



west virginia department of environmental protection

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

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

PERMIT MODIFICATION APPROVAL

March 06, 2015

CNX GAS COMPANY LLC
POST OFFICE BOX 1248
JANE LEW, WV 26378

Re: Permit Modification Approval for API Number 103296 , Well #: AUD5CHS

Extend Lateral

Oil and Gas Operator:

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

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

Sincerely,

Gene Smith
Assistant Chief of Permitting
Office of Oil and Gas

47 00 103296 MOD



Carolinda Flanagan
Permitting Analyst
P.O. Box 1248
Jane Lew, WV 26378
(304) 884-2057



December 4, 2014

West Virginia Department of Environmental Protection
Office of Oil & Gas
Attn: Laura Cooper
601 57th Street, SE
Charleston, WV 25304-2345

RE: **AUD5BHS - API# 47-001-03295 (Lateral Extension – extending 2840' more)**
AUD5CHS - API# 47-001-03296 (Lateral Extension – extending 2575' more)
AUD5DHS - API# 47-001-03294 (Lateral Extension – extending 2890' more)
AUD5EHS - API# 47-001-03293 (Lateral Extension – extending 2480' more)

Dear Laura,

Enclosed, please find modifications for the AUD5BHS-AUD5EHS to extend the laterals due to additional leasing being obtained. I have attached an updated casing plan, mylar plat, lease breakdown, and road letters where applicable.

Should you need any further information, please contact me at (304) 884-2057 or by email at carolindaflanagan@consolenergy.com. Thank you!

Sincerely,


Carolinda Flanagan

RECEIVED
Office of Oil and Gas

DEC 05 2014

WV Department of
Environmental Protection

03/06/2015

470010329600



Carolinda Flanagan
Permitting Analyst
P.O. Box 1248
Jane Lew, WV 26378
(304) 884-2057



February 20, 2015

West Virginia Department of Environmental Protection
Office of Oil & Gas
Attn: Melanie Hankins
601 57th Street, SE
Charleston, WV 25304-2345

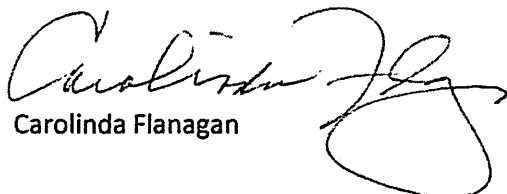
RE: AUD5BHS - API# 47-001-03295 (Lateral Extension – extending 2840' more)
AUD5CHS - API# 47-001-03296 (Lateral Extension – extending 2575' more)
AUD5DHS - API# 47-001-03294 (Lateral Extension – extending 2890' more)
AUD5EHS - API# 47-001-03293 (Lateral Extension – extending 2480' more)

Dear Melanie,

Enclosed, please find, per your request, clarification of the TVD, TMD, formation at TVD, and the cement section on the WW-6B for the modifications sent to you and dated December 4, 2014 for the AUD5BHS-AUD5EHS to extend the laterals due to additional leasing being obtained. I have attached updated casing plans, casing schematics, and mylar plats reflecting these changes.

Should you need any further information, please contact me at (304) 884-2057 or by email at carolindaflanagan@consolenergy.com. Thank you!

Sincerely,


Carolinda Flanagan

Received
Office of Oil & Gas
FEB 23 2015

03/06/2015

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

1) Well Operator: CNX Gas Company LLC 494458046 Barbour Union Audra
Operator ID County District Quadrangle

2) Operator's Well Number: AUD5CHS Well Pad Name: AUD5HS

3) Farm Name/Surface Owner: Dana L. Jenkins Public Road Access: US Rt 119

4) Elevation, current ground: 1621.5' Elevation, proposed post-construction: 1620'

5) Well Type (a) Gas Oil Underground Storage

Other

(b) If Gas Shallow Deep

Horizontal

6) Existing Pad: Yes or No No

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Associated Pressure(s):
Target - Marcellus, Depth - 7480' (Top), Thickness - 90', Pressure - 5000#

