

west virginia department of environmental protection

Office of Oil and Gas 601 57th Street SE Charleston, WV 25304 (304) 926-0450 (304) 926-0452 fax

Earl Ray Tomblin, Governor Randy C. Huffman, Cabinet Secretary www.dep.wv.gov

September 26, 2012

WELL WORK PERMIT

Horizontal 6A Well

This permit, API Well Number: 47-8509979, issued to ANTERO RESOURCES APPALACHIAN CORPORATION, is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, as amended, and all rules and regulations promulgated thereunder, and to all conditions and provisions outlined in the pages attached hereto. Notification shall be given by the operator to the Oil and Gas Inspector at least 24 hours prior to the construction of roads, locations, and/or pits for any permitted work. In addition, the well operator shall notify the same inspector 24 hours before any actual well work is commenced and prior to running and cementing casing. Spills or emergency discharges must be promptly reported by the operator to 1-800-642-3074 and to the Oil and Gas inspector.

Please be advised that form WR-35, well operators report of well work, is to be submitted to this office within 90 days of completion of drilling, as should form WR-34 Discharge Monitoring Report within 30 days of discharge of pits, if applicable. Failure to abide by all statutory and regulatory provisions governing all duties and operations hereunder may result in suspension or revocation of this permit and, in addition, may result in civil and/or criminal penalties being imposed upon the operators.

In addition to the applicable requirements of this permit, and the statutes and rules governing oil and gas activity in WV, this permit may contain specific conditions which must be followed. Permit conditions are attached to this cover letter.

Per 35CSR-4-5.2.g this permit will expire in two (2) years from the issue date unless permitted well work is commenced. If there are any questions, please feel free to contact me at (304) 926-0499 ext. 1654.

James Martin

Chief

Operator's Well No: CAMPBELL UNIT 2H

Farm Name: CAMPBELL, JOHN A. & LINDA J.

API Well Number: 47-8509979

Permit Type: Horizontal 6A Well

Date Issued: 09/26/2012

Promoting a healthy environment.



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PERMIT MODIFICATION APPROVAL

January 30, 2013

ANTERO RESOURCES APPALACHIAN CORPORATION 1625 17TH STREET, SUITE 300 DENVER, CO 80202

Re: Permit Modification Approval for API Number 8509979 $\,$, Well #: CAMPBELL UNIT 2H MODIFIED TOP HOLE LOCATION

Oil and Gas Operator:

The Office of Oil and Gas has reviewed the attached permit modification for the above referenced permit. The attached modification has been approved and well work may begin. Please be reminded that the oil and gas inspector is to be notified twenty-four (24) hours before permitted well work is commenced.

Please call James Martin at 304-926-0499, extension 1654 if you have any questions.

Sincerely

Gene Smith

Regulatory/Compliance Manager

Office of Oil and Gas

Promoting a healthy environment.

PERMIT CONDITIONS

West Virginia Code § 22-6A-8(d) allows the Office of Oil and Gas to place specific conditions upon this permit. Permit conditions have the same effect as law. Failure to adhere to the specified permit conditions may result in enforcement action.

CONDITIONS

- 1. If the operator encounters an unanticipated void, or an anticipated void at an unanticipated depth, the operator shall notify the inspector within 24 hours. Modifications to the casing program may be necessary to comply with W. Va. Code § 22-6A-5a (12), which requires drilling to a minimum depth of thirty feet below the bottom of the void, and installing a minimum of twenty (20) feet of casing. Under no circumstance should the operator drill more than fifty (50) feet below the bottom of the void or install less than twenty (20) feet of casing below the bottom of the void.
- 2. No clearing debris shall be buried.
- Final Site Design, Construction Plan along with Erosion and Sediment Control Measures shall at minimum, use the Best Management Practices found in The West Virginia Erosion and Sediment Control Field Manual dated May 2012.
- 4. The contractor shall do in place density tests <u>every lift</u> on all fill material, with a minimum of two tests per lift per acre of fill. Every lift must pass a 95% compaction based on the standard proctor density test of the actual soils used in specific engineered sites
- 5. The contractor may <u>not</u> proof-roll the soil in lieu of standard proctor testing.
- 6. Permanent stabilization shall be applied to areas that are to be left dormant for more than <u>six</u> (6) months.

STATE OF WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS W.VA. CODE §22-6A - WELL WORK PERMIT APPLICATION

| | | | | | 85 | 04 | 562 |
|--|--|---------------------------------------|--|---|--|---|-----------------------------------|
| 1) Well Opera | tor: Antero Re | sources Appalachia | n Corporation | 494488557 | 085- Ritchie | Union | Pullman 7.5' |
| | | | | Operator ID | County | District | Quadrangle |
| 2) Operator's | Well Number | : Campbell U | nit 2H | | Well Pad Nam | ie: John Campbell | North Pad |
| 3 Elevation, c | urrent ground | d: ~1012' | Ele | evation, proposed | | | 1014' |
| 4) Well Type: | Other | | Oil | | | _ | |
| | (b) If Gas: | Shallow Horizontal | | Deep | | | |
| 5) Existing Pac | d? Yes or No | . No | | | | | |
| 6) Proposed Ta | arget Formati 6,800' TVD, Anticipal | on(s), Depth(ed Thickness- 50' fe | s), Anticipate et, Associated Press | ed Thicknesses an | d Associated | Pressure(s): | |
| 7) Proposed To 8) Formation a 9) Proposed To | it Total Verticotal Measured | cal Depth: | 800' TVD Marcellus Shale 15,500' MD | | | | |
| 10) Approxima | ate Fresh Wat | er Strata Dep | ths: 192 | 2', 230', 338' | | | |
| 11) Method to | Determine Fi | resh Water D | _ | set well records | | | |
| 12) Approxima13) Approxima | ate Sanwater | Deptns: | 1850' | | | | |
| 14) Approxima | ate Denth to F | r Depuis: Possible Void | None available | sough - 41 11. | | | |
| 15) Does land | contain coal s | eams tributa | (coar illille, i | t to, active mine? | None anticipate | d | |
| 16) Describe p | roposed well | | | re a new horizontal shallow | No w well and complete | Marcelius Shale | |
| | | | | | The state of the s | Mardellas Oriale | |
| 17) Describe fr Antero plans to pu water and sand, w | mp Slickwater into th | e Marcellus Shale fo | rmation in order to re | eady the well for production the attached "List of Anticip | . The fluid will be cor ated Additives Used f | nprised of approxima or Fracturing or Stim | tely 99 percent ulating Well." |
| 18) Total area | to be disturbe | d, including 1 | oads, stockpi | ile area, pits, etc, | (acres): | 9.98 acres | |
| 19) Area to be | disturbed for | well pad only | , less access | road (acres): | 2.65 acres | | |
| | | | | | | JUI TO | C Uni |
| | | | | | 3.5 | W 7 | 2617. |
| | | | | | | D12772775 | Tentoj Poiz - m |

20)

CASING AND TUBING PROGRAM

| ТҮРЕ | <u>Size</u> | 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 |
| Fresh Water | 13-3/8" | New | J-55 | 54.5# | 395' | 395' | CTS, 549 Cu. Ft. |
| Coal | 9-5/8" | New | J-55 | 36# | 2500' | 2500' | CTS,1018 Cu. Ft. |
| Intermediate | | | | | | | |
| Production | 5-1/2" | New | P-110 | 20# | 15500' | 15500' | 3863 Cu. Ft. |
| Tubing | 2-3/8" | New | N-80 | 4.7# | | 7300' | |
| Liners | | | | | | | |

| ТҮРЕ | <u>Size</u> | 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: | | |
|-------------|----------------------|--------|
| Sizes: | | |
| Depths Set: | | |
| | Office of Oil and Ga | s gull |

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WV Department of Environmental Protection

05/31/2024

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, grout 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. 8-20 /2

RECEIVED Office of Oil and Gas

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WV Department of **Environmental Protection** WW-9 Rev. 1/12

09979 API No. 47 - 085 Operator's Well No. Campbell Unit 2H

STATE OF WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS

CONSTRUCTION AND RECLAMATION PLAN AND SITE REGISTRATION APPLICATION FORM GENERAL PERMIT FOR OIL AND GAS PIT WASTE DISCHARGE

| Operator Name Antero | Resources Appalachian Corporation | OP Code | 494488557 | |
|---|--|--|---|---|
| Watershed Left Fork | Quadrang | le Pullman 7.5' | | Office of Oil & Pro |
| Elevation 1014' | County Ritchie | | t Union | JUL 1 0 2812 |
| | ated Pit Waste: Drilling and Flowback Fluids and Cuttings | | | WV Deputinent o |
| Do you anticipate usir | ng more than 5,000 bbls of water to complete the propo | sed well work? | Yes X | · No ' |
| | be used in the pit? Yes If so, what m | | | |
| Proposed Disposal Mo | ethod For Treated Pit Wastes: Land Application Underground Injection (UIC Permit Number Reuse (at API Number Future permitted well location Off Site Disposal (Meadowfill Landfill Permit #SWI Other (Explain | ns when applicable. | API# will be pr |) ovided on Form WR-34) |
| -If oil based, Additives to be used? Will closed loop syste Drill cuttings disposa -If left in pit | what type? Synthetic, petroleum, etc. N/A Please See Attachment em be used? Yes I method? Leave in pit, landfill, removed offsite, etc. and plan to solidify what medium will be used? Cement offsite name/permit number? Meadowfill Landfill (Permit #: | Removed offsite an | | |
| on August 1, 2005, b provisions of the perr or regulation can lead I certify und application form and the information, I be submitting false information. | I understand and agree to the terms and conditions of the Office of Oil and Gas of the West Virginia Department are enforceable by law. Violations of any term or to enforcement action. It der penalty of law that I have personally examined all attachments thereto and that, based on my inquiry elieve that the information is true, accurate, and communication, including the possibility of fine or imprisonmental actions. | artment of Enviro condition of the p and am familian of those individually plete. I am awa | onmental Progeneral perm with the intals immedia | tection. I understand that the it and/or other applicable law aformation submitted on this tely responsible for obtaining |
| | yped Name) Cole Kilstrom tle Environmental Specialist | | | |

| Property Bound | ary A | Diversion | r # 8 |
|---|-------------------------------------|---|----------------|
| Road | ======= | Spring | |
| Existing Fence | — | - Wet Spot | • |
| Planned Fence | | — Drain Pipe | |
| Stream | | w size in Inches | |
| Open Ditch | | Waterway C | |
| Rock | ් දුරුද්ද | Cross Drain | <i>1111771</i> |
| | A | Artificial Filter Strip | |
| North | Ń | Pit: Cut Walls | |
| Buildings | | Pit: Compacted Fill Walls | |
| Water Wells | ₩ | Area for Land Application | |
| Orit Sites New Pad (2.65) + Ne | Nr Frence Dist 1 (2 12) + No A | of Pit Wasta | |
| | | ds (3.02) + Waste & Spoil Pads/Piles (1.19) = 9.98 Acr | <u>28</u> |
| rioposed Revegetation II | reatment: Acres Disturbed 9.95 | Prevegetation pH 6.0 | 11 11 1 |
| Lime 4 | Tons/acre or to correct to | pH 6.5 moles of m | whitallant are |
| Fertilizer (10-20- | 20 or equivalent) 500 | lbs/acre (500 lbs minimum) | 2 mm per acce |
| Mulch 2-3 | | • | |
| Much_2 0 | To | s/acre Hay or straw or Wood Fiber (will be used where n | eeded) |
| | | Seed Mixtures | |
| | Area I (Temporary) | A TY CD | |
| Seed Type | lbs/acre | Area II <u>(Permar</u> Seed Type lbs/a | |
| Tall Fescue | 45 | Tall Fescue 45 | |
| Perennial Rye Grass | 00 | 40 | |
| T Grennia Trye Glass | 20 | Perennial Rye Grass 20 | |
| | | | |
| | | | |
| A441 | | | |
| Attach: Drawing(s) of road, location | on,pit and proposed area for land a | nnliestion | |
| | | ppincation. | |
| Photocopied section of inv | olved 7.5' topographic sheet. | | |
| | | | |
| Plan Approved by: | Dand who | | |
| | Jana 10 Go | | |
| Comments: | | | |
| | | | |
| . / | 4 F | | |
| Title: | asenspecto | Date: 8-20-12 | |
| Field Reviewed? | 1 /200 | R | ECEIVED |
| | | No Office of | of Oil and Gas |

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WV Department of Environmental Protection

85-09979 Davider Com-8-20-12



Well Site Safety Plan Antero Resources

Well Name: Campbell Unit 1H, Campbell Unit 2H, Pullman Unit 1H and Pullman Unit 2H

Pad Location: JOHN CAMPBELL NORTH PAD

Ritchie County/ Union District

GPS Coordinates: Lat 39°10′51.46″/Long 80°55′47.81″

Driving Directions:

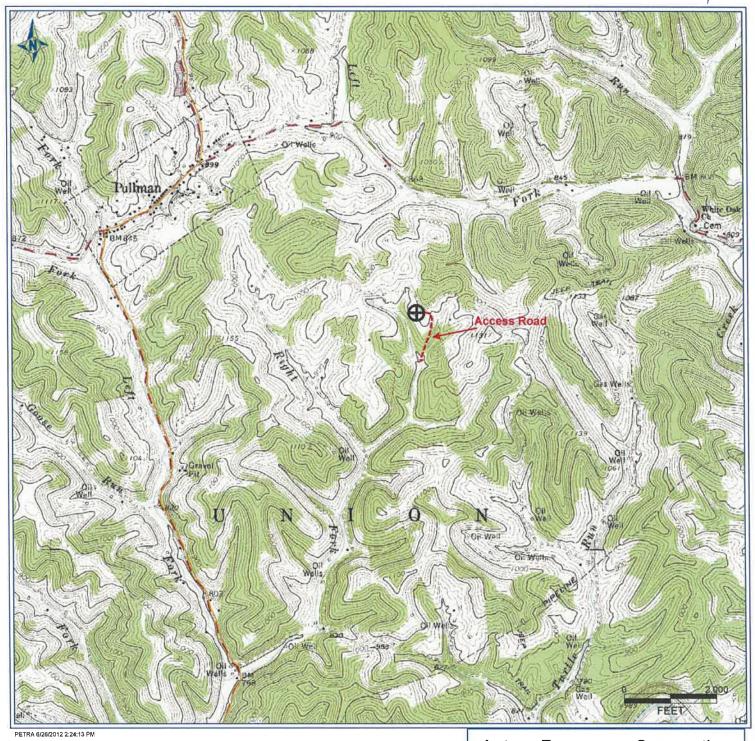
FROM EAST: From the intersection of I-79 and Hwy 50 near Bridgeport WV, head west on Hwy 50 for ~39.6 miles. Turn LEFT onto W Virginia 74 S, and follow for ~7.4 miles. Turn RIGHT onto Co Rd 9 (Main St) and continue for ~0.1 miles. Turn LEFT onto Co Rd 7/9 (Slab Creek Road) and continue for ~0.7 miles. Continue onto Co Rd 9/7/Left Fork Turtle Run for ~0.7 miles. Look for rig signs and location on the right. Drill site is right off the road.

FROM WEST: From the Intersection of I-77 and Hwy 50 near Parkersburg WV, head east on Hwy 50 for ~ 32.3 miles. Turn RIGHT onto W Virginia 74 S, and follow for ~7.4 miles. Turn LEFT onto Co Rd 7/9 (Slab Creek Road) and continue for ~0.7 miles. Continue onto Co Rd 9/7/Left Fork Turtle Run for ~0.7 miles. Look for rig signs and location on the right. Drill site is right off the road.

Office of Oil and Gas

AUG 2 2 2012

WV Department assp-Page 1
Environmental Protection



JUL 10 2017

Antero Resources Corporation APPALACHIAN BASIN Campbell Unit 2H Ritchie County 2,000 4,000 FEET REMARKS QUADRANGLE: PULLMAN WATERSHED: LEFT FORK DISTRICT: UNION Date: 6/26/2012

PERMIT DIANNA STAMPER DESIGNATED AGENT WELL OPERATOR ANTERO RESOURCES APPALACHIAN CORP. CT CORPORATION SYSTEM ADDRESS **1625 17TH STREET ADDRESS** 5400 D BIG TYLER ROAD CHARLESTON, WV 25313 FORM WW-6 **DENVER. CO 80202**

Operator's Well Number Campbell Unit 2H

INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE Chapter 22, Article 6A, Section 5(a)(5) IN LIEU OF FILING LEASE(S) AND OTHER CONTINUING CONTRACT(S)

Under the oath required to make the verification on page 1 of this Notice and Application, I depose and say that I am the person who signed the Notice and Application for the Applicant, and that –

- (1) the tract of land is the same tract described in this Application, partly or wholly depicted in the accompanying plat, and described in the Construction and Reclamation Plan;
- (2) the parties and recordation data (if recorded) for lease(s) or other continuing contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

| Grantor, lessor, etc. | Grantee, lessee, etc. | Royalty | Book/Page |
|--|------------------------------------|---|--------------|
| Freeman Campbell Lease | | | |
| Freeman Campbell, et ux | Key Oil Company | 1/8 | LB 0227/0243 |
| Key Oil Company | Antero Resources Appalachian Corp. | *Partial Assignment of Oil and gas Leases | LB 0253/0747 |
| O'Neill Family Trust et al Lease | | Leases | |
| Robert E. O'Neil | Key Oil Company | 1/8 | LB 0224/0433 |
| Anna L. Lockhart, Individually & as Trustee of O. Glenn Lockhart Estate | Key Oil Company | 1/8 | LB 0224/0437 |
| Betty J. O'Neill | Key Oil Company | 1/8 | LB 0233/0239 |
| Nancy Antill & Mary Francis Harms | Key Oil Company | 1/8 | LB 0233/0244 |
| Nancy Antill & Mary Francis Harms | Key Oil Company | 1/8 | LB 0241/0967 |
| Mary Francis Harms | Key Oil Company | 1/8 | LB 0243/0810 |
| Daniel J. O'Neill, Trustee for the O'Neill Family Trust et al | Key Oil Company | 1/8 | LB 0252/1053 |
| Sharon S. O'Neill | Key Oil Company | 1/8 | LB 0252/1056 |
| Kathleen R. Hooven | Key Oil Company | 1/8 | LB 0252/1059 |
| Mary F. Harms | Key Oil Company | 1/8 | LB 0252/1062 |
| Nancy L. Antill | Key Oil Company | 1/8 | LB 0252/1065 |
| Romarlo, LLC & Robert E. O'Neill | Key Oil Company | 1/8 | LB 0252/1068 |
| Sharon S. O'Neill | Key Oil Company | 1/8 | LB 0252/1072 |
| Kathleen R. Hooven | Key Oil Company | 1/8 | LB 0252/1075 |
| Mary F. Harms | Key Oil Company | 1/8 | LB 0252/1078 |
| Romarlo, LLC, et al | Key Oil Company | 1/8 | LB 0252/1081 |
| Nancy I. Antill | Key Oil Company | 1/8 | LB 0252/1083 |
| Daniel J. O'Neill, Trustee, et al | Key Oil Company | 1/8 | LB 0252/1086 |
| Clifton G. Valentine & Erma Valentine | Key Oil Company | 1/8 | LB 0224/0663 |
| Key Oil Company | Antero Resources Appalachian Corp. | *Partial Assignment of Oil and gas | LB 0253/0747 |
| John A. Campbell Lease | | Léases | 4 C-~ |
| John A. Campbell & Linda J. Campbell, his wife | Antero Resources Appalachian Corp. | 15.00% I I O | 0254/0379 |
| Clifton G. Valentine et al Lease | | F/1" | |
| Clifton G. Valentine & Erma J. Valentine | Key Oil Company | 1/8 | LB 0254/0586 |
| Dr. Byron King, AIF for Patricia Goff | Key Oil Company | ູ່າ/ບູ້ 1/8 | LB 0230/0270 |
| Key Oil Company | Antero Resources Appalachian Corp. | *Partial Assignment of Oil and gas Leases | LB 0253/0747 |

(CONTINUED ON NEXT PAGE)

WW-6A1 (1/12)

INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE Chapter 22, Article 6A, Section 5(a)(5) IN LIEU OF FILING LEASE(S) AND OTHER CONTINUING CONTRACT(S)

Under the oath required to make the verification on page 1 of this Notice and Application, I depose and say that I am the person who signed the Notice and Application for the Applicant, and that –

- (1) the tract of land is the same tract described in this Application, partly or wholly depicted in the accompanying plat, and described in the Construction and Reclamation Plan;
- (2) the parties and recordation data (if recorded) for lease(s) or other continuing contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

| Grantee, Lessee, etc. | Royalty | Book/Page |
|--|---|---|
| Antero Resources Appalachian Corporation Antero Resources Appalachian Corporation Antero Resources Appalachian Corporation | 15.00% 15.00% 15.00% | LB 0254/0377 LB 0254/0378 LB 0254/0381 LB 0254/0382 |
| | Antero Resources Appalachian Corporation Antero Resources Appalachian Corporation | Antero Resources Appalachian Corporation 15.00% Antero Resources Appalachian Corporation 15.00% Antero Resources Appalachian Corporation 15.00% |

*Partial Assignments to Antero Resources Appalachian Corporation include 100% rights to extract, produce and market the oil and gas from the Marcellus and any other formations completed with this well.

Acknowledgement of Possible Permitting/Approval In Addition to the Office of Oil and Gas

The permit applicant for the proposed well work addressed in this application hereby acknowledges the possibility of the need for permits and/or approvals from local, state, or federal entities in addition to the DEP, Office of Oil and Gas, including but not limited to the following:

- WV Division of Water and Waste Management
- WV Division of Natural Resources WV Division of Highways
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- County Floodplain Coordinator

The applicant further acknowledges that any Office of Oil and Gas permit in no way overrides, replaces, or nullifies the need for other permits/approvals that may be necessary and further affirms that all needed permits/approvals should be acquired from the appropriate authority before the affected activity is initiated.

Well Operator: Antero Resources Appalachian Corporation

By: Kevin Kilstrom

Its: Vice President of Production



June 28, 2012

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

West Virginia Department of Environmental Protection Chief, Office of Oil and Gas Attn: Mr. James Martin 601 57th Street SE Charleston, WV 25304

RE: Campbell Unit 2H

Quadrangle: Pullman 7.5'

Ritchie County/Union District, West Virginia

Mr. Martin:

Antero Resources Appalachian Corporation (Antero) is submitting the following application for a new well work permit for the Campbell Unit 2H horizontal shallow well. As an authorized representative, I certify that Antero has the right to extract, produce or market the oil or gas for all leases through which the Campbell Unit 2H horizontal lateral will drill through including any and all roads crossed under as identified on the attached survey plat.

