west virginia department of environmental protection

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

Harold D. Ward, Cabinet Secretary
www.dep.wv.gov

Thursday, March 4, 2021
PERMIT MODIFICATION APPROVAL
Horizontal 6A / New Drill

HG ENERGY II APPALACHIA, LLC
5260 DUPONT ROAD

PARKERSBURG, WV 26101

Re: Permit Modification Approval for EVANS 1213 N-1H
47-041-05708-00-00

LOD was increased for slip repair and the tank was relocated.

HG ENERGY II APPALACHIA, LLC

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.

If there are any questions, please feel free to contact me at (304) 926- 0450.

James A. Martin
Chief

Operator's Well Number:	EVANS 1213 N-1H
Farm Name:	JAMES M & SUZANNE L EVANS
U.S. WELL NUMBER:	47-041-05708-00-00
Horizontal 6A	New Drill
Date Modification Issued:	3/4/2021

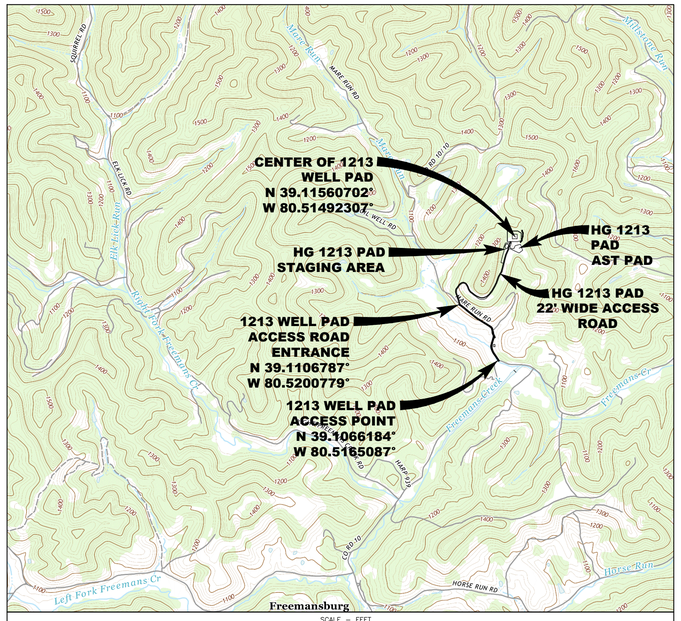
APPROVED
WVDEP OOG
MODIFICATION
3/4/2021

CONSTRUCTION IMPROVEMENT PLANS WITH EROSION AND SEDIMENT CONTROLS

HG 1213 WELL PAD

SHT. NO.	SHEET TITLE
1	TITLE SHEET
2A–2D	SITE DEVELOPMENT PLANS
3	WELL PAD SECTIONS
4A–4B	ACCESS ROAD SECTIONS
5A–5F	CONSTRUCTION NOTES & DETAILS
6A–6C	RESTORATION PLAN
7	PROPERTY MAP

FREEMANS CREEK DISTRICT
LEWIS COUNTY
WEST VIRGINIA



LOCATION MAP

REFERENCE:
USGS 7.5–MIN TOPOGRAPHIC QUADRANGLE
BIG ISAAC, WV 2019
CAMDEN, WV 2019

CONSTRUCTION SEQUENCE

1. Prior to commencement of any earth disturbance activity including clearing and grubbing, the registrant shall call West Virginia 811 by dialing 811 or 1-800-245-4848 to identify all utility lines. The registrant also must clearly delineate sensitive areas, riparian forest buffer boundaries, the limits of clearing, and trees that are to be conserved within the project site, and shall install appropriate barriers where equipment may not be parked, staged, operated or located for any purpose.
2. Site access - This is the first land-disturbance activity to take place at the site and should provide BMPs to minimize accelerated erosion and sedimentation from the following areas: entrance to the site, construction routes, and areas designated for equipment or other use at the site including parking, stockpiles.
3. Sediment Barriers - Install perimeter BMPs after the construction site is accessed, keeping associated clearing and grubbing limited to only that amount required for installing perimeter BMPs.
4. Land Clearing and Grading - Implement clearing and grading only after all downslope E&S BMPs have been constructed and stabilized.
5. Surface Stabilization - Apply temporary or permanent stabilization measures immediately to any disturbed areas where work has reached final grade, has been delayed or otherwise temporarily suspended.
6. Construction of Buildings, Utilities, and Paving - During construction, install and maintain any additional erosion and sediment control BMPs, and implement any structural post construction stormwater BMPs that may be required.
7. Upon completion of pad grading, compact the pad to grade and begin placement of pad soil cement.
8. Final Stabilization, Topsoiling, Trees and Shrubs - After construction is completed, install stabilization BMPs including: permanent seeding, mulching and riprap, and complete implementation of stormwater BMPs in this last construction phase. Stabilize all open areas, including borrow and spoil areas, and remove all temporary BMPs and stabilize any disturbances associated with the removal of the BMP.

PREPARED FOR

HG ENERGY II APPALACHIA, LLC

5260 DUPONT ROAD
PARKERSBURG, WEST VIRGINIA 26101
(304) 420–1100

PREPARED BY

PENN ENVIRONMENTAL & REMEDIATION, INC.

111 RYAN COURT
PITTSBURGH, PA 15205
(412) 722–1222

Estimated Gross Material Balance (CY)			
Final Development - Gravel Option			
	Cut	Fill	Stockpile
1213 Well Pad	8,320	7,670	650
1213 Well Pad Access Road	5,320	1,540	3,780
1213 Well Pad TAP Site Pad	350	440	-90
1213 Well Pad AST and Staging Area	12	2,851	-2,839
Totals	14,002	12,501	1,501
Est. Swell Factor (20%)			300
Total Site Balance:			1,801
Stripped Topsoil (Limits of Earthwork)			6,152
Est. Swell Factor (20%)			1,230
Est. Topsoil Stockpile Volume (Loose CY)			7,382
Minimum Total Stockpile Capacity Required (CY)			9,183

Notes:
1. Material balance for est. gross earthwork quantities only.
2. Topsoil est. volume based on 6 inches average depth.
3. Material balance and aggregate quantities based on estimates and may not be representative of actual quantities.
4. Estimates do not reflect contractor pay volumes.

Estimated Gravel Quantities					
	Access Roads	Staging/ AST Pad	1213 Well Pad	TAP Site Pad	TOTAL
10" Soil Cement (Placed SY)	8,626	5,509	10,700	4,077	28,912
2" Depth of 1.5" Crusher Run (Tons)	623	398	773	295	2,098

Estimated Pad Access Road 8" Filter Sock Length (LF)	734
Estimated Well Pad 8" Filter Sock Length (LF)	1310
TOTAL Estimated 8" Compost Filter Sock Length (LF)	2044
Estimated Pad Access Road Limit of Disturbance (Acres)	8.437
Estimated 1213 Well, AST & Staging Pads Limit of Disturbance (Acres)	6.71
TOTAL Estimated Limit of Disturbance (Acres)	15.147
Well Pad Peak Pre-Construction Elevation (Ft)	1233.00
Well Area Subbase Elevation (Top of Soil Cement Subbase) (Ft)	1227.30
Well Area Surface Elevation (Ft)	1232.87

WELL #	LAT.	LONG.
N–1H	N 39.115635	W 80.515002
N–2H	N 39.115635	W 80.514949
N–3H	N 39.115634	W 80.514896
N–4H	N 39.115634	W 80.514844
S–5H	N 39.115566	W 80.515003
S–6H	N 39.115566	W 80.514950
S–7H	N 39.115566	W 80.514897
S–8H	N 39.115565	W 80.514844

WELL ELEVATIONS 1227.46
UTM83–17F

	LATITUDE	LONGITUDE
1213 WELL PAD ACCESS POINT	N 39.1066184°	W 80.5165087°
1213 WELL PAD ACCESS ROAD ENTRANCE	N 39.1106787°	W 80.5200779°

RECORD OWNER	RECORD LOT #	RECORD AREA OF LOT	AREA WITHIN LOD
SUZANNE LYNN & JAMES M. EVANS	21–03–006C–0004–0000	308.1376	15.096
MARE RUN ROAD D.R. 10/9	N/A	N/A	0.051
TOTAL LIMIT OF DISTURBANCE			15.147 AC.

REVISION	DATE	DESCRIPTION
1	2020–09–29	REVISED PER CLIENT COMMENTS
2	2020–11–20	REVISED PER WVDEP COMMENTS
3	2021–01–18	REVISED PER CLIENT COMMENTS

MATTHEW E. PERCH
REGISTERED
20458
STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER
3-4-2021

TITLE SHEET

HG 1213 PAD
FREEMANS CREEK DISTRICT
LEWIS COUNTY, WEST VIRGINIA

PREPARED FOR
HG ENERGY II APPALACHIA, LLC
PARKERSBURG, WEST VIRGINIA

APPROVED	MEP	09/04/2020
CHECKED	CAC	09/03/2020
DRAWN	SMH	09/03/2020
PROJECT No.	4000–PA008130	

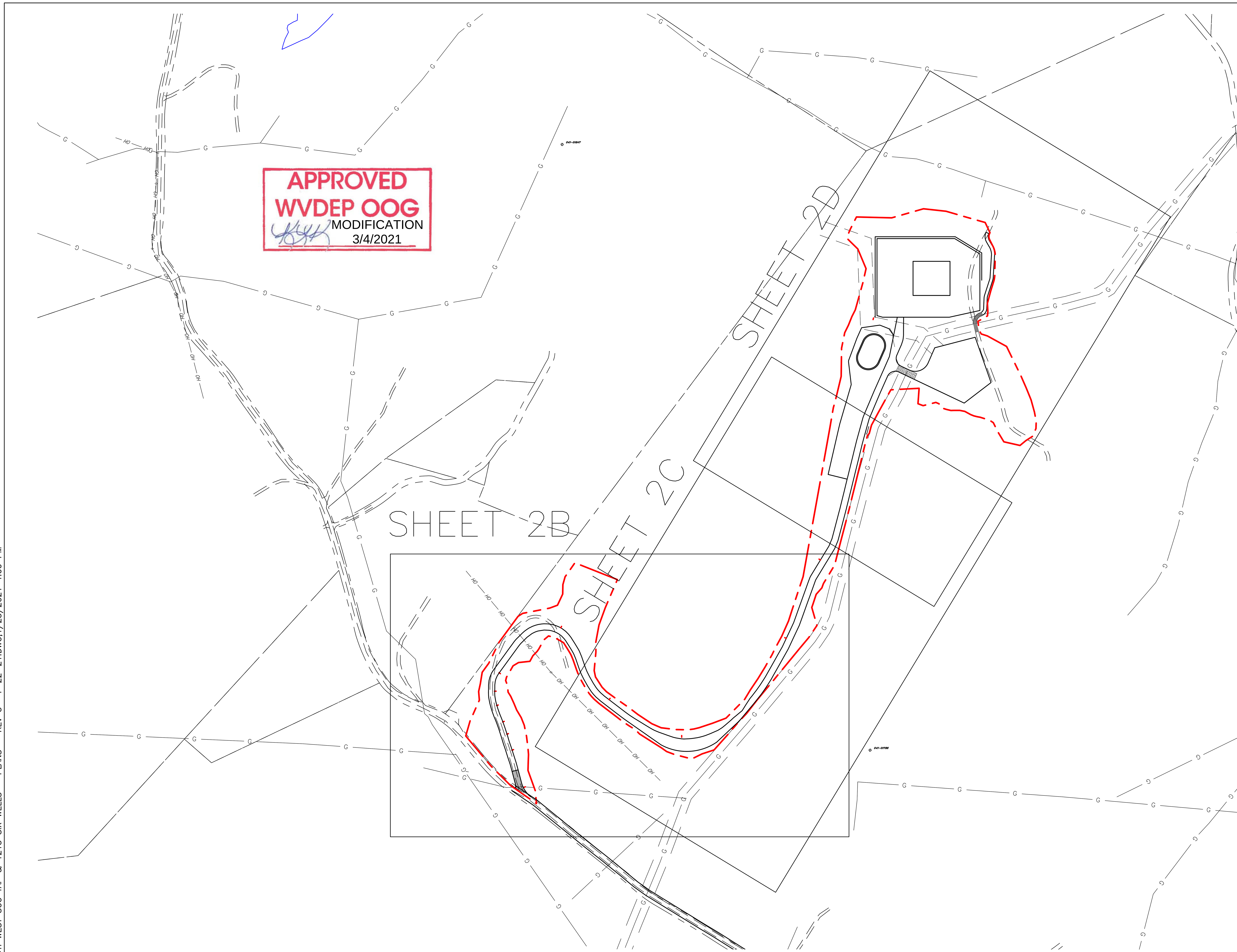
DRAWING NUMBER
PA008130–001
SHEET 1

Penn E&R
Environmental & Remediation, Inc.
111 RYAN COURT, PITTSBURGH, PA 15205;
412–722–1222

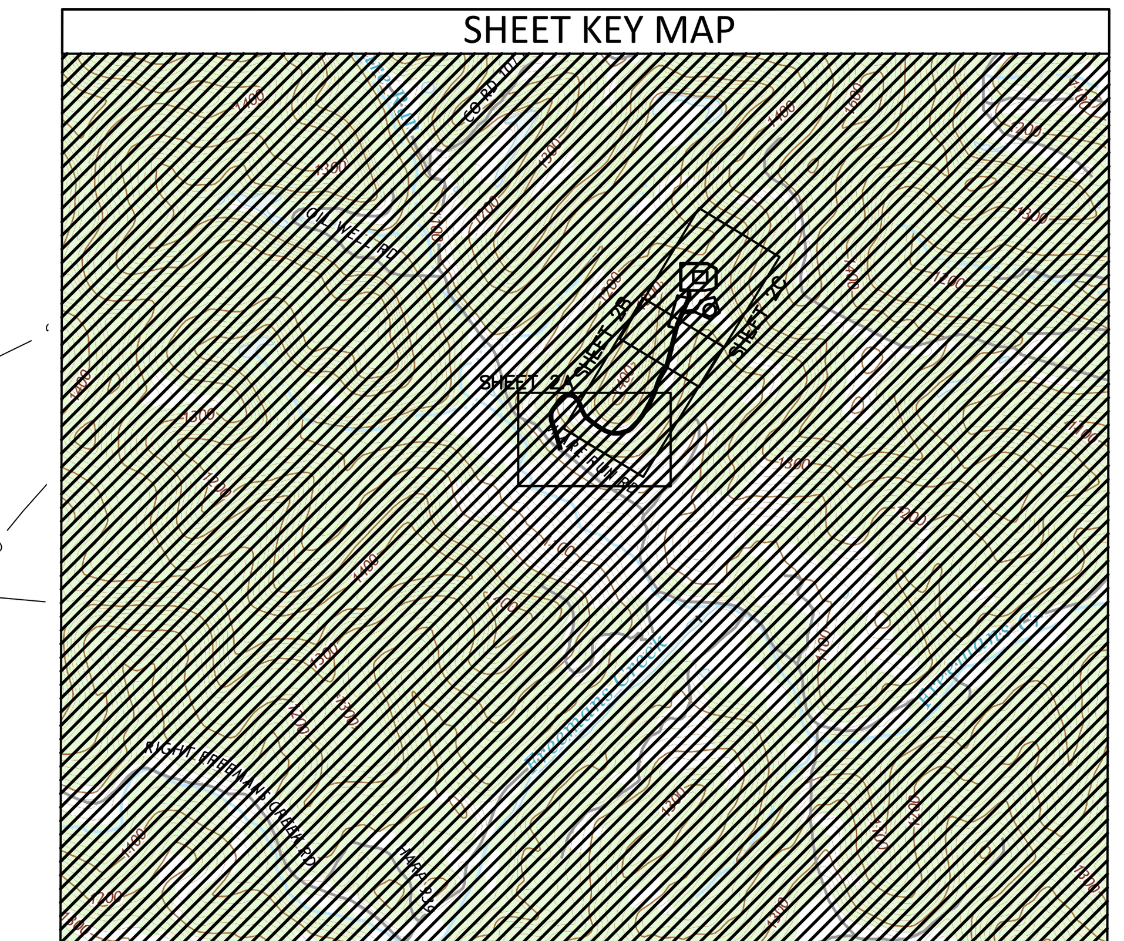
WEST VIRGINIA 811
CALL BEFORE YOU DIG!
Dial 811 or 800.245.4848
Miss Utility of West Virginia

1. SERVICE UTILITY LINES ARE NOT SHOWN ON THE PLANS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING, MAINTAINING, AND REPLACING AS NECESSARY TO ENSURE CONTINUAL SERVICE.

S:_PROJECT FILES\4000–PA008130 HG 1213\DRAWINGS\PA008130 TITLE SHEET.DWG,1/26/2021 12:03 PM



SHEET KEY MAP



SCALE – FEET
0 2000 4000

REFERENCE:
USGS 7.5-MIN TOPOGRAPHIC QUADRANGLE
CAMDEN, WV DATED 2019

LEGEND

- ROCK CHECK DAM
- RIPRAP APRON
- ACCESS ROAD/PAD CHANNEL
- COMPOST FILTER SOCK 8" UNLESS OTHERWISE NOTED (CFS)
- STACKED COMPOST FILTER SOCK 8" (SCFS)
- APPROXIMATE LIMITS OF DISTURBANCE
- APPROXIMATE PROPERTY LINE
- EXISTING INDEX CONTOUR
- EXISTING INTERMEDIATE CONTOUR
- PROPOSED SUBBASE INDEX CONTOUR
- PROPOSED SUBBASE INTERMEDIATE CONTOUR
- EXISTING ACCESS ROAD
- EXISTING OVERHEAD UTILITY LINE
- EXISTING GAS LINE (G)
- EXISTING WATER LINE (W)
- DELINEATED WATERCOURSE
- CONSTRUCTION FENCE (X)
- SECTION (A A)
- TOE BENCH (SEE FILL BENCH DETAIL)
- EROSION CONTROL BLANKET
- EXISTING WETLAND

WEST VIRGINIA GENERAL NOTES:

1. ALL PROPOSED ELEVATIONS SHOWN ON PLAN SHEETS REFLECT PROPOSED SUBBASE ELEVATIONS.
2. REFERENCE THIS SHEET WITH THE CONSTRUCTION NOTES AND DETAILS.
3. CONTRACTOR SHALL CONTACT WEST VIRGINIA UTILITIES PROTECTION SERVICES (811) A MINIMUM OF 3 DAYS PRIOR TO EXCAVATION WORK. UTILITIES MUST BE IDENTIFIED AND EITHER RELOCATED OR PROTECTED BY CONTRACTOR PRIOR TO BEGINNING WORK AT THE SITE.
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6. ESTABLISH EROSION AND SEDIMENTATION CONTROL BMPS PRIOR TO EARTHWORK. SITE CONSTRUCTION SHALL FOLLOW WEST VIRGINIA EROSION AND SEDIMENT CONTROL FIELD MANUAL DATED MAY 2012.
7. CLEAR AND GRUB WORK AREA. REMOVE AND STOCKPILE AVAILABLE TOPSOIL FROM LIMIT OF DISTURBANCE TO A LOCATION DESIGNATED BY HG ENERGY II APPALACHIA, LLC.
8. NO EMBANKMENT FILL SHALL BE PLACED ON FROZEN MATERIAL. FILL MATERIAL SHALL BE FREE OF ORGANICS, LARGE ROCKS, FROZEN SOIL OR OTHER OBJECTIONABLE MATERIAL.
9. CUT/FILL SLOPES SHALL BE CONSTRUCTED TO A MAXIMUM SLOPE OF 2H:1V UNLESS NOTED OTHERWISE.
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REFERENCE:

1. PROPERTY BOUNDARIES & OWNER INFORMATION OBTAINED VIA WV PROPERTY VIEWER WWW.MAPWV.GOV/PARCEL/
2. EXISTING CONTOURS OBTAINED FROM SolSpec Solutions ON 12/04/2019.

