

Commercial/Industrial Floodplain Development Permit

Doddridge County, WV Floodplain Management

This permit has been issued to ANTERO RESOURCES , and is for the approved commercial and/or industrial development project associated with this permit that impacts the FEMA-designated floodplain and/or floodway of Doddridge County, WV, pursuant to the rules and regulations established by all applicable Federal, State and local laws and ordinances, including the Doddridge County Floodplain Ordinance. This permit must be posted at the site of work as to be clearly visible, and must remain posted during entirety of development.

Permit: #14-242 Bonnell Centralized Freshwater Impoundment

Date Approved: 07/10/2014

Expires: N/A

Issued to: ANTERO RESOURCES

**POC: Emily Kijowski
303-357-7232**

**Company Address: 1615 WYNKOOP ST
DENVER, CO**

Project Address: New Milton District

Lat/Long: 39.2083N/80.6975W

Purpose of development: Freshwater Impoundment. Project does NOT impact floodplain.

Issued by: Edwin L. "Bo" Wriston, Doddridge County FPM (or designee)

Date: 07/10/2014

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

Legal Advertisement:
Doddridge County
Floodplain Permit Application

Please take notice that on the 3rd day of July, 2014

Antero Resources

filed an application for a Floodplain Permit to develop land located at or about:

New Milton District 39.2083N / 80.6975W

Permit #14-242 Bonnell Centralized Freshwater Impoundment

(Note: This project is not within the floodplain)

The Application is on file with the Clerk of the County Court and may be inspected or copied during regular business hours. As this project is outside the FEMA identified floodplain of Doddridge County, Doddridge County Floodplain Management has no regulatory authority.

Any interested persons who desire to comment shall present the same in writing by **August 4, 2014**, delivered to:

Clerk of the County Court
118 E. Court Street, West Union, WV 26456
Beth A Rogers, Doddridge County Clerk
Edwin L. "Bo" Wriston. Doddridge County Flood Plain Manager

#14-242

FILED

2014 JUL -3 PM 1:20

BETH A. POLES
COUNTY CLERK
DODDRIDGE COUNTY, WV



Antero Resources
1615 Wynkoop Street
Denver, CO 80202
Office 303.357.7310
Fax 303.357.7315

June 30, 2014

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

Mr. Wriston:

Antero Resources Appalachian Corporation (Antero) would like to submit a Doddridge County Floodplain permit application for our Bonnell Centralized Fresh Water Impoundment. Our project is located in Doddridge County, New Milton District and per FIRM map #54017C0230C, this location is **not** within the floodplain.

Attached you will find the following:

- Doddridge County Floodplain Permit Application
- Bonnell FWI Construction Plans
- FIRM Map
- WV Flood Tool Map

If you have any questions please feel free to contact me at (303) 357-7232.

Thank you in advance for your consideration.

Sincerely,

A handwritten signature in cursive script that reads "Emily Kijowski".

Emily Kijowski
Permit Representative
Antero Resources Appalachian Corporation

Enclosures

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 _____



DATE June 30, 2014

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 Midstream LLC - Randy Kloberdanz,

ADDRESS: 1615 Wynkoop Street, Denver, CO 80202

TELEPHONE NUMBER: Contact Emily Kijowski: (303)-357-7232

BUILDER'S NAME: Antero Midstream LLC

ADDRESS: 1615 Wynkoop Strett, Denver, CO 80202

TELEPHONE NUMBER: (303)-357-7310

ENGINEER'S NAME: Rettew Associates, Inc.

ADDRESS: Twin Towers, Steubenville Pk, Ste 305, Pittsburgh, PA 15205

TELEPHONE NUMBER: (412)-446-1728

PROJECT LOCATION:

NAME OF SURFACE OWNER/OWNERS (IF NOT THE APPLICANT) James F. Bonnell and Jaqueline S. Bonnell

ADDRESS OF SURFACE OWNER/OWNERS (IF NOT THE APPLICANT) 184 Needmore Road,
New Milton, WV 26411

DISTRICT: New Milton

DATE/FROM WHOM PROPERTY

PURCHASED: N/A

LAND BOOK DESCRIPTION: _____

DEED BOOK REFERENCE: Book 255, Page 622

TAX MAP REFERENCE: Tax Map 12, Parcel 15

EXISTING BUILDINGS/USES OF PROPERTY: None

NAME OF AT LEAST ONE ADULT RESIDING IN EACH RESIDENCE LOCATED UPON THE SUBJECT PROPERTY See above

ADDRESS OF AT LEAST ONE ADULT RESIDING IN EACH RESIDENCE LOCATED UPON THE SUBJECT PROPERTY See above

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

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

B. OTHER DEVELOPMENT ACTIVITIES:

- | | | | | | | | |
|-------------------------------------|---|--------------------------|--------|--------------------------|----------|--------------------------|------------|
| <input checked="" type="checkbox"/> | Fill | <input type="checkbox"/> | Mining | <input type="checkbox"/> | Drilling | <input type="checkbox"/> | Pipelining |
| <input checked="" type="checkbox"/> | Grading | | | | | | |
| <input type="checkbox"/> | Excavation (except for STRUCTURAL DEVELOPMENT checked above) | | | | | | |
| <input type="checkbox"/> | Watercourse Altercation (including dredging and channel modification) | | | | | | |
| <input type="checkbox"/> | Drainage Improvements (including culvert work) | | | | | | |
| <input checked="" type="checkbox"/> | Road, Street, or Bridge Construction | | | | | | |
| <input type="checkbox"/> | Subdivision (including new expansion) | | | | | | |
| <input type="checkbox"/> | Individual Water or Sewer System | | | | | | |
| <input type="checkbox"/> | 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 \$ N/A-Project is not located within floodplain

D. ADJACENT AND/OR AFFECTED LANDOWNERS:

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 - No properties sharing an
 ADDRESS: immediate common boundary up
or down stream due to the location
 not being in floodplain

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 - No properties sharing an
 ADDRESS: immediate common boundary up
or down stream due to the location
 not being in floodplain

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): Randy Kloberdanz

SIGNATURE:  DATE: June 30, 2014

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: _____

Dated: _____

Is **NOT** located in a Specific Flood Hazard Area (Notify applicant that the application review is complete and **NO FLOODPLAIN 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 _____

DATE _____

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 _____ DATE _____

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: _____

PERMIT DATE: _____

PURPOSE –

CONSTRUCTION LOCATION: _____

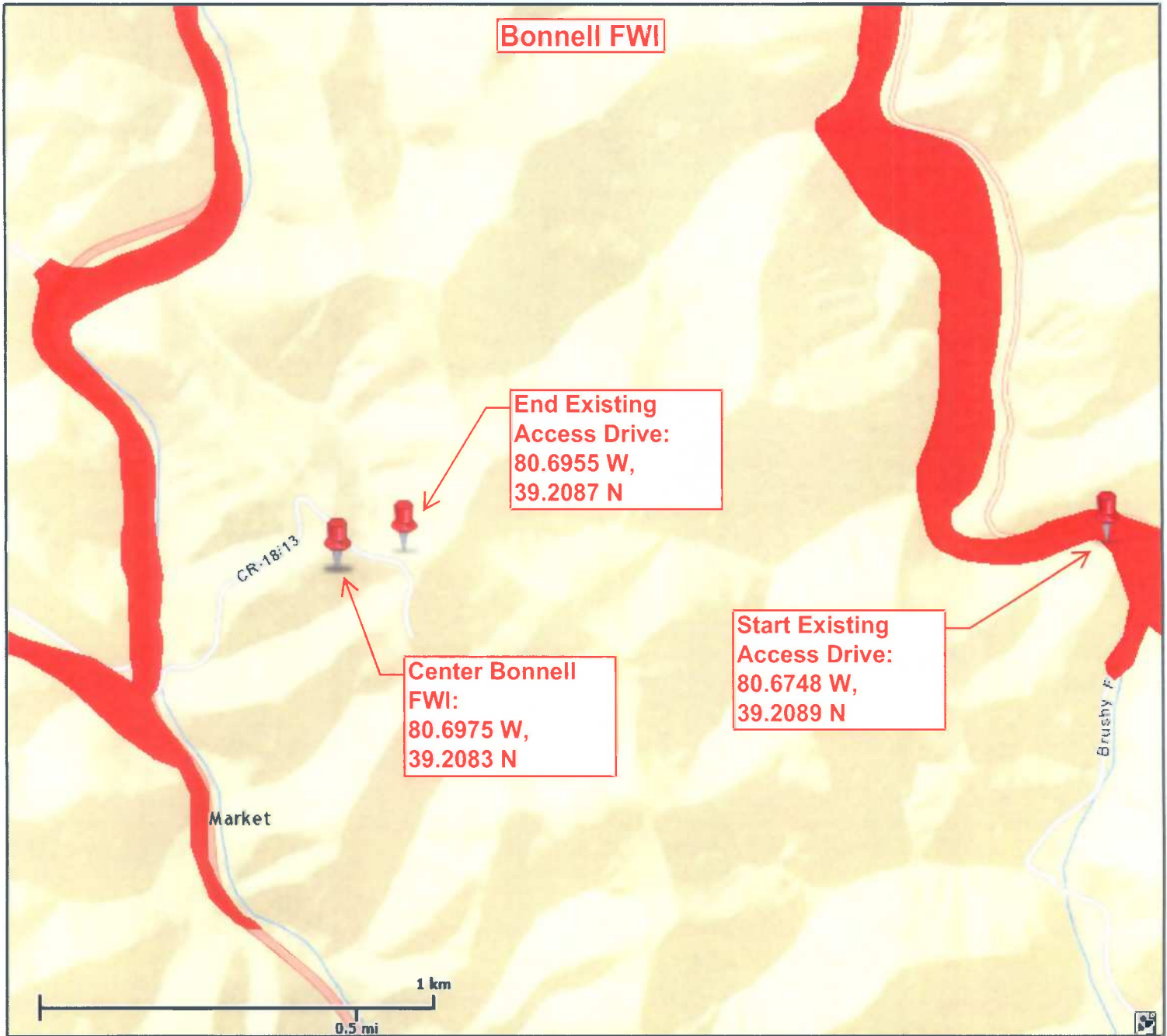
OWNER'S ADDRESS: _____

**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 _____ **DATE** _____


WV Flood Map



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

Map Created on 6/30/2014

 Location of the mouse click

 **Flood Hazard Zone**
(1% annual chance floodplain)

User Notes:

Disclaimer:
The online map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. To obtain more detailed information in areas where Base Flood Elevations have been determined, users are encouraged to consult the latest Flood Profile data contained in the official flood insurance study. These studies are available online at www.msc.fema.gov.

WV Flood Tool is supported by FEMA, WV NFIP Office, and WV GIS Technical Center
(<http://www.MapWV.gov/flood>)

Flood Hazard Area:
Elevation: N/A
Location (long, lat):
Location (UTM 17N):
FEMA Issued Flood Map:
Contacts:
CRS Information:
Parcel Number:

STATE OF WEST VIRGINIA,
COUNTY OF DODDRIDGE, TO WIT

I, Virginia Nicholson, Editor of THE
HERALD RECORD, a weekly newspaper
published regularly, in Doddridge County,
West Virginia, Do Hereby Certify
That the Accompanying Legal Notice
Entitled:

Floodplain Permit
14-242

Bonnell Impoundment

was published in said paper for *2*

successive weeks beginning with the issue
of *July 15th* 2014 and
ending with the issue of

July 22nd 2014 and
that said notice contains *189*

WORD SPACE at *115* cents a word
amounts to the sum of \$ *21.74*

FOR FIRST PUBLICATION, SECOND
PUBLICATION IS 75% OF THE FIRST
PUBLICATION

\$ *16.31*
and each publication thereafter
\$ *38.00* TOTAL

EDITOR

Virginia Nicholson

SWORN TO AND SUBSCRIBED

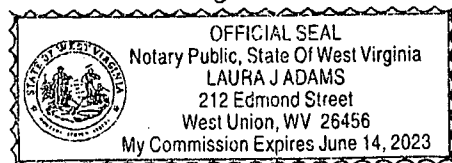
BEFORE ME THIS THE *24th* DAY
OF *July* 2014

NOTARY PUBLIC

Laura J Adams

LEGAL ADVERTISEMENT:
Doddridge County
Floodplain Permit Application
Please take notice that on the 3rd day of July, 2014
Antero Resources filed an application for a Floodplain
Permit to develop land located at or about: New Milton
District 39.2983N/80.6975W Permit #14-242 Bonnell
Centralized Freshwater Impoundment (Note: This project
is not within the floodplain)
The Application is on file with the Clerk of the County
Court and may be inspected or copied during regular
business hours. As this project is outside the FEMA
identified floodplain of Doddridge County, Doddridge
County Floodplain Management, has no regulatory
authority. Any interested persons who desire to comment
shall present the same in writing by August 4, 2014.
Delivered to the:
Clerk of the County Court
118 E. Court Street, West Union, WV 26456
Beth A. Rogers, Doddridge County Clerk
Edwin L. "Bo" Wriston, Doddridge County Flood Plain
Manager