Sincerely,

Houston Eagleston

Landman

WW-6AC (1/12)

Date of Notice Certification: 06/29/2012

STATE OF WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS $\frac{\text{NOTICE CERTIFICATION}}{\text{NOTICE CERTIFICATION}}$

API No. 47- 085

| | 2 | One | erator's | Well No. Camp | bell Unit 2H |
|--|---|--|--|--|---|
| | | - | | ame: John Cai | |
| Notice has b | een given: | | | | |
| | e provisions in West Virginia Code § | 22-6A, the Operator has provided | d the req | uired parties w | ith the Notice Forms listed |
| | tract of land as follows: | | • | • | |
| State: | West Virginia | | ting: | 506051m | |
| County: | Ritchie | No. | rthing: | 4336871m | |
| District: | Union | Public Road Access: | | CR 9/7 | |
| Quadrangle: | Pullman 7.5' | Generally used farm | name: | Campbell, John | |
| Watershed: | Left Fork | | | | |
| prescribed by it has provided information reof giving the requirements Virginia Code | West Virginia Code § 22-6A-7(b), of the secretary, shall be verified and shed the owners of the surface describe equired by subsections (b) and (c), securface owner notice of entry to surface owner notice of entry to surface of subsection (b), section sixteen of e § 22-6A-11(b), the applicant shall to have been completed by the applicant | nall contain the following informated in subdivisions (1), (2) and (action sixteen of this article; (ii) the rivey pursuant to subsection (a), of this article were waived in writered proof of and certify to the section. | tion: (14), substate the received the received ting by | A) A certification (b), security approximately A) A certification (b), security approximately approx | on from the operator that (i) stion ten of this article, the deemed satisfied as a result cle six-a; or (iii) the notice wher; and Pursuant to West |
| | West Virginia Code § 22-6A, the Operator has properly served the required | | Notice C | ertification | OOG OFFICE USE |
| *PLEASE CHI | ECK ALL THAT APPLY | | | | ONLY |
| ☐ 1. NO | TICE OF SEISMIC ACTIVITY or | NOTICE NOT REQUIRED SEISMIC ACTIVITY WAS CO | | | RECEIVED/ NOT REQUIRED |
| 2. NO | TICE OF ENTRY FOR PLAT SURV | YEY or NO PLAT SURVEY entation of WV Code 22-6A | WAS C | ONDUCTED | RECEIVED |
| ■ 3. NO | TICE OF INTENT TO DRILL or | NOTICE NOT REQUIRED NOTICE OF ENTRY FOR PLAWAS CONDUCTED or | | | RECEIVED/ NOT REQUIRED |
| | | ☐ WRITTEN WAIVER BY (PLEASE ATTACH) | SURFA | CE OWNER | |
| ■ 4. NO | TICE OF PLANNED OPERATION | G FGT | N. | D | RECEIVED |
| ■ 5. PU | BLIC NOTICE | JH 7 = | | 3 | RECEIVED |
| ■ 6. NO | TICE OF APPLICATION | JUL 10 | 20i2 | | RECEIVED |
| L | | The State of the s | Will'n | , | |

Required Attachments:

The Operator shall attach to this Notice Certification Form all Notice Forms and Certifications of Notice that have been provided to the required parties and/or any associated written waivers. For the Public Notice, the operator shall attach a copy of the Class II Legal Advertisement with publication date verification or the associated Affidavit of Publication. The attached Notice Forms and Certifications of Notice shall serve as proof that the required parties have been noticed as required under West Virginia Code § 22-6A. Pursuant to West Virginia Code § 22-6A-11(b), the Certification of Notice to the person may be made by affidavit of personal service, the return receipt card or other postal receipt for certified mailing.

Certification of Notice is hereby given:

THEREFORE, I Kevin Kilstrom , have read and understand the notice requirements within West Virginia Code § 22-6A. I certify that as required under West Virginia Code § 22-6A, I have served the attached copies of the Notice Forms, identified above, to the required parties through personal service, by registered mail or by any method of delivery that requires a receipt or signature confirmation. I certify under penalty of law that I have personally examined and am familiar with the information submitted in this Notice Certification and all attachments, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Address: Well Operator: Antero Resources Appalaghian Corporation 1625 17th Street By: Kevin Kilstrom Denver, CO 80202 Facsimile: (303) 357-7315 Its: Vice President of Production Telephone:

(303) 357-7310 Email:

Notary Public

My Commission Expires

worn before me this 29 day of

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

WW-6A (5-12) API NO. 47- 085 - 0 9979
OPERATOR WELL NO. Campbell Unit 2H
Well Pad Name: John Campbell North Pad

STATE OF WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS NOTICE OF APPLICATION

| Notice Time Requirement: notice shall be provided no later that Date of Notice: 06/29/2012 Date Permit Application Filed: 06/29. | | | |
|--|--|--|--|
| Notice of: | | | |
| ■ PERMIT FOR ANY USELL WORK CONSTRUCTION OF A | ROVAL FOR THE AN IMPOUNDMENT OR PIT | | |
| Delivery method pursuant to West Virginia Code § 22-6A-10 | (b) | | |
| | OD OF DELIVERY THAT REQUIRES A PT OR SIGNATURE CONFIRMATION | | |
| or by registered mail or by any method of delivery that requires a erosion and sediment control plan required by section seven of the owners of record of the surface of the tract on which the well is of tract or tracts overlying the oil and gas leasehold being developer roads or other land disturbance as described in the erosion and se seven of this article; (3) The coal owner, operator or lessee, in the located [sic] is known to be underlain by one or more coal seams oil and gas leasehold being developed by the proposed well work enlargement, alteration, repair, removal or abandonment of any in Any surface owner or water purveyor who is known to the application one thousand five hundred feet of the center of the well proposed domestic animals; and (6) The operator of any natural gas storage (c)(1) If more than three tenants in common or other co-owners of the lands, the applicant may serve the documents required upon the storage of the content of the server of the lands, the applicant may serve the documents required upon the server of the server of the server of the lands, the applicant may serve the documents required upon the server of the server of the server of the server of the lands, the applicant may serve the documents required upon the server of | nis article, and the well plat to each of the following persons: (1) The or is proposed to be located; (2) The owners of record of the surface d by the proposed well work, if the surface tract is to be used for ediment control plan submitted pursuant to subsection (c), section are event the tract of land on which the well proposed to be drilled is so; (4) The owners of record of the surface tract or tracts overlying the k, if the surface tract is to be used for the placement, construction, impoundment or pit as described in section nine of this article; (5) cant to have a water well, spring or water supply source located ad which is used to provide water for consumption by humans or the field within which the proposed well work activity is to take place. Of interests described in subsection (b) of this section hold interests in the person described in the records of the sheriff required to be a of this code. (2) Notwithstanding any provision of this article to the | | |
| Name: John A. and Linda J. Campbell | Name: PLEASE SEE ATTACHMENT | | |
| Address: 505 Oxford Road Pullman, WV 26421 | Address: | | |
| Name: | _ | | |
| Address: | ☐ COAL OPERATOR | | |
| | Name: | | |
| SURFACE OWNER(s) (Road and/or Other Disturbance) | Address: | | |
| | WATER PURVEYOR(s)/OWNER(s) OF WATER WELL, | | |
| Name:Address: | SPRING OR OTHER WATER SUPPLY SOURCE | | |
| Attacoo. | Name: NONE IDENTIFIED WITHIN 2000' | | |
| Name: | Address: | | |
| Address: | vev Lo, Ethnemor | | |
| SURFACE OWNER(s) (Impoundments/Pits) Name: Address: | SPRING OR OTHER WATER SUPPLY SOURCE. Name: NONE IDENTIFIED WITHIN 2000' Address: OPERATOR OF ANY NATURAL GAS STORAGE FIELD Name: Address: | | |
| | | | |
| | *Please attach additional forms if necessary | | |

API NO. 47- 085 - 09979
OPERATOR WELL NO. Campbell Unit 2H
Well Pad Name: John Campbell North Pad

Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-10(b), notice is hereby given that the undersigned well operator has applied for a permit for well work or for a certificate of approval for the construction of an impoundment or pit.

This Notice Shall Include:

Pursuant to W. Va. Code § 22-6A-10(b), this notice shall include: (1) copies of the application; (2) the erosion and sediment control plan required by section seven of this article; and (3) the well plat.

Pursuant to W. Va. Code § 22-6A-10(f), this notice shall also include: (1) a statement of the time limits for filing written comments; (2) who may file written comments; (3) the name and address of the secretary for the purpose of filing the comments and obtaining additional information; and (4) a statement that the persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Water Well Testing:

Pursuant to West Virginia Code § 22-6A-10(d), notification shall be made, with respect to surface landowners identified in subsection (b) or water purveyors identified in subdivision (5), subsection (b) of this section, of the opportunity for testing their water well.

Water Testing Laboratories:

Pursuant to West Virginia Code § 22-6A-10(i), persons entitled to notice pursuant to subsection (b) of this section may contact the department to ascertain the names and locations of water testing laboratories in the subject area capable and qualified to test water supplies in accordance with standard accepted methods. In compiling that list of names the department shall consult with the state Bureau for Public Health and local health departments.

Well Location Restrictions

Pursuant to W. Va. Code § 22-6A-12, Wells may not be drilled within two hundred fifty feet measured horizontally from any existing water well or developed spring used for human or domestic animal consumption. The center of well pads may not be located within six hundred twenty-five feet of an occupied dwelling structure, or a building two thousand five hundred square feet or larger used to house or shelter dairy cattle or poultry husbandry. This limitation is applicable to those wells, developed springs, dwellings or agricultural buildings that existed on the date a notice to the surface owner of planned entry for surveying or staking as provided in section ten of this article or a notice of intent to drill a horizontal well as provided in subsection (b), section sixteen of this article was provided, whichever occurs first, and to any dwelling under construction prior to that date. This limitation may be waived by written consent of the surface owner transmitted to the department and recorded in the real property records maintained by the clerk of the county commission for the county in which such property is located. Furthermore, the well operator may be granted a variance by the secretary from these distance restrictions upon submission of a plan which identifies the sufficient measures, facilities or practices to be employed during well site construction, drilling and operations. The variance, if granted, shall include terms and conditions the department requires to ensure the safety and protection of affected persons and property. The terms and conditions may include insurance, bonding and indemnification, as well as technical requirements. (b) No well pad may be prepared or well drilled within one hundred feet measured horizontally from any perennial stream, natural or artificial lake, pond or reservoir, or a wetland, or within three hundred feet of a naturally reproducing trout stream. No wellpad may be located within one thousand feet of a surface or ground water intake of a public water supply. The distance from the public water supply as identified by the department shall be measured as follows: (1) For a surface water intake on a lake or reservoir, the distance shall be measured from the boundary of the lake or reservoir. (2) For a surface water intake on a flowing stream, the distance shall be measured from a semicircular radius extending upstream of the surface water intake. (3) For a groundwater source, the distance shall be measured from the wellhead or The department may, in its discretion, waive these distance restrictions upon submission of a plan identifying sufficient measures, facilities or practices to be employed during well site construction, drilling and operations to protect the waters of the state. A waiver, if granted, shall impose any permit conditions as the secretary considers necessary. (c) Notwithstanding the foregoing provisions of this section, nothing contained in this section prevents an operator from conducting the activities permitted or authorized by a Clean Water Act Section 404 permit or other approval from the United States Army Corps of Engineers within any waters of the state or within the restricted areas referenced in this section. (d) The well location restrictions set forth in this section shall not apply to any well on a multiple well pad if at least one of the wells was permitted prior to the effective date of this article. (e) The secretary shall, by December 31, 2012, report to the Legislature on the noise, light, dust and volatile organic compounds generated by the drilling of horizontal wells as they relate to the well location restrictions regarding occupied dwelling structures pursuant to this section. Upon a finding, if any, by the secretary that the well location restrictions regarding occupied dwelling structures are inadequate or otherwise require alteration to address the items examined in the study required by this subsection, the secretary shall have the authority to propose for promulgation legislative rules establishing guidelines and procedures regarding reasonable levels of noise, light, dust and volatile organic compounds relating to drilling horizontal wells, including reasonable means of mitigating such

factors, if necessary.

API NO. 47- 085 - 09979

OPERATOR WELL NO. Campbell Unit 2H

Well Pad Name: John Campbell North Pad

Written Comment:

Pursuant to West Virginia Code § 22-6A-11(a), all persons described in subsection (b), section ten of this article may file written comments with the secretary as to the location or construction of the applicant's proposed well work within thirty days after the application is filed with the secretary. All persons described in West Virginia Code § 22-6A-10(b) may file written comments as to the location or construction of the applicant's proposed well work to the Secretary at:

Chief, Office of Oil and Gas Department of Environmental Protection 601 57th St. SE Charleston, WV 25304 (304) 926-0450

Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water. NOTE: YOU ARE NOT REQUIRED TO FILE ANY COMMENT.

Time Limits and Methods for Filing Comments.

The law requires these materials to be served on or before the date the operator files its Application. You have **THIRTY (30) DAYS** after the filing date to file your comments. Comments must be filed in person or received in the mail by the Chief's office by the time stated above. You may call the Chief's office to be sure of the date. Check with your postmaster to ensure adequate delivery time or to arrange special expedited handling. If you have been contacted by the well operator and you have signed a "voluntary statement of no objection" to the planned work described in these materials, then the permit may be issued at any time.

Pursuant to West Virginia Code § 22-6A-11(c)(2), Any objections of the affected coal operators and coal seam owners and lessees shall be addressed through the processes and procedures that exist under sections fifteen, seventeen and forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article. The written comments filed by the parties entitled to notice under subdivisions (1), (2), (4), (5) and (6), subsection (b), section ten of this article shall be considered by the secretary in the permit issuance process, but the parties are not entitled to participate in the processes and proceedings that exist under sections fifteen, seventeen or forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article.

Comment Requirements

Your comments must be in writing and include your name, address and telephone number, the well operator's name and well number and the approximate location of the proposed well site including district and county from the application. You may add other documents, such as sketches, maps or photographs to support your comments.

Disclaimer: All comments received will be placed on our web site http://www.dep.wv.gov/oil-and-gas/Horizontal-Permits/Pages/default.aspx and the applicant will automatically be forwarded an email notice that such comments have been submitted. The applicant will be expected to provide a response to comments submitted by any surface owner, water purveyor or natural gas storage operator noticed within the application.

Permit Denial or Condition

The Chief has the power to deny or condition a well work permit. Pursuant to West Virginia Code § 22-6A-8(d), the permit may not be issued or be conditioned, including conditions with respect to the location of the well and access roads prior to issuance if the director determines that:

- (1) The proposed well work will constitute a hazard to the safety of persons;
- (2) The plan for soil erosion and sediment control is not adequate or effective;
- (3) Damage would occur to publicly owned lands or resources; or
- (4) The proposed well work fails to protect fresh water sources or supplies.

VIVI Department of Environmental Protection

A permit may also be denied under West Virginia Code § 22-6A-7(k), the secretary shall deny the issuance of a permit if the secretary determines that the applicant has committed a substantial violation of a previously issued permit for a horizontal well, including the applicable erosion and sediment control plan associated with the previously issued permit, or a substantial violation of one or more of the rules promulgated under this article, and in each instance has failed to abate or seek review of the violation within the time prescribed by the secretary pursuant to the provisions of subdivisions (1) and (2), subsection (a), section five of this article and the rules promulgated hereunder, which time may not be unreasonable.

API NO. 47- 085 - 09979

OPERATOR WELL NO. Campbell Unit 2H

Well Pad Name: John Campbell North Pad

Pursuant to West Virginia Code § 22-6A-10(g), any person entitled to submit written comments to the secretary pursuant to subsection (a), section eleven of this article, shall also be entitled to receive from the secretary a copy of the permit as issued or a copy of the order modifying or denying the permit if the person requests receipt of them as a part of the written comments submitted concerning the permit application. Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

| Notice is | hereby | given | by: |
|-----------|--------|-------|-----|
|-----------|--------|-------|-----|

Well Operator: Antero Resources Appalachian Corporation
Telephone: 303-357-7310
Email: amihalcin@anteroresources.com

Address: 1625 17th Street

Denver, CO 80202

Facsimile: 303-358-7315

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at deprivacyofficer@wv.gov.

Su —

Subscribed and worn before me th

Notary Public

My Commission Expires

,

WW-6A Notice of Application Attachment:

Coal Owners:

Owner:

John A. & Linda J. Campbell

Address:

505 Oxford Road Pullman, WV 26421

Owner:

Ruth Villers

Address:

520 Park Drive

Pennsboro, WV 26415

Owner:

Naomi P. Federkiel

Address:

18 Olive Street

Norwalk, OH 44857

Owner:

J.W. Prunty c/o Ruth Villers

Address:

520 Park Drive

Pennsboro, WV 26415

Owner:

Kermit Comoway, Pearl Cunningham &

Thya Neusbaum, heirs

c/o Melinda Gilbertson

Address:

900 Par Lane

Dell Rapids, SD 57022



WW-6A4 (1/12)

Date of Notice: 04/30/2012

Operator Well No. Campbell Unit 2H

STATE OF WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS NOTICE OF INTENT TO DRILL

Pursuant to W. Va. Code § 22-6A-16(b), the Notice of Intent to Drill is only required if the notice requirements of W. Va. Code § 22-6A-10(a) have NOT been met or if the Notice of Intent to Drill requirement has NOT been waived in writing by the surface owner.

Date Permit Application Filed: 06/29/2012

Notice Time Requirement: Notice shall be provided at least TEN (10) days prior to filing a permit application.

| Delivery metho | d pursuant to West Virginia Code § 22-6A | -16(b) | |
|--|---|---|--|
| ☐ HAND DELIVERY | CERTIFIED MAIL RETURN RECEIPT REQUES | TED | |
| receipt requested drilling a horizo of this subsection subsection may | Va. Code § 22-6A-16(b), at least ten days prid or hand delivery, give the surface owner not nal well: <i>Provided</i> , That notice given pursunas of the date the notice was provided to the waived in writing by the surface owner. If facsimile number and electronic mail address | otice of its intent to enter upon the uant to subsection (a), section tente surface owner: <i>Provided, how</i> The notice, if required, shall incl | the surface owner's land for the purpose of the nof this article satisfies the requirements wever, That the notice requirements of this lude the name, address, telephone number, |
| | by provided to the SURFACE OWNE | R(s): Name: | |
| Address: 505 Oxfo | | Address: | |
| - | , WV 26421 | Addiess. | |
| the surface own State: County: District: Quadrangle: | st Virginia Code § 22-6A-16(b), notice is he er's land for the purpose of drilling a horizon Vest Virginia Ritchie Union Pullman 7.5' eft Fork | | |
| This Notice S | hall Include | | , |
| Pursuant to We facsimile numb related to horiz | est Virginia Code § 22-6A-16(b), this notice and electronic mail address of the operational drilling may be obtained from the Sec 7 th Street, SE, Charleston, WV 25304 (304-9) | ator and the operator's authorize cretary, at the WV Department of | red representative. Additional information of Environmental Protection headquarters, |
| Notice is here | by given by: | | |
| | Antero Resources Appalachian Corporation | Authorized Representative | : Hannah Knopping |
| Address: | 1625 17th Street | Address: | 1625 17th Street |
| | Denver, CO 80202 | | Denver, CO 80202 |
| Telephone: | (303) 357-7310 | Telephone: | (303) 357-6412 |
| Email: | hknopping@anteroresources.com | Email: | hknopping@anteroresources.com |
| Facsimile: | (303) 357-7315 | Facsimile: | (303) 357-7315 |
| | | | |

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

WW-6A5 (1/12)

Operator Well No. Campbell Unit 2H

STATE OF WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS NOTICE OF PLANNED OPERATION

| Date of Notice: | 06/29/2012 Date Permit | Application Filed: 06/29 | | аррисацон. —— | |
|--|---|--|--|---|--------------------|
| Delivery method | d pursuant to West Virginia Code | § 22-6A-16(c) | | | |
| CERTIFIE RETURN | ED MAIL RECEIPT REQUESTED | HAND DELIVERY | | | |
| return receipt receipt receipt receipt required to be prequired to be predrilling of a hor damages to the second of notices receipt re | quested or hand delivery, give the surration. The notice required by this rovided by subsection (b), section tentizontal well; and (3) A proposed surface affected by oil and gas operate required by this section shall be given | rface owner whose land subsection shall includ of this article to a surfaurface use and compensations to the extent the dain to the surface owner as | will be used for e: (1) A copy ce owner whose ation agreement mages are comp | ration, an operator shall, by certified at the drilling of a horizontal well notice of this code section; (2) The informate land will be used in conjunction with a containing an offer of compensation pensable under article six-b of this chapted in the records of the sheriff at the | tion the for pter. |
| | y provided to the SURFACE OWN sted in the records of the sheriff at the | | | | |
| Name: John A. | & Linda J. Campbell | Name: | | | |
| Address: 505 Oxfo | ord Road | Address | | | |
| Pullman, | WV 26421 | | | | |
| operation on the State: VECOUNTY: REDISTRICT: URL Quadrangle: PECOUNTY | est Virginia Code § 22-6A-16(c), notice surface owner's land for the purpos vest Virginia Litchie Inion tuliman 7.5' | e of drilling a horizontal UTM NAD 8 Public Road A Generally use | well on the tra Easting: Northing: Access: | well operator has developed a planned ct of land as follows: 506051m 4336871m CR 9/7 Campbell, John | |
| to be provided horizontal well; surface affected information rela headquarters, lo | st Virginia Code § 22-6A-16(c), this by W. Va. Code § 22-6A-10(b) to and (3) A proposed surface use and I by oil and gas operations to the exated to horizontal drilling may be obtained at 601 57th Street, SE, Ch | a surface owner whose compensation agreement tent the damages are contained from the Secret | land will be unt containing arompensable und ary, at the WV | code section; (2) The information requised in conjunction with the drilling a offer of compensation for damages the article six-b of this chapter. Addit Department of Environmental Prote or by visiting | |

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at deprivacyofficer@wv.gov.

CERTIFICATION OF AGREEMENT WITH WVDOH to fulfill WV Code 22, Article 6A, Section 20

OIL AND GAS ROAD STATEWIDE BONDING AGREEMENT

THIS AGREEMENT, executed in duplicate, made and entered into this 28 day of Floruary, 2012, by and between the WEST VIRGINIA DEPARTMENT OF TRANSPORTATION, DIVISION OF HIGHWAYS, hereinafter called "DEPARTMENT," and Antero Resources Appalachian Corporation, a Delawage company, hereinafter called "COMPANY."

WITNESSETH:

JUL 1 0 2012

Office of Oil & Gas

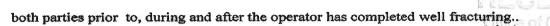
WHEREAS, Company has horizontal gas well drilling operations in certain areas of West Virginia; and

WHEREAS, the Department believes that the frequent and repetitive use of certain sections of highways in the State by Company, its contractors, agents, independent contractors or suppliers of drilling materials or drilling equipment, and employees contributes to increased wear and tear to public roads in the state road system in the State, including local roads ("State Owned Roads"); and,

WHEREAS, the Department and Company have entered into this Agreement to satisfy the requirements of the Department's policy entitled "Oil & Gas Road Policy" dated January 3, 2012, as issued by Paul A. Mattox, Jr., Secretary of Transportation / Commissioner of Highways, and any subsequent related policies, hereinafter called "Policy", a copy of which is made a part of this Bonding Agreement and is identified as Attachment 1.