REVISION	DATE	DESCRIPTION
1	2020–09–29	REVISED PER CLIENT COMMENTS
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NORTH

MATTHEW E. PIERCE REGISTERED 20458 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

SCALE – FEET
0 200 400 600

SITE DEVELOPMENT PLAN
WITH EROSION AND SEDIMENTATION CONTROLS
HG 1213 PAD
FREEMANS CREEK DISTRICT
LEWIS COUNTY, WEST VIRGINIA

PREPARED FOR

HG ENERGY II APPALACHIA, LLC
PARKERSBURG, WEST VIRGINIA

APPROVED	MEP	09/04/2020
CHECKED	CAC	09/03/2020
DRAWN	SMH	09/03/2020
PROJECT No.	4000–PA008130	

DRAWING NUMBER
PA008130–001
SHEET 2A

Penn E&R
Environmental & Remediation, Inc.
111 RYAN COURT, PITTSBURGH, PA 15205; 412–722–1222

C:\PROJECT FILES\4000–PA008130 HG 1213\DRAWINGS\DTI WEST SGG TAP & 1213 SIX WELLS – PLANS – REV 3– 1–22–21.DWG,1/25/2021 4:00 PM

APPROVED
WVDEP OOG
MODIFICATION
3/4/2021

3,800 CY CAPACITY STOCKPILE

LEVEL SPREADER

CYNTHIA D. SUMPTER
21-03-0055-0042-0000
9.96 AC

WATERCOURSE A DO NOT DISTURB

EXISTING CULVERT

EXISTING MAILBOX

EXISTING WATER VALVE

EXISTING CULVERT

EXISTING ACCESS ROAD TURNOUT

GASLINE MARKER – LOCATION OF LINE UNABLE TO BE DETERMINED – NOT FLAGGED

32 L.F. 12" SW HDPE @ 3.50%

30 L.F. 12" SW HDPE @ 5.80%

27 L.F. 12" SW HDPE @ 0.90%

EXISTING CULVERT TO BE EXTENDED AS NECESSARY

32 L.F. 12" SW HDPE @ 9.90%

EXISTING TIMBER RETAINING WALL

EXISTING CULVERT TO BE EXTENDED AS NECESSARY

PAVED CONSTRUCTION ENTRANCE – FIRST 70 FEET

SLIP REPAIR AREA

SUZANNE LYNN & JAMES M. EVANS
21-03-006C-0004-0000
308.1376 AC

EXISTING WATER VALVE

ACCESS ROAD:
N39.110679
W80.520078

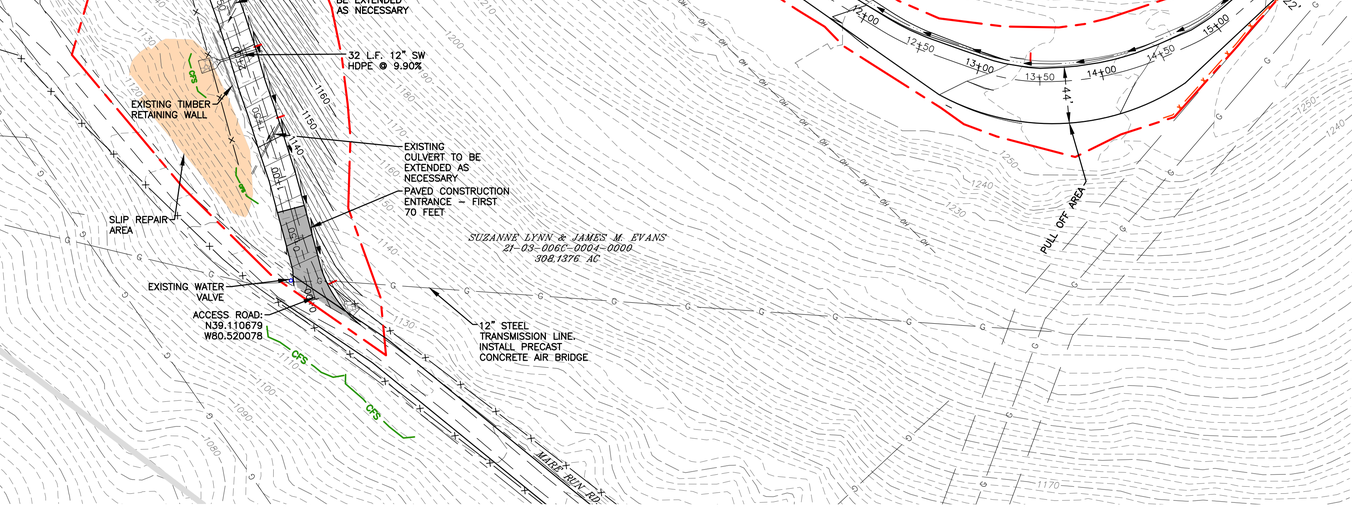
12" STEEL TRANSMISSION LINE. INSTALL PRECAST CONCRETE AIR BRIDGE

MARK RUN RD

MATCH LINE STA. 10+00 SEE SHEET 2C

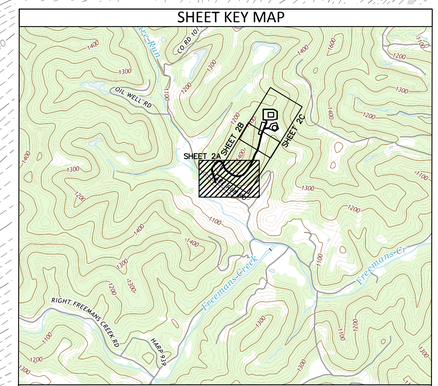
PULL OFF AREA

DOMINION WELL API# 047-10184



22' WIDE PAD 1213 ACCESS ROAD

SHEET KEY MAP



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NORTH

MATTHEW E. PIERCE REGISTERED 20458 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER
1-7-2021

SCALE – FEET
0 60 120 180

SITE DEVELOPMENT PLAN WITH EROSION AND SEDIMENTATION CONTROLS HG 1213 PAD FREEMANS CREEK DISTRICT LEWIS COUNTY, WEST VIRGINIA

PREPARED FOR
HG ENERGY II APPALACHIA, LLC
PARKERSBURG, WEST VIRGINIA

APPROVED	MEP	09/04/2020
CHECKED	CAC	09/03/2020
DRAWN	SMH	09/03/2020
PROJECT No.	4000-PA008130	

DRAWING NUMBER
PA008130-001
SHEET 2B

Penn E&R Environmental & Remediation, Inc.
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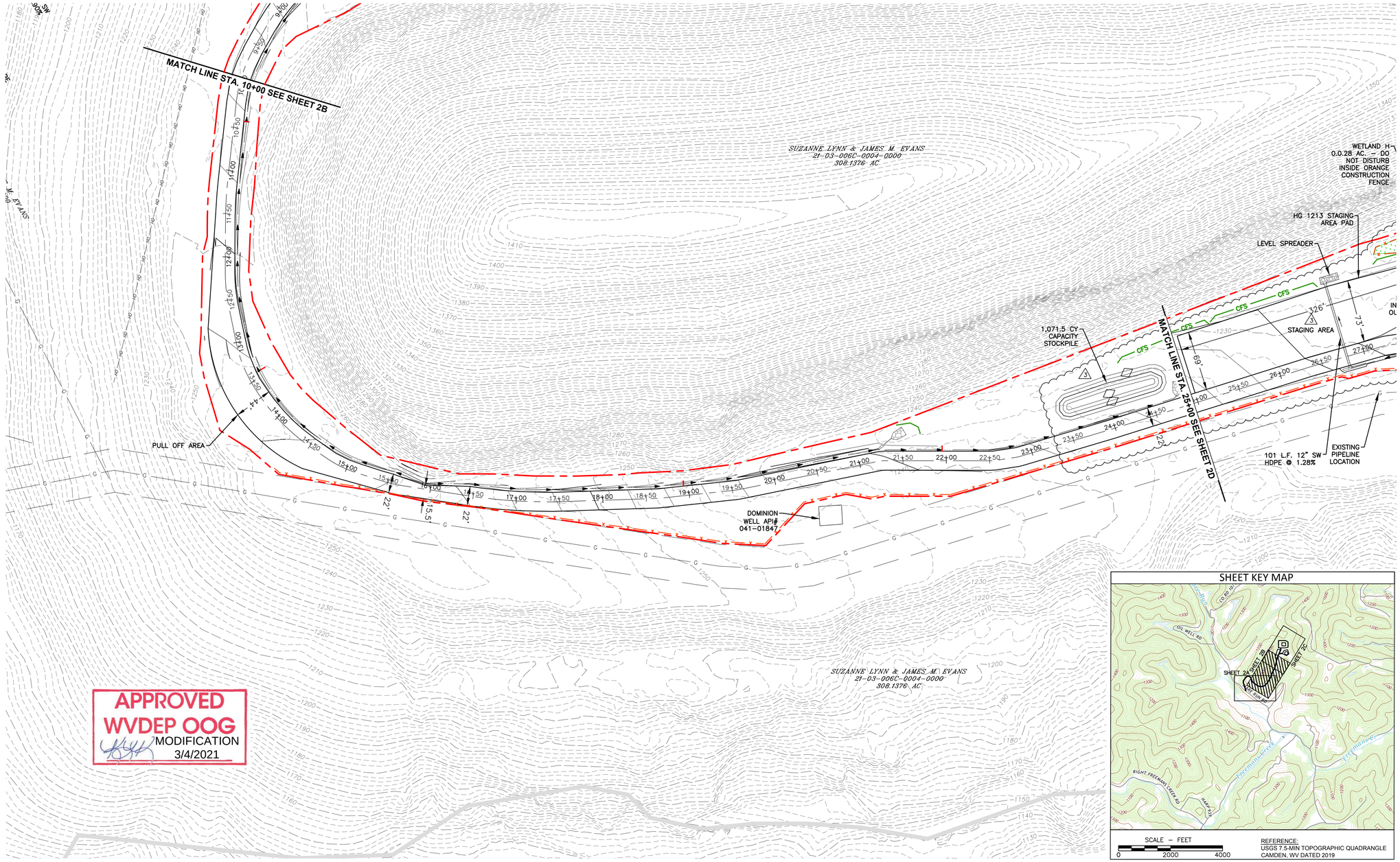
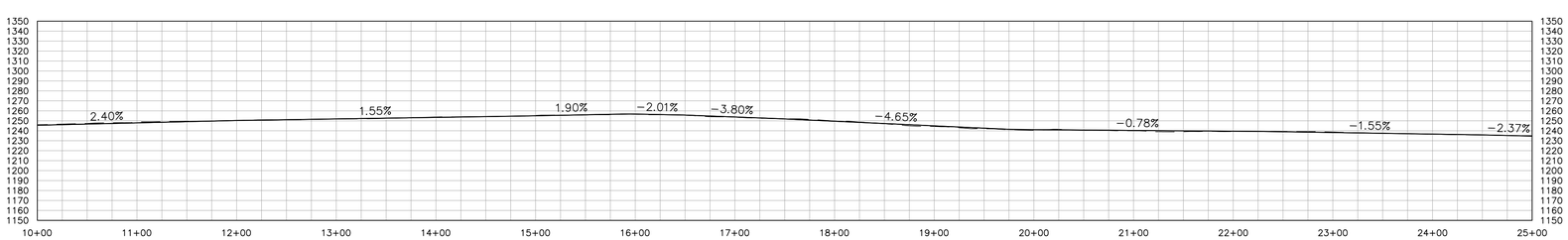
412-722-1222

C:\PROJECT FILES\4000-PA008130 HG 1213\DRAWINGS\DTI WEST SGG TAP & 1213 SIX WELLS – PLANS – REV 3– 1-22-21.DWG,1/25/2021 4:01 PM





22' WIDE PAD 1213 ACCESS ROAD

SHEET KEY MAP

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REFERENCE:

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2. EXISTING CONTOURS OBTAINED FROM SolSpec Solutions ON 12/04/2019.

REVISION	DATE	DESCRIPTION
1	2020–09–29	REVISED PER CLIENT COMMENTS
2	2020–11–20	REVISED PER WVDEP COMMENTS
3	2021–01–18	REVISED PER CLIENT COMMENTS

NORTH

MATTHEW E. REESE REGISTERED 20458 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER 3-3-2021

SCALE – FEET
0 60 120 180

SITE DEVELOPMENT PLAN
WITH EROSION AND SEDIMENTATION CONTROLS
HG 1213 PAD
FREEMANS CREEK DISTRICT
LEWIS COUNTY, WEST VIRGINIA

PREPARED FOR

HG ENERGY II APPALACHIA, LLC
PARKERSBURG, WEST VIRGINIA

APPROVED	MEP	09/04/2020
CHECKED	CAC	09/03/2020
DRAWN	SMH	09/03/2020
PROJECT No.	4000–PA008130	

DRAWING NUMBER
PA008130–001
SHEET 2C

Penn E&R
Environmental & Remediation, Inc.
111 RYAN COURT, PITTSBURGH, PA 15205;
412–722–1222

C:\PROJECT FILES\4000–PA008130 HG 1213\DRAWINGS\DT WEST SGG TAP & 1213 SIX WELLS – PLANS – REV 3– 1–22–21.DWG,1/25/2021 4:01 PM

APPROVED
WVDEP OOG
MODIFICATION
3/4/2021

SUZANNE LYNN & JAMES M. EVANS
21-03-006C-0004-0000
308.1376 AC

PHILLIP E. BURNSIDE
21-03-006C-0003-0000
86.66 AC

WETLAND N
0.028 AC. – DO NOT DISTURB
INSIDE ORANGE CONSTRUCTION
FENCE

WETLAND G
0.119 AC. – DO
NOT DISTURB
INSIDE ORANGE
CONSTRUCTION
FENCE

IMPACTED AREA
WETLAND G
0.029 AC.

PROPOSED
50' PIPELINE
ROW

WATERCOURSE J
– DO NOT
DISTURB

8" GATE VALVE PER
HG ENERGY II
APPALACHIA, LLC.
(NORMALLY CLOSED)

CATCH BASIN
GRATE ELEV. 1226.90
INVERT 6" (N&S) 1223.95
INVERT 8" 1223.90

WATERCOURSE K
– DO NOT
DISTURB

LEVEL SPREADER

WETLAND H
0.028 AC. – DO
NOT DISTURB
INSIDE ORANGE
CONSTRUCTION
FENCE

HG 1213 STAGING
AREA PAD

LEVEL SPREADER

AST PAD

IMPAIRED WATER AST CENTER:
N 39.11490323, W 80.51570330
INNER TANK VOLUME 18,136 BBLS
OUTER TANK VOLUME 20,832 BBLS

STAGING AREA

1,071.5 CY
CAPACITY
STOCKPILE

MATCH LINE STA. 25+00 SEE SHEET 2C

101 L.F. 12" SW
HDPE @ 1.28%

EXISTING
PIPELINE
LOCATION

22' WIDE PAD ACCESS
ROAD WITH CONCRETE
AIR BRIDGE

83'X131' AST
OUTER TANK

PROPOSED
TAP SITE PAD

WATERCOURSE B
DO NOT DISTURB

PLACE TIMBER MAT AIR
BRIDGE ON EXISTING
ACCESS PATH

4,100 CY
CAPACITY
STOCKPILE

WETLAND L
0.006 AC. – DO NOT DISTURB
INSIDE ORANGE CONSTRUCTION
FENCE

1,200 CY
CAPACITY
STOCKPILE

CENTER OF 1213
WELL PAD
N 39.11560713
W 80.51494958

600 L.F. 6" PERF.
HDPE @ 0.20%

PERIMETER BERM

WATERCOURSE M
– DO NOT DISTURB

LEVEL SPREADER

35 L.F. 8" SW
HDPE @ 2.10%

MATCH BERM TO
CUT SLOPE @
ELEV. 1229.65

35 L.F. 12" SW
HDPE @ 1.50%

TOE BENCH DRAIN

WATERCOURSE F
– DO NOT DISTURB

4" STEEL TRANSMISSION
LINE

77 LF HDPE
CULVERT

WETLAND E
0.131 AC. – DO
NOT DISTURB
INSIDE ORANGE
CONSTRUCTION
FENCE

INV. 6" PERF.
HDPE 1225.15

8" STEEL TRANSMISSION
LINE

IMPACTED AREA
WETLAND E
0.046 AC.

350 L.F. 10' WIDE
ACCESS ROAD
RELOCATION

WATERCOURSE D
DO NOT DISTURB

600 L.F. 6" PERF.
HDPE @ 0.20%

MATCH BERM TO
CUT SLOPE @
ELEV. 1229.65

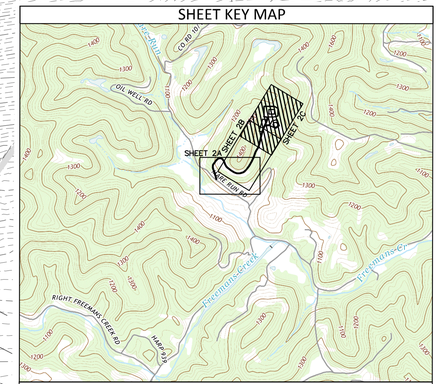
WETLAND C
0.069 AC.

SUZANNE LYNN & JAMES M. EVANS
21-03-006C-0004-0000
308.1376 AC

LEGEND

- ROCK CHECK DAM
- RIPRAP APRON
- ACCESS ROAD/PAD CHANNEL
- CFS — CFS — COMPOST FILTER SOCK 8" UNLESS OTHERWISE NOTED
- 3CFS — 3CFS — STACKED COMPOST FILTER SOCK 8"
- APPROXIMATE LIMITS OF DISTURBANCE
- APPROXIMATE PROPERTY LINE
- EXISTING INDEX CONTOUR
- EXISTING INTERMEDIATE CONTOUR
- PROPOSED SUBBASE INDEX CONTOUR
- PROPOSED SUBBASE INTERMEDIATE CONTOUR
- EXISTING ACCESS ROAD
- EXISTING OVERHEAD UTILITY LINE
- G — EXISTING GAS LINE
- W — EXISTING WATER LINE
- DELINEATED WATERCOURSE
- X — X — CONSTRUCTION FENCE
- SECTION
- TOE BENCH (SEE FILL BENCH DETAIL)
- EROSION CONTROL BLANKET
- EXISTING WETLAND

SHEET KEY MAP



SCALE – FEET
0 2000 4000

REFERENCE:
USGS 7.5-MIN TOPOGRAPHIC QUADRANGLE
CAMDEN, WV DATED 2019

WEST VIRGINIA GENERAL NOTES:

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2. REFERENCE THIS SHEET WITH THE CONSTRUCTION NOTES AND DETAILS.
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NORTH

MATTHEW E. PHILLIPS
REGISTERED
20458
STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER
1-7-2021

SCALE – FEET
0 60 120 180

SITE DEVELOPMENT PLAN
WITH EROSION AND SEDIMENTATION CONTROLS
HG 1213 PAD
FREEMANS CREEK DISTRICT
LEWIS COUNTY, WEST VIRGINIA

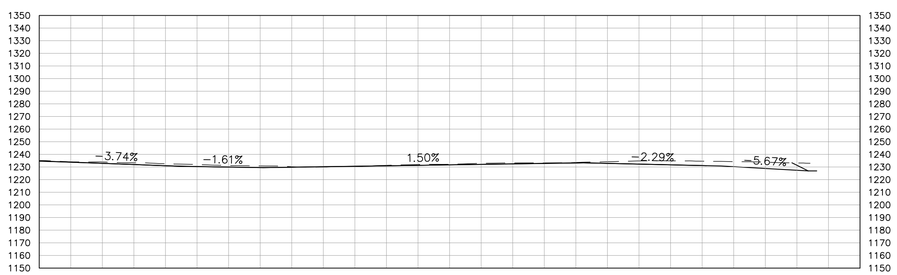
PREPARED FOR

HG ENERGY II APPALACHIA, LLC
PARKERSBURG, WEST VIRGINIA

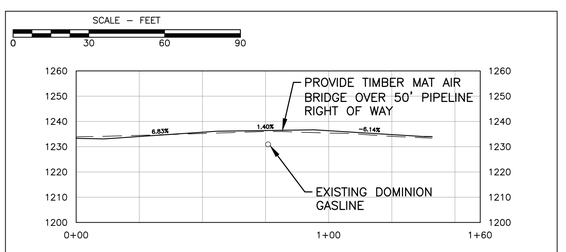
APPROVED	MEP	09/04/2020
CHECKED	CAC	09/03/2020
DRAWN	SMH	09/03/2020
PROJECT No.	4000–PA008130	

DRAWING NUMBER
PA008130–001
SHEET 2D

Penn E&R
Environmental & Remediation, Inc.
111 RYAN COURT, PITTSBURGH, PA 15205;
412–722–1222



22' WIDE PAD 1213 ACCESS ROAD



22' WIDE AST PAD ACCESS ROAD

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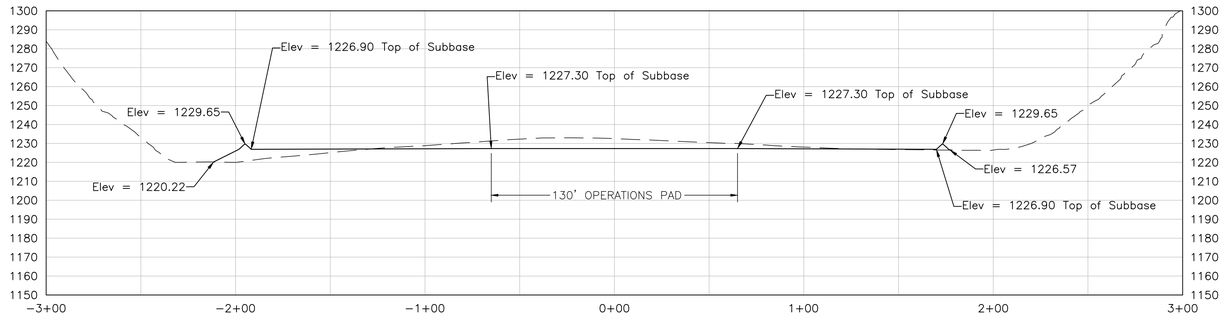
APPROVED
WVDEP OOG
MODIFICATION
3/4/2021