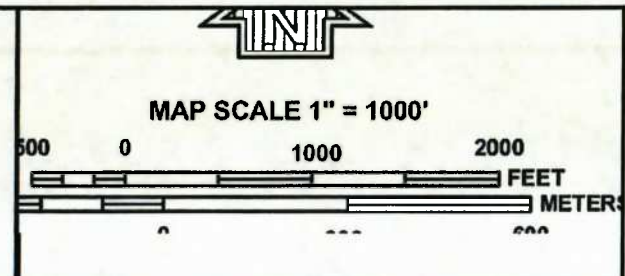
7-15-2xb



**DODDRIDGE COUNTY
UNINCORPORATED AREAS
540024**



JOINS PANEL 02



260000 FT.

255000 FT

**APPROXIMATE
PROJECT SITE**

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0230C

FIRM

FLOOD INSURANCE RATE MAP
DODDRIDGE COUNTY,
WEST VIRGINIA
AND INCORPORATED AREAS

PANEL 230 OF 325
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
DODDRIDGE COUNTY	540024	0230	C

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

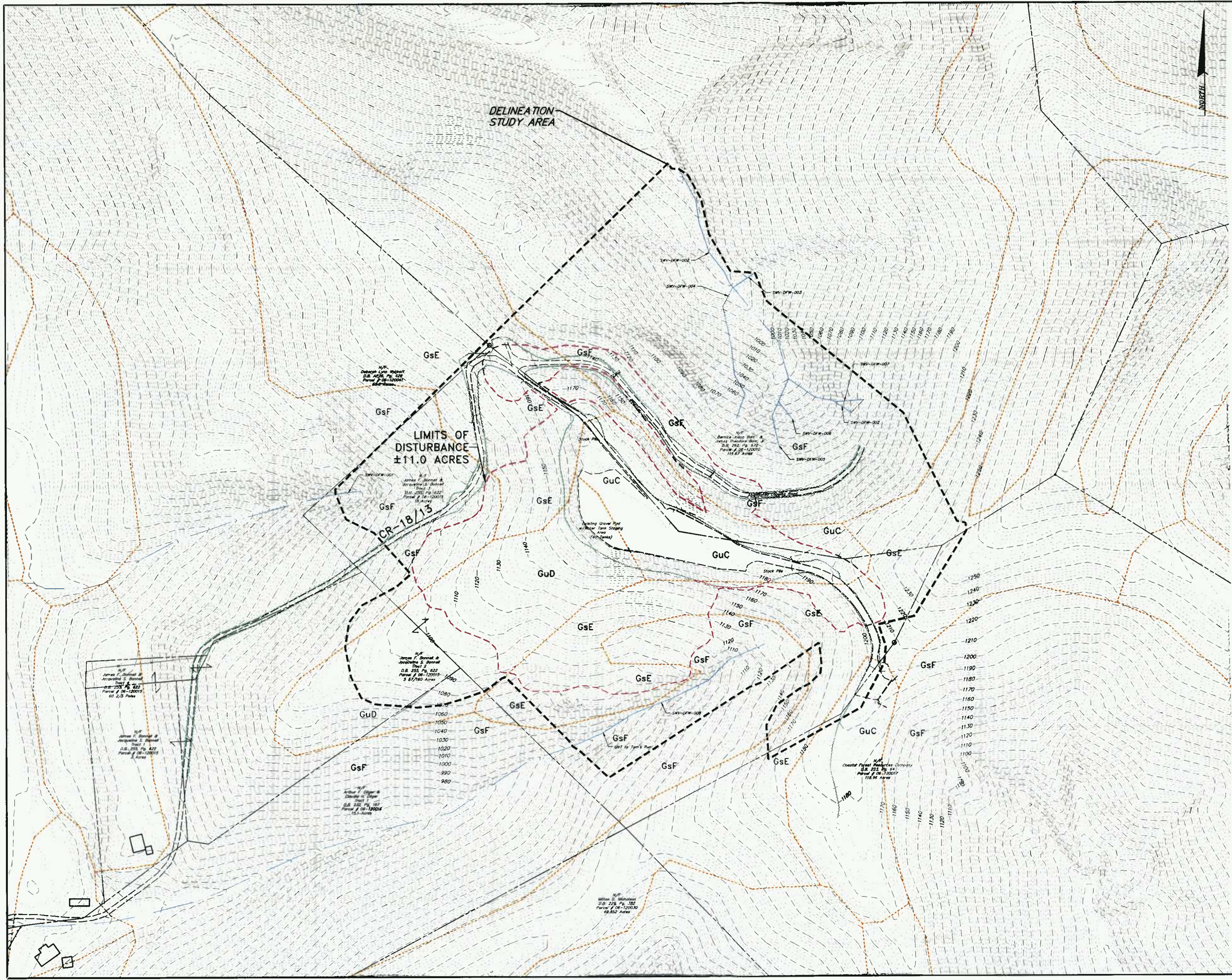
**MAP NUMBER
54017C0230C**

**MAP REVISED
OCTOBER 4, 2011**

Federal Emergency Management Agency

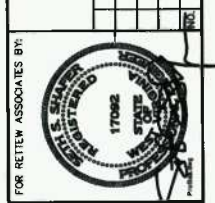
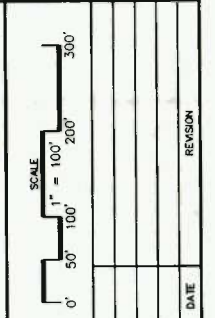
6-30-14
ERIC W. HERSHEY
REGISTERED
19074
STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER
Eric W. Hershey

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



LEGEND

EXISTING LOT LINE	---
EXISTING FARM LANE	---
EXISTING STREAM	---
EXISTING STORM PIPE	---
EXISTING CONTOUR LINE	---
SOIL TYPE DESIGNATION	---
SOIL TYPE BOUNDARY LINE	---
EXISTING TREE LINE	---
LIMITS OF DISTURBANCE	---



FOR RETLEW ASSOCIATES BY:

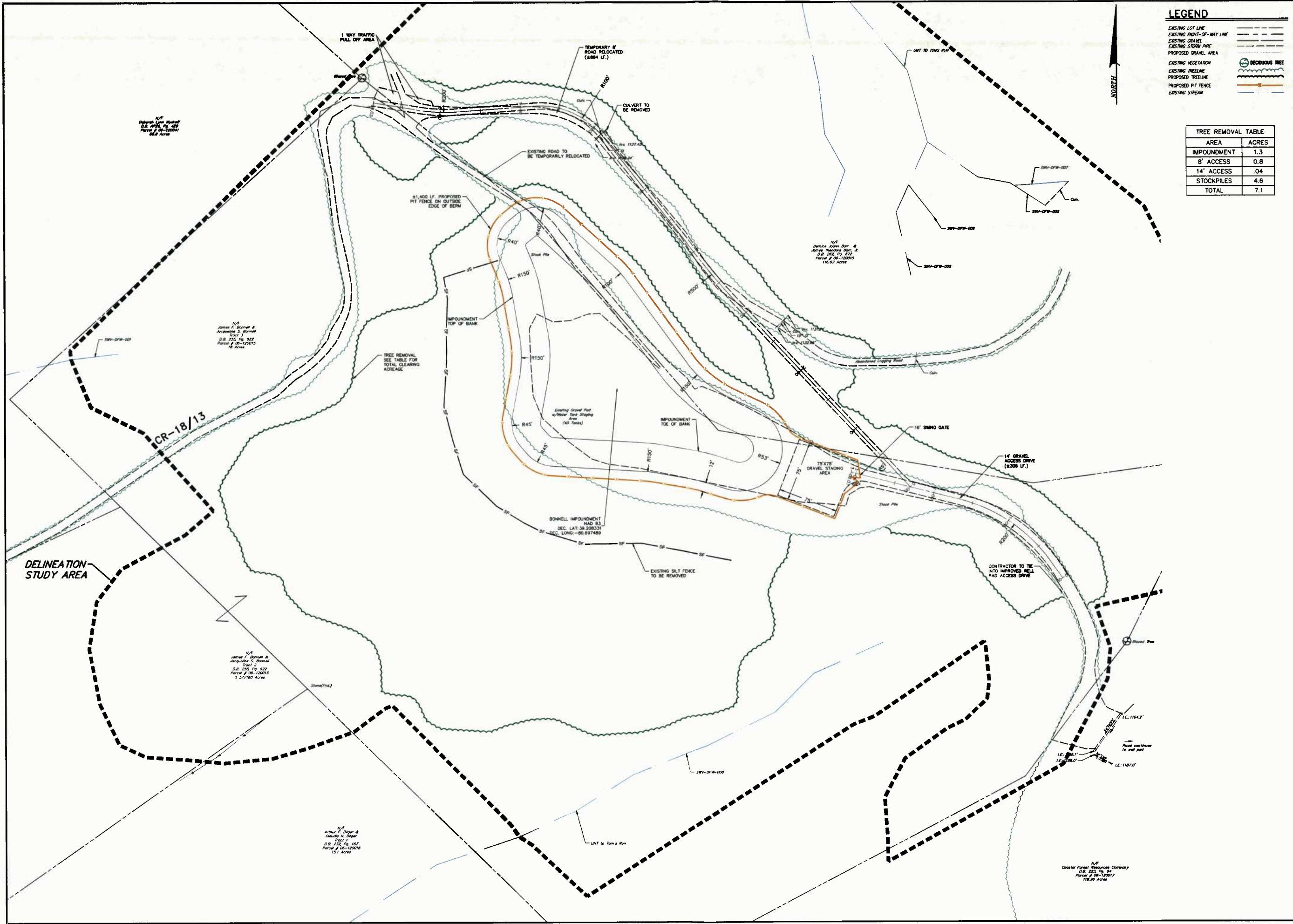
MANAGER:	SETH S. SHAFER, PE
DESIGN BY:	CHAD BY: P.J.F.
SURV. CHIEF:	FILEBOOK NO. JON
DRAWN BY:	CHAD BY: P.J.F.
DRAWING REFERENCE:	

CLIENT
ANTERO RESOURCES APPALACHIAN CORPORATION
1625 17TH STREET
DENVER, COLORADO 80202

RETLEW
RETLEW ASSOCIATES, INC.
1401 Tower, 4905 Shoshone Pk. Dr. 300, P.O. Box 10200
Denver, CO 80202
Phone: (412) 446-1728 • Fax: (412) 446-1733
Email: retlew@retlew.com
Website: www.retlew.com

EXISTING CONDITIONS PLAN
FOR
**BONNELL CENTRALIZED
FRESHWATER IMPOUNDMENT**
NEW MILTON DISTRICT DODDRIIDGE COUNTY, WV

DATE: 12/28/12
SHEET NO. 2 OF 10
DWG. NO. 095452004

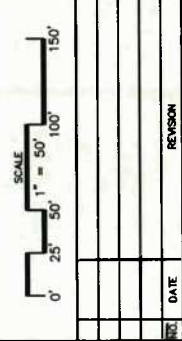


LEGEND

- EXISTING LOT LINE
- EXISTING RIGHT-OF-WAY LINE
- EXISTING GRAVEL
- EXISTING STORM PIPE
- PROPOSED GRAVEL AREA
- EXISTING VEGETATION
- EXISTING TREELINE
- PROPOSED TREELINE
- PROPOSED PIT FENCE
- EXISTING STREAM

TREE REMOVAL TABLE

AREA	ACRES
IMPOUNDMENT	1.3
8' ACCESS	0.8
14' ACCESS	.04
STOCKPILES	4.6
TOTAL	7.1



FOR REVIEW ASSOCIATES BY:

MANAGER:	DESIGN BY:	FIELDBOOK NO.:	DRAWN BY:	DRAWING REFERENCE:
SETH S. SHAFER, PE	CHAD BY: P.J.F.	DATA COLLECTOR:	CHAD BY: P.J.F.	
JUN			JUN	

CLIENT
ANTERO RESOURCES APPALACHIAN CORPORATION
1825 17TH STREET
DENVER, COLORADO 80202

RETTEW
RETTEW ASSOCIATES, INC.
1000
Tim Towne, 4955 Shakerline Pl., Ste. 305, Pittsburgh, PA 15206
Phone (412) 446-1725 • Fax (412) 446-1733
Email: rettew@rettew.com
Website: www.rettew.com
Engineers • Planners • Surveyors • Landscape Architects
Environmental Consultants

LAYOUT PLAN
FOR
**BONNELL CENTRALIZED
FRESHWATER IMPOUNDMENT**
NEW MILTON DISTRICT
DODDRIEGE COUNTY, WV

DATE: 12/28/12
SHEET NO. 3 OF 10
DWG. NO. 095452004

LEGEND

- EXISTING LOT LINE
- EXISTING PAVEMENT
- EXISTING STORM PIPE
- EXISTING CONTOUR LINE
- PROPOSED GRAVEL AREA
- PROPOSED MINOR CONTOUR LINE
- PROPOSED MAJOR CONTOUR LINE
- EXISTING STREAM
- DRAINAGE TRENCH
- EXISTING VEGETATION
- EXISTING TREELINE
- PROPOSED TREELINE
- DECIDUOUS TREE

NOTES:
 1. CONTRACTOR SHALL PROTECT TREES TO REMAIN.
 2. PER WDEP REQUIREMENTS, EARTHWORK WILL INCLUDE A MINIMUM 2 FOOT DEEP STRIPPING/OVER EXCAVATION WITHIN THE LIMITS OF THE FRESHWATER IMPOUNDMENT.

