Outside Roadbed	To Be Assigned	Temporary Crossing for Roadway Improvements, crossing will be completed within 72 hours	approved
2	KLF-STREAM33 (INT) - Crossing 2	Sugar Run Road (CR-52) Roadway Improvements	Kleinfelder, Inc.	7/25/2021 0:00	UNT to Sugar Run	Intermittent	Doddridge	39.20188	-80.884647	Temporary	Sometime Between April 1 & June 30	3 days	• Temporary Erosion and Sediment (E&S) Perimeter Controls for Construction Activity	2.5	1.144	9	Seed & Mulch/Permanently Herbaceous Layer-Outside Roadbed	To Be Assigned	Temporary Crossing for Roadway Improvements, crossing will be completed within 72 hours	approved
3	KLF-STREAM31 (PER) - Crossing 1	Sugar Run Road (CR-52) Roadway Improvements	Kleinfelder, Inc.	7/25/2021 0:00	UNT to Sugar Run	Perennial	Doddridge	39.19825	-80.857223	Permanent	Sometime Between April 1 & June 30	3 days	• Culvert Replacement Impact 26' - C/P, Diameter 36", Length 36'	5	1.144	26	Seed & Mulch/Permanently Herbaceous Layer-Outside Roadbed	To Be Assigned	Temporary Crossing for Roadway Improvements, crossing will be completed within 72 hours	approved
4	KLF-STREAM31 (PER) - Crossing 2	Sugar Run Road (CR-52) Roadway Improvements	Kleinfelder, Inc.	7/25/2021 0:00	UNT to Sugar Run	Perennial	Doddridge	39.19825	-80.857223	Temporary	Sometime Between April 1 & June 30	3 days	• Temporary E&S Perimeter Controls for Construction Activity	5	1.144	5	Seed & Mulch/Permanently Herbaceous Layer-Outside Roadbed	To Be Assigned	Temporary Crossing for Roadway Improvements, crossing will be completed within 72 hours	approved
5	KLF-STREAM21 (PER) - Crossing 1 (FB Discharge 1)	Sugar Run Road (CR-52) Roadway Improvements	Kleinfelder, Inc.	7/25/2021 0:00	Sugar Run	Perennial	Doddridge	39.196341	-80.859818	Permanent	Sometime Between April 1 & June 30	3 days	• Culvert Replacement Impact 1.5' - C/P, Diameter 18", Length 18' • Outlet Protection Impact 4.5' - Rip-Rap Installation	10	1.144	6	Seed & Mulch/Permanently Herbaceous Layer-Outside Roadbed	To Be Assigned	Temporary Crossing for Roadway Improvements, crossing will be completed within 72 hours	approved
6	KLF-STREAM21 (PER) - Crossing 1 (FB Discharge 2)	Sugar Run Road (CR-52) Roadway Improvements	Kleinfelder, Inc.	7/25/2021 0:00	Sugar Run	Perennial	Doddridge	39.196341	-80.859818	Temporary	Sometime Between April 1 & June 30	3 days	• Temporary E&S Perimeter Controls for Construction Activity	10	1.144	6	Seed & Mulch/Permanently Herbaceous Layer-Outside Roadbed	To Be Assigned	Temporary Crossing for Roadway Improvements, crossing will be completed within 72 hours	approved
7	KLF-STREAM29 (INT) - Crossing 1	Sugar Run Road (CR-52) Roadway Improvements	Kleinfelder, Inc.	7/25/2021 0:00	UNT to Sugar Run	Intermittent	Doddridge	39.195543	-80.859034	Permanent	Sometime Between April 1 & June 30	3 days	• Culvert Replacement Impact 30' - C/P, Diameter 36", Length 30' • Outlet Protection Impact 7' - Rip-Rap Installation	2	1.144	37	Seed & Mulch/Permanently Herbaceous Layer-Outside Roadbed	To Be Assigned	Temporary Crossing for Roadway Improvements, crossing will be completed within 72 hours	approved
8	KLF-STREAM29 (INT) - Crossing 2	Sugar Run Road (CR-52) Roadway Improvements	Kleinfelder, Inc.	7/25/2021 0:00	UNT to Sugar Run	Intermittent	Doddridge	39.195543	-80.859034	Temporary	Sometime Between April 1 & June 30	3 days	• Temporary E&S Perimeter Controls for Construction Activity	2	1.144	3	Seed & Mulch/Permanently Herbaceous Layer-Outside Roadbed	To Be Assigned	Temporary Crossing for Roadway Improvements, crossing will be completed within 72 hours	approved
