



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

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

PERMIT MODIFICATION APPROVAL
Horizontal 6A / Horizontal 6A Well - 1

ANTERO RESOURCES CORPORATION
1615 WYNKOOP STREET

DENVER, CO 80202

Re: Permit Modification Approval for MANZAREK UNIT 2H
47-017-06776-00-00

Top Hole Coordinates changed

ANTERO RESOURCES CORPORATION

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: MANZAREK UNIT 2H
Farm Name: FOSTER, YVONNE
U.S. WELL NUMBER: 47-017-06776-00-00
Horizontal 6A / Horizontal 6A Well - 1
Date Issued: 09/23/2016

Promoting a healthy environment.

09/23/2016



September 22, 2016

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

West Virginia Department of Environmental Protection
Office of Oil and Gas
Attn: Mrs. Laura Adkins
601 57th Street
Charleston, WV 25304

Mrs. Adkins:

Antero Resources Corporation (Antero) is submitting the following permit modifications for two approved wells on the Yvonne Pad. We are requesting to slightly shift the surface hole locations of the Manzarek Unit 1H (API# 47-017-06775) and Manzarek Unit 2H (API# 47-017-06776) as shown on the attached survey plats.

The Yvonne Pad will not change from what was originally approved, and there will be no additional disturbance associated with these requested modifications. Please note that the casing program is the same as submitted and approved in the original permit application.

Attached you will find the following documents:

- REVISED Mylar Plats, which show the new surface hole locations
- REVISED Exhibit 7: Well Pad Surface Diagram, which shows the changes to the Yvonne Pad surface configuration

If you have any questions please feel free to contact me at (303) 357-7323.

Thank you in advance for your consideration.

Sincerely,

A handwritten signature in black ink that reads "Ashlie Steele". The signature is written in a cursive, flowing style.