SCALE: 1" = 50'

DATE: 12/28/12

SHEET NO. 4 OF 10

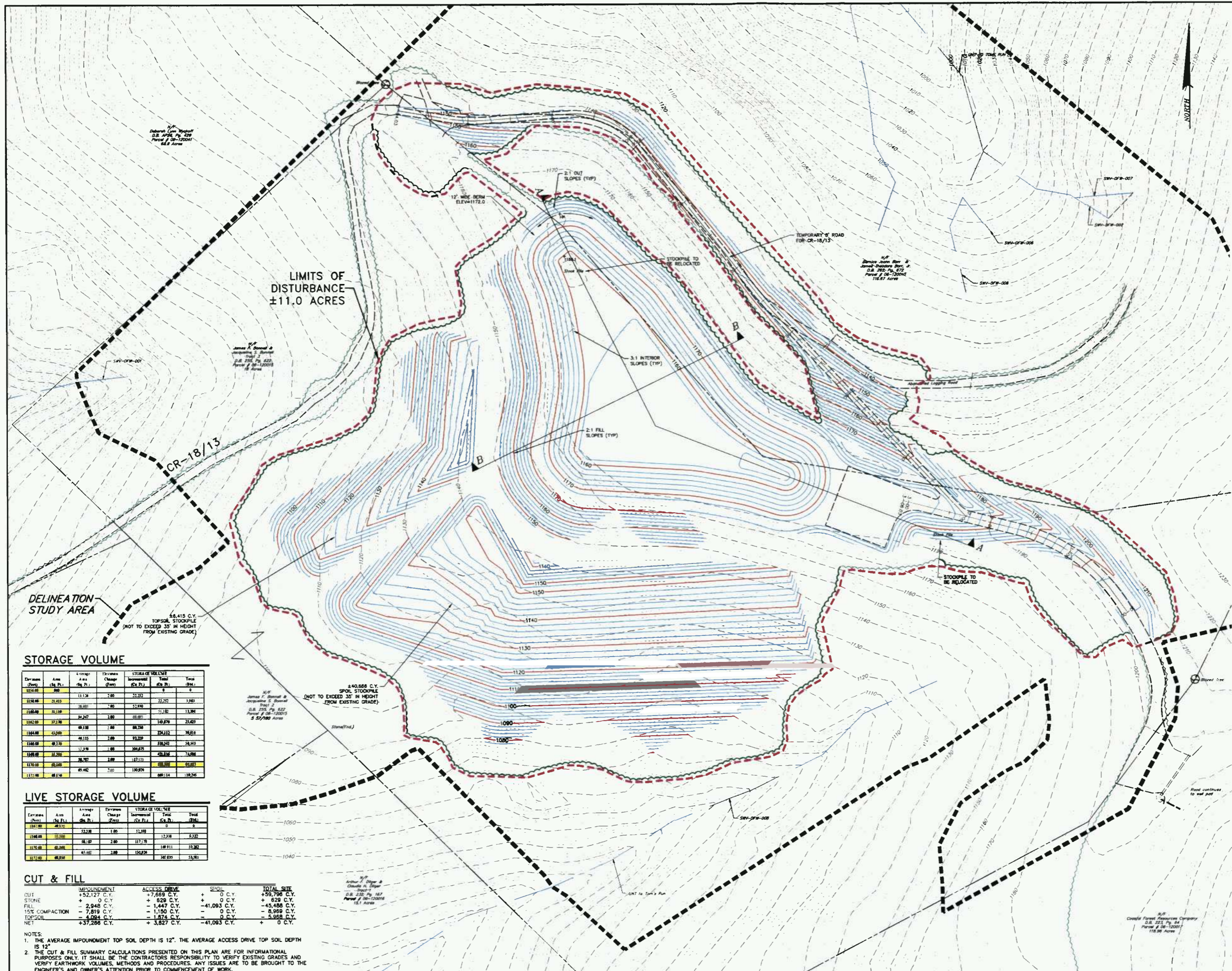
DWG. NO. 095452004

FOR RETIRE ASSOCIATES BY:

MANAGER: SETH S. SHAFER, PE
 DESIGN BY: JON P.J.
 SURV. CHECK: JON P.J.
 DRAWN BY: JON P.J.
 CHECK BY: JON P.J.

CLIENT: ANTERO RESOURCES APPALACHIAN CORPORATION
 1625 17TH STREET
 DENVER, COLORADO 80202

REVISIONS:



STORAGE VOLUME

Elevation (Feet)	Area (Sq. Ft.)	Volume Change (Cu. Yd.)	Incremental Volume (Cu. Yd.)	Total Volume (Cu. Yd.)
1124.00	800		0	0
1126.00	21,413	20,613	20,613	20,613
1128.00	33,258	11,845	32,458	53,071
1130.00	37,230	3,972	36,430	90,501
1132.00	41,202	3,972	40,402	130,903
1134.00	45,174	3,972	44,374	175,277
1136.00	49,146	3,972	48,346	223,623
1138.00	53,118	3,972	52,318	275,941
1140.00	57,090	3,972	56,290	332,231
1142.00	61,062	3,972	60,262	392,493
1144.00	65,034	3,972	64,234	456,727
1146.00	69,006	3,972	68,206	524,933
1148.00	72,978	3,972	72,178	597,111
1150.00	76,950	3,972	76,150	673,261
1152.00	80,922	3,972	80,122	753,383

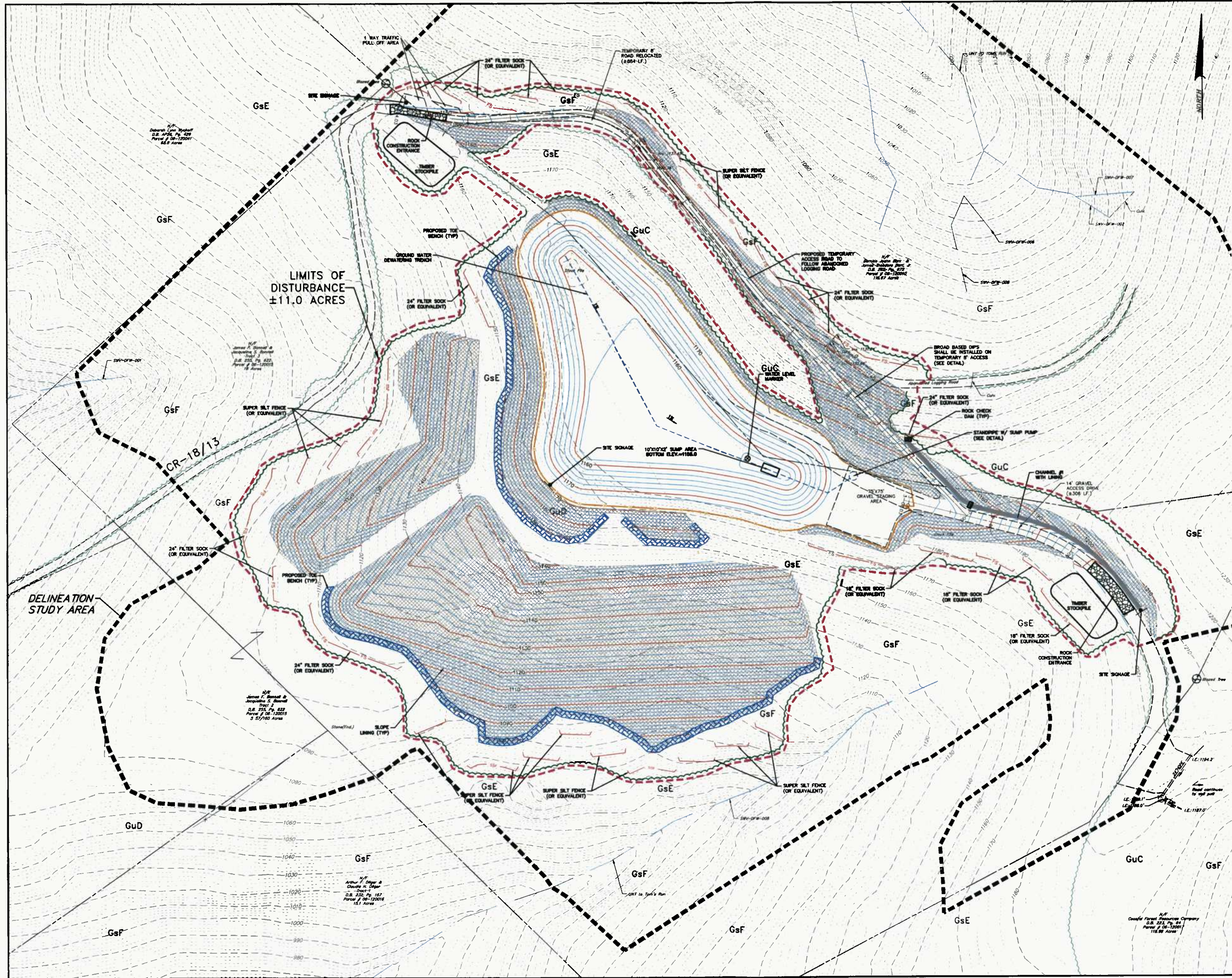
LIVE STORAGE VOLUME

Elevation (Feet)	Area (Sq. Ft.)	Volume Change (Cu. Yd.)	Incremental Volume (Cu. Yd.)	Total Volume (Cu. Yd.)
1140.00	45,174		0	0
1142.00	49,146	3,972	3,972	3,972
1144.00	53,118	3,972	7,944	7,944
1146.00	57,090	3,972	11,916	11,916
1148.00	61,062	3,972	15,888	15,888
1150.00	65,034	3,972	19,860	19,860
1152.00	69,006	3,972	23,832	23,832
1154.00	72,978	3,972	27,804	27,804
1156.00	76,950	3,972	31,776	31,776
1158.00	80,922	3,972	35,748	35,748
1160.00	84,894	3,972	39,720	39,720

CUT & FILL

Category	Impoundment	Access Drive	Spill	Total Site
CUT	+52,127 C.Y.	+7,889 C.Y.	0 C.Y.	+60,016 C.Y.
STONE	0 C.Y.	+829 C.Y.	0 C.Y.	+829 C.Y.
FILL	-2,948 C.Y.	-1,447 C.Y.	-41,093 C.Y.	-45,488 C.Y.
15% COMPACTION	-7,819 C.Y.	-11,500 C.Y.	0 C.Y.	-19,319 C.Y.
TOPSOIL	-4,004 C.Y.	+1,874 C.Y.	-5,988 C.Y.	-8,118 C.Y.
NET	+37,286 C.Y.	+3,827 C.Y.	-41,093 C.Y.	0 C.Y.

NOTES:
 1. THE AVERAGE IMPOUNDMENT TOP SOIL DEPTH IS 12". THE AVERAGE ACCESS DRIVE TOP SOIL DEPTH IS 12".
 2. THE CUT & FILL SUMMARY CALCULATIONS PRESENTED ON THIS PLAN ARE FOR INFORMATIONAL PURPOSES ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY EXISTING GRADES AND VERIFY EARTHWORK VOLUMES, METHODS AND PROCEDURES. ANY ISSUES ARE TO BE BROUGHT TO THE ENGINEER'S AND OWNER'S ATTENTION PRIOR TO COMMENCEMENT OF WORK.



LEGEND

EXISTING LOT LINE	---
EXISTING PAVEMENT	---
EXISTING STORM PIPE	---
EXISTING CONTOUR LINE	---
SOIL TYPE DESIGNATION	---
SOIL TYPE BOUNDARY LINE	---
PROPOSED GRAVEL AREA	---
PROPOSED MINOR CONTOUR LINE	---
PROPOSED MAJOR CONTOUR LINE	---
PROPOSED SPOT ELEVATION	---
PROPOSED CULVERT	---
LIMITS OF DISTURBANCE	---
SUPER SILT FENCE (OR EQUIVALENT)	---
FILTER SOCK	---
TEMPORARY ROCK CONSTRUCTION ENTRANCE	---
ROCK CHECK DAM	---
OUTLET PROTECTION CHANNEL LINING	---
SLOPE LINING	---
TOE BENCH	---
DEWATERING TRENCH	---
EXISTING VEGETATION	---
EXISTING TREELINE	---
PROPOSED TREELINE	---
EXISTING STREAM	---
WATER LEVEL MARKER	---

- NOTES:**
- CONTRACTOR SHALL PROTECT TREES TO REMAIN.
 - PER WPOED REQUIREMENTS, EARTHWORK WILL INCLUDE A MINIMUM 2 FOOT DEEP STRIPPING/OVER EXCAVATION WITHIN THE LIMITS OF THE FRESHWATER IMPOUNDMENT.
 - SILT FENCE MAYBE SUBSTITUTED FOR FILTER SOCK UP TO & INCLUDING 24" & SUPER SILT FENCE MAYBE SUBSTITUTED FOR FILTER SOCK LARGER THAN 24".