9	KLF-STREAM28 (PER) - Crossing 1	Sugar Run Road (CR-52) Roadway Improvements	Kleinfelder, Inc.	7/25/2021 0:00	UNT to Sugar Run	Perennial	Doddridge	39.193177	-80.85663	Permanent	Sometime Between April 1 & June 30	3 days	• Culvert Replacement Impact 32' - C/P, Diameter 24", Length 32' • Outlet Protection Impact 7' - Rip-Rap Installation	3.5	1.144	39	Seed & Mulch/Permanently Herbaceous Layer-Outside Roadbed	To Be Assigned	Temporary Crossing for Roadway Improvements, crossing will be completed within 72 hours	approved
10	KLF-STREAM28 (PER) - Crossing 2	Sugar Run Road (CR-52) Roadway Improvements	Kleinfelder, Inc.	7/25/2021 0:00	UNT to Sugar Run	Perennial	Doddridge	39.193177	-80.85663	Temporary	Sometime Between April 1 & June 30	3 days	• Temporary E&S Perimeter Controls for Construction Activity • Sediment and Debris Removal	3.5	1.144	10	Seed & Mulch/Permanently Herbaceous Layer-Outside Roadbed	To Be Assigned	Temporary Crossing for Roadway Improvements, crossing will be completed within 72 hours	approved
11	KLF-STREAM26 (INT) - Crossing 1	Sugar Run Road (CR-52) Roadway Improvements	Kleinfelder, Inc.	7/25/2021 0:00	UNT to Sugar Run	Intermittent	Doddridge	39.189792	-80.853715	Permanent	Sometime Between April 1 & June 30	3 days	• Culvert Replacement Impact 33' - C/P, Diameter 18", Length 33' • Outlet Protection Impact 5' - Rip-Rap Installation	3	0.656	38	Seed & Mulch/Permanently Herbaceous Layer-Outside Roadbed	To Be Assigned	Temporary Crossing for Roadway Improvements, crossing will be completed within 72 hours	approved
12	KLF-STREAM26 (INT) - Crossing 2	Sugar Run Road (CR-52) Roadway Improvements	Kleinfelder, Inc.	7/25/2021 0:00	UNT to Sugar Run	Intermittent	Doddridge	39.189792	-80.853715	Temporary	Sometime Between April 1 & June 30	3 days	• Temporary E&S Perimeter Controls for Construction Activity	3	0.656	3	Seed & Mulch/Permanently Herbaceous Layer-Outside Roadbed	To Be Assigned	Temporary Crossing for Roadway Improvements, crossing will be completed within 72 hours	approved
13	KLF-STREAM31 (PER) - Crossing 2	Sugar Run Road (CR-52) Roadway Improvements	Kleinfelder, Inc.	7/25/2021 0:00	Sugar Run	Perennial	Doddridge	39.189456	-80.853588	Permanent	Sometime Between April 1 & June 30	3 days	• Roadway Slip Repair Impact 21'	10	0.656	21	Seed & Mulch/Permanently Herbaceous Layer-Outside Roadbed	To Be Assigned	Temporary Crossing for Roadway Improvements, crossing will be completed within 72 hours	approved
14	KLF-STREAM24 (PER) - Crossing 1	Sugar Run Road (CR-52) Roadway Improvements	Kleinfelder, Inc.	7/25/2021 0:00	UNT to Sugar Run	Perennial	Doddridge	39.18778	-80.851385	Permanent	Sometime Between April 1 & June 30	3 days	• Culvert Replacement Impact 41' - C/P, Diameter 24", Length 41' • Outlet Protection Impact 5' - Rip-Rap Installation	4	0.656	46	Seed & Mulch/Permanently Herbaceous Layer-Outside Roadbed	To Be Assigned	Temporary Crossing for Roadway Improvements, crossing will be completed within 72 hours	approved
