Doddridge County Sheriff
Flood Plain Ordinance Fund

1014
69-217/515

DATE July 2, 2013

PAY TO THE ORDER OF ANTERO RESOURCES $ 5,418.47

Five Thousand Four Hundred Eighteen Dollars and 47/100---------- DOLLARS

Security features included. Details on back.

CORNERSTONE BANK
West Union, WV 26456

Ralph Landon
Beth A. Rogers

MEMO #13-019 John North Pad Reimbursement

MP

⑈001014⑈ ⑆051502175⑆ 11⑈9649⑈9⑈

BLUE TRADITIONAL

By: BH - MEH - AML
Asst. Chief Tax Deputy

Michael Headley
Sheriff of Doddridge County

The Person paying Money into the Treasury shall forthwith file one of these Receipts with the County Clerk

Doddridge County, West Virginia

No. 4776

Date: June 25, 2013
Customer copy

Received: #13-019 Antero Resources $5,651.02

In Payment For: 318 Building Permits (LP)

For: 12-Flood Plain Ordinanc Fund #20 Fund

By: BH - MEH - AML
Asst. Chief Tax Deputy

Michael Headley
Sheriff of Doddridge County

ANTERO RESOURCES APPALACHIAN
1625 17th STREET, SUITE 300
DENVER, COLORADO 80202

Vendor Name	Vendor No.	Date	Check Number	Check Total
DODDRIDGE COUNTY COMMISSION	43312	Jun-18-2013	31802	$5,651.02

VOUCHER	VENDOR INV #	INV DATE	TOTAL AMOUNT	PRIOR PMTS & DISCOUNTS	NET AMOUNT
06-AP-8200	JOHNNORTHPAD	06/18/13	5,651.02	0.00	5,651.02
FLOOD PLAIN PERMIT - JOHN NORTH PAD					
TOTAL INVOICES PAID					5,651.02

DETACH AND RETAIN FOR TAX PURPOSES

Doddridge County Flood Plain Refund Calculator (if not in Flood Plain)	
John North Pad	
Estimated Construction Costs	830,204.00
Amount over $100,000	730,204.00
Drilling Oil and Gas Well Fee	1,000.00
Deposit for additional charges	1,000.00
$5 per $1,000 over $100,000	3,651.02
Amount Due with application	5,651.02
95% of Application Fee minus $1,000 deposit	4,418.47
Cost for Permit	232.55
Total Refund (Includes 100% of 1,000 deposit)	$5,418.47

ANTERO
RESOURCES

Antero Resources
1625 17th Street
Denver, Colorado 80202
Office 303.357.7310
Fax 303.357.7315

June 21, 2013

Doddridge County Commission
Attn: Dan Wellings, Doddridge County Floodplain Manager
118 East Court Street, Room 102
West Union, WV 26456

Mr. Wellings:

Antero Resources Appalachian Corporation (Antero) would like to submit a Doddridge County Floodplain permit application for our John North Drill Pad. Our project is located in Doddridge County, Greenbrier District and per FIRM map #54017C0255C, this location is not within the floodplain.

Attached you will find the following:

- Doddridge County Floodplain Permit Application
- FIRM Map
- A detailed set of plans signed by a WV licensed professional engineer
- Copies of other required permits
- Site Safety Plan

If you have any questions please feel free to contact me at (303) 357-6820.

Thank you in advance for your consideration.

Sincerely,

Shauna Redican
Permit Representative
Antero Resources Appalachian Corporation

Enclosures

2013 JUN 25 PM 2:50
COUNTY, WV

John North Pad

PERMIT #13-019

DODDRIDGE COUNTY
FLOODPLAIN DEVELOPMENT PERMIT APPLICATION

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. Development shall not be used or occupied until a Certificate of Compliance is issued.
5. The permit will expire if no work is commenced within six months of issuance.
6. Applicant is hereby informed that other permits may be required to fulfill local, state, and federal requirements.
7. Applicant hereby gives consent to the Floodplain Administrator/Manager or his/her representative to make inspections to verify compliance.
8. **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 Shauna Redican

DATE June 21, 2013

SECTION 2: PROPOSE DEVELOPMENT (TO BE COMPLETED BY APPLICANT).

IF THE APPLICANT IS NOT A NATURAL PERSON, THE NAME, ADDRESS, AND TELEPHONE NUMBER OF A NATURAL PERSON WHO SHALL BE APPOINTED BY THE APPLICANT TO RECEIVE NOTICE PURSUANT TO ANY PROVISION OF THE CURRENT DODDRIDGE COUNTY FLOODPLAIN ORDINANCE.

APPLICANT'S NAME: Antero Resources Appalachian Corporation - Shauna Redican, Permit Representative

ADDRESS: 1625 17th Street, Denver, CO 80202

TELEPHONE NUMBER: Contact Shauna Redican: 303-357-6820

BUILDER'S NAME: Antero Resources Appalachian Corporation

ADDRESS: 1625 17th Street, Denver, CO 80202

TELEPHONE NUMBER: (303) 357-7310

ENGINEER'S NAME: Allegheny Surveys, Inc. - Charles K. Wilson

ADDRESS: 172 Thompson Drive, Bridgeport, WV 26330

TELEHONE NUMBER: 304-848-5035

PROJECT LOCATION:

NAME OF SURFACE OWNER/OWNERS (IF NOT THE APPLICANT)
John K. and Mary J. Davis

ADDRESS OF SURFACE OWNER/OWNERS (IF NOT THE APPLICANT)
RR 3 Box 15, Salem, WV 26426

DISTRICT: Greenbrier

DATE/FROM WHOM PROPERTY PURCHASED: N/A

LAND BOOK DESCRIPTION:

DEED BOOK REFERENCE: Deed/ Page: 177/714 and 177/722

TAX MAP REFERENCE: TM 8, Pcl 27, 28, 29, 30 and 32.1

EXISTING BUILDINGS/USES OF PROPERTY: None

NAME OF AT LEAST ONE ADULT RESIDING IN EACH RESIDENCE LOCATED UPON THE SUBJECT PROPERTY John K. and Mary J. Davis

ADDRESS OF AT LEAST ONE ADULT RESIDING IN EACH RESIDENCE LOCATED UPON THE SUBJECT PROPERTY RR 3 Box 15, Salem, WV 26426

To avoid delay in processing the application, please provide enough information to easily identify the project location.

DESCRIPTION OF WORK (CHECK ALL APPLICABLE BOXES)

A. STRUCTURAL DEVELOPMENT

ACTIVITY		STRUCTURAL TYPE	
[]	New Structure	[]	Residential (1 – 4 Family)
[]	Addition	[]	Residential (more than 4 Family)
[]	Alteration	[]	Non-residential (floodproofing)
[]	Relocation	[]	Combined Use (res. & com.)
[]	Demolition	[]	Replacement
[]	Manufactured/Mobil Home		

B. OTHER DEVEOPLMENT ACTIVITIES:

X	Fill	[]	Mining	X	Drilling	[]	Pipelining

X Grading

[] Excavation (except for STRUCTURAL DEVELOPMENT checked above)

[] Watercourse Altercation (including dredging and channel modification)

X Drainage Improvements (including culvert work) *Replace existing culvert as shown on page 6 of attached John North Pad Design

X Road, Street, or Bridge Construction *Access Road Construction as shown on page 6 and 7 of attached John North Pad design

[] Subdivision (including new expansion)

[] Individual Water or Sewer System

[] Other (please specify)

C. STANDARD SITE PLAN OR SKETCH

1. **SUBMIT ALL STANDARD SITE PLANS, IF ANY HAVE BEEN PREPARED.**
2. **IF STANDARD SITE PLANS HAVE NOT BEEN PREPARED:**
   SKETCH ON A SEPARATE 8 ½ X 11 INCH SHEET OF PAPER THE SHAPE AND LOCATION OF THE LOT. SHOW THE LOCATION OF THE INTENDED CONSTRUCTION OR LAND USE INDICATING BUILDING SETBACKS, SIZE & HEIGHT. IDENTIFY EXISTING BUILDINGS, STRUCTURES OR LAND USES ON THE PROPERTY.
3. **SIGN AND DATE THE SKETCH.**

ACTUAL TOTAL CONSTRUCTION COSTS OF THE COMPLETE DEVELOPMENT IRRESPECTIVE OF WHETHER ALL OR ANY PART OF THE SUBJECT PROPOSED CONSTRUCTION PROJECT IS WITHIN THE FLOODPLAIN $ 830,204.00

*See attached Floodplain Calculation Fee

D. ADJACENT AND/OR AFFECTED LANDOWNER

1. **NAME AND ADDRESS OF ALL OWNERS OF SURFACE TRACTS ADJACENT TO THE AREA OF THE SURFACE TRACT (UP & DOWN STREAM) UPON WHICH THE PROPOSED ACTIVITY WILL OCCUR AND ALL OTHER SURFACE OWNERS UP & DOWN STREAM) WHO OWN PROPERTY THAT MAY BE AFFECTED BY FLOODING AS IS DEMONSTRATED BY A FLOODPLAIN STUDY OR SURVEY (IF ONE HAS BEEN COMPLETED).**

NAME: N/A
ADDRESS: _____

NAME: _____
ADDRESS: _____

NAME: _____
ADDRESS: _____

NAME: _____
ADDRESS: _____

1. **NAME AND ADDRESS OF AT LEAST ONE ADULT RESIDING IN EACH RESIDENCE LOCATED UPON ANY ADJACENT PROPERTY AT THE TIME THE FLOODPLAIN PERMIT APPLICATION IS FILED AND THE NAME AND ADDRESS OF AT LEAST ONE ADULT RESIDING IN ANY HOME ON ANY PROPERTY THAT MAY BE AFFECTED BY FLOODING AS IS DEMONSTRATED BY A FLOODPLAIN STUDY OR SURVEY.**

NAME: N/A
ADDRESS: _____

NAME: _____
ADDRESS: _____

NAME: _____
ADDRESS: _____

NAME: _____
ADDRESS: _____

E. CONFIRMATION FORM

THE APPLICANT ACKNOWLEDGES, AGREES, AND CONFIRMS THAT HE/IT WILL PAY WITHIN 30 DAYS OF RECEIPT OF INVOICE BY THE COUNTY FOR ALL EXPENSES RELATIVE TO THE PERMIT APPLICATION PROCESS GREATER THAN THE REQUIRED DEPOSIT FOR EXPENSES INCLUDING:

(A) PERSONAL SERVICE OF PROCESS BY THE DODDRIDGE COUNTY SHERIFF AT THE RATES PERMITTED BY LAW FOR SUCH SERVICE.

(B) SERVICE BY CERTIFIED MAIL RETURN RECEIPT REQUESTED.

(C) PUBLICATION.

(D) COURT REPORTING SERVICES AT ANY HEARINGS REQUESTED BY THE APPLICANT.

(E) CONSULTANTS AND/OR HEARING EXPERTS UTILIZED BY DODDRIDGE COUNTY FLOODPLAIN ADMINISTRATOR/MANAGER OR FLOODPLAIN APPEALS BOARD FOR REVIEW OF MATERIALS AND/OR TESTIMONY REGARDING THE EFFICACY OF GRANTING OR DENYING THE APPLICANT'S FLOODPLAIN PERMIT.

NAME (PRINT): Anthony Smith

SIGNATURE: [signature] **DATE:** 6/24/13

After completing SECTION 2, APPLICANT should submit form to Floodplain Administrator/Manager or his/her representative for review.

SECTION 3: FLOODPLAIN DETERMINATION (to be completed by Floodplain Administrator/Manager or his/her representative)

THE PROPOSED DEVELOPMENT:

THE PROPOSED DEVELOPMENT IS LOCATED ON:

FIRM Panel: 255

Dated: 10/04/2011

[X] Is **NOT** located in a Specific Flood Hazard Area (Notify applicant that the application review is complete and **NO FLOOPLAIN DEVELOPMENT PERMIT IS REQUIRED**).

[] Is located in Special Flood Hazard Area.

FIRM zone designation_____

100-Year flood elevation is:_____ NGVD (MSL)

[] Unavailable

[] The proposed development is located in a floodway.

FBFM Panel No._____ Dated_____

[] See section 4 for additional instructions.

SIGNED Dan Wellington DATE 06/25/2011

SECTION 4: ADDITIONAL INFORMATION REQUIRED (To be completed by Floodplain Administrator/Manager or his/her representative)

The applicant must submit the documents checked below before the application can be processed.

[] A plan showing the location of all existing structures, water bodies, adjacent roads, lot dimensions and proposed development.

[] Development plans, drawn to scale, and specifications, including where applicable: details for anchoring structures, storage tanks, proposed elevation of lowest floor, (including basement or crawl space), types of water resistant materials used below the first floor, details of flood proffing of utilities located below the first floor and details of enclosures below the first floor. Also_____

_____

[] Subdivision or other development plans (If the subdivision or development exceeds 50 lots or 5 acres, whichever is the lesser, the applicant must provide 100-year flood elevations if they are not otherwise available).

[] Plans showing the extent of watercourse relocation and/or landform alterations.

[] Top of new fill elevation_____Ft. NGVD (MSL).
For floodproofing structures applicant must attach certification from registered engineer or architect.

[] Certification from a registered engineer that the proposed activity in a regulatory floodway will not result in any increase in the height of the 100-year flood. A copy of all data and calculations supporting this finding must also be submitted.

[] Manufactured homes located in a floodplain area must have a West Virginia Contractor's License and a Manufactured Home Installation License as required by the Federal Emergency Management Agency (FEMA).

[] Other:

_____

_____

_____

SECTION 5: PERMIT DETERMINATION (To be completed by Floodplain Administrator/Manager or his/her representative)

I have determined that the proposed activity **(type is or is not)** in conformance with provisions of the Floodplain Ordinance adopted by the County Commission of Doddridge County on May 21, 2013. The permit is issued subject to the conditions attached to and made part of this permit.

SIGNED Dan Williams DATE 06/25/2013

If the Floodplain Administrator/Manager found that the above was not in conformance with the provisions of the Doddridge County Floodplain Ordinance and/or denied that application, the applicant may complete an appealing process below.

APPEALS: Appealed to the County Commission of Doddridge County? [] Yes {} No
Hearing Date:_____
County Commission Decision - Approved [] Yes [] No

CONDITIONS:_____

_____

_____

_____

SECTION 6: AS-BUILT ELEVATIONS (To be submitted by APPLICANT before Certificate of Compliance is issued).

The following information must be provided for project structures. This section must be completed by a registered professional engineer or a licensed land surveyor (or attach a certification to this application).

COMPLETE 1 OR 2 BELOW:

1 Actual (As-Built) Elevation of the top of the lowest floor (including basement or crawl space is_____FT. NGVD (MSL)

2 Actual (As Built) elevation of floodproofing is_____FT. NGVD (MSL)

Note: Any work performed prior to submittal of the above information is at risk of the applicant.

SECTION 7: COMPLIANCE ACTION (To be completed by the Floodplain Administrator/Manager or his/her representative).

The Floodplain Administrator/Manager or his/her representative will complete this section as applicable based on inspection of the project to ensure compliance with the Doddridge County Floodplain Ordinance.

INSPECTIONS:

DATE:_____ **BY:**_____

DEFICIENCIES ? **Y/N**

COMMENTS_____

_____

_____

_____

_____

_____

SECTION 8: CERTIFICATE OF COMPLIANCE (To be completed by Floodplain Administrator/Manager or his/her representative).

Certificate of Compliance issued: DATE:_____ BY:_____

CERTIFICATE OF COMPLIANCE
FOR DEVELOPMENT IN SPECIAL FLOOD HAZARD AREA
(OWNER MUST RETAIN)

PERMIT NUMBER: 13-019
PERMIT DATE: 06/25/2013

PURPOSE –

CONSTRUCTION LOCATION: _____

OWNER'S ADDRESS: _____
_____
_____

THE FOLLOWING MUST BE COMPLETED BY THE FLOODPLAIN ADMINISTRATOR/MANAGER OR HIS/HER AGENT.

COMPLIANCE IS HEREBY CERTIFIED WITH THE REQUIREMENT OF THE FLOODPLAIN ORDINANCE ADOPTED BY THE COUNTY COMMISSION OF DODDRIDGE COUNTY ON MAY 21, 2013.

SIGNED Dan Wellman **DATE** 06/25/2013

CLEARING & GRUBBING; EROSION & SEDIMENT CONTROLS	John North Pad			
	QUANTITY	UNIT		
MOBILIZATION	1.0	EA	$19,140.00	$19,140.00
CONSTRUCTION ENTRANCE	1.0	EA	$3,172.76	$3,172.76
CLEARING & GRUBBING	19.95	AC	$4,513.25	$90,039.34
TREE REMOVAL	13.05	AC	$2,953.00	$38,536.65
8" COMPOST FILTER SOCK	0	LF	$2.83	$0.00
12" COMPOST FILTER SOCK	4,325	LF	$3.82	$16,521.50
18" COMPOST FILTER SOCK	150	LF	$7.94	$1,191.00
24" COMPOST FILTER SOCK	0	LF	$9.23	$0.00
32" COMPOST FILTER SOCK	1,750	LF	$14.00	$24,500.00
JUTE MATTING - SLOPE MATTING	18,600	SY	$2.13	$39,618.00
SUPER SILT FENCE	1,650	LF	$8.48	$13,992.00
9" STRAW WATTLES	3,372	LF	$3.11	$10,486.92
TOTAL				**$257,198.17**

RETAINING STRUCTURES				
	QUANTITY	UNIT	UNIT PRICE	FINAL PRICE
CONCRETE BIN BLOCKS (2' x 2' x 6')	0	EA	$75.00	$0.00
GABION CAGES WITH STONE (3' X 3' X 6')	0	EA	$175.00	$0.00
HORIZONTAL REINFORCEMENT (INSTALL TENSAR TX190 GEOGRID or EQUIVALENT)	0	SY	$0.82	$0.00
TOTAL				**$0.00**

SITE				
	QUANTITY	UNIT		
DRILL PAD EXCAVATION	55,857	CY	$3.75	$209,463.75
ACCESS ROADS EXCAVATION	11,777	CY	$4.16	$48,992.32
TANK PADS and/or FRAC PIT EXCAVATION	20,450	CY	$4.13	$84,458.50
OFFLOAD PAD	0	CY	$7.00	$0.00
SPOIL PAD	0	CY	$3.84	$0.00
TRUCK QUEUE / TURNAROUND	0	CY	$4.13	$0.00
TOPSOIL	10,000	CY	$4.09	$40,900.00
DIVERSION DITCH	0	LF	$4.50	$0.00
ROADSIDE DITCH	1,400	LF	$3.99	$5,586.00
TOTAL				**$389,400.57**

SUMP(S) PER ANTERO RESOURCES STANDARD DETAIL				
	QUANTITY	UNIT		
INSTALL 102" x 78" x 44" PRE CAST SUMP	4	EA	$844.22	$3,376.88
VALVE BOX HDPE PIPE (MINIMUM 12" DIAMETER x 48" HEIGHT)	4	EA	$545.50	$2,182.00
4" PVC CONNECTIVE PIPE (ANTERO SUMP DRAIN DETAIL)	120	LF	$9.42	$1,130.40
TOTAL				**$6,689.28**

AGGREGATE SURFACING - SPREADING, COMPACTION, and/or INSTALLATION				
	QUANTITY	UNIT		
DRILL PAD AASHTO #1 (8" THICK)	4,800	TON	$2.59	$12,432.00
DRILL PAD 1 1/2" or 3/4" CRUSHER RUN STONE (2" THICK)	1,200	TON	$2.89	$3,468.00
DRILL PAD GEOTEXTILE FABRIC (US 200)	11,000	SY	$1.06	$11,660.00
ACCESS ROADS 6" OR 4" MINUS CRUSHER RUN AGGREGATE (8" THICK)	5,125	TON	$2.83	$14,503.75
ACCESS ROADS 1 1/2" OR 3/4" CRUSHER RUN STONE (2" THICK)	1,280	TON	$2.95	$3,776.00
ACCESS ROADS GEOTEXTILE FABRIC (US 200)	11,000	SY	$1.02	$11,220.00
*INSTALL TENSAR TX190 GEOGRID or EQUIVALENT	11,000	SY	$0.82	$9,020.00
TANK PADS 6" OR 4" MINUS CRUSHER RUN AGGREGATE (8" THICK)	4,100	TON	$3.50	$14,350.00
TANK PADS 1 1/2" or 3/4" CRUSHER RUN AGGREGATE (2" THICK)	1,025	TON	$4.00	$4,100.00
TANK PADS GEOTEXTILE FABRIC (US 200)	8,500	SY	$1.25	$10,625.00
*INSTALL TENSAR TX190 GEOGRID or EQUIVALENT	8,500	SY	$1.00	$8,500.00
TOTAL				**$103,654.75**

ROAD CULVERTS				
	QUANTITY	UNIT		
15" HDPE	0	LF	$20.11	$0.00
18" HDPE	380	LF	$23.33	$8,865.40
24" HDPE	180	LF	$41.20	$7,416.00
30" HDPE	0	LF	$32.50	$0.00
36" HDPE	0	LF		$0.00
42" HDPE	0	LF		$0.00
48" HDPE	0	LF		$0.00

60" HDPE	0	LF		$0.00
R4 RIP RAP (INLETS/OUTLETS)	50	TON	$35.69	$1,784.50
AASHTO #1 STONE (DITCH CHECKS)	5	TON	$61.10	$305.50
DITCH LINING - (ACCESS ROAD) JUTE MATTING	0	SY	$3.00	$0.00
DITCH LINING - (ACCESS ROAD) SYNTHETIC MATTING (TRM)	600	SY	$3.45	$2,070.00
TOTAL				**$20,441.40**

FENCING/GATES

	QUANTITY	UNIT		
4 FT WOVEN WIRE FARM FENCE w/MINIMUM 10 FT POST SPACING (WOODEN and/or "T" POST)	0.0	LF	$16.50	$0.00
16 FT DOUBLE GATE	0.0	EA	$1,200.00	$0.00
TOTAL				**$0.00**

SEEDING

	QUANTITY	UNIT		
SITE SEEDING (LIME, FERTILIZER, SEEDING, AND HYDRO-MULCH w/TACK (HYC-2 OR EQUAL))	16	AC	$3,301.25	$52,820.00
TOTAL				**$52,820.00**

UNFORESEEN SITE CONDITIONS

	QUANTITY	UNIT		
*ROCK CLAUSE - BLASTING	0.0	CY	$3.27	$0.00
*ROCK CLAUSE - HOE RAMMING	0.0	CY	$11.35	$0.00
*FRENCH DRAINS	0.0	FT	$10.93	$0.00
*ORANGE SAFETY FENCE w/"T" POST (10FT CENTERS) - WETLAND PROTECTION	0.0	LF	$10.60	$0.00
*STEEL PANELS w/"T" POST (10 FT CENTERS) - WETLAND PROTECTION	0.0	LF	$6.35	$0.00
*SILT FENCE	0.0	LF	$4.00	$0.00
*TEMPORARY SEEDING	0.0	AC	$2.67	$0.00
*CONSTRUCTION STAKEOUT	0.0	HOUR	$1,962.50	$0.00
* JUTE MATTING - SLOPE MATTING	0.0	SY	$2.13	$0.00
TOTAL				**$0.00**

GRAND TOTAL	**$830,204.17**

ANTERO RESOURCES

Well Site Safety Plan
Antero Resources

Well Name: **Douglas Unit 1H, Douglas Unit 2H, Bernice Unit 2H, Hinkle Unit 1H, Hinkle Unit 2H, Pauline Unit 1H, and Pauline Unit 2H**

Pad Location: **JOHN NORTH PAD**
Doddridge County/ Greenbrier District

GPS Coordinates: Lat 39°13'28.06"/Long 80°34'33.9" (NAD83)

Driving Directions:

From the intersection of US-50 and Co Route 50/1/Dog Run near the town of Salem head south on Co Route 50 for 0.7 miles. Turn right onto County Rd 50/73 for 0.5 miles. Continue onto South St for 0.2 miles. Continue onto Patterson Rd for 0.2 miles. Continue onto Co Route 29 for 0.2 miles. Continue onto Salem County Club Rd for 0.4 miles. Salem County Club Rd turns a slight right and becomes Co Route 29 for 1.5 miles. Slight left onto Co Route 15 for 2.1 miles. Turn left onto Co Route 48 for 1.4 miles. Lease road will be on your right.

Approval Sheet

The West Virginia Department of Environmental Protection Office of Oil and Gas has set forth minimum requirements for a Well Site Safety Plan which shall be submitted with each horizontal well application. A horizontal well shall be any well which meets the definition as provided for in Title 35, Series 8, Section 2.2 of the West Virginia Department of Environmental Protection Office of Oil and Gas.

Approved Safety Plans should be maintained and available at the drilling rig at all times and provided to the local emergency planning committee for the emergency planning district in which the well work will occur or to the county office of emergency services at least seven days before commencement of well work or site preparation work that involves any disturbance of land.

The Safety Plan, once approved, may only be modified upon approval by the West Virginia Department of Environmental Protection Office of Oil and Gas ("Office").

This plan has met the requirements of the West Virginia Department of Environmental Protection Office of Oil and Gas Well Site Safety Plan Standards.

Approved this day _____of month_____, 20__ by

_____ Date: _____

_____ Date: _____

Plan Modification*

Revision No.	Description of Revision	Antero Preparer	Antero Reviewer/Approver	Agency Approval	Date

*The Office of Oil and Gas must approve all changes and modifications to previously approved plans.

Site Specific Safety Plan
Antero Resources

1.0 Siting Requirements

1.1. Exhibit 1 provides a plan view map showing the well location, access road, pits, flare lines, dwellings, and noting the north and prevailing wind directions.

1.2. Exhibit 2 also provides an area topographical map showing the well site location

2.0 Site Safety Plan

2.1. Safety Meeting

Safety meetings will be conducted as follows:

- Pre-Drilling,
- Pre-Completion,
- Pre-Workover
- Post Accident/Near Miss, and
- As-Needed.

Safety meetings should be held on-site weekly, at a minimum, prior to the beginning of operations, and:

- Includes personnel employed and involved in the operations, and
- Includes the District Oil and Gas Inspector (or other designated Office of Oil and Gas representative, for the pre-spud meeting only).

Typically, contractor of the operator will conduct these safety meetings with Antero Resources personnel participating as needed. Please list the above personnel as a record of attendance using the form found in Appendix A, or one similar. These records may be maintained separate from this plan.

2.2 Personnel and Visitor Log

This log is intended to provide a current headcount of all persons present at the site at any given time. All personnel and visitors must sign in upon entering the site and sign out upon departure. This log, or one similar, is provided in Appendix B and will be maintained at all times by the Drilling Supervisor or Toolpusher.

2.3 Evacuation Plan

The Drilling Supervisor or Toolpusher will establish a muster point at which all persons on site will assemble for personnel safety and verification of headcount. This point will be located at the entrance to the site.

In the event of an emergency requiring the evacuation of personnel, an audible or visual alarm will be sounded. The Drilling Supervisor and/or the Toolpusher will determine if local residents should be evacuated at this time depending on the outcome of their assessment of the situation.

If local resident evacuation is indicated, the Drilling Supervisor and/or the Toolpusher will be responsible for notifying the local impacted residents, or the local authorities will take this responsibility depending on the urgency, availability and direction of the local authorities. Local authorities have indicated that they will take this responsibility typically and will notify of evacuation mandates via television and radio media announcements in addition to public address units on patrol vehicles. In the event that Antero is directed to take this responsibility, notification will be by dispatching a worker to each affected residence to inform them of evacuation requirements and procedures. See section 8.1 for additional information.

Evacuated local residents may be temporarily housed in local hotels depending on the severity and duration of the emergency. Included in Exhibits 1 & 2 are maps and drawings that may assist in the emergency response and evacuation process.

The Drilling Supervisor and/or the Toolpusher will secure the Personnel and Visitor log before evacuating the site in order to perform a headcount at the muster point.

2.4 Emergency Response Personnel

Requesting public emergency response assistance for this location would be accomplished by the Drilling Supervisor or Toolpusher via telephone to Harrison County Dispatch which can be reached by dialing 911. From there, they will dispatch the appropriate and available emergency response agencies depending on the nature and extent of the emergency.

A list of Emergency Contacts, including Antero's 24 hour emergency contact telephone number, any contractors of the operator, the Department, the local oil and gas inspector, and local emergency response units are found in Appendix C. This list will be posted at the well site.

2.5 Local Schools and Public Facilities

In the event of an emergency requiring the evacuation of schools and public facilities the Drilling Supervisor or Toolpusher will make the required notifications unless the local public emergency responders take on this responsibility. Generally, local emergency responders have stated that they will assume this responsibility. Exhibit 3 lists all schools and public facilities, with their contact information, within a one-mile radius of the horizontal well location.

2.6 Material Safety Data Sheets

The Drilling Supervisor or Contractor of the Operator will maintain Material Data Safety Sheets (MSDS) for all materials and chemicals used on the well site. The MSDS sheets should be located in the Company Representatives Office on-site. Copies of the MSDS sheets may also be obtained from the area Safety Coordinator, the operator contact for maintaining MSDSs, by calling the local Antero Resource Office at 304-622-3842.

3.0 Casing Requirements

3.1 Geologic Prognosis

A list of anticipated freshwater, saltwater, oil and gas, hydrogen sulfide, thief zones, and high pressure and high volume zones, including their expected depth are attached to this plan in Exhibit 4, WW-6B.

3.2 Casing and Cementing Program

Exhibit 4 shows the detailed casing and cementing program, which meets the standards of the American Petroleum Institute (API) and employs a minimum of three strings of casing which are of sufficient weight, quantity and quality for the anticipated conditions to be encountered. This casing and cementing program is designed to maintain well control and integrity. The casing setting depths are sufficient to cover and seal off those zones as identified in Exhibit 4.

4.0 BOP Requirements

4.1 BOP Equipment

The following is a list of all BOP equipment with types, sizes and ratings to be utilized and available during the drilling, completion and work-over of the well.

5M system:

- Annular preventer*
- Pipe ram, blind ram, and, if conditions warrant, as specified by the authorized officer, another pipe ram shall also be required*
- A second pipe ram preventer shall be used with a tapered drill string
- Drilling spool, or blowout preventer with 2 side outlets (choke side shall be a 3-inch minimum diameter, kill side shall be at least 2-inch diameter)*
- 3 inch diameter choke line
- 2 choke line valves (3 inch minimum)*
- Kill line (2 inch minimum)
- 2 chokes with 1 remotely controlled from rig floor
- 2 kill line valves and a check valve (2 inch minimum)*
- Upper kelly cock valve with handle available
- When the expected pressures approach working pressure of the system, 1 remote kill line tested to stack pressure (which shall run to the outer edge of the substructure and be unobstructed)
- Lower kelly cock valve with handle available
- Safety valve(s) and subs to fit all drill string connections in use
- Inside BOP or float sub available
- Pressure gauge on choke manifold
- All BOPE connections subjected to well pressure shall be flanged, welded, or clamped*
- Fill-up line above the uppermost preventer.

If repair or replacement of the BOPE is required after testing, this work shall be performed prior to drilling out the casing shoe.

When the BOPE cannot function to secure the hole, the hole shall be secured using cement, retrievable packer or a bridge plug packer, bridge plug, or other acceptable approved method to assure safe well conditions.

Minimum standards for choke manifold equipment.

i. All choke lines shall be straight lines unless turns use tee blocks or are targeted with
ii. running tees, and shall be anchored to prevent whip and reduce vibration.
iii. ii. Choke manifold equipment configuration shall be functionally equivalent to the appropriate example diagram shown in Appendix C. The actual configuration of the chokes may vary.

All valves (except chokes) in the kill line choke manifold, and choke line shall be a type that does not restrict the flow (full opening) and that allows a straight through flow).

Pressure gauges in the well control system shall be a type designed for drilling fluid service

5M and higher system accumulator shall have sufficient capacity to open the hydraulically-controlled gate valve (if so equipped) and close all rams plus the annular preventer (for 3 ram systems add a 50 percent safety factor to compensate for any fluid loss in the control system or preventers) and retain a minimum pressure of 200 psi above precharge on the closing manifold without use of the closing unit pumps. The fluid reservoir capacity shall be double the usable fluid volume of the accumulator system capacity and the fluid level of the reservoir shall be maintained at the manufacturer's recommendations. Two independent sources of power shall be available for powering the closing unit pumps. Sufficient nitrogen bottles are suitable as a backup power source only, and shall be recharged when the pressure falls below manufacturer's specifications.

Accumulator Precharge Pressure Test
This test shall be conducted prior to connecting the closing unit to the BOP stack and at least once every 6 months. The accumulator pressure shall be corrected if the measured precharge pressure is found to be above or below the maximum or minimum limit specified below (only nitrogen gas may be used to precharge):

Power Availability

Power for the closing unit pumps shall be available to the unit at all times so that the pumps shall automatically start when the closing valve manifold pressure has decreased to the pre-set level.

Accumulator Pump Capacity

Each BOP closing unit shall be equipped with sufficient number and sizes of pumps so that, with the accumulator system isolated from service, the pumps shall be capable of opening the hydraulically-operated gate valve (if so equipped), plus closing the annular preventer on the smallest size drill pipe to be used within 2 minutes, and obtain a minimum of 200 psi above specified accumulator precharge pressure.

Locking Devices

A manual locking device (i.e., hand wheels) or automatic locking devices shall be installed on all systems of 2M or greater. A valve shall be installed in the closing line as close as possible to the annular preventer to act as a locking device. This valve shall be maintained in the open position and shall be closed only when the power source for the accumulator system is inoperative.

Accumulator working pressure rating	**Minimum acceptable operating pressure**	**Desired precharge pressure**	**Maximum acceptable precharge pressure**	**Minimum acceptable precharge pressure**
1,500 psi	1,500 psi	750 psi	800 psi	700 psi
2,000 psi	2,000 psi	1,000 psi	1,100 psi	900 psi
3,000 psi	3,000 psi	1,000 psi	1,100 psi	900 psi

Remote Controls

Remote controls shall be readily accessible to the driller. Remote controls for all 3M or greater systems shall be capable of closing all preventers. Remote controls for 5M or greater systems shall be capable of both opening and closing all preventers. Master controls shall be at the accumulator and shall be capable of opening and closing all preventers and the choke line valve (if so equipped). No remote control for a 2M system is required.

4.2 Procedure and Schedule for Testing BOP Equipment

Well Control Equipment Testing

i. Perform all tests described below using clear water or an air..

ii. Ram type preventers and associated equipment shall be tested to approved stack working pressure if isolated by test plug or to 80 percent of internal yield pressure of casing if BOP stack is not isolated from casing. Pressure shall be maintained for at least 10 minutes or until requirements of test are met, whichever is longer. If a test plug is utilized, no bleed-off of pressure is acceptable. For a test not utilizing a test plug, if a decline in pressure of more than 10 percent in 30 minutes occurs, the test shall be considered to have failed. Valve on casing head below test plug shall be open during test of BOP stack.

iii. Annular type preventers shall be tested to 70 percent of rated working pressure. Pressure shall be maintained at least 10 minutes or until provisions of test are met, whichever is longer.

iv. As a minimum, the above test shall be performed:
   a. when initially installed:
   b. whenever any seal subject to test pressure is broken:
   c. following related repairs: and
   d. 30-day intervals.

v. Valves shall be tested from working pressure side during BOPE tests with all downstream valves open.

vi. When testing the kill line valve(s), the check valve shall be held open or the ball removed.

vii. Annular preventers shall be functionally operated at least weekly.

viii. Pipe and blind rams shall be activated each trip, however, this function need not be performed more than once a day.

ix. A BOPE pit level drill shall be conducted weekly for each drilling crew.

x. Pressure tests shall apply to all related well control equipment.

xi. All of the above described tests and/or drills shall be recorded in the drilling log.

xii. For intermediate wellbore drilling phase, the BOP equipment will be pressure and function tested upon initial installation.

xiii. For the bottom and horizontal wellbore drilling phase, the BOP equipment will be pressure and function tested upon initial installation, weekly, and after each bit trip.