FOR RETTEW ASSOCIATES BY:

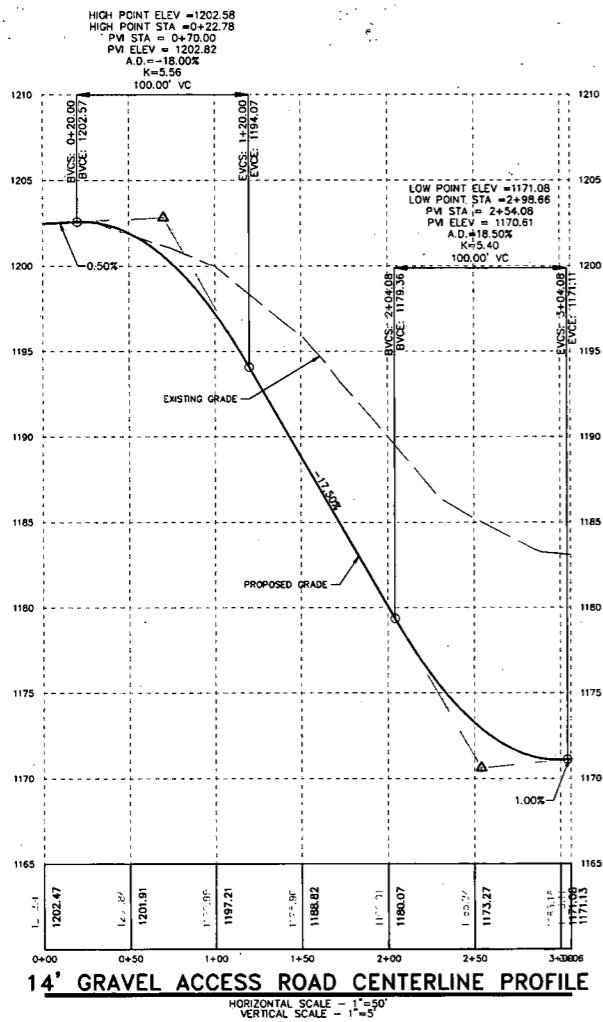
MANAGER:	SETH S. SHAFER, PE
DESIGN BY:	CHD BY: P.J.F.
SURV. CHIEF:	FILEBOOK NO. DATA COLLECTOR
DRAWN BY:	CHD BY: P.J.F.
DRAWING REFERENCE:	

CLIENT:
ANTERO RESOURCES APPALACHIAN CORPORATION
 1625 17TH STREET
 DENVER, COLORADO 80202

RETTEW
 RETTEW ASSOCIATES, INC.
 1100 N. 17TH ST., SUITE 305, PITTSBURGH, PA 15205
 PHONE: (412) 446-1728 • FAX: (412) 446-1733
 EMAIL: rettew@rettew.com
 Website: www.rettew.com

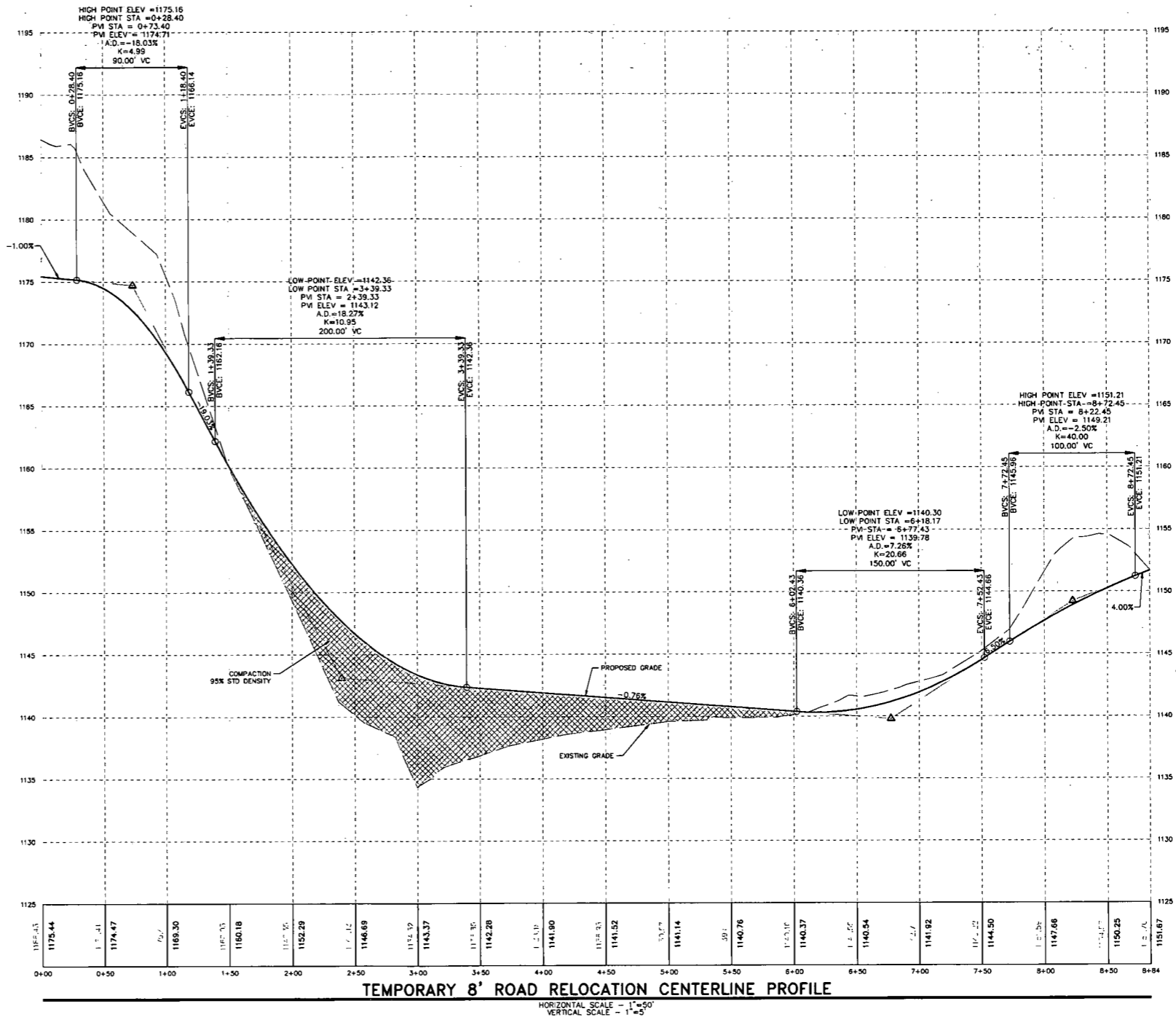
EROSION & SEDIMENT CONTROL PLAN
 FOR
BONNELL CENTRALIZED FRESHWATER IMPOUNDMENT
 NEW MILTON DISTRICT DODDRIIDGE COUNTY, WV

DATE: 12/28/12
 SHEET NO. 5 OF 10
 DWG. NO. 095452004



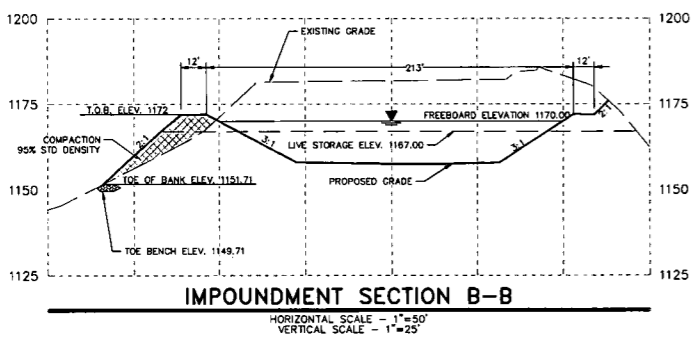
14' GRAVEL ACCESS ROAD CENTERLINE PROFILE

HORIZONTAL SCALE - 1"=50'
VERTICAL SCALE - 1"=5'



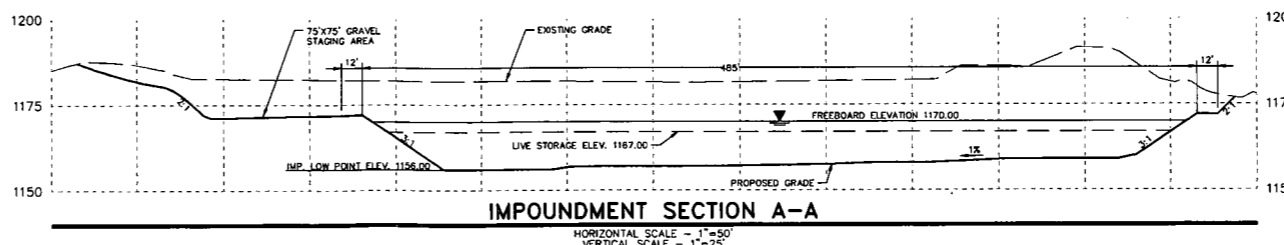
TEMPORARY 8' ROAD RELOCATION CENTERLINE PROFILE

HORIZONTAL SCALE - 1"=50'
VERTICAL SCALE - 1"=5'



IMPOUNDMENT SECTION B-B

HORIZONTAL SCALE - 1"=50'
VERTICAL SCALE - 1"=25'



IMPOUNDMENT SECTION A-A

HORIZONTAL SCALE - 1"=50'
VERTICAL SCALE - 1"=25'

SCALE	AS NOTED
DATE	
NO.	
REV.	

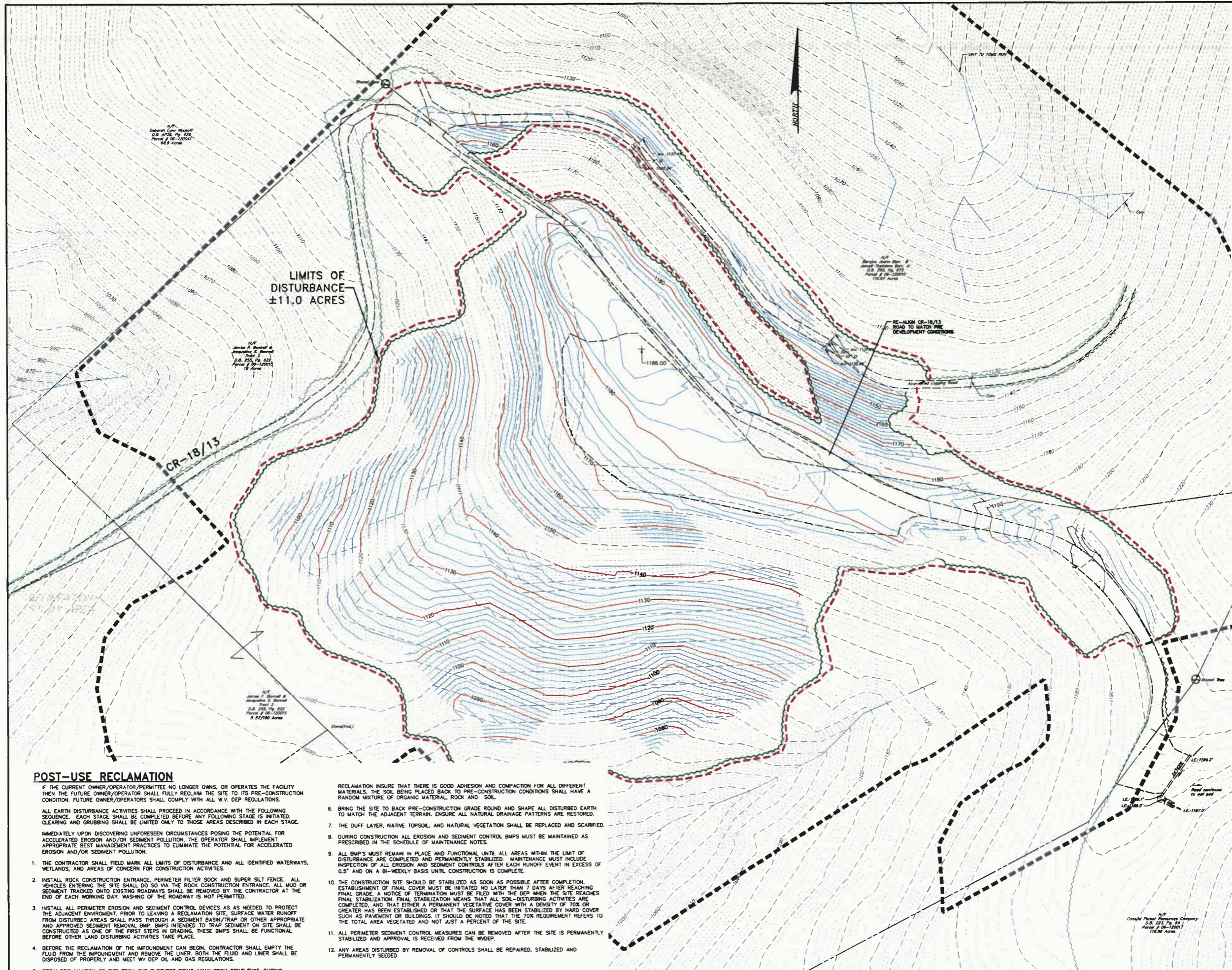
FOR REVIEW ASSOCIATES BY:	
MANAGER:	SETH S. SHAFER, PE
DESIGN BY:	CHD BY: P.J.F.
SURV. CHIEF:	FIELDBOOK NO. DATA COLLECTOR
DRAWN BY:	JDN
CHD BY:	P.J.F.