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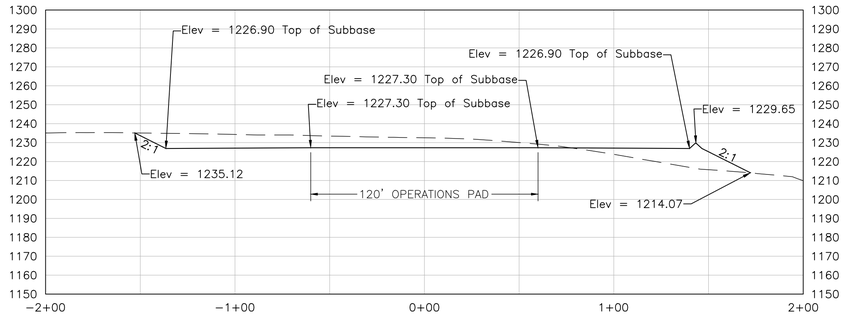

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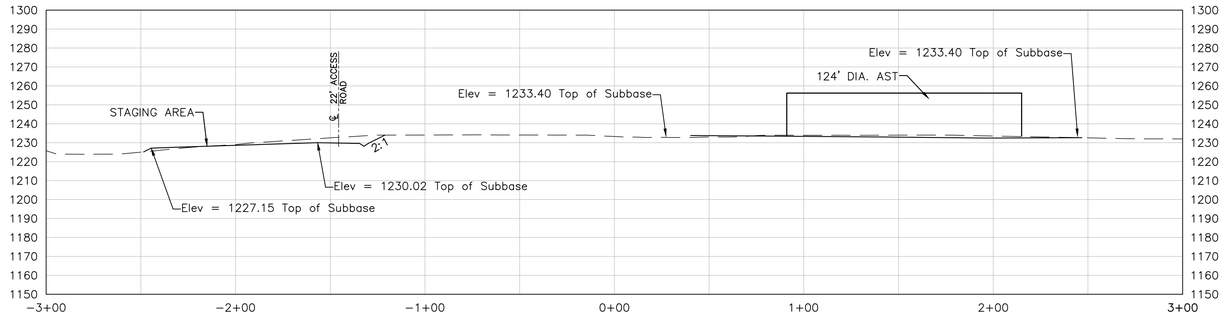


SECTION C-C

LEGEND

EXISTING GRADE

PROPOSED GRADE

REVISION	DATE	DESCRIPTION
1	2020-09-29	REVISED PER CLIENT COMMENTS
2	2020-11-20	REVISED PER WVDEP COMMENTS
3	2021-01-18	REVISED PER CLIENT COMMENTS

MATTHEW E. PRINCE
REGISTERED
20458
STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER
1-7-2021

WELL PAD AND AST PAD SECTIONS

HG 1213 PAD
FREEMANS CREEK DISTRICT
LEWIS COUNTY, WEST VIRGINIA

PREPARED FOR
HG ENERGY II APPALACHIA, LLC
PARKERSBURG, WEST VIRGINIA

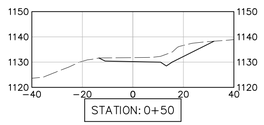
APPROVED	MEP	09/04/2020
CHECKED	CAC	09/03/2020
DRAWN	SMH	09/03/2020
PROJECT No.	4000-PA008130	

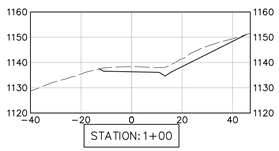
DRAWING NUMBER
PA008130-001
SHEET 3

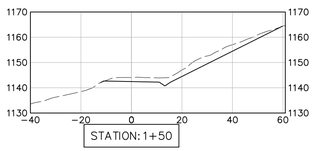
Penn E&R
Environmental & Remediation, Inc.
111 RYAN COURT, PITTSBURGH, PA 15205;
412-722-1222

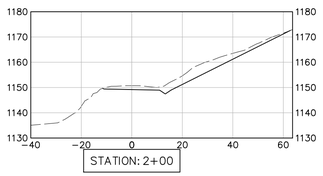
C:\PROJECT FILES\4000-PA008130 HG 1213\DRAWINGS\DTI WEST SGG TAP & 1213 SIX WELLS - PLANS - REV 3- 1-22-21.DWG,1/25/2021 4:01 PM

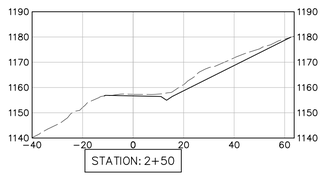
APPROVED
WVDEP OOG
MODIFICATION
3/4/2021

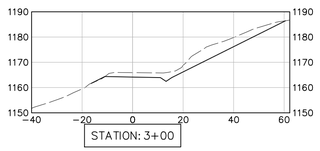


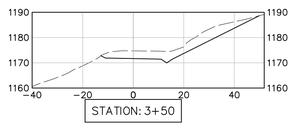


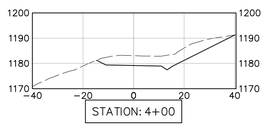


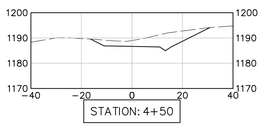


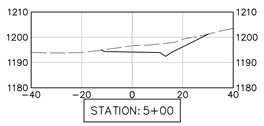


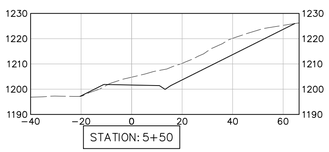


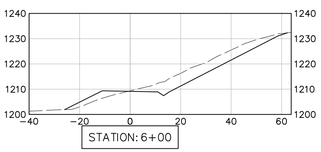


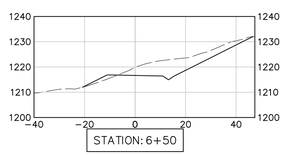


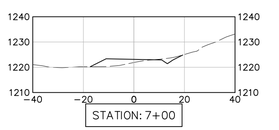


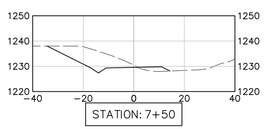


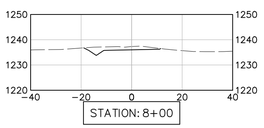


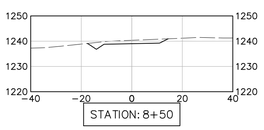


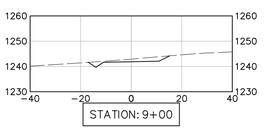


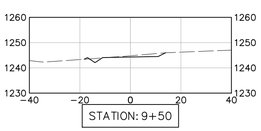


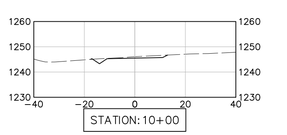


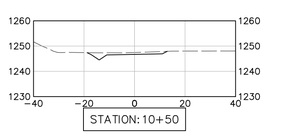


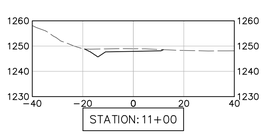


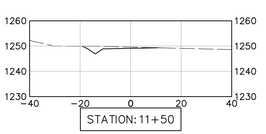


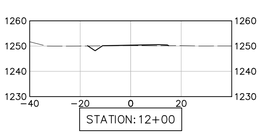


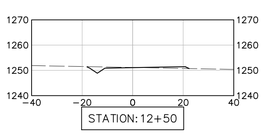


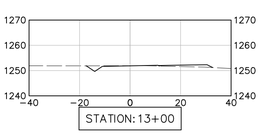


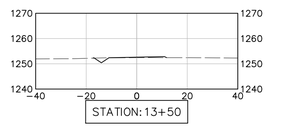


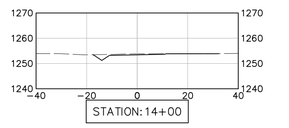


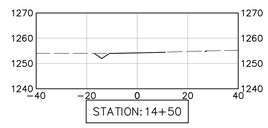


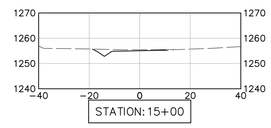


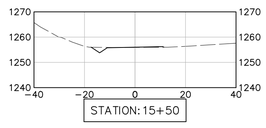


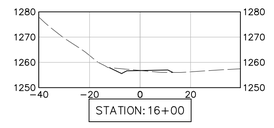


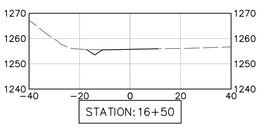


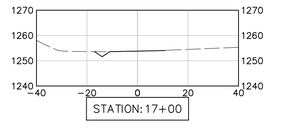


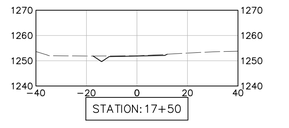


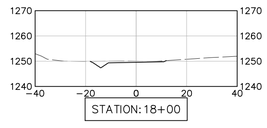


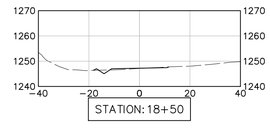


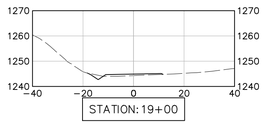


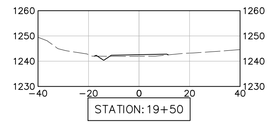


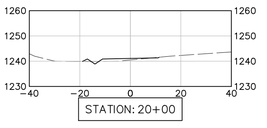












LEGEND

EXISTING GRADE

PROPOSED GRADE

REVISION	DATE	DESCRIPTION
1	2020-09-29	REVISED PER CLIENT COMMENTS
2	2020-11-20	REVISED PER WVDEP COMMENTS
3	2021-01-18	REVISED PER CLIENT COMMENTS

NORTH

MATTHEW E. PHEGLEY
REGISTERED
20458
STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER
1-25-2021

SCALE – FEET

0 30 60 90

ACCESS ROAD SECTIONS

HG 1213 PAD
FREEMANS CREEK DISTRICT
LEWIS COUNTY, WEST VIRGINIA

PREPARED FOR

HG ENERGY II APPALACHIA, LLC
PARKERSBURG, WEST VIRGINIA

APPROVED	MEP	09/04/2020
CHECKED	CAC	09/03/2020
DRAWN	SMH	09/03/2020
PROJECT No.	4000-PA008130	

DRAWING NUMBER
PA008130-001
SHEET 4A

Penn E&R
Environmental & Remediation, Inc.
111 RYAN COURT, PITTSBURGH, PA 15205;
412-722-1222

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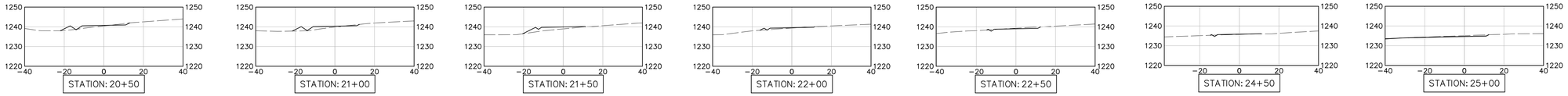
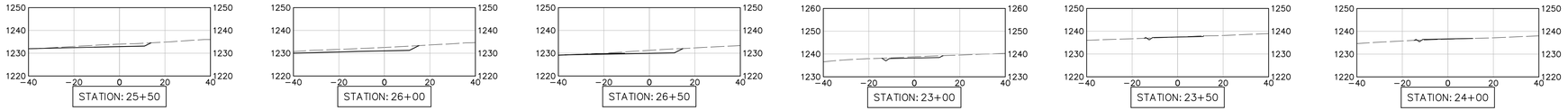
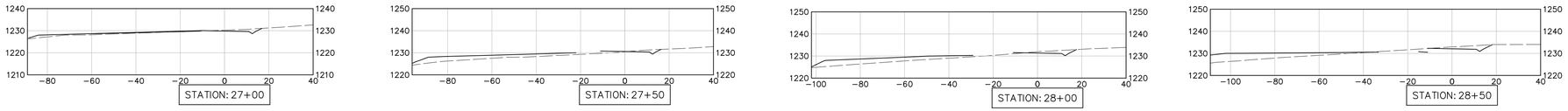
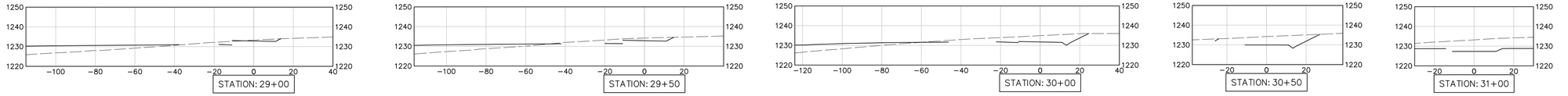
APPROVED
WVDEP OOG
MODIFICATION
3/4/2021









LEGEND

EXISTING GRADE

PROPOSED GRADE

REVISION	DATE	DESCRIPTION
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NORTH

MATHEW E. PRIDE
REGISTERED
20458
STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER
1-4-2021

SCALE – FEET

0 50 100 150

ACCESS ROAD SECTIONS

HG 1213 PAD
FREEMANS CREEK DISTRICT
LEWIS COUNTY, WEST VIRGINIA

PREPARED FOR

HG ENERGY II APPALACHIA, LLC
PARKERSBURG, WEST VIRGINIA

APPROVED	MEP	09/04/2020
CHECKED	CAC	09/03/2020
DRAWN	SMH	09/03/2020
PROJECT No.	4000-PA008130	

DRAWING NUMBER
PA008130-001
SHEET 4B

Penn E&R
Environmental & Remediation, Inc.
111 RYAN COURT, PITTSBURGH, PA 15205;
412-722-1222

BEST MANAGEMENT PRACTICES (BMPs)

1. The Best Management Practices listed in this plan shall be installed and maintained in accordance with the West Virginia Office of Oil and Gas Erosion and Sediment Control Field Manual (Manual), as amended and updated. The BMPs contained in this plan shall be installed as shown (or indicated) prior to earth disturbance (including clearing and grubbing) within the drainage area of the BMP in question. Appropriate BMPs shall be provided for each stage of activity (including, but not necessarily limited to, access road construction and maintenance, drilling pad, frac ponds, & pipelines). Each BMP shall be kept functional until all earth disturbances within the drainage area are completed and a minimum vegetative cover (uniform 70% coverage of perennial vegetation over the entire disturbed area) has been achieved or other suitable permanent erosion protection has been installed.
2. All erosion control and stormwater BMPs will be installed and maintained as specified in this plan.
3. All unnecessary disturbed areas will be regraded, smoothed, limed, fertilized, seeded and mulched as specified in this plan.
4. All woody material, brush, and trees shall be cleared from the site area and kept to the minimum necessary for proper construction, including the installation of necessary sediment controls. Trees six inches in diameter and larger shall be cut and logs stacked.
5. Topsoil shall be removed from construction areas and stockpiled for reuse during reclamation. In woodland areas, tree stumps, large roots, large rocks, tree and leaf debris, and ground vegetation shall be removed prior to actual site construction.
6. No embankment fill shall be placed on frozen material.
7. The fill material shall be clean mineral soil, free of roots, woody vegetation, stumps, sod, large rocks, frozen soil or other objectionable material.
8. Embankment material shall exhibit adequate soil strength and contain the proper amount of moisture to ensure that compaction will be achieved.
9. Earthen fill slopes should be constructed with slopes no steeper than a ratio of 2:1.
10. Fill material will be placed in lifts or layers over the length of the fill. Lift thickness of the soil shall be as thin as the suitable random excavated material will permit, typically from 6–12 inches. Maximum fill particle size shall be no larger than 6 inches.
11. The size of rock lifts shall not exceed 36 inches. The rock shall not be greater in any dimension than 6 inches.
12. Compaction shall be obtained by compaction equipment, sheep's foot or pad roller, with compaction to visible non–movement of the embankment material. Compaction effort shall not exceed optimum moisture limits. Each lift shall be compacted to a standard proctor density of at least 95% before beginning the next lift. QC testing shall be performed at a rate of 2 tests/acre/lift.
13. In areas of steep terrain, a terraced bench shall be constructed at the base of the slope where fill is to be placed, creating a toe foundation and aid in holding fill material. Additional terracing shall be constructed for each additional 50 vertical feet of slope and shall be a minimum of 10 feet wide.
14. Cross–drain culverts shall be located approximately 30 degrees downgrade with a minimum size diameter of 12 inches. Culverts shall have a minimum of 12 inches of soil cover or 1/2 the pipe diameter, whichever is greater. Outlet protection shall be used to prevent erosion from the discharge.
15. Rock Check Dams shall be used to reduce the velocity of storm water flows, thereby reducing erosion of the channel and trapping sediment. If applicable, refer to the drawing for orientation of stone and a cross–sectional view of the measure. An effort should be made to extend the stone to the top of channel banks.The maximum height of the dam should be 3.0 feet.The center of the check dam must be at least 6 inches lower than the outer edges.
16. Silt fences should be placed on the contour. Fence posts shall not be spaced greater than 10 feet apart. If woven wire fence is used, it shall be fastened securely on the upstream side of the fence posts. Filter cloth, when used, shall be secured on the upstream side of the fence posts and anchored at the bottom. The filter cloth shall be embedded in the soil at least 4 inches and the soil compacted around it. Silt fences are not for concentrated flows. In areas where concentrated flows can be expected, use armored diversions. In ditches or swales rock check dams should be used.
17. Well access roads that intersect public roads must have installed gravel or other aggregates for at least 200 feet from the public road to keep mud off the highway. The construction entrance shall be constantly maintained to ensure it functions to effectively remove mud from tires and keep it off the public road.
18. The minimum road width will be 10 feet for a single lane and 20 feet for double lane access road.
19. Collection channels, diversion channels, and conveyance channels shall be no steeper than 2:1, when excavated in soil. The channels shall have a V–shape with a minimum depth of 1 foot. Ditch stabilizing measures can be seeding and mulching, rock ditch check dams, and lining with stone or fabric, etc., depending upon ditch grade and expected velocity. Ditch outlets shall have erosion and sediment control structures.
20. Erosion control blanketing (either rolled or sprayed) shall be installed or applied for all slopes 3H:1V or steeper, within 50 feet of a surface water, or where soil conditions indicate blanketing is needed to achieve the required vegetative cover.

CONSTRUCTION SEQUENCE

1. Prior to commencement of any earth disturbance activity including clearing and grubbing, the registrant shall call West Virginia 811 by dialing 811 or 1–800–245–4848 to identify all utility lines. The registrant also must clearly delineate sensitive areas, riparian forest buffer boundaries, the limits of clearing, and trees that are to be conserved within the project site, and shall install appropriate barriers where equipment may not be parked, staged, operated or located for any purpose.
2. Site access – The Contractor shall provide BMPs to minimize accelerated erosion and sedimentation from the following areas: entrance to the site, construction routes, and areas designated for equipment or other use at the site including parking, stockpiles.
3. Sediment Barriers – Install perimeter BMPs after the construction site is accessed, keeping associated clearing and grubbing limited to only that amount required for installing perimeter BMPs.
4. Land Clearing and Grading – Implement clearing and grading only after all downslope E&S BMPs have been constructed and stabilized.
5. Surface Stabilization – Apply temporary or permanent stabilization measures immediately to any disturbed areas where work has reached final grade, has been delayed or otherwise temporarily suspended.
6. Construction of Buildings, Utilities, and Paving – During construction, install and maintain any additional erosion and sediment control BMPs, and implement any structural post construction stormwater BMPs that may be required.
7. Final Stabilization, Topsoiling, Trees and Shrubs – After construction is completed, install stabilization BMPs including: permanent seeding, mulching and riprap, and complete implementation of stormwater BMPs in this last construction phase. Stabilize all open areas, including borrow and spoil areas, and remove all temporary BMPs and stabilize any disturbances associated with the removal of the BMP.

SEDIMENT AND WASTE DISPOSAL

1. No waste or similar materials will be disposed, buried, dumped, or discharged at the site unless it is done in accordance with federal and state laws and regulations. Materials will be addressed as specified in HG Energy's Preparedness, Prevention and Contingency (PPC) Plan.
2. Liners to be removed from the site shall be legally removed, transported, and disposed of off–site at a licensed facility.
3. Accumulated sediment shall remain on site and returned to the existing topsoil stockpile.
4. Garbage, fuels, or any substance harmful to human, aquatic or fish life, will be prevented from entering springs, streams, ponds, lakes, wetlands, or any water course or water body.
5. Oils, fuels, lubricants and coolants will be placed in suitable containers and disposed properly.
6. All trash and garbage will be collected and disposed properly.

PLAN MODIFICATIONS

1. Minor modifications to the E & S Plan and Site Restoration Plan shall be noted on the plan that is available at the site and initialed by the appropriate Department staff. Minor changes to the plan may include adjustments to BMPs and locations within the permitted boundary to improve environmental performance, prevent potential pollution, change in ownership or address, typographical errors and on–site field adjustments such as the addition or deletion of BMPs, or alteration of earth disturbance activities to address unforeseen circumstances.
2. Major modifications to the approved E & S Plan involving new or additional earth disturbance activity other than those described as minor modifications above, and/or the addition of a discharge will require prior approval by the reviewing entity and may require the submittal of a new plan.