Ashlie Steele
Permitting Supervisor
Antero Resources Corporation

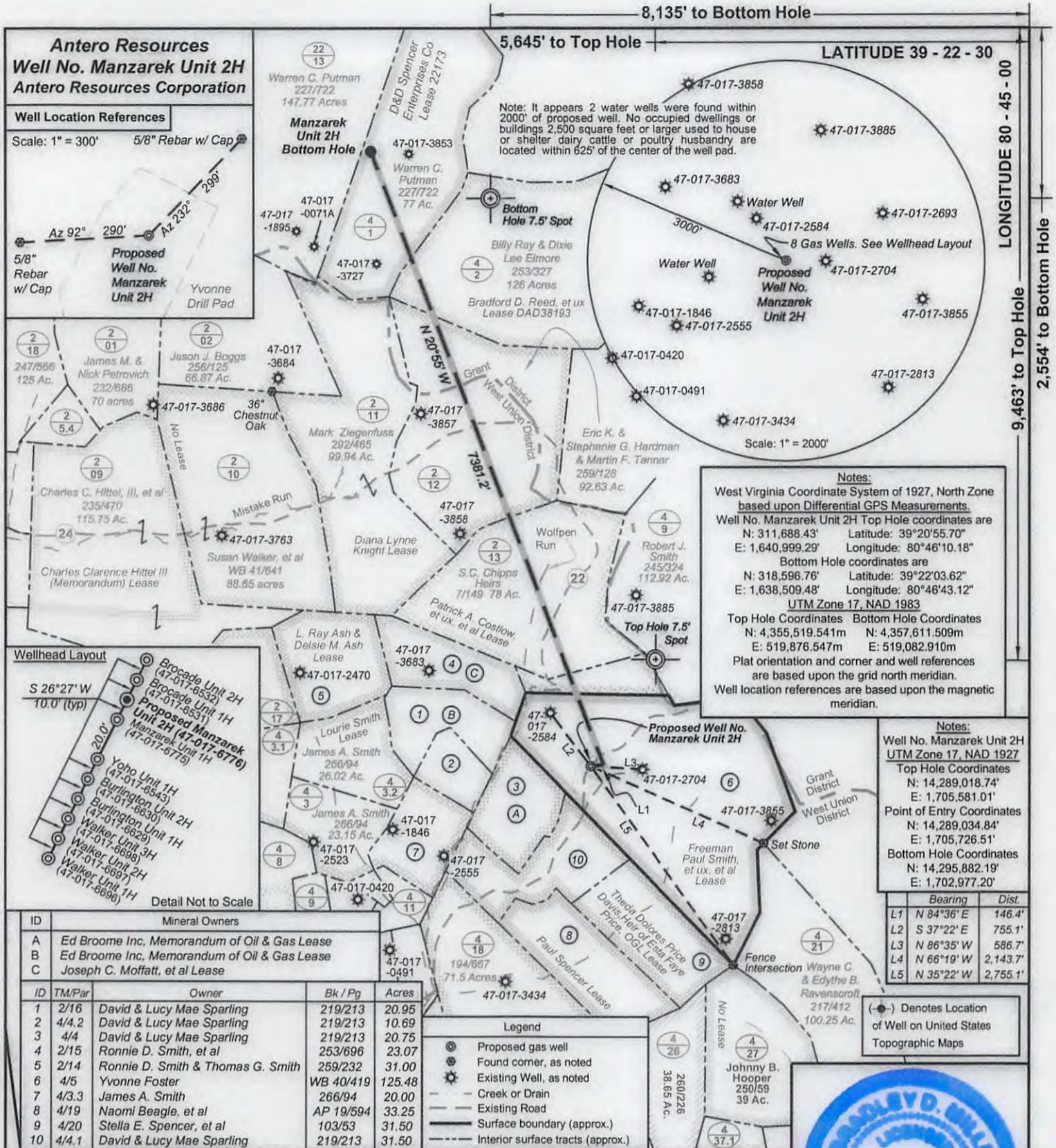
Enclosures

RECEIVED
Office of Oil and Gas

SEP 23 2016

WV Department of
Environmental Protection

09/23/2016



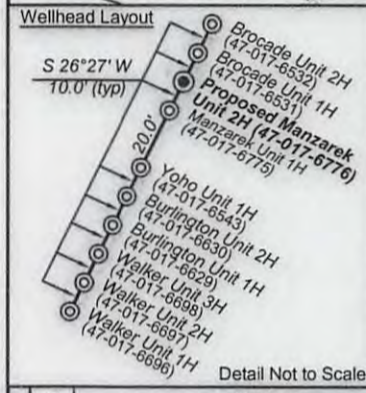
Antero Resources
Well No. Manzarek Unit 2H
Antero Resources Corporation

Well Location References
 Scale: 1" = 300' 5/8" Rebar w/ Cap

Notes:
 West Virginia Coordinate System of 1927, North Zone based upon Differential GPS Measurements.
 Well No. Manzarek Unit 2H Top Hole coordinates are
 N: 311,688.43' Latitude: 39°20'55.70"
 E: 1,640,999.29' Longitude: 80°46'10.18"
 Bottom Hole coordinates are
 N: 318,596.76' Latitude: 39°22'03.62"
 E: 1,638,509.48' Longitude: 80°46'43.12"
 UTM Zone 17, NAD 1983
 Top Hole Coordinates Bottom Hole Coordinates
 N: 4,355,519.541m N: 4,357,611.509m
 E: 519,876.547m E: 519,082.910m
 Plat orientation and corner and well references are based upon the grid north meridian.
 Well location references are based upon the magnetic meridian.