15	KLF-STREAM24 (PER) - Crossing 2	Sugar Run Road (CR-52) Roadway Improvements	Kleinfelder, Inc.	7/25/2021 0:00	UNT to Sugar Run	Perennial	Doddridge	39.18778	-80.851385	Temporary	Sometime Between April 1 & June 30	3 days	• Temporary E&S Perimeter Controls for Construction Activity	4	0.656	7	Seed & Mulch/Permanently Herbaceous Layer-Outside Roadbed	To Be Assigned	Temporary Crossing for Roadway Improvements, crossing will be completed within 72 hours	approved
16	KLF-STREAM21 (PER) - Crossing 3 (FB Discharge 1)	Sugar Run Road (CR-52) Roadway Improvements	Kleinfelder, Inc.	7/25/2021 0:00	Sugar Run	Perennial	Doddridge	39.186989	-80.850477	Permanent	Sometime Between April 1 & June 30	3 days	• Culvert Replacement Impact 3.5' - C/P, Diameter 18", Length 35' • Outlet Protection Impact 3' - Rip-Rap Installation	10	0.656	7	Seed & Mulch/Permanently Herbaceous Layer-Outside Roadbed	To Be Assigned	Temporary Crossing for Roadway Improvements, crossing will be completed within 72 hours	approved
17	KLF-STREAM21 (PER) - Crossing 3 (FB Discharge 2)	Sugar Run Road (CR-52) Roadway Improvements	Kleinfelder, Inc.	7/25/2021 0:00	Sugar Run	Perennial	Doddridge	39.186989	-80.850477	Temporary	Sometime Between April 1 & June 30	3 days	• Temporary E&S Perimeter Controls for Construction Activity	10	0.656	10	Seed & Mulch/Permanently Herbaceous Layer-Outside Roadbed	To Be Assigned	Temporary Crossing for Roadway Improvements, crossing will be completed within 72 hours	approved
18	KLF-STREAM23 (INT) - Crossing 1	Sugar Run Road (CR-52) Roadway Improvements	Kleinfelder, Inc.	7/25/2021 0:00	UNT to Sugar Run	Intermittent	Doddridge	39.186524	-80.850019	Permanent	Sometime Between April 1 & June 30	3 days	• Culvert Replacement Impact 24' - C/P, Diameter 24", Length 24' • Outlet Protection Impact 5' - Rip-Rap Installation	2.5	0.656	29	Seed & Mulch/Permanently Herbaceous Layer-Outside Roadbed	To Be Assigned	Temporary Crossing for Roadway Improvements, crossing will be completed within 72 hours	approved
19	KLF-STREAM23 (INT) - Crossing 2	Sugar Run Road (CR-52) Roadway Improvements	Kleinfelder, Inc.	7/25/2021 0:00	UNT to Sugar Run	Intermittent	Doddridge	39.186524	-80.850019	Temporary	Sometime Between April 1 & June 30	3 days	• Temporary E&S Perimeter Controls for Construction Activity	2.5	0.656	6	Seed & Mulch/Permanently Herbaceous Layer-Outside Roadbed	To Be Assigned	Temporary Crossing for Roadway Improvements, crossing will be completed within 72 hours	approved
20	KLF-STREAM22 (PER) - Crossing 1	Sugar Run Road (CR-52) Roadway Improvements	Kleinfelder, Inc.	7/25/2021 0:00	UNT to Sugar Run	Perennial	Doddridge	39.185054	-80.849576	Permanent	Sometime Between April 1 & June 30	3 days	• Culvert Replacement Impact 33' - C/P, Diameter 24", Length 33' • Outlet Protection Impact 8' - Rip-Rap Installation	4	0.656	39	Seed & Mulch/Permanently Herbaceous Layer-Outside Roadbed	To Be Assigned	Temporary Crossing for Roadway Improvements, crossing will be completed within 72 hours	approved
21	KLF-STREAM22 (PER) - Crossing 2	Sugar Run Road (CR-52) Roadway Improvements	Kleinfelder, Inc.	7/25/2021 0:00	UNT to Sugar Run	Perennial	Doddridge	39.185054	-80.849576	Temporary	Sometime Between April 1 & June 30	3 days	• Temporary E&S Perimeter Controls for Construction Activity	4	0.656	6	Seed & Mulch/Permanently Herbaceous Layer-Outside Roadbed	To Be Assigned	Temporary Crossing for Roadway Improvements, crossing will be completed within 72 hours	approved