MAINTENANCE

1. BMPs will be inspected at least once every seven calendar days for actively disturbed areas, 14 calendar days for restored areas and within 24 hours after any storm event greater than 0.5 inches of rain per 24 hour period.
2. Culverts will be cleaned out, repaired or replaced as necessary.
3. Silt fence will be maintained and cleaned out, if applicable.
4. Earth disturbance areas will be repaired where signs of accelerated erosion are detected.
5. Seeding and mulching will be repeated in those areas that appear to be failing or have failed.

APPROVED
WVDEP OOG
MODIFICATION
3/4/2021

REVISION	DATE	DESCRIPTION
1	2020–09–29	REVISED PER CLIENT COMMENTS
2	2020–11–20	REVISED PER WVDEP COMMENTS
3	2021–01–18	REVISED PER CLIENT COMMENTS

MATTHEW E. PERRY
REGISTERED
20458
STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER
1-14-2021

CONSTRUCTION NOTES

HG 1213 PAD
FREEMANS CREEK DISTRICT
LEWIS COUNTY, WEST VIRGINIA

PREPARED FOR
HG ENERGY II APPALACHIA, LLC
PARKERSBURG, WEST VIRGINIA

APPROVED	MEP 09/04/2020
CHECKED	CAC 09/03/2020
DRAWN	SMH 09/03/2020
PROJECT No.	4000–PA008130

DRAWING NUMBER
PA008130–001
SHEET 5A

Penn E&R
Environmental & Remediation, Inc.
111 RYAN COURT, PITTSBURGH, PA 15205;
412–722–1222

TOPSOIL SPECIFICATIONS:

1. SITE PREPARATION – BEFORE SPREADING TOPSOIL, ASSURE THAT ALL NECESSARY EROSION AND SEDIMENT CONTROL PRACTICES SUCH AS DIVERSIONS, BERMS, DIKES, WATERWAYS, AND SEDIMENT BASINS ARE IN PLACE AND FUNCTIONING PROPERLY. THESE PRACTICES MUST BE MAINTAINED UNTIL THE SITE IS PERMANENTLY STABILIZED.

2. GRADING – MAINTAIN GRADES ON THE AREAS TO BE TOPSOILED ACCORDING TO THE APPROVED PLAN AND DO NOT ALTER THEM BY ADDING TOPSOIL.

3. LIMING OF SUBSOIL – WHERE THE pH OF THE EXISTING SUBSOIL IS 6.0 OR LESS, OR THE SOIL IS COMPOSED OF HEAVY CLAYS, INCORPORATE AGRICULTURAL LIMESTONE IN AMOUNTS RECOMMENDED BY SOIL TESTS OR SPECIFIED FOR THE SEEDING MIXTURE TO BE USED. INCORPORATE LIME TO A DEPTH OF AT LEAST 2 INCHES BY DISKING.

4. ROUGHENING – IMMEDIATELY PRIOR TO SPREADING THE TOPSOIL, LOOSEN THE SUBGRADE BY DISKING OR SCARIFYING TO A DEPTH OF AT LEAST 4 INCHES, TO ENSURE BONDING OF THE TOPSOIL AND SUBSOIL. IF NO AMENDMENTS HAVE BEEN INCORPORATED, LOOSEN THE SOIL TO A DEPTH OF AT LEAST 6 INCHES BEFORE SPREADING THE TOPSOIL.

5. SPREADING TOPSOIL – UNIFORMLY DISTRIBUTE TOPSOIL TO A MINIMUM COMPACTED DEPTH OF 2 INCHES ON 3:1 SLOPES OR STEEPER AND 4 INCHES ON FLATTER SLOPES.

6. TOPSOIL SHALL NOT BE SPREAD WHILE IT IS FROZEN OR SATURATED OR WHEN THE SUBSOIL IS FROZEN OR SATURATED.

7. IRREGULARITIES IN THE SURFACE THAT RESULT FROM TOPSOILING OR OTHER OPERATIONS SHALL BE CORRECTED TO PREVENT THE FORMATION OF DEPRESSIONS OR PONDING OF WATER.

8. COMPACT THE TOPSOIL ENOUGH TO ENSURE GOOD CONTACT WITH THE UNDERLYING SOIL, BUT AVOID EXCESSIVE COMPACTION, AS IT INCREASES RUNOFF AND INHIBITS SEED GERMINATION AND SEEDLING GROWTH. LIGHT PACKING WITH A ROLLER IS RECOMMENDED WHERE HIGH-MAINTENANCE TURF IS TO BE ESTABLISHED.

REVEGETATION SPECIFICATIONS:

A. GENERAL

1. OBJECTIVES: THIS SECTION PROVIDES PLANNING AND ESTABLISHMENT OF TEMPORARY AND PERMANENT VEGETATIVE COVER ON ALL DISTURBED AREAS. THE OBJECTIVE IS TO PROVIDE SUFFICIENT VEGETATION TO CONTROL EROSION AND SEDIMENTATION ON AND OFF THE SITE. A VEGETATIVE COVER OF 70% OR GREATER WOULD GENERALLY MEET THIS REQUIREMENT. CONSIDERATIONS FOR THE IMPROVEMENT OF WATER QUALITY AND WILDLIFE HABITAT ARE INCORPORATED INTO THIS SECTION. WITH PRIOR AND DOCUMENTED APPROVAL, THESE STANDARDS MAY BE ADJUSTED AND MODIFIED TO MEET INDIVIDUAL SITE REQUIREMENTS.
2. ACREAGE CALCULATION: APPLICATION RATES LISTED IN THIS SECTION ARE ON A "PER ACRE" BASIS. TO CALCULATE ACREAGE, THE PLANNER MUST MEASURE THE AVERAGE LENGTH AND WIDTH (IN FEET) OF EACH AREA TO BE TREATED. ACREAGE IS DETERMINED BY MULTIPLYING THE LENGTH BY THE WIDTH, THEN DIVIDING THE TOTAL BY 43,560. EXAMPLE: 430 FEET LONG X 310 FEET WIDE=133,300 SQ. FT. THEN: 133,300 DIVIDED BY 43,560 = 3.06 ACRES.
3. STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN SEVEN DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS PERMANENTLY CEASED.

   WHERE THE INITIATION OF STABILIZATION MEASURES BY THE SEVENTH DAY AFTER CONSTRUCTION ACTIVITY TEMPORARILY OR PERMANENTLY CEASES IS PRECLUDED BY SNOW COVER, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS CONDITIONS ALLOW.

   WHERE CONSTRUCTION ACTIVITY WILL RESUME ON A PORTION OF THE SITE WITHIN 21 DAYS FROM WHEN ACTIVITIES CEASED, (E.G., THE TOTAL TIME PERIOD THAT CONSTRUCTION ACTIVITY IS TEMPORARILY HALTED IS LESS THAN 21 DAYS) THEN STABILIZATION MEASURES DO NOT HAVE TO BE INITIATED ON THAT PORTION OF THE SITE BY THE SEVENTH DAY AFTER CONSTRUCTION ACTIVITIES HAVE TEMPORARILY CEASED.

   AREAS WHERE THE SEED HAS FAILED TO GERMINATE ADEQUATELY (UNIFORM PERENNIAL VEGETATIVE COVER WITH A DENSITY OF 70%) WITHIN 30 DAYS AFTER SEEDING AND MULCHING MUST BE RESEEDED IMMEDIATELY, OR AS SOON AS WEATHER CONDITIONS ALLOW.

B. SITE PREPARATION

1. WATER CONTROL: INSTALL NEEDED SURFACE WATER CONTROL MEASURES, DIVERSION DITCHES, WATER BARS, SEDIMENT CONTROLS (SEE SECTION II, CONSTRUCTION, FOR GUIDANCE).
2. SEEDBED PREPARATION:

   THE SEEDBED MUST BE LOOSE AT THE TIME OF SEEDING. APPLICATIONS OF SEED ON HARD GROUND WILL RESULT IN A POOR STAND OF VEGETATION. THE SOIL SURFACE MUST BE LOOSENED (MINIMUM OF 3 INCHES) BY DISKING ON THE CONTOUR, OR BY BULLDOZER TRACKING UP AND DOWN THE SLOPE. BACKBLADING IS ACCEPTABLE ON GENTLE SLOPES SUCH AS THE BENCH OR ROAD BED. IF SEEDBED PREPARATION IS NOT FEASIBLE, 50% MORE SEED SHALL BE ADDED TO THE RECOMMENDED RATES SHOWN IN TABLES 3–4. WHEN HYDROSEEDING, SEEDBED PREPARATION MAY NOT BE NECESSARY IF ADEQUATE SITE PREPARATION WAS PERFORMED. APPLY ALL NUTRIENT REQUIREMENTS IMMEDIATELY PRIOR TO SEEDING. SOIL FERTILITY AND PH LEVEL SHOULD BE TESTED AND ADJUSTED ACCORDING TO SEED SPECIES PLANTED. WHERE SAMPLING IS IMPRACTICAL OR NOT FEASIBLE, AN ALL-INCLUSIVE FERTILIZER RECOMMENDATION MAY BE USED AS SHOWN IN TABLE 1. APPLY LIME TO BRING SOIL PH TO A RANGE SUITABLE (PH 6.0) FOR THE PLANNED SPECIES. IN ABSENCE OF A SOILS TEST, 3 TONS/ACRE OF LIME MAY BE APPLIED (150 LBS./1000 SQ. FT.). INCORPORATE THE APPROPRIATE AMOUNT OF LIME AND/OR FERTILIZER IN THE SLURRY MIX WHEN HYDROSEEDING.

C. SEEDING

1. TEMPORARY SEEDING

   a. STABILIZATION SHALL BE INITIATED AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN SEVEN DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE PERMANENTLY CEASED.

   i. WHERE THE INITIATION OF STABILIZATION MEASURES BY THE SEVENTH DAY AFTER CONSTRUCTION ACTIVITY TEMPORARILY OR PERMANENTLY CEASES IS PRECLUDED BY NATURAL CAUSES, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS CONDITIONS ALLOW.

   ii. WHERE CONSTRUCTION ACTIVITY WILL RESUME ON A PORTION OF THE SITE WITHIN 14 DAYS FROM WHEN ACTIVITIES CEASED, (e.g., THE TOTAL TIME PERIOD THAT CONSTRUCTION ACTIVITY IS TEMPORARILY HALTED IS LESS THAN 14 DAYS) THEN STABILIZATION MEASURES DO NOT HAVE TO BE INITIATED ON THAT PORTION OF THE SITE BY THE SEVENTH DAY AFTER CONSTRUCTION ACTIVITIES HAVE TEMPORARILY CEASED.

   iii. AREAS WHERE THE SEED HAS FAILED TO GERMINATE ADEQUATELY (UNIFORM PERENNIAL VEGETATIVE COVER WITH A DENSITY OF 70%) WITHIN 30 DAYS AFTER SEEDING AND MULCHING MUST BE RESEEDED IMMEDIATELY, OR AS SOON AS WEATHER CONDITIONS ALLOW.

   b. SEED MIXTURES AND PLANTING DATES: REFER TO TABLES 2–4 FOR RECOMMENDED DATES TO ESTABLISH VEGETATIVE COVER AND THE APPROVED LISTS OF TEMPORARY AND PERMANENT PLANT SPECIES, AND PLANTING RATES. TABLE 3 GIVES RECOMMENDED TYPES OF TEMPORARY VEGETATION, RATES OF APPLICATION, AND OPTIMUM SEEDING DATES. IN SITUATIONS WHERE ANOTHER COVER IS DESIRED CONTACT THE LOCAL SOIL CONSERVATION DISTRICT FOR SEEDING RECOMMENDATIONS.

   c. SEED APPLICATION: APPLY SEED BY BROADCASTING, DRILLING, OR BY HYDROSEEDING ACCORDING TO THE RATES INDICATED IN TABLE IV–3. PERFORM ALL PLANTING OPERATIONS AT RIGHT ANGLES TO THE SLOPE. NECESSARY SITE PREPARATION, ROUGHENING OF THE SOIL SURFACE, SHOULD BE DONE JUST PRIOR TO SEEDING. SEEDBED PREPARATION MAY NOT BE REQUIRED ON NEWLY DISTURBED AREAS.

2. PERMANENT SEEDING

   a. GENERAL:

   PERMANENT VEGETATIVE COVER WILL BE ESTABLISHED WHERE NO FURTHER SOIL DISTURBANCE IS ANTICIPATED OR NEEDED. SOIL FERTILITY AND pH LEVEL SHOULD BE TESTED AND ADJUSTED ACCORDING TO SEED SPECIES PLANTED. PLANTING OF PERMANENT VEGETATIVE COVERS MUST BE PERFORMED ON ALL DISTURBED AREAS AFTER THE COMPLETION OF THE DRILLING PROCESS. ANY SITE THAT CONTAINS SIGNIFICANT AMOUNTS OF TOPSOIL SHALL HAVE THE TOPSOIL REMOVED AND STOCKPILED WHEN FEASIBLE. TOPSOIL SHOULD NOT BE ADDED TO SLOPES STEEPER THAN 2:1 UNLESS A GOOD BONDING TO THE SUB-LAYER CAN BE ACHIEVED. AFTER PROPER GRADING AND SEEDBED PREPARATION, THE VEGETATION WILL REESTABLISH GROUND COVER FOR THE CONTROL OF SURFACE WATER RUNOFF AND EROSION.

   ALL REQUIRED SEEDBED PREPARATION, LOOSENING OF SOIL BY DISKING OR DOZER TRACKING, SHOULD BE PERFORMED JUST PRIOR TO SEEDING. IF SEEDBED PREPARATION IS NOT FEASIBLE, 50% MORE SEED SHALL BE ADDED TO THE RECOMMENDED RATES SHOWN IN TABLES IV 3–4.

   WHEN HYDROSEEDING, SEEDBED PREPARATION MAY NOT BE NECESSARY IF ADEQUATE SITE PREPARATION WAS PERFORMED. INCORPORATE THE APPROPRIATE AMOUNT OF LIME AND/OR FERTILIZER IN THE SLURRY MIX WHEN HYDROSEEDING.

   WHEN HYDROSEEDING , FIRST MIX THE LIME, FERTILIZER, AND HYDRO-MULCH IN THE RECOMMENDED AMOUNT OF WATER. MIX THE SEED AND INOCULATE TOGETHER WITHIN ONE HOUR PRIOR TO PLANTING, AND ADD TO THE SLURRY JUST BEFORE SEEDING. APPLY THE SLURRY UNIFORMLY OVER THE PREPARED SITE. ASSURE THAT AGITATION IS CONTINUOUS THROUGHOUT THE SEEDING OPERATION AND THAT THE MIX IS APPLIED WITHIN ONE HOUR OF INITIAL MIXING.

   b. LIME AND FERTILIZER

   i. LIME SHALL BE APPLIED TO ALL PERMANENT SEEDINGS. THE pH OF THE SOIL IS TO BE DETERMINED AND LIME APPLIED ACCORDINGLY. ONCE THE pH IS KNOWN, SELECT THE AMOUNT OF LIME TO BE APPLIED FROM TABLE IV–5.

   ii. FERTILIZER SHALL BE APPLIED IN ALL PERMANENT SEEDINGS. APPLY THE EQUIVALENT OF 500LBS. MINIMUM 10–20–20 FERTILIZER PER ACRE OR USE THE AMOUNT OF FERTILIZER AND LIME RECOMMENDED BY A CERTIFIED SOIL TEST.

   iii. APPLICATION: FOR BEST RESULTS AND MAXIMUM BENEFITS THE LIME AND FERTILIZER ARE TO BE APPLIED AT THE TIME OF SEEDBED PREPARATION.

   c. PERMANENT SEED MIXTURES

   i. PLANNERS SHOULD TAKE INTO CONSIDERATION THE SPECIES MAKEUP OF THE EXISTING PASTURE AND THE LANDOWNER'S FUTURE PASTURE MANAGEMENT PLANS WHEN RECOMMENDING SEED MIXTURES. SELECTION: FROM TABLES IV 4A AND B. PERMANENT SEEDING MIXTURES SUITABLE FOR ESTABLISHMENT IN WEST VIRGINIA.

   ii. ALL LEGUMES MUST BE PLANTED WITH THE PROPER INOCULATE PRIOR TO SEEDING.

   iii. 'LATHCO' FLATPEA IS POTENTIALLY POISONOUS TO SOME LIVESTOCK.

   iv. ONLY ENDOPHYTE FREE VARIETIES OF TALL FESCUE SHOULD BE USED. TALL FESCUE AND CROWNVETCH ARE ALSO A VERY INVASIVE SPECIES NON-NATIVE TO WV.

   v. FOR UNPREPARED SEEDBEDS OR SEEDING OUTSIDE THE OPTIMUM TIMEFRAMES, ADD 50% MORE SEED TO THE SPECIFIED RATE. MIXTURES IN TABLE 4B ARE MORE WILDLIFE AND FARM FRIENDLY; THOSE LISTED IN BOLD ARE SUITABLE FOR USE IN SHADED WOODLAND SETTINGS. MIXTURES IN ITALICS ARE SUITABLE FOR USE IN FILTER STRIPS.

   d. SEEDING FOR WILDLIFE HABITAT: CONSIDER THE USE OF NATIVE PLANTS OR LOCALLY ADAPTED PLANTS WHEN SELECTING COVER TYPES AND SPECIES FOR WILDLIFE HABITAT. WILDLIFE FRIENDLY SPECIES OR MIXES THAT HAVE MULTIPLE VALUES SHOULD BE CONSIDERED. SEE WILDLIFE FRIENDLY SPECIES/MIXTURES IN TABLE IV–4B. CONSIDER SELECTING NO OR LOW MAINTENANCE LIN-LIVED PLANTS ADAPTABLE TO SITES WHICH MAY BE DIFFICULT TO MAINTAIN WITH EQUIPMENT.

D. MULCHING

1. GENERAL ORGANIC MULCHES

   THE APPLICATION OF STRAW, HAY OR OTHER SUITABLE MATERIALS TO THE SOIL SURFACE TO PREVENT EROSION. STRAW MADE FROM WHEAT OR OATS IS THE PREFERRED MULCH, THE USE OF HAY IS PERMISSIBLE, BUT NOT ENCOURAGED DUE TO THE RISK OF SPREADING INVASIVE SPECIES. MULCH MUST BE APPLIED TO ALL TEMPORARY AND PERMANENT SEEDING ON ALL DISTURBED AREAS. DEPENDING ON SITE CONDITIONS, IN CRITICAL AREAS SUCH AS WATERWAYS, OR STEEP SLOPES, ADDITIONAL OR SUBSTITUTE SOIL PROTECTIVE MEASURES MAY BE USED IF DEEMED NECESSARY. EXAMPLES INCLUDE JUTE MESH, AND SOIL STABILIZATION BLANKETS OR EROSION CONTROL MATTING.

   AREAS THAT HAVE BEEN TEMPORARILY OR PERMANENTLY SEEDED SHOULD BE MULCHED IMMEDIATELY FOLLOWING SEEDING. MULCHES CONSERVE DESIRABLE SOIL PROPERTIES, REDUCE SOIL MOISTURE LOSS, PREVENT CRUSTING AND SEALING OF THE SOIL SURFACE AND PROVIDE A SUITABLE MICROCLIMATE FOR SEED GERMINATION.

   AREAS THAT CANNOT BE SEEDED BECAUSE OF THE SEASON SHOULD BE MULCHED TO PROVIDE SOME PROTECTION TO THE SOIL SURFACE. AN ORGANIC MULCH, STRAW OR HAY, SHOULD BE USED AND THE AREA THEN SEEDED AS SOON AS WEATHER OR SEASONAL CONDITIONS PERMIT. DO NOT USE FIBER MULCH (CELLULOSE–HYDROSEED) ALONE FOR THIS PRACTICE; AT NORMAL APPLICATION RATES IT WILL NOT GIVE THE SOIL PROTECTION OF OTHER TYPES OF MULCH.

   WOOD CELLULOSE FIBER MULCH, IS USED IN HYDROSEEDING OPERATIONS AND APPLIED AS PART OF THE SLURRY, IT CREATES THE BEST SEE-SOIL CONTACT WHEN APPLIED OVER TOP OF (AS A SEPARATE OPERATION) NEWLY SEEDED AREAS. FIBER MULCH DOES NO ALONE PROVIDE SUFFICIENT PROTECTION ON HIGHLY ERODIBLE SOILS, OR DURING LESS THAN FAVORABLE GROWING CONDITIONS. FIBER MULCH SHOULD NOT BE USED ALONE DURING THE DRY SUMMER MONTHS OR WHEN USED FOR LATE FALL MULCH COVER. USE STRAW MULCH DURING THESE PERIODS, AND FIBER MULCH MAY BE USED TO TACK (ANCHOR) THE STRAW MULCH. FIBER MULCH IS WELL SUITED FOR STEEP SLOPES, CRITICAL AREAS, AND AREAS SUSCEPTIBLE TO WIND.