Notes:
 Well No. Manzarek Unit 2H UTM Zone 17, NAD 1927
 Top Hole Coordinates
 N: 14,289,018.74'
 E: 1,705,581.01'
 Point of Entry Coordinates
 N: 14,289,034.84'
 E: 1,705,726.51'
 Bottom Hole Coordinates
 N: 14,295,882.19'
 E: 1,702,977.20'

Bearing	Dist.
L1 N 84°36' E	146.4'
L2 S 37°22' E	755.1'
L3 N 86°35' W	586.7'
L4 N 66°19' W	2,143.7'
L5 N 35°22' W	2,755.1'



ID	Mineral Owners
A	Ed Broome Inc, Memorandum of Oil & Gas Lease
B	Ed Broome Inc, Memorandum of Oil & Gas Lease
C	Joseph C. Moffatt, et al Lease

ID	TM/Par	Owner	Bk / Pg	Acres
1	2/16	David & Lucy Mae Sparling	219/213	20.95
2	4/4.2	David & Lucy Mae Sparling	219/213	10.69
3	4/4	David & Lucy Mae Sparling	219/213	20.75
4	2/15	Ronnie D. Smith, et al	253/696	23.07
5	2/14	Ronnie D. Smith & Thomas G. Smith	259/232	31.00
6	4/5	Yvonne Foster	WB 40/419	125.48
7	4/3.3	James A. Smith	266/94	20.00
8	4/19	Naomi Beagle, et al	AP 19/594	33.25
9	4/20	Stella E. Spencer, et al	103/53	31.50
10	4/4.1	David & Lucy Mae Sparling	219/213	31.50

Legend

- Proposed gas well
- Found corner, as noted
- Existing Well, as noted
- Creek or Drain
- Existing Road
- Surface boundary (approx.)
- Interior surface tracts (approx.)



I, the undersigned, hereby certify that this plat is correct to the best of my knowledge and belief and shows all the information required by law and the rules issued and prescribed by the Department of Environmental Protection.

Bradley D. Miller
Bradley D. Miller, P.S. 2167



FILE NO: 264-30(54)-M(G)-14
 DRAWING NO: Manzarek 2H Well Plat 09-22-16
 SCALE: 1" = 1500'
 MINIMUM DEGREE OF ACCURACY: Submeter
 PROVEN SOURCE OF ELEVATION: WVDOT, Harrisville, WV