From: Sargent, Barbara D <Barbara.D.Sargent@wv.gov>
Sent: Thursday, April 9, 2020 1:38 PM
To: John Lewis <JALewis@kleinfelder.com>
Cc: Tyler Streb <tstreb@anteroresources.com>; Matthew Albright <MAlbright@kleinfelder.com>
Subject: Re: [External] Antero Resources Corp: Sugar Run Road (CR-52) Roadway Improvements - WVDNR Consultation Letter

External Email.

John--

That is correct. An updated letter is not needed. Thank you for contacting us regarding the revision.

If you have any other questions, let me know.

Barb

Barbara Sargent
WVDNR - Wildlife Resources Section
Operations Unit
Environmental Coordination
738 Ward Road
PO Box 67
Ward Road
Elkins, WV 26241
304-637-0245

<http://www.wvdnr.gov/>

From: John Lewis <JALewis@kleinfelder.com>
Sent: Thursday, April 9, 2020 12:36 PM
To: Sargent, Barbara D <Barbara.D.Sargent@wv.gov>
Cc: Tyler Streb <tstreb@anteroresources.com>; Matthew Albright <MAlbright@kleinfelder.com>
Subject: RE: [External] Antero Resources Corp: Sugar Run Road (CR-52) Roadway Improvements - WVDNR Consultation Letter

Hi Barbra,

This email is in summary of our phone conversation we had earlier today.

Since submitting the Sugar Run Road (CR-52) Roadway Improvements consultation letter, design changes have occurred that potentially propose to add rip-rap outlet protection around a culvert. The LOD expansion consist of an approximate 0.002 acre area adjacent to the existing Department of Highways right-of-way and does not anticipate additional tree clearing.

Per our conversation, you have reviewed our original consultation letter, and based on the information we discussed regarding the design modification, it has been determined that no additional action/revised documentation is necessary to submit to WVDNR-WRS as it is understood that minor modifications tend to occur.

Please do not hesitate to reach out if you have any questions.

Thanks!

John A. Lewis

d| 724.200.7512

m| 412.848.7376



DIVISION OF NATURAL RESOURCES

**Wildlife Resources Section
Elkins Operations Center
738 Ward Rd., PO Box 67
Elkins, WV 26241
Telephone 304-637-0245
Fax 304-637-0250**

**Stephen S. McDaniel
Director**

April 3, 2020

Mr. Tyler Streb
Antero Resources Corporation
1615 Wynkoop Street
Denver, CO 80202

Dear Mr. Streb:

We have reviewed Natural Heritage Program files for information on rare, threatened and endangered (RTE) species and sensitive habitats for the area of the proposed Sugar Run Road (CR 52) Roadway Improvements project in Doddridge County, WV.

We have no known records of any RTE species or sensitive habitats within the project area. The Wildlife Resources Section knows of no surveys that have been conducted in the area for rare species or rare species habitat. Consequently, this response is based on information currently available and should not be considered a comprehensive survey of the area under review. This response is valid for two years.

The information provided above is the product of a database search and retrieval. This information does not satisfy other consultation or permitting requirements for disturbances to the natural resources of the state, and further consultation may be required. Additionally, any concurrence requirements for federally listed species must come from the US Fish and Wildlife Service.

Thank you for your inquiry, and should you have any questions please feel free to contact me at the above number, or barbara.d.sargent@wv.gov. Enclosed please find an invoice.

Sincerely,

Barbara Sargent
Environmental Resources Specialist
Environmental Coordination
Operations Unit

cc: John Lewis - Kleinfelder

enclosure

S:\Monthly\BSargent\Invoices\Antero.doc

John Lewis

From: George Eidel <doddridgecountyfpm@gmail.com>
Sent: Thursday, September 30, 2021 8:46 AM
To: John Lewis
Cc: John Angiulli; Daniel Bulian (dbulian@anteroresources.com); Matthew Albright
Subject: Re: Antero Resources Corporation: Sugar Run Road (CR-52) Roadway Improvements - Floodplain Permit Modification

External Email

Yes, your permit will still be valid.