2. CHEMICAL MULCHES, SOIL BINDERS AND TACKIFIERS:

   A WIDE RANGE OF SYNTHETIC, SPRAY-ON MATERIALS IS MARKETED TO STABILIZE AND PROTECT THE SOIL SURFACE. THESE ARE MIXED WITH WATER AND SPRAYED OVER THE MULCH AND TO THE SOIL. THEY MUST BE USED ALONE IN SOME CASES AS TEMPORARY STABILIZERS, OR IN CONJUNCTION WITH FIBER MULCH, STRAW OR HAY.

   WHEN USED ALONE MOST CHEMICAL MULCHES DO NOT HAVE THE CAPABILITY TO INSULATE THE SOIL OR RETAIN SOIL MOISTURE THAT ORGANIC MULCHES HAVE.

3. SPECIFICATIONS: FROM TABLE IV–6 SELECT THE TYPE OF MULCH AND RATE OF APPLICATION THAT WILL BEST SUIT THE CONDITIONS AT THE SITE.
4. ANCHORING: DEPENDING ON THE FIELD SITUATION, MULCH MAY NOT STAY IN PLACE BECAUSE OF WIND ACTION OR RAPID WATER RUNOFF. IN SUCH CASES, MULCH IS TO BE ANCHORED MECHANICALLY OR WITH MULCH NETTING.

   a. MECHANICAL ANCHORING: APPLY MULCH AND PULL A MULCH ANCHORING TOOL OVER THE MULCH. WHEN A DISK IS USED, SET THE DISK STRAIGHT AND PULL ACROSS THE SLOPE. MULCH MATERIAL SHOULD BE TUCKED INTO THE SOIL ABOUT THREE INCHES.

   b. MULCH NETTING: FOLLOW MANUFACTURER'S RECOMMENDATIONS WHEN POSITIONING AND STAPLING THE MULCH NETTING IN THE SOIL.

E. FENCING

LIVESTOCK SHALL BE CONTROLLED OR EXCLUDED AS NECESSARY TO ALLOW FOR ESTABLISHMENT AND MAINTENANCE OF THE DESIRED VEGETATIVE COVER. WHERE LIVESTOCK ARE PRESENT, THE OPERATOR SHOULD CONSULT WITH THE AFFECTED LANDOWNER TO COORDINATE THE FENCE TYPE AND LAYOUT.

ALSO, PERMANENT FENCING MAY NEED INSTALLED AS A PROTECTIVE MEASURE AROUND WELL SITE FIXTURES, SENSITIVE AREAS OR AREAS PRONE TO RECURRING DISTURBANCE AND EROSION (e.g. SLIPS).

RECLAMATION REQUIREMENTS

1. RECLAMATION OF THE WASTE PIT SHALL NOT CAUSE AN OVERFLOW OR DISCHARGE OF MATERIALS TO WATERS OF THE STATE. LINER SHALL BE DISPOSED OF IN ACCORDANCE WITH W. VA. CODE §22–6A–8(g)(2).
2. ALL FLUID MUST BE REMOVED FROM THE WASTE PIT AND DISPOSED OF IN AN APPROVED MANNER OR RECYCLED.
3. THE OPERATOR SHALL GRADE OR TERRACE AND PLANT, SEED OR SOD THE AREA DISTURBED IN ACCORDANCE WITH THE EROSION AND SEDIMENT CONTROL PLAN.
4. STOCKPILED TOPSOIL SHOULD BE RE-SPREAD OVER DISTURBED AREA. TOPSOIL SHOULD NOT BE ADDED TO SLOPES STEEPER THAN 2:1 UNLESS GOOD BONDING TO THE SUB-SOIL CAN BE ACHIEVED.
5. PRIOR TO SEEDING SOIL SHOULD BE LOOSENED BY DISKING, BULLDOZER TRACKING, ETC. NOTE THAT BULLDOZER TRACKING CAN COMPACT WET CLAY SOILS AND RESTRICT ESTABLISHMENT OF VEGETATION.
6. MAINTAINING SEDIMENT BARRIERS IS CRITICAL UNTIL VEGETATION IS REESTABLISHED. TEMPORARY SEDIMENT CONTROL DEVICES SUCH AS SILT FENCING SHALL BE REMOVED ALONG WITH SEDIMENT AFTER AT LEAST A 70% VEGETATIVE COVER IS ESTABLISHED.
7. SOIL FILL MATERIAL SHALL BE PLACED IN LIFTS OR LAYERS OVER THE LENGTH OF THE FILL. LIFT THICKNESS OF SOIL SHALL NOT EXCEED 18" IN LOOSE DEPTH, COMPACTED TO 90% OF MAXIMUM DRY DENSITY AND WITHIN THREE PERCENTAGE POINTS OF THE OPTIMUM MOISTURE CONTENT AS DETERMINED BY ASTM D–698.

TABLE IV–1–1
RECOMMENDED SEEDING DATES FOR PERMANENT AND TEMPORARY COVER UNLESS OTHERWISE SPECIFIED.

PLANTING DATES	SUITABILITY
MARCH 1 – APRIL 15 AND AUGUST 1 – OCTOBER 1	BEST SEEDING PERIODS
APRIL 15 – AUGUST 1	HIGH RISK – MOISTURE STRESS LIKELY
OCTOBER 1 – DECEMBER 1	HIGH RISK – FREEZE DAMAGE TO YOUNG SEEDLINGS
DECEMBER 1 – MARCH 1	GOOD SEEDING PERIOD. DORMANT SEEDING.

TABLE IV–1–2
ACCEPTABLE FERTILIZER RECOMMENDATION IN ABSENCE OF SOIL TEST

SPECIES	N(LBS/AC)	P2O5(LBS/AC)	K2O(LBS/AC)	EXAMPLES REC. (PER ACRE)
COOL SEASON GRASS	40	80	80	400LBS 10–20–20
CS GRASS & LEGUME	30	60	60	300LBS 10–20–20
TEMPORARY COVER	30	40	40	200LBS 19–19–19

TABLE IV–1–3
TEMPORARY COVER SUITABLE FOR ESTABLISHMENT IN WEST VIRGINIA

SPECIES	RATES IN LBS PER ACRE	OPTIMUM SEEDING DATES	DRAINAGE	pH RANGE
ANNUAL RYEGRASS	40	3/1–6/15 OR 8/15–9/15	WELL–POORLY	5.5–7.5
FIELD BROMEGRASS	40	3/1–6/15 OR 8/15–9/15	WELL –MOD. WELL	6.0–7.0
SPRING OATS	96	3/1–6/15	WELL–POORLY	5.5–7.5
SUDANGRASS	40	5/15–8/15	WELL–POORLY	5.5–7.5
WINTER RYE	168	8/15–10/15	WELL–POORLY	5.5–7.5
WINTER WHEAT	180	8/15–11/15	WELL –MOD. WELL	5.5–7.0
JAPANESE MILLET	30	6/15–8/15	WELL	4.5–7.0
REDTOP	5	3/1–6/15	WELL	4.0–7.5
ANNUAL RYEGRASS	26	3/1–6/15	WELL–POORLY	5.5–7.5
SPRING OATS	64	3/1–6/15	WELL–POORLY	5.5–7.5

NOTE: THESE RATES SHOULD BE INCREASED BY 50% IF PLANTED APRIL 15 – AUGUST 1 AND OCTOBER 1 – MARCH 1.

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

SPECIES	RATES IN LBS PER ACRE	DRAINAGE	pH RANGE
CROWNVETCH/ TALL FESCUE	10–15 30	WELL –MOD. WELL	5.0–7.5
CROWNVETCH/ PERENNIAL REYGRASS	10–15 20	WELL –MOD. WELL	5.0–7.5
FLATPEA/ TALL FESCUE	20 15	WELL –MOD. WELL	4.0–8.0
LADINO CLOVER/ SERECIA LESPEDEZA/ TALL FESCUE	30 25 2	WELL –MOD. WELL	4.5–7.5
TALL FESCUE/ LADINO CLOVER/ REDTOP	40 3 3	WELL –MOD. WELL	5.0–7.5
CROWNVETCH/ TALL FESCUE/ REDTOP	10 20 3	WELL –MOD. WELL	5.0–7.5
TALL FESCUE/ BIRDSFOOT TREFOIL/ REDTOP	40 10 3	WELL –MOD. WELL	5.0–7.5
SERICEA LESPEDEZA/ TALL FESCUE/ REDTOP	25 30 3	WELL –MOD. WELL	4.5–7.5
REDTOP/ TALL FESCUE/ CREEPING RED	30 3 50	WELL –MOD. WELL	5.0–7.5
TALL FESCUE	50	WELL –MOD. WELL	4.5–7.5
PERENNIAL RYEGRASS/ TALL FESCUE/ LATHCO FLATPEA	10 15 20	WELL–POORLY	5.0–8.0

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

SPECIES	RATES IN LBS PER ACRE	DRAINAGE	pH RANGE
KY BLUEGRASS/ REDTOP/ LADINO CLOVER	20 3 2/10	WELL –MOD. WELL	5.5–7.5
TIMOTHY/ ALFALFA	5 12	WELL –MOD. WELL	6.5–8.0
TIMOTHY/ BIRDSFOOT TREFOIL	5 8	WELL –POORLY	5.5–8.0
ORCHARDGRASS/ LADINO CLOVER/ REDTOP	10 2 3	WELL –MOD. WELL	5.5–7.5
ORCHARDGRASS/ LADINO CLOVER	10 2	WELL –MOD. WELL	5.5–7.5
ORCHARDGRASS/ PERENNIAL RYEGRASS	20 10	WELL –MOD. WELL	5.0–7.5
CREEPING RED FESCUE/ PERENNIAL RYEGRASS	30 10	WELL –MOD. WELL	5.0–7.5
ORCHARDGRASS OR KY BLUEGRASS	20	WELL –MOD. WELL	6.0–7.5
BIRDSFOOT TREFOIL/ REDTOP/ ORCHARDGRASS	10 5 20	WELL –MOD. WELL	5.5–7.5
LATHCO FLAT PEA/ PERENNIAL RYEGRASS	30 20	WELL –MOD. WELL	5.5–7.5
LATHCO FLAT PEA/ ORCHARDGRASS	30 20	WELL–MOD. WELL	5.5–7.5

TABLE IV–5
LIME AND FERTILIZER APPLICATION TABLE

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

TABLE IV–6
MULCH MATERIALS RATES AND USES

MATERIAL	MINIMUM RATES PER ACRE	COVERAGE	REMARKS
HAY OR STRAW	2 TO 3 TONS 100 TO 150 BALES	COVER 75 TO 90% OF SURFACE	SUBJECT TO WIND BLOWING OR WASHING UNLESS TIED DOWN
WOOD FIBER PULP FIBER WOOD–CELLULOSE RETICULATED PAPER	1000 TO 1500 lbs.	COVER ALL DISTURBED AREAS	FOR HYDROSEEDING

APPROVED
WVDEP OOG
MODIFICATION
3/4/2021

REVISION	DATE	DESCRIPTION
1	2020–09–29	REVISED PER CLIENT COMMENTS
2	2020–11–20	REVISED PER WVDEP COMMENTS
3	2021–01–18	REVISED PER CLIENT COMMENTS

MATTHEW E. PROCTOR
REGISTERED
20458
STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER
1–14–2021

CONSTRUCTION NOTES

HG 1213 PAD
FREEMANS CREEK DISTRICT
LEWIS COUNTY, WEST VIRGINIA

PREPARED FOR

HG ENERGY II APPALACHIA, LLC
PARKERSBURG, WEST VIRGINIA

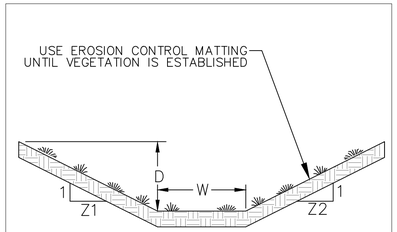
APPROVED	MEP	09/04/2020
CHECKED	CAC	09/03/2020
DRAWN	SMH	09/03/2020
PROJECT No.	4000–PA008130	

DRAWING NUMBER
PA008130–001
SHEET 5B

Penn E&R
Environmental & Remediation, Inc.
111 RYAN COURT, PITTSBURGH, PA 15205;
412–722–1222

S:\PROJECT FILES\4000–PA008130 HG 1213\DRAWINGS\PA008130 1213 PAD DETAILS.DWG,1/18/2021 4:10 PM

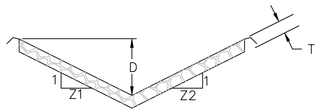
1213 ACCESS CHANNEL DETAILS



GRASS LINED

CHANNEL ID BY STATION	MIN. DEPTH (D), FT	WIDTH (W), FT	Z1	Z2
00+00~00+75 (RT)	2.0	0	2	2
08+00~26+75 (LT)	2.0	0	2	2
26+75~28+25 (RT)	2.0	0	2	2
28+80~30+75 (LT)	2.0	0	2	2

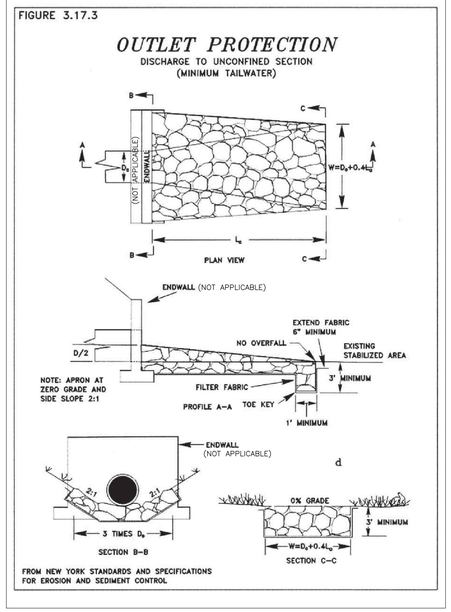
1213 ACCESS CHANNEL DETAILS



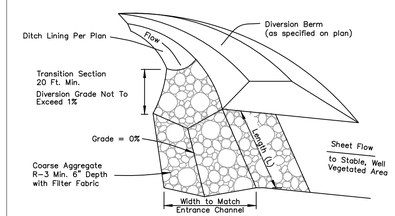
RIPRAP LINED

TRIANGULAR RIP-RAP CHANNEL DIMENSIONS					
CHANNEL ID BY STATION	MIN. DEPTH (D), FT	Z1	Z2	T (FT)	RIPRAP SIZE D50 (IN)
00+75~07+00 (RT)	2	2	2	0.75	3
07+25~08+00 (LT)	2	2	2	0.75	3

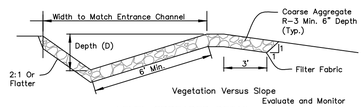
RIPRAP APRON



LEVEL SPREADER



LEVEL SPREADER FOR DIVERSION OUTLET



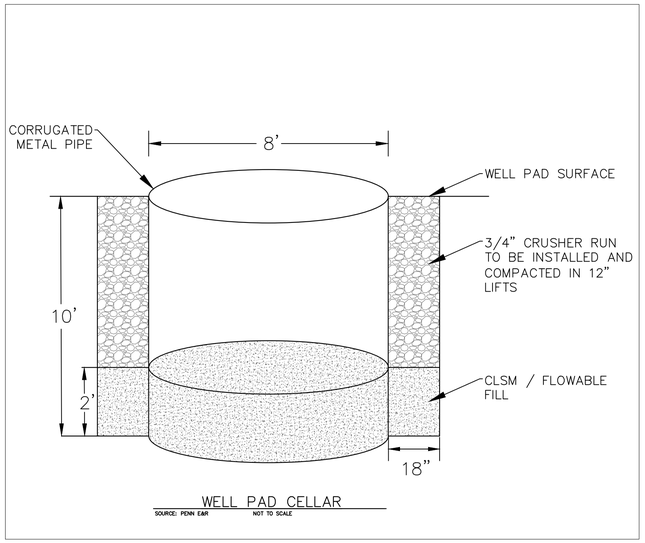
LEVEL SPREADER DETAIL

FLOW RATE (CFS)	MIN. DEPTH (D)	MIN. LENGTH (L)
0–10	0.5 FT.	10 FT.
10–20	0.6 FT.	20 FT.
20–30	0.7 FT.	30 FT.

NOTES
1. LEVEL SPREADERS SHOULD NOT BE USED FOR DESIGN FLOWS EXCEEDING 30 CFS.
2. RUNOFF CONTAINING SEDIMENT MUST BE TREATED BY A SEDIMENT TRAPPING DEVICE PRIOR TO RELEASE INTO THE LEVEL SPREADER.
3. ENDS OF THE LEVEL SPREADER SHALL BE TIED INTO HIGHER GROUND TO PREVENT FLOW AROUND THE LEVEL SPREADER.

Adapted from: NRCS Standard Drawing and Ohio Department of Natural Resources "Rainwater and Land Development"

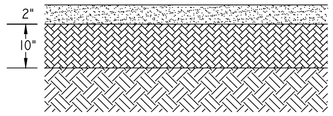
WELL PAD CELLAR



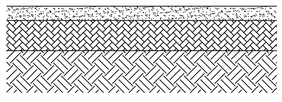
WELL PAD CELLAR

SOURCE: PENN E&R NOT TO SCALE

ACCESS ROAD, WELL PAD, STAGING AREA, AND AST PAD SURFACING DETAIL

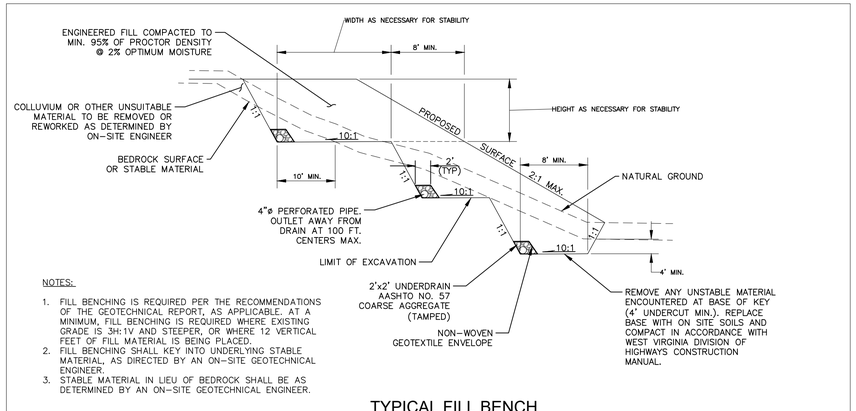


ACCESS ROAD SURFACING DETAIL FIRST 70 L.F



APPROVED
WVDEP OOG
MODIFICATION
3/4/2021

TOE BENCH- BONDING BENCHES DETAIL



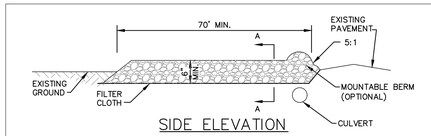
NOTES:

1. FILL BENCHING IS REQUIRED PER THE RECOMMENDATIONS OF THE GEOTECHNICAL REPORT, AS APPLICABLE. AT A MINIMUM, FILL BENCHING IS REQUIRED WHERE EXISTING GRADE IS 3H:1V AND STEEPER, OR WHERE 12 VERTICAL FEET OF FILL MATERIAL IS BEING PLACED.
2. FILL BENCHING SHALL KEY INTO UNDERLYING STABLE MATERIAL, AS DIRECTED BY AN ON-SITE GEOTECHNICAL ENGINEER.
3. STABLE MATERIAL IN LIEU OF BEDROCK SHALL BE AS DETERMINED BY AN ON-SITE GEOTECHNICAL ENGINEER.

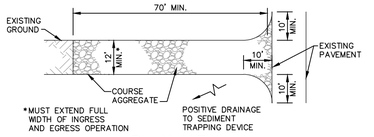
TYPICAL FILL BENCH

SOURCE: PENN E&R NOT TO SCALE

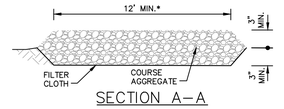
ROCK CONSTRUCTION SITE ENTRANCE



SIDE ELEVATION



PLAN VIEW



SECTION A-A

NOTES:
1. STABILIZED CONSTRUCTION ENTRANCES SHALL BE INSTALLED WHEREVER CONSTRUCTION TRAFFIC ENTERS AND LEAVES A SITE.
2. USE 2–4" STONE FOR LOW VOLUME ENTRANCES, LARGER STONE (4–6") FOR HEAVY USE OR MATERIAL DELIVERY ENTRANCES.
3. LENGTH IS AS REQUIRED, BUT NOT LESS THAN 70' (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30' MIN. LENGTH WOULD APPLY).
4. THICKNESS SHOULD BE NOT LESS THAN 6".
5. THE WIDTH SHALL BE A MIN. OF 10', BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS AND EGRESS OCCURS.
6. GEOTEXTILE FABRIC SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
7. ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE, IF A CULVERT IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES SHALL BE USED.
8. IF NECESSARY, DIVERT ANY WATER RUNNING DOWN ACCESS ROAD TO A SEDIMENT TRAP LOCATED ON EITHER SIDE OF THE STABILIZED CONSTRUCTION ENTRANCE.
9. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
10. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
11. WHEELS ON ALL VEHICLES SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS-OF-WAY. IF WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO APPROVED SEDIMENT TRAPPING DEVICE.
12. IF THE STREET IS WASHED PRECAUTIONS MUST BE TAKEN TO PREVENT MUDDY WATER FROM RUNNING INTO WATERWAYS OR STORM SEWERS.
13. INSPECTION AND NEEDED MAINTENANCE SHOULD BE PROVIDED DAILY BUT AT A MINIMUM EVERY SEVEN DAYS AND AFTER EVERY RAIN OF 0.5 INCH OR GREATER.