NOW, THEREFORE, for and in consideration of the mutual agreements hereinafter set forth, the parties agree as follows:

- I. For purposes of this Bonding Agreement, "Project Transportation Usage" of the Company shall be understood to mean use of one or more State Owned Roads for the delivery and removal of drilling materials and drilling equipment at the site or location of one or more of Company's horizontal gas well pad locations. To the extent reasonably practical, prior to commencing use of a State Owned Road for Project Transportation Usage after January 1, 2011, the Company shall submit to the Department a section or sections of current official WVDOH County Highway maps identifying the exact location of the proposed project and the State Owned Roads that the Company will utilize for the Project Transportation Usage.
- II. Company and Department shall within 14 days of the Company's submittal, agree to a list of these sections of State Owned Roads, hereinafter called "Project Roads List", to be utilized for each of Company's projects, identified by route number and milepost; at a time to be mutually agreed to by the parties prior to initial commencement of Project Transportation Usage of a particular State Owned Road on a Project Roads List, the Company and Department will jointly review the condition of the roads and bridges on the Project Roads List. The Department will document the road type and surface condition and general right-of-way width of each section of road on the Project Road List. Either party may supplement this documentation with photographs, video or other evidence of the present condition of the road surface, shoulders, ditches, culverts, bridges or other structures or appurtenances of roads on the Project Road List, as well as approaches to the roads, utility facilities located within or along the right-of-way, or any other condition, including third-party activities, that may affect the duties and responsibilities of the parties under this Agreement. A copy of any such documentation must be made and provided to the other party within ten business days after the joint review of the roads on the Project Roads List.
- III. Department shall issue a Project Agreement or Project Permit, as appropriate, to Company to use State Owned Roads and may include any minor or major improvements required of Company prior to, during or after Project with the assignment of responsibilities of



- IV. In the Project Agreement/Project Permit, the Department shall not require the use of State Owned Roads other than the roads proposed by Company unless the Department has safety concerns as to the Company's proposed roads. A failure to agree on roads that may otherwise be lawfully used for a particular Project Transportation Usage shall result in the designation of the State Owned Roads proposed by Company, with milepost determinations as designated by Department. This Agreement shall only cover portions of State Owned Roads designated on the Project Roads List.
- V. For the duration of Company's Project Transportation Usage of the Stated Owned Roads on the Project Roads List, whether by the Company, its contractors (while working on behalf of Company), agents, independent contractors or suppliers of drilling materials or drilling equipment, or employees, the Company agrees to pay for all reasonable maintenance and repair costs incurred by the Department to repair areas of the State Owned Roads included in the Project Roads List that were directly damaged by Company's Project Transportation Usage, as determined to be reasonably necessary and appropriate by the Department. The Department shall keep a record of all labor performed by Department employees and contractors for such maintenance and repairs and shall send an invoice for the same to Company.
- VI. Company shall be responsible for the cost of all maintenance and repairs reasonably necessary to put the existing roadways, bridges and appurtenances on the Project Roads List utilized for the Project Transportation Usage in the condition that existed immediately prior to the Project Transportation Usage. Company shall not be required to pay for maintenance or repairs to put any areas of such roadways, bridges and appurtenances on the Project Roads List in a condition better than the condition that existed immediately prior to the Project Transportation Usage. Company shall also not be required to pay for maintenance or repairs to any areas of these roadways, bridges or appurtenances on the Project Roads List that are not actually utilized for the Project Transportation Usage or for damage not caused by Project Transportation Usage.
- VII. Company shall notify the Department in writing of Company's final completion of Project Transportation Usage for particular roadways, bridges and appurtenances on the Project Roads List. Within fourteen days after its receipt of written notification of the completion of the Project Transportation Usage for all roads on a Project Roads List, the Department will review the condition of the roadways, bridges and appurtenances on the Project Roads List actually utilized for the Project Transportation Usage and advise Company of any final repairs reasonably necessary to leave these roads, bridges and appurtenances in a condition reasonably deemed by Department to be equal to their condition prior to commencement of Project Transportation Usage; and, upon completion of all such final repairs by or on behalf of Company and acceptance by Department, the Company shall be released from all further liability for maintenance or repairs to roads, bridges, or appurtenances on said Project Roads List. Any maintenance or repair work under the Project Agreement/Project Permit for roads, bridges or appurtenances on the Project Roads List may be performed by a contractor directly chosen by the Company as approved by the Department, the Department's workforce, or a private contractor hired by the Department through the public bid process in accordance with state law, all of which work shall be subject to the standards and specifications of the Department.
- VIII. In order to ensure performance of Company's performance and payment obligations under this Bonding Agreement, the Company shall post a corporate surety bond, hereinafter called "Master Bond", with the Department named as the beneficiary, which form of bond shall be subject to the consent of the Department, not to be unreasonably withheld. The amount and form of the bond shall be in accordance with the Policy as set forth above. However, the amount of the Master Bond does not limit the amount of claims that may be made by the Department against the Company under this Bonding Agreement. The Company shall provide the Master Bond to the Department within one (1) month after the execution of this Bonding Agreement. The Master Bond shall secure the good faith performance of all payment obligations of Company under the terms of this Bonding Agreement respecting the roads, bridges and appurtenances on the Project Roads List for each Project Transportation Usage undertaken by the Company, and shall remain in effect until termination of this Agreement. Company shall not be obligated to provide any other bonds, sureties, or other guarantees of performance to the Department for Company's use of State Owned Roads, except as required in this Agreement.

- IX. Company shall maintain Commercial General Liability Insurance in the amount of two million dollars, with a minimum coverage of one million dollars per occurrence, for personal injury or death to persons, or for property damage, resulting from Company's Project Transportation Usage and shall present evidence of such insurance to Department upon request.
- X. Company's usage of State Owned Roads under the Project Agreement/Project Permit shall comply with all applicable Federal, State and local laws and regulations including, but not limited to, to the extent applicable, the National Environmental Policy Act, Section 404 of the Clean Water Act, Section 106 of the National Historic Preservation Act, Rare, Threatened and Endangered Species Act, Section 401 Water Quality Certification, and hazardous waste requirements. Further, upon reasonable written request of Department, Company shall furnish Department with acceptable documentation of such compliance which is in the possession of the Company.
- XI. Company shall defend, indemnify and hold Department harmless from and against any and all losses, damage, and liability, and from all claims for damages on account of or by reason of bodily injury, including death, which may be sustained, or claimed to be sustained, by any person or persons, including employees of Department, and from and against any and all claims, losses or liabilities for damages to property, arising out of the negligent or willful acts or omissions of Company, its agents, independent contractors and suppliers of drilling materials or drilling equipment, employees and contractors, in the performance of all Project Transportation Usage activities undertaken pursuant to this Agreement (collectively, "claims"). The Company shall not be responsible to indemnify, defend or hold harmless Department for any claims caused by the negligent or willful acts or omissions of the Department or its agents, employees and contractors or third parties not performing work at the direction of Company or delivering drilling equipment or drilling materials, including water, for use by or for company.
- XII. If a provision of this Agreement is or becomes illegal, invalid or unenforceable in any jurisdiction, that shall not affect the validity or enforceability of any other provision of this Agreement; or the validity or enforceability in other jurisdictions of that or any other provision of this Agreement.
- XIII. Department shall give Company a minimum of thirty days written notice of default under the terms of this Bonding Agreement and the opportunity to cure this default during such thirty-day period. If a default is not cured to the satisfaction of Department, or provision acceptable to Department is not made for a cure, Department may then elect to terminate this Bonding Agreement in whole or in part, and may in addition exercise its rights under the Master Bond or seek any other lawful relief available. Company may terminate this Bonding Agreement upon thirty days written notice to Department for any reason. In the event Company terminates this Agreement for any reason, it shall be liable for the repair and maintenance costs set forth above for prior Project Transportation Usage.
- XIV. Nothing herein shall be construed to mean that Company shall have any jurisdiction or control over any public roads in the state road system.
- XV. Company, its contractors, agents, employees and suppliers shall at all times be subject to applicable provisions of state and federal law, including without limitation laws requiring operation of vehicles in accordance with legal size and weight restrictions and posted weight limits. Oversize/overweight permits for vehicle or loads not otherwise conforming with law must be obtained in accordance with law; Department agrees to work in good faith with Company to review and grant (where authorized by law) such permits in a timely manner upon request by Company.
- XVI. This Bonding Agreement shall be construed and enforced in accordance with the laws of the State of West Virginia, as they may be amended.
- XVII. This Bonding Agreement shall be binding upon the successors and assigns of each party hereto.

IN WITNESS WHEREOF, the parties hereto have caused this Bonding Agreement to be executed by their duly authorized officers effective as of the date first above written.

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION, DIVISION OF HIGHWAYS

(To be executed in duplicate)

APPROVED AS TO FORM THIS DAY OF Mar. 20/2

VIRGINIA DEPARTMENT OF HIGHWAYS

Form WW-9 Additives Attachment

SURFACE INTERVAL

- 1. Fresh Water
- 2. Soap -Foamer AC
- 3. Air

INTERMEDIATE INTERVAL

STIFF FOAM RECIPE:

- 1) 1 ppb Soda Ash / Sodium Carbonate-Alkalinity Control Agent
- 2) 1 ppb Conqor 404 (11.76 ppg) / Corrosion Inhibitor
- 3) 4 ppb KLA-Gard (9.17 ppg) / Amine Acid Complex-Shale Stabilizer
- 4) 1ppb Mil Pac R / Sodium Carboxymethylcellulose-Filtration Control Agent
- 5) 12 ppb KCL / Potassium Chloride-inorganic Salt
- 6) Fresh Water 80 bbls
- 7) Air

PRODUCTION INTERVAL

- 1. Alpha 1655
 - Salt Inhibitor
- 2. Mil-Carb

Calcium Carbonate

- 3. Cottonseed Hulls
 - Cellulose-Cottonseed Pellets LCM
- 4. Mil-Seal

Vegetable, Cotton & Cellulose-Based Fiber Blend - LCM

5. Clay-Trol

Amine Acid Complex – Shale Stabilizer
ex

6. Xan-Plex

Viscosifier For Water Based Muds

7. Mil-Pac (All Grades)
Sodium Carboxymethylcellulose – Filtration Control Agent

8. New Drill

Anionic Polyacrylamide Copolymer Emulsion – Shale Stabilizer

9. Caustic Soda

Sodium Hydroxide - Alkalinity Control

10. Mil-Lime

Calcium Hydroxide - Lime

11. LD-9

Polyether Polyol – Drilling Fluid Defoamer

12. Mil Mica

Hydro-Biotite Mica – LCM

JUL 1 0 2012

13. Escaid 110

Drilling Fluild Solvent - Aliphatic Hydrocarbon

14. Ligco

Highly Oxidized Leonardite - Filteration Control Agent

15. Super Sweep

Polypropylene - Hole Cleaning Agent

16. Sulfatrol K

Drilling Fluid Additive - Sulfonated Asphalt Residuum

17. Sodium Chloride, Anhydrous

Inorganic Salt

18. D-D

Drilling Detergent - Surfactant

19. Terra-Rate

Organic Surfactant Blend

20. W.O. Defoam

Alcohol-Based Defoamer

21. Perma-Lose HT

Fluid Loss Reducer For Water-Based Muds

22. Xan-Plex D

Polysaccharide Polymer - Drilling Fluid Viscosifier

23. Walnut Shells

Ground Cellulosic Material - Ground Walnut Shells - LCM

24. Mil-Graphite

Natural Graphite – LCM

25. Mil Bar

Barite - Weighting Agent

26. X-Cide 102

Biocide

27. Soda Ash

Sodium Carbonate – Alkalinity Control Agent

28. Clay Trol

Amine Acid complex – Shale Stabilizer

29. Sulfatrol

Sulfonated Asphalt – Shale Control Additive

30. Xanvis

Viscosifier For Water-Based Muds

31. Milstarch

Starch - Fluid Loss Reducer For Water Based Muds

32. Mil-Lube

Drilling Fluid Lubricant



List of Anticipated Additives Used for Fracturing or Stimulating Well

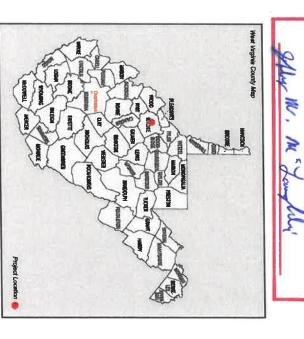
| Additives | Chemical Abstract Service Number (CAS #) |
|--|---|
| Fresh Water | 7732-18-5 |
| 2 Phosphobutane 1,2,4 tricarboxylic acid | 37971-36-1 |
| Ammonium Persulfate | 7727-54-0 |
| Anionic copolymer | proprietary |
| Anionic polymer | proprietary |
| BTEX Free Hydrotreated Heavy Naphtha | 64742-48-9 |
| Cellulase enzyme | (Proprietary) |
| Demulsifier Base | (Proprietary) |
| Ethoxylated alcohol blend | Mixture |
| Ethoxylated Nonylphenol | 68412-54-4 |
| Ethoxylated oleylamine | 26635-93-8 |
| Ethylene Glycol | 107-21-1 |
| Glycol Ethers | 111-76-2 |
| guar gum | 9000-30-0 |
| Hydrogen Chloride | 7647-01-0 |
| Hydrotreated light distillates, non-aromatic, BTEX free | 64742-47-8 |
| sopropyl alcohol | 67-63-0 |
| liquid, 2,2-dibromo-3-nitrilopropionamide | 10222-01-2 |
| Microparticle | proprietary |
| Petroleum Distillates (BTEX Below Detect) | 64742-47-8 |
| Polyacrylamide | 57-55-6 |
| Propargyl Alcohol | 107-19-7 |
| Propylene Glycol | 57-55-6 |
| Quartz | 14808-60-7 |
| Sillica, crystalline quartz | 7631-86-9 |
| Sodium Chloride | 7647-14-5 |
| Sodium Hydroxide | 1310-73-2 |
| Sugar | 57-50-1 |
| Surfactant | 68439-51-0 |
| Suspending agent (solid) | 14808-60-7 |
| Tar bases, quinoline derivs, benzyl chloride-quaternized | 72480-70-7 |

RECEIVED
Office of Oil and Gas

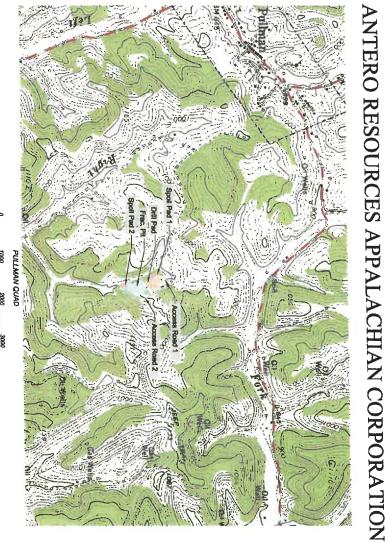
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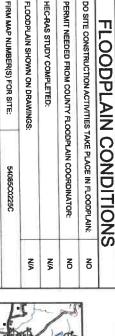
WV Department of Environmental Protection

APPROVED VDEP OOG



JOHN CAMPBELL NORTH DRILL PAD FINAL SITE DESIGN, CONSTRUCTION PLAN, & **EROSION & SEDIMENT CONTROL PLANS**





Dusty Woods 817-771-1436

leron Kunzier, Construction Meneger 05-227-8344

nveyor & Engineer

lohn Kawcak, Engineer 117-368-1553

yan Ward, Environmental Engineer (ALLSTAR) 96-213-2666, ext 311 Off. 304-692-7477 Cell

honySmith - Construction L869-3405 Off. 304-673-6196 Cell

STATE PLANE NAD 83

ntero Resources

Tom Corethers, PE, PS - Homor Brothers Engineers ∜04-624-6445 Office Bill Yetzer, PS, EI, - Allegheny Surveys Inc. 304-848-5035 Off. 304-619-4937 Cell

ACREAGE OF CONSTRUCTION IN FLOODPLAIN:

Ş

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



ginia Code of State Rules.

ybection, Office of Oil and Gas §35-4-21.

yporary frac pit pond. The computed

is less than 15 acre feet,

yond is lined.

6-29-2012 DATE 5-8-2012

RE

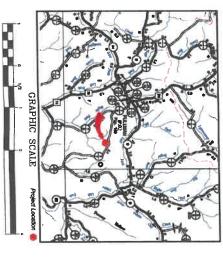
/ISED QUANTITIES & SPOIL AREA
/ISED WELL TABLE & AFFECTED PARCELS DATA

Scale: AS SHOWN
Designed By: JDR & TBC

Date: 4-27-2012

REVISIONS





| ď | 76 | | N. B. | | 1 |
|----|------------------|-----|-------|---|-----|
| 1. | | 100 | | | |
| 3 | GRAPHI | | | | |
| Ų. | GRAPHIC SCALE | | | | |
| | Project Location | | A | | |
| | ocation . | P) | 1 | F | HA. |

| COVER SHEET/LOCATION MAP JOHN CAMPBELL NORT DRILL PAD SITE |
|--|
| UNION DISTRICT RITCHIE COUNTY, WV |

- 250' from an existing well or developed spring used for heap?
 625' occupied dwelling or barn greater 2500 SF used for from the centar of the ped.
 100' from edge of disturbence to wetlands, perennial strapond or reservoir.
 300' from edge of disturbence to naturally reproducing the 300' from edge of disturbence to naturally reproducing the 300' from edge of disturbence to naturally reproducing the second control of surface or ground water inteke to a public water second streams, natural or artificial lake, als.

S HEET

| SHEET / LOCATION MAP | SHEET INDEX | e or ground water intake to a public water supply. | e of disturbance to wetlands, perennial streams, netural or ertificial take, out. | dwelling or barn greater 2500 SF used for pourtry or dairy measured or of the pad. |
|--|-------------|--|---|---|
| COVER SHEET/LOCATION OF CAMPBELL NORILL PAD SITE UNION DISTRICT RITCHIE COUNTY, WY | IOR? | ГН | ANTERO RESOURCES APPALACHAIN CORP | THIS DOCUMENT |

SCHEDULE

Hornor

Prop. Wed Campbell Unit 2H HV-N NADB3 N: 251292.91 WV-N NADB3 E: 1863180.82 LAT NADB3: 35*10'51.87* LDN NADB3: 80'55'47.88*

Prop. Well Compdet Unit 1H WY-M NALDSS M: 25/294.75 WY-M NALDSS E: 1657/96.05 LAT NALDSS: 30*10751.79* LON NALDSS: 80*55'47.80*

Prop. Well VReva: Linit 2H WV-N NADES N: 251268.32 WV-N NADES: 1563178.10 LAT NADES: 30"10"11.63" LON NADES: 80"55-47.65"

Prop. Well Kurin Link 1H WY-N HADES N: 251278.52 WY-N HADES E: 1663172.38 LAT HADES: 39*10%1.71* LON NADES: 80*6647.73*

Prop. Well Composel Unit 3 WY-M (MUDS) N: 261301, 11 WY-M (MUDS) E: 1683165.20 LAT (MADS): 3811051,951 LON (MADS): 80155747,951

Prop. Well Pullmen Livil 2H WV-N NADES N: 251251.48 WV-N NADES E: 1663144.51 LAT NADES: 38*10'31.76" LON NADES: 68'55'48.08"

Prop. Wed Pulman Unit 1H WY-N NADBS II: 251273,28 WY-N NADBS II: 1503160,24 LAT HADBS: 80"55188" LON NADBS: 80"5548,01"

Prop. HM Shodgmas UM 2H WV-N NADB3 N: 251266.09 MV-N NADB3: 1663166.07 LAT NADB3: 39*1051.60* LON NADB3: 30*10511.33*

Prop. What Villers Unit 1H WY-H MADRS N: 251256.89 WY-H MADRS E: 1563161.69 LAT MADRS: 30*10'51.5165" LOW MADRS: 30*55'47.86"

Since Bros. Engineers
1902 Bros. Engineers
Civil, Mining, Environmental and
Consulting Engineering
143 South Phet Strate, Part Office Res 286,
Dorkstors, West Vegleia, 28301 (204) 824-8445



AFFEC

TED TAX PARCELS: 13/28.3

TM 13 - PCL 28 John Campbell
WB 37/206 120.25 Acres
(Affected eres from Proposed Access Roads = 1,503 feet, 3.02 Acres)
(Affected ares from Proposed Lnill Pad = 2,65 Acres)
(Affected ares from Proposed Fran. Pit = 3.12 Acres)
(Affected ares from Proposed Spoil Piles = 1.19 Acres)

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

West Virginia Coordinate System of 1883
State Plane Grid Morth
Established By Swayy Grade GPS

2

50





| Schedule of Quantities Well Site: John Campbell North Drill Pad | Quantities Drill Pad & | es d & Frac | Water Pit | |
|--|-------------------------|----------------|---|-------|
| | UNIT | QUANTITY | UNIT PRICE | TOTAL |
| 1. Clearing, Grubbing, E&S Controls | | | | |
| A. Clearing & Grubbing | Ą | 9.98 | to | |
| | AC | 3.80 | 69 | |
| - 1 | 두 | 1,984 | en | |
| - 1 | Ę. | 258 | 60 | |
| 2 Excevation (Cut Onty) | - | | | |
| • | Ę | N | 69 | |
| - 1 | Q | 7,382 | 69 | |
| - 1 | ςγ | 20,049 | 69 | |
| | প | 7,276 | en | |
| - 11 | ঽ | 4,321 | co | |
| - 1 | ፍ | 732 | 69 | |
| | q | 1,394 | 64 | |
| H. Ditch Lining (Access Road) | | 3 | 6 | |
| 1. Rip Rap | y. | 4/0 | | |
| 2. Synthetic Matting (TRM) | ę v | 4 0 | 0 | |
| 3. Jute Matting | n 07 | 1 030 | SA 6 | |
| K 24" Sumo | E . | 12 | es · | |
| 2 | | N. Carlo | | |
| A 6"-8" Rip Rap (Inlets/Outlets) | SNOT | 14 | s | |
| | SNOT | 3.5 | 59 | |
| 4. Aggregate Surfacing | | | 69 | |
| A. Drill Pad 40 Mil. Liner | SY | 7,421 | en en | |
| - 1 | SY | 7,421 | 69 | |
| C. Drill Pad 1' Minus Crusher Run Aggregate (2") | SNOT | 704 | GI | |
| | SNOT | 1,759 | 69 | |
| - 1 | SNOT | 645 | en | |
| 1 | SNOT (| 1,768 | 69 | |
| | | 2,653 | 69 | |
| 5. Frac, Water Pit Liner - 60 mil. | | | l | |
| | SY | 5,864 | 69 | |
| - 1 | YS | 6,864 | 69 | |
| 6. Road Culverts (5 Total) | | | | |
| A. 15" CMP (5) | 5 | 190 | en. | |
| 7. A. Hydro Seeding | AC | 6,65 | 49 | |
| 8. Fence and Gates | | | CONTRACTOR DESIGNATION OF THE PERSON OF THE | |
| 7 | ! '\ | 984 | 69 | |
| B. 16' Double Swing Gate | 5 | - | 41 | |
| - | ð | 5.01 | 60 | |
| TOTAL | | | 69 | |

| TOTAL | 9. Reclamation | B. 16' Double Swing Gate | A. Woven Wire Fence | 8. Fence and Gates | 7. A. Hydro Seeding | A 15" CMP (5) | 8. Road Culverts (5 Total) | B. 10 oz. Felt Under Layment | A. (One) 60 mil Layer | 5. Frac. Water Pit Liner - 60 mil. | G. Access Roads Geotextile Fabric (US 200) | F. Access Roads 4" Minus Crusher Run Aggregate (8") | E. Drill Pad #57 Stone (2*) | | C. Drill Pad 1' Minus Crusher Run Aggregate (2") | B. Drill Pad 10oz Felt | A. Drill Pad 40 Mil. Liner | 4. Aggregate Surfacing | B. #3 Stone (Ditch Checks) | A. 6"-8" Rip Rap (Inlets/Outlets) | o. owne |
|-------|----------------|--------------------------|---------------------|--------------------|---------------------|---------------|----------------------------|------------------------------|-----------------------|------------------------------------|--|---|-----------------------------|-------|--|------------------------|----------------------------|------------------------|----------------------------|-----------------------------------|---------|
| | ð | ፫ | 5 | | AC | 5 | | SY | SY | | SY | 1 | TONS | TONS | SNOT | SY | SΥ | | SNOT | NOT | |
| | 5.01 | _ | 984 | | 6,65 | 190 | | 5,884 | 5,854 | | 2,653 | 1,768 | 645 | 1,759 | 704 | 7,421 | 7,421 | | 3.5 | 4 | |
| 4 | 69 | 69 | 64 | | * | 4 | | 4 | 4 | | 4 | 69 | en | 69 | en | 69 | 69 | 59 | 65 | • | , |
| | | | | | | l | | | | | l | | | | | | | | ı | | |

| DESCRIPTION | | FILL (CY) | NET (CY) |
|----------------------|--------|-----------|----------|
| MAIN ACCESS ROAD 1 | | 275 | <u>.</u> |
| MAIN ACCESS ROAD 2 | 3.810 | 869 | 2,941 |
| DRII PAD | | 18,221 | -9,414 |
| ERAC PIT | - 1 | 14,371 | 7,346 |
| FRAC PIT ACCESS ROAD | - 4 | 2 | 4,408 |
| SPOIL PADS | | 5,282 | -5,282 |
| TOTAL | 39,018 | 39,020 | -2 |

GRADING VOLUMES

| LOD AREAS (ACRES | ES) |
|--------------------|------|
| DESCRIPTION | AREA |
| MAIN ACCESS ROAD 1 | 0.28 |
| ဂ္ဂ | 2.04 |
| C C E | 0.70 |
| DRILL PAD | 2.65 |
| FRAC PIT | 3.12 |
| WASTE & SPOIL PADS | 1.19 |
| TOTAL | 9.98 |
| TOTAL WOODED AREA | 3.80 |

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

| -W | | |
|-------------------|---------------------------------|-----------|
| Page 2 of 14 | | |
| File No. CIPADIA | | |
| Designed By: JDR. | REVISED LOD TABLE | 6-29-2012 |
| Scale: N.T.S. | REVISED QUANTITIES & SPOIL AREA | 5-8-2012 |
| Date: 4-27-20 | REVISIONS | DATE |
| | | |

SCHEDULE OF QUANTITIES JOHN CAMPBELL NORTH DRILL PAD SITE UNION DISTRICT RITCHIE COUNTY, WV

CUT SLOPE 2
FILL SLOPE 2
FRAC PIT INTERIOR 3
PAD CONTAINMENT BERM SLOPE 1
CUT SWELL FACTOR 1
FILL SHRINK FACTOR 1
PAD ELEVATION: 1

2:1 2:1 3:1 1.5:1 1.05 1.00 1014.0

GRADING

AREAS RECEIVING JUTE MATTING AND SYNTHETIC MATTING (TRM) ARE TO BE SEEDED, LIMED AND FERTILIZED PRIOR TO INSTALLATION OF MATERIALS. TOPSOIL QUANTITY FOR THIS SITE IS ESTIMATED AT A UNIFORM THICKNESS OF 6° OVER THE ENGRAVATED AREA. ACTUAL QUANTITY MAY VARY.