On Wed, Sep 29, 2021 at 9:04 PM John Lewis <JALewis@kleinfelder.com> wrote:

Hi George,

On August 25, 2021 an email notification was submitted to you summarizing design changes that occurred on the Sugar Run Road (CR-52) Roadway Improvements Project (Permit: # 21-591) that resulted in the modification of the limits of disturbance (LOD) within the floodplain (email correspondence below). An updated floodplain permit application dated September 15, 2021 was subsequently provided for the LOD expansion area that proposed the placement of fill material within the designated floodplain, which you approved on September 28, 2021.

One of the other design changes outlined in the August 25, 2021 email notification included the reduction of the LOD to DOH right-of-way through the removal of a proposed pull-off/staging area between stations 2+00 and 5+00. Since providing that email notification, a landowner along Sugar Run Road (CR-52) has come to an agreement with Antero that will allow for construction of the proposed pull-off/staging. Therefore, Antero would like to include this area under the existing permit. As described in the original floodplain application dated March 1, 2021 and approved on April 5, 2021, the proposed pull-off/staging area does not propose permanent fill above the existing floodplain elevation; which was verified through the original no-rise certificate. Inclusion of this area will increase the LOD from 10.055 acres to 10.184 acres. Please find attached the applicable updated design sheet and impact map for your records.

Antero is requesting confirmation that the floodplain permit issued on April 5, 2021 is still valid for the proposed pull-off/staging within the floodplain. Please let us know if you have any questions.

Thank you!

John A. Lewis, PWS

d| 724.200.7512
m| 412.848.7376



From: George Eidel <doddridgecountyfpm@gmail.com>

Sent: Tuesday, September 28, 2021 7:59 AM

To: John Lewis <JALewis@kleinfelder.com>

Subject: Re: Antero Resources Corporation: Sugar Run Road (CR-52) Roadway Improvements - Floodplain Permit Modification

External Email

John,

Good morning, since the permit has already been approved and the impact to the floodplain was minimal with a no rise certificate attached I did not run it back through. You are good to go, I will be out to that area periodically to check on the progress. If you have to make any other changes just let me know.

Thanks,

George

On Tue, Sep 28, 2021 at 6:51 AM John Lewis <JALewis@kleinfelder.com> wrote:

Morning George,

Just wanted to follow-up on the floodplain application that was mailed to your office on 9.16.21 and see if you needed anything else from our end?

Since the original portion of the project is under construction, curious if you are able to provide a rough date on when you think approval would be received so I can update our construction folks? I generally remember discussing with you previously that the Doddridge County Floodplain Commissions meetings are held twice a month (1st and 3rd Tuesday's). Once read and approved at the meeting, there is a 20 day comment period before issuing the permit. Since this is a modification of the original project, does this modification still go through this process?

Thank you!

John A. Lewis, PWS

d | 724.200.7512

m | 412.848.7376



From: George Eidel <doddridgecountyfpm@gmail.com>

Sent: Tuesday, August 31, 2021 8:54 AM

To: John Lewis <JALewis@kleinfelder.com>

Subject: Re: Antero Resources Corporation: Sugar Run Road (CR-52) Roadway Improvements - Floodplain Permit Modification

External Email

John,

Sorry I haven't gotten back with you sooner. In looking at what you are doing and my main concern is the additional fill. As long as you can show that there will be no impact from the new fill and a certificate showing such our office will be okay with the changes. Also can you send us hard copies of everything?