STABILIZED CONSTRUCTION ENTRANCE

NOT TO SCALE

REFERENCE:

1. DETAILS FROM THE OFFICE OF OIL AND GAS, WEST VIRGINIA EROSION AND SEDIMENT CONTROL FIELD MANUAL, DATED MAY 2012; WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION, DIVISION OF WATER AND WASTE MANAGEMENT, EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE MANUAL, DATED 2006; OR PENN E&R, INC., UNLESS OTHERWISE NOTED.

REVISION	DATE	DESCRIPTION
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MATTHEW S. HIMEBAUGH REGISTERED 20458 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER 1-18-2021

CONSTRUCTION DETAILS

HG 1213 PAD
FREEMANS CREEK DISTRICT
LEWIS COUNTY, WEST VIRGINIA

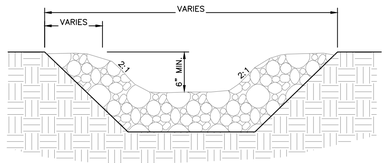
PREPARED FOR

HG ENERGY II APPALACHIA, LLC
PARKERSBURG, WEST VIRGINIA

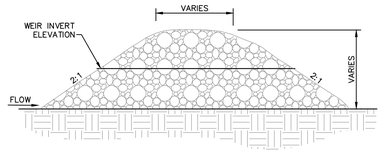
APPROVED	MEP	09/04/2020
CHECKED	CAC	09/03/2020
DRAWN	SMH	09/03/2020
PROJECT No.	4000-PA008130	

DRAWING NUMBER
PA008130-001
SHEET 5C

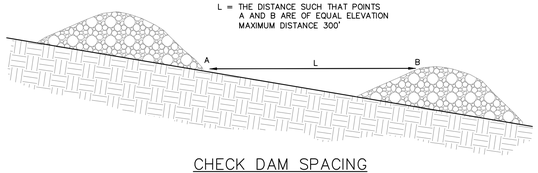
Penn E&R
Environmental & Remediation, Inc.
111 RYAN COURT, PITTSBURGH, PA 15205;
412-722-1222



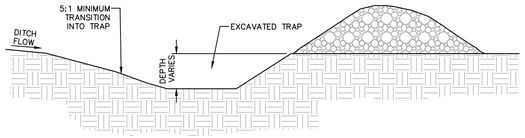
ELEVATION



CROSS SECTION



CHECK DAM SPACING

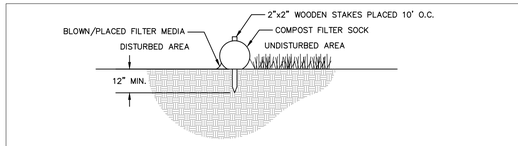


CHECK DAM WITH SUMP

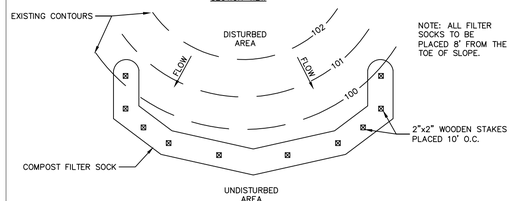
NOTES:
1. INSPECT EACH CHECK DAM AT A MINIMUM ONCE EVERY SEVEN CALENDAR DAYS AND WITHIN 24 HOURS AFTER ANY STORM EVEN GREATER THAN 0.5 INCHES OF RAIN PER 24 HOUR PERIOD. CHECK TO SEE IF WATER HAS FLOWED AROUND THE EDGES OF THE STRUCTURE.
2. REPLACE STONE AND REPAIR DAMS AS NECESSARY TO MAINTAIN THE CORRECT HEIGHT AND CONFIGURATION.
3. SEDIMENT SHOULD BE REMOVED FROM BEHIND THE CHECK DAMS WHEN IT HAS ACCUMULATED TO ONE HALF OF THE ORIGINAL HEIGHT OF THE DAM. DISPOSE OF THE SEDIMENT IN AN APPROPRIATE PLACE.

ROCK CHECK DAM

NOT TO SCALE



SECTION VIEW



PLAN VIEW

COMPOST SHALL MEET THE FOLLOWING STANDARDS:

ORGANIC MATTER CONTENT	80% – 100% (DRY WEIGHT BASIS)
ORGANIC PORTION	FIBROUS AND ELONGATED
pH	5.5 – 8.0
MOISTURE CONTENT	35% – 55%
PARTICLE SIZE	98% PASS THROUGH 1" SCREEN
SOLUBLE SALT CONCENTRATION	5.0 dS MAXIMUM

SLOPE PERCENT	MAXIMUM SLOPE LENGTH ABOVE SEDIMENT CONTROL IN FEET*				
	8" ** SEDIMENT CONTROL	12" ** SEDIMENT CONTROL	18" ** SEDIMENT CONTROL	24" ** SEDIMENT CONTROL	32" ** SEDIMENT CONTROL
	6.5'	9.5'	14.5'	19'	26'
2 OR LESS	600	750	1000	1300	1650
5	400	500	550	650	750
10	200	250	300	400	500
15	140	170	200	325	450
20	100	125	140	260	400
25	80	100	110	200	275
30	60	75	90	130	200
35	60	75	80	115	150
40	60	75	80	100	125
45	40	50	60	80	100
50	40	50	55	65	75

* BASED ON A FAILURE OF 36" SUPER SILT FENCE (SIRE REINFORCED AT 1000' OF SLOPE, WATERSHED EQUIVALENT TO RECEIVING LENGTH OF SEDIMENT CONTROL DEVICE, 1"/24 HR. RAIN EVENT.

** EFFECTIVE HEIGHT OF SEDIMENT CONTROL AFTER INSTALLATION AND WITH CONSTANT HEAD FROM RUNOFF AS DETERMINED BY OHIO STATE UNIVERSITY.

COMPOST FILTER SOCK

NOT TO SCALE

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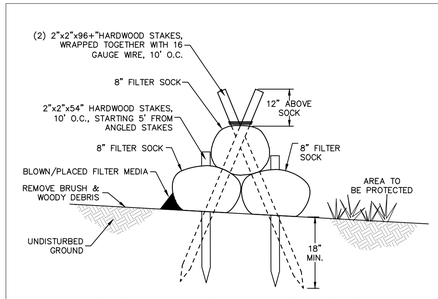
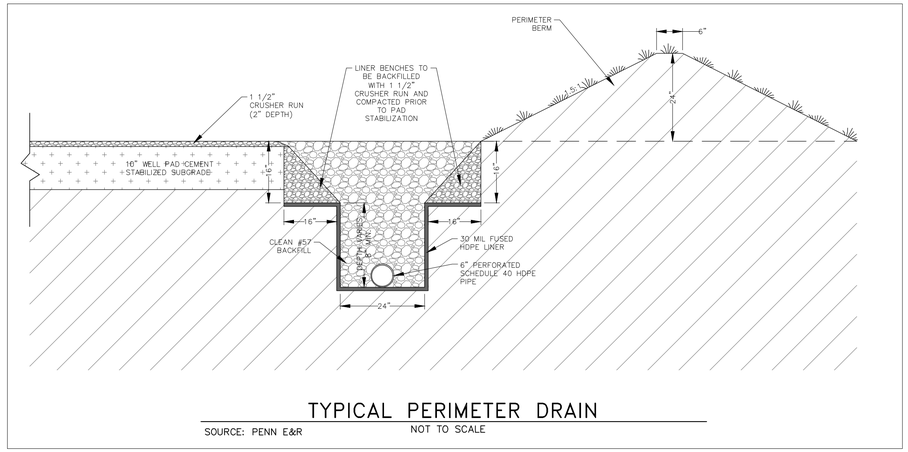


TRIPLE STACKED COMPOST FILTER SOCK

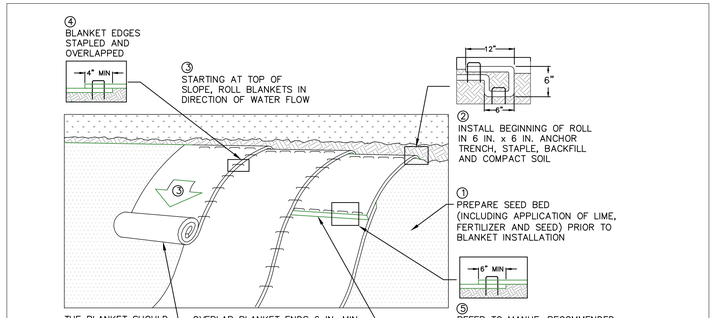
NOT TO SCALE



TYPICAL PERIMETER DRAIN

NOT TO SCALE

SOURCE: PENN E&R



NOTES:

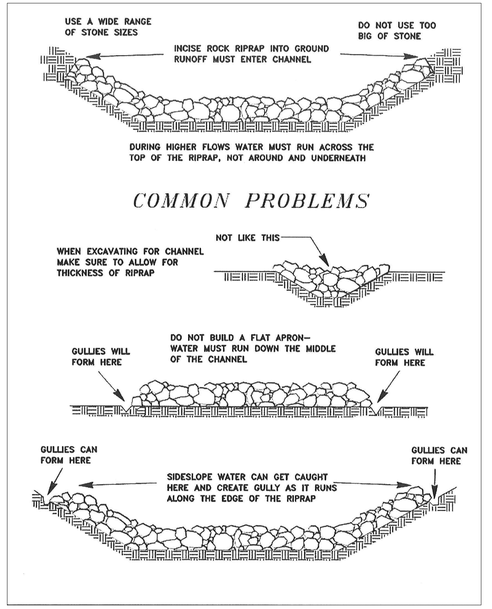
1. SEED AND SOIL AMENDMENTS SHALL BE APPLIED ACCORDING TO THE RATES IN THE PLAN DRAWINGS PRIOR TO INSTALLING THE BLANKET.
   SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS, AND GRASS.
   BLANKET SHALL HAVE GOOD CONTINUOUS CONTACT WITH UNDERLYING SOIL THROUGHOUT ENTIRE LENGTH. LAY BLANKET LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH SOIL. DO NOT STRETCH BLANKET.
   THE BLANKET SHALL BE STAPLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF BLANKET EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" APART ACROSS THE WIDTH OF THE BLANKET.
3. ROLL THE BLANKET DOWN OR THE SLOPE. BLANKET WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL BLANKET MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING THE DOT SYSTEM , STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
4. THE EDGES OF PARALLEL BLANKET MUST BE STAPLED WITH 4" MINIMUM OVERLAP.
5. CONSECUTIVE BLANKET SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH A MINIMUM 6" OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" APART ACROSS ENTIRE BLANKET WIDTH.
6. PROVIDE ANCHOR TRENCH AT TOE OF SLOPE IN SIMILAR FASHION AS AT TOP OF SLOPE.
7. IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY SECURE THE BLANKET.
8. BLANKETED AREAS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT UNTIL PERENNIAL VEGETATION IS ESTABLISHED TO A MINIMUM UNIFORM 70% COVERAGE THROUGHOUT THE BLANKETED AREA. DAMAGED OR DISPLACED BLANKETS SHALL BE RESTORED OR REPLACED WITHIN 4 CALENDAR DAYS.

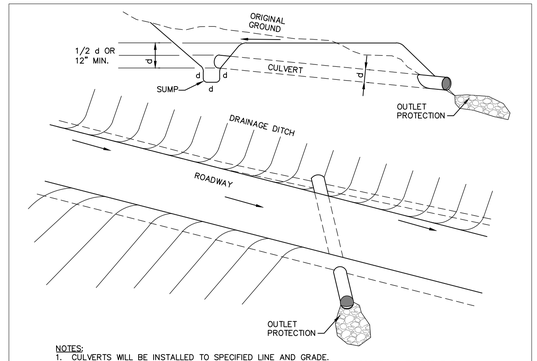
NOTE:
*HYDRAULICALLY APPLIED SLOPE BLANKET MAY BE USED AS AN EQUIVALENT TO SLOPE STABILIZATION MATTING.

SLOPE	SLOPE LENGTH	SLOPE LINING	STAPLE PATTERN
2:1 SLOPES	MAX. 30'	NAG S75	C
2:1 SLOPES	MAX. 55'	NAG SC150	C

EROSION CONTROL BLANKET INSTALLATION

NOT TO SCALE





NOTES:
1. CULVERTS WILL BE INSTALLED TO SPECIFIED LINE AND GRADE.
2. DITCH SHALL BE EXCAVATED TO A DEPTH AND GRADE TO ENSURE PROPER COVER FOR THE CULVERT.
3. DITCH BOTTOM WILL HAVE A FIRM FOUNDATION FOR THE CULVERT. GRAVEL MAY BE USED TO STABILIZE THE DITCH BOTTOM.
4. THE CULVERT WILL BE BACKFILLED WITH MATERIAL FREE OF LARGE ROCKS, WHICH MAY CAUSE DAMAGE TO IT.
5. STONE MAY BE NEEDED FOR FURTHER SURFACE STABILIZATION.
6. RECOMMENDED INSTALLATION IS WITH A BACKHOE RATHER THAN A DOZER.
7. CULVERTS WILL HAVE OUTLET PROTECTION (I.E. FIELD ROCK OR RIPRAP, AND SEDIMENT BARRIERS) AS WELL AS NATURAL FILTER STRIP AREAS.
8. CULVERTS WITH OUTLETS ONTO LENGTHY FILL SLOPES MAY REQUIRE SLOPE DRAINS WITH OUTLET PROTECTION DEPENDING ON THE STEEPNESS OF THE OUTSLOPE.
9. RIPRAP USED AS OUTLET PROTECTION MUST BE HARD, ANGULAR AND OF A QUALITY RESISTANT TO WEATHERING AND DISINTEGRATION. RIPRAP SHOULD BE GROUTED ON STEEP OR LENGTHY FILL SLOPES WITH A MINIMUM THICKNESS TWO TIMES THE MAXIMUM STONE DIAMETER, BUT NOT LESS THAN SIX INCHES.

DITCH RELIEF CULVERT

NOT TO SCALE

REFERENCE:

1. DETAILS FROM THE OFFICE OF OIL AND GAS, WEST VIRGINIA EROSION AND SEDIMENT CONTROL FIELD MANUAL, DATED MAY 2012; WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION, DIVISION OF WATER AND WASTE MANAGEMENT, EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE MANUAL, DATED 2006; OR PENN E&R, INC., UNLESS OTHERWISE NOTED.

APPROVED
WVDEP OOG
MODIFICATION
3/4/2021

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3	2021-01-18	REVISED PER CLIENT COMMENTS

MATTHEW E. PHARES REGISTERED 20458 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER 1-7-2021

CONSTRUCTION DETAILS

HG 1213 PAD
FREEMANS CREEK DISTRICT
LEWIS COUNTY, WEST VIRGINIA

PREPARED FOR

HG ENERGY II APPALACHIA, LLC
PARKERSBURG, WEST VIRGINIA

APPROVED	MEP	09/04/2020
CHECKED	CAC	09/03/2020
DRAWN	SMH	09/03/2020
PROJECT No.	4000-PA008130	

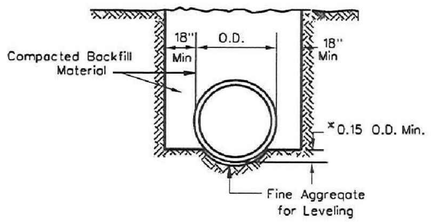
DRAWING NUMBER
PA008130-001
SHEET 5D

Penn E&R
Environmental & Remediation, Inc.
111 RYAN COURT, PITTSBURGH, PA 15205;
412-722-1222

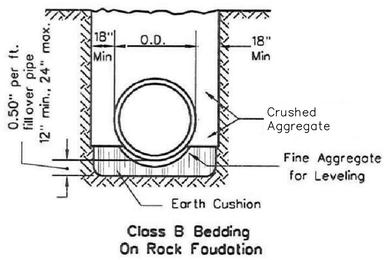
S:\PROJECT FILES\4000-PA008130 HG 1213\DRAWINGS\PA008130 1213 PAD DETAILS.DWG,1/18/2021 4:11 PM

PIPE DETAILS

* Except for structural plate pipe where length of bedding arc need not exceed width of bottom plate However, if structural plate pipe is first assembled and then placed in the trench, the 0.15 O.D. minimum value will apply.

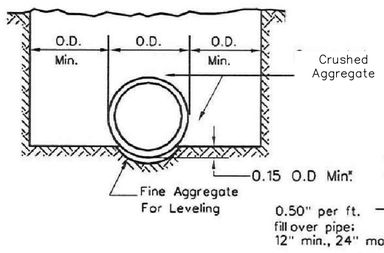


Class B Bedding

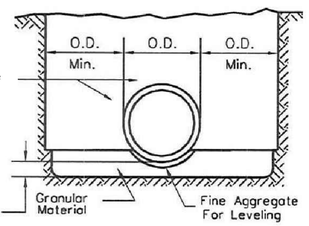


Class B Bedding On Rock Foudation

(Trench shown is for 18" thru 54" Pipe)

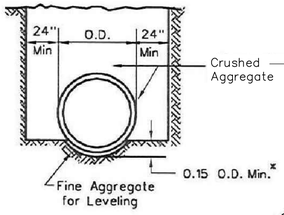


Class B Bedding

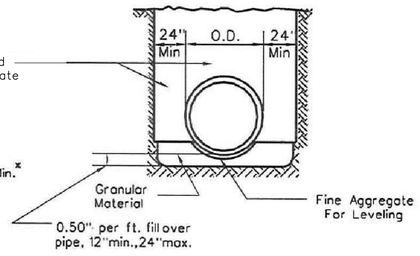


Class B Bedding On Rock Foundation

(Trench shown is for 60" thru 108" flexible pipe in soil cut fill sections)



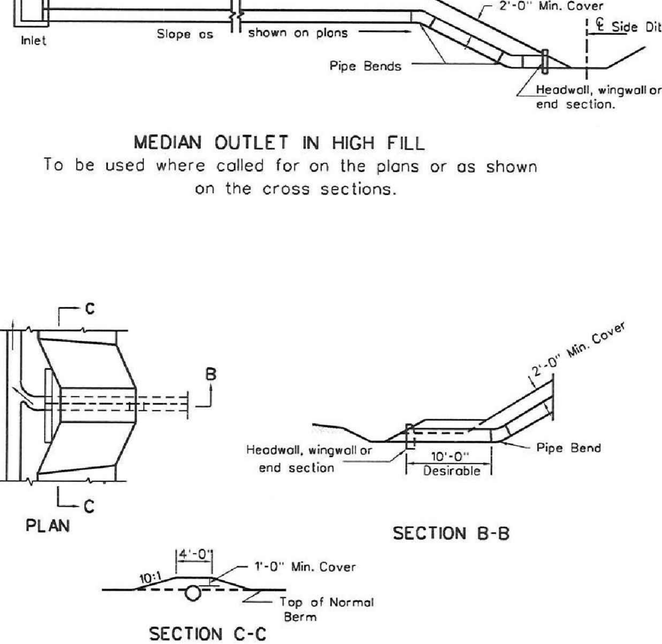
Class B Bedding



Class B Bedding On Rock Foundation

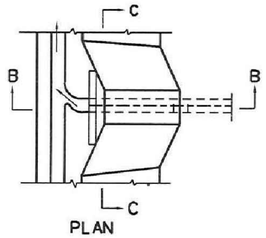
(Trench shown is for 60" thru 108" rigid pipe in cut sections)

TYPICAL PIPE BEDDING



MEDIAN OUTLET IN HIGH FILL

To be used where called for on the plans or as shown on the cross sections.



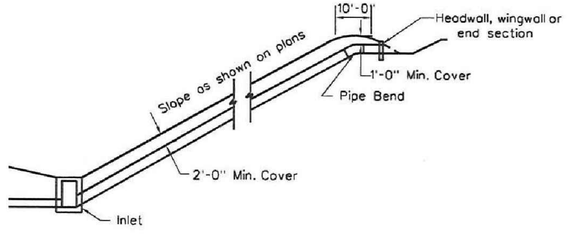
PLAN

SECTION B-B

SECTION C-C

OUTLET THROUGH BERM

To be used where called for on the plans or as shown on the cross sections.



PIPE FLUME
Earth Cut or Shallow Rock Cuts

NOTES

For pipe without corrugations, a one inch layer of fine aggregate for leveling will normally be adequate to achieve a uniform bearing surface. For corrugated pipe, layers shall be 1" minimum for 1/2" depth corrugations, 2" minimum for 1" depth corrugations, and 3" minimum for 2" or 2-1/2" depth corrugations.