4.3 BOP Installation Schedule

The BOP will be installed after running surface casing as well as after running intermediate casing. BOP equipment shall be installed on the innermost string of casing after the surface casing.

4.4 Well Control Training

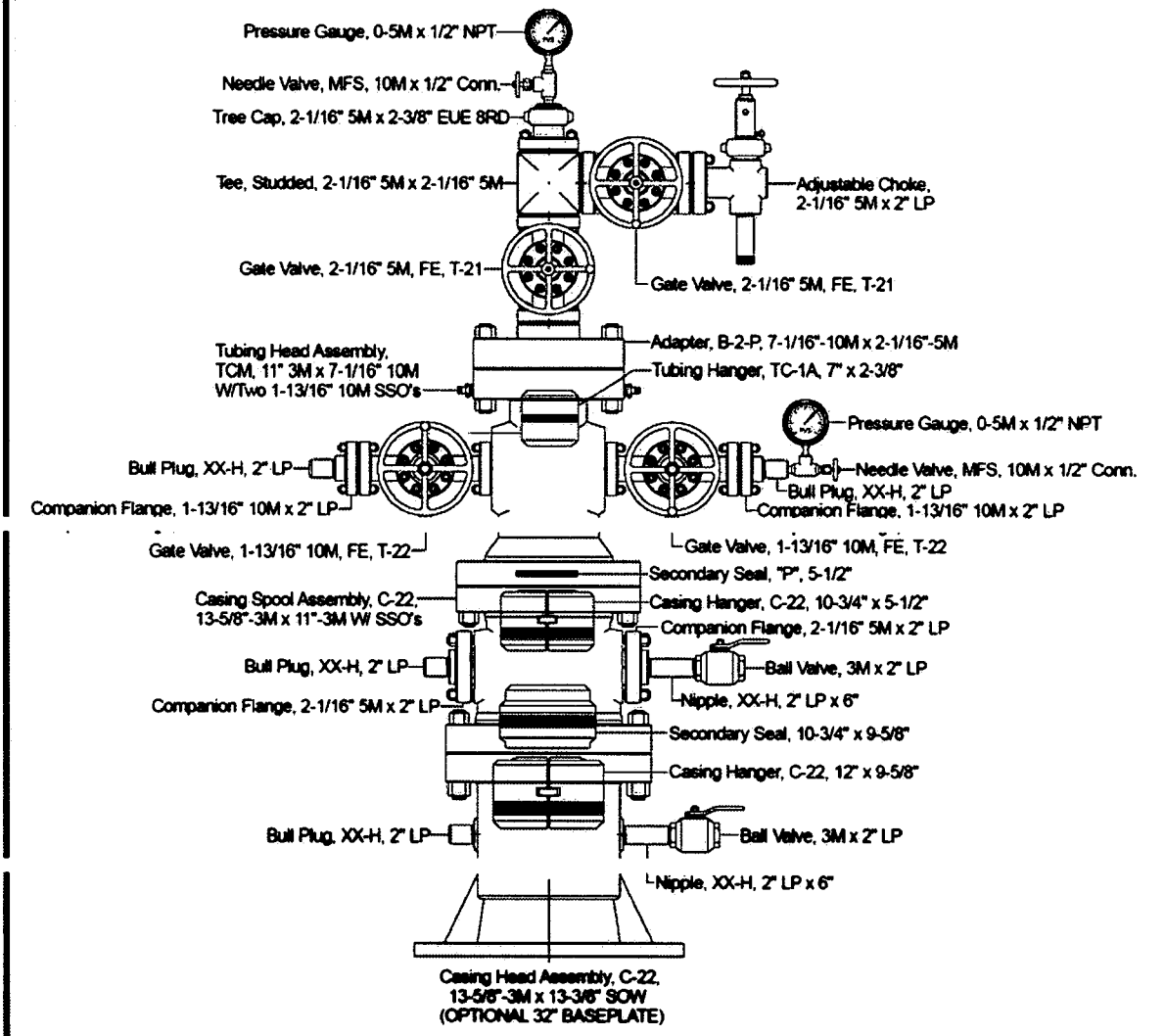
All Drilling Supervisors and Toolpushers used on this well will be IADC trained and certified. A trained person will be present during the drilling operations. Training certificates will be available for review on the location. The list of personnel with said training is provided in Appendix E.

4.5 Drilling Record

The Drilling Supervisor will maintain detailed records of significant drilling events such as lost circulation, hydrogen sulfide gas, fluid entry, kicks and abnormal pressures through the electronic data entry and recording system, Wellview. This system allows the Drilling Supervisor to enter daily reports containing the specified information. The records are then retained electronically at Antero Main Office in Denver, CO.

The Emergency Response Plan for this operating area requires the Drilling Supervisor to notify the district oil and gas inspector or the designated Office of Oil and Gas representative any unusual drilling events such as hydrogen sulfide gas or significant kicks that occur during drilling operations. Any encounter of hydrogen sulfide gas requires immediate notification of the Office of Oil and Gas.

4.6 Schematic and Description of the Wellhead Assembly



5.0 Well Flaring Operations

5.1 Size, Construction and Length of Flare Line

The flare line will be a 4" diameter, steel line that extends 50' from the well. The line will be anchored to the surface of the ground by cross pinning it in place using metal staking at multiple points along the line.

The choke assembly is described in previous section of this document and in drawing "5M Choke Manifold Equipment" BLM drawing Onshore Oil and Gas Order Number 2, Appendix D.

We do not anticipate flaring since we would first attempt to route the flow to the Gas Buster and work the gas kick off from there. Flaring would occur as a last resort or if needed.

5.2 Flare Lighting System

The system for lighting the flare will be an automatic flare igniter using a solar collector panel and battery charger system. A second igniter will be installed as a backup. Should flaring be required or needed.

The Drilling Supervisor will give notification to the local fire department prior to lighting the flare, if practicable, or as soon as possible thereafter.

5.3 Flare Safe Distances

The flare line(s) discharge shall be located not less than 50 feet from the well head, having straight lines unless turns are targeted with running tees, and shall be positioned downwind of rig and trailers. The flare system shall have an effective method for ignition. All flammable material beyond the end of the flare line will be cleared to a minimum distance of 50feet.

5.4 Flare Duration

The flare duration should not exceed the maximum time requirements needed to complete the operation.

6.0 Well Killing Operations

6.1 Mud Mixing Inventory

The following shows the inventory of all materials that will be on-site for the mixing of mud:

- 20 sack of Soda Ash
- 480 sacks of KCL
- 200 sacks of Biolose
- 40 sack of Xan-Plex
- 20 buckets of X-Cide 102
- 3 Drums of KD-40
- 5 Buckets of LD-S
- 15 super sack of MIL Bar
- 100 sacks of Soletex
- 40 Sacks of Graphite
- 300 Sack of Salt

Volume of mixed mud	=pit volume + equivalent volume in tanks = 500 bbls + 500 bbls = 1000 bbls total
Mixed Mud Weight	The mixed mud weight will vary depending on the bottom hole pressures and will calculated and adjusted as we gather more information; we intend to use 12.8 lb – 13.0 lb mud but will adjust the mud weight as information becomes available
Volume of Add'l Weighting Mat'l	Antero will have the necessary materials available to mix up enough mud to weight the mud up 1 lb more than the mud used for drilling; as an estimate, we expect to have 10 pallets of barite on site and 12 pallets of bentonite
Volume Water for Mixing	The rig has a 400 bbl rig water tank and the location will have 800 bbls additional in separate tanks.

6.2 Mud Mixing Units

The drilling rig is equipped with 2 mud tanks with agitators and jets such that it can make two pills.

6.3 Kill Procedures

The following paragraph describes the methodology and type of kill procedures that will be used if needed. These procedures are recognized by the IADC.

Once a Kick is detected a prompt shut in of the well is essential. The exact shut in method will be dictated by the operation being performed at the time of the kick, available equipment, plus other extenuating circumstance. The following types of kill operations may be performed to bring the well back under control. The different methods listed below to be used will be determined by the operation being performed at the time of the kick.

Kill Procedures

1.) Drillers Method

2.) Wait and Weight Method

3.) Circulate and Weight Method

4.) Concurrent Method

5.) Reverse Circulation Method

6.) Dynamic Kill Method

7.) Bullheading Method

8.) Volumetric Method

7.0 Hydrogen Sulfide Operations

7.1 H2S Monitoring

The equipment and method used for the monitoring, detection and warning of the presence of hydrogen sulfide gas during drilling, completions and work-over operations will be portable electronic gas detection such as BW gas detectors or equivalent. These detectors will be

typically located near the well bore on the drilling rig, outside the data van or on the drillers stand.

7.2 H2S Training

All personnel that will be involved in the drilling operations will be trained in H2S in drilling operations to a minimum of the awareness level. Additional training will be given to the Drilling Supervisors both in H2S and emergency response duties related specifically to air toxins. All of the aforementioned training will be completed prior to spudding the well. These records may be kept separate from this plan.

7.3 Personal Protection Equipment

The following personal protection equipment will be available and in use as needed on location:

- Fire Retardant Clothing (FRC),
- Hardhats,
- safety shoes,
- safety glasses and/or safety goggles/face shields,
- hearing protection earplugs,
- cotton and chemical resistant work gloves, and
- dust mask respirators.

In the event that other hazards are identified or presented during the drilling operation, we will attempt to eliminate the hazard, and if not practical, additional PPE will be provided to mitigate the risk to the worker. In the event that H2S is detected, a hazard assessment will be performed for this exposure along with risk mitigation.

7.4 H2S Notification and Control

The emergency alarm will be audible or visual type which will be detectable by all personnel on location. If dangerous levels of H2S are detected, we will immediately implement our Emergency Response Plan which will provide for site control and evacuation as needed. Generally, the site will be secured such that access is allowed only for trained emergency response personnel. Site security will be accomplished by trained workers stationed at safe points on the perimeter and access road to the site.

If H2S is detected and confirmed, a telephonic notification will be made to the local oil and gas inspector.

8.0 Notification and Protection Zone Standards

8.1 Method of Notification

In an emergency which requires the notification of residents and emergency personnel that may be affected during drilling such as release of H2S, flaring, etc., the emergency response plan will be immediately implemented. This plan specifies the roles and responsibilities of on-site personnel in case of emergency and addresses emergency notification of potentially affected residents and public emergency response personnel.

In general under the situation presently described, after the activation of the emergency alarm, the on-site personnel will muster for a headcount by the On-Scene Incident Commander which is usually the Drilling Supervisor or Toolpusher. After initial assessment of the situation, the OSIC will notify the public emergency response agency from which direction will be taken. If the agency directs, on-site personnel will notify all local impacted residents of the incident by dispatching a worker by truck to each potentially affected residence. If the public emergency responder does not direct this notification to be made by the operator, then the public response agency will be responsible for this notification. The local emergency responders have, in general, stated that emergency notification of local residents will be accomplished by their means including television and radio announcement as well as public address systems on patrol vehicles. Antero safety coordinators who are located in the field may assist with the notification of local residents.

8.2 Established Protection Zones

Protection zones will be established and maintained based on the nature, extent and severity of the event. These protection zones will be based on those safe distances outlined in the applicable portions of the DOT Emergency Response Guidebook.

Appendix A: Safety Meeting Log, Personnel and Visitor Log & Emergency Contacts

Safety Meeting Log

Date:_____ Location(Pad):_____ Well Name:_____

	Name	Organization	Job Title
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Appendix B.

Daily Personal and Visitor Log

DATE	TIME IN	TIME OUT	NAME	ORGANIZATION

Appendix C.

EMERGENCY CONTACT LIST AND PHONE NUMBERS

Contact	Phone Number
Designated Person and Incident Commander:	
John Kawcak, *Operations Manager*	817.368.1553 John
Tim Culberson, Midstream Construction Manager	918.916.0116 Tim
Terry Wyckoff, Midstream Production Manager	304.991.0720 Terry
Designated Backup Person Incident Commander/Response Coordinator:	
Mike Ward	580.276.7484 Mike
Ricky Jones	580.927.6276 Ricky
Norman Wood	903.353.4429 Norman
Stanley Dudley	970.618.7602 Stanley
Jeff Partridge	940.577.2288 Jeff
Landon West	940.389.0602 Landon
Tim Henrich	720.530.3059 Tim H.
Mike Alcorn	304.627.7070 Mike
James Harvey	918.916.4340 James
Tim Murrell	903.256.6040 Tim
Delf Martinez	970.629.0055 Delf
Ralph Ybarra	580.927.5606 Ralph
Virgil Gaither	580.504.2366 Virgil
James Neal	607.644.8701 James
Frontier #3	832.487.7965 Rig Sat Phone
Frontier #14	713.758.0662 Rig Sat Phone
Frontier #17	713,758.0730 Rig Sat Phone
Frontier #8	832.531.7014 Rig Sat Phone
Frontier #22	713.758.0893 Rig Sat Phone
Hall Drilling #3	713.758.0881 Rig Sat Phone
Antero Resources Denver Office 1625 17th Street, Suite 300 Denver, CO 80202	Office: (303) 357-7310 Fax: 303-357-7315
Environmental Manager Jerry Alberts	Direct: (303) 357-7341 Cell: 720-201-0160 24hr

Contact	Phone Number
Safety Manager Rick Blankenship	Direct: (303) 357-7378 Cell: (720) 235-2775 24hr
Vice President Production Kevin Kilstrom	Direct: (303) 357-7335 Cell: (303) 808-0254 24hr
Federal and State Agencies	
National Response Center	(800) 424-8802
West Virginia Office of Water Resources' Emergency Notification Number, Oil Spill Response	1-800-642-3074
West Virginia Office of Oil and Gas Sam Ward, WVDEP Inspector – Harrison County Joe Taylor, WVDEP Inspector – Tyler County David Cowan, WVDEP Inspector – Ritchie County Douglas Newlon, WVDEP Inspector – Doddridge County	 (304) 389-7583 cell Sam Ward (304) 380-7469 cell Joe Taylor (304) 389-3509 cell David Cowan (304) 932-8049 cell Douglas Newlon
Environmental Protection Agency (EPA) Region 3	Phone: 215-814-3231 Fax: 215-814-3163
West Virginia Worker's Compensation	1-888-4WVCOMP 1-304-926-3400
West Virginia Fish and Wildlife Service, Field Office, Elkins, WV	**Phone:** 304-636-6586 **Fax:** 304-636-7824
US OSHA Charles Green	1-800-321-OSHA (1-800-321-6742) 304.347.5937
Local Agencies and Responders	
Sheriff/Police/Fire Department	911
Harrison County LEPC	304.624.9700 John Keeling
Hospital- United Hospital Center--Clarksburg	304. 624.2121
Harrison County Emergency and Dispatch Business Office	911 304.623.6559

Contact	Phone Number
Doddridge County Emergency	911 304.873.3253
Doddridge County LEPC	304.782.2124 Roland W. Kniceley
WV Highway Patrol	304,782,2124 doddridgeoes@dishmail.net
Public Water Intakes (see App G for add'l points)	to be determined
Waste Removal	
TK Stanley—Waste Removal, Vac Truck	304.622.6677
Stallion	330.760.4248
Waste Management	
Contractors	
Hall Drilling Services MT Hall	304588 3368
TK Stanley	304.622.6677
Cleanup Crews	
Ryan Environmental	304.641.0244
Water Haulers	
TK Stanley	304.476.0396
Hall Drilling	304.483.8125
Frac Tank Suppliers	
TK Stanley—Frac Tank Rental	304.622.6677
Stallion	330.760.4248
Winch Trucks	
TK Stanley	304.476.9588

Contact	Phone Number
Water Moving/Pumping	
TK Stanley	304.476.0396
Pumping Services—Kill Fluids	
Halliburton—Jane Lew	724.743.6601 Central Dispatch
Light Plants	254.434.1469 Hot Lights- Josh
Wolfpack	304-623-1199.
BOPs	
Blue Dot	304.290.7399
Snubbing Services	Basic Energy- 724-825-2548 Bryan Berlison
Cudd Well Control	713.849.2769 Houston
Wild Well Control	281.353.5481
Roustabout Crews	740.473-1305 Hall Drilling Office 304.588.66474 Hall Drilling- Jack 601.410.7440- TK Stanley Office 724.984.7626- TK Stanley- Brett

WV Emergency Reporting

In the event of a hazardous waste or hazardous material release or emergency, please contact: 1-800-642-3074.

Additional Contact Information

1-800-424-8802 National Response Center
1-304-558-5938 DEP Elkview Emergency Response Unit

Email Contacts:

Mike Dorsey Mike.H.Dorsey@wv.gov
Rusty Joins Rusty.T.Joins@wv.gov

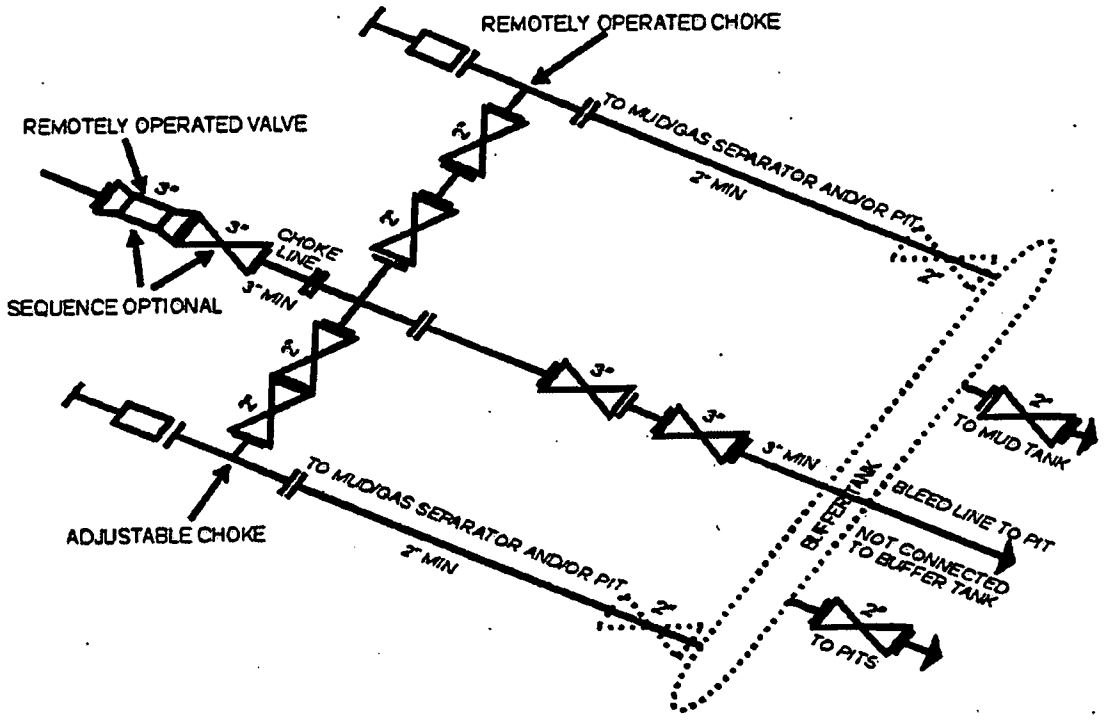
WHERE TO FIND HELP

Doddridge County:

Ambulance, Fire, Law Enforcement Emergencies **Call 911**
Poison Control Center....1-304-388-4211 or 1-800-222-1222
Emergency Alert System Radio WFBY-FM 106.5

FIRE:	
Doddridge County Ambulance Authority	304-838-5718
Greenwood V.F.D	304-873-3669
McClellan V.F.D	304-782-2774
Smithburg V.F.D	304-873-1493
West Union V.F.D	304-873-1391
B.A.N.C.S V.F.D	304-873-3722
EMS:	
Doddridge County Office of Emergency Service	304-782-2124
Doddridge County EMS	304-873-3330
LAW ENFOREMENT:	
Doddridge County Sheriff Department	304-873-1000
West Union Police Department	304-873-1107
West Virginia State Police Doddridge County Detachment	304-873-2101
OTHER IMPORTANT NUMBERS:	
W.V. Dept. of Health & Human Resources	304-627-2295
National Response Center (Chemical, Oil Spills & Chemical/Biological Terrorism) (State Emergency Spill Notification)	1-800-424-8802 1-800-642-3074
Allegheny Power	1-800-255-3443
WV State Fire Marshal (Arson Hotline)	304-588-2191 1-800-233-3473
Dominion Hope Gas	1-800-688-4673

Appendix D: Choke Manifold Schematic



5M CHOKE MANIFOLD EQUIPMENT - CONFIGURATION OF CHOKES MAY VARY

Although not required for any of the choke manifold systems, buffer tanks are sometimes installed downstream of the choke assemblies for the purpose of manifolding the bleed lines together. When buffer tanks are employed, valves shall be installed upstream to isolate a failure or malfunction without interrupting flow control. Though not shown on 2M, 3M, 10M, OR 15M drawings, it would also be applicable to those situations.

[54 FR 39528, Sept. 27, 1989]

Appendix E. **List of Well Control Trained Personnel**

1. John Kawcak- Antero
2. Mike Ward- Drilling Consultant
3. Ricky Jones- Drilling Superintendent
4. Mike Alcorn- Drilling Superintendent
5. Landon West- Completion Consultant
6. Jeff Partridge-Completion Consultant
7. Norman Wood- Drilling Consultant
8. Delf Martinez- Drilling Consultant
9. James Harvey- Drilling Consultant
10. Steve Guffey- Drilling Consultant
11. Tim Murell- Drilling Consultant
12. James Neal-Drilling Consultant
13. Virgil Gaither-Drilling Consultant
14. Ralph Ybarra- Drilling Consultant
15. Bob Belcher- Completion Consultant (Willowbend)
16. Kris Humpert- Completion Consultant (Willowbend)
17. Ronnie Fuller- Completion Consultant (Willowbend)
18. Trevor Lively- Completion Consultant (Willowbend)
19. Trey Armstrong- Completion Consultant (Willowbend)
20. Gary Linn- Completion Consultant (Willowbend)
21. Justin Bowers- Completion Consultant (Willowbend)
22. Michael Petitt- Completion Consultant (Willowbend)
23. Stephen Sanders- Completion Consultant (Willowbend)

Appendix F. **List of Hazardous Chemicals used during Phases of Operation:**

Chemical Name	Daily Qty. on Location	Storage Container
	Construction	
Diesel Fuel Oil	2000 Gallons	Double Walled Tank
	Drilling	
Airfoam HD	275 gallons	Drum
Alpha 1655	220 gallons	Drum
Aluminum Stearate	150 lbs	Tote
Caustic Soda	1500 lbs	Bag
Claytrol	440 gallons	Drum
Conqor 404	55 gallons	Drum
Diesel Fuel Oil	8000 gallons	Double Walled Tank
Gear Oil	250 gallons	Double Walled Tank
Hydraulic Fluid	250 gallons	Double Walled Tank
KCL (Potassium Chloride)	15000 lbs	Bag
LD-9	100 gallons	Bucket
Lime	2500 lbs	Bag
Mil-Bar	80000 lbs	Super Sack
Mil-Lube	220 gallons	Drum
Milmica	2500 lbs	Bag
Mil-Pac LV	2500 lbs	Bag
Mil-Plug (Walnut Shells)	5000 lbs	Bag
Milstarch	10000 lbs	Bag
Mineral Oil	265 gallons	Tote
Motor Oil	250 gallons	Double Walled Tank
New-Drill	160 gallons	Bucket
Perma-Lose HT	10000 lbs	Bag
Salt	30000 lbs	Super Sack
Soda Ash	1000 lbs	Bag
SWF	265 gallons	Drum
W.O. Defoam	160 gallons	Bucket
Xan-Plex D	1200 lbs	Bag
X-Cide 102	160 gallons	Bucket
	Completions	
15% Hydrochloric Acid	1000 gallons	Acid Tanker
DAP 901 (Scale Inhibitor)	284 gallons	Tote
DAP-923 (Acid Additive)	1.8 gallons	Acid Tanker
Diesel Fuel Oil	8000 gallons	Tanker
DWP-111 (Gel)	4980 gallons	Tote
DWP-204 (Buffer)	496 gallons	Tote
DWP-612 (FR)	1116 gallons	Tote
DWP-901 (Oxide Breaker)	1112 pounds	Bucket
DWP-944 (Biocide)	224 gallons	Tote
Oil 40 (Pump Flush)	300 gallons	Tote
EB-4L(Gel Breaker)	362 gallons	Tote
HCl Acid	1000 gallons	Tanker
KR-153SL(Biocide)	74 gallons	Tote

Appendix F. **CONTINUED**

Completions -CONTINUED		
Super Scale Inhibitor	112 gallons	Tote
WFR-3B(Friction Reducer)	372 gallons	Tote

Service/Work over		
FR-1100(Friction Reducer)	800 gallons	Bucket
FR-1205(Pipe on Pipe)	265 gallons	Bucket
FR1302(Liquid Beads)	80 gallons	Bucket
FR-1400(Gel Sweep/Friction Reducer)	550 gallons	Tote
76 DynaLife LEP Grease	20 gallons	Bucket
LithoPlex rt. No. 2 grease	2 gallons	Tube
Hi Temp red grease	3 gallons	Tube
50/50 antifreeze	15 gallons	Bucket
Hydraulic oil 68	15 gallons	Bucket
Hydraulic oil 46	25 gallons	Bucket
Premium Lithium grease	1 gallon	Spray Can
P.B. Blaster	2 gallons	Spray Can
Transmission fluid	10 gallons	Bucket
Max-gear	15 gallons	Bucket
Brakleen	3 gallons	Spray Can
Off-road diesel	700 gallons	Double Walled Tank

Reclamation		
Diesel Fuel Oil	2000 gallons	Double Walled Bulk Tank

Salem Compressor Station		
Used Oil	50 barrels	Bulk Tank
Compressor Oil	1600 gallons	Bulk Tank
Engine Oil	1600 gallons	Bulk Tank
Ethylene Glycol	2000 gallons	Bulk Tank
Produced Water	420 barrels	Bulk Tank

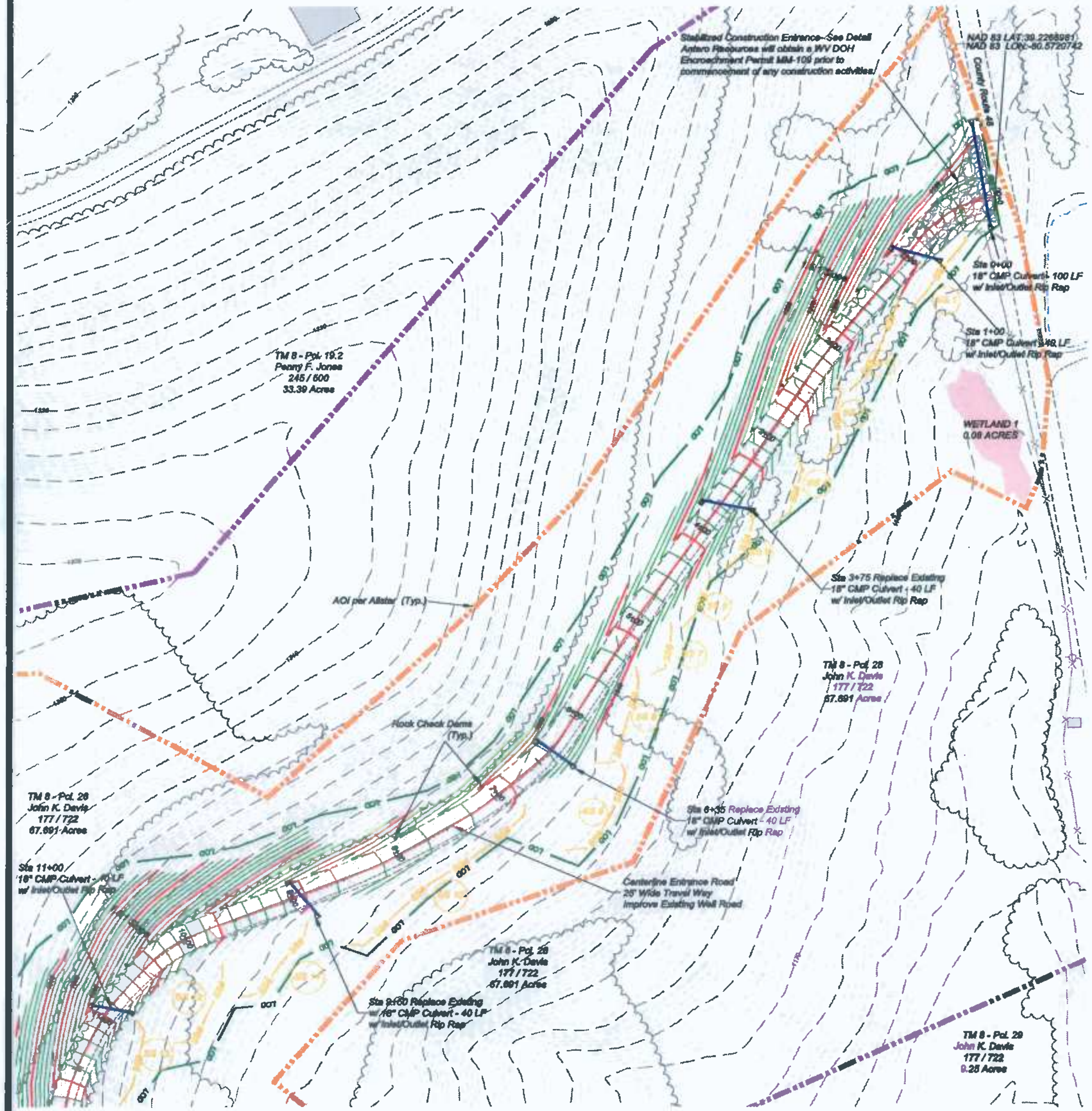
Note: The attached list represents anticipated materials used for planned operations on the well site. In the event of an unplanned event on the well site, additional materials may be required. Additional MSDS for any unplanned events will be maintained on the well site in accordance with OSHA CFR 1910.1200 standards.

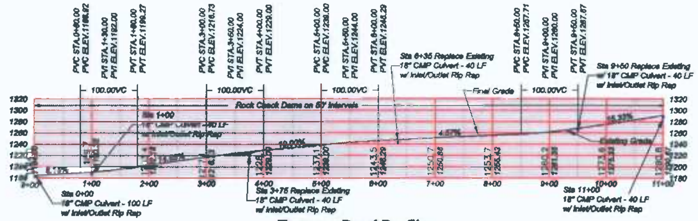
The Drilling Supervisor or Contractor of the Operator will maintain Material Data Safety Sheets (MSDS) for all materials and chemicals used on the well site in accordance with OSHA CFR 1910.1200 standards. The MSDS should be located in the Company Representative's Office on-site. Copies of the MSDS may also be obtained from the area Safety Coordinator, the operator contact for maintaining MSDS, by calling the local Antero Resource Office at 304-622-3842 or 800-878-1373.

All topographic information shown hereon is base on aerial photography provided by Blue Mountain Aerial Mapping with a flight date of Spring 2011

NOTE: All surface boundary line shown hereon are based on current Deeds and boundary evidence collected with mapping grade GPS receivers.