Thank You,

George

On Wed, Aug 25, 2021 at 12:43 PM John Lewis <JALewis@kleinfelder.com> wrote:

Hi George,

On April 5, 2021, you issued Antero Resources Corporation (Antero) a Floodplain Development Permit (Permit: # 21-591) for the Sugar Run Road (CR-52) Roadway Improvements project located in Doddridge County, WV (attached). Since receipt of this approval, design changes have occurred resulting in the need to expand and reduce select areas of the limits-of-disturbance (LOD) within the FEMA 100-year floodplain (floodplain). As seen in the revised aerial imagery map and design plans (links below), the LOD decreased by 0.19-acre in some areas while increasing by 0.21-acre in others. The changes will result in a net increase of 47.55 cubic yards of fill within the floodplain. After reviewing the material provided below, please let us know if this email notification sufficiently addresses the change in scope and can be added to the file on record; or if we will need to update the floodplain application to address the changes.

A breakdown of the general design changes include:

- Roadside ditch along South Fork of Hughes River Road – Installation of culvert and rock (Design Sheet 14)
 - LOD acreage increase of 0.21-acre.
 - Approximately 29.41 cubic yards of fill material.
 - Ditch fill will range in depth from 12-24 inches.

- Pavement transitions and grading at the intersection of Sugar Run Road & South Fork of Hughes River Road (Design Sheet 14)
 - This area is located within the original LOD.
 - Approximately 18.14 cubic yards of fill material.
 - Intersection pavement transitions and grading will result in approximately 0" to 6" of rise.

- LOD reductions within Floodplain (Design Sheet 14)
 - LOD acreage decrease of 0.19-acre.
 - Pull-off / staging area within the floodplain has been reduced to DOH ROW (~Station 2+00 to 5+00)
 - LOD pulled in to avoid Church property.

No tree clearing and or aquatic feature impacts are necessary for this additional work. Revised aerial imagery mapping and design plans can be downloaded at the links below:

1. **20210825_Sugar Run Road Improvement_NWP_AttB_Mod1_v0.pdf** (4.04 MB) in Lewis_John_
<https://kleinfelder.filegenius.com/downloadPublic/6myvtp852h657bc/odba344v7pds4ct>

2. **20210824_Sugar Run Road Improvement_Design Plans.pdf** (14.76 MB) in Lewis_John_
<https://kleinfelder.filegenius.com/downloadPublic/y9mto1ykgw58cfu/3y7er89471yewm2>

These links will expire on **09/04/21 at 08:43 am PDT**

Thanks,

John A. Lewis, PWS
Project Professional

51 Dutilh Rd., Suite 240
Cranberry Township, PA 16066
d | 724.200.7512
o | 724.772.7072
m | 412.848.7376



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George C. Eidel, CFM, OEM Director/Floodplain Manager

Doddridge County Office of Emergency Management

101 Church Street Suite 102

West Union, WV 26456-2095

Work Phone:1-304-873-1343

Mobile Phone: 1-304-281-7407

Fax: 1-304-873-1840

doddridgecountyfpm@gmail.com

--

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George C. Eidel, CFM, OEM Director/Floodplain Manager

Doddridge County Office of Emergency Management

101 Church Street Suite 102

West Union, WV 26456-2095

Work Phone:1-304-873-1343

Mobile Phone: 1-304-281-7407

Fax: 1-304-873-1840

doddridgecountyfpm@gmail.com

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--

George C. Eidel, CFM, OEM Director/Floodplain Manager

Doddridge County Office of Emergency Management

101 Church Street Suite 102

West Union, WV 26456-2095

Work Phone: 1-304-873-1343

Mobile Phone: 1-304-281-7407

Fax: 1-304-873-1840

doddridgecountyfpm@gmail.com

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John Lewis

From: George Eidel <doddridgecountyfpm@gmail.com>
Sent: Tuesday, September 28, 2021 7:59 AM
To: John Lewis
Subject: Re: Antero Resources Corporation: Sugar Run Road (CR-52) Roadway Improvements - Floodplain Permit Modification

External Email

John,

Good morning, since the permit has already been approved and the impact to the floodplain was minimal with a no rise certificate attached I did not run it back through. You are good to go, I will be out to that area periodically to check on the progress. If you have to make any other changes just let me know.

Thanks,

George

On Tue, Sep 28, 2021 at 6:51 AM John Lewis <JALewis@kleinfelder.com> wrote:

Morning George,

Just wanted to follow-up on the floodplain application that was mailed to your office on 9.16.21 and see if you needed anything else from our end?