STATE OF WEST VIRGINIA
 DEPARTMENT OF ENVIRONMENTAL PROTECTION
OIL AND GAS DIVISION

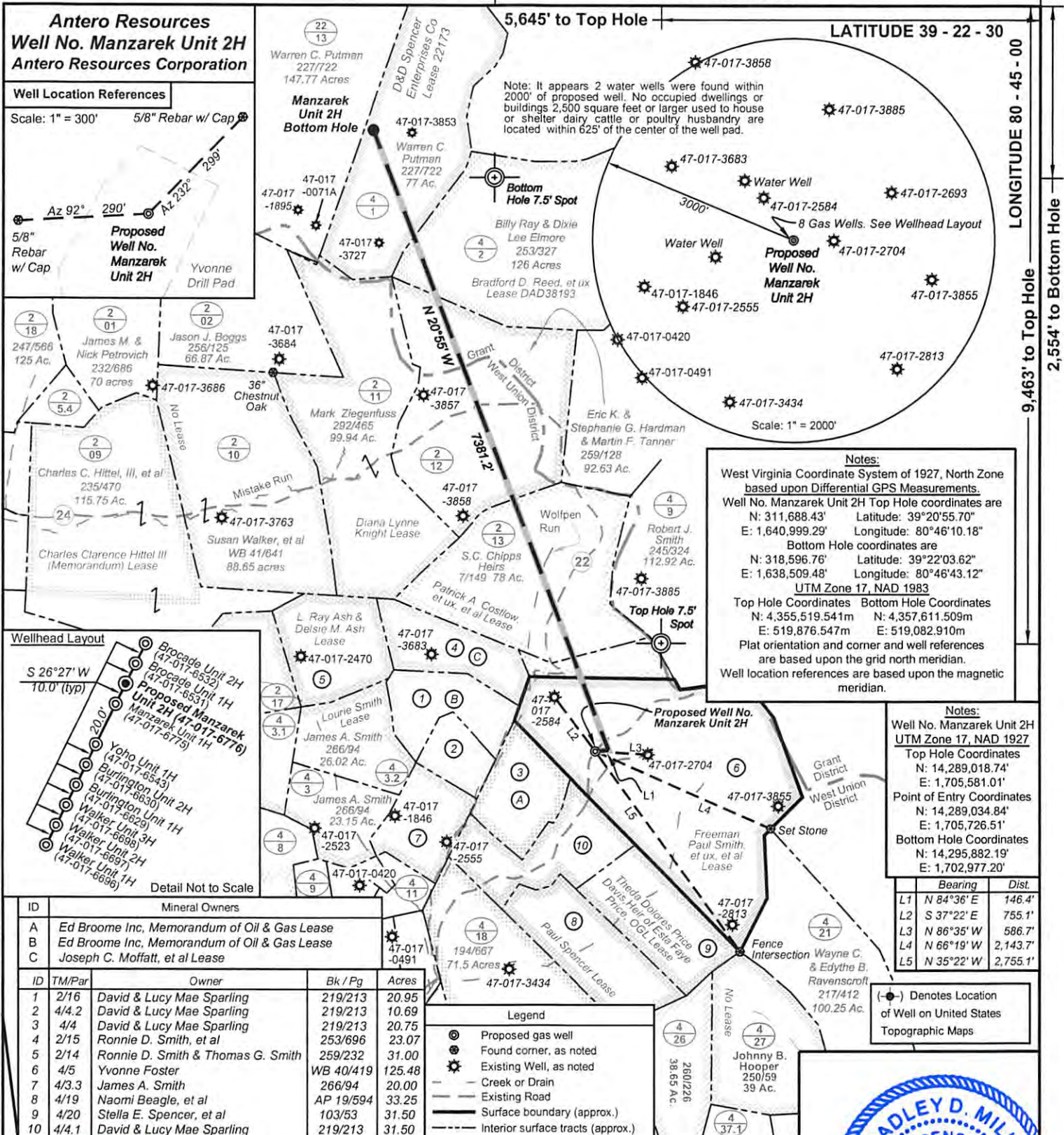
DATE: September 22 20 16
 OPERATOR'S WELL NO. Manzarek Unit 2H
 API WELL NO
 47 - 017 - 6776
 STATE COUNTY PERMIT

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
 (IF GAS) PRODUCTION: STORAGE DEEP SHALLOW
 LOCATION: ELEVATION: Proposed Grade-1227' WATERSHED: Headwaters Middle Island Creek QUADRANGLE: West Union
 DISTRICT: West Union COUNTY: Doddridge

SURFACE OWNER: Yvonne Foster Diana Lynne Knight ACREAGE: 125.48 283; 73
 ROYALTY OWNER: Freeman Paul Smith, et ux, et al; Bradford D. Reed, et ux LEASE NO: 22173; DAD38193 ACREAGE: 125; 126; 78.973
 PROPOSED WORK: DRILL CONVERT DRILL DEEPER FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
 PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) SHL-MOD 7,400' TVD
 PLUG AND ABANDON CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 15,700' MD

WELL OPERATOR: Antero Resources Corporation DESIGNATED AGENT: Dianna Stamper - CT Corporation System
 ADDRESS: 1615 Wynkoop Street ADDRESS: 5400 D Big Tyler Road
 Denver, CO 80202 Charleston, WV 25313

09/23/2016



Antero Resources
Well No. Manzarek Unit 2H
Antero Resources Corporation

Well Location References
 Scale: 1" = 300' 5/8" Rebar w/ Cap

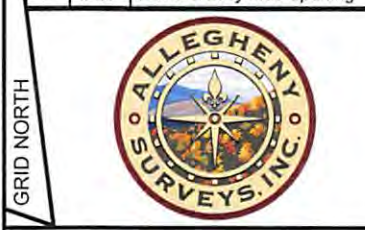
Wellhead Layout
 S 26°27' W 10.0' (typ)