SITE PLAN 1





Entrance Road Profile

Horizontal & Vertical Scale 1" = 100'

0 100 200 300

Legend

- Existing 2' Contour
- Existing 10' Contour
- Existing Tree Line
- E — E Existing Utility Line / Pole
- Surface Owner Property Line
- GAS Existing Gas Line CL
- LOD Limits of Disturbance
- Proposed Diversion Ditch
- Proposed 2' Contour
- Proposed 10' Contour
- SF Proposed Super Silt Fence
- Proposed Check Dam
- Proposed Culvert W/ Inlet & Outlet Protection
- SW Proposed Straw Wattles
- Proposed Silt Soxx w/ Diameter
- Proposed 2' Contour
- Proposed 10' Contour
- Proposed Rip-Rap

* Silt Soxx Diameter in Inches
* Super Silt Fence Can be Substituted for Silt Soxx of any Size

LINED DITCH TREATMENT vs SLOPE of DITCH
Line with Seed & Mulch if slope is less than 3%
Line with Jute Matting if slope is greater than 3% less than 9%
Line with turf reinforcement matting (TRM) if slope is greater than 9%
*Turf reinforcement matting shall be Excelsior Recyclex or Landlok TRM 435 or equal

DATE	REVISIONS
4-16-13	Updated Per New Antero Standards

Allegheny Surveys, Inc.
172 Thompson Drive
Bridgeport, WV 26330
(304) 848-5035

CHARLES K. WILSON REGISTERED NO. 12480 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

L&W ENTERPRISES, INC.
PO BOX 826
14 SOUTH GROVE ST.
PETERSBURG, WV 26847
PH: 304-257-4818
FAX: 304-257-2224
EMAIL: KEILK@CITLINK.NET

L & W Surveying Engineering Forestry Consulting

ANTERO

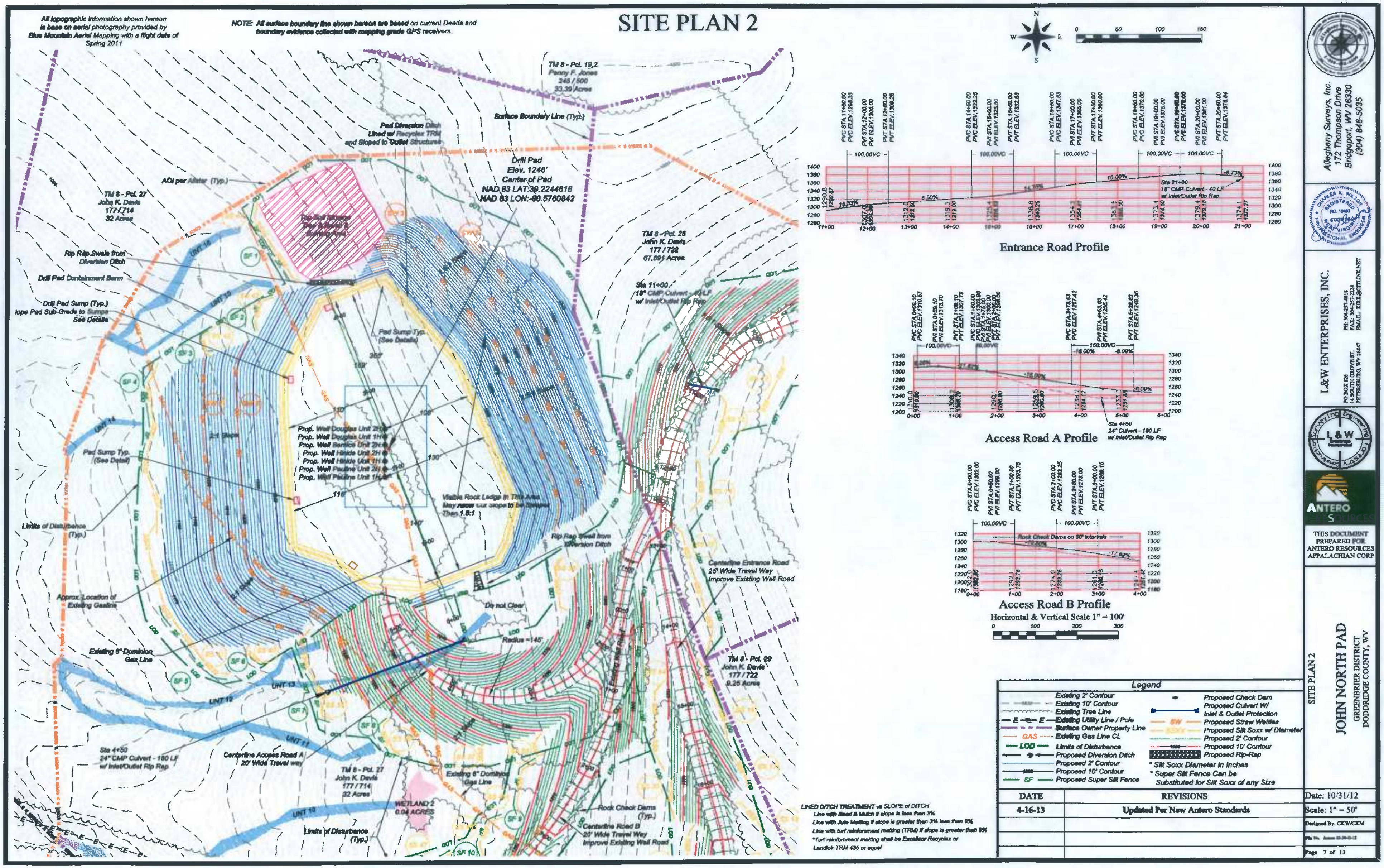
THIS DOCUMENT PREPARED FOR ANTERO RESOURCES APPALACHIAN CORP

SITE PLAN 1

JOHN NORTH PAD
GREENBRIER DISTRICT
DODDRIDGE COUNTY, WV

Date: 10/31/12
Scale: 1" = 50'
Designed By: CKW/CKM
File No. Antero 12-30-G-12
Page 6 of 13

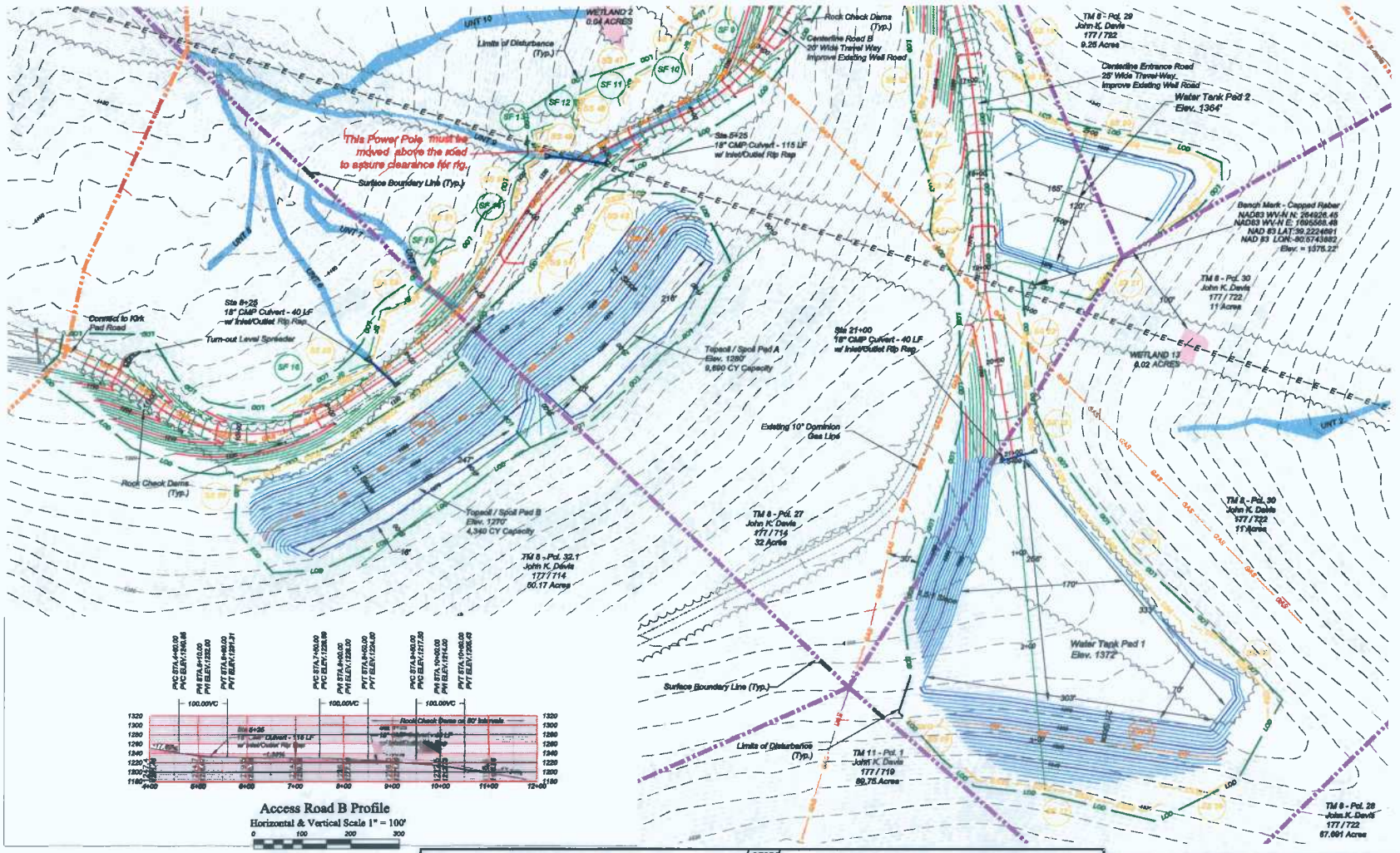
EXHIBIT 1, PAGE 1


SITE PLAN 2
All topographic information shown hereon is base on aerial photography provided by Blue Mountain Aerial Mapping with a flight date of Spring 2011
NOTE: All surface boundary line shown hereon are based on current Deeds and boundary evidence collected with mapping grade GPS receivers.
TM 8 - Pcl. 19.2 Penny F. Jones 245 / 500 33.39 Acres
Surface Boundary Line (Typ.)
Pad Diversion Ditch Lined w/ Recyclex TRM and Sloped to Outlet Structures
Drill Pad Elev. 1246' Center of Pad NAD 83 LAT:39.2244616 NAD 83 LON:-80.5760842
AOI per Allstar (Typ.)
TM 8 - Pcl. 27 John K. Davis 177 / 714 32 Acres
TM 8 - Pcl. 28 John K. Davis 177 / 722 67.69± Acres
Rip Rap Swale from Diversion Ditch
Drill Pad Containment Berm
Drill Pad Sump (Typ.) Slope Pad Sub-Grade to Sumps See Details
Sta 11+00 18" CMP Culvert - 40 LF w/ Inlet/Outlet Rip Rap
Pad Sump Typ. (See Details)
Prop. Well Douglas Unit 2H
Prop. Well Douglas Unit 1H
Prop. Well Bernice Unit 2H
Prop. Well Hinkle Unit 2H
Prop. Well Hinkle Unit 1H
Prop. Well Pauline Unit 2H
Prop. Well Pauline Unit 1H
Visible Rock Ledge in This Area May Allow Cut Slope to be Steeper Than 1.5:1
Limits of Disturbance (Typ.)
Rip Rap Swell from Diversion Ditch
Centerline Entrance Road 25' Wide Travel Way Improve Existing Well Road
Approx. Location of Existing Gasline
Do not Clear
Radius =145'
Existing 6" Dominion Gas Line
TM 8 - Pcl. 29 John K. Davis 177 / 722 9.25 Acres
Sta 4+50 24" CMP Culvert - 180 LF w/ Inlet/Outlet Rip Rap
Centerline Access Road A 20' Wide Travel way
TM 8 - Pcl. 27 John K. Davis 177 / 714 32 Acres
Existing 6" Dominion Gas Line
WETLAND 2 0.04 ACRES
Limits of Disturbance (Typ.)
Rock Check Dams (Typ.)
Centerline Road B 20' Wide Travel Way Improve Existing Well Road
Entrance Road Profile
Access Road A Profile
Sta 4+50 24" Culvert - 180 LF w/ Inlet/Outlet Rip Rap
Access Road B Profile
Horizontal & Vertical Scale 1" = 100'
LINED DITCH TREATMENT vs SLOPE of DITCH
Line with Seed & Mulch if slope is less than 3%
Line with Jute Matting if slope is greater than 3% less than 9%
Line with turf reinforcement matting (TRM) if slope is greater than 9%
*Turf reinforcement matting shall be Excelsior Recyclex or Landlok TRM 435 or equal
Legend
Existing 2' Contour
Existing 10' Contour
Existing Tree Line
Existing Utility Line / Pole
Surface Owner Property Line
Existing Gas Line CL
Limits of Disturbance
Proposed Diversion Ditch
Proposed 2' Contour
Proposed 10' Contour
Proposed Super Silt Fence
Proposed Check Dam
Proposed Culvert W/ Inlet & Outlet Protection
Proposed Straw Wattles
Proposed Silt Soxx w/ Diameter
Proposed 2' Contour
Proposed 10' Contour
Proposed Rip-Rap
* Silt Soxx Diameter in Inches
* Super Silt Fence Can be Substituted for Silt Soxx of any Size
DATE
REVISIONS
4-16-13
Updated Per New Antero Standards
Allegheny Surveys, Inc. 172 Thompson Drive Bridgeport, WV 26330 (304) 848-5035
L&W ENTERPRISES, INC.
ANTERO RESOURCES
THIS DOCUMENT PREPARED FOR ANTERO RESOURCES APPALACHIAN CORP
SITE PLAN 2
JOHN NORTH PAD
GREENBRIER DISTRICT DODDRIDGE COUNTY, WV
Date: 10/31/12
Scale: 1" = 50'
Designed By: CKW/CKM
Page 7 of 13
EXHIBIT 1, PAGE 2

SITE PLAN 3

All topographic information shown hereon is base on aerial photography provided by Blue Mountain Aerial Mapping with a flight date of Spring 2011

NOTE: All surface boundary line shown hereon are based on current Deeds and boundary evidence collected with mapping grade GPS receivers.



Legend

- Existing 2' Contour
- Existing 10' Contour
- Existing Tree Line
- Existing Utility Line / Pole
- Surface Owner Property Line
- Existing Gas Line CL
- LOD — Limits of Disturbance
- Proposed Diversion Ditch
- Proposed 2' Contour
- Proposed 10' Contour
- SF — Proposed Super Silt Fence
- Proposed Check Dam
- Proposed Culvert W/ Inlet & Outlet Protection
- SW — Proposed Straw Wattles
- SSOX — Proposed Silt Soxx w/ Diameter
- Proposed 2' Contour
- Proposed 10' Contour
- Proposed Rip-Rap

* Silt Soxx Diameter In Inches
* Super Silt Fence Can be Substituted for Silt Soxx of any Size

DATE	REVISIONS
4-16-13	Updated Per New Antero Standards

Allegheny Surveys, Inc.
172 Thompson Drive
Bridgeport, WV 26330
(304) 848-5035

L&W ENTERPRISES, INC.
PO BOX 654
1 MILL STREET
PETERSBURG, WV 26847
PH. 304-257-4818
FAX 304-257-4819
EMAIL: KIM@CITLINE.NET

THIS DOCUMENT PREPARED FOR ANTERO RESOURCES APPALACHIAN CORP

SITE PLAN 3
JOHN NORTH PAD
GREENBRIER DISTRICT
DODDRIDGE COUNTY, WV

Date: 10/31/12
Scale: 1" = 50'
Designed By: CEW/CKM
File No. Antero 33-30-C-12
Page 8 of 13

EXHIBIT 1, PAGE 3

NORTH

PREVAILING WIND DIRECTION NNE

ANTERO RESOURCES

EXHIBIT 1
JOHN NORTH
PAD

EXHIBIT 1, PAGE 4

DRILLING LAYOUT/FLARE LINES/PREVAILING WINDS

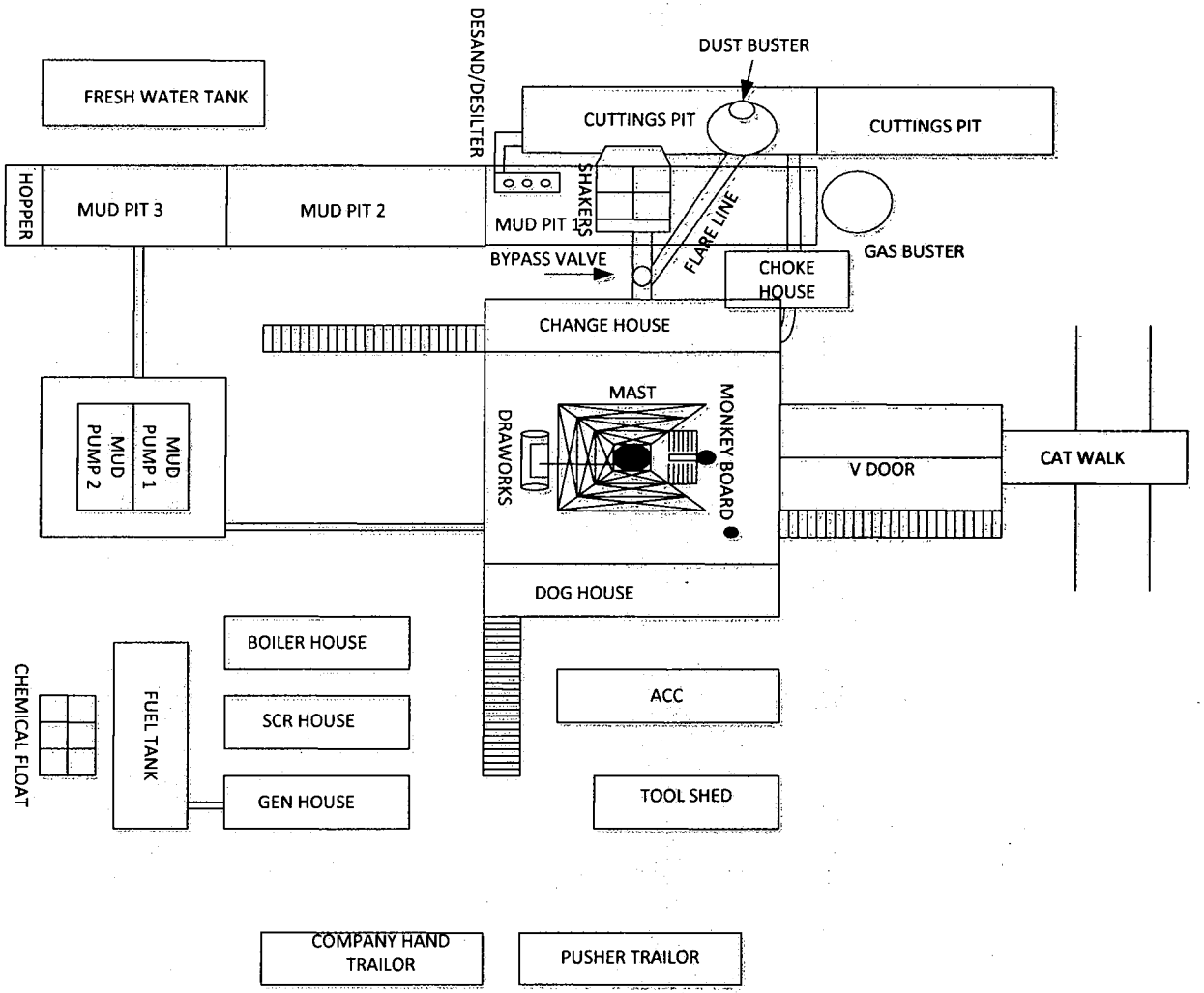
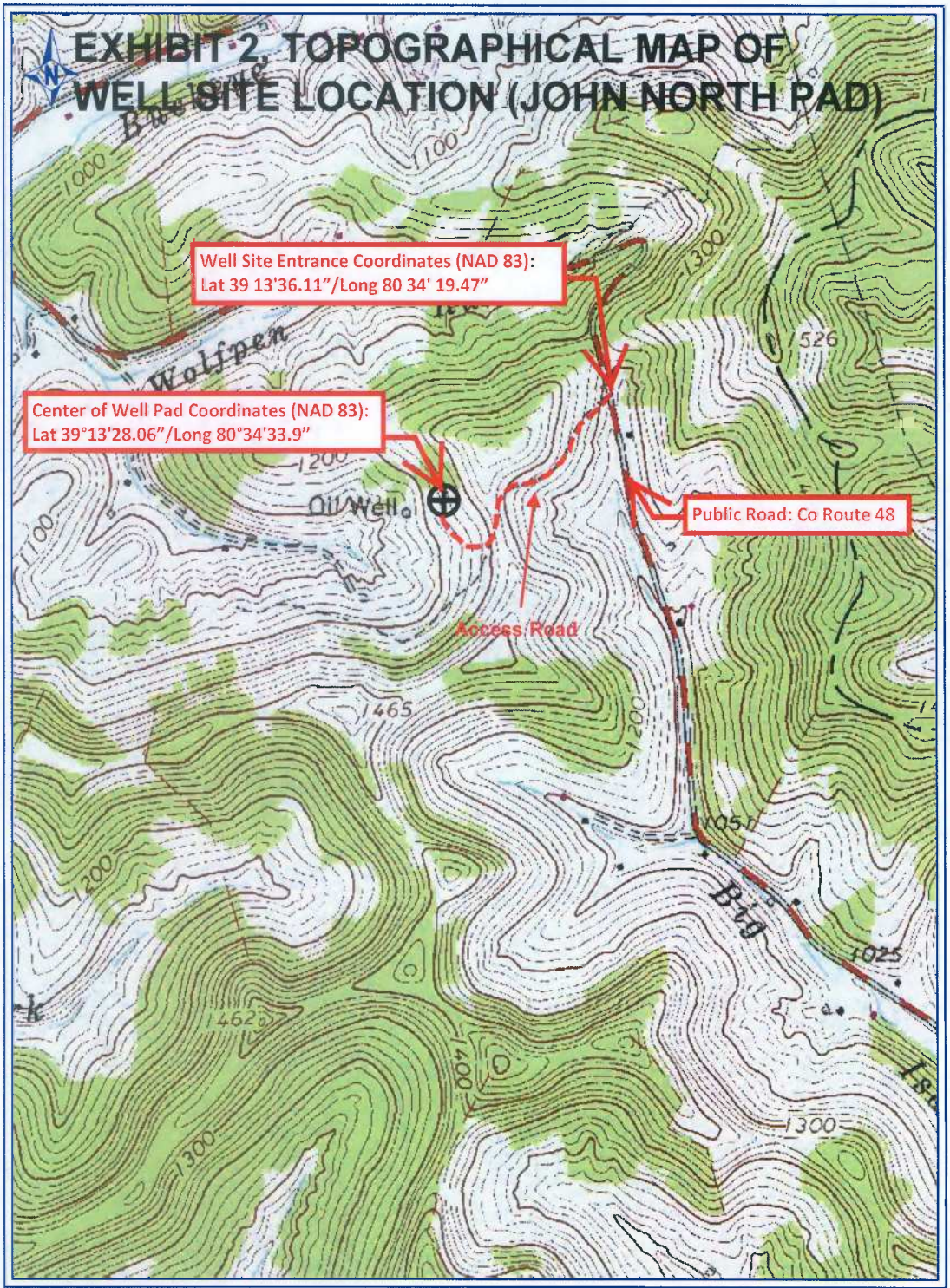


EXHIBIT 2, TOPOGRAPHICAL MAP OF WELL SITE LOCATION (JOHN NORTH PAD)



PETRA 4/17/2013 9:34:30 AM

Antero Resources Corp

APPALACHIAN BASIN

John North Pad

Doddridge County

REMARKS
QUADRANGLE: BIG ISAAC
WATERSHED: WOLFPEN RUN OF BUCKEYE CREEK
DISTRICT: GREENBRIER

By: ECM

0 3,500

FEET

JOHN NORTH PAD - EXHIBIT 3
LIST OF ALL SCHOOLS & PUBLIC FACILITIES WITHIN A ONE- MILE RADIUS OF PROPOSED WELL SITE

Facility Name	Telephone Number
None identified within a 1-mile radius	

EXHIBIT 4.a to SSP- WW-2B FORM

WW - 6B
(3/13)

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
WELL WORK PERMIT APPLICATION

1) Well Operator:	Antero Resources Appalachian Corporation	494488557	017-Doddridge	Greenbrier	Big Isaac
		Operator ID	County	District	Quadrangle

2) Operator's Well Number: Bernice Unit 2H Well Pad Name: John North Pad

3 Elevation, current ground: ~1239' Elevation, proposed post-construction: 1246'

4) Well Type: (a) Gas ■ Oil _____ Underground Storage _____

Other _____

(b) If Gas: Shallow ■ Deep _____

Horizontal ■

5) Existing Pad? Yes or No: No

6) Proposed Target Formation(s), Depth(s), Anticipated Thicknesses and Associated Pressure(s):

Marcellus Shale: 7500' TVD, Anticipated Thickness- 50 Feet, Associated Pressure- 3200#

7) Proposed Total Vertical Depth: 7500' TVD

8) Formation at Total Vertical Depth: Marcellus

9) Proposed Total Measured Depth: 20000' MD

10) Approximate Fresh Water Strata Depths: 175', 331'

11) Method to Determine Fresh Water Depth: Offset well records. Depths have been adjusted according to surface elevations.

12) Approximate Saltwater Depths: 541', 1581', 1903'

13) Approximate Coal Seam Depths: 238', 841', 1337'

14) Approximate Depth to Possible Void (coal mine, karst, other): None anticipated

15) Does proposed well location contain coal seams directly overlying or adjacent to an active mine? If so, indicate name and depth of mine: No

16) Describe proposed well work: Drill, perforate, fracture a new horizontal shallow well and complete Marcellus Shale

17) Describe fracturing/stimulating methods in detail:

Antero plans to pump Slickwater into the Marcellus Shale formation in order to ready the well for production. The fluid will be comprised of approximately 99 percent water and sand, with less than 1 percent special-purpose additives as shown in the attached "List of Anticipated Additives Used for Fracturing or Stimulating Well."

18) Total area to be disturbed, including roads, stockpile area, pits, etc, (acres): 19.95 acres

19) Area to be disturbed for well pad only, less access road (acres): 6.08 acres

WW - 6B
(3/13)

20) **CASING AND TUBING PROGRAM**

TYPE	Size	New or Used	Grade	Weight per ft.	FOOTAGE: For Drilling	INTERVALS: Left in Well	CEMENT: Fill -up (Cu. Ft.)
Conductor	20"	New	H-40	94#	40'	40'	CTS, 38 Cu. Ft.
Fresh Water	13-3/8"	New	J-55/H-40	54.5#/ 48#	395'	395'	CTS, 549 Cu. Ft.
Coal	9-5/8"	New	J-55	36#	2510'	2510'	CTS, 1022 Cu. Ft.
Intermediate							
Production	5-1/2"	New	P-110	20#	20000'	20000'	5089 Cu. Ft.
Tubing	2-3/8"	New	N-80	4.7#		7100'	
Liners							

TYPE	Size	Wellbore Diameter	Wall Thickness	Burst Pressure	Cement Type	Cement Yield
Conductor	20"	24"	0.438"	1530	Class A	1.18
Fresh Water	13-3/8"	17-1/2"	0.38"/0.33"	2730/1730	Class A	1.18
Coal	9-5/8"	12-1/4"	0.352"	3520	Class A	1.18
Intermediate						
Production	5-1/2"	8-3/4" & 8-1/2"	0.361"	12630	Lead-H/POZ & Tail - H	H/POZ-1.44 & H-1.8
Tubing	2-3/8"	4.778"	0.19"	11200		
Liners						

PACKERS

Kind:	N/A			
Sizes:	N/A			
Depths Set:	N/A			

21) Describe centralizer placement for each casing string. Conductor: no centralizers

Surface Casing: one centralizer 10' above the float shoe, one on the insert float collar and one every 4th joint spaced up the hole to surface.

Intermediate Casing: one centralizer above float joint, one centralizer 5' above float collar and one every 4th collar to surface.

Production Casing: one centralizer at shoe joint and one every 3 joints to top of cement in intermediate casing.

22) Describe all cement additives associated with each cement type.

Conductor: no additives, Class A cement.

Surface: Class A cement with 2% calcium and 1/4 lb flake, 5 gallons of clay treat

Intermediate: Class A cement with 1/4 lb of flake, 5 gallons of clay treat

Production: Lead cement- 50/50 Class H/Poz + 1.5% salt + 1% C-45 + 0.5% C-16a + 0.2% C-12 + 0.45% C-20 + 0.05% C-51

Production: Tail cement- Class H + 45 PPS Calcium Carbonate + 1.0% FL-160 + 0.2% ACGB-47 + 0.05% ACSA-51 + 0.2% ACR-20

23) Proposed borehole conditioning procedures. Conductor: blowhole clean with air, run casing, 10 bbls fresh water.

Surface: blowhole clean with air, trip to conductor shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate pipe capacity + 40 bbls fresh water followed by 25 bbls bentonite mud, 10 bbls fresh water spacer.

Intermediate: blowhole clean with air, trip to surface casing shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate 40 bbls brine water followed by 10 bbls fresh water and 25 bbls bentonite mud, pump 10 bbls fresh water.

Production: circulate with 14 lb/gal NaCl mud, trip to middle of lateral, circulate, pump high viscosity sweep, trip to base of curve, pump high viscosity sweep, trip to top of curve, trip to bottom, circulate, pump high viscosity sweep, trip out, run casing, circulate 10 bbls fresh water, pump 48 bbls barite pill, pump 10 bbls fresh water followed by 48 bbls mud flush and 10 bbls water.

*Note: Attach additional sheets as needed.

EXHIBIT 4.b to SSP- WW-2B FORM

WW - 6B
(3/13)

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
WELL WORK PERMIT APPLICATION

1) Well Operator: Antero Resources Appalachian Corporation	494488557	017-Doddridge	Greenbrier	Big Isaac
	Operator ID	County	District	Quadrangle

2) Operator's Well Number: Douglas Unit 2H Well Pad Name: John North Pad

3 Elevation, current ground: ~1239' Elevation, proposed post-construction: 1246'

4) Well Type: (a) Gas ■ Oil _____ Underground Storage _____
Other _____
(b) If Gas: Shallow ■ Deep _____
Horizontal ■

5) Existing Pad? Yes or No: No

6) Proposed Target Formation(s), Depth(s), Anticipated Thicknesses and Associated Pressure(s):
Marcellus Shale: 7500' TVD, Anticipated Thickness- 50 Feet, Associated Pressure- 3200#

7) Proposed Total Vertical Depth: 7500' TVD

8) Formation at Total Vertical Depth: Marcellus

9) Proposed Total Measured Depth: 17900' MD

10) Approximate Fresh Water Strata Depths: 175', 331'

11) Method to Determine Fresh Water Depth: Offset well records. Depths have been adjusted according to surface elevations.

12) Approximate Saltwater Depths: 541', 1581', 1903'

13) Approximate Coal Seam Depths: 236', 841', 1337'

14) Approximate Depth to Possible Void (coal mine, karst, other): None anticipated

15) Does proposed well location contain coal seams directly overlying or adjacent to an active mine? If so, indicate name and depth of mine: No

16) Describe proposed well work: Drill, perforate, fracture a new horizontal shallow well and complete Marcellus Shale

17) Describe fracturing/stimulating methods in detail:
Antero plans to pump Slickwater into the Marcellus Shale formation in order to ready the well for production. The fluid will be comprised of approximately 99 percent water and sand, with less than 1 percent special-purpose additives as shown in the attached "List of Anticipated Additives Used for Fracturing or Stimulating Well."

18) Total area to be disturbed, including roads, stockpile area, pits, etc, (acres): 19.95 acres

19) Area to be disturbed for well pad only, less access road (acres): 6.08 acres

WW - 6B
(3/13)

20) **CASING AND TUBING PROGRAM**

TYPE	Size	New or Used	Grade	Weight per ft.	FOOTAGE: For Drilling	INTERVALS: Left in Well	CEMENT: Fill -up (Cu. Ft.)
Conductor	20"	New	H-40	94#	40'	40'	CTS, 38 Cu. Ft.
Fresh Water	13-3/8"	New	J-55/H-40	54.5#/ 48#	385'	385'	CTS, 535 Cu. Ft.
Coal	9-5/8"	New	J-55	36#	2505'	2505'	CTS, 1020 Cu. Ft.
Intermediate							
Production	5-1/2"	New	P-110	20#	17900'	17900'	4516 Cu. Ft.
Tubing	2-3/8"	New	N-80	4.7#		7200'	
Liners							

TYPE	Size	Wellbore Diameter	Wall Thickness	Burst Pressure	Cement Type	Cement Yield
Conductor	20"	24"	0.438"	1530	Class A	1.18
Fresh Water	13-3/8"	17-1/2"	0.38"/0.33"	2730/1730	Class A	1.18
Coal	9-5/8"	12-1/4"	0.352"	3520	Class A	1.18
Intermediate						
Production	5-1/2"	8-3/4" & 8-1/2"	0.361"	12630	Lead-H/POZ & Tail - H	H/POZ-1.44 & H-1.8
Tubing	2-3/8"	4.778"	0.19"	11200		
Liners						

PACKERS

Kind:	N/A			
Sizes:	N/A			
Depths Set:	N/A			

WW - 6B
(3/13)

21) Describe centralizer placement for each casing string. Conductor: no centralizers

Surface Casing: one centralizer 10' above the float shoe, one on the insert float collar and one every 4th joint spaced up the hole to surface.

Intermediate Casing: one centralizer above float joint, one centralizer 5' above float collar and one every 4th collar to surface.

Production Casing: one centralizer at shoe joint and one every 3 joints to top of cement in intermediate casing.

22) Describe all cement additives associated with each cement type.

Conductor: no additives, Class A cement.

Surface: Class A cement with 2% calcium and 1/4 lb flake, 5 gallons of clay treat

Intermediate: Class A cement with 1/4 lb of flake, 5 gallons of clay treat

Production: Lead cement- 50/50 Class H/Poz + 1.5% salt + 1% C-45 + 0.5% C-16a + 0.2% C-12 + 0.45% C-20 + 0.05% C-51

Production: Tail cement- Class H + 45 PPS Calcium Carbonate + 1.0% FL-160 + 0.2% ACGB-47 + 0.05% ACSA-51 + 0.2% ACR-20

23) Proposed borehole conditioning procedures. Conductor: blowhole clean with air, run casing, 10 bbls fresh water.

Surface: blowhole clean with air, trip to conductor shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate pipe capacity + 40 bbls fresh water followed by 25 bbls bentonite mud, 10 bbls fresh water spacer.

Intermediate: blowhole clean with air, trip to surface casing shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate 40 bbls brine water followed by 10 bbls fresh water and 25 bbls bentonite mud, pump 10 bbls fresh water.

Production: circulate with 14 lb/gal NaCl mud, trip to middle of lateral, circulate, pump high viscosity sweep, trip to base of curve, pump high viscosity sweep, trip to top of curve, trip to bottom, circulate, pump high viscosity sweep, trip out, run casing, circulate 10 bbls fresh water, pump 48 bbls barite pill, pump 10 bbls fresh water followed by 48 bbls mud flush and 10 bbls water.

*Note: Attach additional sheets as needed.

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
Division of Highways
Office of the District Engineer/Manager
District Four

Earl Ray Tomblin
Governor

P. O. Box 4220 · Clarksburg, West Virginia 26302 · (304) 842-1500

Paul A. Mattox, Jr., P. E.
Secretary of Transportation/
Commissioner of Highways

January 30, 2013

Antero Resources Appalachian Corporation
1625 17th Street
Denver, CO 80202
Attn: Eugene Simcox

Dear Applicant:

Your approved copy of Permit Number 04-12-1081 for a Drilling Permit is enclosed. A description of the work is on the permit.

Please contact District Four office (telephone 304-842-1575), at least 48 hours in advance of the date you plan to begin work so arrangements can be made to inspect the work authorized by the permit. Failure to comply will result in cancellation of your permit.

A copy of this permit is to be available on the job at all times while the work is in progress for inspection by the West Virginia Division of Highways personnel.

Sincerely,

Greg Phillips
District Manager

Denise Roncone
Permit Supervisor

GP:DR:sg
Attachments
cc: County
Charleston
Permits

Dist. Permit Number 04-12-1081

BOND Number LPM 9062891

OIL and GAS DATA INFORMATION SHEET

APPLICANT

Company Name ANTERO RESOURCES APPALCHIAN CORPORATION

Address 1625 17TH STREET

City DENVER ST CO Zip 80202

Contact Person Permit Burt Simcox Telephone (304) 282-9372

24/7 Road Maintenance Contact Aaron Kunzler Telephone _____ Cell (405) 227-8344

24/7 Backup Contact Dusty Wood Telephone _____ Cell (817) 771-1436

Drilling/ Fracking will require usage of _____Less than 5000 Barrels of fluids __X__ 5000 /+

Site Location

Site Name John North Access Road Local Name Big Isaac Rte.# SLS 48

Decimal Format GPS N: 39.2266981 W: 80.5720742 County Doddridge

Location Description

On Rte. # SLS 48 being 3.696 miles N S E W of Jct. of Rte. # SLS 15 and Rte. # ____

DOH USE ONLY HAULING ROUTE from US or WV Route (Attach Map)

Name & Rte.#	Beg MP	End MP	Surface Type	Condition
Miletus Road SLS 15	7.69	10.65	HMA	Good
Traugh Fork SLS15/5	0.00	1.84	HMA	Fair
Turtletree Fork SLS 30	0.00	2.35	HMA	Fair
Standing Stone SLS 46	0.00	3.67		
No name SLS 15/7	0.00	0.40	ROCK	Good
Halls Run SLS 29/2	0.00	0.97	HMA	Good
Raccoon Run SLS 50/6	0.00	0.75	ROCK	Good
Coburn Fork SLS 28	0.00	0.48	ROCK	Good
Salem Water Plant 50/73	1.94	1.249	HMA	Good
Patterson Fk SLS 29	0.00	2.58	HMA	Good
Snake Run SLS 25/7	0.00	2.190	ROCK	Fair
Dry Fork SLS 27	0.00	1.58		Poor
Br Dry Fork SLS 25/13	0.00	1.49		Poor
Jarvisville SLS 31	0.00	3.10	HMA	Poor
Big Isaac SLS 48	0.00	3.431	HMA	Good
Meathouse Fk SLS 25	0.00	13.810	HMA	Good

Well location WGS83 Decimal Format GPS N: 39.224321 W: 80.575950

WV DEP Permit Number 47 - _____ - _____

STATE COUNTY PERMIT NUMBER

Form MM-109
Rev. 05-19-05

PERMIT NO. 04-12-1081

PERMIT TO ENTER UPON, UNDER, OVER OR ACROSS THE STATE ROADS OF THE STATE OF WEST VIRGINIA, AS PROVIDED FOR IN SECTION 6, ARTICLE 16, CHAPTER 17; SECTION 9, ARTICLE 16, CHAPTER 17; SECTION 8, ARTICLE 4, CHAPTER 17, WEST VIRGINIA CODE, 1931, AS AMENDED.