ANTERO RESOURCES APPALACHIAN CORPORATION
1625 17TH STREET
DENVER, COLORADO 80202

RETTEW
RETTEW ASSOCIATES, INC.
1611 Tower, 4505 S. University Blvd., Suite 300, Littleton, CO 80120
Phone: (303) 446-1726 • Fax: (303) 446-1733
Email: rettew@rettew.com
Website: www.rettew.com

ROAD PROFILES & CROSS SECTIONS
FOR
**BONNELL CENTRALIZED
FRESHWATER IMPOUNDMENT**
NEW MILTON DISTRICT
DODDRIEGE COUNTY, WY

DATE:	12/28/12
SHEET NO.:	6 OF 10
DWG. NO.:	095452004



LEGEND

EXISTING LOT LINE	---
EXISTING PAVEMENT	---
EXISTING STORM PIPE	---
EXISTING CONTOUR LINE	---
PROPOSED GRAVEL AREA	---
PROPOSED MINOR CONTOUR LINE	---
PROPOSED MAJOR CONTOUR LINE	---
EXISTING STREAM	---
DEWATERING TRENCH	---
EXISTING VEGETATION	---
EXISTING TREELINE	---
PROPOSED TREELINE	---
DECIDUOUS TREE	---

- RECLAMATION NOTES:**
1. REMOVE ALL EQUIPMENT FROM THE SITE, RESTORE THE NATURAL DRAINAGE PATTERNS AND REMOVE AND SEDIMENTATION DEVICES OTHER CONTROL FACILITIES.
 2. ROUND OR SHAPE ALL DISTURBED AREAS TO CONFORM THE SITE TO ADJACENT TERRAIN.
 3. ALL UNSTABILIZED AREAS SHOULD BE SCARIFIED, LIMED, FERTILIZED, SEED, AND MULCHED.

- RESTORATION OF PLANTED AREAS**
1. IF EARTH DISTURBANCE OCCURS DURING THE MONTHS OF NOVEMBER THROUGH MARCH, THEN TEMPORARY SEED MIXTURE SHALL BE APPLIED TO DISTURBED AREAS. IF STABILIZATION CANNOT BE ACHIEVED WITH TEMPORARY SEED, THEN MULCH WITH TACKIFIER SHALL BE APPLIED TO DISTURBED AREAS. MULCH SHALL BE CLEAN OAT OR WHEAT STRAW AND SHALL BE APPLIED PER TABLE IV-4. TACKIFIER SHALL BE APPLIED AT THE MANUFACTURER'S APPLIED RATE. AREAS THAT LOSE THE MULCH COVER SHALL BE REMULCHED.
 2. FINAL RESTORATION SHALL BE PERFORMED NO LATER THAN THE START OF THE NEXT PLANTING SEASON FOLLOWING CONSTRUCTION. THE PLANTING SEASON SHALL BE AS ESTABLISHED BY THE U.S. AGRICULTURAL SERVICE FOR THE AREA OF CONSTRUCTION.
 3. TOPSOIL SHALL BE FREE FROM SUBSOIL, BRUSH, WEEDS, OR OTHER LITTER, CLAY LUMPS AND STONES, BUT MAY CONTAIN DECAYING VEGETABLE MATTER AS IS PRESENT IN GOOD TOPSOIL.
 4. PRECAUTIONS SHALL BE EXERCISED AS NECESSARY TO CONFORM WITH LAWS RELATING TO EROSION AND SEDIMENT CONTROL.
 5. SEED SHALL BE NOT MORE THAN ONE (1) YEAR OLD. GERMINATION TESTS OF SEEDS SHALL BE MADE NOT MORE THAN SIX (6) MONTHS PRIOR TO SEEDING. SEED THAT HAS BECOME WET, MOLDY, OR OTHERWISE DAMAGED SHALL NOT BE USED.
 6. TEMPORARY AND PERMANENT SEEDING SHALL ADHERE TO THE SPECIFICATIONS PROVIDED IN THIS PLAN.
 7. THE CONTRACTOR SHALL BE RESPONSIBLE TO PRODUCE A STAND OF GRASS IN ALL SEED OR SODDED AREAS. EROSION, DROUGHT, OR ANY OTHER CONDITION ENCOUNTERED SHALL NOT RELIEVE THE CONTRACTOR OF THIS REQUIREMENT.

FOR REVIEW ASSOCIATES BY:

DATE	
SCALE	1" = 50'
	0' 25' 50' 100' 150'



MANAGER: SETH S. SHAFER, PE
 DESIGN BY: P.J.F.
 SURV. CHECK: P.J.F.
 DRAWN BY: JON
 CHECK BY: P.J.F.

CUBBY
 ANTERO RESOURCES APPALACHIAN CORPORATION
 1625 17TH STREET
 DENVER, COLORADO 80202

REVIEW
 4000 W. 10th Ave., Suite 100
 Fort Collins, CO 80504
 Phone: (970) 446-1728 • Fax: (970) 446-1733
 Email: review@retire.com
 Website: www.retire.com

RECLAMATION PLAN FOR
BONNELL CENTRALIZED FRESHWATER IMPOUNDMENT
 DODDRIIDGE COUNTY, WY
 NEW MILTON DISTRICT

DATE: 12/28/12
 SHEET NO. 7 OF 10
 DWG. NO. 095452004

- POST-USE RECLAMATION**
- IF THE CURRENT OWNER/OPERATOR/PERMITEE NO LONGER OWNS, OR OPERATES THE FACILITY THEN THE FUTURE OWNER/OPERATOR SHALL FULLY RECLAIM THE SITE TO ITS PRE-CONSTRUCTION CONDITION. FUTURE OWNER/OPERATORS SHALL COMPLY WITH ALL W.V. DEP REGULATIONS.
- ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE FOLLOWING SEQUENCE. EACH STAGE SHALL BE COMPLETED BEFORE ANY FOLLOWING STAGE IS INITIATED. CLEARING AND GRUBBING SHALL BE LIMITED ONLY TO THOSE AREAS DESCRIBED IN EACH STAGE.
- IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION, THE OPERATOR SHALL IMPLEMENT APPROPRIATE BEST MANAGEMENT PRACTICES TO ELIMINATE THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION.
1. THE CONTRACTOR SHALL FIELD MARK ALL LIMITS OF DISTURBANCE AND ALL IDENTIFIED WATERWAYS, WETLANDS, AND AREAS OF CONCERN FOR CONSTRUCTION ACTIVITIES.
 2. INSTALL ROCK CONSTRUCTION ENTRANCE, PERIMETER FILTER SOCK AND SUPER SILT FENCE. ALL VEHICLES ENTERING THE SITE SHALL DO SO VIA THE ROCK CONSTRUCTION ENTRANCE. ALL MUD OR SEDIMENT TRACKED ONTO EXISTING ROADWAYS SHALL BE REMOVED BY THE CONTRACTOR AT THE END OF EACH WORKING DAY. WASHING OF THE ROADWAY IS NOT PERMITTED.
 3. INSTALL ALL PERIMETER EROSION AND SEDIMENT CONTROL DEVICES AS AS NEEDED TO PROTECT THE ADJACENT ENVIRONMENT. PRIOR TO LEAVING A RECLAMATION SITE, SURFACE WATER RUNOFF FROM DISTURBED AREAS SHALL PASS THROUGH A SEDIMENT BASIN/TRAP OR OTHER APPROPRIATE AND APPROVED SEDIMENT REMOVAL BMP. BMPs INTENDED TO TRAP SEDIMENT ON SITE SHALL BE CONSTRUCTED AS ONE OF THE FIRST STEPS IN GRADING. THESE BMPs SHALL BE FUNCTIONAL BEFORE OTHER LAND DISTURBING ACTIVITIES TAKE PLACE.
 4. BEFORE THE RECLAMATION OF THE IMPOUNDMENT CAN BEGIN, CONTRACTOR SHALL EMPTY THE FLUID FROM THE IMPOUNDMENT AND REMOVE THE LINER. BOTH THE FLUID AND LINER SHALL BE DISPOSED OF PROPERLY AND MEET WY DEP OIL AND GAS REGULATIONS.
 5. BEGIN RECLAMATION OF SITE FROM THE FURTHEST POINT AWAY FROM DRIVE/EXT. DURING

6. RECLAMATION INSURE THAT THERE IS GOOD ADHESION AND COMPACTION FOR ALL DIFFERENT MATERIALS. THE SOIL BEING PLACED BACK TO PRE-CONSTRUCTION CONDITIONS SHALL HAVE A RANDOM MIXTURE OF ORGANIC MATERIAL, ROCK AND SOIL.
6. BRING THE SITE TO BACK PRE-CONSTRUCTION GRADE ROUND AND SHAPE ALL DISTURBED EARTH TO MATCH THE ADJACENT TERRAIN. ENSURE ALL NATURAL DRAINAGE PATTERNS ARE RESTORED.
7. THE DUFF LAYER, NATIVE TOPSOIL, AND NATURAL VEGETATION SHALL BE REPLACED AND SCARIFIED.
8. DURING CONSTRUCTION ALL EROSION AND SEDIMENT CONTROL BMPs MUST BE MAINTAINED AS PRESCRIBED IN THE SCHEDULE OF MAINTENANCE NOTES.
9. ALL BMPs MUST REMAIN IN PLACE AND FUNCTIONAL UNTIL ALL AREAS WITHIN THE LIMIT OF DISTURBANCE ARE COMPLETED AND PERMANENTLY STABILIZED. MAINTENANCE MUST INCLUDE INSPECTION OF ALL EROSION AND SEDIMENT CONTROLS AFTER EACH RUNOFF EVENT IN EXCESS OF 0.5" AND ON A BI-WEEKLY BASIS UNTIL CONSTRUCTION IS COMPLETE.
10. THE CONSTRUCTION SITE SHOULD BE STABILIZED AS SOON AS POSSIBLE AFTER COMPLETION. ESTABLISHMENT OF FINAL COVER MUST BE INITIATED NO LATER THAN 7 DAYS AFTER REACHING FINAL GRADE. A NOTICE OF TERMINATION MUST BE FILED WITH THE DEP WHEN THE SITE REACHES FINAL STABILIZATION. FINAL STABILIZATION MEANS THAT ALL SOIL-DISTURBING ACTIVITIES ARE COMPLETED, AND THAT EITHER A PERMANENT VEGETATIVE COVER WITH A DENSITY OF 70% OR GREATER HAS BEEN ESTABLISHED OR THAT THE SURFACE HAS BEEN STABILIZED BY HARD COVER SUCH AS PAVEMENT OR BUILDINGS. IT SHOULD BE NOTED THAT THE 70% REQUIREMENT REFERS TO THE TOTAL AREA VEGETATED AND NOT JUST A PERCENT OF THE SITE.
11. ALL PERIMETER SEDIMENT CONTROL MEASURES CAN BE REMOVED AFTER THE SITE IS PERMANENTLY STABILIZED AND APPROVAL IS RECEIVED FROM THE WDEP.
12. ANY AREAS DISTURBED BY REMOVAL OF CONTROLS SHALL BE REPAIRED, STABILIZED AND PERMANENTLY SEED.