Proposed Manzarek Unit 2H Well Plat (47-017-6776)

Yoho Unit 1H (47-017-6543)
 Burlington Unit 2H (47-017-6630)
 Burlington Unit 1H (47-017-6629)
 Walker Unit 3H (47-017-6698)
 Walker Unit 2H (47-017-6697)
 Walker Unit 1H (47-017-6696)

ID	Mineral Owners
A	Ed Broome Inc, Memorandum of Oil & Gas Lease
B	Ed Broome Inc, Memorandum of Oil & Gas Lease
C	Joseph C. Moffatt, et al Lease

ID	TM/Par	Owner	Bk / Pg	Acres
1	2/16	David & Lucy Mae Sparling	219/213	20.95
2	4/4.2	David & Lucy Mae Sparling	219/213	10.69
3	4/4	David & Lucy Mae Sparling	219/213	20.75
4	2/15	Ronnie D. Smith, et al	253/696	23.07
5	2/14	Ronnie D. Smith & Thomas G. Smith	259/232	31.00
6	4/5	Yvonne Foster	WB 40/419	125.48
7	4/3.3	James A. Smith	266/94	20.00
8	4/19	Naomi Beagle, et al	AP 19/594	33.25
9	4/20	Stella E. Spencer, et al	103/53	31.50
10	4/4.1	David & Lucy Mae Sparling	219/213	31.50



I, the undersigned, hereby certify that this plat is correct to the best of my knowledge and belief and shows all the information required by law and the rules issued and prescribed by the Department of Environmental Protection.

Bradley D. Miller
Bradley D. Miller, P.S. 2167



FILE NO: 264-30(54)-M(G)-14
 DRAWING NO: Manzarek 2H Well Plat 09-22-16
 SCALE: 1" = 1500'
 MINIMUM DEGREE OF ACCURACY: Submeter
 PROVEN SOURCE OF ELEVATION: WVDOT, Harrisville, WV

STATE OF WEST VIRGINIA
 DEPARTMENT OF ENVIRONMENTAL PROTECTION
OIL AND GAS DIVISION

DATE: September 22, 2016
 OPERATOR'S WELL NO: Manzarek Unit 2H
 API WELL NO: 47-017-6776
 STATE COUNTY PERMIT

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
 (IF GAS) PRODUCTION: STORAGE DEEP SHALLOW
 LOCATION: ELEVATION: Original Grade-1253' Proposed Grade-1227' WATERSHED: Headwaters Middle Island Creek QUADRANGLE: West Union
 DISTRICT: West Union COUNTY: Doddridge

SURFACE OWNER: Yvonne Foster Diana Lynne Knight ACREAGE: 125.48
 ROYALTY OWNER: Freeman Paul Smith, et ux, et al; Bradford D. Reed, et ux LEASE NO: 22173; DAD38193 ACREAGE: 125; 126; 78.973
 PROPOSED WORK: DRILL CONVERT DRILL DEEPER FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
 PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) SHL-MOD 7,400' TVD
 PLUG AND ABANDON CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 15,700' MD