Since the original portion of the project is under construction, curious if you are able to provide a rough date on when you think approval would be received so I can update our construction folks? I generally remember discussing with you previously that the Doddridge County Floodplain Commissions meetings are held twice a month (1st and 3rd Tuesday's). Once read and approved at the meeting, there is a 20 day comment period before issuing the permit. Since this is a modification of the original project, does this modification still go through this process?

Thank you!

John A. Lewis, PWS

d| 724.200.7512



From: George Eidel <doddridgecountyfpm@gmail.com>

Sent: Tuesday, August 31, 2021 8:54 AM

To: John Lewis <JALewis@kleinfelder.com>

Subject: Re: Antero Resources Corporation: Sugar Run Road (CR-52) Roadway Improvements - Floodplain Permit Modification

External Email

John,

Sorry I haven't gotten back with you sooner. In looking at what you are doing and my main concern is the additional fill. As long as you can show that there will be no impact from the new fill and a certificate showing such our office will be okay with the changes. Also can you send us hard copies of everything?

Thank You,

George

On Wed, Aug 25, 2021 at 12:43 PM John Lewis <JALewis@kleinfelder.com> wrote:

Hi George,

On April 5, 2021, you issued Antero Resources Corporation (Antero) a Floodplain Development Permit (Permit: # 21-591) for the Sugar Run Road (CR-52) Roadway Improvements project located in Doddridge County, WV (attached). Since receipt of this approval, design changes have occurred resulting in the need to expand and reduce select areas of the limits-of-disturbance (LOD) within the FEMA 100-year floodplain (floodplain). As seen in the revised aerial imagery map and design plans (links below), the LOD decreased by 0.19-acre in some areas while increasing by 0.21-acre in others. The changes will result in a net increase of 47.55 cubic yards of fill within the floodplain. After reviewing the material provided below, please let us know if this email notification sufficiently addresses the change in scope and can be added to the file on record; or if we will need to update the floodplain application to address the changes.

A breakdown of the general design changes include:

- Roadside ditch along South Fork of Hughes River Road – Installation of culvert and rock (Design Sheet 14)
 - LOD acreage increase of 0.21-acre.
 - Approximately 29.41 cubic yards of fill material.
 - Ditch fill will range in depth from 12-24 inches.
- Pavement transitions and grading at the intersection of Sugar Run Road & South Fork of Hughes River Road (Design Sheet 14)
 - This area is located within the original LOD.
 - Approximately 18.14 cubic yards of fill material.
 - Intersection pavement transitions and grading will result in approximately 0" to 6" of rise.
- LOD reductions within Floodplain (Design Sheet 14)
 - LOD acreage decrease of 0.19-acre.
 - Pull-off / staging area within the floodplain has been reduced to DOH ROW (~Station 2+00 to 5+00)
 - LOD pulled in to avoid Church property.

No tree clearing and or aquatic feature impacts are necessary for this additional work. Revised aerial imagery mapping and design plans can be downloaded at the links below:

1. **20210825_Sugar Run Road Improvement_NWP_AttB_Mod1_v0.pdf** (4.04 MB) in Lewis_John_
<https://kleinfelder.filegenius.com/downloadPublic/6myvtp852h657bc/odba344v7pds4ct>

2. **20210824_Sugar Run Road Improvement_Design Plans.pdf** (14.76 MB) in Lewis_John_
<https://kleinfelder.filegenius.com/downloadPublic/y9mto1ykgw58cfu/3y7er89471yewm2>

These links will expire on **09/04/21 at 08:43 am PDT**

Thanks,

John A. Lewis, PWS
Project Professional

51 Dutilh Rd., Suite 240
Cranberry Township, PA 16066
d| 724.200.7512
o| 724.772.7072
m| 412.848.7376



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George C. Eidel, CFM, OEM Director/Floodplain Manager

Doddridge County Office of Emergency Management

101 Church Street Suite 102

West Union, WV 26456-2095

Work Phone: 1-304-873-1343

Mobile Phone: 1-304-281-7407

Fax: 1-304-873-1840

doddridgecountyfpm@gmail.com

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George C. Eidel, CFM, OEM Director/Floodplain Manager

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