Hornor
Since
1902 Bros. Engineers
Civil, Mining, Environmental and
Consulting Engineering
140 South Thrd Street. Post Office Box 386,
Gardeburg, West Virginia, 28301 (304) 624-6445



981 983 985 987 989 991 991 993 995 997 999 (TOP BERM)

4,045 9,965 17,163 25,753 25,753 35,850 47,568 61,015 76,287 93,480 112,691

169,882 418,556 720,903 1,081,702 1,505,801 1,998,018 2,562,817 3,204,292 3,926,459 4,733,343

0 0.521 1.285 2.212 3.320 4.621 6.132 7.865 9.834 12.050 14.526

UNINCISED ACRE-FT 0 04 02 1.108 2.409 3.920 7.622 9.838 12.314

979 (BOTTOM) ELEVATION

BARRELS

GALLONS

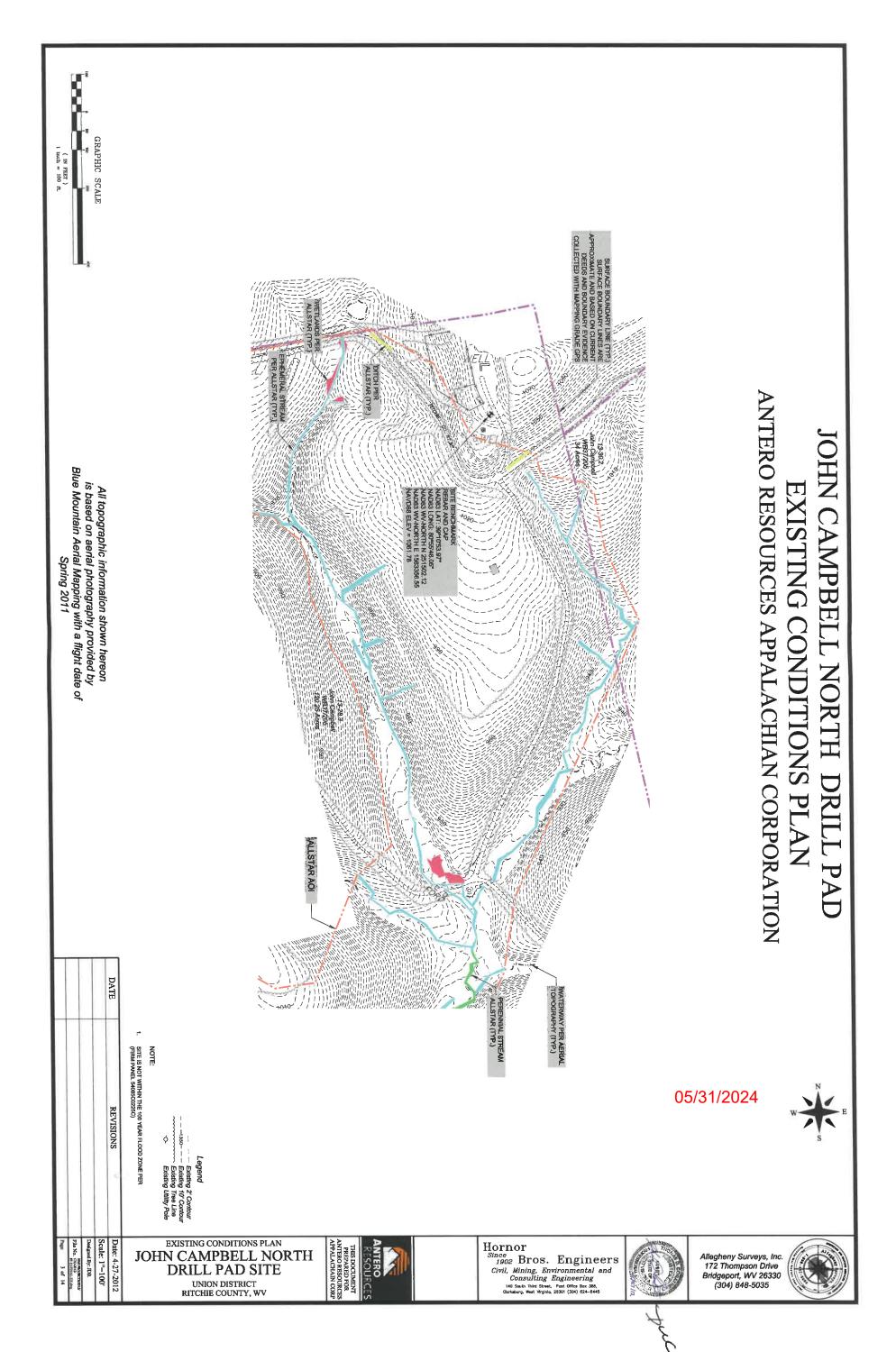
ACRE.

Ξ

FRAC PIT VOLUMES

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





85-09979

CONSTRUCTION, GENERAL AND EROSION AND SEDIMENT NOTES

CONSTRUCTION SPECIFICATIONS:

- THE FRAC PIT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS AND THE SCOPE OF WORN AND SHALL CONFORM GENERALLY WITH THE GRADES, BERMS, DEPTHS AND DIMENSIONS SHOWN.
- THE CONSTRUCTION DOCUMENTS SHOW THE EXISTING AND NEW GRADES AND BERMS, ETC. THAT ALL CUT AND FILL ESTIMATES ARE BASED UPON. THE ENGINEER'S ESTIMATES OF THE QUANTITIES ARE ONLY ESTIMATES AND MAY CHANGE BASED ON ACTUAL FIELD CONDITIONS.
- 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.
- 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.
- THE CONTRACTOR SHALL HAVE ON BITE AT ALL TIMES WHEN CONSTRUCTION IS IN PROGRESS A COMPETENT SUPERINDENT THOROUGHLY FAMILLAR WITH THE CONSTRUCTION OF EARTH BERMS AND EMBANKMENTS, THE COMPACTION OF SOILS AND PLACEMENTS OF LINERS.
- CLEARING AND GRUBBING SHALL REMOVE ALL BRUSH, TREES, ROOTS, STUMPS, FENCES, SIGNS OR ANY OTHER MATERIAL THAY IS NOT TO BE REUSED FOR THE CONSTRUCTION. SOME STUMPS MAY REMAIN AT THE APPROVAL OF THE ENGINEER. NO CLEARING DEBRIS SHALL BE BURED ONS-TIE WITHOUT THE LANDOWNER'S AND ENGINEER'S WRITTEN PETMISSION. ANY DEBRIS BURIAL STEED AND MULCHED. 24" SILT SOCK OR SILT FENCE SHALL BE INSTALLED PRIOR TO CLEARING AND GRUBBING AS SHOWN ON THE DRAWINGS IN ACCORDANCE WITH WY DEP BEST MANACEMENT PRACTICES MANUAL CHAPTER 3. SURFACE WATER SHALL BE DIVERTED AWAY FROM ALL EXCAVATIONS AND THE FACE OF ALL FILLS TO PREVENT FLOODING AND SOFTENING OF THE SUBGRADE OR COMPACTED MATERIALS.
- TOP SOIL SHALL BE STREPED 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
- TOE CUTS OF 12' MINIMUM WIDE SHALL BE EXCAVATED ON ALL RECEIVING SLOPES TO PROVIDE A BASE FOR THE IMPOUNDMENT BERM.
- 10. PRIOR TO PLACING ANY FILL, THE EXPOSED SUBGRADE SHALL BE COMPACTED AND PROOF ROLLED TO PRODUCE A STABLE AND UNVIELDING SITE.
- 11. FRAC PIT BERNS SHALL BE UNIFORMLY GRADED SOIL FREE FROM AGGREGATE EXCEEDING 0°. THE FILL SHALL BE FREE OF ALL ORGANIC MATERIAL, STUMPS , BRUSH, OR OTHER DELETERIOUS MATTER.
- SHALL BE CONTROLLED WITHIN PLUS OR MINUS 4% OF THE OPTIMUM TO FACILITATE COMPACTION. CONTRACTOR IS THE RESPONSIBLE FOR THE CRIGINAL SOIL TEST AND PROVIDING A COPP OF THE RESULTS WITH MOISTIRE-JERISITY CURRE TO THE RESULTS WITH MOISTIRE-JERISITY CURRE TO THE RESULT OF THE PROVIDING TO THE PROVIDING TO SOIL AND SAIL BE DONE IN THE REPORT OF THE PROVIDING THE PROVIDI
- ONSITE FILL SHALL BE USED TO THE MAXIMUM EXTENT POSSIBLE. ANY IMPORTED FILL SHALL BE CERTIFIED BY THE CONTRACTOR TO BE CLEAR OF ALL IN-ZARDOUS SUBSTANCES OR MATERIALS. IF MATERIAL IS ENCOUNTERED THAT CANNOT BE REPEDD BY A CAT TO BYTH A SINGLET CONTRACTOR THE CONTRACTOR SHALL CONTRACT THE ENGINEER WHO WILL VISIT THE SITE AND DETERMINE IF THE MATERIAL MAY BE USED AS IS OR MUST BE REMOVED BY OTHER MEMAS. IF UNSUTTRALE SOLDS IN THE SUBSANDA FARE FOUND THAY SHALL BE REMOVED AND REPLACED WITH APPROPRIATE FILL AT THE CONTRACTORS EXPENSE AND THE ENGINEER'S DIRECTION.
- 14. IF SPRINGS OR SEEPS ARE ENCOUNTERED, SUBSURFACE DRAINAGE FEATURES SHALL BE INSTALLED PRIOR TO FILL PLACEMENT, CONTACT ENGINEER FOR EVALUATION AND RECOMMENDATION OF CORRECTIVE MEASURES.
- 15. THE FILL TOE FOR ALL FILL EMBANKMENTS SHALL BE BENCHED OR KEYED INTO THE NATURAL SOIL ALL FILL TOES SHALL BE SUPPORTED BY COMPETENT BEDROCK OR SOIL MATERIAL.
- 17. ANY SOFT AREAS SHALL BE OVER-EXCAVATED TO A FIRM MATERIAL AND BACKGILLED WITH A WELL COMPACTED STRUCTURAL FILL. 16. FILL PLACED AGAINST EXISTING SLOPES SHALL BE BENCHED INTO THE EXISTING MATERIAL DURING FILL PLACEMENT TO REDUCE THE POTENTIAL FOR DEVELOPMENT OF A SMOOTH INTERFACE BETWEEN THE FILL AND EXISTING SLOPE.
- 18. FILL REQUIRED TO OBTAIN DESIGN GRADES SHALL BE PLACED AS CONTROLLED, COMPACTED FILL. THE FILL SHALL BE FREE OF TRAISH, WOOD, TOPSOIL, ORGANICS, COAL, COAL MINE REFUSE, FROZEN MATERIAL AND PIECES OF ROCK GREATER THAN § IN ANY DIMENSION.
- 18. DURING PLACEMENT OF MATERIAL, MOISTEN OR AERATE EACH LAVER OF FILL, AS NECESSARY, TO OBTAIN THE REQUIRED COMPACTION, FILL SHOULD NOT BE PLACED ON SURFACES THAT ARE MUDDY OR FROZEN, OR HAVE NOT BEEN APPROVED BY PRIOR PROCAFOLUNG. FREE WATER SHALL BE PREVENTED FROM APPEARING ON THE SURFACE DURING OR SUBSEQUENT TO COMPACTION OPERATIONS.
- 20. SOIL MATERIAL WHICH IS REMOVED BECAUSE IT IS TOO WET TO PERMIT PROPER COMPACTION MAY BE SPREAD AND ALLOWED TO DRY. DRYING CAN BE FACILITATED BY DISCING OR HARROWING UNTIL THE MOISTURE CONTENT IS REDUCED TO AN ACCEPTABLE LEVEL. WHEN THE SOIL IS TOO DRY, WATER MAY BE UNIFORMLY APPLIED TO THE LAYER TO BE COMPACTED.
- 21. THE FILL OUTSLOPES SHALL BE OVERBUILT AND TRIMMED BACK TO DESIGN CONFIGURATIONS TO VERIFY PROPER COMPACTION.
- 22. GRANULAR MATERIALS, SUCH AS AASHTO NO. 57 STONE SHALL BE COMPACTED TO 85% OF ITS RELATIVE DENSITY, AS DETERMINED BY ASTM D 4253 AND D 4254 TEST METHODS.
- 23. THE INSIDE OF THE FRACE PIT SHALL BE BOTH SMOOTH DRUM ROLLED AND FREE OF PROTRUDING OR SHARP ROCKS IN ORDER TO RECEIVE THE LINER.
- PAIOR TO THE LINER INSTALLATION THE CONTRACTOR SHALL CONTRACT 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.
- LINER SHALL BE POLYFLEX IMPERVIOUS TEXTURED HOPE GEOMEMBRANE, 80ML, INSTALLED IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS. THE TOP OF THE LINER SHALL BE TURNED DOWN INTO A 4" ANCHOR TRENCH AT THE TOP OF THE BEBU AND BACKFILLED WITH SELECT FILL AS SHOWN ON THE DRAWINGS OR AS REQUIRED BY THE LINER MANUFACTURER.
- 26. PHOTOGRAPHIC DOCUMENTATION SHALL BE TAKEN BY THE CONTRACTOR AND PROVIDED TO THE ENGINEER OF THE POLICY OF THE PROVIDED TO THE ENGINEER OF THE COLUMNS ACTIVATES, I, SITE AFTER CLEARING AND GRIBBINGS, Z. THE SITE AFTER TO PRODUCE MEMOVAL, S. TOE KEY AND INSPECTION TREACH CONSTRUCTION; 6, DAILY PHOTOS OF CUT AND FILL OPERATIONS; 6, PROOF-ROLLING TESTS.
- PRIOR TO AS-BUILT CERTIFICATION, THE CONTRACTOR SHALL PROVIDE THE ENGINEER WITH A COMPLETE BINDER THAT INCLUDES ALL PRIOTIO DOCUMENTATION, ALL COMPACTION HEST REPORTS RESULTS AND MADES, A REPORT OF ALL CUT AND INCLUDES A

- ANY DISCREPANCIES FOUND BETWEEN THE DRAWINGS AND SPECIFICATIONS AND SITE CONDITIONS OR ANY MICONSISTENCIES OR AMBIGUITIES IN DRAWINGS OR SPECIFICATIONS SHALL BE MANEDARELY REPORTED TO THE ENQUIREER, IN WARTHING, WHO SHALL PROMENTY 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.
- WORK ON THIS PROJECT SHALL CONFORM TO THE LATEST EDITIONS OF THE WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE HANDBOOK, IN THE EVENT OF CONFLICT BETWEEN THE DESIGN, SPECIFICATIONS, OR PLANS, THE MOST STRINGENT WILL GOVERN.

- INSTALLATION OF CONCRETE, CORRUGATED METAL, OR HIDPE STORM PIPE SHALL BE IN CONFORMANCE WITH THESE DRAWNINGS.
- 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.
- MATERIALS USED TO FILL AROUND DRAINAGE STRUCTURES IN UTILITY TRENCHES OR ANY OTHER DERRESSION REQUIRING FILL OR BACK FILL SHALL BE COMPACTED TO 95% OF MAXINUM DENSITY AS DETERMINED BY THE STANDARD PROCTOR TEST AS SET FORTH HA STIM STRUNDARD DESS. THE CONTRACTOR SHALL, PROR TO ANY OFERSTRONS INVOLVING FILLING OR BACK FILLING, SUBMIT THE RESULTS OF THE REDCTOR TEST COGETHER WITH A CERTIFICATION THAT THE SOIL TESTED IS REPRESENTANCE OF THE MITERIALS TO BE USED ON THE PROCECT IT ESTS SHALL BE CONDUCTED BY A CERTIFICATION OF THE MITERIALS TO BE USED ON THE PROCECT IT ESTS SHALL BE CONDUCTED BY A CERTIFICATION OF THE MITERIALS TO BE USED ON THE PROJECT. THE TESTS SHALL BE CONDUCTED WITH THESE TESTS DEATERS THING LABORATORY. THE CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH THESE TESTS ARPRESENTING THE LABORATORY. THE CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH THESE TESTS AND THEIR SUBMITTALS.
- FILL SHALL BE PLACED IN LIFTS AT A MAXIMUM UNCOMPACTED DEPTH OF 12-INCHES WITH SOIL FREE FROM AGGREGATES EXCEEDING 9".
- 11. A PRE-CONSTRUCTION CONFERENCE SHALL BE HELD PRIOR TO THE START OF CONSTRUCTION. 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
- SATISFACTORY MATERIALS FOR USE AS FILL FOR PAD AREAS INCLUDE MATERIALS CLASSIFIED IN ASTM D-2467AS GW, GP, GM, GC, SW, SP, SM, SC, ML, AND CL GROUPS. THE MOISTURE CONTROLLE SCONTROLLED WITHIN PLUS OR MINUS 4% OF THE OPTIMUM TO FACULTATE COMPACTION. GENERALT. YOU WASTISFACTORY MATERIALS INCLUDE MATERIALS CLASSIFIED IN ASTM D-2487 AS FT, CH, MH, CL, CH AND ANY SCILL TOO WET TO FACULTATE COMPACTION. CH AND MY SCILL SWAY BE USED SUBJECT TO APROVAL OF THE BROINEER, SIGLIS SHALL HAVE A MINIMUM DRY DENSITY OF \$2 LBCF PER ASTM D-689 AND SHALL HAVE A PLASTICITY INDEX LESS THAN 17.

EROSION CONTROL NOTES

- THE CONTRACTOR SHALL ARRANGE FOR A PRE-CONSTRUCTION CONFERENCE WITH THE APPROPRIATE EROSION AND SEDIMENT CONTROL INSPECTOR 49 HOURS PRIOR TO BEGINNING WORK.
- 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.
- 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.
- ALL DISTURBED AREAS NOT PAVED OR BUILT UPON ARE TO BE FERTILIZED AND HYDRO-SEEDED WITH STRAW AND COTTON PRODUCT WITH TACK AGENTS BY THE CONTRACTOR IN ACCORDANCE WITH THE CURRENT WEST VIRGINIA EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE MANUAL.
- 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.
- 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 AFT FINAL GRADE BUT WILL REMAIN DORMATI (MOISTURBED) FOR LONSER THAN 2T DAYS. PERMANENT STABILIZATION SHALL BE APPLIED TO AREAS THAT ARE TO BE LEFT DORMANT FOR MORE THAN 2T DAYS. PERMANENT STABILIZATION SHALL BE APPLIED TO AREAS THAT ARE TO BE LEFT DORMANT FOR MORE THAN 2T DAYS.
- DURING CONSTRUCTION OF THE PROJECT, SOIL STOCKPILES SHALL BE STABILIZED OR PROTECTED WITH SEDIMENT TRAFFING MEASURES.
- SEDIMENT BASINS AND TRANS, DERINITIER DIKES, SEDIMENT BARRIERS AND OTHER MEASURES INTENDED TO TRAP SEDIMENT SHALL BE CONSTRUCTED MA FREST STEP IN ANY LAND DISTURBING ACTIVITY AND SHALL BE MADE FUNCTIONAL BEFORE UPSLOPE LUND DISTURBANCE TAKES PLACE.
- STABILIZATION MEASURES SHALL BE APPLIED TO EARTHEN STRUCTURES SUCH AS IMPOUNDMENTS, DIKES AND DIVERSIONS IMMEDIATELY AFTER INSTALIATION.
- 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 SECIMENT AND THE DISTURBED SOIL, MEASURES ASSAULTING FROM THE DISPOSITION OF TEMPORARY MEASURES. SHALL BE PERMANENTLY STABILIZED TO PREVENT FURTHER EROSION AND SEDIMENTATION.
- ALL DISTURBED AREAS NOT PAVED OR BUILT UPON SHALL BE HYDRO-SEEDED AND FERTILIZED. PERFORM PERMANENT TOP SOILING, SEEDING AND FERTILIZING AS SOON AFTER FINISH GRADING AS POSSIBLE. SEEDING SHALL COMPLY WITH THE FOLLOWING:

- 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.
- 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.
- THE COMTRACTOR 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 HERE EXPENSE, OF ALL EXISTING UTILITIES DAMAGED UTILITIES DAMAGED UTILITIES DAMAGED UTILITIES DAMAGED UTILITIES CONSTRUCTION. FORTY-EIGHT HOURS PRIOR TO ANY EXCAVATION THE CONTRACTOR SHALL CALL MISS UTILITY AT (800) 552-7001.

- CONTRACTOR SHALL SUBMIT AND ADHERE TO A GENERAL GROUNDWATER PROTECTION PLAN.

- A. TOPSOIL 4 INCH MINIMUM FOR PERMANENT TURF
- FERTILIZER 500 POUNDS PER ACRES OF 10-20-10 FERTILIZER OR EQUIVALENT POUNDAGE OF DIFFERENT ANALYSIS, WORK INTO SOIL PRIOR TO SEEDING.
- LIME (PERMANENT SEEDING) AGRICULTURAL LIME SPREAD AT RATE OF 4 TONSIACRE, WORK INTO SOIL PRIOR TO SEEDING.
- MULCH WOOD FIBER OR CHOPPED STRAW AT RATE OF 2 TONS PER ACRE. HYDRO-MULCH AT RATE OF 30 BALES PER ACRE.
- SEED 45 LBS. PER ACRE TALL FESCUE AND 20 LBS. PER ACRE PERENNAL RYE GRASS. TO BE SEEDED BY HYDRO-SEEDER.

EROSION AND SEDIMENT CONTROL NARRATIVE

- PROJECT DESCRIPTION: THE PURPOSE OF THIS PROJECT IS TO GRADE AND INSTALL EROSION AND SEDIMENT CONTROL WESSIGNES, IN PREPARATION FOR THE CONSTRUCTION OF A GAS WELL PAD NEAR PULLMAN WEST VIRGINIA. IN RITCHIE COUNTY. THE CONSTRUCTION INCLUDES TWO ACCESS ROADS, ONE PAC. WHITEN IMPOUNDMENT, DRILL PAD, STOCKI WATER CONTROLS, AND INCIDENTAL WORK. THE TOTAL APPROXIMATE LAND DISTURBANCE ASSOCIATED WITH THIS PROJECT IS 9.98 ACRES.
- EXISTING SITE CONDITIONS: THE EXISTING SITE MODERATELY STEEP TOPOGRAPHY WITH 5% TO DRAINAGE WAYS. E IS OPEN GRASSLAND AND UREAND HARDWOODS WITH GENTLE TO DOWN SLOPES. NO EROSION IS NOTICED ON SITE, OR IN ANY NATURAL

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- ADJACENT PROPERTY: THE SITE IS BORDERED ON ALL SIDES BY UPLAND HARDWOODS.
- SOILS: NO SOIL STUDIES OR SUBSURFACE INVESTIGATIONS WERE PERFORMED OR THIS PROJECT.
- OFF SITE AREAS. THERE SHALL BE NO BORROW AREA OUTSIDE OF THE FROP NEED GRADING AND CONSTRUCTION AREA.