8) Proposed Total Vertical Depth: 7670'

9) Formation at Total Vertical Depth: Onondaga

10) Proposed Total Measured Depth: 14298'

11) Proposed Horizontal Leg Length: 5180'

12) Approximate Fresh Water Strata Depths: 72', 165', 505'

13) Method to Determine Fresh Water Depths: Offset Well Information

14) Approximate Saltwater Depths: None Anticipated

15) Approximate Coal Seam Depths: 165', 505'

16) Approximate Depth to Possible Void (coal mine, karst, other): None Anticipated

17) Does Proposed well location contain coal seams directly overlying or adjacent to an active mine? Yes No

(a) If Yes, provide Mine Info: Name: _____
Depth: _____
Seam: _____
Owner: _____

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Office of Oil & Gas

FEB 23 2015

WW-6B
(10/14)

API NO. 47- 001 - 03296
OPERATOR WELL NO. AUD5CHS
Well Pad Name: AUD5HS

18) CASING AND TUBING PROGRAM

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	20	N	J-55	94	60	60	67.7/ CTS
Fresh Water	13.375	N	J-55	54.5	650	600	312.5/ CTS
Coal							
Intermediate	9.675	N	J-55	36	2050	2000	469.7/ CTS
Production	5.5	N	P-110	20	14248	14298	2367.2
Tubing	2.375	N	J-55	4.7		7600	
Liners							

Handwritten note: 3/6/15

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Max. Associated Surface Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	20	26	0.438	2110	0	Class A	1.18
Fresh Water	13.375	17.5	0.380	2730	0	Class A	1.39
Coal							
Intermediate	9.675	12.25	0.352	3520	1693.8	Class A	1.18
Production	5.5	8.75	0.361	14360	6260.0	Class A	1.26
Tubing	2.375	5.5 csg	0.190	7700			
Liners							

PACKERS

Kind:	None			
Sizes:	None			
Depths Set:	None			

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19) Describe proposed well work, including the drilling and plugging back of any pilot hole:

Drill and stimulate new horizontal Marcellus well. Well to be drilled to a TMD of 14298'. Well to be drilled to a TVD of 7670', formation at TVD - Onondaga. Well will be plugged back to an approximate depth of 6800' (approximate due to exact kick off point being unknown). Plugging back will be done using the displacement method and Class A Type cement. A solid cement plug will be set from TD to KOP. If an unexpected void is encountered, plan will be to set casing at a minimum of 30' past void and cement to surface with approved Class A type cement. There will not be any production, perforation, or stimulation of any formations below the target formation.

20) Describe fracturing/stimulating methods in detail, including anticipated max pressure and max rate:

The stimulation will be multiple stages divided over the lateral length of the well. Stage spacing is dependent upon engineering design. Slickwater fracturing technique will be utilized on each stage using sand, water, and chemicals.

Max Pressure - 9500 psi. Max Rate - 100 bbl/min.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 16.62

22) Area to be disturbed for well pad only, less access road (acres): 11.88

23) Describe centralizer placement for each casing string:

Conductor - No centralizers used.

Surface - Rigid Bow spring centralizers on first joint then every third joint to surface.

Intermediate - Rigid Bow spring centralizers one on the first two joints and every third joint to surface.

Production - Rigid bow spring centralizer on first joint then every casing joint (free floating) through the lateral and every other joint in the curve. (Note: cementing the 5 1/2" casing completely in open hole lateral and curve.)

24) Describe all cement additives associated with each cement type:

Conductor - 2% CaCl₂.

Surface - 3% CaCl₂ & 1#/sk Celloflake LCM.

Intermediate - 3% CaCl₂ & 0.5#/sk Celloflake LCM.

Production - 2.6% Cement extender, 0.7% Fluid loss additive, 0.5% High Temperature Retarder, 0.2% Friction Reducer

25) Proposed borehole conditioning procedures:

Conductor - The hole is auger drilled w/ air and casing ran in air.

Surface - The hole is drilled w/ air and casing is ran in air. Once casing is on bottom, the casing string will be circulated w/ fresh water prior to cementing.