THIS PERMIT, Made this 6th day of December 20 12, between the WEST VIRGINIA DEPARTMENT OF TRANSPORTATION, DIVISION OF HIGHWAYS, a statutory corporation hereinafter called DIVISION and Antero Resources Appalachian Corporation

Address: 1625 17th Street, Denver, CO 80202 Phone No: 303) 357-7310

hereinafter called APPLICANT.

WITNESSETH

In consideration of the hereinafter set out covenants and in accordance with Section 6, Article 16, Chapter 17; or Section 9, Article 16, Chapter 17; or Section 8, Article 4, Chapter 17, of the Official Code of West Virginia, 1931, as amended, and the rules and regulations promulgated thereunder, APPLICANT does hereby apply to enter

Route Type & No. SLS 48 DOH Project No. _____ (if applicable);

at 3.696 ~~1.2~~ miles SE of the intersection of SLS 48 & SLS 15 Mile Post 1.324

in Doddridge County, for the purposes hereinafter set forth and in accordance with the plans and specifications which are attached hereto and made a part hereof: To enlarge and maintain a existing heavy hauling approach for a well pad facility located on The West side of SLS 48 approximately 3.70 ~~1.2~~ miles SE of the intersection of SLS 48 & SLS 15. Site distance is approximately 300 feet to the North and 450 feet to the South. The John North Pad.

APPLICANT further agrees to accept the conditions hereinafter set forth:

1. APPLICANT shall deposit with DIVISION the sum of $ 1,000,000 in the form of an official, certified or cashier's check, or executed bond with surety satisfactory to DIVISION to cover any damage and inspection costs DIVISION may sustain by reason of the granting of this permit, including any expense incurred in restoring said highway to its original condition or the proper repair of any and all damages that may result within one (1) year from the date of the completion of said work.

2. APPLICANT agrees to reimburse DIVISION for inspection costs as follows:
   - ☒ A. For any inspection costs incurred under this permit.
   - ☐ B. At $ _____ per linear foot for _____ feet of water line installed under this permit
   - ☐ C. At $ _____ per linear foot for _____ feet of sewer line installed under this permit

3. APPLICANT shall notify DIVISION at least 48 hours in advance of the date the work will begin. Failure to comply will be cause for cancellation of this permit.

4. APPLICANT agrees to protect its employees, equipment and users of the highway at all times in accordance with the current Division of Highways manual "Traffic Control For Street and Highway Construction and Maintenance Operations".

5. APPLICANT agrees to comply with all applicable state and federal laws in the performance of work under this permit.

6. Supplementary conditions cited on the reverse side of this permit are understood and agreed to be a part hereof.

7. The work authorized under this permit shall be completed on or before (Date): December 6, 2013

RECOMMENDED:

Dennis Ronemus

Title Permit Supervisor

Eugene B. Smith

Signature and Title of Applicant

BOND REQUIREMENT:

BOND NO. LPM 9062891 /DATE 2/21/2012

Attached ☐ On File ☒

INSPECTION: Owner/Consultant ☐

Full Time ☐ Part Time ☐

Periodic ☐ Reimbursable ☐ No Cost ☐

AUTHORIZATION NO: _____

APPROVED:

Greg Bulla

DISTRICT MANAGER

Title _____

West Virginia Division of Highways

04-12-1081

PERMIT NO: _____

CHAPTER 17 WEST VIRGINIA CODE, 1931

§17-4-8. Use of roadbed by railroad, telephone company, etc.
No railroad or electric or other railway shall be constructed upon the roadbed of any state road, except to cross the same, nor shall any person, firm or corporation enter upon or construct any works in or upon such road, or lay or maintain thereon or thereunder any drainage, sewer or water pipes, gas pipes, electric conduits or other pipes, nor shall any telephone, telegraph or electric line or power pole, or any other structure whatsoever, be erected upon, in or over any portion of a state road, except under such restrictions, conditions and regulations as may be prescribed by the state road commissioner. Whenever any railroad or electric or other railway, heretofore or hereafter constructed, shall cross any state road, it shall be required to keep its own roadbed, and the bed of the road or highway at such crossing, in proper repair, or else to construct and maintain an overhead or undergrade crossing, subject to the approval of the state road commissioner; and the tracks of such railroad or railway at grade crossings shall be so constructed as to give a safe and easy approach to and across the same, and when the construction of such approaches is made necessary by a change in the railroad grade at the grade crossing, the cost shall be upon the railway company.

§17-16-6. Permit by commission or county court for openings in or structures on public roads; franchises and easements of oil, etc., transportation companies.
No opening shall be made in any state or county-district road or highway, nor shall any structure be placed therein or thereover, nor shall any structure, which has been so placed, be changed or removed, except in accordance with a permit from the state road commission or county court, as the case may be. No road or highway shall be dug up for laying or placing pipes, sewers, poles or wires, or for other purposes, and no trees shall be planted or removed or obstructions placed thereon, without the written permit of the commission or county court, or its duly authorized agent, and then only in accordance with the regulations of the commission or court. The work shall be done under the supervision and to the satisfaction of the commission or court; and the entire expense of replacing the highway in as good condition as before shall be paid by the persons to whom the permit was given, or by whom the work was done: **Provided, however,** That nothing herein contained shall be so construed as to prevent any oil or gas company or person having a proper permit or franchise from transporting oil or gasoline along any of the public highways of this State, nor to give such company a franchise without paying to the landowners through whose lands such road passes the usual and customary compensation paid or to be paid to the landowners for such right of way. Any grant or franchise when made shall be construed to give to such company or person only the right to use the easement in such public road.

A violation of any provision of this section shall be a misdemeanor, and the person or corporation violating the same shall, upon conviction thereof, be fined not less than twenty-five nor more than one hundred dollars for each offense.

§17-16-9. Private driveways or approaches to roads; obstruction of ditches.
The owner or tenant of land fronting on any state road shall construct and keep in repair all approaches or driveways to and from the same, under the direction of the state road commission, and, likewise, the owner or tenant of land fronting on any county-district road shall construct and keep in repair approaches or driveways to and from the same, under the direction of the county road engineer, and it shall be unlawful for such owner or tenant to fill up any ditch, or place any material of any kind or character in any ditch, so as in any manner to obstruct or interfere with the purposes for which it was made.

SUPPLEMENTARY CONDITIONS

1. The person, firm or corporation to whom a permit is issued agrees to hold the State of West Virginia and DIVISION harmless on account of any damages to persons or property which may arise during the process of the work authorized by this permit or by reason thereof.
2. Applications for permission to perform work within highway rights of way shall be made on DIVISION'S standard permit form and shall be signed by the authorized representative of the person, firm or corporation applying.
3. The APPLICANT shall give detailed information concerning the work to be performed and the application must include a sketch sufficient to show the nature of the work performed.
4. APPLICANT, his agents, successor, heirs or assigns, contractors or any other person, firm or corporation working under APPLICANT'S real or apparent authority, shall perform the work in a manner satisfactory to DIVISION. Damage to the road resulting at any time from work authorized under this permit shall be repaired by APPLICANT. Unsatisfactory repairs may be a corrected by DIVISION or its authorized agent and the cost thereof paid by APPLICANT.
5. DIVISION assumes no liability for damage to the proposed work by reason of construction or maintenance work on the road.
6. This permit is granted subject to removal of the authorized installation by APPLICANT at no cost to DIVISION when required for improvement of the road, and subject to all regulations now or hereafter adopted by DIVISION.
7. Utility installation shall be in accordance with the current manual, "Accommodation of Utilities on Highway Right of Way".
8. Driveways shall be in accordance with the current manual, "Rules and Regulations for Constructing Driveways on State Highway Rights-of-Way."
9. DIVISION reserves the right to cancel this permit at any time, should APPLICANT fail to comply with the terms and conditions under which it is granted.
10. This permit is granted only insofar as the DIVISION has a right to do so.

Addendum to Permit 04-12-1081

This addendum, made this 2nd day of January 2013, between the West Virginia Department of Transportation, Division of Highways, a statutory company hereinafter called the Division

and Antero Resources

Address: 1625 17th Street, Denver, CO 80202 Phone: 303 357-7310

hereinafter called APPLICANT.

The Applicant has filed with the DIVISION a written application for the following named route and location:

Doddridge County Route SLS 48, Big Isaac @ MP 1.324, John North Pad.

The following routes listed will be used by Antero moving fracking equipment, rigs, & water, etc. from one well site and water location to another.

Doddridge 15, Miletus Road, @ MP 7.69 to 10.65; slip area @ 10.39, failing piling @ 10.18 -10.22
Doddridge 15/5, Traugh Fork, @ MP 0.00 to 1.84;
Harrison 30, Turtletree Fork, @ MP 0.00 to 2.35;
Doddridge 46, Standing Stone Road @ MP 0.00 to 3.67;
Doddridge 15/7, @ MP 0.00 to 0.40;
Harrison 29/2, Halls Run Road @ MP 0.00 to 0.97;
Harrison 50/6, Raccoon Run, @ MP 0.00 to 0.75;
Harrison 28, Coburn Fork, @ MP 0.00 to 0.48;
Harrison 50/73, Salem Water Plant @ MP 1.249 to 1.94;
Harrison 29, Patterson Fork @ MP 0.00 to 2.58; has slips at various locations and pipe extensions and HMA overlay of 4" base and 2" wearing as per route review required.
Harrison 31, Jarvisville Road @ MP 0.00 to 3.10;
Doddridge 48, Big Isaac @ MP 0.00 to 3.431; Piling failed at 1.12 to 1.15.
Doddridge 25, Meathouse Fork @ MP 0.00 to 13.810; FDR Proposed
Doddridge 25/7, Snake Run @ MP 0.00 to 2.190; aerial gas line 1.30, various drainage areas and stabilization required.
Doddridge 27, Dry Fork @ MP 0.00 to 1.58; bridge needs agreement with D/4 Bridge engineer prior to road use. Recommend rebuild of bridge and FDR.
Doddridge 24/13, Branch of Dry Fork @ MP 0.00 to 1.490;

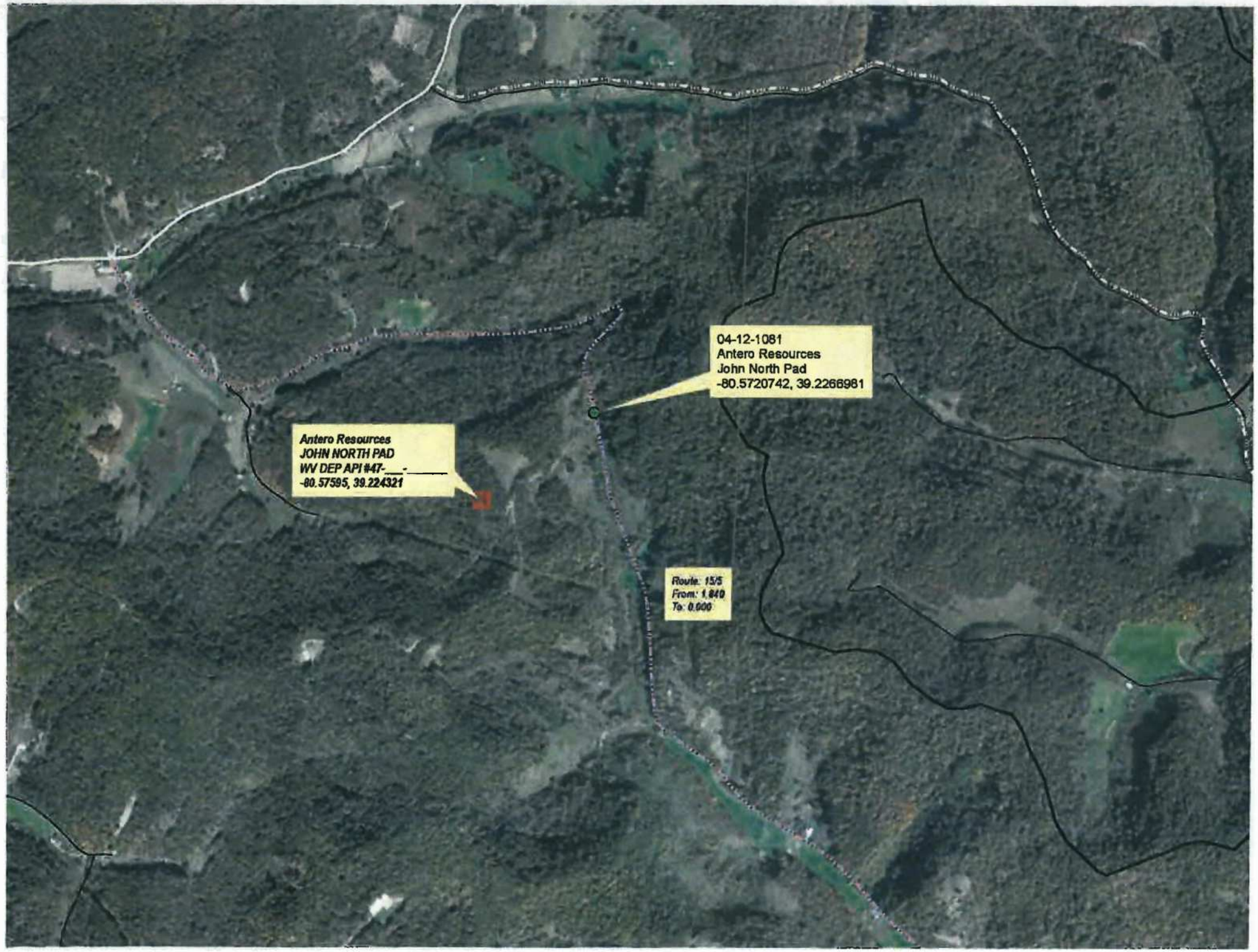
After completion of the project, a joint review of roads will be filmed and evaluated to assure roads have been repaired to existing condition or better.

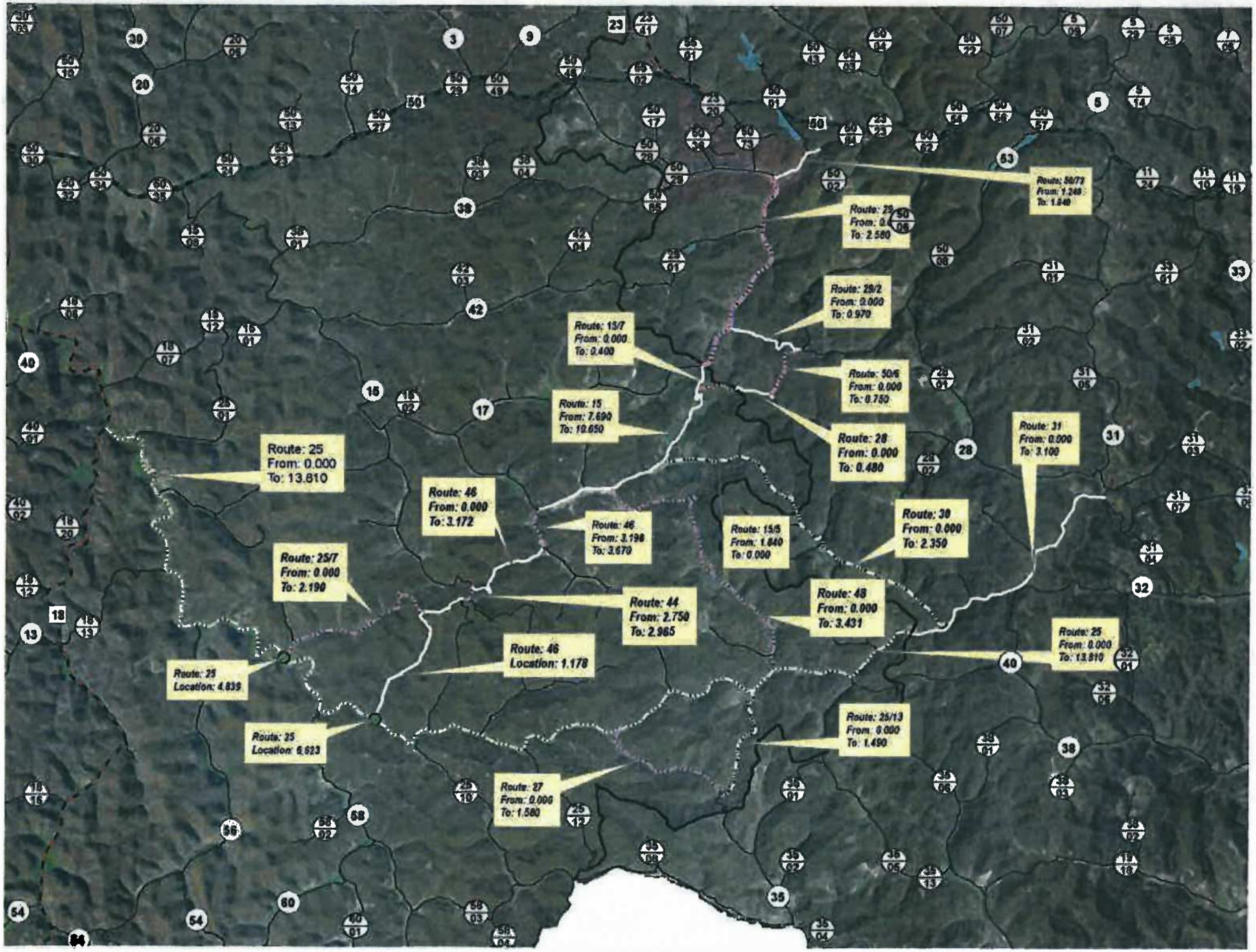
- No travel on School Bus Routes during their traversing operational hours on above mentioned route on bi-directional roadways where the lane widths are less than 10 ft.
- Pilot Vehicle required for all Oversized Loads on covered roads.
- Repairs that will include "Hot Mix Asphalt" will have the following testing requirement: The supplier will be responsible for testing at the plant; Compaction testing will be as per WV DOH specifications.
- The Division of Highways shall have the right at all times to inspect the work, and if such inspections should reveal that the work is not done according to specifications, upon being so advised by the Division, ANTERO Resources agrees to take immediate corrective actions.

Applicant shall properly repair and maintain any and all damages that may result to said bridges, highways, shoulders and ditches from hauling activities of Applicant, its agents, contractors and employees, to as good
a condition prior to commencement of Applicant's operation or as when the permit was issued, as determined by the District Engineer/Manager of the DIVISON having jurisdiction over the work permitted, or pay damages therefore in the amount to sufficiently restore such bridges, roads, highways, shoulders and ditches to original condition; and shall reimburse the DIVISON for all inspection costs incurred by it in connection with said work and repairs of such damages and faithfully comply with all terms and conditions of said permits and save harmless the DIVISION and the State of West Virginia from all losses resulting from the conduct of said work and repairs; provided that all projects covered by this blanket bond have been restored to original or better condition; then this Bond shall be released; or otherwise will remain in full force and effect.

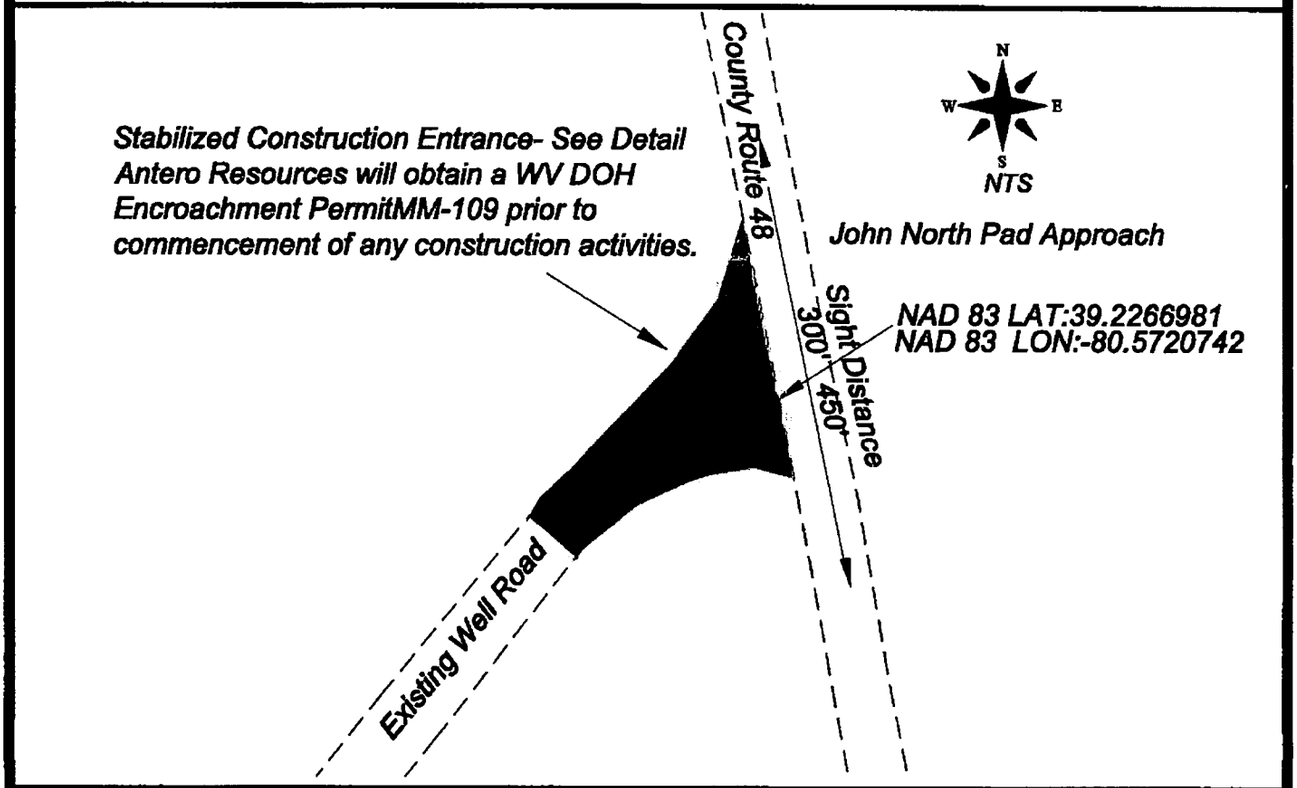
Bond Amount: $1,000,000.00

Bond Number: LPM9062891 Date: 2/21/2012

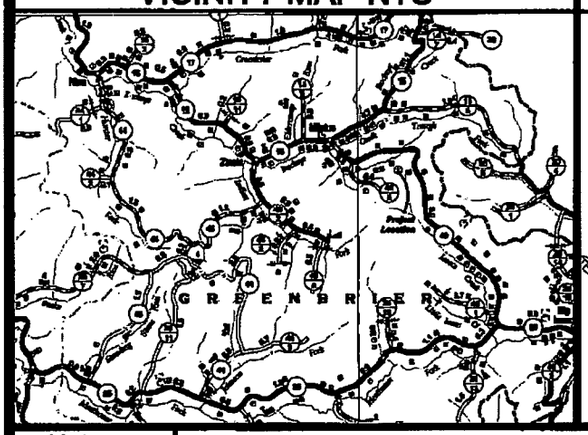

04-12-1081
Antero Resources
John North Pad
-80.5720742, 39.2266981
Antero Resources
JOHN NORTH PAD
WV DEP API #47-___-_____
-80.57595, 39.224321
Route: 15/5
From: 1.840
To: 0.000


Route: 25
From: 0.000
To: 13.810
Route: 46
From: 0.000
To: 3.172
Route: 46
From: 3.198
To: 3.670
Route: 15/7
From: 0.000
To: 0.400
Route: 15
From: 7.690
To: 10.650
Route: 28
From: 0.000
To: 0.480
Route: 50/6
From: 0.000
To: 0.750
Route: 29/2
From: 0.000
To: 0.970
Route: 50/72
From: 1.240
To: 1.840
Route: 31
From: 0.000
To: 3.100
Route: 30
From: 0.000
To: 2.350
Route: 15/5
From: 1.840
To: 0.000
Route: 48
From: 0.000
To: 3.431
Route: 44
From: 2.750
To: 2.965
Route: 25/7
From: 0.000
To: 2.190
Route: 46
Location: 1.178
Route: 25
Location: 4.839
Route: 35
Location: 6.623
Route: 27
From: 0.000
To: 1.580
Route: 25/13
From: 0.000
To: 1.450
Route: 25
From: 0.000
To: 13.810

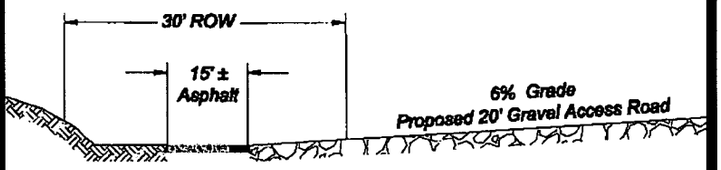
PLAN VIEW OF PROPOSED ROAD APPROACH



VICINITY MAP NTS



APPROACH PROFILE



Notes:

All specifications as set forth in the "Rules and Regulations for Construction of Driveways on State Highway Right-of-Way" which are applicable will be carried out in full.

Location:

Proposal to construct and maintain a proposed 20 ft. commercial approach on the west side of County Rt. 48, 1.2 miles southeast of the intersection of County Rt. 48 & County Rt.15 in Greenbrier District, Doddridge County, West Virginia.

DRAWN BY: K. Wilson	DATE: October 31, 2012	PROJECT NO: 52-30-G-12
	FIELD REVIEW: Aerial Photography	CADD FILE: 52-30-G-12 John North App

DRAWING NOT TO SCALE

SURVEYING AND MAPPING SERVICES PERFORMED BY:

ALLEGHENY SURVEYS, INC.

1-800-482-8606

P.O. BOX 438
BIRCH RIVER, WV 26610
PH: (304) 649-8606
FAX: (304) 649-8608

172 THOMPSON DRIVE
BRIDGEPORT, WV 26330
PH: (304) 848-5035
FAX: (304) 848-5037

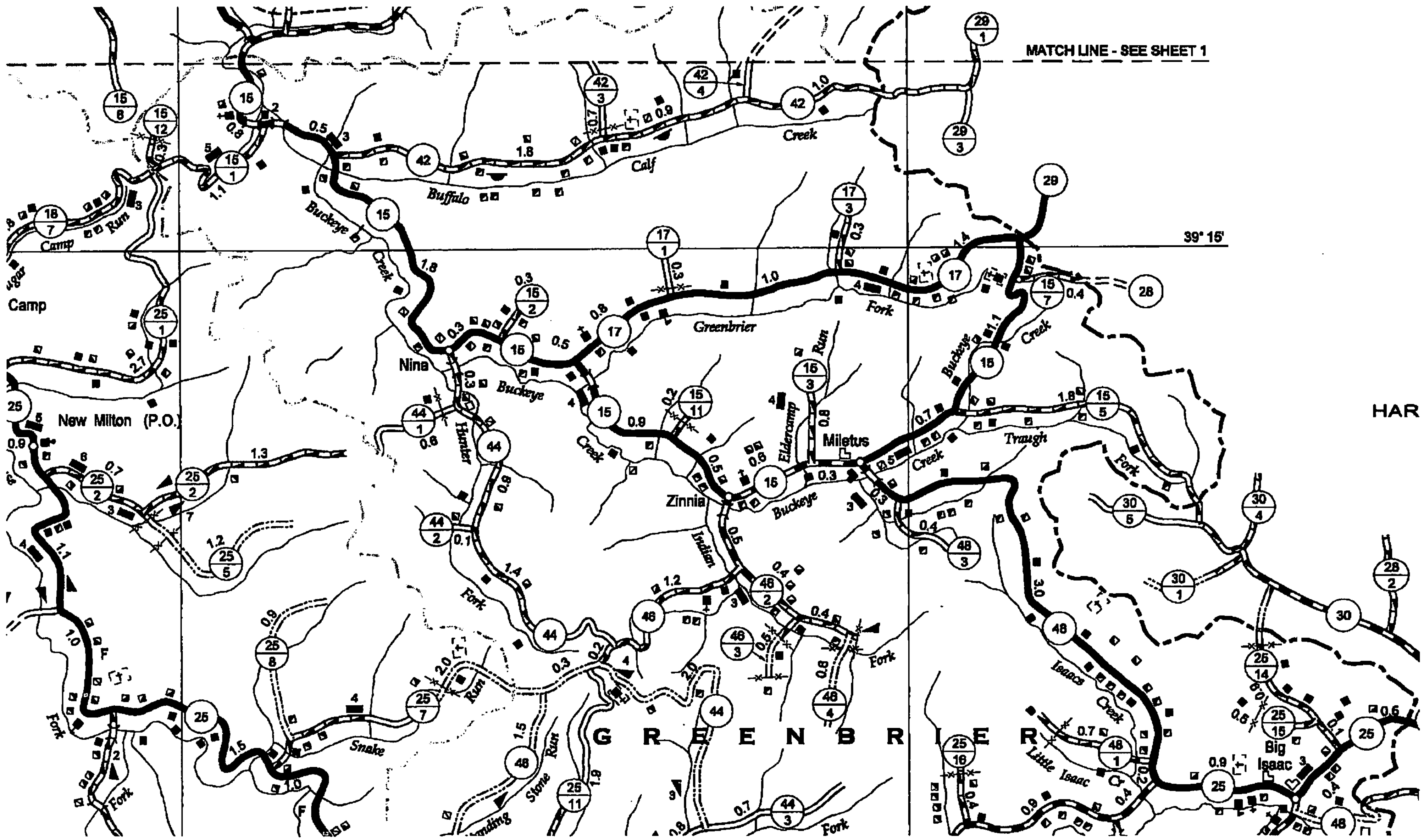
PREPARED FOR:

ANTERO RESOURCES

1625 17th St.
Denver, CO 80202

Google earth

feet 3000
km 1



MATCH LINE - SEE SHEET 1
39° 15'
Camp
New Milton (P.O.)
Nina
Zinnia
Miletus
Big Isaac
G R E E N B R I E R
HAR
Buffalo
Calf
Creek
Buckeye
Greenbrier
Fork
Camp Run
Hunter
Eldercamp Run
Traugh
Indian
Isaacs Creek
Little Isaac
Snake
Stone Run

Permit: ~~4-12-815~~ 4-12-1081

Applicant: Antero

Addendum Continued

Conditions and Requirements

Repairs/Upgrades Necessary for Maintenance Permit

~~29/2 - 50/6~~
~~28 (15/7 Dodd)~~
SLS 48

County: ~~Harrison~~ Doddridge

Well Pad: ~~Huber 7~~ John North

Approach Coordinates:

N__________

W__________

Route No.	Route Name	Mile Post	Perform Ditching	Patch Potholes	Clean Culverts	Repair Base Failures	Slip Repair	Overlay Asphalt	Overlay S&C	Stone/Stabilize Roadway	Stone/Repair Shoulders	Bridge Concerns	Ongoing Roadway Maintained	Other	Comments
29/2	Halls Run	0.97													Road in good condition
															Some Patching over all Good Condition
50/6		0.0													
4		0.177													Huber Pad
		0.4													
28	Harr Co	0.48													Rock base road stoned with
		0.00													Potholes
15/7	Dodd Co	0.40													
		0.285													Nimeroz Pad
15/7															Good condition Rock base
	at SLS 15	0.0													

RECOMMENDATIONS: Ditch all roads, F.D.R. or equivalent to maintain Road

Above routes reviewed for necessary repairs and upgraded required for Maintenance Permit/Agreement.

Eugene Sesop — Applicant Representative — Date: 1-2-2013

[signature] — DOH Respresentative — Date: 1/2/13

Permit: 4-12-1081

Applicant: Antero

Addendum Continued
Conditions and Requirements
Repairs/Upgrades Necessary for Maintenance Permit

~~15/5 Dodd~~ 5/5 48
~~30 Harrison~~

County: ~~Harrison~~ Dodd Co

Well Pad: ~~Carder~~ John North

Route No.	Route Name	Mile Post	Perform Ditching	Patch Potholes	Clean Culverts	Repair Base Failures	Slip Repair	Overlay Asphalt	Overlay S&C	Stone/Stabilize Roadway	Stone/Repair Shoulders	Bridge Concerns	Ongoing Roadway Maintained	Other	Approach Coordinates: N W / Comments
15/5	Travis Fork	0.00		✓											Paved road Extensive Patching in Pot holes
				✓											
				✓											
15/5	Dodd Co	1.84													
30	Harr Co	0.00													Good condition
		0.57													Excellent Condition Recently paved
30	"														Skip Paved by Antero
30	at 5/5 31	Harr. Co													

RECOMMENDATIONS: Ditch all roads, F.D.R. or equivalent to maintain Roads

Above routes reviewed for necessary repairs and upgraded required for Maintenance Permit/Agreement.

Eugene Simon — Applicant Representative
1-2-2013 — Date

DOH Respresentative
Date

Permit: 4-12-1081

Applicant: Antero

Addendum Continued

Conditions and Requirements

Repairs/Upgrades Necessary for Maintenance Permit

~~S9.3 27~~ 2 of 2 SLS 48

County: ~~Harrison~~

Well Pad: John North

Approach Coordinates:

N ____

W ____

Route No.	Route Name	Mile Post	Perform Ditching	Patch Potholes	Clean Culverts	Repair Base Failures	Slip Repair	Overlay Asphalt	Overlay S&C	Stone/Stabilize Roadway	Stone/Repair Shoulders	Bridge Concerns	Ongoing Roadway Maintained	Other	Comments
50/23	old U.S. 50	1.94												Harr.	Salem Water Plant at Dog Run
	"	1.38												Harr.	Patched but Good Condition
29		2.53	at B&O-CSX RR Track									✓		Harr.	
		2.49										✓			Bridge
		1.40													Slip
		1.36													Slip repair
		1.19													Extend Pipe
		1.05													Check Pipe
		0.85										✓			Bridge
		0.85													
		0.52													start of Slip

RECOMMENDATIONS: Ditch all roads, FDR or equivalent to maintain Road

Above routes reviewed for necessary repairs and upgraded required for Maintenance Permit/Agreement.

Eugene Sine — 1-2-2013

Applicant Representative — Date

[illegible signature] — [illegible]

DOH Respresentative — Date

Permit: 4-12-1081

Addendum Continued

Conditions and Requirements

Repairs/Upgrades Necessary for Maintenance Permit

~~SLS 3 & E4~~ ~~Fol 2~~ SLS 48

County: ~~Harrison~~

Applicant: Antero

Well Pad: John North

Approach Coordinates:

N

W

Route No.	Route Name	Mile Post	Perform Ditching	Patch Potholes	Clean Culverts	Repair Base Failures	Slip Repair	Overlay Asphalt	Overlay S&C	Stone/Stabilize Roadway	Stone/Repair Shoulders	Bridge Concerns	Ongoing Roadway Maintained	Other	Comments
29	Patterson	0.48												Harr	Slip
"	"	0.37												"	Slip
"	"	0.3		✓										"	
"	"	0.24		✓										"	start of Slip
"	"	0.20												"	
"	"	0.113												"	old Piling Job
	"	0.00												"	Dodd Co line

RECOMMENDATIONS: Repair all Slip areas, Repair all base failures, Ditch road, Place 4" of Base, Place 2" wearing, Place shoulder Stone, or Repair slips & do F.D.R.

Above routes reviewed for necessary repairs and upgraded required for Maintenance Permit/Agreement.