 ORTICAL EROSION AREAS CONTROL MANITEMANCE. ALL 21 SLOPES AND SITEMER AND DITCHES AND OTHER CONTROLS
 SHALL BE CONSIDERED ORTICAL EROSION AREA STATES REVELS SHALL BE TO ORTOCHES AND OTHER CONTROLS
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 BOOKED STATES AND STATES AND STATES AREAS IF IT BECOMES EVIDENT
 BOOKED CONSTRUCTION THAT THE ONES IN PLACE ARE NOT FUNCTIONING SUFFICIENTLY.
- EROSION AND SEDIMENT CONTROL MEASURES: UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSIONS AND SEDIMENT CONTROL PRACTICES SHALL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SECLEFICATIONS OF THE CURRENT WEST VINGRINA EROSION AND SEDIMENT CONTROL BEST MANAGEMENT FRACTICE MANUAL THE CONTRACTOR SHALL DRIVAN A COPY OF THIS MANUAL FINE WIDER WESTER AND CONSTRUCT ALL DOPICES BASED ON THIS MANUAL, OR A HANDBOOK THAT IS COMPARABLE OR EXCEEDS THE SPECIFICATIONS OF THE WEST VINGRINA MANUAL. THE MINIMUM STANDARDS OF THIS MANUAL SHALL BE ADHERED TO UNLESS OTHERWISE MANUAL SHALL BE ADHERED TO MANUAL
- STRUCTURAL PRACTICES:

 ONVERSION DITCHES: LIVIL BE CONSTRUCTED AS
 ONVERSION BERMS: WILL BE CONSTRUCTED AS
 OUTLET PROTECTION: WILL BE CONSTRUCTED
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 WILL BE CONSTRUCTED AS SHOWN ON THE PLANS.
- VEGETATIVE PRACTICE TOPSOLLING: TOPSOLL WILL DETERNINED IN THE FIELD JOON THE COMPLETIC AREAS AT A MINIMAIN DEPTH OF 4 INCHES, TEMPO AREAS AT A MINIMAIN DEPTH OF 4 INCHES, TEMPO AT 10 AVS SHALL BE SEEDED WITH A FAST GERMINA MIXTURE. PERMANALENT SEEDNIC, ALL SEEDED AR CORTAIN AM ADEQUATE STAND OF GRASS, PERMANA CAHIENYING FIRAL GRADE. WATER, MUICH, AND REVERENTION, IN THE OPINION OF THE ENGINEER. L WILL BE STRIPPED FROM THE SITE AND STOCKPILED IN AN AREA
 FITCHON OF THE PROJECT TOPSOIL WILL BE PLACED ON ALL DISTURBED
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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 SEDMENT CONTROL MEASURES. AFTER ACHEVING ADECOLATE STABILIZATION THE TEMPORARY EROSION AND SEDMENT CONTROLS SHALL BE REMOVED AND ANY AREAS DISTURBED DURING THIS PROCESS SHALL BE STABILIZED.

Hornor

- SEQUENCE OF EVENTS:
- A PRE-CONSTRUCTION CONFERENCE WILL BE I DRAWINGS AND PROVIDE ANY REQUESTED GUI HELD ON SITE WITH CONTRACTOR TO REVIEW THE CONSTRUCTION IDANCE.
- 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. 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.
- GRADING OPERATIONS AS REQUIRED. CUT SLO SHALL BE CLEANED. ALL DITCHES WILL HAVE AT SLOPE WITH THE FOLLOWING DETERMINATION; AND 10% 20% RIPRAP. PPES AND FILL SLOPES SHALL BE TOPSOILED AS NEEDED, DITCH LINES TLEAST GRASS LUNING PROTECTION OR GREATER SHAED ON DITCH DTO 4%-ORGANIC JUTE MATTING, 4 TO 10% - SYNTHETIC MATTING (TRM)
- 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.
- WHEN FINAL GRADE IS ACHIEVED, TOPSOIL TO BUSTURBED AREAS AS REQUIRED. A SOIL SAMPLE POLICY FRATES, IF NO SOILS SAMPLE IS TAKEN THE FOUR TONS PER ACRE. FERTILIZE AT A RATE OF 500 L FESCUE AND 20 LBS. PER ACRE OF PERENNIAL DE PLACED ON ALL DISTURBED AREAS NOT I WED. HYDRO-SEED ALL.
 PIE SHOULD BE TAKEN AND TREST D'O DETERMINE RECOMMENDED.
 BLOWNES ONTES SEPOLLD BE APPLIED AS A MINIMUM: LINE AT A RATE OF 4
 LILDWANG ONTES SEPOLLD BE APPLIED AS A MINIMUM: LINE AT A RATE OF 1ALL.
 ILBS. OF 10:20-10 FER ACRE: SEED WITH 46 ILBS. PER ACRE OF 1ALL.
 ILBS. OF 10:20-10 FER ACRE:

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- LIME, FERTILIZER, AND SEED WILL BE APPLIED AND INSTALLED IN ACCORDANCE WITH MANUF BY USING A HYDRO-SEEDER. HYDRO-MULCH PRODUCTS SHALL BE MIXED ACTURER'S SPECIFICATIONS.
- FINAL SEEDING MUST OCCUR WITHIN 7 DAYS OF FINAL GRADING. BE REMOVED AND REPAIR/STABILIZE
- MAKE MODIFICATIONS FOR PERMANENT STORM WHEN SITE IS STABILIZED, ALL EROSION AND SU THOSE AREAS IN ACCORDANCE WITH STATE ST WATER MANAGEMENT. EDIMENT CONTROL MEASURES CAN ANDARDS.
- FINAL SITE INSPECTION.
- PERMANENT STABILIZATION: ALL AREAS, EFT UNCOMPRED BY ETHER BUILDINGS OR PAVEMENT SHALL BE STABILIZED WITH PERMANENT SEEDING IMMEDIATEN FOLLOWING FINISH ORGANIDA AND WITHIN 7 DAYS. AT NO TIME SHALL LAND LI DORMANT FOR LOWER THAN 2 TO DAYS. SEE SEALURIOGE OF ENENTS FOR RATES.
- MANITENANCE, AND OTHER CONSIDERATIONS AND GROUND WATER PROTECTION: ALL EROSION AND SEDIMENT CONTROL MEASURES WILL BE CHECKED DAILY AND AFTER EACH RAWFALL OF 63 MOYOR MCKE. THEY WILL BE CHECKED DAILY AND AFTER EACH RAWFALL OF 63 MOYOR MCKE. THEY WILL BE CHECKED DAILY CHECKED THE CHE

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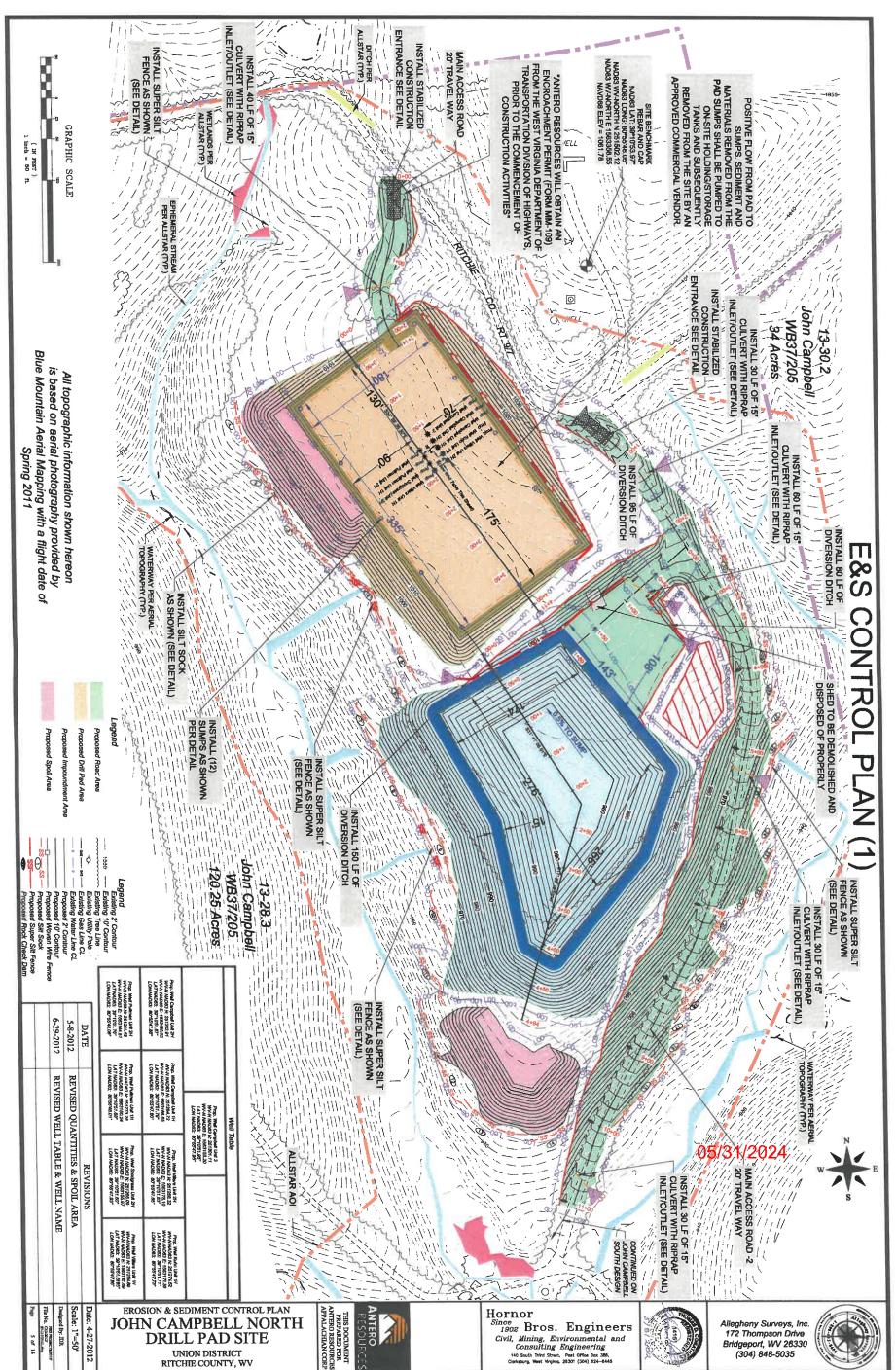
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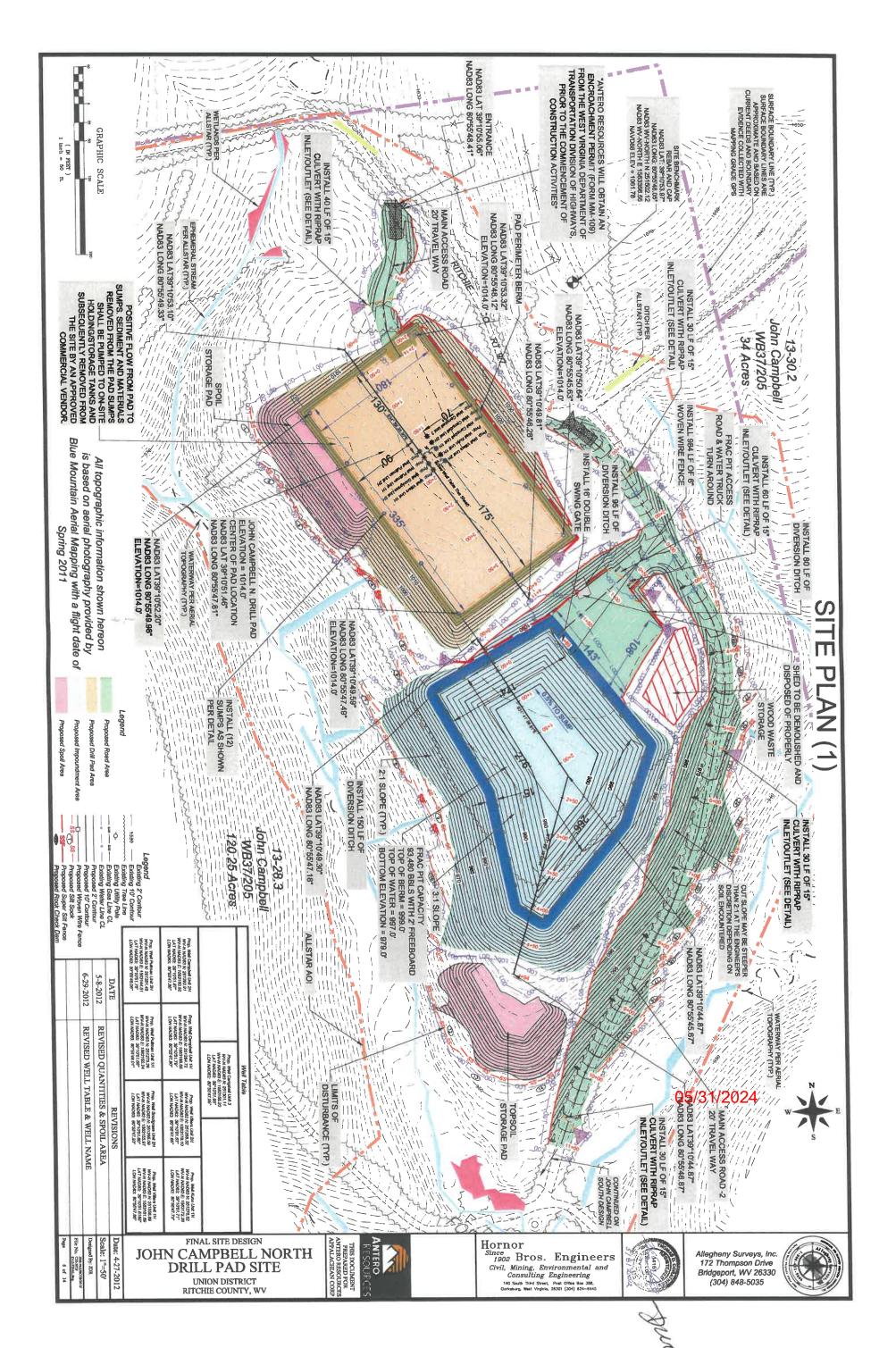
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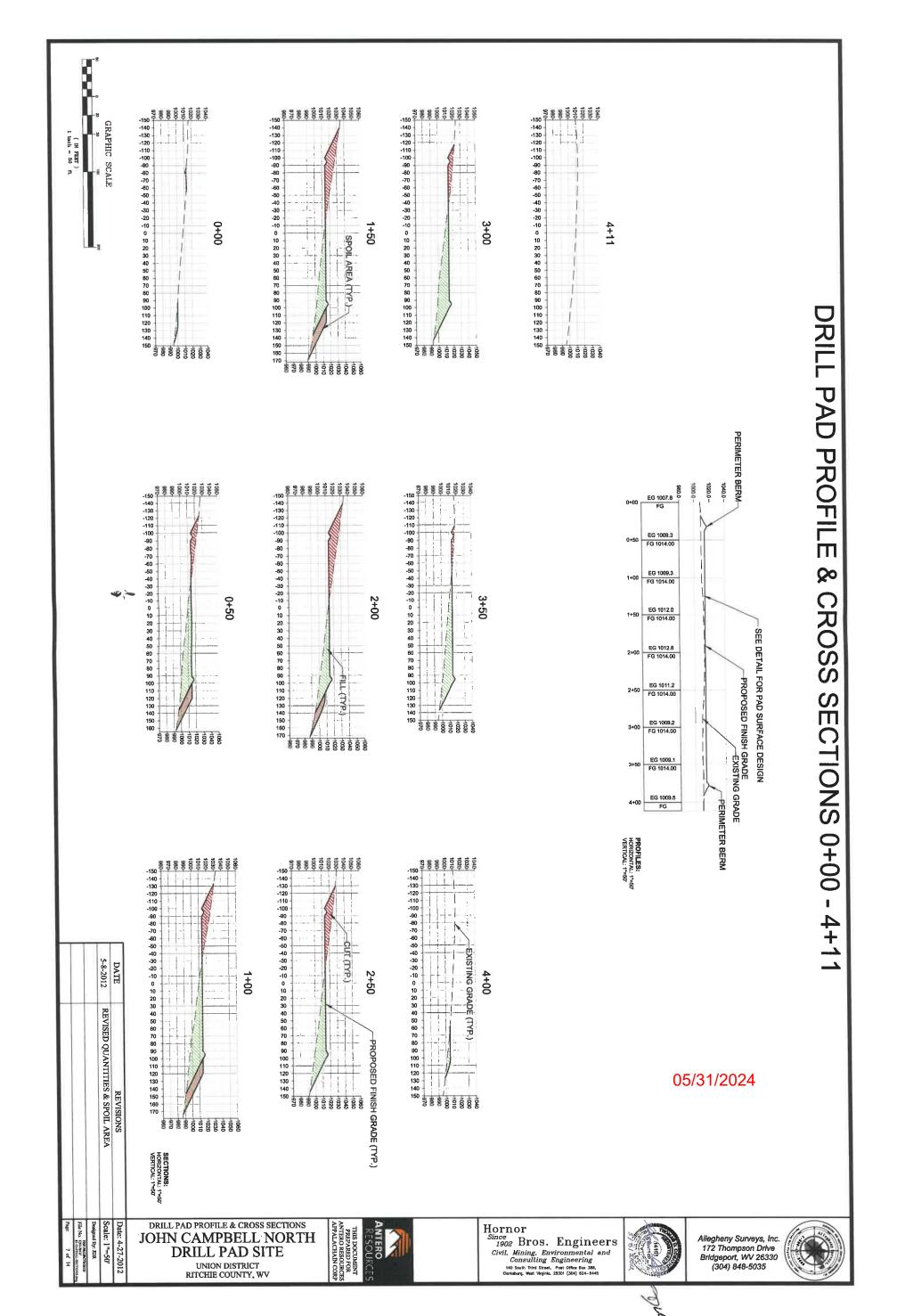
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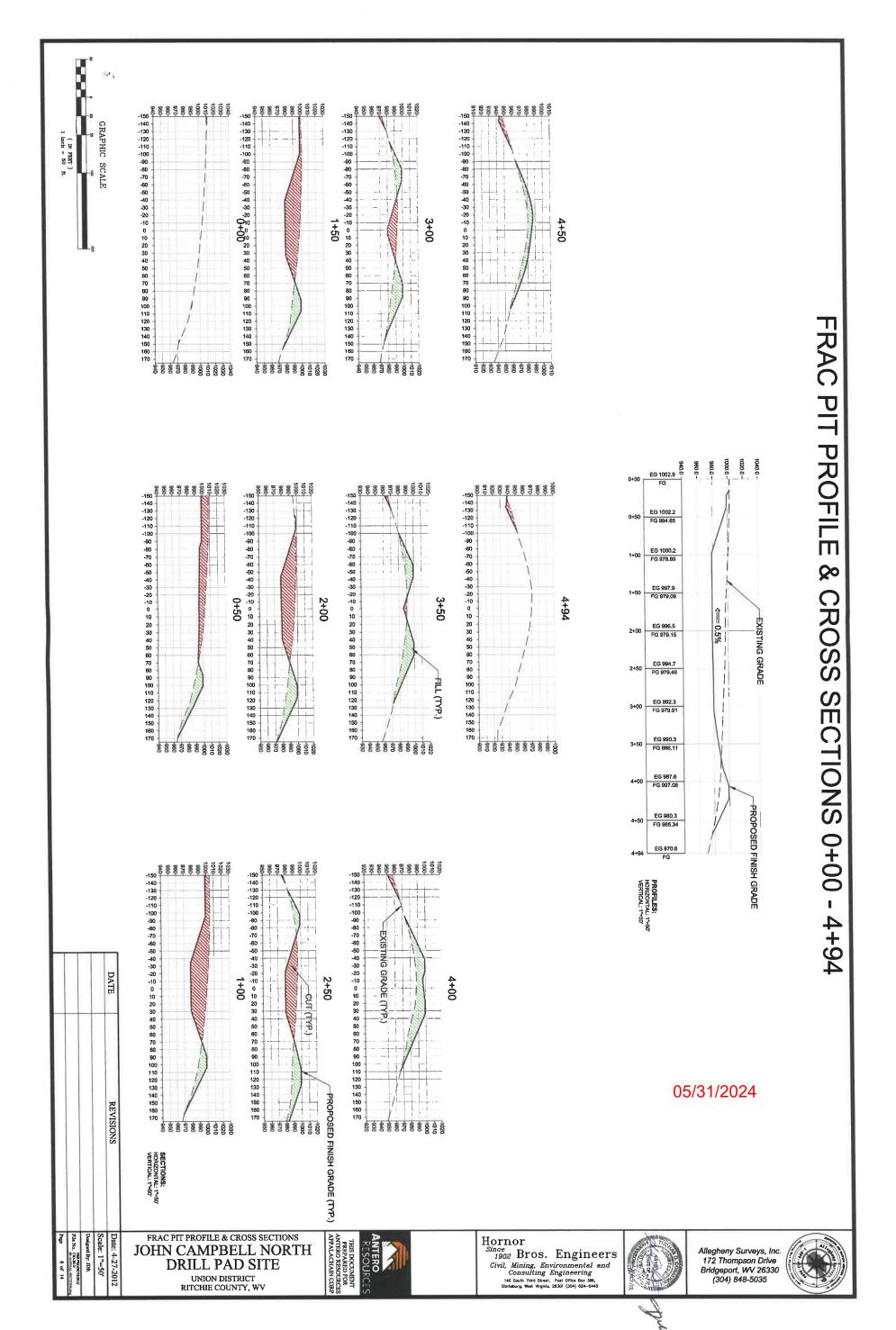
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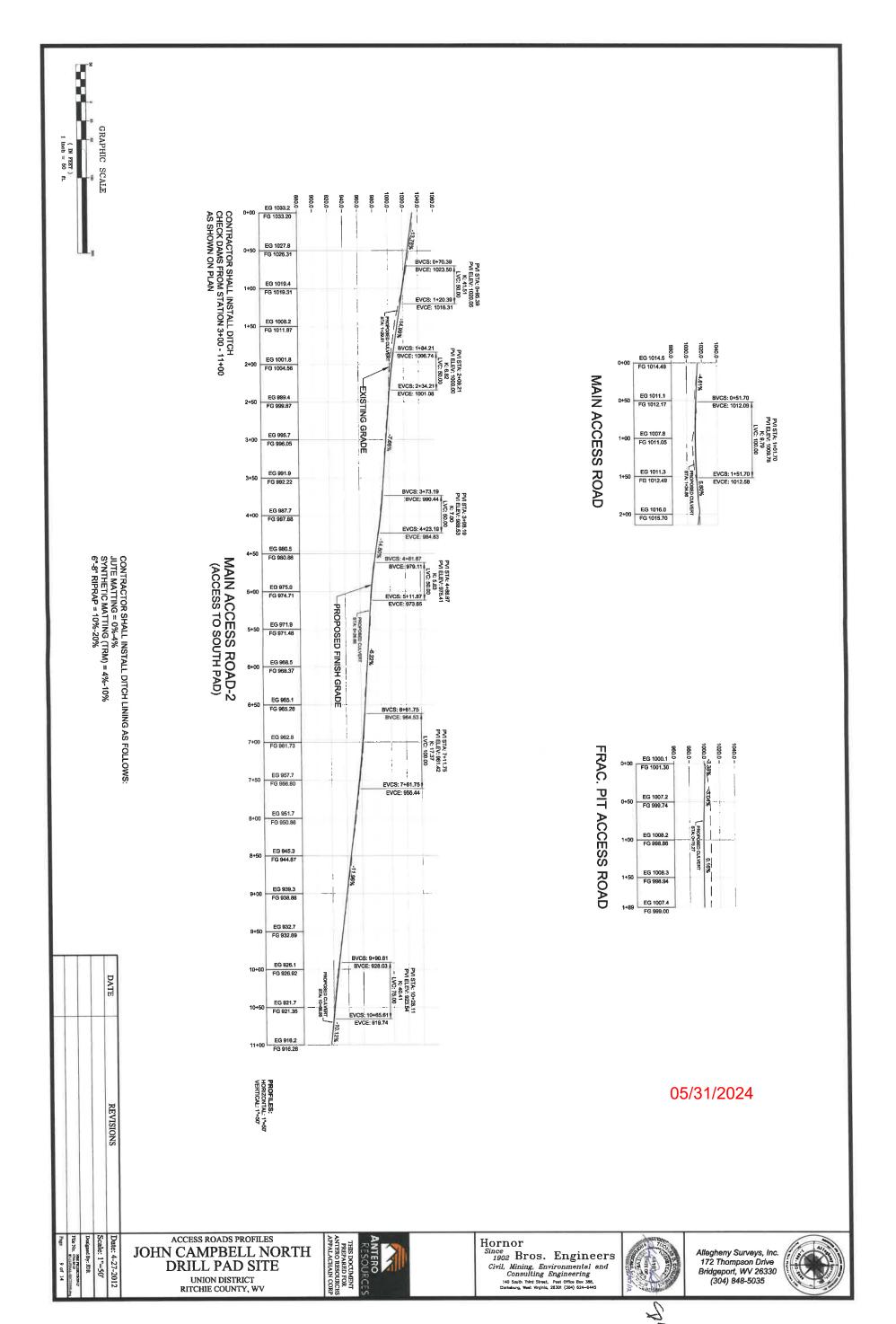