REFERENCE:

1. DETAILS FROM THE OFFICE OF OIL AND GAS, WEST VIRGINIA EROSION AND SEDIMENT CONTROL FIELD MANUAL, DATED MAY 2012; WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION, DIVISION OF WATER AND WASTE MANAGEMENT, EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE MANUAL, DATED 2006; OR PENN E&R, INC., UNLESS OTHERWISE NOTED.

APPROVED
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MODIFICATION
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MATTHEW E. PIERCE REGISTERED 20458 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER 1-7-2021

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
STANDARD DETAIL

PREPARED 1-1-99

REVISION DATE

MISCELLANEOUS DRAINAGE (sheet 1 of 4)

STANDARD SHEET DR8

CONSTRUCTION DETAILS

HG 1213 PAD
FREEMANS CREEK DISTRICT
LEWIS COUNTY, WEST VIRGINIA

PREPARED FOR
HG ENERGY II APPALACHIA, LLC
PARKERSBURG, WEST VIRGINIA

APPROVED	MEP 09/04/2020
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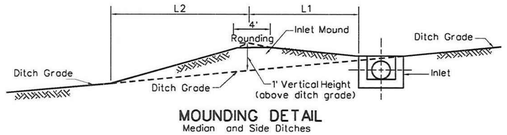
PROJECT No.	4000-PA008130

DRAWING NUMBER
PA008130-001
SHEET 5E

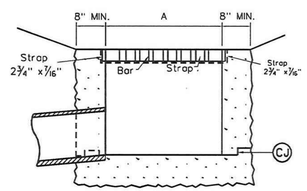
Penn E&R
Environmental & Remediation, Inc.
111 RYAN COURT, PITTSBURGH, PA 15205;
412-722-1222

INLET DETAILS

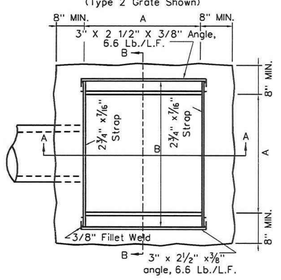
INLET MOUNDING TABLE			
DITCH GRADE (z)		L1, HORIZONTAL LENGTH (FT.)	L2, HORIZONTAL LENGTH (FT.)
FROM	TO		
0	3	10	15
3	5	9	20
5	7.5	8	40
7.5	UP	SPECIAL DESIGN	SPECIAL DESIGN



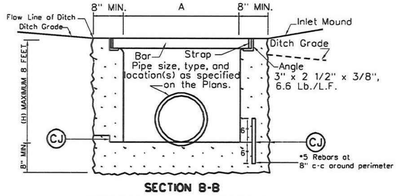
MOUNDING DETAIL
Median and Side Ditches



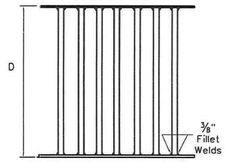
SECTION A-A
(Type 2 Grate Shown)



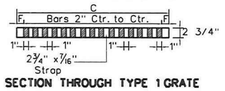
PLAN



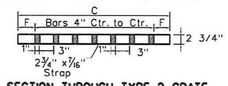
SECTION B-B



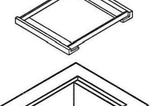
PLAN VIEW-TYPE 2 GRATE



SECTION THROUGH TYPE 1 GRATE



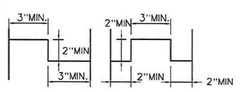
SECTION THROUGH TYPE 2 GRATE



EXPLODED DETAIL

DIMENSIONS						TYPE 2 GRATE			FRAME		TYPE 1 GRATE		
Pipe Size	A	B	C	D	H(Min)	F	Bars	WT.	WT.	F	Bars	WT.
18"	2'-8"	3'-2"	2'-7 3/4"	3'-1 3/4"	2'-0"	3 3/8"	7	223	62	1 3/8"	15	453
21"	2'-8"	3'-2"	2'-7 3/4"	3'-1 3/4"	2'-3"	3 3/8"	7	223	62	1 3/8"	15	453
24"	2'-8"	3'-2"	2'-7 3/4"	3'-1 3/4"	2'-6"	3 3/8"	7	223	62	1 3/8"	15	453
27"	3'-0"	3'-6"	2'-11 3/4"	3'-5 3/4"	2'-9"	3 3/8"	8	279	69	1 3/8"	17	566
30"	3'-6"	4'-0"	3'-5 3/4"	3'-11 3/4"	3'-0"	3 3/8"	9	357	80	1 3/8"	21	797
33"	3'-9"	4'-3"	3'-8 3/4"	4'-2 3/4"	3'-3"	3 7/8"	10	419	85	1 7/8"	21	847
36"	4'-0"	4'-6"	3'-11 3/4"	4'-5 3/4"	3'-6"	3 3/8"	11	486	90	1 3/8"	23	981
42"	4'-6"	5'-0"	4'-5 3/4"	4'-11 3/4"	4'-0"	3 3/8"	12	587	101	1 3/8"	27	1277
48"	5'-0"	5'-6"	4'-11 3/4"	5'-5 3/4"	4'-6"	3 3/8"	14	748	112	1 3/8"	29	1507

Table Note: Grate and frame weights are for information only and will increase if larger straps and bars are used.
The following substitutions in dimensions are acceptable for fabricating the grate and frame:
Strap Thickness: 1/2" Strap Depth: 3" Bar Depth: 3"



CONSTRUCTION JOINT DETAILS

NOTES

The final installed top surface of inlet and grate shall be flush with adjacent finished surfaces such as pavement, gutters, curbs, and sidewalks. Top of grate elevation, if shown on the plans, is for information only.

Construction may be cast-in place, precast in one or multiple sections, or any combination of cast-in-place and precast.

Type 2 Grate shall be used at all locations unless otherwise specified on the Plans. Type 1 Urban Grates shall be used only at specially designated locations as shown on the plans.

The Contractor, at his option, may omit use of the frame by forming a ledge in the concrete.

Special care shall be execised in forming the 2" wide concrete ledge to provide a smooth, even surface for supporting the grates if the shallow frame is not used. no projections shall exist on the bearing surfaces of the ledge or the grates, and the grates shall seat on the ledge without rocking.

The Mounding Detail as shown is not required when an inlet is placed in a sag.

Optional construction joints labeled "CJ" may be roughened concrete, keyed or doweled as per the typical details shown herein or as approved by the Engineer. Non shrink grout meeting the requirements of subsection 715.5 of the specifications may be used to a depth of ½" for leveling between precast sections. Thicker depths will be allowed as per the manufacturer's recommendations.

This inlet is to be installed in roadside or median ditches only. It is not to be placed adjacent to pavement or in the gutter pan of combination curb and gutter.

The minimum distance from the top of any pipe opening to any construction joint above the opening shall be four (4) inches.

The number and location of pipe openings shall be as shown in the plans. The contractor at no additional cost, shall be responsible for any temporary bracing required to transport precast inlet sections due to multiple openings.

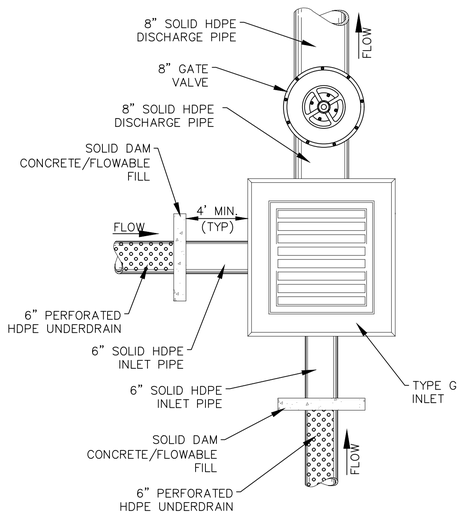
WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
STANDARD DETAIL

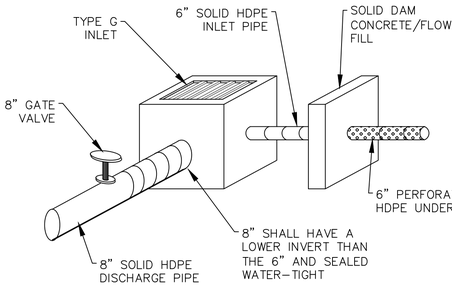
PREPARED 7-1-99

REVISION DATE

TYPE G INLET

STANDARD SHEET DR6-G





CONTROLLED DISCHARGE DETAIL

NOTES:
1. NO DISCHARGE SHALL OCCUR DURING DRILLING ACTIVITIES.
2. SEE PLAN VIEW FOR INVERT ELEVATIONS

APPROVED
WVDEP OOG
MODIFICATION
3/4/2021

REFERENCE:

1. DETAILS FROM THE OFFICE OF OIL AND GAS, WEST VIRGINIA EROSION AND SEDIMENT CONTROL FIELD MANUAL, DATED MAY 2012; WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION, DIVISION OF WATER AND WASTE MANAGEMENT, EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE MANUAL, DATED 2006; OR PENN E&R, INC., UNLESS OTHERWISE NOTED.

REVISION	DATE	DESCRIPTION
1	2020-09-29	REVISED PER CLIENT COMMENTS
2	2020-11-20	REVISED PER WVDEP COMMENTS
3	2021-01-18	REVISED PER CLIENT COMMENTS

MATTHEW E. PIERCE
REGISTERED
20458
STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER
1-7-2020

CONSTRUCTION DETAILS

HG 1213 PAD
FREEMANS CREEK DISTRICT
LEWIS COUNTY, WEST VIRGINIA

PREPARED FOR

HG ENERGY II APPALACHIA, LLC
PARKERSBURG, WEST VIRGINIA

APPROVED	MEP	09/04/2020
CHECKED	CAC	09/03/2020
DRAWN	SMH	09/03/2020
PROJECT No.	4000-PA008130	

DRAWING NUMBER
PA008130-001
SHEET 5F

Penn E&R
Environmental & Remediation, Inc.
111 RYAN COURT, PITTSBURGH, PA 15205;
412-722-1222

S:\PROJECT FILES\4000-PA008130 HG 1213\DRAWINGS\PA008130 1213 PAD DETAILS.DWG,1/18/2021 4:12 PM

LEVEL SPREADER TO REMAIN

CYNTHIA D. SUMPTER
21-03-0055-0042-0000
9.96 AC

12" SW HDPE TO REMAIN

12" SW HDPE TO REMAIN

12" SW HDPE TO REMAIN

EXISTING CULVERT TO REMAIN

12" SW HDPE TO REMAIN

EXISTING CULVERT TO REMAIN

22' WIDE ACCESS ROAD TO REMAIN

ACCESS ROAD:
N39.110679
W80.520078

SUZANNE LYNN & JAMES M. EVANS
21-03-006C-0004-0000
308.1376 AC

MATCH LINE STA. 10+00 SEE SHEET 6B

22' WIDE ACCESS ROAD TO REMAIN

15.5' WIDE ACCESS ROAD TO REMAIN

44' WIDE ACCESS ROAD TO REMAIN

MARSH RUN RD

APPROVED
WVDEP OOG
MODIFICATION
3/4/2021

LEGEND

- ROCK CHECK DAM
- RIPRAP APRON
- ACCESS ROAD/PAD CHANNEL
- APPROXIMATE LIMITS OF DISTURBANCE
- APPROXIMATE PROPERTY LINE
- EXISTING INDEX CONTOUR
- EXISTING INTERMEDIATE CONTOUR
- EXISTING ACCESS ROAD
- EXISTING OVERHEAD UTILITY LINE
- G — EXISTING GAS LINE
- W — EXISTING WATER LINE
- DELINEATED WATERCOURSE
- IMPACTED WETLAND
- EXISTING WETLAND
- RESTORED AREA
- GRAVEL AREA TO REMAIN

REFERENCE:

1. PROPERTY BOUNDARIES & OWNER INFORMATION OBTAINED VIA WV PROPERTY VIEWER WWW.MAPWV.GOV/PARCEL/
2. EXISTING CONTOURS OBTAINED FROM SolSpec Solutions ON 12/04/2019.

REVISION	DATE	DESCRIPTION
1	2020-09-29	REVISED PER CLIENT COMMENTS
2	2020-11-20	REVISED PER WVDEP COMMENTS
3	2021-01-18	REVISED PER CLIENT COMMENTS

NORTH

MATTHEW E. PIERCE REGISTERED 20458 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER 1-4-2021

SCALE – FEET

0 60 120 180

RESTORATION PLAN

HG 1213 PAD
FREEMANS CREEK DISTRICT
LEWIS COUNTY, WEST VIRGINIA

PREPARED FOR

HG ENERGY II APPALACHIA, LLC
PARKERSBURG, WEST VIRGINIA

APPROVED	MEP	09/04/2020
CHECKED	CAC	09/03/2020
DRAWN	SMH	09/03/2020
PROJECT No.	4000-PA008130	

DRAWING NUMBER
PA008130-001
SHEET 6A

Penn E&R
Environmental & Remediation, Inc.
111 RYAN COURT, PITTSBURGH, PA 15205;
412-722-1222

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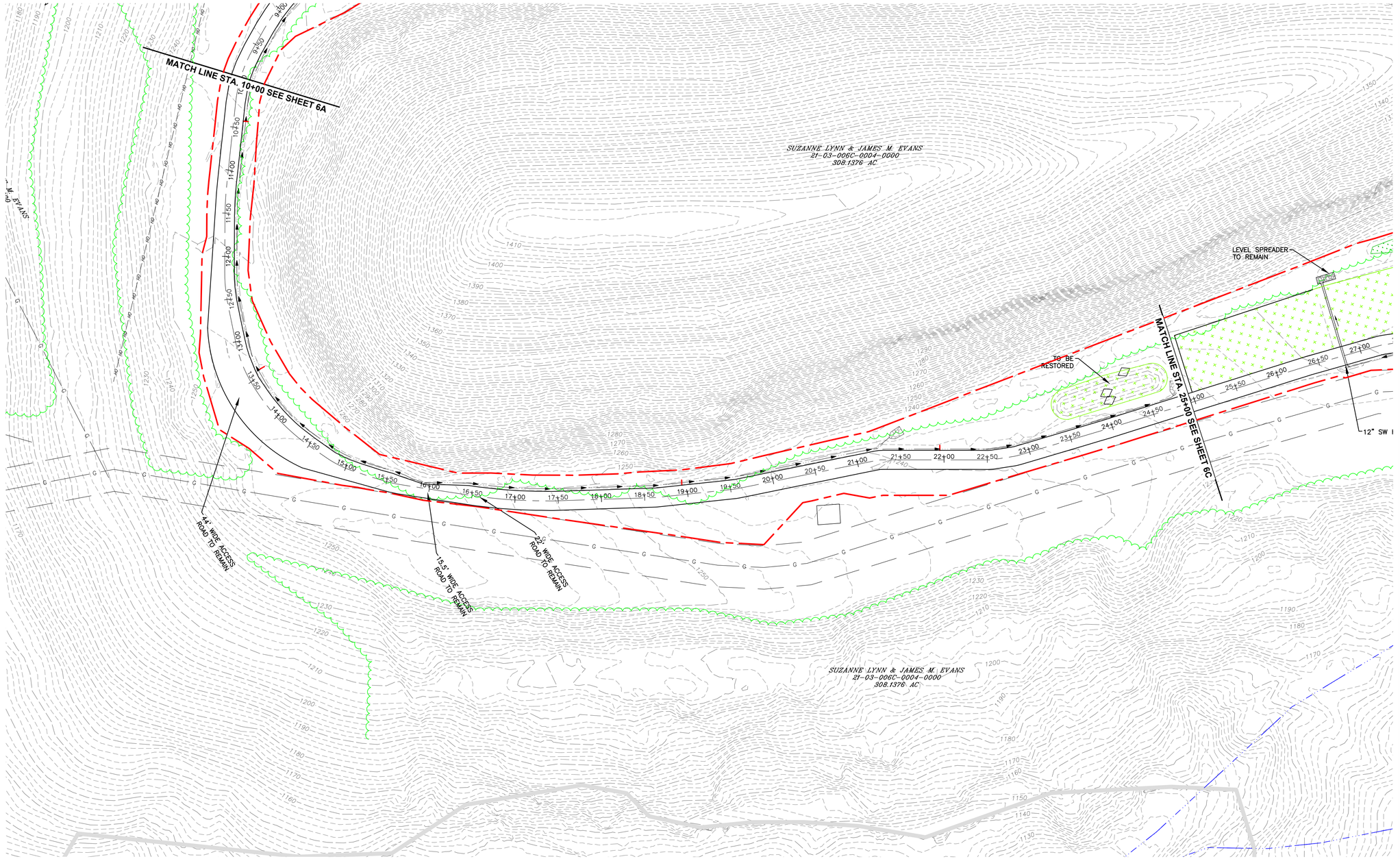

LEGEND

- ROCK CHECK DAM
- RIPRAP APRON
- ACCESS ROAD/PAD CHANNEL
- APPROXIMATE LIMITS OF DISTURBANCE
- APPROXIMATE PROPERTY LINE
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- EXISTING INTERMEDIATE CONTOUR
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NORTH

MATTHEW E. PEIRCE REGISTERED 20458 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER 2-4-2021

SCALE – FEET

0 60 120 180

APPROVED
WVDEP OOG
MODIFICATION
3/4/2021

RESTORATION PLAN

HG 1213 PAD
FREEMANS CREEK DISTRICT
LEWIS COUNTY, WEST VIRGINIA

PREPARED FOR

HG ENERGY II APPALACHIA, LLC
PARKERSBURG, WEST VIRGINIA

APPROVED	MEP	09/04/2020
CHECKED	CAC	09/03/2020
DRAWN	SMH	09/03/2020
PROJECT No.	4000-PA008130	

DRAWING NUMBER
PA008130-001
SHEET 6B

Penn E&R
Environmental & Remediation, Inc.
111 RYAN COURT, PITTSBURGH, PA 15205;
412-722-1222

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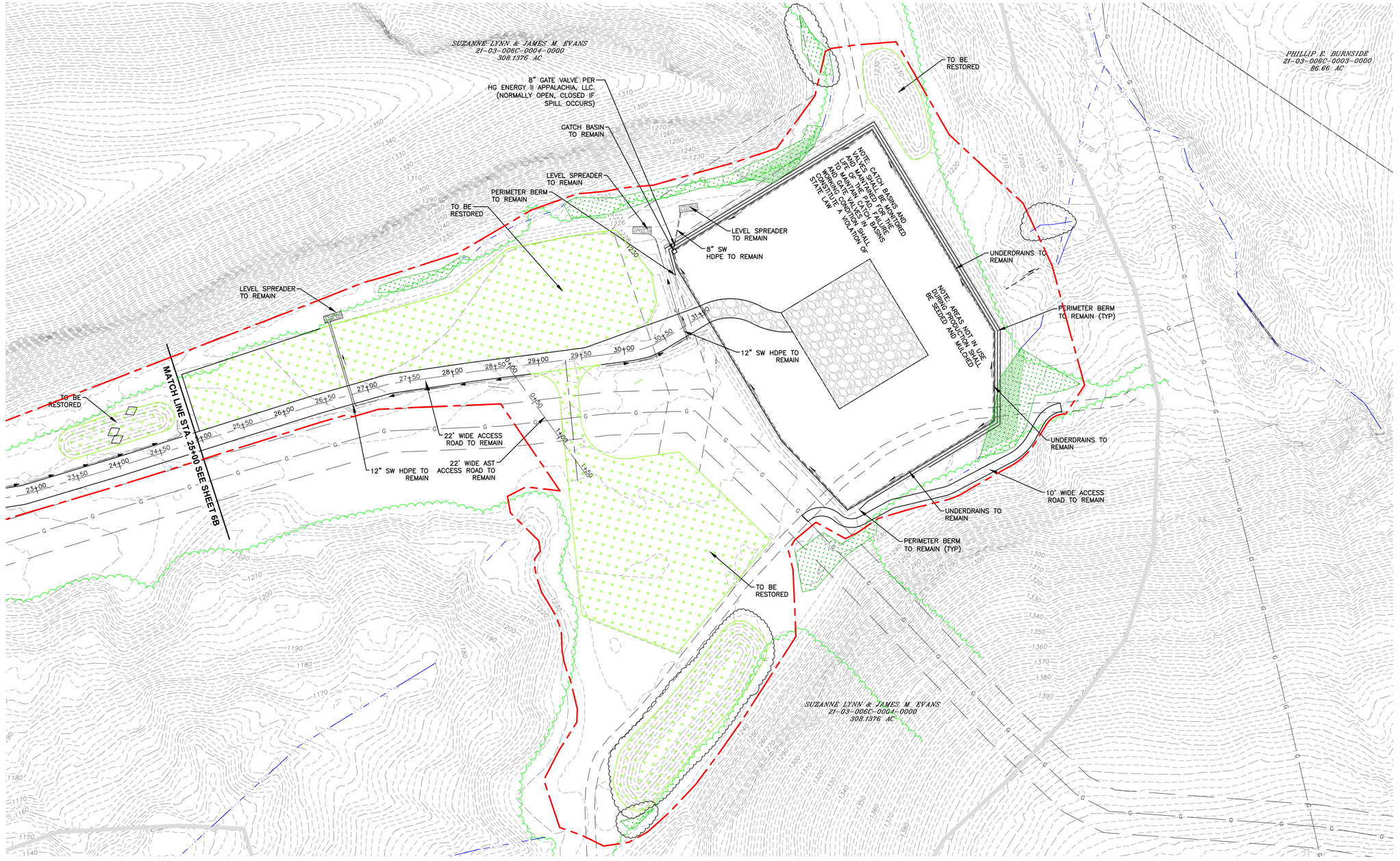