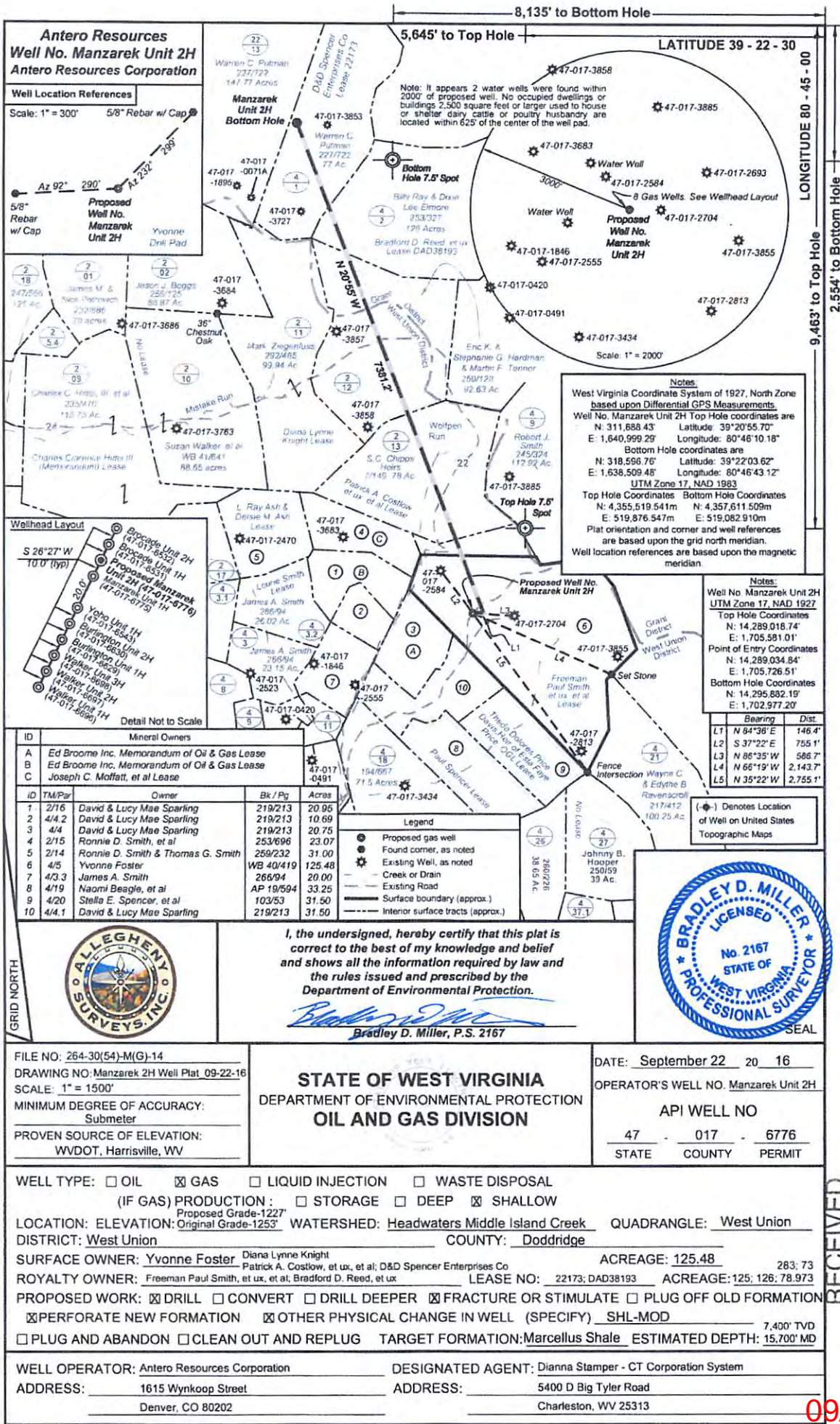
WELL OPERATOR: Antero Resources Corporation DESIGNATED AGENT: Dianna Stamper - CT Corporation System
 ADDRESS: 1615 Wynkoop Street ADDRESS: 5400 D Big Tyler Road
 Denver, CO 80202 Charleston, WV 25313

Notes:
 West Virginia Coordinate System of 1927, North Zone based upon Differential GPS Measurements.
 Well No. Manzarek Unit 2H Top Hole coordinates are
 N: 311,688.43' Latitude: 39°20'55.70"
 E: 1,640,999.29' Longitude: 80°46'10.18"
 Bottom Hole coordinates are
 N: 318,596.76' Latitude: 39°22'03.62"
 E: 1,638,509.48' Longitude: 80°46'43.12"
 UTM Zone 17, NAD 1983
 Top Hole Coordinates Bottom Hole Coordinates
 N: 4,355,519.541m N: 4,357,611.509m
 E: 519,876.547m E: 519,082.910m
 Plat orientation and corner and well references are based upon the grid north meridian.
 Well location references are based upon the magnetic meridian.