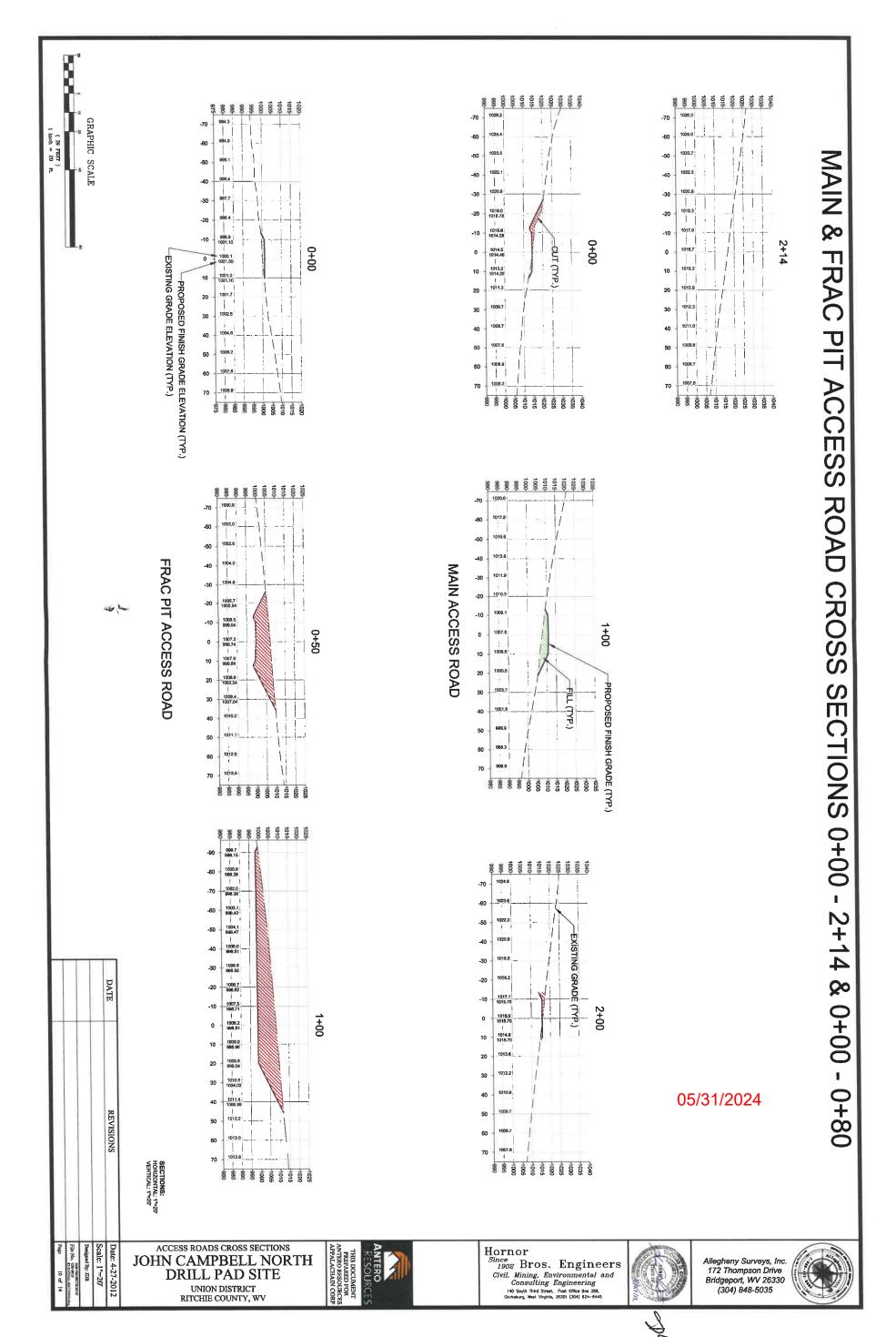






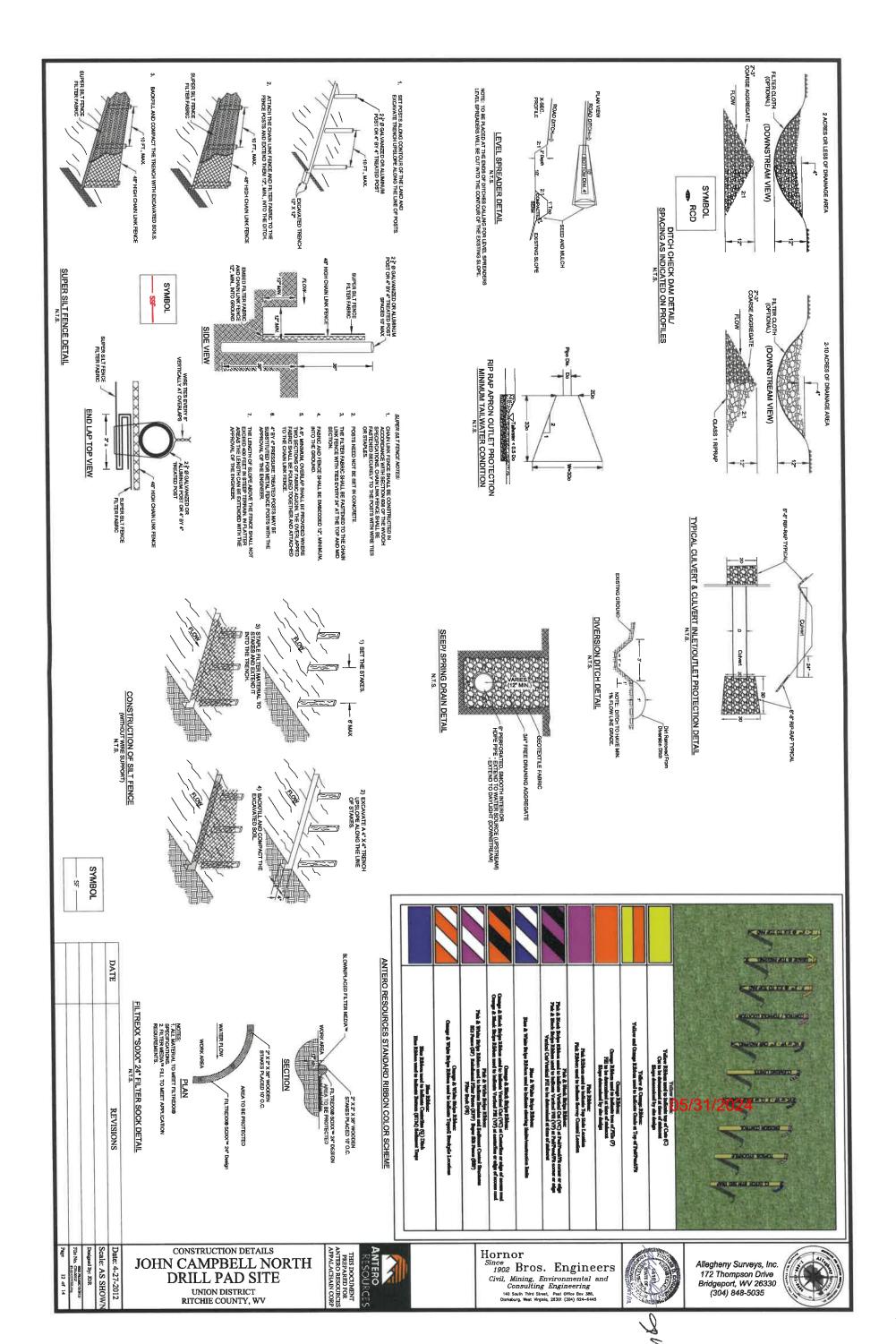


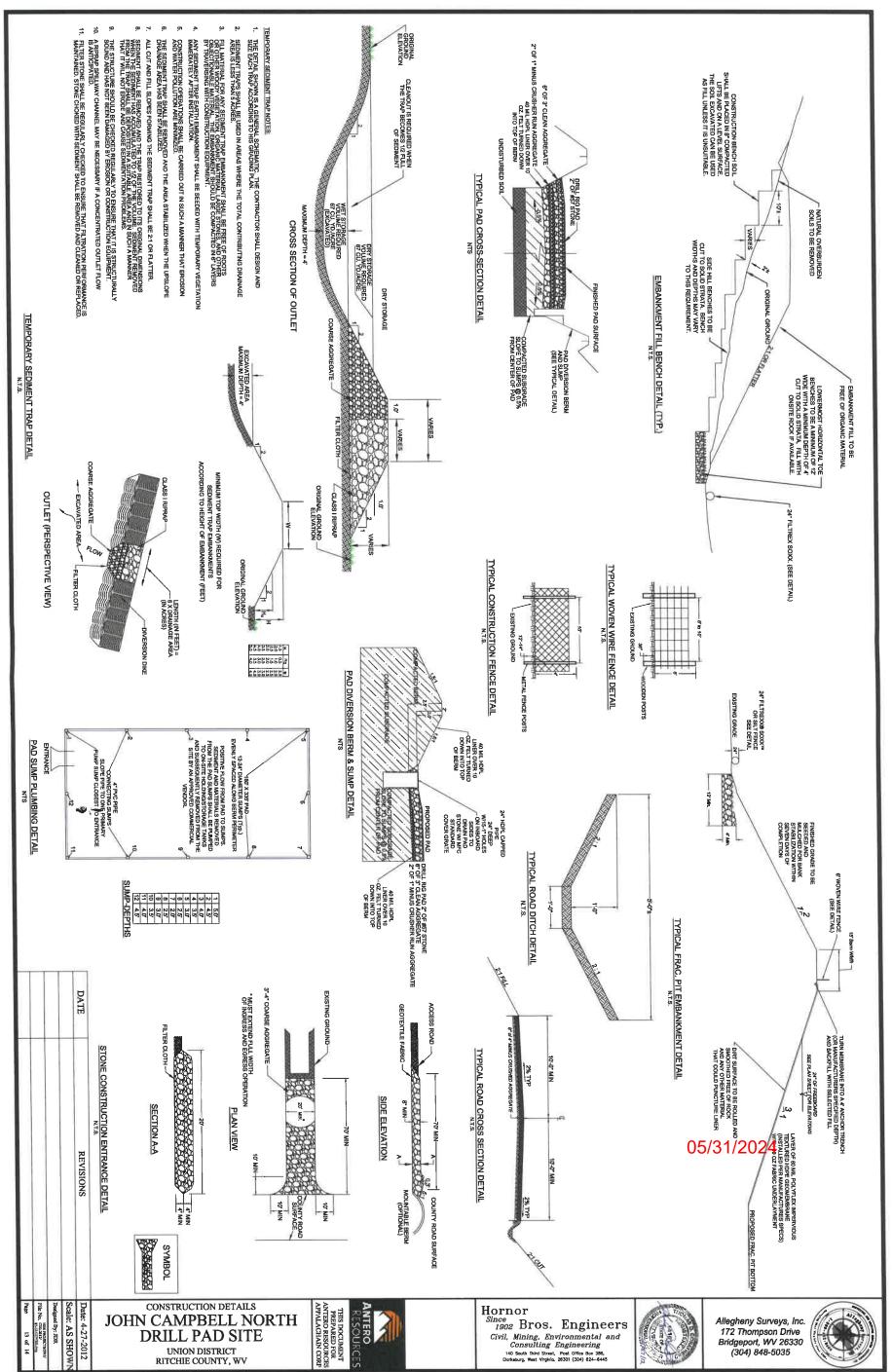
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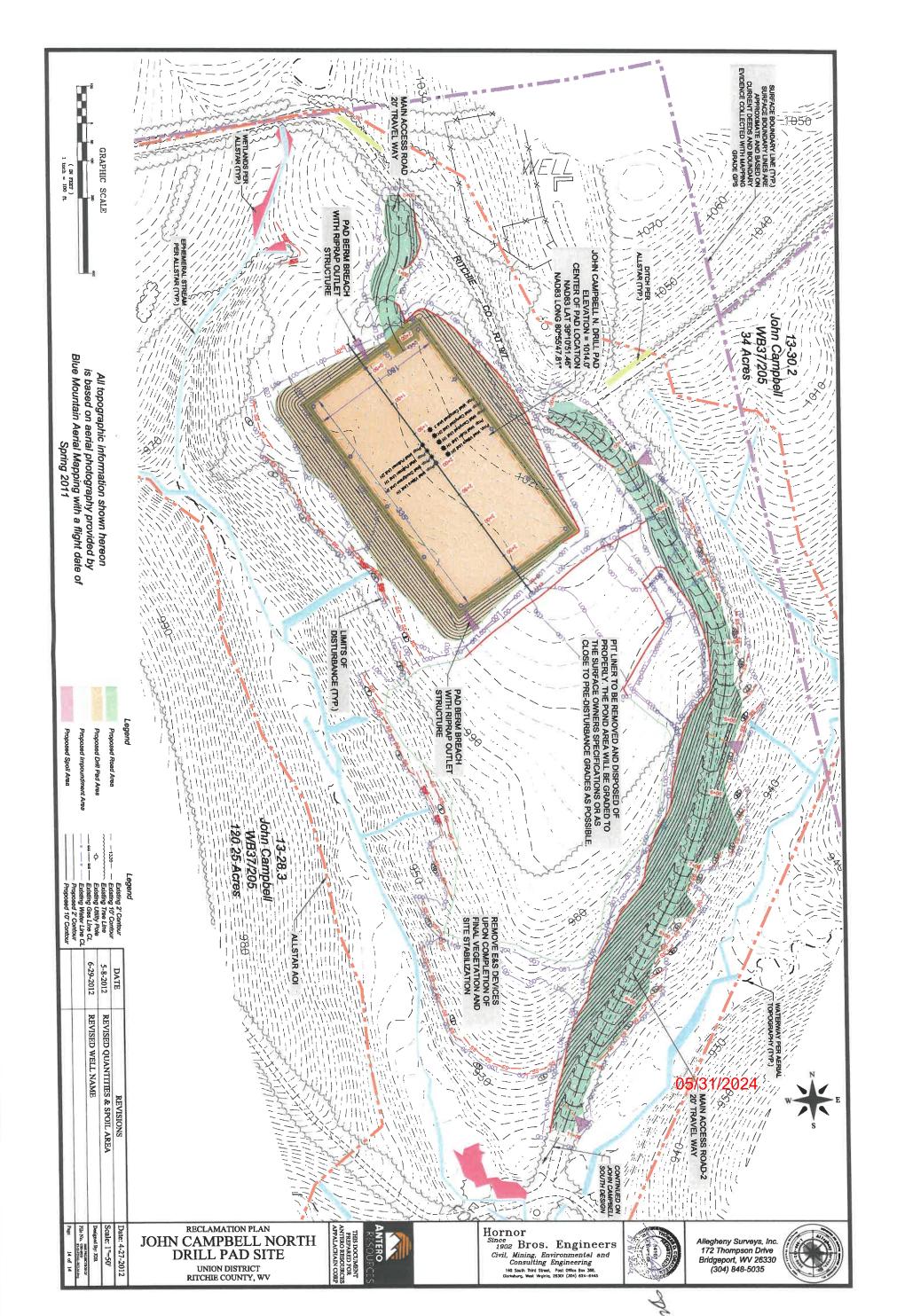








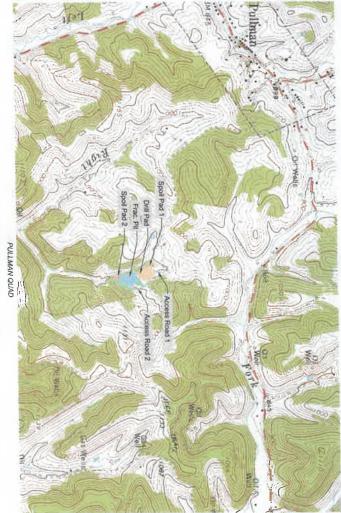


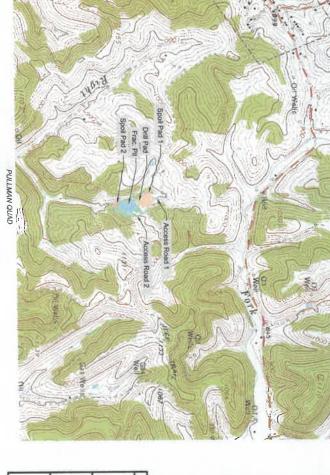


JOHN CAMPBELL NORTH DRILL PAD FINAL SITE DESIGN, CONSTRUCTION PLAN, & **EROSION & SEDIMENT CONTROL PLANS**









| | HOM | Well Table | | |
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| | Prop. Wall Ca WY-M NADR: WY-M NADR: LAT NADR: LON NADR: | Prop. Well Composit that 3H WY-M NADB3 N. 251301 11 WY-M NADB3 E. 1563155 20 LAT NADB3 . 9710'51 85' LON NADB3 . 80'55'47 85' | | |
| We Campbot Unit 2H NACR3 N. 251292.91 NACR3 E. 1583180.92 NACR3: 53*10'51.87* NACR3: 80*55'47.88* | Prop Well Campbell URX 1H WY-A MADBS N. 22 1278-72 WY-A MADBS T. 1653168 65 LAT MADBS: 98°10'98' 76° LON MADBS: 80°55'47-80° | Prop. Wise Villers Unit 2H WY-M NADES 3F. 156:3178-10 LAT NADES 3B*1951.65* LON NADES 30*5547.85* | ers Unit 2H 1, 251208.32 1, 1563178 10 19*10'51.63* 10*55'47.80* | Prop. Well Kuhn Unit 1H WY-H, NALDB3 M, 251278.62 WY-H, NALDB3 E, 1583172.38 LAT HALDB3 - 3910751.71* LON NALDB3 - 8018547.73* |
| Wolf Pullman Line 2H NADR3 N: 251281.48 NADR3 E: 1663144.51 | Prop. Weil Pulman Unk IH WY-W NADB3 N. 251273.28 WY-N NADB3 E: 1563150,24 | Prop. Well Snodgrass Unit 2H WV-N NAD83 N: 251255.09 WV-N NAD83 E: 7563755.97 | Prop. Well Snodgraw Unit 2H WY-N NADB3 N: 251255.09 WY-N NADB3 E: 1563155.97 | Prop Well Villers Unit 19 WY-A MADBS E: 1563161.69 WY-A MADBS E: 1563161.69 |

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| | | Pop. Well Campball thill 3H WAN MADBS R 25/301 11 WAN MADBS R 1563155 20 LAT MADBS 80°55/17.86° LON MADBS 80°55/17.86° | pber that 34 N 251301 11 153455 20 3910751 85 8015547 85 | | | |
| Web Campbat Link 2H v NACAS N. 251292.91 I NACAS E. 1563180.92 NACAS: 391051.871 I NACAS 8015547.881 | Prop Well Campbell Unit 1H WY-M NADBS N. 28128-72 WY-M NADBS E. 1863168 N W-M NADBS: 89*1098-70* LON NADBS: 80*15547-80* | npbell Unit 1H N: 251264.72 E: 1563166.66 SB-10'88.79* 80'55'47.80' | Prop. Well Villers Linit 2H WY-M MADES M. 25 1208.32 WY-M MADES E: 1563178 1: LAT MADES: 39*16'51.65* LON MADES: 80'55'47.80* | Hers Unit 2H N. 251283.32 E. 1563178 10 39*10*51.63* 80*55'47.80* | Prop. WAL Kuhn: Link: 1H WY-M, MALDS: M. 251276.52 WY-M, MALDS: E: 1562172.35 LAT, MALDS: 3911051; 71 LON MALDS: 3010547.73 | |
| . Wolf Pullman Unit 2H NAUDES N. 251281.48 NAUDES E. 105114.51 NAUDES 39"1051.78" NAUDES 40"55146.19" | Prop. Well Pullmen Unit IH WY-A MADDES II: 25/12/3.25 WA-A NADDES II: 55/13/5.65* LON NADES: 80/55/46 01* | Present Unit 1H N: 251273 28 E: 1563150.24 30*10*51.68* 80*55'48 01* | Prop. iMel Shodgraw Urll 2H WY-N NADB3 R: 7852185 98 UN-N NADB3 E: 7852185 97 LAT NADB3 - 99'10'51 90' LON NADB3 - 90'55'47' 93' | Syrass Unit 2H N: 251265.09 -: 1563155.97 -: 1563155.97 -: 99*10'51.80" -: 80°55'47.93" | Prop. Well Villers Unit 114 WV-AI MADES : 1563161.89 WV-AI MADES : 96"(551.588" LON MADES : 96"5547.86" | |
| | | | | | | |

Prop. LON.

| Location | |
|----------|--|
| Restrict | |
| ions: | |

STATE PLANE NAL

mits comply with the following restrictions

* 250' from an existing well or developed spring used for human or domestic enimals. *625' excupsed dwelling or barn greater 2500' SF used for positify or delay measured from the earlier of the pad. *100' from edge of disturbance to wellands, perennial streams, natural or artificial lake pond or reservoir. *300' from edge of disturbance to naturally reproducing trout streams. *100' of surface or ground water intake to a public water supply.

ance to wetlands, perennial streams, natural or artificial lake,

WVDEP OOG **APPROVED**

9NM 7/25/12

| SHEET INDEX COVER SHEET / LOCATION MAP SCHEDULE OF QUANTITIES EXISTING CONDITIONS PLAN CONSTRUCTION, GENERAL AND E&S NOTES 4 |
|--|
| |

| COVER SHEET/LOCATION MAP |
|--------------------------|
| JOHN CAMPBELL NORTH |
| DATE DAD CITE |

DRILL PAD SITE UNION DISTRICT RITCHIE COUNTY, WV









AFFECTED TAX PARGELS: 13/28.3

UNION DISTRICT

TM 13 - PCL 28 John Campbell

WB 317/205 120.25 Acres
(Affected area from Proposed Access Roads 1,314 feet, 2.32 Acres)
(Affected area from Proposed Drill Pad = 2 Codices)
(Affected area from Proposed Fro. Pt = 3 2 Acres)
(Affected area from Proposed Spoil Piles = 4 Acres)



NAVD88 d By Survey Grade GPS



REVISED QUANTITIES & SPOIL AREA REVISIONS

101, 1 1 2012 VANE CONSTRUCTION SECRIVED

5-8-2012 DATE FINAL S
DRILL P
FRAC P
ACCES
ACCES
CONST

Requires that you call two business

(Section XIV: Chapter 24-C) West Virginia State Law

MISS Utility of West Virginia 1-800-245-4848

Tom Corathers, PE, PS - Homor Brothers Engineers 304-624-6445 Office Bill Yelzer, PS, EI, - Allegheny Surveys Inc. 304-848-5035 Off. 304-619-4937 Cell

ACREAGE OF CONSTRUCTION IN FLOODPLAIN:

LOODPLAIN SHOWN ON DRAWINGS: HEC-RAS STUDY COMPLETED:

54085C0225C

N/A NA

N/A

Aeron Kunzler, Construction Manager 105-227-8344

urveyor & Engineer

tyan Ward, Environmental Engineer (ALLSTAR) 66-213-2666, ext 311 Off. 304-692-7477 Cell

hn Kawcak, Engineer 17-368-1553

DO SITE CONSTRUCTION ACTIVITIES TAKE PLACE IN FLOODPLAIN: PERMIT NEEDED FROM COUNTY FLOODPLAIN COORDINATOR:

O Ö

FLOODPLAIN CONDITIONS

nthonySmith - Construction 04-869-3405 Off. 304-673-6196 Cell

roject Contacts

days before you dig in the state of West Virginia.