Applicant Representative	Date	DOH Respresentative	Date
[signature]	1-2-2013	[signature]	12/21/12

Applicant: Antero

Conditions and Requirements
Repairs/Upgrades Necessary for Maintenance Permit SLS 48

Well Pad: ~~[illegible]~~ John North

Approach Coordinates:

N __________

W __________

Route No.	Route Name	Mile Post	Perform Ditching	Patch Potholes	Clean Culverts	Repair Base Failures	Slip Repair	Overlay Asphalt	Overlay S&C	Stone/Stabilize Roadway	Stone/Repair Shoulders	Bridge Concerns	Ongoing Roadway Maintained	Other	Comments
31	Jarvisville	3.10													Surface cracking
		3.03													Drainage structure
		2.92													Edge of road damaged due to Heavy Hauling
															Intermittent [illegible] by Antero
		1.10													Piling job Now not complete
		0.94	to	0.00											Surface cracking
															Road in bad condition

RECOMMENDATIONS: Ditch road. Repair road by F.D.R. or equivalent

Above routes reviewed for necessary repairs and upgraded required for Maintenance Permit/Agreement.

Eugene Sizey [signature]	1-3-2013	[signature]	12/21/12
Applicant Representative	Date	DOH Respresentative	Date

Permit: 4-12-1001

Applicant: Antero

Addendum Continued

SLS 48

Conditions and Requirements

Repairs/Upgrades Necessary for Maintenance Permit

County: [illegible]

Well Pad: John North

Approach Coordinates:

N ______

W ______

Route No.	Route Name	Mile Post	Perform Ditching	Patch Potholes	Clean Culverts	Repair Base Failures	Slip Repair	Overlay Asphalt	Overlay S&C	Stone/Stabilize Roadway	Stone/Repair Shoulders	Bridge Concerns	Ongoing Roadway Maintained	Other	Comments
15	[illegible] Harr Co line	10.65													Road in good condition
		10.39													Slip area slip starting
															smooth but surface cracking
		10.22-10.15													Failing old piling Job
		9.90													Clearence Pad Entrance
		8.61													Road good condition some surface cracking
48		0.0													
		0.07									✓				Small drainage structure
															Road excellent condition Paved 2010
		1.12-1.15													Piling Failed
		1.29													John North Entrance

RECOMMENDATIONS: Ditch Road repair Road by F.D.C. or equivalent

Above routes reviewed for necessary repairs and upgraded required for Maintenance Permit/Agreement.

Applicant Representative	Date	DOH Respresentative	Date
[signature]	1-2-2013	[signature]	1/2/12

Permit: 4-12-1081

Applicant: Antero

Addendum Continued

Conditions and Requirements

Repairs/Upgrades Necessary for Maintenance Permit

SLS 48

County: Roda

Well Pad: John North

Route No.	Route Name	Mile Post	Perform Ditching	Patch Potholes	Clean Culverts	Repair Base Failures	Slip Repair	Overlay Asphalt	Overlay S&C	Stone/Stabilize Roadway	Stone/Repair Shoulders	Bridge Concerns	Ongoing Roadway Maintained	Other	Approach Coordinates: N ___ W ___ Comments
43		1.39													John North Entrance
															Road in excellent condition Paved 2010
		3,172													Heflin North Pad
															Intersect 25

RECOMMENDATIONS: Ditch Roads Repair by F.D.R or equivalent

Above routes reviewed for necessary repairs and upgraded required for Maintenance Permit/Agreement.

[illegible signature] 1-2-2013

Applicant Representative Date

[illegible signature] [illegible]

DOH Respresentative Date

Permit: 4-12-1081

Applicant: Antero

Addendum Continued

Conditions and Requirements

Repairs/Upgrades Necessary for Maintenance Permit

~~25~~ SLS48

County: Dodd

Well Pad: John North

Approach Coordinates:

N ______________________

W ______________________

Route No.	Route Name	Mile Post	Perform Ditching	Patch Potholes	Clean Culverts	Repair Base Failures	Slip Repair	Overlay Asphalt	Overlay S&C	Stone/Stabilize Roadway	Stone/Repair Shoulders	Bridge Concerns	Ongoing Roadway Maintained	Other	Comments
5,08	Meathouse Fork														Bridge Road good condition
4.55						✓									Base Failure
4,1															Swisher Pad
3.44															Brushy Fork Rd Intersection
3.69	to 0.00														Road in Fair to good condition
2.51						✓									Road damage
1,26						✓									

RECOMMENDATIONS: Road needs Full Depth Reclamation to hold up to many wells Proposed along CR25 from WV18 to county line

Above routes reviewed for necessary repairs and upgraded required for Maintenance Permit/Agreement.

Eugene Sing [signature] 1-2-2013

Applicant Representative — Date

[signature] 1/4/13

DOH Respresentative — Date

Permit: 4-12-1081

Applicant: Antero

Addendum Continued

Conditions and Requirements

Repairs/Upgrades Necessary for Maintenance Permit

25/40 ~~25/7~~

County: Dodd

Well Pad: ~~Frost Pad~~ John North

Approach Coordinates:

N ____________________

W ____________________

Route No.	Route Name	Mile Post	Perform Ditching	Patch Potholes	Clean Culverts	Repair Base Failures	Slip Repair	Overlay Asphalt	Overlay S&C	Stone/Stabilize Roadway	Stone/Repair Shoulders	Bridge Concerns	Ongoing Roadway Maintained	Other	Comments
25/7	Snake Run	0.00													Rock base road in good condition
															up to MP 1.2
		1.26													Ford creek
		1.30													Aerial Gas line
		1.38													Water in road no drainage
		1.58													Bottom of hill Road in Bad condition
		2.21													Trent Pad
															Agreement with Antero to
															up Grade & use Double Camp
															for Trent & other Pads
															25/7 in Bad Condition MP 1.2 to Double Camp Rd

RECOMMENDATIONS: Roads need complete Rebuild to Well sites in this Area

Use Double Camp Road during Rebuild under agreement

Above routes reviewed for necessary repairs and upgraded required for Maintenance Permit/Agreement.

[signature] 1-2-2013

Applicant Representative — Date

[signature] [illegible]

DOH Representative — Date

Permit: 4-12-1081

Applicant: Antero

Addendum Continued ~~27~~ SLS 48

Conditions and Requirements

Repairs/Upgrades Necessary for Maintenance Permit

County: Dodd

Well Pad: ~~Houck~~ John North

Approach Coordinates:

N ____________________

W ____________________

Route No.	Route Name	Mile Post	Perform Ditching	Patch Potholes	Clean Culverts	Repair Base Failures	Slip Repair	Overlay Asphalt	Overlay S&C	Stone/Stabilize Roadway	Stone/Repair Shoulders	Bridge Concerns	Ongoing Roadway Maintained	Other	Comments
27	Dry Fork	0.05													Bridge needs agreement
27															Pot holes Not in good condition
27		0.22													Rock out cropping Narrow road
27		0.72													Entrance to Houck Pad
27		1.58													
25/13	Dry Fork	1.6													
25/13		1.0													Road in good Condition 1.0-1.6
25/13		0.0													Road in Bad condition 1.0-0.0
25		9.58													New paved Road 2011 Excellent Shape
25		7.718													Slip Losing Edge of road
25		5.08		at 25/7											Road recently paved to Auen Good Condition MP 5.08

RECOMMENDATIONS: Rebuild 27 along with bridge do [illegible] or equivalent

Above routes reviewed for necessary repairs and upgraded required for Maintenance Permit/Agreement.

[signature] 1-2-2013

Applicant Representative Date

[signature] [illegible]

DOH Representative Date

Permit: 4-12-1081

Applicant: Antero

Addendum Continued

Conditions and Requirements

Repairs/Upgrades Necessary for Maintenance Permit

~~25~~ 27 SLS 48

County: Dodd

Well Pad: Joe North

Route No.	Route Name	Mile Post	Perform Ditching	Patch Potholes	Clean Culverts	Repair Base Failures	Slip Repair	Overlay Asphalt	Overlay S&C	Stone/Stabilize Roadway	Stone/Repair Shoulders	Bridge Concerns	Ongoing Roadway Maintained	Other	Approach Coordinates: N W / Comments
25	Meathouse Fk.	13.81												Dodd Mem.	Line Surface cracking to 12.99 (Intermittent)
		13.35									✓				Drainage Str.
		12.99													Slip paving by DOH
		12.08													at SLS48
		12.01									✓				Drainage Str. New
		11.95													Slip starting
		11.1													Road in Good Shape. Some Surface cracking Smooth Ride
		10.3													some patching good ride
		9.58													at 27
27		0.00													Dry fork road Needs Aggrement to work
		0.05													Potholes to Bridge

RECOMMENDATIONS: Ditch Roads & Rebuild by E.D.R. or Equivalent

Above routes reviewed for necessary repairs and upgraded required for Maintenance Permit/Agreement.

Eugene Smith — Applicant Representative

1-2-2013 — Date

Roger O. Cobb — DOH Respresentative

1/2/13 — Date

Applicant: Antero

Conditions and Requirements
Repairs/Upgrades Necessary for Maintenance Permit

SLS 48

Well Pad: Dodd ~~[illegible]~~ John North

Route No.	Route Name	Mile Post	Perform Ditching	Patch Potholes	Clean Culverts	Repair Base Failures	Slip Repair	Overlay Asphalt	Overlay S&C	Stone/Stabilize Roadway	Stone/Repair Shoulders	Bridge Concerns	Ongoing Roadway Maintained	Other	Approach Coordinates: N ___ W ___ Comments
50/13	Harrison														Hubert 4-12-815
29															Nimorwicz 4-12-903
29/2															Clearence 4-12-1042
50/6															Trent 4-12-1069
28															John North 4-12-1081
31															Houck 4-12-1082
30															Hefflin Pad
15	Dodd														Dodd 25/7, 25/13 15/7
43															
25															
27															

RECOMMENDATIONS: All Roads listed above will be used by Antero moving Fracking equip, Rigs & water from one location to another Drilling several wells on each site

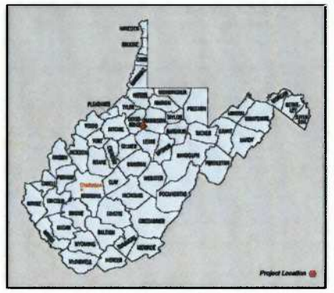
Above routes reviewed for necessary repairs and upgraded required for Maintenance Permit/Agreement.

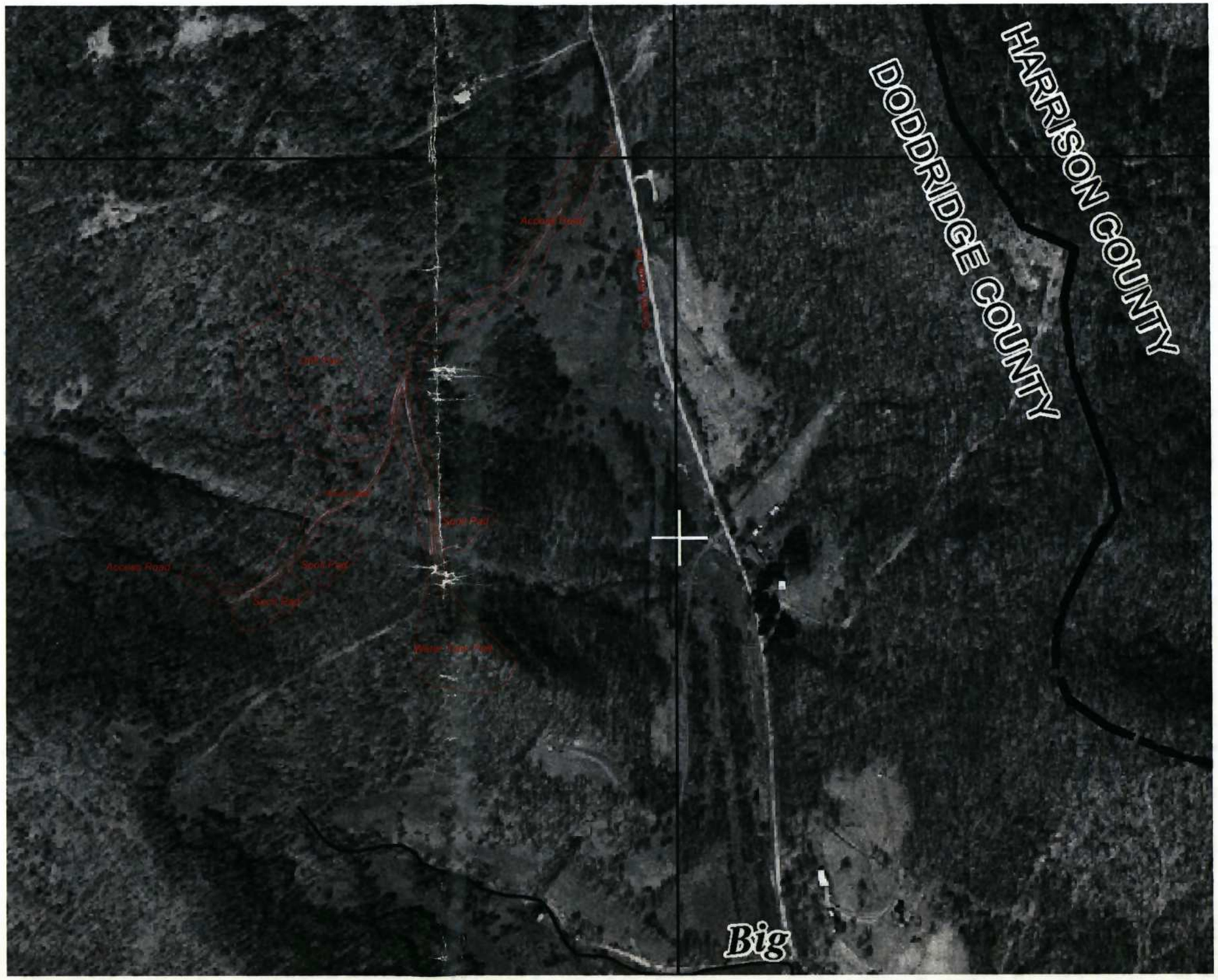
[signature] 1-2-2013
Applicant Representative Date

[signature] 1/2/13
DOH Respresentative Date

JOHN NORTH PAD

PROJECT LOD OVER FEMA FIRM MAP 54017C0255C
ANTERO RESOURCES APPALACHIAN CORPORATION





SITE LOCATIONS NAD 83		
Center of Pad (UTM Meters)	N=4341771.41 m	E=538591.42 m
Beg. Acc. Rd (UTM Meters)	N=4342021.24 m	E=539936.38 m
	LATITUDE	LONGITUDE
Center of Pad	39.2244616	-80.5760842
Begin Access Road	39.2266981	-80.5720742

GREENBRIER DISTRICT, DODDRIDGE COUNTY, WV
MIDDLE ISLAND CREEK WATERSHED

FLOODPLAIN CONDITIONS	
DO SITE CONSTRUCTION ACTIVITIES TAKE PLACE IN FLOODPLAIN:	NO
PERMIT NEEDED FROM COUNTY FLOODPLAIN COORDINATOR:	NO
HEC-RAS STUDY COMPLETED:	N/A
FLOODPLAIN SHOWN ON DRAWINGS:	N/A
FIRM MAP NUMBER(S) FOR SITE:	540017C0255 C
ACREAGES OF CONSTRUCTION IN FLOODPLAIN:	N/A

Allegheny Surveys, Inc.
172 Thompson Drive
Bridgeport, WV 26330
(304) 848-5035

L&W ENTERPRISES, INC.
PO BOX 326
14 SOUTH GROVES ST.
PETERSBURG, WV 26847
PH: 304-257-4818
FAX: 304-257-2264
EMAIL: LEE@CTTLINK.NET

ANTERO RESOURCES

THIS DOCUMENT PREPARED FOR ANTERO RESOURCES APPALACHIAN CORP

PROJECT LOD OVER FEMA FIRM MAP 54017C0255C

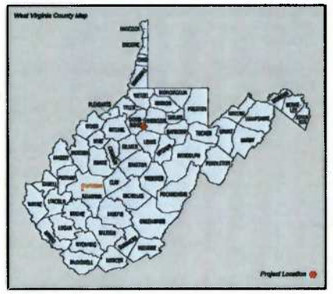
JOHN NORTH PAD

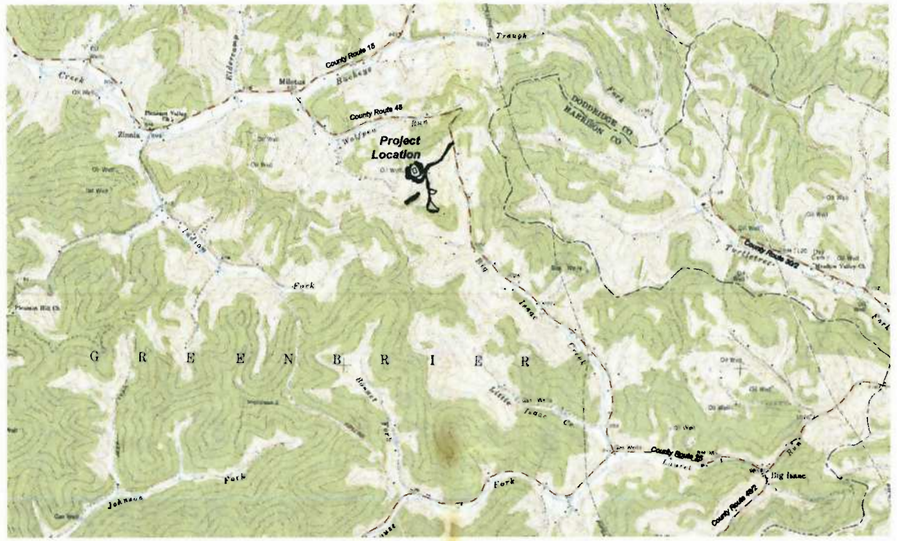
GREENBRIER DISTRICT
DODDRIDGE COUNTY, WV

Date: 6/14/13
Scale: 1" = 200'
Designed By: CKW/CKM
File No. Antero 52-30-O-12
Page 1 of 1

JOHN NORTH PAD

SITE DESIGN, CONSTRUCTION PLAN, & EROSION & SEDIMENT CONTROL PLANS ANTERO RESOURCES APPALACHIAN CORPORATION





BIG ISSAC QUAD

0 1000 2000 3000

Well Table			
Prop. Well Pauline Unit 1H WV-N NAD27 N: 266822.97 WV-N NAD27 E: 1880082.40 LAT NAD83: 38.2243658° LON NAD83: 80.5780980°	**Prop. Well Hinkle Unit 1H** WV-N NAD27 N: 266842.97 WV-N NAD27 E: 1880082.40 LAT NAD83: 38.2244208° LON NAD83: 80.5780989°	Reserved	**Prop. Well Douglas Unit 1H** WV-N NAD27 N: 265872.97 WV-N NAD27 E: 1880082.40 LAT NAD83: 38.2245029° LON NAD83: 80.5781001°
Prop. Well Pauline Unit 2H WV-N NAD27 N: 266832.97 WV-N NAD27 E: 1880081.40 LAT NAD83: 38.2243211° LON NAD83: 80.5780965°	**Prop. Well Hinkle Unit 2H** WV-N NAD27 N: 266862.97 WV-N NAD27 E: 1880082.40 LAT NAD83: 38.2244480° LON NAD83: 80.5780963°	**Prop. Well Bernice Unit 2H** WV-N NAD27 N: 266582.97 WV-N NAD27 E: 1880082.40 LAT NAD83: 38.2244754° LON NAD83: 80.5780997°	**Prop. Well Douglas Unit 2H** WV-N NAD27 N: 266582.97 WV-N NAD27 E: 1880082.40 LAT NAD83: 38.2245303° LON NAD83: 80.5781008°

Project Contacts

Antero Resources

Tom Wince - Construction
304-869-3405 Off. 304-483-0933 Cell

Eli Wagoner, Environmental Engineer
304-622-3842, ext 311 Off. 304-476-9770 Cell

John Kawcak, Engineer
817-368-1553

Dusty Woods
817-771-1436

Michael Ash
304-380-6181

Aaron Kunzler, Construction Supervisor
405-227-8344

Anthony Smith, Field Engineer
304-869-3405 Off. 304-673-6196 Cell

Surveyor & Engineer

Bill Yetzer, PS, EI, - Allegheny Surveys Inc.
304-848-5035 Off. 304-619-4937 Cell

Kirk Wilson, PE - L&W Enterprises, Inc
304-257-4818 Off. 304-668-0365 Cell

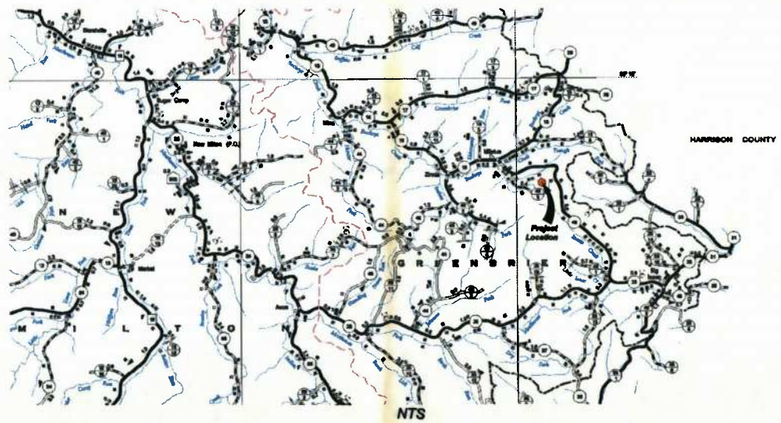
Well Location Restrictions:

All Pad construction complies with the following restrictions.

* *250' from an existing well or developed spring used for human or domestic animals.*
* *625' from occupied dwelling or barn greater than 2500 SF used for poultry or dairy measured from the center of the pad.*
* *100' from edge of disturbance to wetlands, perennial streams, natural or artificial lake, pond or reservoir.*
* *300' from edge of disturbance to a naturally reproducing trout stream.*
* *1000' of a surface or ground water intake to a public water supply.*

SITE LOCATIONS NAD 83		
Center of Pad (UTM Meters)	N=4341771.41 m	E=536591.42 m
Beg. Acc. Rd (UTM Meters)	N=4342021.24 m	E=536936.38 m
	LATITUDE	LONGITUDE
Center of Pad	39.2244616	-80.5760842
Begin Access Road	39.2266981	-80.5720742

GREENBRIER DISTRICT, DODDRIDGE COUNTY, WV
MIDDLE ISLAND CREEK WATERSHED



NTS

West Virginia State Plane Coordinate System
North Zone, NAD27
Elevations Based on NAVD88
Established By Survey Grade GPS & OPUS Post-Processing

Owner Information Greenbrier District, Doddridge County					
Owner	TM/Parcel	Deed/Page	Total Acres	Type of Disturbance	Acreage
John K. Davis	8/27	177/714	32	Drill Pad	6.05
				Road A	1.84
				Road B	1.28
				Entrance Road	1.42
				Water Tank Pad 2	0.49
				Spoil Pad A	0.90
				Total	**11.98**
John K. Davis	8/28	177/722	67.691	Entrance Road	3.52
				Road A	0.05
				Drill Pad	0.03
				Total	3.60
John K. Davis	8/29	177/722	9.25	Water Tank Pad 2	0.29
John K. Davis	8/30	177/722	11	Water Tank Pad 1	2.32
John K. Davis	8/32.1	177/714	50.17	Spoil Pad A	0.13
				Spoil Pad B	0.77
				Road B	0.86
				Total	**1.76**
				Grand Total	**19.95**

LOD Area (ac)	
Entrance Road (2100')	4.94
Road A (550')	1.89
Road B (1175')	2.14
Drill Pad	6.08
Water Tank Pad 1	2.32
Water Tank Pad 2	0.78
Spoil Pad A	1.03
Spoil Pad B	0.77
Total Affected Area	**19.95**
Total Wooded Acres Disturbed	**13.05**
Total Linear Feet of Access Road	**3,825**

Ephemeral Stream Impact (linear feet)	
UNT 6 (Road B)	10
UNT 8 (Road B)	55
UNT 9 (Road B)	215
UNT 12 (Road A)	50
UNT 13 (Road A)	215
Total	545

DRAWING INDEX

FLOODPLAIN CONDITIONS	
DO SITE CONSTRUCTION ACTIVITIES TAKE PLACE IN FLOODPLAIN:	NO
PERMIT NEEDED FROM COUNTY FLOODPLAIN COORDINATOR:	NO
HEC-RAS STUDY COMPLETED:	N / A
FLOODPLAIN SHOWN ON DRAWINGS:	N / A
FIRM MAP NUMBER(S) FOR SITE:	540017C0255 C
ACREAGES OF CONSTRUCTION IN FLOODPLAIN:	N / A

MISS Utility of West Virginia
1-800-245-4848
West Virginia State Law
(Section XIV: Chapter 24-C)
Requires that you call two business days before you dig in the state of West Virginia.
IT'S THE LAW!!

811
Know what's **below.**
Call before you dig.

DATE	REVISIONS
4-16-13	Updated Per New Antero Standards

Allegheny Surveys, Inc.
172 Thompson Drive
Bridgeport, WV 26330
(304) 848-5035

CHARLES K. WILSON
NO. 17483
STATE OF WEST VIRGINIA
PROFESSIONAL ENGINEER

L&W ENTERPRISES, INC.
PO BOX 826
14 SOUTH GROVE ST.
PETERSBURG, WV 26847
PH: 304-257-4818
FAX: 304-257-2254
EMAIL: KIRK@CTLINE.NET

ANTERO RESOURCES

THIS DOCUMENT PREPARED FOR ANTERO RESOURCES APPALACHIAN CORP

COVER SHEET/LOCATION MAP

JOHN NORTH PAD
GREENBRIER DISTRICT
DODDRIDGE COUNTY, WV

Date: 10/31/12
Scale: N/A
Designed By: CKW/CKM
File No. Antero 52-30-0-12
Page 1 of 13

SCHEDULE OF QUANTITIES

CLEARING & GRUBBING; EROSION & SEDIMENT CONTROLS	John North Pad			
	QUANTITY	UNIT		
MOBILIZATION	1.0	EA		$0.00
CONSTRUCTION ENTRANCE	1.0	EA		$0.00
CLEARING & GRUBBING	19.95	AC		$0.00
TREE REMOVAL	13.05	AC		$0.00
8" COMPOST FILTER SOCK	4,185	LF		$0.00
12" COMPOST FILTER SOCK	125	LF		$0.00
18" COMPOST FILTER SOCK	150	LF		$0.00
24" COMPOST FILTER SOCK	0	LF		$0.00
32" COMPOST FILTER SOCK	1,750	LF		$0.00
SUPER SILT FENCE	1,650	LF		$0.00
9" STRAW WATTLES	3,372	LF		$0.00
CONCRETE BIN BLOCKS	0	EA		$0.00
TOTAL				$0.00
SITE				
	QUANTITY	UNIT		
DRILL PAD EXCAVATION	55,857	CY		$0.00
ACCESS ROADS EXCAVATION	11,777	CY		$0.00
TANK PADS and/or FRAC PIT EXCAVATION	20,450	CY		$0.00
OFFLOAD PAD	0	CY		$0.00
SPOIL PAD	0	CY		$0.00
TRUCK QUEUE / TURNAROUND	0	CY		$0.00
TOPSOIL	10,000	CY		$0.00
DIVERSION DITCH	0	LF		$0.00
ROADSIDE DITCH	1,400	LF		$0.00
TOTAL				$0.00
SUMP(S) - PER ANTERO RESOURCES STANDARD DETAIL				
	QUANTITY	UNIT		
INSTALL 102" x 78" x 44" PRE CAST SUMP	4	EA		$0.00
VALVE BOX HDPE PIPE (MINIMUM 12" DIAMETER x 48" HEIGHT)	4	EA		$0.00
4" PVC CONNECTIVE PIPE (ANTERO SUMP DRAIN DETAIL)	100	LF		$0.00
TOTAL				$0.00
AGGREGATE SURFACING - SPREADING, COMPACTION, and/or INSTALLATION				
	QUANTITY	UNIT		
DRILL PAD AASHTO #1 (6" THICK)	3,600	TON		$0.00
DRILL PAD 1 1/2" or 3/4" CRUSHER RUN STONE (2" THICK)	1,200	TON		$0.00
DRILL PAD GEOTEXTILE FABRIC (US 200)	11,000	SY		$0.00
ACCESS ROADS 6" OR 4" MINUS CRUSHER RUN AGGREGATE (8" THICK)	5,125	TON		$0.00
ACCESS ROADS 1 1/2" OR 3/4" CRUSHER RUN STONE (2" THICK)	1,280	TON		$0.00
ACCESS ROADS GEOTEXTILE FABRIC (US 200)	11,000	SY		$0.00
*INSTALL TENSAR TX190 GEOGRID or EQUIVALENT	11,000	SY		$0.00
OFFLOAD PAD/TRUCK QUEUE/TURNAROUND 6" OR 4" MINUS CRUSHER RUN AGGREGATE (8" THICK)	0	TON		$0.00
OFFLOAD PAD/TRUCK QUEUE/TURNAROUND 1 1/2" or 3/4" CRUSHER RUN AGGREGATE (2" THICK)	0	TON		$0.00
OFFLOAD PAD/TRUCK QUEUE/TURNAROUND GEOTEXTILE FABRIC (US 200)	0	SY		$0.00
*INSTALL TENSAR TX190 GEOGRID or EQUIVALENT	0	SY		$0.00
GATHERING FACILITIES 6" OR 4" MINUS CRUSHER RUN AGGREGATE (8" THICK)	0	TON		$0.00
GATHERING FACILITIES 1 1/2" or 3/4" CRUSHER RUN AGGREGATE (2" THICK)	0	TON		$0.00
GATHERING FACILITIES GEOTEXTILE FABRIC (US 200)	0	SY		$0.00
*INSTALL TENSAR TX190 GEOGRID or EQUIVALENT	0	SY		$0.00
TANK PADS 6" OR 4" MINUS CRUSHER RUN AGGREGATE (8" THICK)	4,100	TON		$0.00
TANK PADS 1 1/2" or 3/4" CRUSHER RUN AGGREGATE (2" THICK)	1,025	TON		$0.00
TANK PADS GEOTEXTILE FABRIC (US 200)	8,500	SY		$0.00

ROAD CULVERTS	QUANTITY	UNIT		
15" HDPE	0	LF		$0.00
18" HDPE	380	LF		$0.00
24" HDPE	180	LF		$0.00
30" HDPE	0	LF		$0.00
36" HDPE	0	LF		$0.00
42" HDPE	0	LF		$0.00
48" HDPE	0	LF		$0.00
60" HDPE	0	LF		$0.00
R4 RIP RAP (INLETS/OUTLETS)	50	TON		$0.00
AASHTO #1 STONE (DITCH CHECKS)	5	TON		$0.00
DITCH LINING - (ACCESS ROAD) SEED AND MULCH	0	SY		$0.00
DITCH LINING - (ACCESS ROAD) JUTE MATTING	100	SY		$0.00
DITCH LINING - (ACCESS ROAD) SYNTHETIC MATTING (TRM)	500	SY		$0.00
TOTAL				$0.00
FENCING/GATES				
	QUANTITY	UNIT		
4 FT WOVEN WIRE FARM FENCE w/MINIMUM 10 FT POST SPACING (WOODEN and/or "T" POST)	0.0	LF		$0.00
16 FT DOUBLE GATE	0.0	EA		$0.00
TOTAL				$0.00
SEEDING				
	QUANTITY	UNIT		
SITE SEEDING (LIME, FERTILIZER, SEEDING, AND HYDRO-MULCH w/TACK (HYC-2 OR EQUAL))	16	AC		$0.00
TOTAL				$0.00
UNFORESEEN SITE CONDITIONS				
	QUANTITY	UNIT		
*ROCK CLAUSE - BLASTING	0.0	CY		$0.00
*ROCK CLAUSE - HOE RAMMING	0.0	CY		$0.00
*FRENCH DRAINS	0.0	FT		$0.00
*ORANGE SAFETY FENCE w/"T" POST (10FT CENTERS) - WETLAND PROTECTION	0.0	LF		$0.00
*STEEL PANELS w/"T" POST (10 FT CENTERS) - WETLAND PROTECTION	0.0	LF		$0.00
*SILT FENCE	0.0	LF		$0.00
*TEMPORARY SEEDING	0.0	AC		$0.00
*CONSTRUCTION STAKEOUT	0.0	HOUR		$0.00
* JUTE MATTING - SLOPE MATTING	0.0	SY		$0.00
TOTAL				$0.00
	GRAND TOTAL			$0.00

John North Pad Quantities						
Description	Cut (CY)	Fill (CY)	Spoil (CY)	Borrow (CY)	Max. Slope	Length Of Slope
Entrance Road	8227	2049	6,178	0	15.33%	300 feet
Road A	90	17,267	0	17,177	16.00%	280 feet
Drill Pad	55,857	45,063	10,794	0	n/a	n/a
Road B	3,460	3,466	-6	0	17.14%	175 feet
Water Tank Pad 1	18,042	5,564	12,478	0	n/a	n/a
Water Tank Pad 2	2,408	796	1,612	0	n/a	n/a
Spoil Pad A	0	9,690	0	9,690	n/a	n/a
Spoil Pad B	0	4,340	0	4,340	n/a	n/a
Totals	88,084	88,235	31,056	31,207	n/a	n/a
	Total Spoil (CY) =		-151	(Excess Spoil Capacity)		

The earthwork quantities provided are an estimate for consideration. The quantities shown may be greater or less than actually excavated. The engineer is not responsible for variances from the estimated quantities and does not certify to their accuracy.