W.P. Deborah Lee Westhoff
 D.B. 225, Pg. 424
 Parcel # 08-120041
 64.8 Acres

W.P. James K. Bernal & Jacqueline S. Bernal
 D.B. 225, Pg. 622
 Parcel # 08-120011
 18 Acres

W.P. James K. Bernal & Jacqueline S. Bernal
 D.B. 225, Pg. 622
 Parcel # 08-120011
 5.57/180 Acres

W.P. Barbara Jean Barr & James H. Barr
 D.B. 202, Pg. 672
 Parcel # 08-120006
 116.67 Acres

W.P. Coastal Forest Resources Company
 D.B. 225, Pg. 84
 Parcel # 08-120011
 116.96 Acres

TABLE IV-4a
PERMANENT SEEDING MIXTURES SUITABLE FOR ESTABLISHMENT IN WEST VIRGINIA

SPECIES	RATES IN LBS PER ACRE	DRAINAGE	pH RANGE
CROWNVEICH/TALL FESCUE	10-15	WELL - MOD. WELL	5.0-7.5
CROWNVEICH/PERENNIAL RYEGRASS	10-15	WELL - MOD. WELL	5.0-7.5
FLATPEA/TALL FESCUE	20	WELL - MOD. WELL	4.0-8.0
LADINO CLOVER/SERICEA LESPEDEZA/TALL FESCUE	25	WELL - MOD. WELL	4.5-7.5
TALL FESCUE/REDTOP	3	WELL - MOD. WELL	5.0-7.5
CROWNVEICH/TALL FESCUE/REDTOP	10	WELL - MOD. WELL	5.0-7.5
BROODFOOT TREFOIL/REDTOP	10	WELL - MOD. WELL	5.0-7.5
SERICEA LESPEDEZA/REDTOP	25	WELL - MOD. WELL	4.5-7.5
TALL FESCUE/REDTOP	3	WELL - MOD. WELL	5.0-7.5
TALL FESCUE/CREeping RED	50	WELL - MOD. WELL	4.5-7.5
PERENNIAL RYEGRASS/TALL FESCUE/LADINO FLATPEA	10	WELL - POORLY	5.0-8.0

TABLE IV-4b
PERMANENT SEEDING MIXTURES SUITABLE FOR ESTABLISHMENT IN WEST VIRGINIA (WILDLIFE & FARM FRIENDLY)

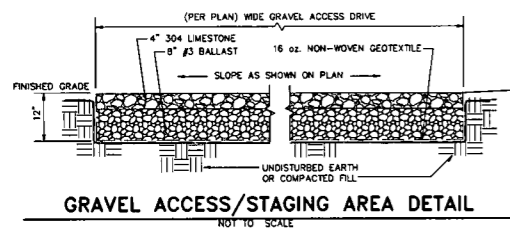
SPECIES	RATES IN LBS PER ACRE	DRAINAGE	pH RANGE
KY BLUEGRASS/REDTOP	20	WELL - MOD. WELL	5.5-7.5
LADINO CLOVER	2/10	WELL - MOD. WELL	5.5-8.0
TIMOTHY/ALFALFA	5	WELL - MOD. WELL	6.5-8.0
TIMOTHY/BROODFOOT TREFOIL	5	WELL - POORLY	5.5-8.0
ORCHARDGRASS	10	WELL - MOD. WELL	5.5-7.5
LADINO CLOVER/REDTOP	2	WELL - MOD. WELL	5.5-7.5
ORCHARDGRASS/LADINO CLOVER	10	WELL - MOD. WELL	5.5-7.5
PERENNIAL RYEGRASS	20	WELL - MOD. WELL	5.0-7.5
CREeping RED FESCUE/PERENNIAL RYEGRASS	30	WELL - MOD. WELL	5.0-7.5
ORCHARDGRASS OR KY BLUEGRASS	20	WELL - MOD. WELL	6.0-7.5
BROODFOOT TREFOIL/REDTOP/ORCHARDGRASS	10	WELL - MOD. WELL	5.5-7.5
LADINO FLAT PEA/PERENNIAL RYEGRASS	30	WELL - MOD. WELL	5.5-7.5
LADINO FLAT PEA/ORCHARDGRASS	30	WELL - MOD. WELL	5.5-7.5

TABLE IV-5
LIME AND FERTILIZER APPLICATION TABLE

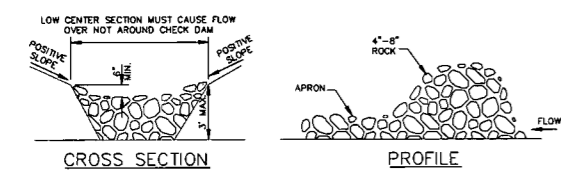
pH OF SOIL	LIME IN TONS PER ACRE	FERTILIZER LBS. PER ACRE 10-20-20 OR EQUIVALENT
ABOVE 6.0	2	500
5.0 TO 6.0	3	500
BELOW 5.0	4	500

TABLE IV-6
MULCH MATERIALS RATES AND USES

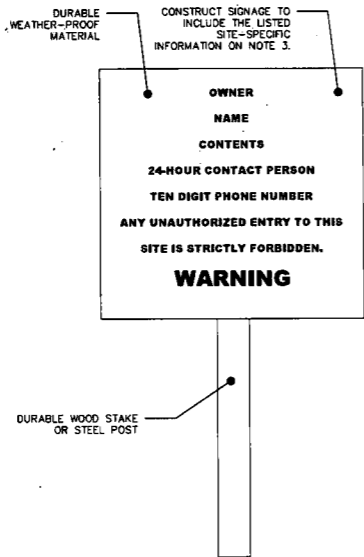
MATERIAL	MINIMUM RATES PER ACRE	COVERAGE	REMARKS
HAY OR STRAW	2 TO 3 TONS 100 TO 150 BALES	COVER 75 TO 80% OF SURFACE	SUBJECT TO WIND BLOWING OR WASHING UNLESS TIED DOWN
WOOD FIBER PULP FIBER WOOD-CELLULOSE RETICULATED PAPER	1000 TO 1500 LBS.	COVER ALL DISTURBED AREAS	FOR HYDROSEEDING



GRAVEL ACCESS/STAGING AREA DETAIL
NOT TO SCALE



ROCK CHECK DAM
NOT TO SCALE



SIGNAGE DETAIL
NOT TO SCALE

NOTES:
1. SIGNS MUST BE PLACED AT ROAD ENTRANCES AND AT A MINIMUM 1 SIGN ON EACH SIDE OF THE PIT TO ENSURE VISIBILITY FROM ANY APPROACH.
2. SIGNS SHALL BE CONSTRUCTED OF DURABLE, WEATHER-PROOF MATERIAL.
3. SIGNS SHALL CONTAIN AT A MINIMUM OWNER, NAME OF IMPOUNDMENT AND CONTENTS, TEN DIGIT PHONE NUMBER OF 24-HOUR CONTACT PERSON, AND WARNINGS TO THE PUBLIC FORBIDDING UNAUTHORIZED ENTRY.

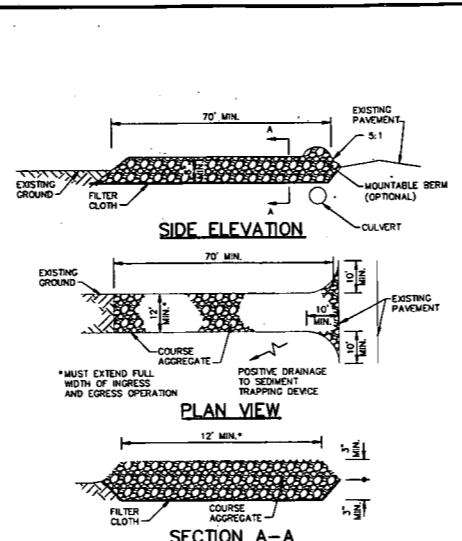
CHANNEL CROSS-SECTION
NOT TO SCALE



RIPRAP CHANNEL DETAIL
NOT TO SCALE



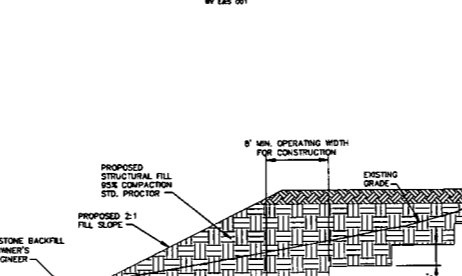
SUPER SILT FENCE
NOT TO SCALE



STABILIZED CONSTRUCTION ENTRANCE
NOT TO SCALE

NOTES:
1. USE 2-4" STONE FOR LOW VOLUME ENTRANCES, LARGER STONE (4-6") FOR HEAVY USE OR MATERIAL DELIVERY ENTRANCES.
2. LENGTH IS AS REQUIRED, BUT NOT LESS THAN 70' (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30' MIN. LENGTH WOULD APPLY).
3. THICKNESS SHOULD BE NOT LESS THAN 6".
4. THE WIDTH SHALL BE A MIN. OF 10', BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS AND EGRESS OCCURS.
5. GEOTEXTILE FABRIC SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE, IF A CULVERT IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES SHALL BE USED.
7. IF NECESSARY, EVENT ANY WATER RUNNING DOWN ACCESS ROAD TO A SEDIMENT TRAP LOCATED ON EITHER SIDE OF THE STABILIZED CONSTRUCTION ENTRANCE.

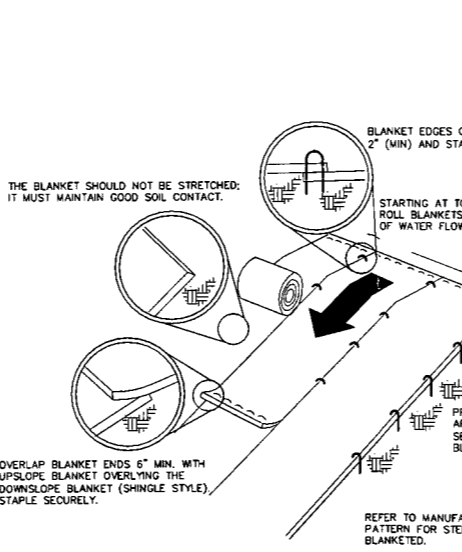
CONTROLLED FILL EMBANKMENT
NOT TO SCALE



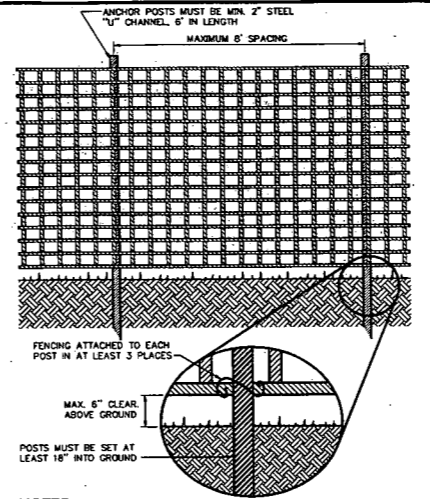
CONTROLLED FILL EMBANKMENT
NOT TO SCALE

NOTES:
1. BENCHES SHALL BE EXCAVATED INTO EXISTING SLOPE AS SPECIFIED OR UNTIL BEDROCK IS EXPOSED.
2. ALL BENCHES SHALL BE SLOPED TO PROMOTE POSITIVE DRAINAGE DURING CONSTRUCTION (15-25% TYP.).
3. GEOTECHNICAL ANALYSIS OR SOIL STABILITY WAS NOT PERFORMED FOR THIS SITE, CONTRACTOR IS RESPONSIBLE TO CONSTRUCT PROPER TOE BENCH USING NORMAL CONSTRUCTION PRACTICES BASED ON FIELD CONDITIONS.

SLOPE INSTALLATION
NOT TO SCALE



SLOPE INSTALLATION
NOT TO SCALE



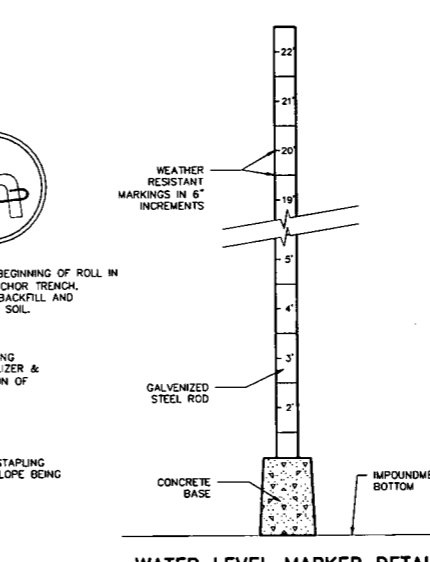
CONSTRUCTION FENCE DETAIL
NOT TO SCALE

NOTES:
1. PROTECTION BARRIER SHALL BE 4' HIGH, CONSTRUCTED OF DURABLE AND HIGHLY VISIBLE MATERIAL (PLASTIC ORANGE CONSTRUCTION FENCE AND SHOCK-RESISTANT FENCE MAY BE USED).
2. PROTECTION BARRIERS SHALL BE MAINTAINED THROUGHOUT THE DURATION OF THE WORK AT THE SITE.
3. ADDITIONAL WARNING SIGNS SHOULD ALSO BE PLACED ON THE FENCING AND IN APPROPRIATE AREAS NEAR THE WORK ZONE.