Notes:
 Well No. Manzarek Unit 2H UTM Zone 17, NAD 1927
 Top Hole Coordinates
 N: 14,289,018.74'
 E: 1,705,581.01'
 Point of Entry Coordinates
 N: 14,289,034.84'
 E: 1,705,726.51'
 Bottom Hole Coordinates
 N: 14,295,882.19'
 E: 1,702,977.20'

Bearing	Dist.
L1 N 84°36' E	146.4'
L2 S 37°22' E	755.1'
L3 N 86°35' W	586.7'
L4 N 66°19' W	2,143.7'
L5 N 35°22' W	2,755.1'

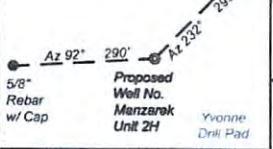
(●) Denotes Location of Well on United States Topographic Maps



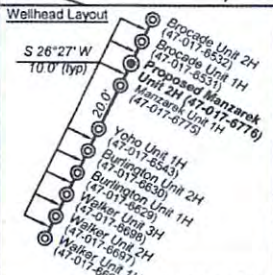
Antero Resources
Well No. Manzarek Unit 2H
Antero Resources Corporation

Well Location References

Scale: 1" = 300' 5/8" Rebar w/ Cap



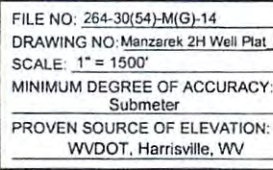
Proposed Well No. Manzarek Unit 2H
 Yvonne Drill Pad



Detail Not to Scale

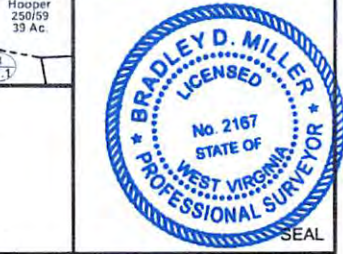
ID	Mineral Owners
A	Ed Broome Inc, Memorandum of Oil & Gas Lease
B	Ed Broome Inc, Memorandum of Oil & Gas Lease
C	Joseph C. Moffatt, et al Lease

ID	TML/Pgr	Owner	Bk / Pg	Acres
1	2/16	David & Lucy Mae Sparling	219/213	20.96
2	4/4.2	David & Lucy Mae Sparling	219/213	10.69
3	4/4	David & Lucy Mae Sparling	219/213	20.76
4	2/15	Ronnie D. Smith, et al	253/696	23.07
5	2/14	Ronnie D. Smith & Thomas G. Smith	269/232	31.00
6	4/5	Yvonne Foster	WB 40/419	125.48
7	4/3.3	James A. Smith	266/94	20.00
8	4/19	Naomi Beagle, et al	AP 19/594	33.25
9	4/20	Stella E. Spencer, et al	103/53	31.50
10	4/4.1	David & Lucy Mae Sparling	219/213	31.50



I, the undersigned, hereby certify that this plat is correct to the best of my knowledge and belief and shows all the information required by law and the rules issued and prescribed by the Department of Environmental Protection.