EARTHWORK & CAPACITY REPORTS

John North Drill Pad — *Wed May 16 15:34:12 2012*

Top of pad elevation: 1246.0000
Cut slope percent grade: 66.67, slope ratio: 1.50
Fill slope percent grade: 50.00, slope ratio: 2.00
Existing Surface: C:\Carlson 2011\Gas Well Permits\Antero\John N. -John S\52-30-G-12 Antero - John North Pad\John North Pad 3-15-12.grd
Grid position: 1694500.30,264415.30 to 1696375.30,266565.30
X grid resolution: 75, Y grid resolution: 86
X grid cell size: 25.00, Y grid cell size: 25.00
Cut Swell Factor: 1.05
Fill Shrink Factor: 1.00

Pad Earthwork Volumes
Total cut : 1,508,151.7 C.F., 55,857.47 C.Y.
Total fill: 1,216,724.9 C.F., 45,063.89 C.Y.
Balance Export: 291,426.8 C.F., 10,793.58 C.Y.
Area: 206574.3 Sq.Ft., 4.742 Acres

Spoil Pad A — *Thu Mar 15 17:51:30 2012*

Top of pad elevation: 1280.0000
Cut slope percent grade: 50.00, slope ratio: 2.00
Fill slope percent grade: 50.00, slope ratio: 2.00
Existing Surface: C:\Carlson 2011\Gas Well Permits\Antero\John N. -John S\52-30-G-12 Antero - John North Pad\John North Pad 3-15-12.grd
Grid position: 1694500.30,264415.30 to 1696375.30,266565.30
X grid resolution: 75, Y grid resolution: 86
X grid cell size: 25.00, Y grid cell size: 25.00
Cut Swell Factor: 1.05
Fill Shrink Factor: 1.00

Pad Earthwork Volumes
Total cut : 2.6 C.F., 0.09 C.Y.
Total fill: 261,644.4 C.F., 9,690.53 C.Y.
Area: 30960.7 Sq.Ft., 0.711 Acres

Spoil Pad B Report — *Mon Nov 12 09:41:50 2012*

Top of pad elevation: 1270.0000
Cut Slope: 66.67% 1.50:1 33.69°
Fill Slope: 50.00% 2.00:1 26.57°
Existing Surface: C:\acad2006\A - Gas Well Permits\Antero\52-30-G-12 Antero - John North Pad\John North\John North Pad 3-15-12.grd
Grid position: 1693989.51,263525.03 to 1697089.51,266775.03
X grid resolution: 62, Y grid resolution: 65
X grid cell size: 50.00, Y grid cell size: 50.00
Cut Swell Factor: 1.05
Fill Shrink Factor: 1.00

Pad Earthwork Volumes
Total cut : 77.8 C.F., 2.88 C.Y.
Total fill: 117,264.1 C.F., 4,343.11 C.Y.
Area: 24187.2 Sq.Ft., 0.555 Acres

Water Tank Pad 1 Report — *Mon Oct 01 15:47:48 2012*

Top of pad elevation: 1372.0000
Cut Slope: 66.67% 1.50:1 33.69°
Fill Slope: 50.00% 2.00:1 26.57°
Existing Surface: C:\acad2006\A - Gas Well Permits\Antero\52-30-G-12 Antero - John North Pad\John North\John North Pad 3-15-12.grd
Grid position: 1693989.51,263525.03 to 1697089.51,266775.03
X grid resolution: 62, Y grid resolution: 65
X grid cell size: 50.00, Y grid cell size: 50.00
Cut Swell Factor: 1.05
Fill Shrink Factor: 1.00

Pad Earthwork Volumes
Total cut : 487,155.4 C.F., 18,042.79 C.Y.
Total fill: 150,233.7 C.F., 5,564.21 C.Y.
Balance Export: 336,921.7 C.F., 12,478.58 C.Y.
Area: 77530.5 Sq.Ft., 1.780 Acres

Water Tank Pad 2 Report — *Tue Oct 02 08:06:17 2012*

Top of pad elevation: 1364.0000
Cut Slope: 66.67% 1.50:1 33.69°
Fill Slope: 50.00% 2.00:1 26.57°
Existing Surface: C:\acad2006\A - Gas Well Permits\Antero\52-30-G-12 Antero - John North Pad\John North\John North Pad 3-15-12.grd
Grid position: 1693989.51,263525.03 to 1697089.51,266775.03
X grid resolution: 62, Y grid resolution: 65
X grid cell size: 50.00, Y grid cell size: 50.00
Cut Swell Factor: 1.05
Fill Shrink Factor: 1.00

Pad Earthwork Volumes
Total cut : 65,030.7 C.F., 2,408.55 C.Y.
Total fill: 21,515.9 C.F., 796.89 C.Y.
Balance Export: 43,514.8 C.F., 1,611.66 C.Y.
Area: 22547.8 Sq.Ft., 0.518 Acres

Process Entrance Road Design — *Tue Nov 06 16:11:56 2012*

Template File> C:\acad2006\A - Gas Well Permits\Antero\52-30-G-12 Antero - John North Pad\John North\ANTERO 25'.TPL
Profile File> C:\acad2006\A - Gas Well Permits\Antero\52-30-G-12 Antero - John North Pad\John North\Entrance Road Final.pro
Existing Surface File> C:\acad2006\A - Gas Well Permits\Antero\52-30-G-12 Antero - John North Pad\John North\Entrance Road Existing.sct
Centerline File> C:\acad2006\A - Gas Well Permits\Antero\52-30-G-12 Antero - John North Pad\John North\Entrance Road.cl
Design Section Output File> C:\acad2006\A - Gas Well Permits\Antero\52-30-G-12 Antero - John North Pad\John North\Entrance Road Final.sct

Processing 0+00.000 to 21+03.000
Cut Swell Factor: 1.050
Fill Shrink Factor: 1.000
Total Cut : 222140.470 C.F., 8227.425 C.Y.
Total Fill: 55331.089 C.F., 2049.300 C.Y.
Balance Export: 6178.125 C.Y.
Cut to Fill Ratio: 4.01

Process Road A Design — *Thu May 17 14:31:27 2012*

Template File> C:\Carlson 2011\Gas Well Permits\Antero\John N. -John S\52-30-G-12 Antero - John North Pad\ANTERO 20.TPL
Profile File> C:\Carlson 2011\Gas Well Permits\Antero\John N. -John S\52-30-G-12 Antero - John North Pad\JN RD A Proposed.pro
Existing Surface File> C:\Carlson 2011\Gas Well Permits\Antero\John N. -John S\52-30-G-12 Antero - John North Pad\JN RD A Existing.sct
Centerline File> C:\Carlson 2011\Gas Well Permits\Antero\John N. -John S\52-30-G-12 Antero - John North Pad\JN RD A CL.cl
Design Section Output File> C:\Carlson 2011\Gas Well Permits\Antero\John N. -John S\52-30-G-12 Antero - John North Pad\JN RD A Proposed.sct

Processing 0+00.000 to 5+67.000
Cut Swell Factor: 1.050
Fill Shrink Factor: 1.000
Total Cut : 2434.168 C.F., 90.154 C.Y.
Total Fill: 466227.182 C.F., 17267.673 C.Y.
Cut to Fill Ratio: 0.01

Process Access Road B Design — *Wed Nov 14 06:37:32 2012*

Template File> C:\acad2006\A - Gas Well Permits\Antero\52-30-G-12 Antero - John North Pad\John North\ANTERO 20.TPL
Profile File> C:\acad2006\A - Gas Well Permits\Antero\52-30-G-12 Antero - John North Pad\John North\Access Road B Final a.pro
Existing Surface File> C:\acad2006\A - Gas Well Permits\Antero\52-30-G-12 Antero - John North Pad\John North\Access Road B Existing.sct
Centerline File> C:\acad2006\A - Gas Well Permits\Antero\52-30-G-12 Antero - John North Pad\John North\Access Road B.cl
Design Section Output File> C:\acad2006\A - Gas Well Permits\Antero\52-30-G-12 Antero - John North Pad\John North\Access Road B a Final.sct

Processing 0+00.000 to 11+75.000
Cut Swell Factor: 1.050
Fill Shrink Factor: 1.000
Total Cut : 93399.963 C.F., 3459.259 C.Y.
Total Fill: 93596.923 C.F., 3466.553 C.Y.
Balance Import: 7.294 C.Y.
Cut to Fill Ratio: 1.00

DATE	REVISIONS
4-16-13	Updated Per New Antero Standards

Allegheny Surveys, Inc.
172 Thompson Drive
Bridgeport, WV 26330
(304) 848-5035

L&W ENTERPRISES, INC.
PO BOX 826
14 SOUTH GROVE ST.
PETERSBURG, WV 26847
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ANTERO RESOURCES

THIS DOCUMENT PREPARED FOR ANTERO RESOURCES APPALACHIAN CORP

SCHEDULE OF QUANTITIES

JOHN NORTH PAD
GREENBRIER DISTRICT
DODDRIDGE COUNTY, WV

Date: 10/31/12
Scale: N/A
Designed By: CKW/CKM
File No. Antero 52-30-G-12

CONSTRUCTION, EROSION AND SEDIMENT NOTES

CONSTRUCTION SPECIFICATIONS:

1. THE IMPOUNDMENT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS AND THE SCOPE OF WORK AND SHALL CONFORM GENERALLY WITH THE GRADES, BERMS, DEPTHS AND DIMENSIONS SHOWN.
2. THE CONSTRUCTION DOCUMENTS SHOW THE EXISTING AND NEW GRADES AND BERMS, ETC. THAT ALL CUT AND FILL ESTIMATES ARE BASED UPON. THE ENGINEERS ESTIMATES OF THE QUANTITIES ARE ONLY ESTIMATES AND MAY CHANGE BASED ON ACTUAL FIELD CONDITIONS.
3. THE GRADES, BERMS, DEPTHS, AND DIMENSIONS MAY CHANGE BASED ON ACTUAL FIELD CONDITIONS. THE ENGINEER RESERVES THE RIGHT TO CHANGE GRADES, BERMS, DEPTHS AND DIMENSIONS AS NECESSARY TO MEET FIELD CONDITIONS.
4. THE CONTRACTOR SHALL PROVIDE THE ENGINEER ALL REASONABLE FACILITIES AND PROVIDE INFORMATION AND SAMPLES AS REQUIRED BY THE ENGINEER FOR PROPER MONITORING AND TESTING OF MATERIAL WORKMANSHIP.
5. THE CONTRACTOR SHALL HAVE ON SITE AT ALL TIMES WHEN CONSTRUCTION IS IN PROGRESS A COMPETENT SUPERINTENDENT THOROUGHLY FAMILIAR WITH THE CONSTRUCTION OF EARTH BERMS AND EMBANKMENTS, THE COMPACTION OF SOILS AND PLACEMENTS OF LINERS.
6. SILT SOXX / SUPER SILT FENCE SHALL BE INSTALLED PRIOR TO CLEARING AND GRUBBING AS SHOWN ON THE DRAWINGS IN ACCORDANCE WITH THE OFFICE OF OIL & GAS, W.VA. EROSION & SEDIMENT CONTROL FIELD MANUAL, MAY 2012. SURFACE WATER SHALL BE DIVERTED AWAY FROM ALL EXCAVATIONS TO PREVENT FLOODING AND SOFTENING OF THE SUBGRADE OR COMPACTED MATERIALS.
7. CLEARING AND GRUBBING SHALL REMOVE ALL BRUSH, TREES, ROOTS, STUMPS, FENCES, SIGNS OR ANY OTHER MATERIAL THAT IS NOT TO BE REUSED FOR THE CONSTRUCTION. SOME STUMPS MAY REMAIN AT THE APPROVAL OF THE ENGINEER. NO CLEARING DEBRIS SHALL BE BURIED ON-SITE.
8. TOP SOIL SHALL BE STRIPPED AND STOCKPILED WITH APPROPRIATE STABILIZATION AND SILT FENCE TO PREVENT EROSION. THE TOP SOIL SHALL BE REUSED DURING THE RECLAMATION PROCESS OR ON THE FACE OF THE IMPOUNDMENT PRIOR TO SEEDING.
9. TOE CUTS OF 10' MINIMUM WIDE SHALL BE EXCAVATED ON ALL RECEIVING SLOPES TO PROVIDE A BASE FOR THE IMPOUNDMENT BERM. ADDITIONAL TERRACING SHALL BE CONSTRUCTED FOR EACH ADDITIONAL FIFTY (50) VERTICAL FEET OF SLOPE AND SHALL BE A MINUMUM OF TEN (10) FEET WIDE.
10. PRIOR TO PLACING ANY FILL, THE EXPOSED SUBGRADE SHALL BE COMPACTED AND PROOF ROLLED TO PRODUCE A STABLE AND UNYIELDING SITE.
11. IMPOUNDMENT BERMS SHALL BE UNIFORMLY GRADED SOIL FREE FROM AGGREGATE EXCEEDING 6". THE FILL SHALL BE FREE OF ALL ORGANIC MATERIAL, STUMPS , BRUSH, OR OTHER DELETERIOUS MATTER.
12. ALL FILL SHALL BE PLACED IN LIFTS OF UP TO 12" AND SHALL BE COMPACTED TO 95% OF THE STANDARD PROCTOR DENSITY OF THE SOIL PER ASTM D-698. THE MOISTURE CONTENT SHALL BE CONTROLLED WITHIN PLUS OR MINUS 2% OF THE OPTIMUM TO FACILITATE COMPACTION. CONTRACTOR IS RESPONSIBLE FOR THE ORIGINAL SOIL TEST AND PROVIDING A COPY OF THE RESULTS WITH MOISTURE-DENSITY CURVE TO THE ENGINEER. THE CONTRACTOR SHALL DO IN-PLACE DENSITY TESTS EVERY LIFT OF SOIL AND SHALL BE DONE IN TWO RANDOM PLACES ON EACH STRAIGHT SIDE OF THE IMPOUNDMENT BERM. RECORDS SHALL BE MAINTAINED OF TEST LOCATION AND RESULTS AND PROVIDED TO THE ENGINEER ON REQUEST. AREAS THAT FAIL FOR COMPACTION SHALL BE REMOVED, RE-COMPACTED AND RETESTED FOR COMPLIANCE. IN LIEU OF MODIFIED PROCTOR TESTING, THE CONTRACTOR MAY PROOF-ROLL THE SOIL EVERY 12" OF SOIL LIFT WITH A LOADED 15 TON TANDEM DUMP TRUCK. SOIL THAT DEFECTS UNDER THE REAR WHEELS GREATER THAN 1/2" SHALL BE REMOVED, RE-COMPACTED AND RETESTED. COMPACTION OF SOIL SHALL BE DONE WITH A 5 TON SHEEPS FOOT, OR VIBRATORY ROLLER.
13. ON-SITE FILL SHALL BE USED TO THE MAXIMUM EXTENT POSSIBLE. ANY IMPORTED FILL SHALL BE CERTIFIED BY THE CONTRACTOR TO BE CLEAR OF ALL HAZARDOUS SUBSTANCES OR MATERIALS. IF MATERIAL IS ENCOUNTERED THAT CANNOT BE RIPPED BY A CAT D6 WITH A SINGLE TOOTH RIPPER, THEN THE CONTRACTOR SHALL CONTACT THE ENGINEER WHO WILL VISIT THE SITE AND DETERMINE IF THE MATERIAL MAY BE USED AS IS OR MUST BE REMOVED BY OTHER MEANS. IF UNSUITABLE SOILS IN THE SUBGRADE ARE FOUND THEY SHALL BE REMOVED AND REPLACED WITH APPROPRIATE FILL AT THE CONTRACTORS EXPENSE AND THE ENGINEER'S DIRECTION.
14. THE INSIDE OF THE IMPOUNDMENT SHALL BE BOTH SMOOTH DRUM ROLLED AND FREE OF PROTRUDING OR SHARP ROCKS IN ORDER TO RECEIVE THE LINER.
15. PRIOR TO THE LINER INSTALLATION THE CONTRACTOR SHALL CONTACT THE SURVEYOR TO DO AN AS-BUILT SURVEY OF THE IMPOUNDMENT TO ENSURE CONFORMANCE WITH THE ENGINEER'S DRAWINGS. THE SURVEYOR SHALL PROVIDE THE INFORMATION TO THE ENGINEER WHO WILL MAKE DETERMINATIONS ON ANY VARIATION FROM THE DRAWINGS AND DIRECT THE CONTRACTOR TO DO CORRECTIVE WORK.
16. LINER SHALL BE POLYFLEX IMPERVIOUS TEXTURED HDPE GEOMEMBRANE, 60MIL, INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. THE TOP OF THE LINER SHALL BE TURNED DOWN INTO A 4' ANCHOR TRENCH AT THE TOP OF THE BERM AND BACKFILLED WITH SELECT FILL AS SHOWN ON THE DRAWINGS OR AS REQUIRED BY THE LINER MANUFACTURER.
17. PHOTOGRAPHIC DOCUMENTATION SHALL BE TAKEN BY THE CONTRACTOR AND PROVIDED TO THE ENGINEER OF THE FOLLOWING ACTIVITIES; 1, SITE AFTER CLEARING AND GRUBBING; 2, THE SITE AFTER TOPSOIL REMOVAL; 3, TOE KEY AND INSPECTION TRENCH CONSTRUCTION; 4, DAILY PHOTOS OF CUT AND FILL OPERATIONS; 5 , PROOF-ROLLING TESTS.
18. PRIOR TO AS-BUILT CERTIFICATION, THE CONTRACTOR SHALL PROVIDE THE ENGINEER WITH A COMPLETE BINDER THAT INCLUDES ALL PHOTO DOCUMENTATION, ALL COMPACTION TEST REPORTS, RESULTS AND MAPS, A REPORT OF ALL CUT AND FILL VOLUMES IN CUBIC YARDS, AND A COPY OF THE AS-BUILT CONFIRMATION SURVEY PRIOR TO LINER PLACEMENT.

GENERAL NOTES

1. ANY DISCREPANCIES FOUND BETWEEN THE DRAWINGS AND SPECIFICATIONS AND SITE CONDITIONS OR ANY INCONSISTENCIES OR AMBIGUITIES IN DRAWINGS OR SPECIFICATIONS SHALL BE IMMEDIATELY REPORTED TO THE ENGINEER, IN WRITING, WHO SHALL PROMPTLY ADDRESS SUCH PROBLEMS. WORK DONE BY THE CONTRACTOR AFTER THE DISCOVERY OF SUCH DISCREPANCIES, INCONSISTENCIES, OR AMBIGUITIES SHALL BE DONE AT THE CONTRACTOR'S RISK.
2. WORK ON THIS PROJECT SHALL CONFORM TO THE OFFICE OF OIL & GAS, W.VA. EROSION & SEDIMENT CONTROL FIELD MANUAL, MAY, 2012. IN THE EVENT OF CONFLICT BETWEEN THE DESIGN, SPECIFICATIONS, OR PLANS, THE MOST STRINGENT WILL GOVERN.
3. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED DAILY, RELOCATED WHEN NECESSARY AND SHALL BE CHECKED AFTER EVERY RAINFALL. SEEDED AREAS SHALL BE CHECKED REGULARLY AND SHALL BE WATERED, FERTILIZED, RESEEDED AND MULCHED AS NECESSARY TO OBTAIN A DENSE STAND OF GRASS.
4. ALL DRAIN INLETS SHALL BE PROTECTED FROM SILTATION. INEFFECTIVE PROTECTION DEVICES SHALL BE REPLACED AND THE INLET CLEANED. FLUSHING IS NOT AN ACCEPTABLE MEANS OF CLEANING.
5. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL PUBLIC OR PRIVATE UTILITIES WHICH LIE IN OR ADJACENT TO THE CONSTRUCTION SITE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR, AT HIS OR HER EXPENSE, OF ALL EXISTING UTILITIES DAMAGED DURING CONSTRUCTION. FORTY-EIGHT HOURS PRIOR TO ANY EXCAVATION THE CONTRACTOR SHALL CALL MISS UTILITY AT (800) 552-7001.
6. INSTALLATION OF CONCRETE, CORRUGATED METAL, OR HDPL STORM PIPE SHALL BE IN CONFORMANCE WITH THESE DRAWINGS.
7. ALL MATERIALS USED FOR FILL OR BACK FILL SHALL BE FREE OF WOOD, ROOTS, ROCKS, BOULDERS OR ANY OTHER NON-COMPACTABLE SOIL TYPE MATERIALS. UNSATISFACTORY MATERIALS ALSO INCLUDE MAN MADE FILLS AND REFUSE DEBRIS DERIVED FROM ANY SOURCE.
8. MATERIALS USED TO FILL AROUND DRAINAGE STRUCTURES IN UTILITY TRENCHES OR ANY OTHER DEPRESSION REQUIRING FILL OR BACK FILL SHALL BE COMPACTED TO 95% OF MAXIMUM DENSITY AS DETERMINED BY THE STANDARD PROCTOR TEST AS SET FORTH IN ASTM STANDARD D-698. THE CONTRACTOR SHALL, PRIOR TO ANY OPERATIONS INVOLVING FILLING OR BACK FILLING, SUBMIT THE RESULTS OF THE PROCTOR TEST TOGETHER WITH A CERTIFICATION THAT THE SOIL TESTED IS REPRESENTATIVE OF THE MATERIALS TO BE USED ON THE PROJECT. THE TESTS SHALL BE CONDUCTED BY A CERTIFIED MATERIALS TESTING LABORATORY AND THE CERTIFICATIONS MADE BY A LICENSED PROFESSIONAL ENGINEER REPRESENTING THE LABORATORY. THE CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH THESE TESTS AND THEIR SUBMITTALS.
9. FILL SHALL BE PLACED IN LIFTS AT A MAXIMUM UNCOMPACTED DEPTH OF 12-INCHES WITH SOIL FREE FROM AGGREGATES EXCEEDING 6".
10. ALL TEST RESULTS SHALL BE SUBMITTED TO THE ENGINEER. FAILURE TO CONDUCT DENSITY TESTS SHALL BE CAUSE FOR NON-ACCEPTANCE OF THE FACILITY. TESTS SHALL BE CONDUCTED AT THE SOLE COST OF THE CONTRACTOR OR HIS AGENT.
11. A PRE-CONSTRUCTION CONFERENCE SHALL BE HELD PRIOR TO THE START OF CONSTRUCTION.
12. SATISFACTORY MATERIALS FOR USE AS FILL FOR PAD AREAS INCLUDE MATERIALS CLASSIFIED IN ASTM D-2487AS GW, GP, GM, GC, SW, SP, SM, SC, ML, AND CL GROUPS. THE MOISTURE CONTENT SHALL BE CONTROLLED WITHIN PLUS OR MINUS 2% OF THE OPTIMUM TO FACILITATE COMPACTION. GENERALLY, UNSATISFACTORY MATERIALS INCLUDE MATERIALS CLASSIFIED IN ASTM D-2487 AS PT, CH, MH, OL, OH AND ANY SOIL TOO WET TO FACILITATE COMPACTION. CH AND MH SOILS MAY BE USED SUBJECT TO APPROVAL OF THE ENGINEER. SOILS SHALL HAVE A MINIMUM DRY DENSITY OF 92LB/CF PER ASTM D-698 AND SHALL HAVE A PLASTICITY INDEX LESS THAT 17.
13. CONTRACTOR SHALL SUBMIT AND ADHERE TO A GENERAL GROUNDWATER PROTECTION PLAN.

EROSION CONTROL NOTES

1. THE CONTRACTOR SHALL ARRANGE FOR A PRE-CONSTRUCTION CONFERENCE WITH THE APPROPRIATE EROSION AND SEDIMENT CONTROL INSPECTOR 48 HOURS PRIOR TO BEGINNING WORK.
2. ALL EROSION CONTROL DEVICES AS SHOWN OR AS REQUIRED, ARE TO BE CONSTRUCTED TO THE CURRENT STANDARDS AND SPECIFICATIONS OF THE WEST VIRGINIA EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE MANUAL AND ARE TO BE IN PLACE PRIOR TO ALL CONSTRUCTION.
3. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED CONTINUOUSLY, RELOCATED WHEN AND AS NECESSARY AND SHALL BE CHECKED AFTER EVERY RAINFALL. SEEDED AREAS SHALL BE CHECKED REGULARLY AND SHALL BE WATERED, FERTILIZED, RESEEDED AND MULCHED AS NECESSARY TO OBTAIN A DENSE STAND OF GRASS.
4. ALL DISTURBED AREAS NOT PAVED OR BUILT UPON ARE TO BE FERTILIZED, SEEDED, HYDRO-SEEDED (WITH STRAW AND COTTEN PRODUCT WITH TACK AGENTS) OR MULCHED BY THE CONTRACTOR IN ACCORDANCE WITH THE OFFICE OF OIL & GAS, W.VA. EROSION & SEDIMENT CONTROL FIELD MANUAL, MAY 2012.
5. ALL DRAIN INLETS SHALL BE PROTECTED FROM SILTATION. INEFFECTIVE PROTECTION DEVICES SHALL BE IMMEDIATELY REPLACED AND THE INLET CLEANED. FLUSHING IS NOT AN ACCEPTABLE METHOD OF CLEANING.
6. PERMANENT OR TEMPORARY SOIL STABILIZATION SHALL BE APPLIED TO DENUDED AREAS WITHIN SEVEN DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE. TEMPORARY SOIL STABILIZATION SHALL BE APPLIED WITHIN SEVEN DAYS TO DENUDED AREAS THAT MAY NOT BE AT FINAL GRADE BUT WILL REMAIN DORMANT (UNDISTURBED) FOR LONGER THAN 21 DAYS. PERMANENT STABILIZATION SHALL BE APPLIED TO AREAS THAT ARE TO BE LEFT DORMANT FOR MORE THAN SIX MONTHS.
7. DURING CONSTRUCTION OF THE PROJECT, SOIL STOCKPILES SHALL BE STABILIZED OR PROTECTED WITH SEDIMENT TRAPPING MEASURES.
8. SEDIMENT BASINS AND TRAPS, PERIMETER DIKES, SEDIMENT BARRIERS AND OTHER MEASURES INTENDED TO TRAP SEDIMENT SHALL BE CONSTRUCTED AS A FIRST STEP IN ANY LAND DISTURBING ACTIVITY AND SHALL BE MADE FUNCTIONAL BEFORE UPSLOPE LAND DISTURBANCE TAKES PLACE.
9. STABILIZATION MEASURES SHALL BE APPLIED TO EARTHEN STRUCTURES SUCH AS IMPOUNDMENTS, DIKES AND DIVERSIONS IMMEDIATELY AFTER INSTALLATION.
10. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION OR AFTER THE TEMPORARY MEASURES ARE NO LONGER NEEDED, UNLESS OTHERWISE AUTHORIZED BY THE ENGINEER. TRAPPED SEDIMENT AND THE DISTURBED SOIL AREAS RESULTING FROM THE DISPOSITION OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED TO PREVENT FURTHER EROSION AND SEDIMENTATION.
11. ALL DISTURBED AREAS NOT PAVED OR BUILT UPON SHALL BE SEEDED, SLOPE MATTED AND FERTILIZED. PERFORM PERMANENT TOP SOILING, SEEDING, FERTILIZING, AND MATTING AS SOON AFTER FINISH GRADING AS POSSIBLE. SEEDING SHALL COMPLY WITH THE FOLLOWING:
    - A. TOPSOIL - 4 INCH MINIMUM FOR PERMANENT TURF
    - B. FERTILIZER - 500 POUNDS PER ACRES OF 10-20-10 FERTILIZER OR EQUIVALENT POUNDAGE OF DIFFERENT ANALYSIS. WORK INTO SOIL PRIOR TO SEEDING.
    - C. LIME (PERMANENT SEEDING) - AGRICULTURAL LIME SPREAD AT RATE OF 4 TONS/ACRE. WORK INTO SOIL PRIOR TO SEEDING.
    - D. MULCH - WOOD FIBER OR CHOPPED STRAW AT RATE OF 2 TONS PER ACRE. HYDRO-MULCH (EAST COAST EROSION CONTROL HY-C2 OR EQUAL) AT MANUFACTURER'S RECOMMEND RATE OR 2500 LB/AC WHICHEVER IS GREATER.
    - E. SEED - 45 LBS. PER ACRE TALL FESCUE AND 20 LBS. PER ACRE PERENNIAL RYE GRASS. TO BE SEEDED BY HAND OR HYDRO-SEEDER.

EROSION AND SEDIMENT CONTROL NARRATIVE

1. PROJECT DESCRIPTION: THE PURPOSE OF THIS PROJECT IS TO GRADE AND INSTALL EROSION AND SEDIMENT CONTROL MEASURES, IN PREPARATION FOR THE CONSTRUCTION OF A GAS WELL PAD NEAR MILETUS, WEST VIRGINIA, IN DODDRIDGE COUNTY. THE CONSTRUCTION INCLUDES UPGRADES OF TWO ACCESS ROADS, DRILL PAD, TWO WATER TANK PADS, STORM WATER CONTROLS, AND INCIDENTAL WORK. THE TOTAL APPROXIMATE LAND DISTURBANCE ASSOCIATED WITH THIS PROJECT is 10.95 ACRES.
2. EXISTING SITE CONDITIONS: THE EXISTING SITE IS UPLAND HARDWOODS WITH MODERATE TO STEEP TOPOGRAPHY WITH 5% TO 50% SLOPES. NO EROSION IS NOTICED ON SITE, ON ADJOINING PROPERTIES OR IN ANY NATURAL DRAINAGE WAYS. THE SITE IS ON TWO DRAINAGE AREAS.
3. ADJACENT PROPERTY: THE SITE IS BORDERED ON ALL SIDES BY UPLAND HARDWOODS.
4. SOILS: NO SOIL STUDIES OR INVESTIGATIONS WERE DONE WITH FOR THIS PROJECT.
5. OFF SITE AREAS: THERE SHALL BE NO BORROW AREA OUTSIDE OF THE PROPOSED GRADING AND CONSTRUCTION AREA.
6. CRITICAL EROSION AREAS-CONTROL MAINTENANCE: ALL 3:1 SLOPES AND STEEPER, DITCHES AND OTHER CONTROLS SHALL BE CONSIDERED CRITICAL EROSION AREAS. THESE AREAS SHALL BE MONITORED & MAINTAINED DAILY AND AFTER EACH RAIN FALL OF 0.5 INCHES OR GREATER. THE LOCAL GOVERNING AUTHORITY WILL HAVE THE AUTHORITY TO RECOMMEND THE PLACEMENT OF ADDITIONAL EROSION CONTROL MEASURES IN THESE AREAS IF IT BECOMES EVIDENT DURING CONSTRUCTION THAT THE ONES IN PLACE ARE NOT FUNCTIONING SUFFICIENTLY.
7. EROSION AND SEDIMENT CONTROL MEASURES: UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE CONSTRUCTED AND MAINTAINED ACCORDING TO THE OFFICE OF OIL & GAS, W.VA. EROSION AND SEDIMENT CONTROL FIELD MANUAL, MAY 2012. THE CONTRACTOR SHALL OBTAIN A COPY OF THIS MANUAL FROM THE WVDEP WEBSITE AND CONSTRUCT ALL DEVICES BASED ON THIS MANUAL OR A HANDBOOK THAT IS COMPARABLE OR EXCEEDS THE SPECIFICATIONS OF THE WEST VIRGINIA MANUAL. THE MINIMUM STANDARDS OF THIS MANUAL SHALL BE ADHERED TO UNLESS OTHERWISE WAIVED OR APPROVED BY A VARIANCE. SEE PLANS FOR ALL PROPOSED EROSION AND SEDIMENT CONTROL MEASURES.
8. STRUCTURAL PRACTICES:
    - -DIVERSION DITCHES: WILL BE CONSTRUCTED AS SHOWN ON THE PLANS.
    - -DIVERSION BERMS: WILL BE CONSTRUCTED AS SHOWN ON THE PLANS.
    - -OUTLET PROTECTION: WILL BE CONSTRUCTED AS SHOWN ON THE PLANS.
    - -SILT SOXX/STRAW WATTLES/SUPER SILT FENCE: WILL BE CONSTRUCTED AS SHOWN ON THE PLANS.
9. VEGETATIVE PRACTICE TOPSOILING: TOPSOIL WILL BE STRIPPED FROM THE SITE AND STOCKPILED IN AN AREA AS SHOWN ON THESE PLANS. UPON THE COMPLETION OF THE PROJECT TOPSOIL WILL BE PLACED ON ALL DISTURBED AREAS AT A MINIMUM DEPTH OF 4 INCHES. TEMPORARY SEEDING: ALL DENUDED AREAS LEFT DORMANT FOR MORE THAN 21 DAYS SHALL BE SEEDED WITH A FAST GERMINATING SEED. THE TIME OF YEAR WILL BE THE BASIS FOR THE SEED MIXTURE. PERMANENT SEEDING: ALL SEEDED AREAS WILL BE RESEEDED, MULCHED AND FERTILIZED AS NEEDED TO OBTAIN AN ADEQUATE STAND OF GRASS. PERMANENT SEEDING SHALL BE PLACED WITHIN SEVEN DAYS UPON ACHIEVING FINAL GRADE. WATER, MULCH, AND RESEED AS NECESSARY TO OBTAIN AN ADEQUATE STAND OF VEGETATION, IN THE OPINION OF THE ENGINEER.
10. MANAGEMENT STRATEGIES: CONSTRUCTION WILL BE SEQUENCED SO THAT GRADING OPERATIONS WILL BEGIN AND END AS SOON AS POSSIBLE. THE JOB SUPERINTENDENT SHALL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF ALL EROSION AND SEDIMENT CONTROL MEASURES. AFTER ACHIEVING ADEQUATE STABILIZATION THE TEMPORARY EROSION AND SEDIMENT CONTROLS SHALL BE REMOVED AND ANY AREAS DISTURBED DURING THIS PROCESS SHALL BE STABILIZED.
11. SEQUENCE OF EVENTS:
    - A. A PRE-CONSTRUCTION CONFERENCE WILL BE HELD ON SITE WITH CONTRACTOR TO REVIEW THE CONSTRUCTION DRAWINGS AND PROVIDE ANY REQUESTED GUIDANCE.
    - B. CONSTRUCT THE CONSTRUCTION ENTRANCE.
    - C. CONSTRUCT ALL PROPOSED SEDIMENT CONTROL DEVICES AS SOON AS CLEARING AND GRUBBING OPERATIONS ALLOW. DIVERSIONS AND SEDIMENT BASINS SHALL BE SEEDED AND MULCHED IMMEDIATELY.
    - D. CLEAR AND GRUB, REMOVE TOPSOIL AND PLACE AT AN AREA DETERMINED IN THE FIELD WHERE EROSION WILL NOT TAKE PLACE. TOPSOIL STOCKPILE TO BE SEEDED AND MULCHED. SILT FENCE SHALL BE CONSTRUCTED AROUND TOPSOIL STOCKPILES.
    - E. GRADING OPERATIONS AS REQUIRED. CUT SLOPES AND FILL SLOPES SHALL BE TOPSOILED IF NEEDED. DITCH LINES SHALL BE CLEANED. ALL DITCHES WILL HAVE AT LEAST GRASS LINING PROTECTION OR GREATER BASED ON DITCH SLOPE WITH THE FOLLOWING DETERMINATION; 0 TO 3% - GRASS LINED, 3 TO 9% - JUTE MATTING, AND 9% OR GREATER -TRM.
    - F. CULVERT INLET AND OUTLET PROTECTION SHALL BE CONSTRUCTED IMMEDIATELY UPON PLACEMENT OF INLETS AND CULVERTS. INSTALLATION OF MATTING AND/OR RIP RAP TO OCCUR ONCE DITCHES ARE CONSTRUCTED.
    - G. WHEN FINAL GRADE IS ACHIEVED, TOPSOIL TO BE PLACED ON ALL DISTURBED AREAS NOT LINED. SEED ALL DISTURBED AREAS AS REQUIRED. A SOIL SAMPLE SHOULD BE TAKEN AND TESTED TO DETERMINE RECOMMENDED RATES. IF NO SOILS SAMPLE IS TAKEN THE FOLLOWING RATES SHOULD BE APPLIES AS A MINIMUM: LIME AT A RATE OF 4 TONS PER ACRE. FERTILIZE AT A RATE OF 500 LBS. OF 10-20-10 PER ACRE. SEED WITH 45 LBS. PER ACRE OF TALL FESCUE AND 20 LBS. PER ACRE OF PERENNIAL RYE GRASS.
    - H. LIME, FERTILIZER, AND SEED WILL BE APPLIED BY HAND OR USING A HYDRO-SEEDER. HYDRO-MULCH PRODUCTS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS.
    - I. FINAL SEEDING MUST OCCUR WITHIN 7 DAYS OF FINAL GRADING.
    - J. WHEN SITE IS STABILIZED WITH ESTABLISHED TURF OVER 70%, ALL EROSION AND SEDIMENT CONTROL MEASURES CAN BE REMOVED AND REPAIR/STABILIZE THOSE AREAS IN ACCORDANCE WITH STATE STANDARDS.
    - K. MAKE MODIFICATIONS FOR PERMANENT STORM WATER MANAGEMENT.
    - L. FINAL SITE INSPECTION.
12. PERMANENT STABILIZATION: ALL AREAS LEFT UNCOVERED BY EITHER BUILDINGS OR PAVEMENT SHALL BE STABILIZED WITH PERMANENT SEEDING IMMEDIATELY FOLLOWING FINISH GRADING AND WITHIN 7 DAYS. AT NO TIME SHALL LAND LAY DORMANT FOR LONGER THAN 21 DAYS. SEE SEQUENCE OF EVENTS FOR RATES.
13. MAINTENANCE, AND OTHER CONSIDERATIONS AND GROUND WATER PROTECTION: ALL EROSION AND SEDIMENT CONTROL MEASURES WILL BE CHECKED DAILY AND AFTER EACH RAINFALL OF 0.5 INCHES OR MORE. THEY WILL BE INSPECTED FOR UNDERMINING, DETERIORATION, EROSION AND EXCESS DEPOSITED MATERIAL. ALL DEFICIENCIES WILL BE CORRECTED IMMEDIATELY. EXCESS MATERIAL WILL BE SPREAD ON THE SITE IN A MANNER WHERE IT IS NOT LIKELY TO ERODE IN THE FUTURE. CLEANING PROCEDURES WILL BE COMPLETED AT REGULAR INTERVALS AND AT LEAST WHEN SEDIMENT REACHES CLEAN OUT LEVELS SHOWN. RECORDS OF CLEANING AND CORRECTIONS WILL BE MAINTAINED BY THE CONTRACTOR. THE "GENERIC GROUNDWATER PROTECTION PLAN FOR CONSTRUCTION SITES" WILL BE USED AND AVAILABLE ON SITE AT ALL TIMES. AN AREA WILL BE PROVIDED FOR VEHICLE AND EQUIPMENT MAINTENANCE. MOBILE FUEL TRUCKS WITH APPROVED TANKS WILL BE USED ON THIS SITE. PORTABLE SANITARY FACILITIES WILL BE AVAILABLE FOR EMPLOYEES. IF CONCRETE IS USED, EXCESS CONCRETE WILL BE DISPOSED OF PROPERLY AND NOT ALLOWED TO REMAIN ON THIS SITE. MACHINERY WILL NOT BE ALLOWED IN LIVE STREAMS. FLUIDS SUCH AS DIESEL FUEL, GAS, OIL OR ANTIFREEZE WILL BE KEPT IN PROPER CONTAINERS AND ANY SPILLAGE WILL BE CLEANED AND TAKEN OFF SITE TO A PROPER FACILITY. SOLID OR HAZARDOUS WASTES WILL BE DISPOSED IN ACCORDANCE WITH APPROPRIATE STATE AND FEDERAL REGULATIONS. IT IS THE CONTRACTORS RESPONSIBILITY TO MAKE CHANGES AND NOTIFY WVDEP OF ANY CHANGES TO GPP. A FINAL INSPECTION WILL BE MADE AT THE CONCLUSION OF THE PROJECT AND ALL CORRECTIONS MADE BEFORE SIGN-OFF OF THE PROJECT SITE.