DESIGN, CONSTRUCTION AND MAINTENANCE STANDARDS FOR EMBANKMENTS

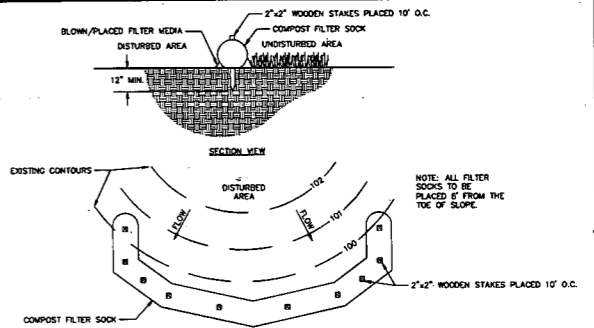
- THE FOUNDATION OF THE EMBANKMENT MUST BE STRIPPED AND GRUBBED TO A DEPTH OF TWO FEET PRIOR TO ANY PLACEMENT AND COMPACTION OF EARTH.
- ANY SPRINGS ENCOUNTERED IN THE FOUNDATION AREA OF AN EMBANKMENT SHOULD BE DRILLED TO THE SHARP AREA AND BE PUMPED OUT.
- ALL EMBANKMENTS MUST BE COMPACTED BY SHEEPSFOOT OR PAD ROLLER. THE LOOSE LIFT THICKNESS MUST BE NEAR INCHES OR LESS AND THE MAXIMUM PARTICLE SIZE IS SIX INCHES. FIVE PASSES OF THE COMPACTION EQUIPMENT OVER THE ENTIRE SURFACE OF EACH LIFT IS REQUIRED. EMBANKMENT COMPACTION TO VISIBLY NON-MOVEMENT IS REQUIRED. FILL MATERIAL SHALL BE FREE OF ROOTS, SOIL, AND OTHER ORGANIC MATERIAL. FROZEN SOIL AND ROCK AND DISCARDED CONSTRUCTION MATERIAL. THE BACKFILL SHOULD BE THOROUGHLY ROLLED AND COMPACTED TO ELIMINATE SOFT OR UNSETTLED AREAS. BACKFILL MATERIAL SHALL HAVE MAXIMUM 6" LOOSE LIFT THICKNESS WITH MAXIMUM PARTICLE SIZE LESS THAN 3". BACKFILL MATERIAL SHALL BE COMPACTED TO 95% OF MAXIMUM DENSITY PER STANDARD ASTM-D698 WITHIN 4" TO 16" OF OPTIMUM MOISTURE FOR THE MATERIAL PLACED. NO GRAVEL SHALL BE PLACED IN THE FILL SIDE OF THE EMBANKMENT. ALL MEASURES SHALL ENSURE BERM INTEGRITY IS PROTECTED FROM WATER SEEP TO PREVENT A POTENTIAL FAILURE.
- A MINIMUM EMBANKMENT TOP WIDTH OF 12 FEET IS REQUIRED.
- ONCE CONSTRUCTED, A CENTRALIZED PIT OR IMPOUNDMENT SHALL DISPLAY ADEQUATE SIGNAGE THAT READILY IDENTIFIES ITS OWNER, ITS NAME, ITS CONTENTS, THE TEN-DIGIT TELEPHONE NUMBER OF A 24-HOUR EMERGENCY CONTACT PERSON, AND WARNINGS TO THE PUBLIC FORBIDDING UNAUTHORIZED ENTRY AND COMMUNICATING THE HAZARDS OF UNAUTHORIZED ENTRY. SIGNS SHALL BE CONSPICUOUSLY DISPLAYED AT ROAD ENTRANCES AND, AT A MINIMUM, ONE ON EACH OF FOUR SIDES OF THE PIT OR IMPOUNDMENT TO ENSURE VISIBILITY FROM ANY APPROACH. SIGNS SHALL BE CONSTRUCTED OF DURABLE, WEATHER-PROOF MATERIAL.
- SECURITY - ALL CENTRALIZED PITS AND IMPOUNDMENTS SHALL BE ENCLOSED BY ADEQUATE FENCING TO SECURE THE SITE FROM ACCESS BY THE PUBLIC AND WILDLIFE. THE FENCE SHALL BE MAINTAINED IN GOOD CONDITION.
- EMBANKMENTS - ALL FAILURES RESULTING FROM LANDSLIDES OR SLOPE FAILURES SHALL BE CORRECTED IMMEDIATELY. IF THE FAILURES AFFECT THE SAFETY OR DESIGN CAPACITY OF THE CENTRALIZED PIT OR IMPOUNDMENT OR ITS APPURTENANCES, ANY SUCH FAILURE SHALL BE REPORTED TO THE OIL AND GAS INSPECTOR OR THE CHIEF WITHIN TWENTY-FOUR (24) HOURS OF ITS OCCURRENCE.
- ALL LINERS SHALL BE MAINTAINED SO AS TO PREVENT LEAKAGE. THE OPERATOR SHALL UTILIZE A WARNING DEVICE IN ALL CENTRALIZED PITS AND IMPOUNDMENTS THAT READILY ALLOWS FOR WATER LEVEL READINGS. THE WARNING DEVICE SHALL DISPLAY INCREMENTS OF AT LEAST SIX (6) INCHES AND BE USED TO OBSERVE AND LOG WATER LEVEL READINGS. THE WARNING DEVICE MAY INCLUDE PAINT MARKINGS ON THE LINER WALL, A VERTICAL ROD WITH MARKINGS OR OTHER SIMILAR SYSTEM.
- THE IMMEDIATE AREA SURROUNDING ALL CENTRALIZED PITS AND IMPOUNDMENTS SHALL HAVE VEGETATIVE CONTROL AND BE MOVED PERIODICALLY.
- THE EMBANKMENTS OF ALL CENTRALIZED PITS AND IMPOUNDMENTS SHALL BE KEPT CLEAR OF SURROUNDING ANIMALS.
- DIVERSION DITCHES AND ALL OTHER SURFACE WATER CONTROL DITCHES SHALL BE MAINTAINED IN PROPER WORKING ORDER SO AS TO PREVENT DRAINAGE INTO THE CENTRALIZED PIT OR IMPOUNDMENT OR UNCONTROLLED EROSION AND SEDIMENTATION.
- THE OPERATOR SHALL NOT STORE NON-AQUEOUS PHASE HYDROCARBONS (I.E. VISIBLE FLOATING HYDROCARBONS) IN A CENTRALIZED PIT OR IMPOUNDMENT. ACCUMULATION OF HYDROCARBONS SHALL BE SKIMMED AND DISPOSED OF PROPERLY.

IMPOUNDMENT CONSTRUCTION NOTES
NOT TO SCALE



WATER LEVEL MARKER DETAIL
NOT TO SCALE

NOTE: CONCRETE BASE TO REST ON BOTTOM OF IMPOUNDMENT LINER.



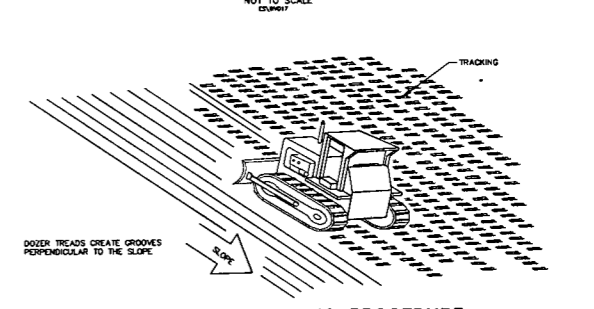
COMPOST FILTER SOCK
NOT TO SCALE

COMPOST SHALL MEET THE FOLLOWING STANDARDS:
ORGANIC MATTER CONTENT: 50% - 100% (WET WEIGHT BASIS)
NITROGEN CONTENT: 1.5% - 3.0%
PH: 5.5 - 8.0
PASTURE SIZE: 1/2" MAX. PASS THROUGH 1" SCREEN
SOLUBLE SALT CONCENTRATION: 0.5% MAX. (BY WEIGHT)

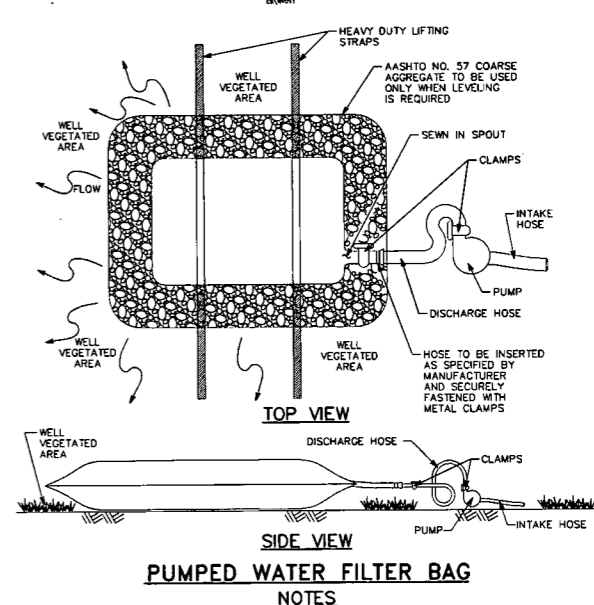
- BASED ON A FAILURE OF 30" SUPER SILT FENCE (SILT RENEW) AT 100% OF SLOPE, WATERSHED EQUIVALENT TO RECEIVING LENGTH OF SEDIMENT CONTROL DEVICE, 17/24 HR. RUN EVENT.
- EFFECTIVE HEIGHT OF SEDIMENT CONTROL AFTER INSTALLATION AND WITH CONSTANT HEAD FROM RUNOFF AS DETERMINED BY OHIO STATE UNIVERSITY.

- INSTALLATION:**
- SEDIMENT CONTROL USED FOR PERMETER CONTROL OF SEDIMENT AND SOLUBLE POLLUTANTS IN STORM RUNOFF SHALL MEET MANUFACTURER'S SPECIFICATIONS.
 - SEDIMENT CONTROL WILL BE PLACED AT LOCATIONS INDICATED ON PLANS.
 - SEDIMENT CONTROL SHOULD BE INSTALLED PARALLEL TO THE BASE OF THE SLOPE OR OTHER DISTURBED AREA. IN EXTREME CONDITIONS (I.E. 2:1 SLOPES), A SECOND SEDIMENT CONTROL SHALL BE CONSTRUCTED AT THE TOP OF THE SLOPE.
 - STAKES SHALL BE INSTALLED THROUGH THE MIDDLE OF THE SEDIMENT CONTROL ON 10 FT. CENTERS USING 2 IN. BY 2 IN. BY 3 FT. HARD WOOD STAKES. IN THE EVENT STAKING IS NOT POSSIBLE, I.E. WHEN SEDIMENT CONTROL IS USED ON PAVEMENT, HEAVY CONCRETE BLOCKS SHALL BE USED BEHIND THE SEDIMENT CONTROL TO HELP STABILIZE DURING RAINFALL/RUNOFF EVENTS.
 - STAKING DEPTH FOR SAND AND SILT LOAM SOILS SHALL BE 12 IN. AND 8 IN. FOR CLAY SOILS.
 - LOGS CONSOLE MAY BE BACKFILLED ALONG THE UPPER SIDE OF THE SEDIMENT CONTROL, FILLING THE SEAM BETWEEN THE SOIL SURFACE AND THE DEVICE, IMPROVING FILTRATION AND SEDIMENT RETENTION.
 - IF THE SEDIMENT CONTROL IS TO BE LEFT AS A PERMANENT FILTER OR PART OF THE NATURAL LANDSCAPE, IT MAY BE SEEDED AT TIME OF INSTALLATION FOR ESTABLISHMENT OF PERMANENT VEGETATION. THE ENGINEER WILL SPECIFY SEED REQUIREMENTS.

BULLDOZER TRACKING PROCEDURE
NOT TO SCALE



PUMPED WATER FILTER BAG
NOT TO SCALE



PUMPED WATER FILTER BAG
NOT TO SCALE

- NOTES:**
- LOCATE BAG IN LEVEL AREAS (LESS THAN 5% GRADE). WHEN LEVEL AREAS ARE NOT AVAILABLE, PLACE AASHTO NO. 57 COARSE AGGREGATE TO LEVEL THE BAG.
 - LOCATE BAG IN A WELL VEGETATED AREA. DISCHARGE ONTO A STABLE, EROSION RESISTANT AREA. WHEN VEGETATED AREA IS NOT AVAILABLE, PROVIDE A GEOTEXTILE (CLASS 4, TYPE A) LINED FLOW PATH TO A STABLE EROSION RESISTANT RECEIVING WATER COURSE OR A WELL VEGETATED AREA.
 - LOCATE BAG IN AN AREA ACCESSIBLE BY EQUIPMENT FOR MAINTENANCE AND REMOVAL PURPOSES.
 - DO NOT INSERT MORE THAN ONE HOSE INTO A BAG.
 - REPLACE THE BAG WHEN 50% OF THE SEDIMENT CAPACITY HAS BEEN FILLED AND/OR WHEN THERE IS A FAILURE. THE ADDITIONAL BAGS WILL BE PAID AS EACH.
 - REMOVE AND PROPERLY DISPOSE OF THE PUMPED WATER FILTER BAGS. RESTORE THE AREA IN ACCORDANCE WITH THE STANDARDS IN THE WIDE E&S MANUAL. DO NOT CUT FILTER BAG OR DISTRIBUTE AND SEED SEDIMENT.
 - DO NOT PERMIT DISCHARGE FROM THE BAG TO DRAIN BACK INTO WORK OR ACCESS AREAS OF THE PROJECT.
 - PLACE AND CONNECT SEDIMENT FILTER BAGS AS PER MANUFACTURER'S RECOMMENDATIONS FOR FOUNDATION EXCAVATION Dewatering PURPOSES. PROVIDE A BAG THAT WILL HANDLE 1000 GALLONS/MINUTE OF CLEAN WATER DISCHARGE. FILTER PARTICLES DOWN TO 150 MICRONS.