Bradley D. Miller
 Bradley D. Miller, P.S. 2167



FILE NO: 264-30(54)-M(G)-14
 DRAWING NO: Manzarek 2H Well Plat 09-22-16
 SCALE: 1" = 1500'
 MINIMUM DEGREE OF ACCURACY: Submeter
 PROVEN SOURCE OF ELEVATION: WVDOT, Harrisville, WV

STATE OF WEST VIRGINIA
 DEPARTMENT OF ENVIRONMENTAL PROTECTION
OIL AND GAS DIVISION

DATE: September 22 20 16
 OPERATOR'S WELL NO. Manzarek Unit 2H
API WELL NO
 47 - 017 - 6776
 STATE COUNTY PERMIT

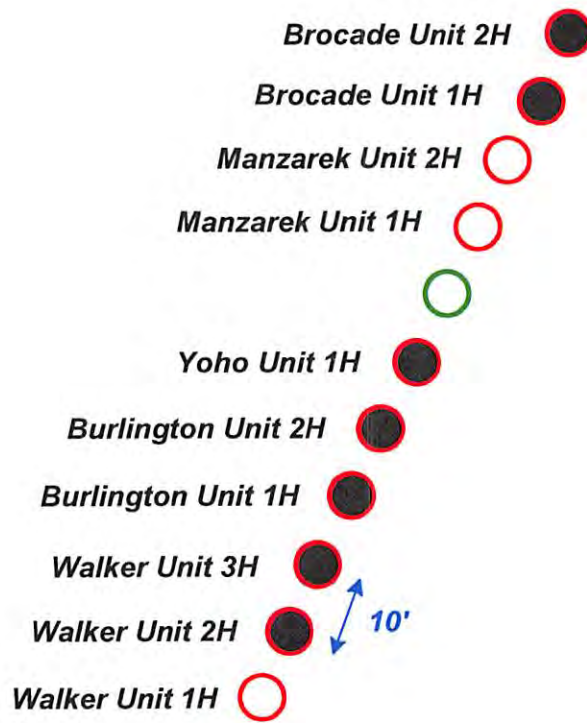
WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
 (IF GAS) PRODUCTION: STORAGE DEEP SHALLOW
 LOCATION: ELEVATION: Original Grade-1253' Proposed Grade-1227' WATERSHED: Headwaters Middle Island Creek QUADRANGLE: West Union
 DISTRICT: West Union COUNTY: Doddridge
 SURFACE OWNER: Yvonne Foster Diana Lynne Knight ACREAGE: 125.48
 Patrick A. Costlow, et ux, et al; D&D Spencer Enterprises Co 283; 73
 ROYALTY OWNER: Freeman Paul Smith, et ux, et al; Bradford D. Reed, et ux LEASE NO: 22173; DAD38193 ACREAGE: 125; 128; 78.973
 PROPOSED WORK: DRILL CONVERT DRILL DEEPER FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
 PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) SHL-MOD 7,400' TVD
 PLUG AND ABANDON CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 15,000' MD

WELL OPERATOR: Antero Resources Corporation DESIGNATED AGENT: Dianna Stamber - CT Corporation System
 ADDRESS: 1615 Wynkoop Street ADDRESS: 5400 D Big Tyler Road
 Denver, CO 80202 Charleston, WV 25313

RECEIVED
 Office of Oil and Gas
 SEP 23 2016
 WV Department of Environmental Protection

09/23/2016

Yvonne Pad



RECEIVED
Office of Oil and Gas

SEP 23 2016

WV Department of
Environmental Protection

WELL NAME	API NUMBER	WELL STATUS
Brocade Unit 2H	47-017-06532	Permitted Well
Brocade Unit 1H	47-017-06531	Permitted Well
Manzarek Unit 2H	Proposed Well	Permitted Well
Manzarek Unit 1H	Proposed Well	Permitted Well
Skipped Location		
Yoho Unit 1H	47-017-06543	Permitted Well
Burlington Unit 2H	47-017-06630	Permitted Well
Burlington Unit 1H	47-017-06629	Permitted Well
Walker Unit 3H	47-017-06696	Permitted Well
Walker Unit 2H	47-017-06697	Permitted Well
Walker Unit 1H	47-017-06696	Permitted Well

Legend	
	Existing Well
	Permitted Well
	Proposed Well
	Skipped Well

Updated: 09/22/2016

Not to Scale

09/23/2016