DATE	REVISIONS
4-16-13	Updated Per New Antero Standards

Allegheny Surveys, Inc.
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FAX: 304-257-2224
EMAIL: KIRK@CITLINK.NET

ANTERO RESOURCES

THIS DOCUMENT PREPARED FOR ANTERO RESOURCES APPALACHIAN CORP

CONSTRUCTION, EROSION AND SEDIMENT NOTES

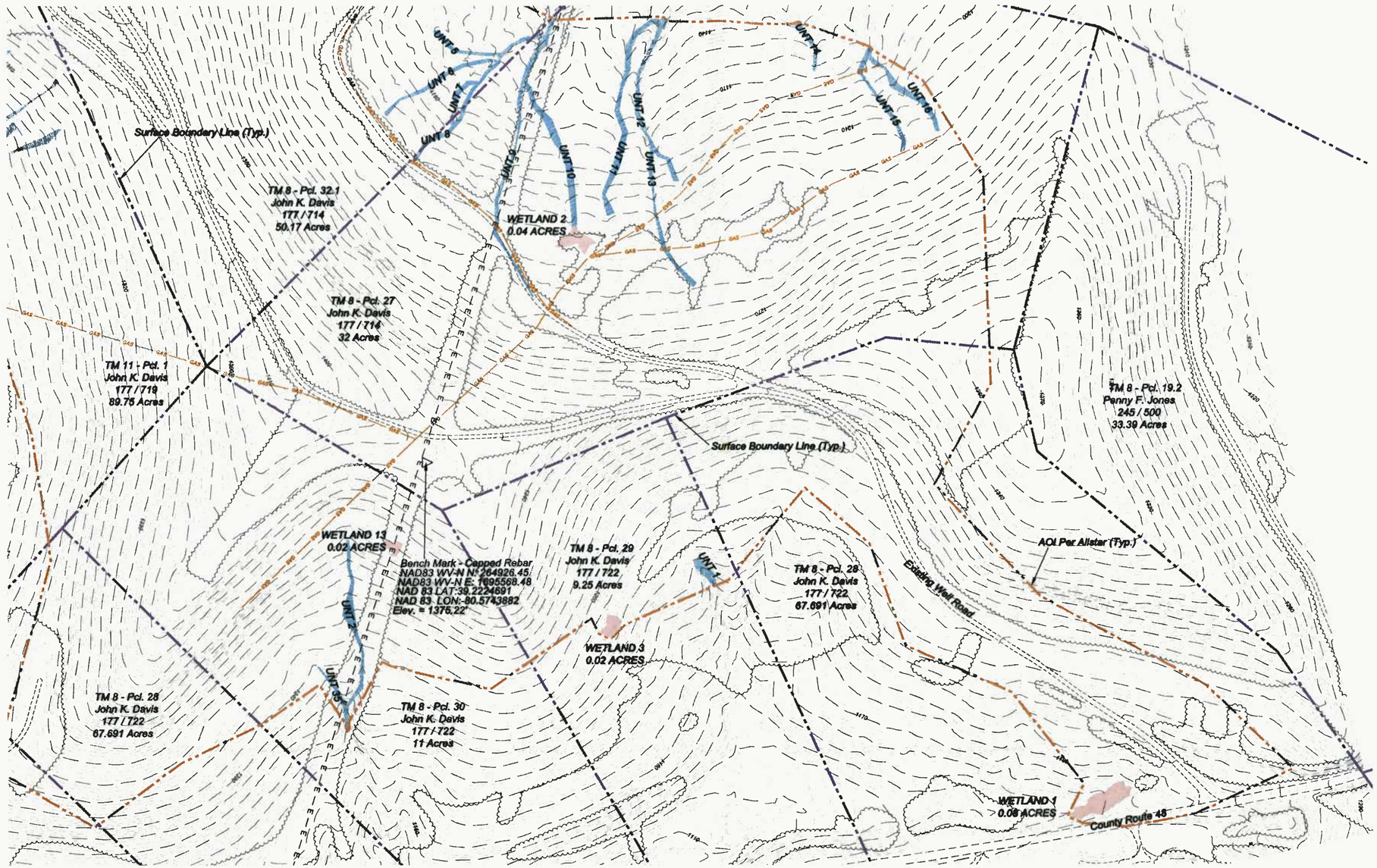
JOHN NORTH PAD
GREENBRIER DISTRICT
DODDRIDGE COUNTY, WV

Date: 10/31/12
Scale: N/A
Designed By: CKW/CKM
File No. Antero 52-30-G-12

EXISTING CONDITIONS

All topographic information shown hereon is base on aerial photography provided by Blue Mountain Aerial Mapping with a flight date of Spring 2011

0 100 200 300



NOTE: All surface boundary line shown hereon are based on current Deeds and boundary evidence collected with mapping grade GPS receivers.

THERE ARE NO OCCUPIED DWELLINGS WITHIN 700' OF THE PAD.

Legend

- Existing 2' Contour
- Existing 10' Contour
- Existing Tree Line
- Existing Utility Pole/Line
- Existing Gas Line CL

DATE	REVISIONS
4-16-13	Updated Per New Antero Standards

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ANTERO RESOURCES

THIS DOCUMENT PREPARED FOR ANTERO RESOURCES APPALACHIAN CORP

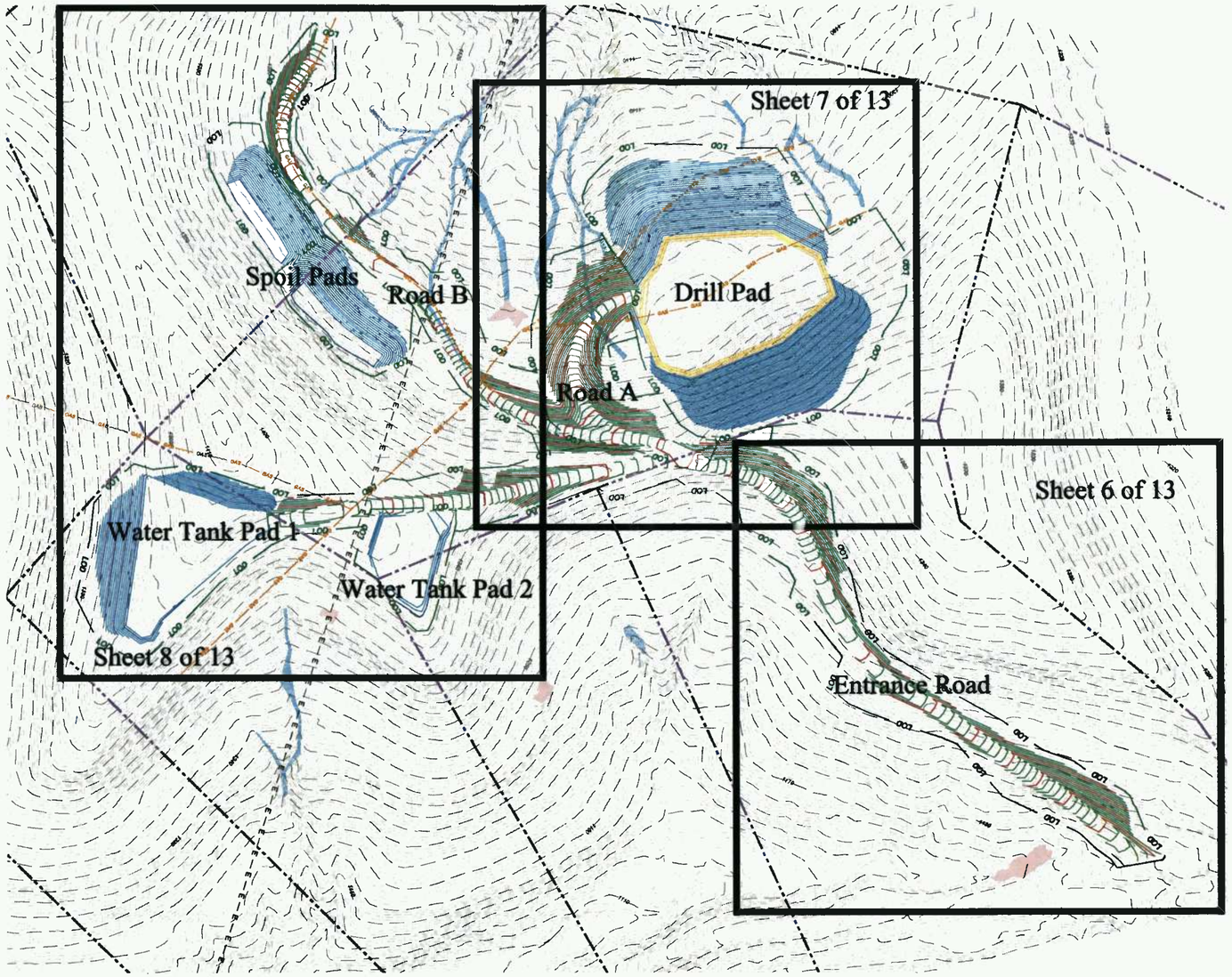
EXISTING CONDITIONS

JOHN NORTH PAD
GREENBRIER DISTRICT
DODDRIDGE COUNTY, WV

Date: 10/31/12
Scale: 1" = 100'
Designed By: CKW/CKM
File No. Antero 32-30-0-12
Page 4 of 13

All topographic information shown hereon is base on aerial photography provided by Blue Mountain Aerial Mapping with a flight date of Spring 2011

SITE INDEX



NOTE: All surface boundary line shown hereon **are based** on current Deeds and boundary evidence collected with mapping **grade** GPS receivers.

DATE	REVISIONS
4-16-13	Updated Per New Antero Standards

Allegheny Surveys, Inc.
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ANTERO RESOURCES

THIS DOCUMENT PREPARED FOR ANTERO RESOURCES APPALACHIAN CORP

SITE INDEX

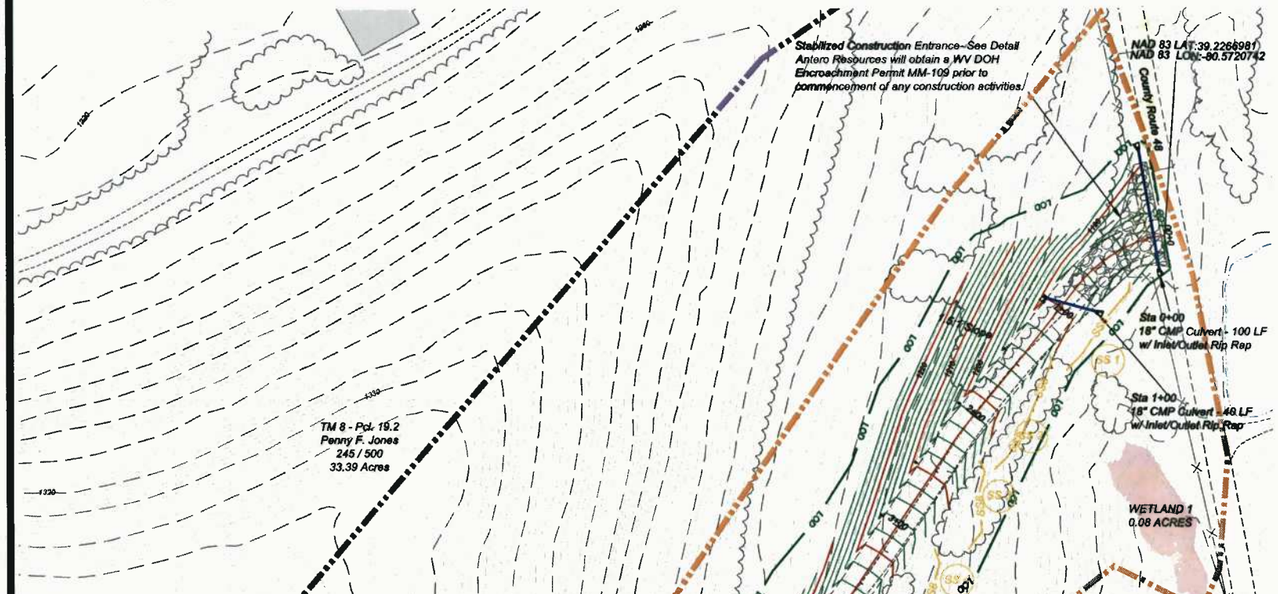
JOHN NORTH PAD
GREENBRIER DISTRICT
DODDRIDGE COUNTY, WV

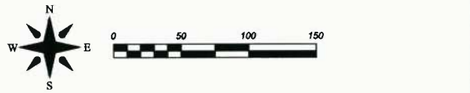
Date: 10/31/12
Scale: 1" = 120'
Designed By: CKW/CKM
File No. Antero 52-30-O-12
Page 5 of 13

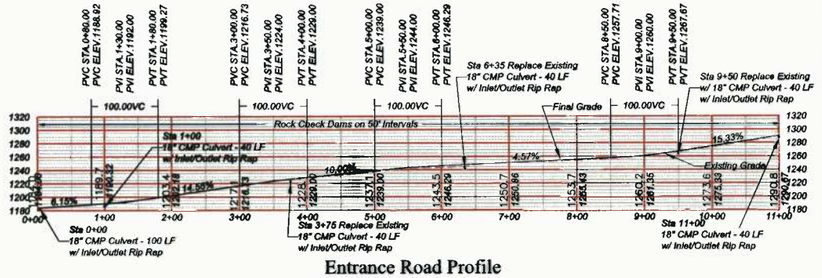
SITE PLAN 1

All topographic information shown hereon is base on aerial photography provided by Blue Mountain Aerial Mapping with a flight date of Spring 2011

NOTE: All surface boundary line shown hereon are based on current Deeds and boundary evidence collected with mapping grade GPS receivers.







Entrance Road Profile

Horizontal & Vertical Scale 1" = 100'

0 100 200 300

LINED DITCH TREATMENT vs SLOPE of DITCH
- Line with Seed & Mulch if slope is less than 3%
- Line with Jute Matting if slope is greater than 3% less than 9%
- Line with turf reinforcment matting (TRM) if slope is greater than 9%

*Turf reinforcment matting shall be Excelsor Recyclex or Landlok TRM 435 or equal

Legend

- Existing 2' Contour
- 1330 Existing 10' Contour
- Existing Tree Line
- E E E Existing Utility Line / Pole
- Surface Owner Property Line
- GAS Existing Gas Line CL
- LOD Limits of Disturbance
- Proposed Diversion Ditch
- Proposed 2' Contour
- 1000 Proposed 10' Contour
- SF Proposed Super Silt Fence
- Proposed Check Dam
- Proposed Culvert W/ Inlet & Outlet Protection
- SW Proposed Straw Wattles
- SSXX Proposed Silt Soxx w/ Diameter
- Proposed 2' Contour
- 1000 Proposed 10' Contour
- Proposed Rip-Rap

* Silt Soxx Diameter in Inches
* Super Silt Fence Can be Substituted for Silt Soxx of any Size

DATE	REVISIONS
4-16-13	Updated Per New Antero Standards

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SURVEYING Engineering L&W Enterprises

ANTERO RESOURCES

THIS DOCUMENT PREPARED FOR ANTERO RESOURCES APPALACHIAN CORP

SITE PLAN 1

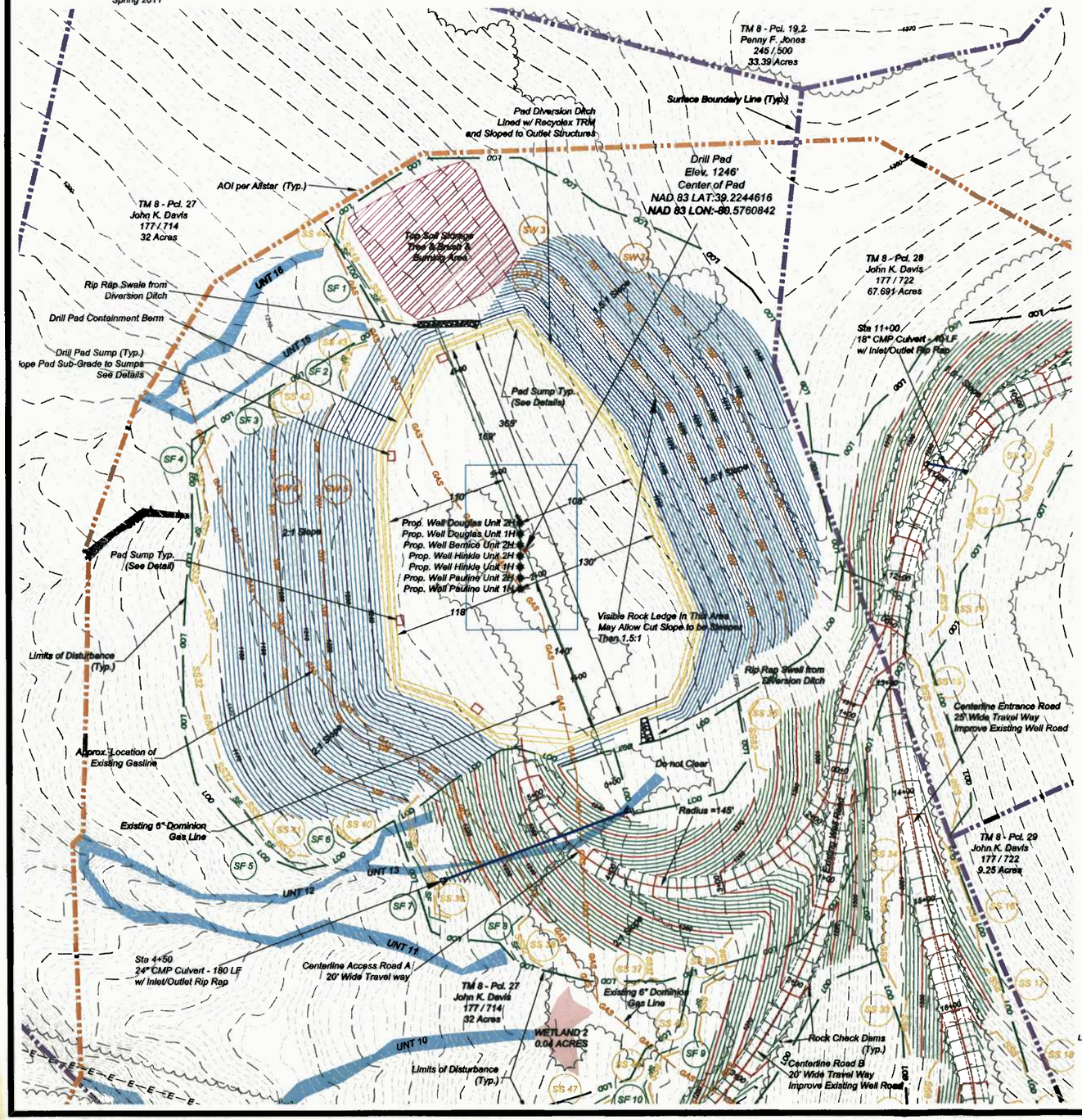
JOHN NORTH PAD
GREENBRIER DISTRICT
DODDRIDGE COUNTY, WV

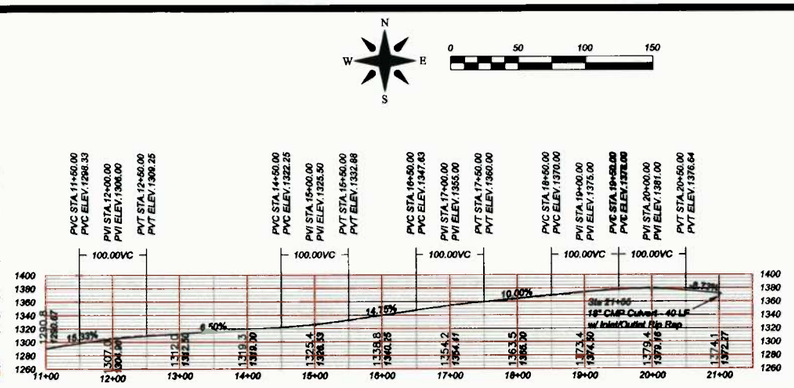
Date: 10/31/12
Scale: 1" = 50'
Designed By: CKW/CKM
File No. Antero 32-30-G-12

SITE PLAN 2

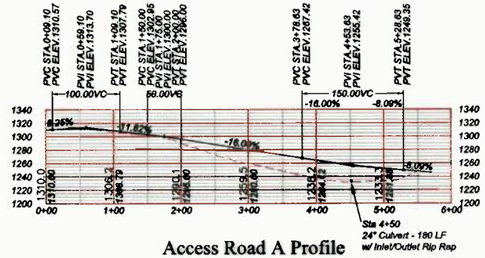
All topographic information shown hereon is base on aerial photography provided by Blue Mountain Aerial Mapping with a flight date of Spring 2011

NOTE: All surface boundary line shown hereon are based on current Deeds and boundary evidence collected with mapping grade GPS receivers.

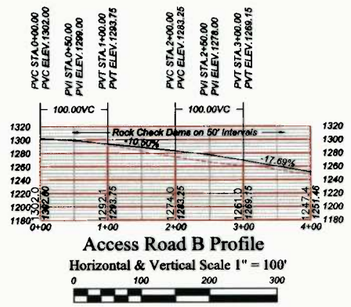




Entrance Road Profile



Access Road A Profile



Access Road B Profile

Horizontal & Vertical Scale 1" = 100'

0 100 200 300

LINED DITCH TREATMENT vs SLOPE of DITCH

Line with Seed & Mulch if slope is less than 3%

Line with Jute Matting if slope is greater than 3% less than 9%

Line with turf reinforcment matting (TRM) if slope is greater than 9%

*Turf reinforcment matting shall be Excelisor Rocyclex or Landlok TRM 435 or equal

Legend

Existing 2' Contour	Proposed Check Dam
Existing 10' Contour	Proposed Culvert W/ Inlet & Outlet Protection
Existing Tree Line	SW Proposed Straw Wattles
E E Existing Utility Line / Pole	SSXX Proposed Silt Soxx w/ Diameter
Surface Owner Property Line	Proposed 2' Contour
GAS Existing Gas Line CL	Proposed 10' Contour
LOD Limits of Disturbance	Proposed Rip-Rap
Proposed Diversion Ditch	* Silt Soxx Diameter in Inches
Proposed 2' Contour	* Super Silt Fence Can be Substituted for Silt Soxx of any Size
Proposed 10' Contour	
SF Proposed Super Silt Fence	

DATE	REVISIONS
4-16-13	Updated Per New Antero Standards

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ANTERO RESOURCES

THIS DOCUMENT PREPARED FOR ANTERO RESOURCES APPALACHIAN CORP

SITE PLAN 2

JOHN NORTH PAD

GREENBRIER DISTRICT
DODDRIDGE COUNTY, WV

Date: 10/31/12

Scale: 1" = 50'

Designed By: CKW/CKM

File No. Antero 52-30-G-12

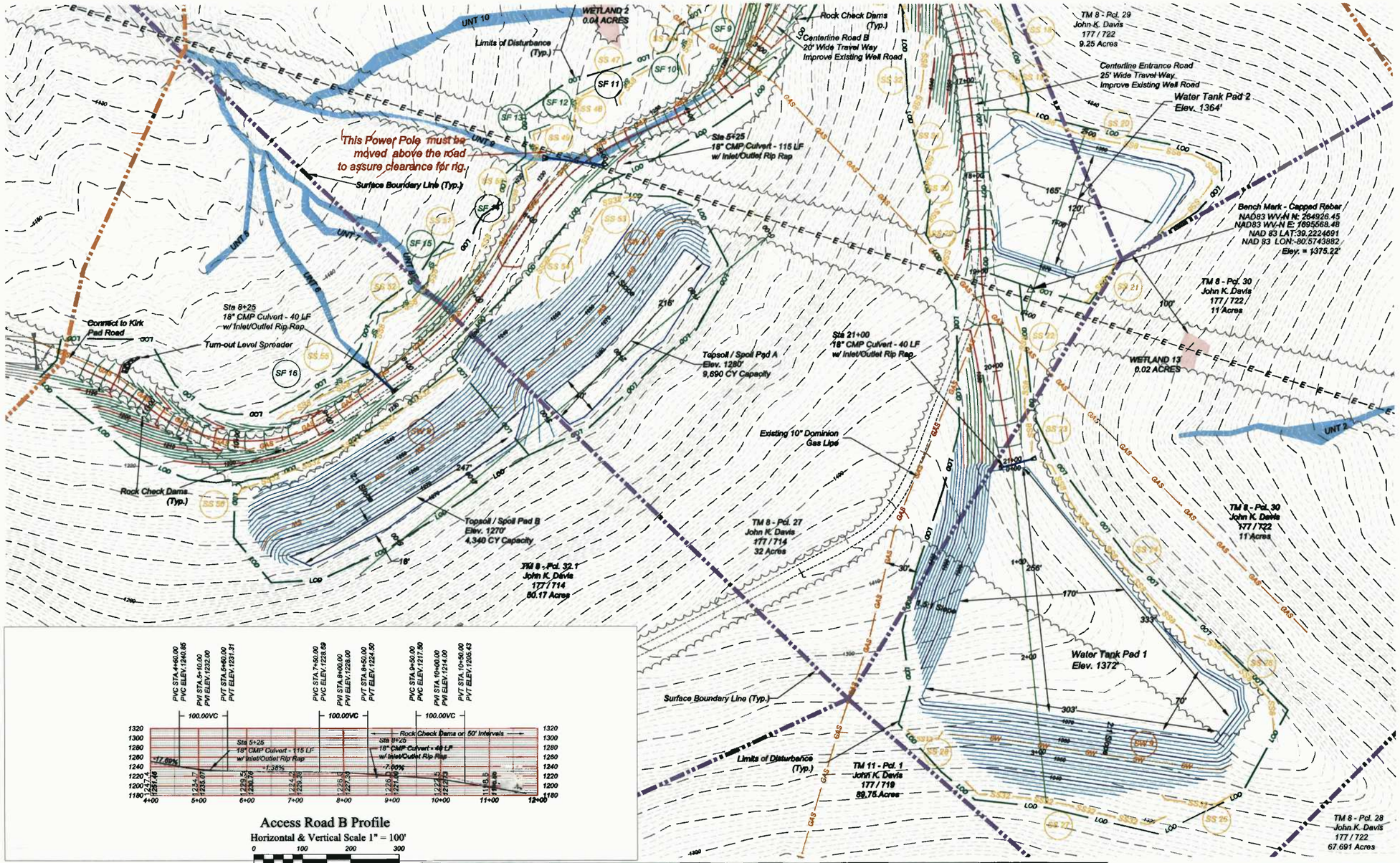
SITE PLAN 3

All topographic information shown hereon is base on aerial photography provided by Blue Mountain Aerial Mapping with a flight date of Spring 2011

NOTE: All surface boundary line shown hereon are based on current Deeds and boundary evidence collected with mapping grade GPS receivers.

0 50 100 150

N W E S



Access Road B Profile

Horizontal & Vertical Scale 1" = 100'

0 100 200 300

Legend

- Existing 2' Contour
- Existing 10' Contour
- Existing Tree Line
- Existing Utility Line / Pole
- Surface Owner Property Line
- Existing Gas Line CL
- LOD — Limits of Disturbance
- Proposed Diversion Ditch
- Proposed 2' Contour
- Proposed 10' Contour
- SF — Proposed Super Silt Fence
- Proposed Check Dam
- Proposed Culvert W/ Inlet & Outlet Protection
- SW — Proposed Straw Wattles
- SSXX — Proposed Silt Soxx w/ Diameter
- Proposed 2' Contour
- Proposed 10' Contour
- Proposed Rip-Rap

* Silt Soxx Diameter in Inches

* Super Silt Fence Can be Substituted for Silt Soxx of any Size

DATE	REVISIONS
4-16-13	Updated Per New Antero Standards

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ANTERO RESOURCES

THIS DOCUMENT PREPARED FOR ANTERO RESOURCES APPALACHIAN CORP

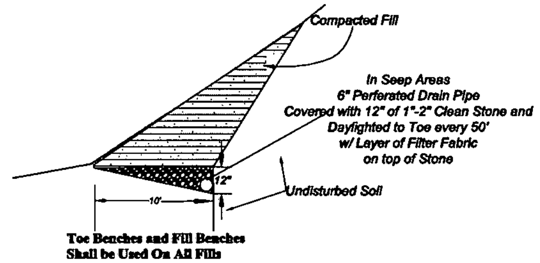
SITE PLAN 3

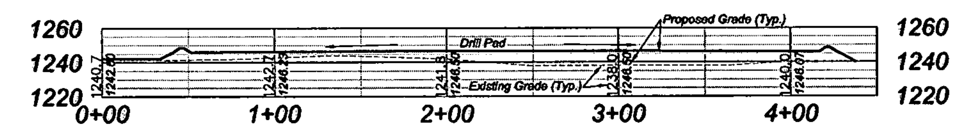
JOHN NORTH PAD

GREENBRIER DISTRICT
DODDRIDGE COUNTY, WV

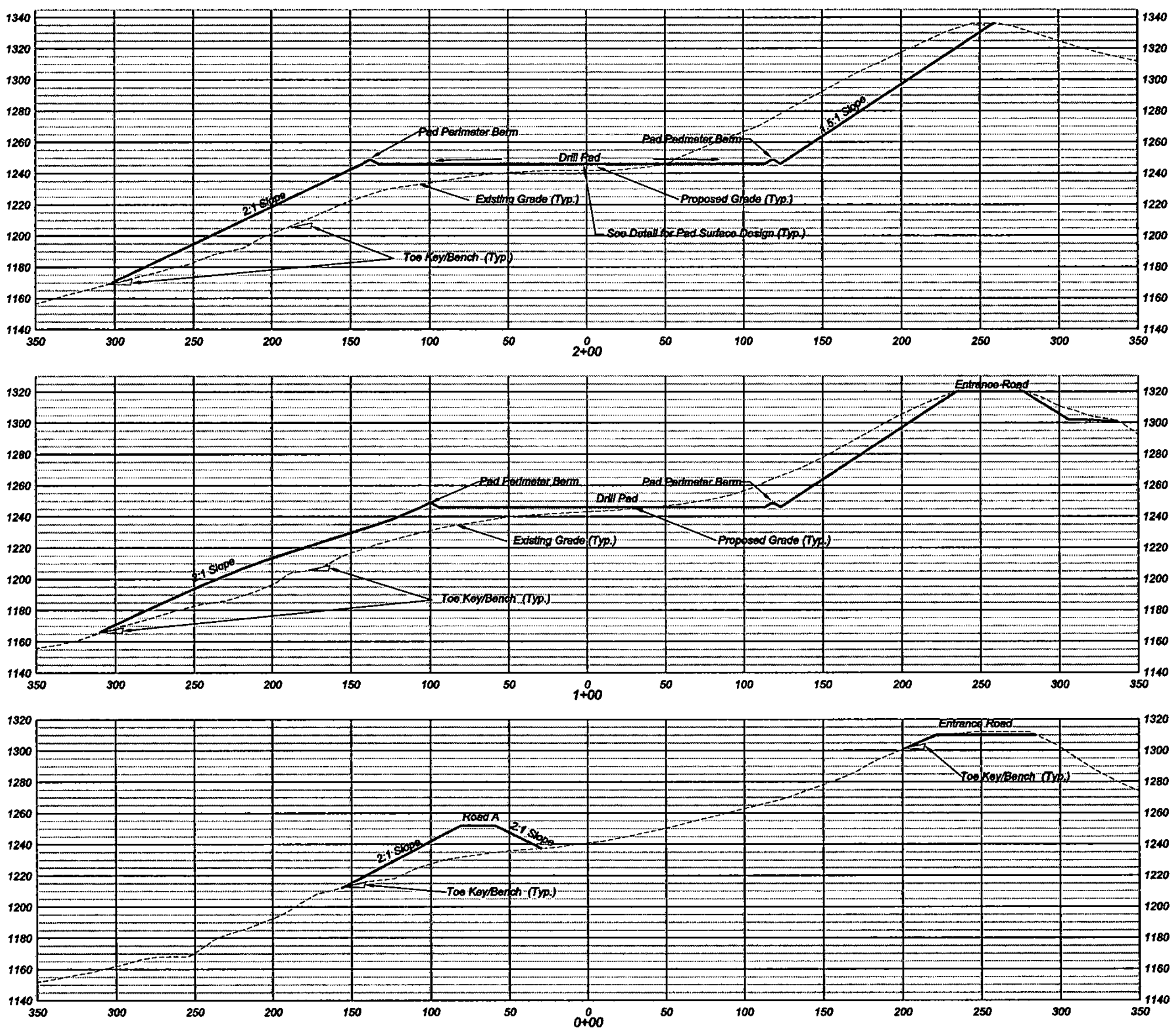
Date: 10/31/12
Scale: 1" = 50'
Designed By: CKW/KKM
File No. Antero 52-30-O-12
Page 8 of 13