LEGEND

- ROCK CHECK DAM
- RIPRAP APRON
- ACCESS ROAD/PAD CHANNEL
- APPROXIMATE LIMITS OF DISTURBANCE
- APPROXIMATE PROPERTY LINE
- EXISTING INDEX CONTOUR
- EXISTING INTERMEDIATE CONTOUR
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REFERENCE:

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NORTH

MATTHEW E. PIERCE REGISTERED 20458 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER 2-4-2021

SCALE – FEET

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RESTORATION PLAN

HG 1213 PAD
FREEMANS CREEK DISTRICT
LEWIS COUNTY, WEST VIRGINIA

PREPARED FOR

HG ENERGY II APPALACHIA, LLC
PARKERSBURG, WEST VIRGINIA

APPROVED WVDEP OOG
MODIFICATION
3/4/2021

APPROVED	MEP	09/04/2020
CHECKED	CAC	09/03/2020
DRAWN	SMH	09/03/2020
PROJECT No.	4000-PA008130	

DRAWING NUMBER
PA008130-001
SHEET 6C

Penn E&R
Environmental & Remediation, Inc.
111 RYAN COURT, PITTSBURGH, PA 15205;
412-722-1222

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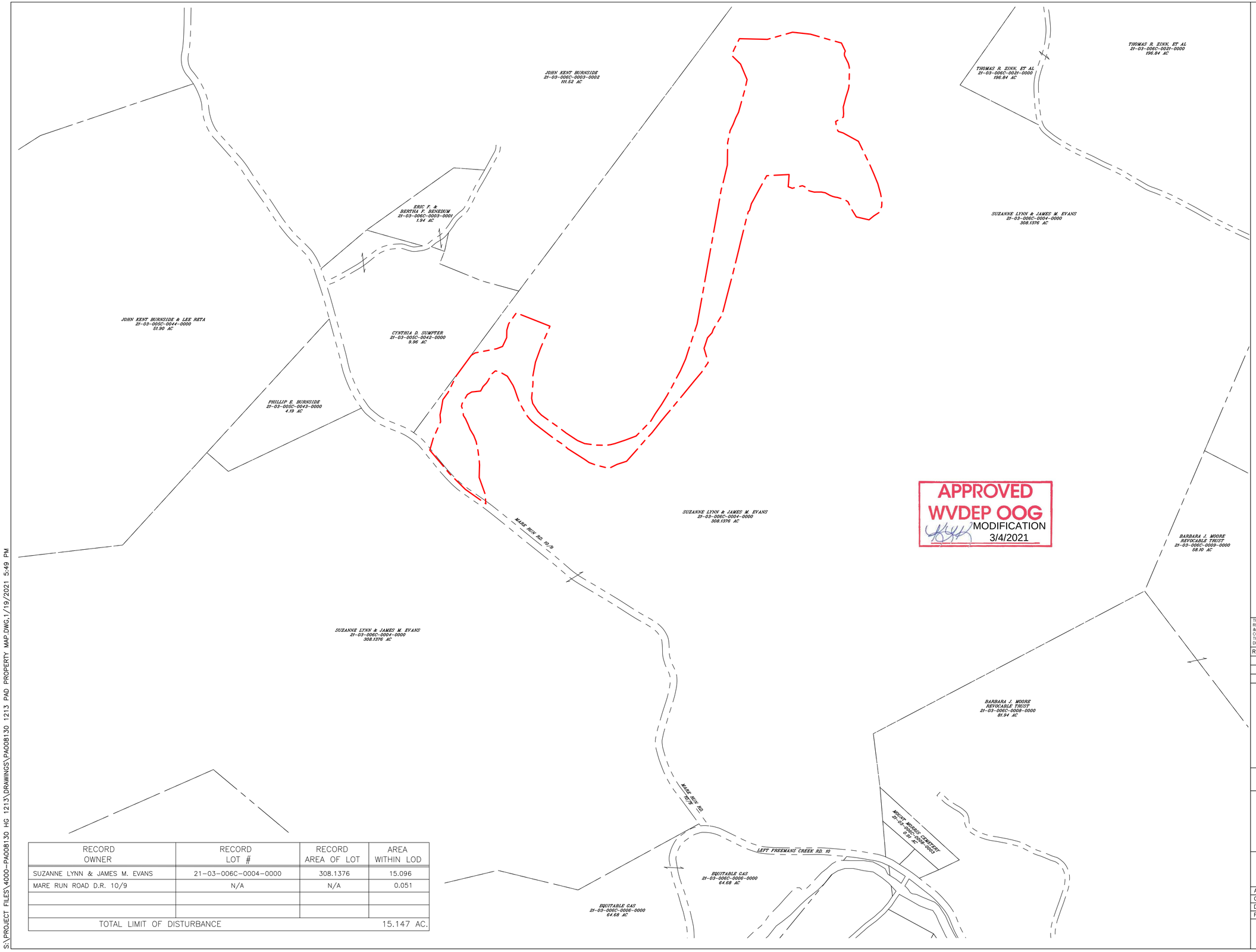

APPROVED
WVDEP OOG
MODIFICATION
3/4/2021

RECORD OWNER	RECORD LOT #	RECORD AREA OF LOT	AREA WITHIN LOD
SUZANNE LYNN & JAMES M. EVANS	21-03-006C-0004-0000	308.1376	15.096
MARE RUN ROAD D.R. 10/9	N/A	N/A	0.051
TOTAL LIMIT OF DISTURBANCE			15.147 AC.

LEGEND

APPROXIMATE LIMITS OF DISTURBANCE

APPROXIMATE PROPERTY LINE

REFERENCE:

1. PROPERTY BOUNDARIES & OWNER INFORMATION OBTAINED VIA WV PROPERTY VIEWER. WWW.MAPWV.GOV/PARCEL/

REVISION	DATE	DESCRIPTION
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NORTH

MATTHEW E. VERCE
REGISTERED
20458
STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER
1-7-2021

SCALE – FEET

0 200 400 600

PROPERTY MAP

HG 1213 PAD
FREEMANS CREEK DISTRICT
LEWIS COUNTY, WEST VIRGINIA

PREPARED FOR

HG ENERGY II APPALACHIA, LLC
PARKERSBURG, WEST VIRGINIA

APPROVED	MEP	09/04/2020
CHECKED	CAC	09/03/2020
DRAWN	SMH	09/03/2020
PROJECT No.	4000-PA008130	

DRAWING NUMBER
PA008130-001
SHEET 7

Penn E&R
Environmental & Remediation, Inc.
111 RYAN COURT, PITTSBURGH, PA 15205;
412-722-1222

S:\PROJECT FILES\4000-PA008130 HG 1213\DRAWINGS\PA008130 1213 PAD PROPERTY MAP.DWG,1/19/2021 5:49 PM

HG Energy, LLC
5260 Dupont Road
Parkersburg, WV 26101
(304) 420-1100 - Office
(304) 863-3172 - Fax

February 3, 2021

WV DEP
Division of Oil & Gas
Attn: Kelly Kees
601 57th Street
Charleston, West Virginia 25304

RE: Evans 1213 Construction Site Plans
Freemans Creek District, Lewis County, West Virginia
Request for Revision

Dear Ms. Kees -

Per discussions with Barry Stollings, enclosed are revised construction plans for the 1213 well pad. The LOD was increased slightly to include a slip area which is being corrected. The AST site was moved to accommodate a proposed Tap Site. The staging area and stockpile were shifted slightly to allow for the AST site move. Please refer to the enclosed set of plans and attached USB. We request DEP approval for these revisions.

Please let me know if you have any questions or require additional information. I can be reached at (304) 420-1119 or dwhite@hgenergyllc.com.

Very truly yours,

Diane White

Diane C. White

Enclosures

cc: Barry Stollings – Inspector
Matt Pierce – Penn E&R

CONSTRUCTION IMPROVEMENT PLANS WITH EROSION AND SEDIMENT CONTROLS

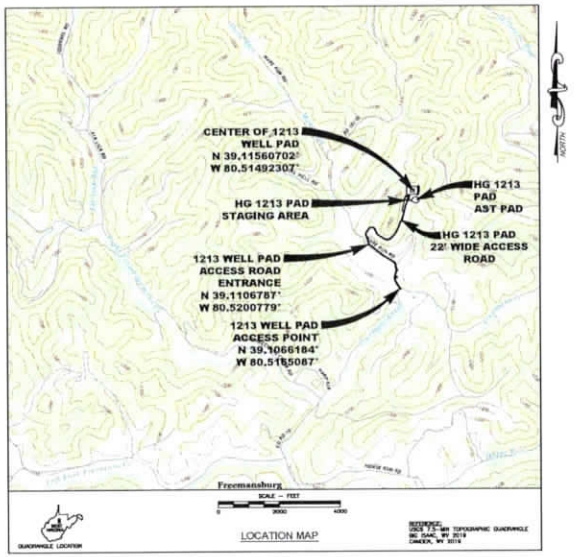
HG 1213 WELL PAD

FREEMANS CREEK DISTRICT
LEWIS COUNTY
WEST VIRGINIA

SHT. NO.	SHEET TITLE
1	TITLE SHEET
2A–2D	SITE DEVELOPMENT PLANS
3	WELL PAD SECTIONS
4A–4B	ACCESS ROAD SECTIONS
5A–5F	CONSTRUCTION NOTES & DETAILS
6A–6C	RESTORATION PLAN
7	PROPERTY MAP

CONSTRUCTION SEQUENCE

1. Prior to commencement of any earth disturbance activity including clearing and grubbing, the registrant shall call West Virginia 811 by dialing 811 or 1-800-245-4848 to identify all utility lines. The registrant also must clearly delineate sensitive areas, riparian forest buffer boundaries, the limits of clearing, and trees that are to be conserved within the project site, and shall install appropriate barriers where equipment may not be parked, staged, operated or located for any purpose.
2. Site access - This is the first land-disturbance activity to take place at the site and should provide BMPs to minimize accelerated erosion and sedimentation from the following areas: entrance to the site, construction routes, and areas designated for equipment or other use at the site including parking, stockpiles.
3. Sediment Barriers - Install perimeter BMPs after the construction site is accessed, keeping associated clearing and grubbing limited to only that amount required for installing perimeter BMPs.
4. Land Clearing and Grading - Implement clearing and grading only after all downslope E&S BMPs have been constructed and stabilized.
5. Surface Stabilization - Apply temporary or permanent stabilization measures immediately to any disturbed areas where work has reached final grade, has been delayed or otherwise temporarily suspended.
6. Construction of Buildings, Utilities, and Paving - During construction, install and maintain any additional erosion and sediment control BMPs, and implement any structural post construction stormwater BMPs that may be required.
7. Upon completion of pad grading, compact the pad to grade and begin placement of pad soil cement.
8. Final Stabilization, Topsoiling, Trees and Shrubs - After construction is completed, install stabilization BMPs including: permanent seeding, mulching and riprap, and complete implementation of stormwater BMPs in this last construction phase. Stabilize all open areas, including borrow and spoil areas, and remove all temporary BMPs and stabilize any disturbances associated with the removal of the BMP.



PREPARED FOR

HG ENERGY II APPALACHIA, LLC
5260 DUPONT ROAD
PARKERSBURG, WEST VIRGINIA 26101
(304) 420–1100

PREPARED BY

PENN ENVIRONMENTAL & REMEDIATION, INC.
111 RYAN COURT
PITTSBURGH, PA 15205
(412) 722–1222

Estimated Gross Material Balance (CY)			
Final Development - Gravel Option			
	Cut	Fill	Stockpile
1213 Well Pad	8,320	7,670	650
1213 Well Pad Access Road	5,320	1,540	3,780
1213 Well Pad TAP Site Pad	350	440	-90
1213 Well Pad AST and Staging Area	12	2,851	-2,839
Totals	14,002	12,501	1,501
Est. Swell Factor (20%)			300
Total Site Balance			1,801
Stripped Topsoil (Limits of Earthwork)			6,152
Est. Swell Factor (20%)			1,230
Est. Topsoil Stockpile Volume (Loose CY)			7,382
Minimum Total Stockpile Capacity Required (CY)			9,183

Notes:
1. Material balance for est. gross earthwork quantities only.
2. Topsoil est. volume based on 6 inches average depth.
3. Material balance and aggregate quantities based on estimates and may not be representative of actual quantities.
4. Estimates do not reflect contractor pay volumes.

Estimated Gravel Quantities					
	Access Route	Staging AST Pad	1213 Well Pad	TAP Site Pad	TOTAL
10" Soil Cement (Paved SY)	8,605	5,329	16,700	4,077	28,912
3" Depth of 1.5" Crusher Run (Tons)	823	388	773	290	2,098
Estimated Pad Access Road 8" Fibre Sock Length (LF)					730
Estimated Well Pad 8" Fibre Sock Length (LF)					1310
TOTAL Estimated 8" Compost Fibre Sock Length (LF)					2044
Estimated Pad Access Road Limit of Disturbance (Acres)					8.437
Estimated 1213 Well, AST & Staging Pads Limit of Disturbance (Acres)					6.71
TOTAL Estimated Limit of Disturbance (Acres)					15.147
Well Pad Peak Pre-Construction Elevation (Ft)					1233.00
Well Area Subbase Elevation (Top of Soil Cement Subbase) (Ft)					1227.30
Well Area Surface Elevation (Ft)					1232.67

WELL #	LAT.	LONG.
N–1H	N 39.115635	W 80.515002
N–2H	N 39.115635	W 80.514949
N–3H	N 39.115634	W 80.514896
N–4H	N 39.115634	W 80.514844
S–5H	N 39.115566	W 80.515003
S–6H	N 39.115566	W 80.514950
S–7H	N 39.115566	W 80.514897
S–8H	N 39.115565	W 80.514844

WELL ELEVATIONS 1227.46
UTM83–17F

	LATITUDE	LONGITUDE
1213 WELL PAD ACCESS POINT	N 39.1066184'	W 80.5165087'
1213 WELL PAD ACCESS ROAD ENTRANCE	N 39.1106787'	W 80.5200779'

RECORD OWNER	RECORD LOT #	RECORD AREA OF LOT	AREA WITHIN LOD
SUZANNE LYNN & JAMES M. EVANS	21–03–0060–0004–0000	308.1376	15.096
MARE RUN ROAD D.R. 10/9	N/A	N/A	0.051
TOTAL LIMIT OF DISTURBANCE			15.147 AC.

RECEIVED
Office of Oil and Gas
FEB 05 2021
WV Department of
Environmental Protection

REVISION	DATE	DESCRIPTION
1	2020–09–29	REVISED PER CLIENT COMMENTS
2	2020–11–20	REVISED PER WVDEP COMMENTS
3	2021–01–18	REVISED PER CLIENT COMMENTS

TITLE SHEET

HG 1213 PAD
FREEMANS CREEK DISTRICT
LEWIS COUNTY, WEST VIRGINIA

PREPARED FOR

HG ENERGY II APPALACHIA, LLC
PARKERSBURG, WEST VIRGINIA

APPROVED	MEP	09/04/2020
CHECKED	GAC	09/03/2020
DRAWN	SMH	09/03/2020
PROJECT No.	4000–PA008130	

DRAWING NUMBER
PA008130–001
SHEET 1

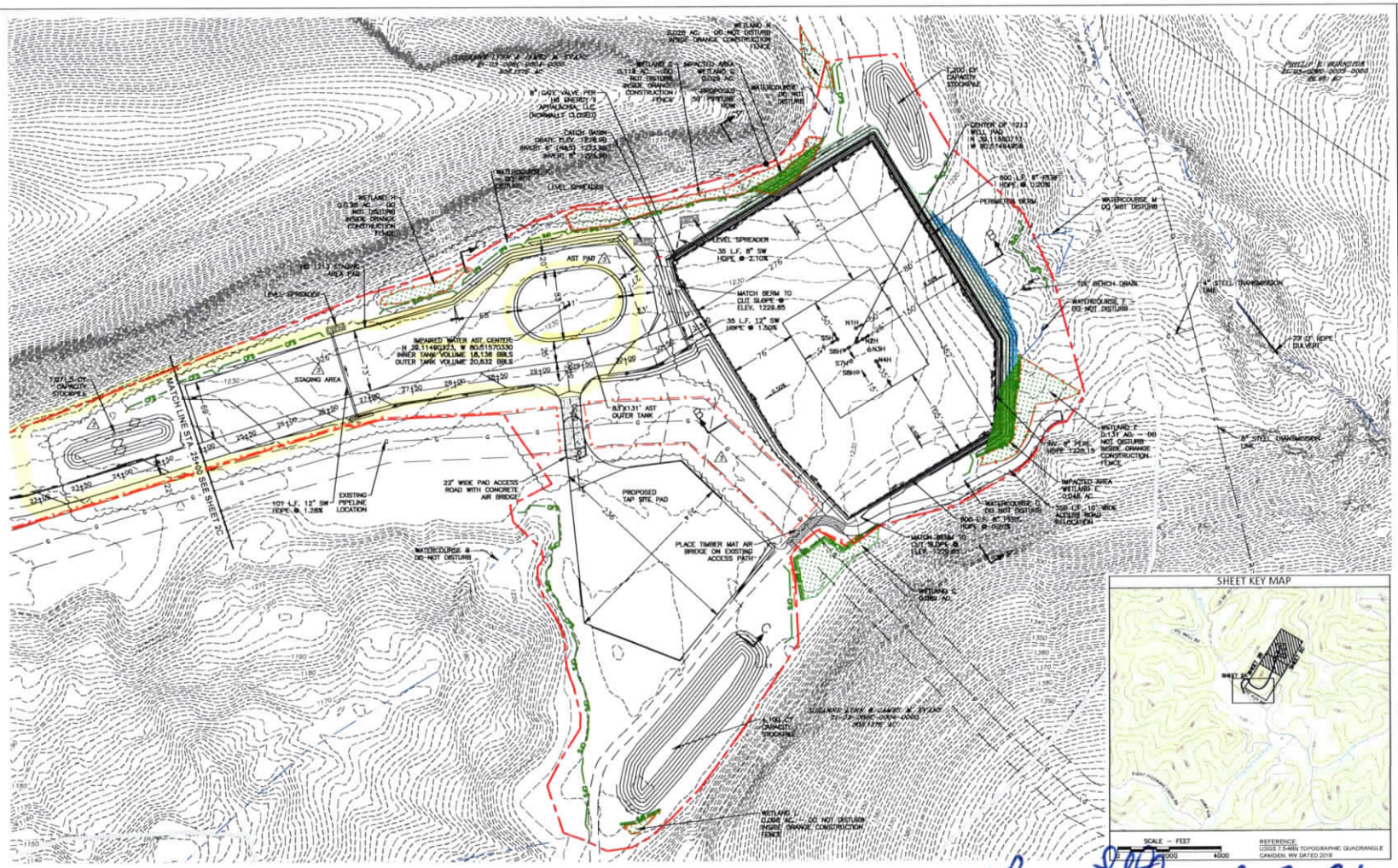
Penn E&R Environmental & Remediation, Inc.
111 RYAN COURT, PITTSBURGH, PA 15205
412–722–1222

Barry Stilley 1-2-21

WEST VIRGINIA 811 CALL BEFORE YOU DIG! Dial 811 or 800.245.4848 Miss Utility of West Virginia

1. SERVICE UTILITY LINES ARE NOT SHOWN ON THE PLANS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING, MAINTAINING, AND REPLACING AS NECESSARY TO ENSURE CONTINUAL SERVICE.

S:\PROJECT FILES\4000–PA008130 HG 1213\DRAWINGS\PA008130 TITLE SHEET.DWG, 1/28/2021 12:03 PM



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REVISION	DATE	DESCRIPTION
1	2020-09-29	REVISED PER CLIENT COMMENTS
2	2020-11-20	REVISED PER INSPECTOR COMMENTS
3	2021-01-18	REVISED PER CLIENT COMMENTS

APPROVED	MEP 09/04/2020
CHECKED	CAC 09/03/2020
DRAWN	SMH 09/03/2020
PROJECT No.	4000-PA008130

DRAWING NUMBER
PA008130-001
SHEET 20

Barry Stilley 2-2-21

C:\PROJECT FILES\4000-PA008130 HG 1213\DRAWINGS\01 WEST SGG TAP & 1213 SIX WELLS - PLANS - REV 3- 1-22-21.DWG, 1/25/2021 4:01 PM