SCALE: AS NOTED

DATE: 12/28/12

SHEET NO. 9 OF 10

DWG. NO. 095452004

FOR EROSION & SEDIMENT CONTROL DETAILS

FOR BONNELL CENTERED FRESHWATER IMPOUNDMENT

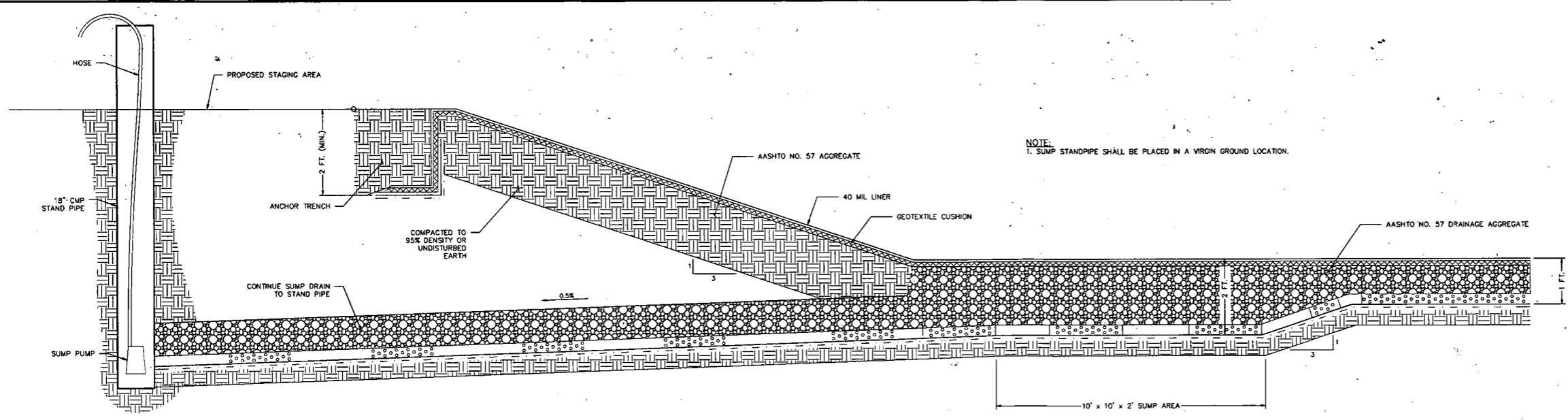
NEW MILTON DISTRICT, DODDRIEDGE COUNTY, WV

REVIEW ASSOCIATES, INC.
14th Floor, 405 Shambone Pk. Ste 302, Pittsburgh, PA 15205
Phone: (412) 446-1728 • Fax: (412) 446-1133
Email: rct@review.com
Website: www.review.com

MANAGER: SETH S. SHAFFER, PE
DESIGN BY: JDN
SURV. CHIEF: JDN
DRAWN BY: JDN
CHECKED BY: JDN
DATE: 12/28/12

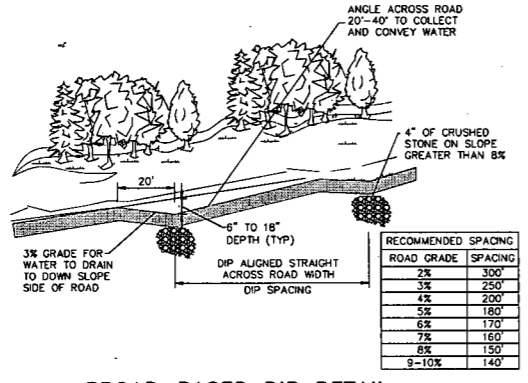
CLIENT: ANTERO RESOURCES APPALACHIAN CORPORATION
1625 17TH STREET
DENVER, COLORADO 80202

ANTERO RESOURCES



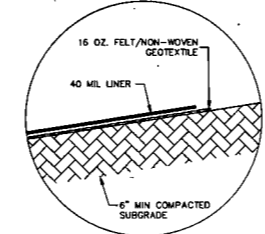
NOTE:
1. SUMP STANDPIPE SHALL BE PLACED IN A VIRGIN GROUND LOCATION.

TYPICAL CROSS-SECTION W/ STANDPIPE DETAIL
NOT TO SCALE

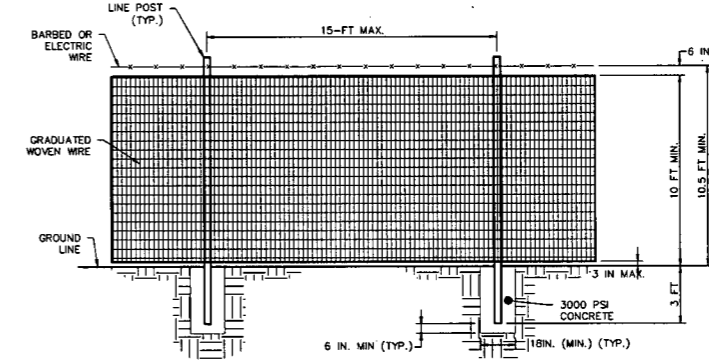


BROAD-BASED DIP DETAIL
NOT TO SCALE

ROAD GRADE	SPACING
2%	300"
3%	250"
4%	200"
5%	180"
6%	170"
7%	160"
8%	150"
9-10%	140"



GEOMEMBRANE LINER SYSTEM
NOT TO SCALE



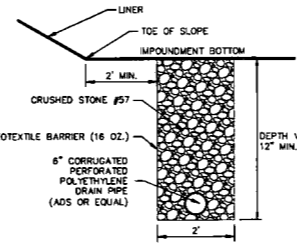
NOTES:
1. WIRE MESH SHALL BE GRADUATED 3 IN. X 6 IN.
2. WOVEN WIRE SHALL BE ASTM CLASS 3 GALVANIZED, TOP AND BOTTOM WIRES MIN. 12 GAUGE. INTERMEDIATE STAY WIRES MIN. 12 1/2 GAUGE.
3. LINE POSTS (WOODEN): MIN. 4 INCH DIAMETER OR 4 INCH SQUARE. LINE POSTS (STEEL): STUDDED OR PUNCHED T, U, OR Y SHAPED, WITH ANCHOR PLATES. MIN. WEIGHT 1.3 LBS./FT. (EXCLUDING ANCHOR PLATE).

FOR FENCE POSTS:				
CCA	ACC	CBA-A	CA-B	MICRO-CA
0.40	0.40	0.41	0.21	0.14

CCA - CHROMATED COPPER ARSENATE
ACC - ALKALINE COPPER QUAT
CBA-A - COPPER BORON AZOLE TYPE A
CA-B - COPPER AZOLE TYPE B
MICRO-CA - DISPERSED COPPER AZOLE OR MICRONIZED COPPER AZOLE

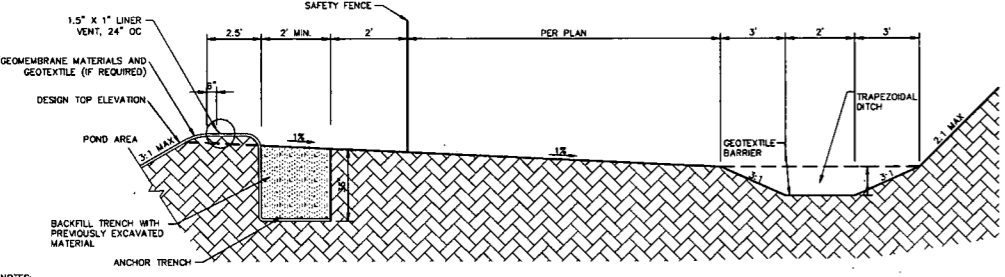
(PRESSURE TREATMENT FOR ALL WOOD ARE TAKEN FROM AMERICAN WOOD PROTECTION ASSOCIATION (AWPA) TABLE 5C "SAWN PRODUCTS - COMMODITY SPECIFICATION A", EXCEPT CBA-A WHICH IS THE RECOMMENDATION OF SIMPSON STRONG TIE COMPANY.)

FENCING DETAIL
NOT TO SCALE



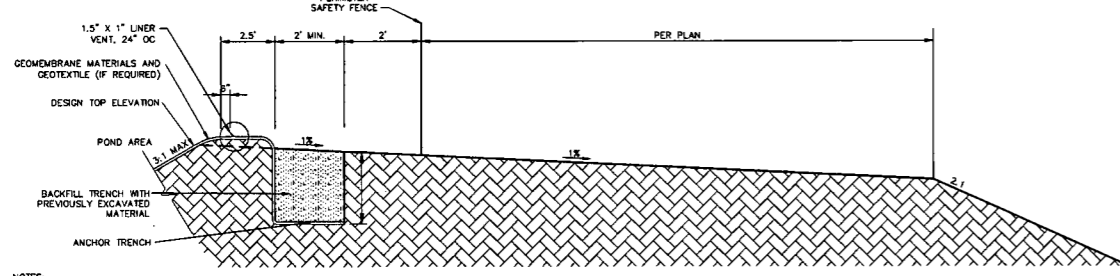
** GROUNDWATER DEWATERING TRENCH
NOT TO SCALE

** NOTE:
TRENCH TO BE INSTALLED AT CENTER OF IMPOUNDMENT & SHALL TIE INTO THE SUMP.



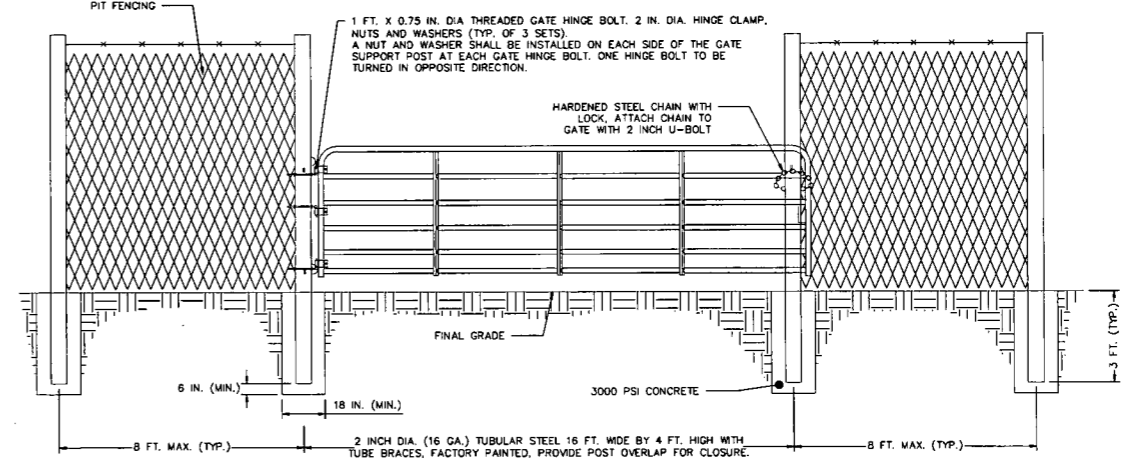
ANCHOR TRENCH AND CUT SECTION DETAIL
NOT TO SCALE

NOTES:
1. USE SAND BAGS AS GEOMEMBRANE WEIGHTS IN TRENCH DURING GEOMEMBRANE INSTALLATION.
2. TO PREVENT SATURATION OF THE ANCHOR TRENCH ONLY EXCAVATE JUST PRIOR TO INSTALLATION OF THE LINER. IMMEDIATELY AFTER INSTALLATION OF THE LINER THE TRENCH SHALL BE BACK FILLED AND COMPACTED IN LIFTS. EXCAVATED ANCHOR TRENCH SHALL BE DRY PRIOR TO PLACEMENT OF LINER. IF ANCHOR TRENCH IS EXCAVATED BEFORE LINER IS READY TO BE INSTALLED THEN THE TRENCH SHALL BE PROTECTED (COVERED) TO REMAIN DRY PRIOR TO PLACEMENT OF LINER.
3. BACKFILL MATERIAL SHALL HAVE MAXIMUM 6\"/>



ANCHOR TRENCH & FILL SECTION DETAIL
NOT TO SCALE

NOTES:
1. USE SAND BAGS AS GEOMEMBRANE WEIGHTS IN TRENCH DURING GEOMEMBRANE INSTALLATION.
2. TO PREVENT SATURATION OF THE ANCHOR TRENCH ONLY EXCAVATE JUST PRIOR TO INSTALLATION OF THE LINER. IMMEDIATELY AFTER INSTALLATION OF THE LINER THE TRENCH SHALL BE BACK FILLED AND COMPACTED IN LIFTS. EXCAVATED ANCHOR TRENCH SHALL BE DRY PRIOR TO PLACEMENT OF LINER. IF ANCHOR TRENCH IS EXCAVATED BEFORE LINER IS READY TO BE INSTALLED THEN THE TRENCH SHALL BE PROTECTED (COVERED) TO REMAIN DRY PRIOR TO PLACEMENT OF LINER.
3. BACKFILL MATERIAL SHALL HAVE MAXIMUM 6\"/>



FENCE GATE DETAIL
NOT TO SCALE

FOR REVIEW ASSOCIATES BY: [Stamp]

MANAGER: SETH S. SHAFER, PE
DESIGN BY: JDN
SURV. CHIEF: JDN
DRAWN BY: JDN
CHECKED BY: JDN

CLIENT: ANTERO RESOURCES APPALACHIAN CORPORATION
1625 17TH STREET
DENVER, COLORADO 80202

CONTRACT NO: 2014-0004-10-01/045

DATE: 12/28/12

SHEET NO. 10 OF 10

DWG. NO. 095452004

EROSION & SEDIMENT CONTROL DETAILS FOR BONNELL CENTRALIZED FRESHWATER IMPOUNDMENT

REVIEW ASSOCIATES, INC.
1611 Evans, 4955 Stouffville Pl. Ste. 305, Pittsburgh, PA 15206
Phone: (412) 446-1726 • Fax: (412) 446-1733
www.review.com