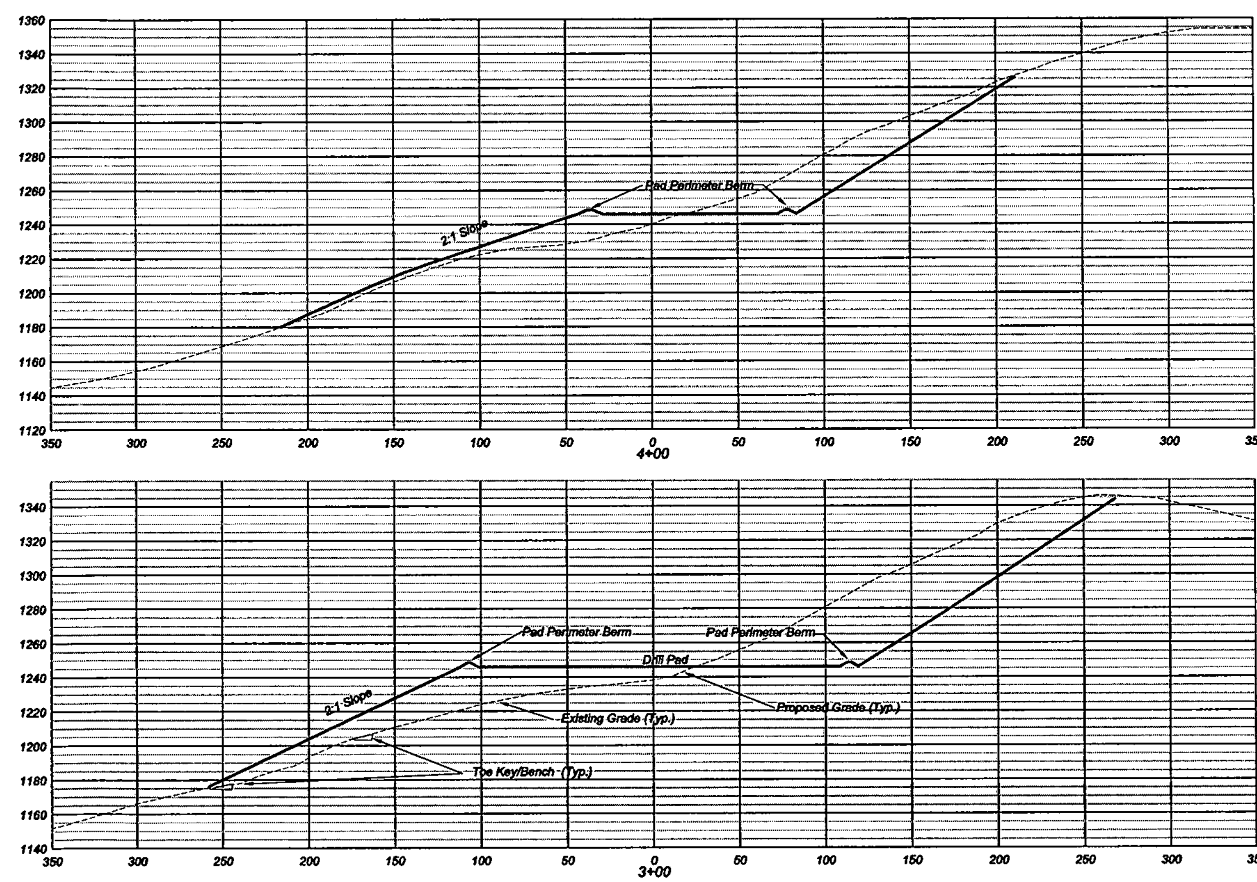
BASELINE PROFILE AND CROSS SECTIONS
DRILL PAD





Drill Pad Profile





Drill Pad Cross Sections

Horizontal & Vertical Scale 1" = 50'

LINED DITCH TREATMENT vs SLOPE of DITCH
- *Line with Seed & Mulch if slope is less than 3%*
- *Line with Jute Matting if slope is greater than 3% less than 9%*
- *Line with turf reinforcment matting (TRM) if slope is greater than 9%*
- **Turf reinforcment matting shall be Excelisor Recyclex or Landlok TRM 435 or equal*

DATE	REVISIONS
4-16-13	Updated Per New Antero Standards

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ANTERO RESOURCES

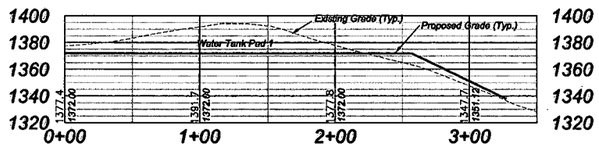
THIS DOCUMENT PREPARED FOR ANTERO RESOURCES APPALACHIAN CORP

BASELINE PROFILE AND CROSS SECTIONS DRILL PAD

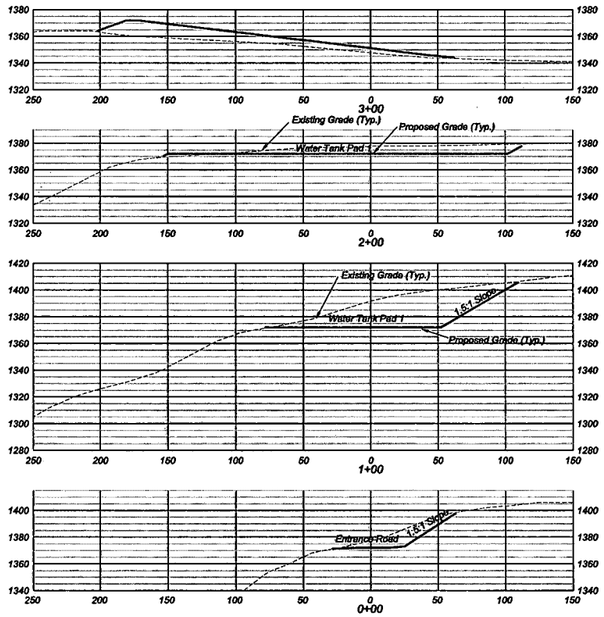
JOHN NORTH PAD
GREENBRIER DISTRICT
DODDRIDGE COUNTY, WV

Date: 10/31/12
Scale: 1" = 50'
Designed By: CKW/CKM
File No. Antero 52-30-G-12

ROAD B, WATER TANK PADS 1&2 AND SPOIL PADS PROFILES & CROSS SECTIONS



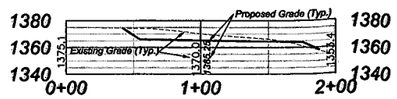
Water Tank Pad 1 Profile



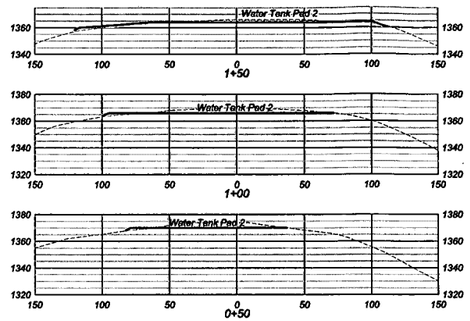
Water Tank Pad 1 Cross Sections

0 50 100 200

Horizontal & Vertical Scale 1" = 50'



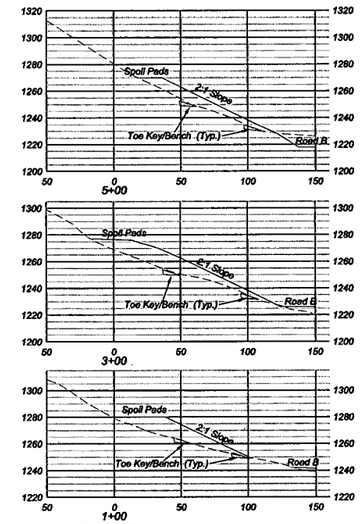
Water Tank Pad 2 Profile



Water Tank Pad 2 Cross Sections

0 50 100 200

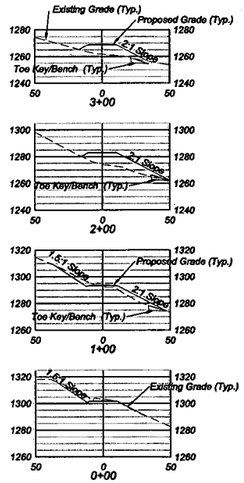
Horizontal & Vertical Scale 1" = 50'

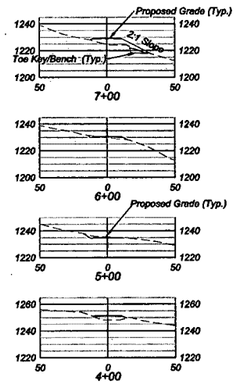


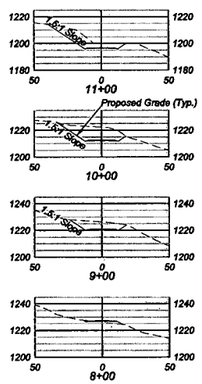
Spoil Pads Cross Sections

0 50 100 200

Horizontal & Vertical Scale 1" = 50'





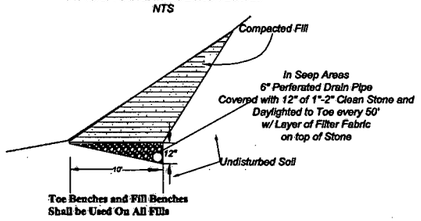


Road B Cross Sections

0 50 100 200

Horizontal & Vertical Scale 1" = 50'

TYPICAL TOE KEY/FILL BENCH DETAIL
NTS



Toe Benches and Fill Benches Shall be Used On All Fills

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PROFESSIONAL ENGINEER

L&W Enterprises Incorporated
Surveying Engineering Forestry Environmental

ANTERO RESOURCES

THIS DOCUMENT PREPARED FOR ANTERO RESOURCES APPALACHIAN CORP

ROAD B, WATER TANK PADS 1&2
AND SPOIL PADS PROFILES & CROSS SECTIONS

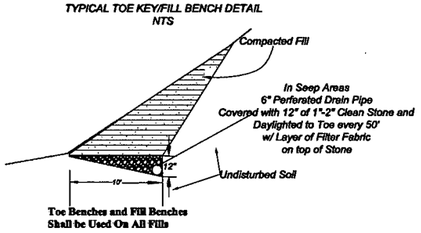
JOHN NORTH PAD

GREENBRIER DISTRICT
DODDRIDGE COUNTY, WV

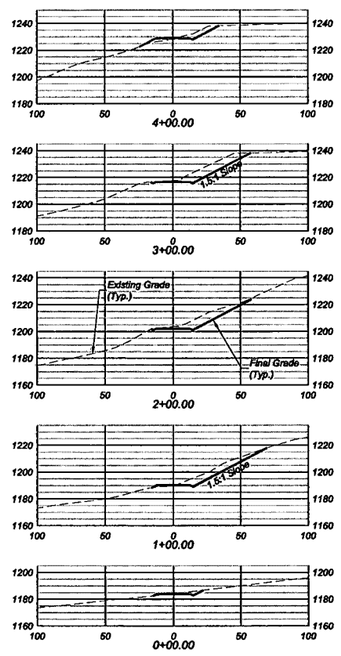
DATE	REVISIONS
4-16-13	Updated Per New Antero Standards

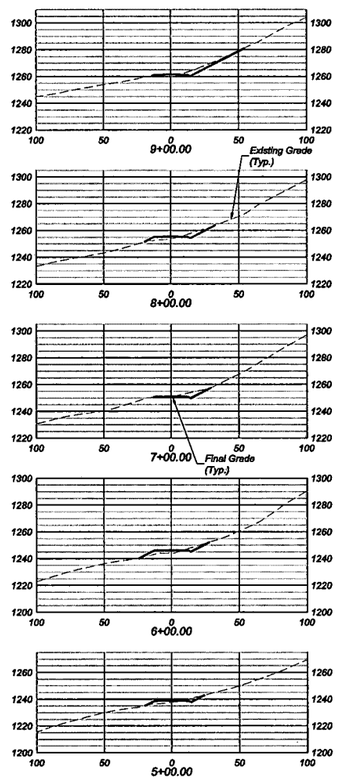
Date: 10/31/12
Scale: 1" =50'
Designed By: CKW/CKM
File No. Antero 32-30-O-12
Page 10 of 13

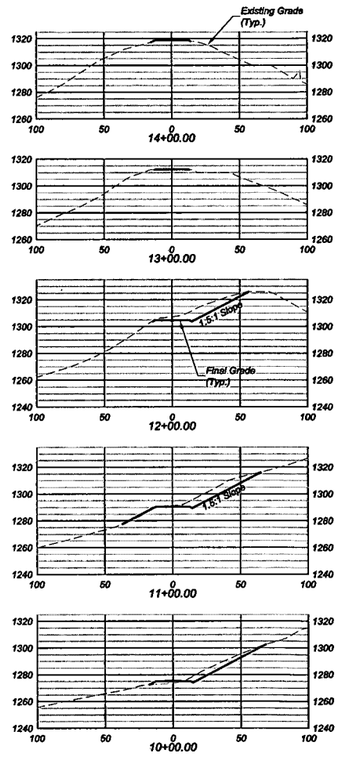
ENTRANCE ROAD AND ROAD A CROSS SECTIONS

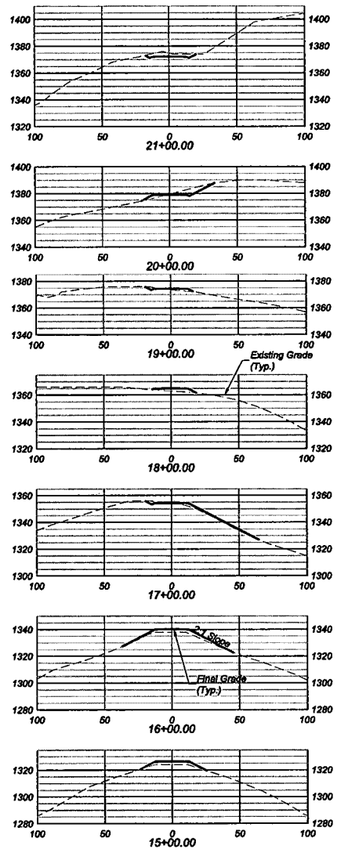


Horizontal & Vertical Scale 1" = 50'

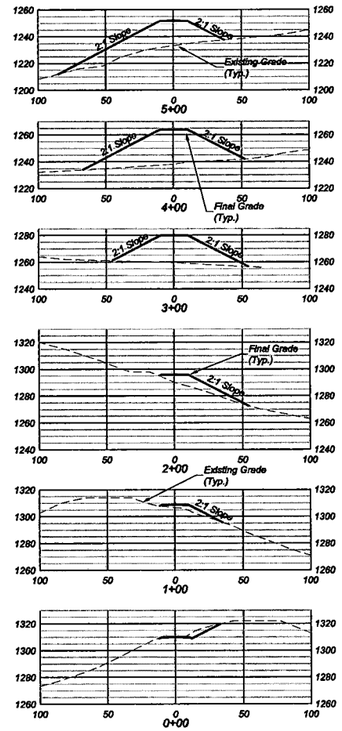








Entrance Road Cross Sections



Access Road A Cross Sections

LINED DITCH TREATMENT vs SLOPE of DITCH
Line with Seed & Mulch if slope is less than 3%
Line with Jute Matting if slope is greater than 3% less than 9%
Line with turf reinforcement matting (TRM) if slope is greater than 9%
**Turf reinforcement matting shall be Excelsior Rocyclex or Landlok TRM 435 or equal*

DATE	REVISIONS
4-16-13	Updated Per New Antero Standards

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L&W Enterprises Incorporated
Surveying Engineering Forestry Construction

ANTERO RESOURCES

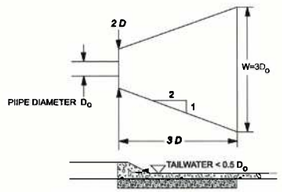
THIS DOCUMENT PREPARED FOR ANTERO RESOURCES APPALACHIAN CORP

ENTRANCE ROAD AND ROAD A CROSS SECTIONS

JOHN NORTH PAD
GREENBRIER DISTRICT
DODDRIDGE COUNTY, WV

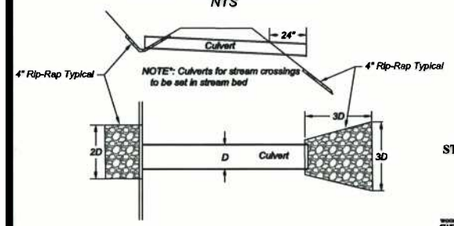
Date: 10/31/12
Scale: 1" =50'
Designed By: CKW/CKM
File No. Antero 53-30-0-12

DETAILS

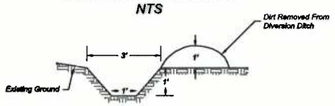


RIP RAP ARPRON OUTLET PROTECTION
MINIMUM TAILWATER CONDITION

TYPICAL CULVERT & CULVERT INLET AND OUTLET PROTECTION DETAIL
NTS

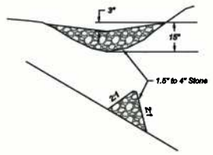


DIVERSION DITCH DETAIL
NTS

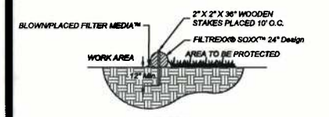


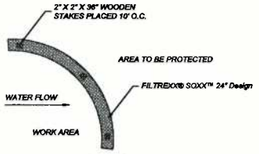
NOTE: Ditch to have min. 1% flow line grade.

DITCH CHECK DAM DETAIL
SPACING AS INDICATED ON PROFILES
NTS



FILTREXX "SOXX" 24" FILTER SOCK DETAIL
NTS

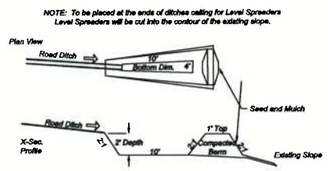




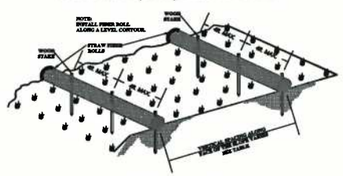
NOTES:
1. ALL MATERIAL TO MEET FILTREXX® SPECIFICATIONS.
2. FILTER MEDIA™ FILL TO MEET APPLICATION REQUIREMENTS.

LEVEL SPREADER DETAIL
NTS

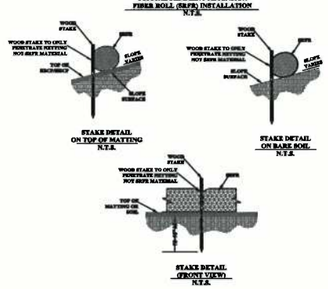
NOTE: To be placed at the ends of ditches calling for Level Spreaders
Level Spreaders will be cut into the contour of the existing slope.



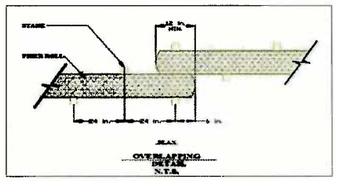
STRAW WATTLE SEDIMENT RETENSION
FIBER ROLL (SRFR) INSTALLATION



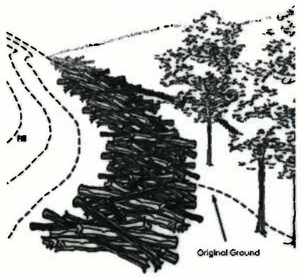
TYPICAL SEDIMENT RETENSION
FIBER ROLL (SRFR) INSTALLATION
N.T.S.



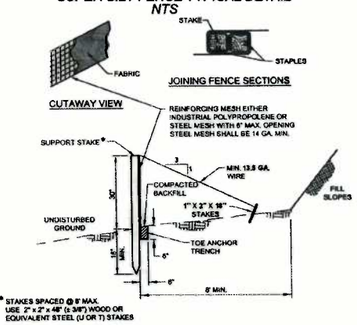
SILT SOXX STAKE OUT



Brush Pile Sediment Barrier

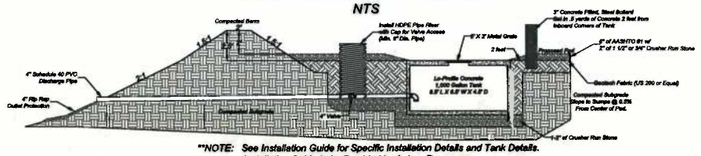


SUPER SILT FENCE TYPICAL DETAIL
NTS



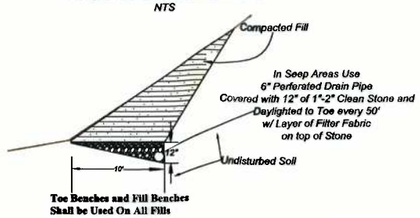
* STAKES SPACED @ 6' MAX.
USE 2" x 2" x 48" (± 3/4") WOOD OR EQUIVALENT STEEL (U OR T) STAKES

PAD DIVERSION BERM & SUMP DETAIL
NTS



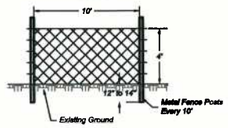
**NOTE: See Installation Guide for Specific Installation Details and Tank Details.
Installation Guide to be Provided by Antero Resources.

TYPICAL TOE KEY/FILL BENCH DETAIL
NTS

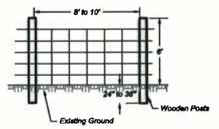


Toe Benches and Fill Benches Shall be Used On All Fills

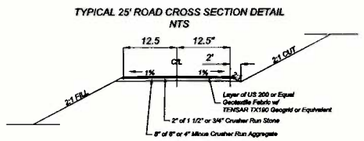
TYPICAL CONSTRUCTION FENCE DETAIL
NTS



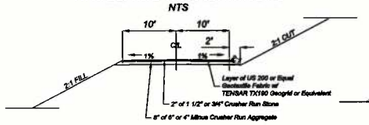
TYPICAL WOVEN WIRE FENCE DETAIL
NTS



TYPICAL 25' ROAD CROSS SECTION DETAIL
NTS



TYPICAL 20' ROAD CROSS SECTION DETAIL
NTS



TYPICAL 18' ROAD CROSS SECTION DETAIL
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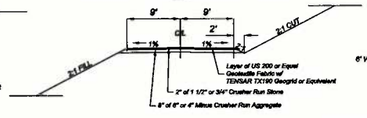
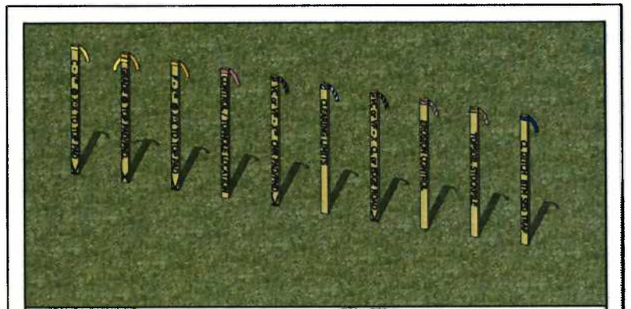
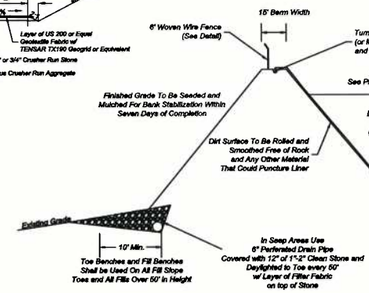


ANTERO RESOURCES
STANDARD RIBBON
COLOR SCHEME

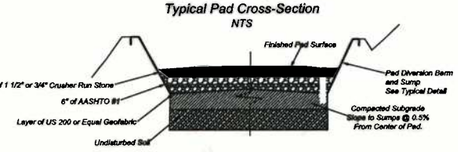


	Yellow Ribbon: Yellow Ribbon used to indicate top of Cuts (C) Cut to be determined at time of stakeout Slope determined by site design
	Yellow & Orange Ribbon: Yellow and Orange Ribbon used to indicate Grade at Top of Pad/Pond/Pit
	Orange Ribbon: Orange Ribbon used to indicate toes of Fills (F) Fill to be determined at time of stakeout Slope determined by site design
	Pink Ribbon: Pink Ribbon used to indicate Top Hole Location Pink Ribbon used to indicate Survey Control Location
	Pink & Black Stripe Ribbon: Pink & Black Stripe Ribbon used to indicate Vertical Cut (VC) at Pad/Pond/Pit centers or edge Pink & Black Stripe Ribbon used to indicate Vertical Fill (VF) at Pad/Pond/Pit centers or edge Vertical Cut/Vertical Fill to be determined at time of stakeout
	Blue & White Stripe Ribbon: Blue & White Stripe Ribbon used to indicate clearing limits/construction limits
	Orange & Black Stripe Ribbon: Orange & Black Stripe Ribbon used to indicate Vertical Cut (VC) at Centerline or edge of access road Orange & Black Stripe Ribbon used to indicate Vertical Fill (VF) at centerline or edge of access road
	Pink & White Stripe Ribbon: Pink & White Stripe Ribbon used to indicate Erosion and Sediment Control Structures Silt Fence (SF) Reinforced Filter Fence (RFF) Super Silt Fence (SSF) Filter Sock (FS)
	Orange & White Stripe Ribbon: Orange & White Stripe Ribbon used to indicate Topsoil Stockpile Locations
	Blue Ribbon: Blue Ribbon used to indicate Centerline (℄) Ditch Blue Ribbon used to indicate Bottom (BTM) Sediment Traps

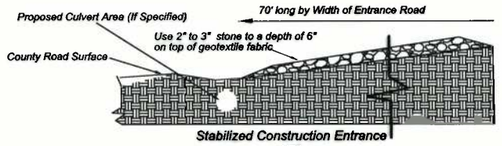
TYPICAL EMBANKMENT DETAIL



Typical Pad Cross-Section
NTS



TYPICAL Proposed Culvert Area (If Specified) 70' long by Width of Entrance Road



Stabilized Construction Entrance
NTS

DATE	REVISIONS
4-16-13	Updated Per New Antero Standards

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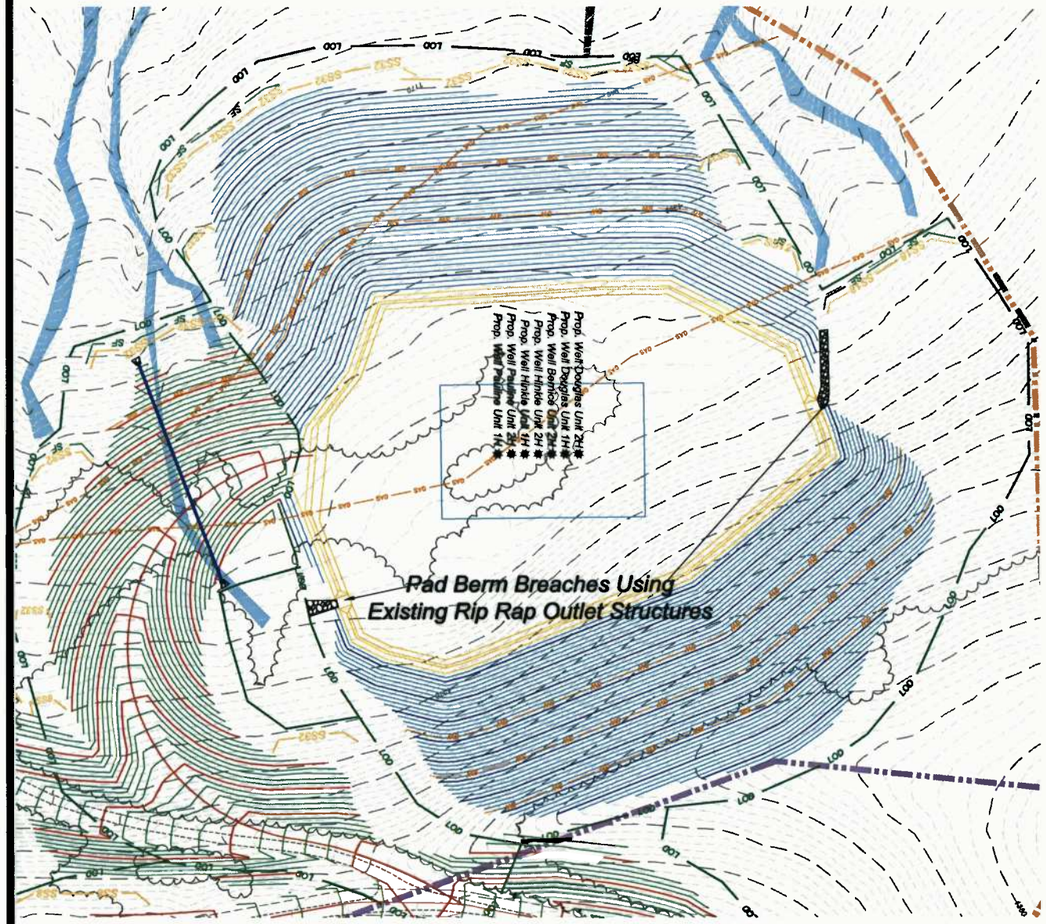
THIS DOCUMENT PREPARED FOR ANTERO RESOURCES APPALACHIAN CORP

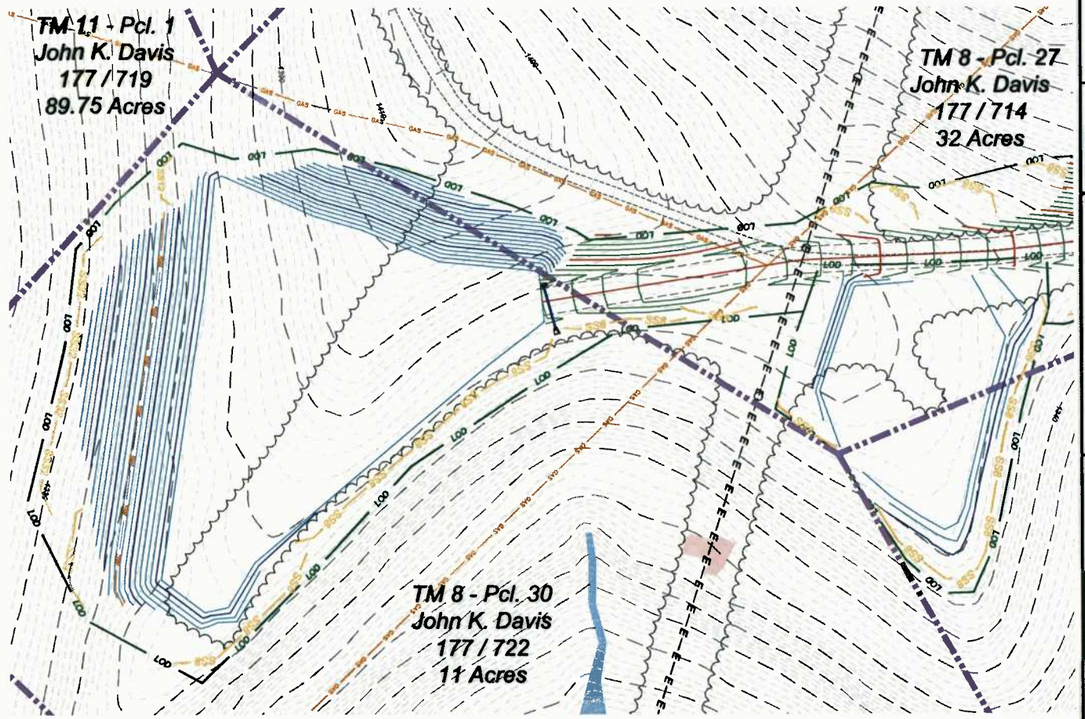
DETAILS

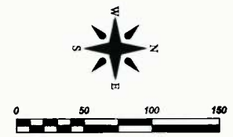
JOHN NORTH PAD
GREENBRIER DISTRICT
DODDRIDGE COUNTY, WV

Date: 10/31/12
Scale: N/A
Designed By: CKW/CKM
File No. Antero 32-30-G-12

RECLAMATION PLAN







*NOTE: No Additional Grading Will be Done for Reclamation

POST CONSTRUCTION DRILLING/FRACTURING REQUIREMENTS:

1. EROSION AND SEDIMENT CONTROLS SHALL BE REPAIRED/RE-ESTABLISHED IN AREAS WHERE AT LEAST 70% TURF HAS NOT BEEN ATTAINED OR EROSION HAS OCCURRED SINCE INITIAL CONSTRUCTION. REPAIRS TO CRITICAL EROSION AREAS (REGRADING, SEEDING AND MULCH AND/OR SLOPE MATTING) SHALL BE DONE BEFORE DRILLING/FRACTURING OPERATIONS COMMENCE. WV DOG BMP SHALL BE USED FOR EROSION AND SEDIMENT CONTROLS.

2. MAINTENANCE AND OTHER CONSIDERATIONS AND GROUND WATER PROTECTION: ALL EROSION AND SEDIMENT CONTROL AND DRILL PAD CONTAINMENT MEASURES WILL BE CHECKED DAILY AND AFTER EACH RAINFALL OF 0.5 INCHES OR MORE. THEY WILL BE INSPECTED FOR UNDERMINING, DETERIORATION, EROSION AND EXCESS DEPOSITED MATERIAL. ALL DEFICIENCIES WILL BE CORRECTED IMMEDIATELY. EXCESS MATERIAL WILL BE SPREAD ON THE SITE IN A MANNER WHERE IT IS NOT LIKELY TO ERODE IN THE FUTURE. CLEANING PROCEDURES WILL BE COMPLETED AT REGULAR INTERVALS AND AT LEAST WHEN SEDIMENT REACHES CLEAN OUT LEVELS SHOWN. RECORDS OF CLEANING AND CORRECTIONS WILL BE MAINTAINED BY THE CONTRACTOR. THE "GENERIC GROUNDWATER PROTECTION PLAN FOR CONSTRUCTION SITES" WILL BE USED AND AVAILABLE ON SITE AT ALL TIMES. AN AREA WILL BE PROVIDED FOR VEHICLE AND EQUIPMENT MAINTENANCE. MOBILE FUEL TRUCKS WITH APPROVED TANKS WILL BE USED ON THIS SITE. PORTABLE SANITARY FACILITIES WILL BE AVAILABLE FOR EMPLOYEES. IF CONCRETE IS USED, EXCESS CONCRETE WILL BE DISPOSED OF PROPERLY AND NOT ALLOWED TO REMAIN ON THIS SITE. MACHINERY WILL NOT BE ALLOWED IN LIVE STREAMS. FLUIDS SUCH AS DIESEL FUEL, GAS, OIL OR ANTIFREEZE WILL BE KEPT IN PROPER CONTAINERS AND ANY SPILLAGE WILL BE CLEANED AND TAKEN OFF SITE TO A PROPER FACILITY. SOLID OR HAZARDOUS WASTES WILL BE DISPOSED IN ACCORDANCE WITH APPROPRIATE STATE AND FEDERAL REGULATIONS.

Legend

Existing 2' Contour	Proposed Check Dam
Existing 10' Contour	Proposed Culvert W/ Inlet & Outlet Protection
Existing Tree Line	Proposed Straw Wattles
Existing Utility Line / Pole	Proposed Silt Soxx w/ Diameter
Surface Owner Property Line	Proposed 2' Contour
Existing Gas Line CL	Proposed 10' Contour
Limits of Disturbance	Proposed Rip-Rap
Proposed Diversion Ditch	* Silt Soxx Diameter in Inches
Proposed 2' Contour	* Super Silt Fence Can be Substituted for Silt Soxx of any Size
Proposed 10' Contour	
Proposed Super Silt Fence	

DATE	REVISIONS
4-16-13	Updated Per New Antero Standards

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ANTERO RESOURCES

THIS DOCUMENT PREPARED FOR ANTERO RESOURCES APPALACHIAN CORP

RECLAMATION PLAN

JOHN NORTH PAD

GREENBRIER DISTRICT
DODDRIDGE COUNTY, WV

Date: 10/31/12
Scale: 1" = 50'
Designed By: CKW/CKM
File No. Antero 32-30-G-12