IT'S THE LAW!!

Know what's below.

Design Certimour.

The drawings, construction nates, and reference diagrams elected hereto have been prepared in accordance with the West Yinginia Cools of State Rules, Division of Environmental Protection, Office of Oil and Gas §35-4-21, Division of Environmental Protection, Office of Oil and Gas §35-4-21, Division of Environmental Protection, Office of Oil and Gas §35-4-21, Division of Environmental Protection, Office of Oil and Gas §35-4-21, Division of Environmental Protection, Office of Oil and Gas §35-4-21, Division of Environmental Protection of Computer of

GRAPHIC SCALE

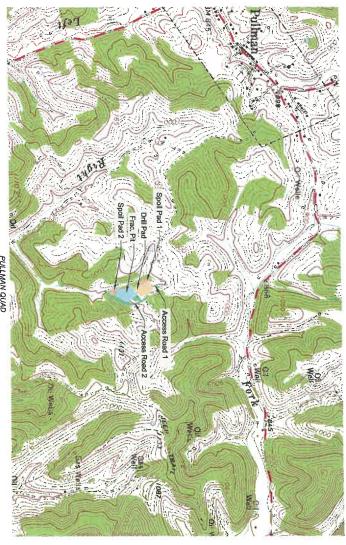
1 INCH = 1 MILE

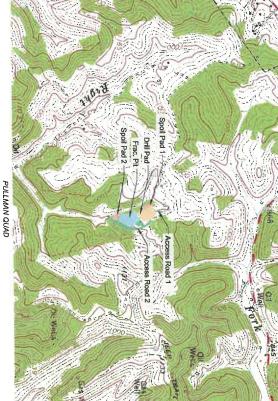
Call before you dig.

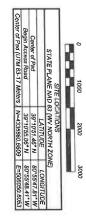
JOHN CAMPBEL L NORTH DRILL PAD

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









| DO SITE CONSTRUCTION ACTIVITIES TAKE PLACE IN FLOODPLAIN: | (E PLACE IN FLOODPLAIN: | NO. |
|---|-------------------------|-----|
| PERMIT NEEDED FROM COUNTY FLOODPLAIN COORDINATOR: | LAIN COORDINATOR: | NO |
| HEC-RAS STUDY COMPLETED: | | NA |
| FLOODPLAIN SHOWN ON DRAWINGS: | | N/A |
| FIRM MAP NUMBER(S) FOR SITE: | 54085C0225C | |
| ACREAGE OF CONSTRUCTION IN FLOODPLAIN: | PLAIN: N/A | |

Dusty Woods 817-771-1436

John Kawcak, Engineer 817-368-1553

Aaron Kunzler, Construction Manager 405-227-8344

Surveyor & Engineer

Tom Corathers, PE, PS - Homor Brothers Engineers 304-624-6445 Office

MISS Utility of West Virginia

1-800-245-4848

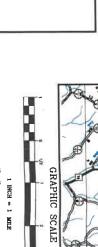
Bill Yetzer, PS, EI, - Allegheny Surveys Inc. 304-848-5035 Off. 304-619-4937 Cell

Ryan Ward, Environmental Engineer (ALLSTAR) 866-213-2666, ext 311 Off. 304-692-7477 Cell

FLOODPLAIN CONDITIONS

AnthonySmith - Construction 304-869-3405 Off. 304-673-6196 Cell

Antero Resources Project Contacts



Design Certification

Requires that you call two business

(Section XIV: Chapter 24-C) West Virginia State Law

days before you dig in the state of

West Virginia.

Know what's **below**.

Call before you dig.

IT'S THE LAW!!

The drawings, construction notes, and reference diagrams attached hereto have been prepared in accordance with the West Virginia Code of State Rules, Division of Environmental Projection, Office of Oil and Cass §35-4-21. The information reflects a temporary frac pit pond. The computed The information reflects a temporary frac pit pond. The computed

6-29-2012 5-8-2012 DATE

REVISED QUANTITIES & SPOIL AREA
REVISED WELL TABLE & AFFECTED PARCELS DATA

REVISIONS

Date: 4-27-2012
Scale: AS SHOWN
Designed By: IDR & TBC



HEET INDEX

COVER SHEET / LOCATION MAP...
SCHEDULE OF QUANTITIES...
EXISTING CONDITIONS PLAN.
CONSTRUCTION, GENERAL AND E&S
EROSION & SEDIMENT CONTROL PL
FINAL SITE DESIGN...
DRILL PAD PROFILE & CROSS SECTIO
FRAC PIT PROFILE & CROSS SECTIO
ACCESS ROADS PROFILES...
ACCESS ROADS CROSS SECTIONS.

COVER SHEET/LOCATION MAP JOHN CAMPBELL NORTH DRILL PAD SITE UNION DISTRICT

RITCHIE COUNTY, WV

THIS DOCUMENT
PREPARED FOR
ANTERO RESOURCES
APPALACHAIN CORP

* 250' from an existing well or developed spring used for human or domestic animals. *685' occupied dwelling or harm greater 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. *200' from edge of disturbance to naturally reproducing trout streams. *300' from edge of disturbance to naturally reproducing trout streams. *300' from edge of disturbance to naturally reproducing trout streams.

the pad. disturbance to wetlands, perennial streams, natural or artificial lake,

All Pad and Fracture Pit limits comply with the following restrictions.

Well

Location Restrictions:

Prop. 1
WV-N/A
LAT N
LON N

n. Well Pullman Unit 1H N NAD83 N: 251273.28 I NAD83 E: 1583150.24 NAD83: 39*1051.68* NAD83: 80*5648.01*

Prop. Well Snodgrass Unit 2H WV-N NADB3 N: 251285.09 WV-N NADB3 E: 1563155.97 LAT NADB3: 39*10'51.60" LON NADB3: 80*55'47.93"

WV-N LATA LONI

. Well Campbell Unit 1H N (NAD83 N: 251284,72 V (NAD83 E: 1563166.65 NAD83: 39*1051.78* I (NAD83: 80*55'47.80*

Prop. Well Villers Unit 2H WY-N NADGS N; 25728.32 W/-N NADGS B; 1563178.10 LAT NADGS: 39*1051.63* LON NADGS: 80*5547.65*

Prop. Well Campbell Unit 3 WV-N NADB3 N: 251301.11 WV-N NADB3 E: 1563155.20 LAT NADB3: 39°10'51.95° LON NADB3: 80°55'47.95°





TM 13 - PCL 28 John Campbell
WB 37/205 120.25 Acres
(Affected area from Proposed Access Roads = 1,503 feet, 3.02 Acres)
(Affected area from Proposed Drill Pad = 2.65 Acres)
(Affected area from Proposed Frac. Pit = 3.12 Acres)
(Affected area from Proposed Frac. Pit = 3.12 Acres)
(Affected area from Proposed Spoil Piles = 1.19 Acres)



AFFECTED TAX PARCELS: 13/25/00000015TRICT



West Virginia Coordinate System of 1983 State Plane Grid North Elevations NAVD88 Established By Survey Grade GPS

Prop. Well Kulm Unit 1H WV-N NADE3 N: 251276.52 WV-N NADE3 E: 1563172.38 LAT NADE3: 39°10'51.71" LON NADE3: 80'55'47.73" Prop. Well Villers Unit 1H WV-N NAD83 N: 251256 89 WV-N NAD83 E: 1563161.69 LAT NAD83: 39'10'51.5185" LON NAD83: 80'56'47.86'

Hornor Since 1902 Bros. Engineers Civil, Mining, Environmental and Consulting Engineering 140 South Third Street, Post Office Box 385, Cloriadourg, West Virginic, 28301 (304) 824–8445

| Well Site: John Campbell North D | Drill Pad & | ad & Frac. | |
|--|-------------|------------|----------------|
| | S | QUANTITY | ONITPRICE |
| . Clearing, Grubbing, E&S Controls | 5 | 0 | 9 |
| | à à | 9.98 | n U |
| | 3 | 3.00 | A 6 |
| C. 24" Silt Sock or Silt Fence | 5 | 1,904 | • |
| | F | 258 | en |
| 2. Excavation (Cut Only) | | | |
| ~ | ΕA | 22 | 49 |
| B. Drill Pad | Q | 7,382 | 49 |
| 1 | প | 20,049 | 69 |
| - 1 | ধ | 7,276 | 69 |
| - 1 | Q | 4,321 | es |
| - 1 | 듀 | 732 | 69 |
| | 듞 | 1,394 | €9 |
| -1 | | | 49 |
| 1. Rip Rap | SY | 476 | 49 |
| 2. Synthetic Matting (TRM) | SΥ | 418 | 69 |
| | SΥ | 2 | 69 |
| I. 4" PVC Connective Pipe | 듞 | 1,030 | GA |
| ı. I | EA | 12 | 69 |
| 3. Stone | | | |
| A. 6"-8" Rip Rap (Inlets/Outlets) | SNOT | 14 | 44 |
| #3 Stone (Ditch Checks) | SNOT | 3.5 | 49 |
| 4. Aggregate Surfacing | | | €9 |
| - | SΥ | 7,421 | 69 |
| - 11 | SY | 7,421 | 49 |
| Drill Pad 1' Minus Crusher Run Aggregate (2") | SNOT | 704 | 69 |
| Drill Pad 3" Clean Aggregate (6") | SNOT | 1,759 | 49 |
| Drill Pad #57 Stone (2") | SNOT | 645 | 49 |
| Access Roads 4" Minus Crusher Run Aggregate (8") | SNOT | 1,768 | €9 |
| . Access Roads Geotextile Fabric (US 200) | YS | 2,653 | 49 |
| 5. Frac. Water Pit Liner - 60 mil. | | | |
| A. (One) 60 mil Layer | SY | 6,864 | 69 |
| 33 1 | SY | 6,864 | 49 |
| 6. Road Culverts (5 Total) | | | |
| - 1 | Fi | 190 | 69 |
| | 20 | n n | A |
| 7. A. Hydro Seeding | Ą | 6.00 | 6 |
| 8. Fence and Gates | | | |
| | 두 | 984 | 69 |
| | EA | _ | 49 |
| | 3 | n 03 | A |
| 9. Reclamation | AC | 0.01 | 59 6 |
| TOTAL | | | 65 |

- TOPSOIL QUANTITY FOR THIS SITE IS ESTIMATED AT A UNIFORM THICKNESS OF δ^{\star} OVER THE ENTIRE EXCAVATED AREA. ACTUAL QUANTITY MAY VARY.
- AREAS RECEIVING JUTE MATTING AND SYNTHETIC MATTING (TRM) ARE TO BE SEEDED, LIMED AND FERTILIZED PRIOR TO INSTALLATION OF MATERIALS.

| Scriedule of Qualifilies | Janua | G | | |
|---|----------|----------------|------------------|-------|
| Well Site: John Campbell North Drill Pad & | Drill Pa | ad & Frac. | | |
| | TINU | QUANTITY | UNIT PRICE | TOTAL |
| ring, Grubbing, E&S Controls | A. | 9.98 | 59 | Ī |
| mber Removal | A R | 3.80 | 6 9 (| |
| 4" Silt Sock or Silt Fence | F | 1,984 | 45 | |
| uper Silt Fence | Fi | 258 | 69 | |
| avation (Cut Only) | | | , | |
| onstruction Entrance | 3 2 | 7 382 | А | |
| ac Water Pit | 2 | 20,049 | €9 | |
| ccess Roads | CY | 7,276 | es. | |
| opsoil | СХ | 4,321 | 69 | |
| version Ditch | 두 | 732 | 69 | |
| oadside Ditch | ٦ | 1,394 | €9 | |
| tch Lining (Access Road) | | | \$ | |
| Rip Rap | SY | 476 | 69 | |
| Synthetic Matting (TRM) | SY | 418 | 69 | |
| Jute Matting | ş | 4030 | 9 64 | V |
| 4" Sump | <u>F</u> | 12 | 49 | |
| | | | | |
| "-8" Rip Rap (Inlets/Outlets) | TONS | 14 | 49 | |
| 3 Stone (Ditch Checks) | SNOT | 3.5 | 69 | |
| regate Surfacing | | | 49 | |
| rill Pad 40 Mil, Liner | Sγ | 7,421 | 49 | П |
| rill Pad 10oz Felt | SY | 7,421 | ÷ | Ī |
| all Pad 1: Minus Crusheli Kuri Aygregate (4.) | SNOT | 1.759 | 6 9 6 | T |
| rill Pad #57 Stone (2") | TONS | 645 | 49 | |
| coss Roads 4" Minus Crusher Run Aggregate (8") TONS | TONS | 1,768 2.653 | φ φ | |
| ccess Roads Georexile Fabric (u.s. 200) ;, Water Pit Liner - 60 mil. | 9 | 2,000 | • | |
| Dne) 60 mil Layer | SY | 6,864 | (5 | Ī |
| oz. Felt Under Layment | SY | 6,864 | 49 | |
| d Culverts (5 Total) 5" CMP (5) | Fi | 190 | 49 | П |
| lydro Seeding | AC | 6.65 | €9 | |
| ce and Gates foven Wire Fence | Fi I | 984 | €9 | |
| 5' Double Swing Gate | ΕA | | 49 | |
| amation | AC. | 5.01 | . 49 | |
| | | | | |

| | FRAC | FRAC PIT VOLUMES | MES | |
|----------------------|---------|------------------|-----------|----------------------|
| ELEVATION | BARRELS | GALLONS | ACRE-FT | UNINCISED ACRE-FT |
| 979 (BOTTOM) | 0 | 0 | 0 | 0 |
| 981 | 4,045 | 169,882 | 0.521 | 0 |
| 983 | 9.965 | 418,556 | 1.285 | 0 |
| 985 | 17,163 | 720,903 | 2.212 | 24 |
| 987 | 25,753 | 1,081,702 | 3.320 | 1. 02. 8 |
| 989 | 35.850 | 1,505,801 | 4.621 | 2.409 |
| 991 | 47.568 | 1,998,018 | 6.132 | 3.920 |
| 993 | 61.015 | 2,562,817 | 7.865 | 5. 69 3 |
| 995 | 76,287 | 3,204,292 | 9.834 | 7.622 |
| 997 | 93,480 | 3,926,459 | 12.050 | 9.838 |
| 999 (TOP BERM) | 112,691 | 4,733,343 | 14.526 | 12.314 |
| | GRA | GRADING VOLUMES | MES | J |
| DESCRIPTION | | CUT (CY) | FILL (CY) | NET (CY) |
| MAIN ACCESS ROAD 1 | ROAD 1 | 274 | 275 | <u>.</u> |
| MAIN ACCESS ROAD 2 | ROAD 2 | 3,810 | 869 | 2,941 |
| DRILL PAD | | 8,807 | 18,221 | -9,414 |
| FRAC PIT | | 21,717 | 14,371 | 7,346 |
| FRAC PIT ACCESS ROAD | SS ROAD | 4,410 | 2 | 4,408 |
| SPOIL PADS | | 0 | 5,282 | -5,282 |
| TOTAL | | 39,018 | 39,020 | -2 |

| LOD AREAS (ACRES | RES) |
|----------------------|------|
| DESCRIPTION | AREA |
| MAIN ACCESS ROAD 1 | 0.28 |
| MAIN ACCESS ROAD 2 | 2.04 |
| FRAC PIT ACCESS ROAD | 0.70 |
| DRILL PAD | 2.65 |
| FRAC PIT | 3.12 |
| WASTE & SPOIL PADS | 1.19 |
| TOTAL | 9.98 |
| TOTAL WOODED AREA | 3.80 |

| CUT SLOPE FILL SLOPE FRAC PIT INTERIOR PAD CONTAINMENT BERM SLOPE CUT SWELL FACTOR FILL SHRINK FACTOR PAD ELEVATION: | GRADING | DESCRIPTION MAIN ACCESS ROAD 1 MAIN ACCESS ROAD 2 FRAC PIT ACCESS ROAD DRILL PAD FRAC PIT WASTE & SPOIL PADS TOTAL TOTAL WOODED AREA 3 |
|--|---------|---|
| 2:1 2:1 3:1 8LOPE 1.5:1 1.05 1.00 1014.0' | | AREA 0.28 0.28 2.04 0.70 2.65 3.12 1.19 9.98 3.80 |

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.

| ı | | | |
|-----|---------------------------------|-----------|-------|
| Pag | | | L |
| ¥ | | | les. |
| D | REVISED LOD TABLE | 6-29-2012 | Die C |
| S | REVISED QUANTITIES & SPOIL AREA | 5-8-2012 | ally |
| ਰੂ | REVISIONS | DATE | |
| Т | | | _ |

SCHEDULE OF QUANTITIES JOHN CAMPBELL NORTH DRILL PAD SITE

UNION DISTRICT RITCHIE COUNTY, WV

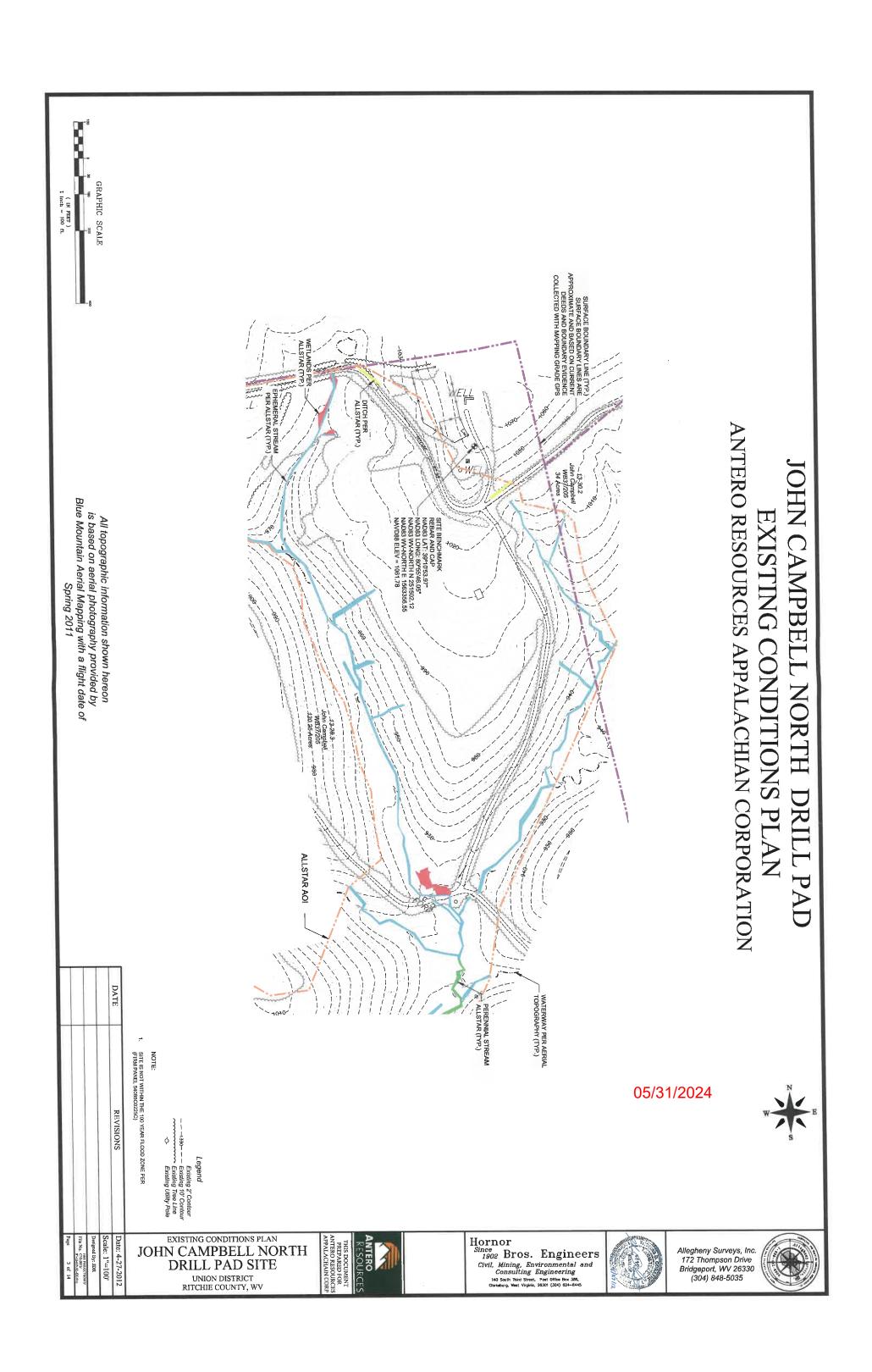


Hornor Since 1902 Bros. Engineers Civil, Mining, Environmental and Consulting Engineering 140 South Third Street, Past Office Box 388. Clarkaburg, West Virginia, 28301 (304) 824–8445



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





CONSTRUCTION, GENERAL AND EROSION AND SEDIMENT NOTE

CONSTRUCTION SPECIFICATIONS:

- THE FRAC PIT 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.
- THE CONSTRUCTION DOCUMENTS SHOW THE EXISTING AND NEW GRADES AND BERMS, ETC. THAT ALL CUT AND FILL ESTIMATES ARE BASED UPON. THE ENGINEER'S ESTIMATES OF THE QUANTITIES ARE ONLY ESTIMATES AND MAY CHANGE BASED ON ACTUAL FIELD CONDITIONS.
- 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.
- 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.
- THE CONTRACTOR SHALL HAVE ON SITE AT ALL TIMES WHEN CONSTRUCTION IS IN PROGRESS A COMPETENT SUPERNITEMENT THOROUGH, FEAMLIAR WITH THE CONSTRUCTION OF EARTH BERMS AND EMBANKMENTS, THE COMPACTION OF SOILS AND PLACEMENTS OF LINERS.
- 24" SILT SOCK OR SILT FENCE SHALL BE INSTALLED PRIOR TO CLEARING AND GRUBBING AS SHOWN ON THE DRAWINGS IN ACCORDANCE WITH WAY DEP BEST MANAGEMENT PRACTICES MANUAL CHAPTER 3. SURFACE WATER SHALL BE DIVERTED AWAY FROM ALL EXCAVATIONS AND THE FACE OF ALL FILLS TO PREVENT FLOODING AND SOFTENING OF THE SUBGRAUDE OR COMPACTED MATERIALS.
- CLEARING AND GRUBBING SHALL REMOVE ALL BRUSH, TREES, ROOTS, STUMPS, FENCES, SIGNS OR ANY OTHER MITERAL THAT IS NOT TO BE REUSED FOR THE CONSTRUCTION. SOME STUMPS MAY REMAIN AT THE APPROVAL OF THE ENGINEER. NO CLEARING DERRIS SHALL BE BREED ON-SITE WITHOUT THE LANDOWNERS AND ENGINEERS WRITTEN PERMISSION. ANY DEBRIS BURIAL SITE SHALL BE SEEDED AND MULCHED. 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.
- TOE CUTS OF 12 MINIMUM WIDE SHALL BE EXCAVATED ON ALL RECEIVING SLOPES TO PROVIDE A BASE FOR THE IMPOUNDMENT BERM.
- 10. PRIOR TO PLACING ANY FILL, THE EXPOSED SUBGRADE SHALL BE COMPACTED AND PROOF ROLLED TO PRODUCE A STABLE AND UNYBELDING SITE.
- FRAC PIT 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.
- ALL FILL SHALL BE PLACED IN LOOSE LIFTS OF UP TO 12" AND SHALL BE COMPACTED TO AT LEAST 95% OF THE LABORATORY MAXIMUM DRY DENSITY AS DETERMINED BY THE STANDARD PROCTOR TEST METHOD (ASTIMD 698), THE MOISTURE CONTENT RESPONSIBLE FOR THE ORIGINAL SOLIT TEST AND PROVIDING A COPY OF THE RESULT'S WITH MOISTURE DENSITY CHAVE TO RESPONSIBLE FOR THE ORIGINAL SOLIT TEST AND PROVIDING A COPY OF THE RESULT'S WITH MOISTURE DENSITY CHAVE TO THE SHALL BE DONE IN THE CONTRACTOR SHALL DO IN-PLACE DENSITY TESTS SUFERY THROLL IT OF SOLI AND SHALL BE DONE IN THE CONTRACTOR SHALL DO IN-PLACE DENSITY TESTS SOLIT SHATED SHALL BE MADE TO SHALL BE ANALYSIA DESCRIPTION SHALL BE CONTRACTOR THE SHALL BE SHALL BE MAY PROOF-SOLIT THE SOLIT PROFESSIALL BE MANTANDED OF THE SOLIT PROFESSIALL BE MANTANDED TO THE ENGINEER ON REQUEST, AREX THAT FALL FOR COMPACTION SHALL BE MAY PROOF-SOLIT THE SOLIT PROFESSIAL BE MANTANDED TO THE SHALL BE DONE ON THE SOLIT PROFESSIAL BE MANTANDED TO THE SOLIT PROFESSIAL BE MADE THE PLACE AN WHEELS SHALL BE MADE THE PLACE AN WHEELS OF THE PLACE AND METERSTED. COMPACTION OF SOLIT PROFESSIAL BE MADE THE PLACE AN WHEELS SHALL PROFESSIAL BE MADE THE PLACE AN WHEELS SHALL PROFESSIAL BE MADE THE PLACE AN WHEELS SHALL PROFESSIAL BE DONE WITH A 5 TON SMOOTH, SHEEPS FOOT, OR VIBRATORY ROLLER.
- 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 IMATERIAL IS ENCOUNTERED THAT CANNOT BE RIPPED BY A CAT DO WITH A SINGLE TOOTH RIPPER. THAT WHE CONTRACTOR SHALL CONTRACT THE ENGINEER WHO WILL VISIT THE SITE AND DETERMINE IF THE MATERIAL MAY BE USED AS IS OR MUIST BE REMOVED BY OTHER MEANS. IF UNSUTTABLE SOILS IN THE SUBGRADE ARE FOUND THRY SHALL BE REMOVED BY OTHER MEANS. IF CONTRACTORS EXPENSE AND THE ENGINEER'S DIRECTION.
- IF SPRINGS OR SEEPS ARE ENCOUNTERED, SUBSURFACE DRAINAGE FEATURES SHALL BE INSTALLED PRIOR TO FILL PLACEMENT. CONTACT ENGINEER FOR EVALUATION AND RECOMMENDATION OF CORRECTIVE MEASURES.
- THE FILL TOE FOR ALL FILL EMBANKMENTS SHALL BE BENCHED OR KEYED INTO THE NATURAL SOIL ALL FILL TOES SHALL BE SUPPORTED BY COMPETENT BEDROCK OR SOIL MATERIAL.
- ANY SOFT AREAS SHALL BE OVER-EXCAVATED TO A FIRM MATERIAL AND BACKFILLED WITH A WELL COMPACTED STRUCTURAL FILL. FILL PLACED AGAINST EXISTING SLOPES SHALL BE BENCHED INTO THE EXISTING MATERIAL DURING FILL PLACEMENT TO REDUCE THE POTENTIAL FOR DEVELOPMENT OF A SMOOTH INTERFACE BETWEEN THE FILL AND EXISTING SLOPE.
- , FILL REQUIRED TO OBTAIN DESIGN GRADES SHALL BE PLACED AS CONTROLLED, COMPACTED FILL, THE FILL SHALL BE FREE OF TRASH, WOOD, TOPSOIL, ORGANICS, COAL, COAL MINE REFUSE, FROZEN MATERIAL AND PIECES OF ROCK GREATER THAN & IN ANY DIMENSION.
- L DURING PLACEMENT OF MATERIAL, MOISTEN OR AERATE EACH LAYER OF FILL, AS NECESSARY, TO OBTAIN THE REQUIRED COMPACTION. FILL SHOULD NOT BE PLACED ON SUPPACES THAT ARE MUDDY OR FROZEN, OR HAVE NOT BEEN APPROVED BY PRIOR PROJECTULING. FREE WATER SHALL BE PREVENTED FROM APPEARING ON THE SURFACE DURING OR SUBSEQUENT TO COMPACTION OPERATIONS.
- SOIL MATERIAL WHICH IS REMOVED BECAUSE IT IS TOO WET TO PERMIT PROPER COMPACTION MAY BE SPREAD AND ALLOWED TO DRY, DRYING CAN BE FACILITATED BY DISCING OR HARROWING UNTIL THE MOISTURE CONTENT IS REDUCED TO AN ACCEPTABLE LEVEL, WHEN THE SOIL IS TOO DRY, WATER MAY BE UNIFORMLY APPLIED TO THE LAYER TO BE COMPACTED.
- , THE FILL OUTSLOPES SHALL BE OVERBUILT AND TRIMMED BACK TO DESIGN CONFIGURATIONS TO VERIFY PROPER COMPACTION.
- GRANULAR MATERIALS, SUCH AS AASHTO NO. 57 STONE SHALL BE COMPACTED TO 85% OF ITS RELATIVE DENSITY, AS DETERMINED BY ASTM D 4255 AND D 4254 TEST METHODS.
- 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 RROWDE THE INSORMATION TO THE ENGINEER WHO WILL MAKE DETERMINATIONS ON ANY VARIATION FROM THE DRAWINGS AND DIRECT THE CONTRACTOR TO DO CORRECTIVE WORK. THE INSIDE OF THE FRAC PIT SHALL BE BOTH SMOOTH DRUM ROLLED AND FREE OF PROTRUDING OR SHARP ROCKS IN ORDER TO RECEIVE THE LINER.
- LINER SHALL BE POLYFLEX IMPERVIOUS TEXTURED HOPE GEOMEMBRANE, 50MIL, INSTALLED IN ACCORDANCE WITH MANUFACTURERS 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.
- 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 NISPECTION TRENCH CONSTRUCTION; 4, DAILY PHOTOS OF CUT AND FILL OPERATIONS; 5, PROOF-ROLLING TESTS.

- ANY DISCREPANCIES FOUND BETWEEN THE DRAWINGS AND SPECIFICATIONS AND SITE CONDITIONS OR ANY INCONSISTENCIES OR AMBIGUITIES IN DRAWINGS OR SPECIFICATIONS SHALL BE MEMERINKELY KEPCRIED TO THE ENGINEER, IN WARTHING, WHO SHALL FROMENT, ADDRESS SUCH PROBLEMS, WORK COME BY THE CONTRACTOR AFTER THE ENGINEER, INCONSISTENCIES, OR AMBIGUITIES SHALL BE DONE AT THE CONTRACTOR'S RISK.
- WORK ON THIS PROJECT SHALL CONFORM TO THE LATEST EDITIONS OF THE WEST VIRIGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE HANDBOOK. IN THE EVENT OF CONFLICT BETWEEN THE DESIGN, SPECIFICATIONS, OR PLANS, THE MOST STRINGENT WILL GOVERN.

- 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.
- 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 UNRING CONSTRUCTION, FOR TY-EIGHT HOURS PRIOR TO ANY EXCAVATION THE CONTRACTOR SHALL CALL MISS UTILITY AT (800) 552-7001.
- INSTALLATION OF CONCRETE, CORRUGATED METAL, OR HDPE STORM PIPE SHALL BE IN CONFORMANCE WITH THESE DRAWNIGS.
- 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 REPUSE DEBRIS DERIVED FROM ANY SOURCE.
- MATERIALS USED TO FILL AROUND DRAINAGE STRUCTURES IN UTILITY TRENCHES OR ANY OTHER DEPRESSION REQUIRING FILL OR BACK FILL SHALL BE COMPACTED TO 85% OF MAXIMUM DENSITY AS DETERMINED BY THE STANDARD PROCTOR TEST AS SET FORTH IN ASTIM STANDARD DASS. THE CONTRACTOR SHALL, PRIOR TO MY OPERATIONS INVOLVING FILLING FILEST AGE, YELLING, SUBMIT THE RESULT SO THE PROCTOR TEST TOGETHER WITH A CERTIFICATION THAT THE SOIL TESTED IS REPRESENTATIVE OF THE MATERIALS TO BE USED ON THE PROJECT. THE TEST SHALL BE CONDUCTED BY A CERTIFIED MATERIALS TESTING LAGORATORY AND THE CERTIFICATIONS MADE BY A LICENSED PROFESSIONAL ENGINEER REPRESENTING THE LAGORATORY. THE CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH THESE TESTS AND THEIR SUBMITTALS.

STRUCTURAL PRACTICES:
DIVERSION DITCHES: WILL BE CONSTRUCTED ADVERSION BERMS: WILL BE CONSTRUCTED AVAILET PROTECTION: WILL BE CONSTRUCTE 24* SILT SOXXISILT FENGE/SUPER SILT FENGE

ED AS SHOWN ON THE PLANS. AS SHOWN ON THE PLANS. TED AS SHOWN ON THE PLANS. E: WILL BE CONSTRUCTED AS SHOWN ON THE PLANS.

- FILL SHALL BE PLACED IN LIFTS AT A MAXIMUM UNCOMPACTED DEPTH OF 12-INCHES WITH SOIL FREE FROM AGGREGATES EXCEEDING 6°.
- 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 AGEN
- A PRE-CONSTRUCTION CONFERENCE SHALL BE HELD PRIOR TO THE START OF CONSTRUCTION.
- SATISFACTORY MATERIALS FOR USE AS FILL FOR PAD AREAS INCLUDE MATERIALS CLASSIFIED IN ASTM D-2487AS GW, QP, GM, QC, SW, SP, SM, SC, ML, AND CL GROUPS, THE MOISTURE CONTENT SHALL BE CONTROLLED WITHIN PLUS OR MINUS 4% OF THE OPTIMUM TO PAGULITATE COMPACTION, GENERALLY, UNSATISFACTORY MATERIALS INCLUDE MATERIALS CLASSIFIED IN ASTM D-2487 AS FT, CH, MH, OL, OH AND ANY SOIL TOO WET TO FACILITATE COMPACTION, CH AND MH SOILS MAY BE USED SUBJECT TO APPROVAL OF THE RIGHIERER, SOILS SHALL HAVE A MINIMUM DRY DENSITY OF 92 LB/OF PER ASTM D-488 AND SHALL HAVE A PLASTICITY INDEX LESS THAN 17.

EROSION CONTROL NOTES

THE CONTRACTOR SHALL ARRAINGE FOR A PRE-CONSTRUCTION CONFERENCE WITH THE APPROPRIATE EROSION AND SEDIMENT CONTROL INSPECTOR 48 HOURS PRIOR TO BEGINNING WORK.

D. CLEAR AND GRUB, REMOVE TOPSOIL AND PLACE, TOPSOIL STOCKPILE TO BE SEEDED A STOCKPILES. C. CONSTRUCT ALL PROPOSED SEDIMENT CONT DIVERSIONS AND SEDIMENT BASINS SHALL BE

ACE AT AN AREA DETERMINED IN THE FIELD WHERE EROSION WILL NOT TAKE AND MULCHED. SILT FENCE SHALL BE CONSTRUCTED AROUND TOPSOIL

TROL DEVICES AS SOON AS CLEARING AND GRUBBING OPERATIONS ALLOW. E SEEDED AND MULCHED IMMEDIATELY.

E HELD ON SITE WITH CONTRACTOR TO REVIEW THE CONSTRUCTION UIDANCE.

NOPES AND FILL SLOPES SHALL BE TOPSOILED AS NEEDED. DITCH LINES AT LEAST GRASS LINING PROTECTION OR GREATER BASED ON DITCH NY, O TO 4% - ORGANIC JUTE MATTING, 4 TO 10% - SYNTHETIC MATTING (TRM).

GRADING OPERATIONS AS REQUIRED. CUT SI SHALL BE CLEANED. ALL DITCHES WILL HAVE SLOPE WITH THE FOLLOWING DETERMINATIO AND 10% - 20% - RIPRAP.

B. CONSTRUCT THE CONSTRUCTION ENTRANCE

A PRE-CONSTRUCTION CONFERENCE WILL BE DRAWINGS AND PROVIDE ANY REQUESTED G

SEQUENCE OF EVENTS:

MANAGEMENT STRATEGIES: CONSTRUCTION WILL BE SEQUENCED SO THAT GRADING OPERATIONS WILL BEGIN AND END ASSOCIATE POSSIBLE. THE JOB SUPERINTENDENT SHALL BE RESPONSIBLE FOR THE INSTRUCTION AND MAINTENANCE OF ALL EROSION AND SEDIMENT CONTROL. MESSURES, AFTER RESPENSION APECIANTE STABILIZATION THE TEMPORARY EROSION AND SEDIMENT CONTROL. BEAULT BE REMOVED AND ANY AREAS DISTURBED DURING THIS PROCESS SHALL BE FRINDIVED AND ANY AREAS DISTURBED DURING THIS PROCESS SHALL BE STABILIZED.

Hornor

GETATIVE PRACTICE TOPSOILING: TOPSOIL WILL BE STRIPPED FROM THE SITE AND STOCKPILED IN AN AREA TERMINED IN THE PRED. UPON THE CONFECTIONS OF THE PROJECT TOPSOIL WILL BE PLACED ON ALL DISTURBED THAN AN INNIMUM DEPTH OF A HON-TES. TREPLOPARY SEEDING: ALL DENUEDD AREAS LET DORRAWIT FOR MORE THAN DAYS SHALL BE SEEDED WITH A FAST GERMINATING SEED. THE TIME OF YEAR WILL BE THE BASIS FOR THE SEED TO THE OF THE REPROMENT SEEDING: ALL SEEDING SHALL BE THE BASIS FOR THE SEED TO THAN ADEQUATE STAND OF GRASS, PERMANENT SEEDING SHALL BE PLACED WITHIN SEVEN DAYS UPON THE WINDOW OF THE SUBJECT OF THE SEEDING SHALL BE PLACED WITHIN SEVEN DAYS UPON THE WINDOW OF THE ENGINEER.

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- 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.
- ALL DISTURBED AREAS NOT PAVED OR BUILT UPON ARE TO BE FERTILIZED AND HYDRO-SEEDED WITH STRAW AND COTTON PRODUCT WITH TACK AGENTS BY THE CONTRACTOR IN ACCORDANCE WITH THE CURRENT WEST VIRGINIA EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE MANUAL.
- 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.
- 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 27 DAYS, PERMANENT STABILIZATION SHALL BE APPLIED TO AREAS THAT ARE TO BE LEFT DORMANT FOR MORE THAN ONE YEAR.
- DURING CONSTRUCTION OF THE PROJECT, SOIL STOCKPILES SHALL BE STABILIZED OR PROTECTED WITH SEDIMENT TRAPPING MEASURES.
- SEDMENT BASINS AND TRAPS, PERIMETER DIKES, SEDMENT BARRIERS AND OTHER MEASURES INTENDED TO TRAP SEDMENT SHALL BE CONSTRUCTED AS A FRIST STEP IN ANY LAND DISTURBING ACTIVITY AND SHALL BE MADE FUNCTIONAL BEFORE UPSLOPE LAND DISTURBANCE TAKES PLACE.
- STABILIZATION MEASURES SHALL BE APPLIED TO EARTHEN STRUCTURES SUCH AS IMPOUNDMENTS, DIKES AND DIVERSIONS IMMEDIATELY AFTER INSTALLATION.
- ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILEZHON OR AFTER THE TEMPORARY MEASURES ARE NO LONGER NEEDED, UNLESS OTHERWISE AUTHORIZED BY THE BYIGHER, TRAPPED SEDIMENT, AND THE DISTURBED SOLL MEASURES SHALL BE PERMANENTLY STABILIZED TO PREVENT FURTHER EROSION AND SEDIMENTATION.
- A. TOPSOIL 4 INCH MINIMUM FOR PERMANENT TURF
- FERTILIZER 500 POUNDS PER AGRES OF 10-20-10 FERTILIZER OR EQUIVALENT POUNDAGE OF DIFFERENT ANALYSIS. WORK INTO SOIL PRIOR TO SEEDING.
- LIME (PERMANENT SEEDING) AGRICULTURAL LIME SPREAD AT RATE OF 4 TONS/ACRE. WORK INTO SOIL PRIOR TO SEEDING.

EROSION AND SEDIMENT CONTROL NARRATIVE

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 PULLMAN, WEST VIRGINIA, IN STICHIE
COUNTY. THE CONSTRUCTION INCLUDES TWO ACCESS ROADS, ONE FRAC, WATER IMPOUNDMENT, DRILL PAD STORM
VANTER CONTROLS, AND INCIDENTAL WORK, THE TOTAL APPROXIMATE LAND DISTURGANACE ASSOCIATED WITH THIS
PROJECT IS 9.98 ACRES.

OFF SITE AREAS: THERE SHALL BE NO BORROW AREA OUTSIDE OF THE PROVISED GRADING AND CONSTRUCTION AREA

ADJACENT PROPERTY: THE SITE IS BORDERED ON ALL SIDES BY UPLAND HANDWOODS.

SOILS: NO SOIL STUDIES OR SUBSURFACE INVESTIGATIONS WERE PERFORMED FOR THIS PROJECT.

EXISTING SITE CONDITIONS: THE EXISTING SITE IS OPEN GRASSLAND AND UPLAND HARDWIDDS WITH GENTLE TO INDIFFATELY STEEP TOPOGRAPHY WITH 5% TO 20% SLOPES. NO EROSION IS NOTICED ON SITE, OR IN ANY NATURAL DRAINAGE WAYS.

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ORITICAL EROSION AREAS CONTRIOL MANITEMANCE. ALL 31 SLOPES AND SIZEPERS DITCHES AND OTHER CONTROLS SYALL BE CONTROLS STALL BE CONTROLS STALL BE CONTROLS AND ATTER STALL STALL SHALL BE MONITORED & MANITAMED DAILY AND ATTER SYALL SECONDER STALL STALL SHALL BE MONITORED & MANITAMED DAILY AND ATTER STALL SHALL BE AND SHOULD SHALL HAVE THE ALTHORITY TO EXCHANGE ON THE PLACEMENT OF ADDITIONAL BROSION COUNTROL, MEASURES IN THESE AREAS IF IT BECOMES ENDENT COUNTROL MEASURES IN THESE AREAS IT BECOMES ENDENT DURING CONSTRUCTION THAT THE ONES IN PLACE ARE NOT PUNCTIONING SON'S FIGURE STALL STALL SHALL SH

COSION AND SEDIMENT CONTROL MEASURES. UNLESS OTHERWISE INDIGED. ALL VEGETATIVE AND STRUCTURAL MOSION AND SEDIMENT CONTROL PRACTICES SHALL BE CONSTRUCTED AND BANTHANED ACCORDING TO MINIMUM IN MADDARDS AND SPECIFICATIONS OF THE CURRENT WEST VIGIRIANE RESION AND SEDIMENT CONTROL BEST MARGEMENT PRACTICE MANUAL THE CONTRACTOR SHALL OBTAIN A COPY OF THIS MANUAL FROM THE WYDED MAGRIENT PRACTICE MANUAL THE CONTRACTOR SHALL OBTAIN A COPY OF THIS MANUAL FROM THE WYDED SESTER AND CONSTRUCTED AND THE WIDE SHALL OBTAIN A COPY OF THIS MANUAL FROM THE WIDE SHALL BE ADTERED SHE SPECIFICATIONS OF THE WEST VIRRONIA MANUAL. THE MINIMUM STANDARDS OF THIS MANUAL SHALL BE ADTERED JUNESS OTHERWISE WAYED OR APPROVED BY A VARIANCE. SEE PLANS FOR ALL PROPOSED EROSION AND EDIMENT CONTROL MASSURES.

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- EROSION AND SEDIMENT CONTROL NEASURES 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.

- CONTRACTOR SHALL SUBMIT AND ADHERE TO A GENERAL GROUNDWATER PROTECTION PLAN.
- OSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED CONTINUOUS! Y, RELOCATED WHEN AND AS CESSARY AND SHALL BE CHECKED AFTER EVERY RAINFALL SEEDED AREAS SHALL BE CHECKED REGULARLY AND SHALL WATERED, FERTILIZED, RESEEDED AND MULCHED AS NECESSARY TO OBTAIN A DENSE STAND OF GRASS.

K. MAKE MODIFICATIONS FOR PERMANENT STORM WATER MANAGEMENT.

WHEN SITE IS STABILIZED, ALL EROSION AND SEDIMENT CONTROL MEASURES CAN BE REMOVED AND THOSE AREAS IN ACCORDANGE WITH STATE STANDARDS.

FINAL SEEDING MUST OCCUR WITHIN 7 DAYS

L. FINAL SITE INSPECTION.

- ALL DISTURBED AREAS NOT PAYED OR BUILT UPON SHALL BE HYDRO-SEEDED AND FERTILIZED. PERFORM PERMANENT TOP SOILING, SEEDING AND FERTILIZING AS SOON AFTER FINISH GRADING AS POSSIBLE. SEEDING SHALL COMPLY WITH THE FOLLOWING:

- MULCH WOOD FIBER OR CHOPPED STRAW AT RATE OF 2 TONS PER ACRE, HYDRO-MULCH AT RATE OF 30 BALES PER ACRE.

5-8-2012

REVISED QUANTITIES & SPOIL AREA

Scale: N.T.S.

ned By: JDR

Date: 4-27-2012

REVISIONS

- SEED 45 LBS, PER AORE TALL FESCUE AND 20 LBS, PER AORE PERENNIAL RYE GRASS. TO BE SEEDED BY HYDRO-SEEDER.
- MANITENANCE, AND OTHER CONSIDERATIONS AND GROUND WATER PROTECTION; ALL EROSION AND SEDMENT CONTROL MEASURES WILL BE CHECKED DAILY AND AFTER RACH RAWFALL OF D.5 INCH OR MORE. THEY WILL BE INSPECTED FOR UNDERMINING, INCTERPIORATION, EROSION, AND EXCESS DEPOSITED MATERIAL. ALL DEFENDED BY THE PROJECTION OF THE FORE FOR THE STATE BY THE CHARLEST OF CLEANING PROCEDURES WILL BE COMPLETED AT REGULAR MITERVALS AND AT LEAST WHICH CONSTRUCTION SITES WILL BE MANTANLED BY THE CONTRACTOR. THE "GENERAL GROUNDWATER PROTECTION OF THE ACTION OF THE "GENERAL CHARLEST OF THE CHARLEST ON THE STREET WILL BE EXCENDED IN THE CHARLEST OF THE CHARLEST ON THE STREET WILL BE CARDED TO THE CHARLEST OF THE CHARLEST OF THE CHARLEST ON THE CHARLEST WILL BE CARDED THE CHARLEST ON THE CHARLEST WILL BE CARDED THE CHARLEST ON THE CHARLEST WILL BE CARDED THE CHARLEST WILL BE CARDED THE CHARLEST WILL BE CARDED THE CHARLEST ON THE CHARLEST WILL BE CARDED THE CHARLEST WILL BE CARDED THE CHARLEST ON THE CHARLEST ON THE CHARLEST ON THE CHARLEST WILL BE CARDED TO THE CHARLEST ON THE CHARLEST ON THE CHARLEST WILL BE CARDED TO THE CHARLEST ON T 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. CONSTRUCTION, GENERAL AND E&S NOTES JOHN CAMPBELL NORTH DRILL PAD SITE UNION DISTRICT

RITCHIE COUNTY, WV

THIS DOCUMENT
PREPARED FOR
ANTERO RESOURCES
APPALACHIAN CORP

G. WHEN FINAL GRADE IS ACHIEVED, TOPSOIL TO BE PLACED ON ALL DISTURBED AREAS NOT LINED, HYDRO-SEED ALL DISTURBED AREAS AS REQUIRED, ASOIL SAMPLE SHOULD BE TAKEN AND TESTED TO DETERMINE RECOMMENDED RATES. IF NO SOILS SAMPLE IS TAKEN THE FOLLOWING RATES SHOULD DE APPLIED AS A MINIMUNE, LINEAT A RATE OF 4 TONG PER ACRE, FERTILIZE AT A FARTE 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.

LIME, FERTILIZER, AND SEED WILL BE APPLIED BY USING A HYDRO-SEEDER, HYDRO-MULCH PRODUCTS SHALL BE MIXED AND INSTALLED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

OF FINAL GRADING.

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.