Intermediate - The hole is drilled w/ air and casing is ran in air. (Note: Drilling soap may be utilized if the hole gets wet/damp during the drilling of all air holes with the exception of the conductor)

Production - The hole will be drilled with synthetic oil base mud. At TD the hole is circulated at optimum pump rate until shale shaker deem the hole is clean. Once casing is ran the hole is circulated at minimum flow rate one hole volume prior to pumping cement.

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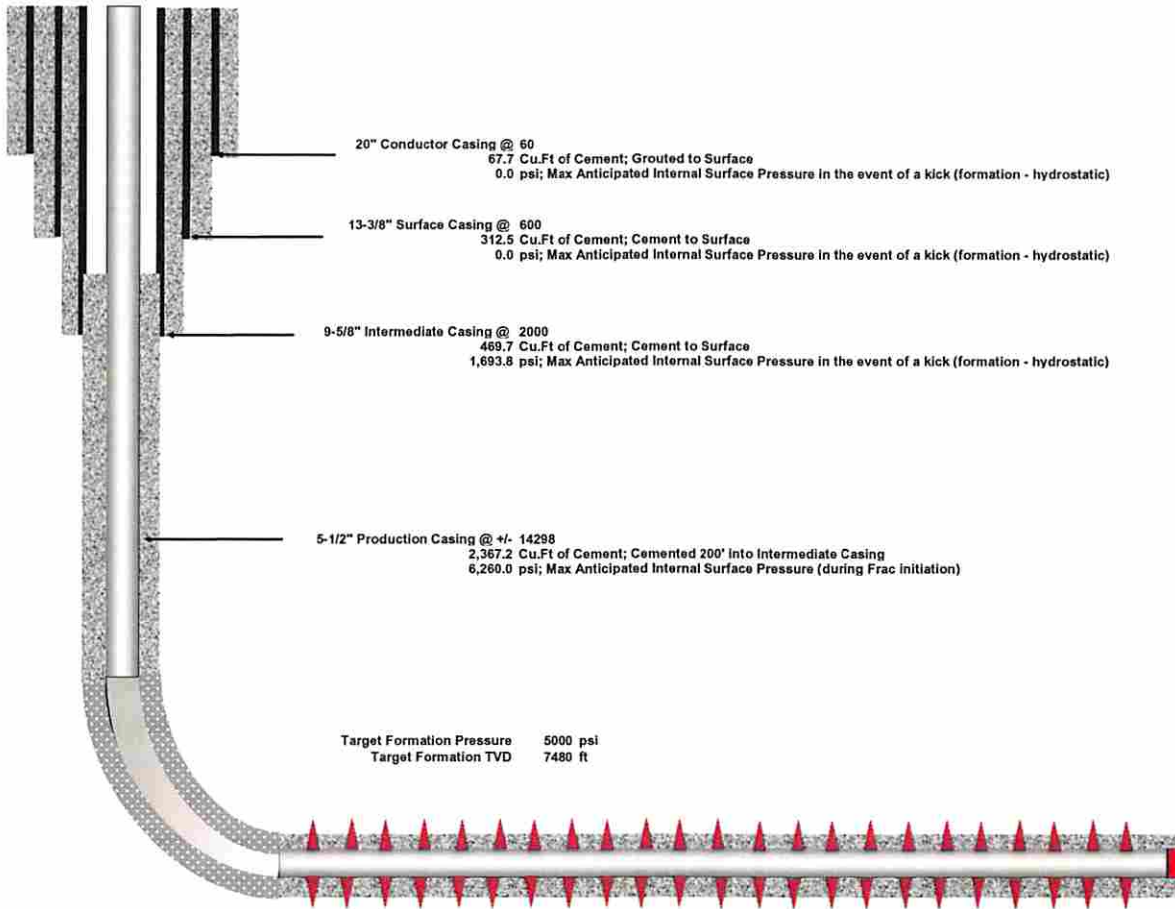
*Note: Attach additional sheets as needed.



AUD5CHS

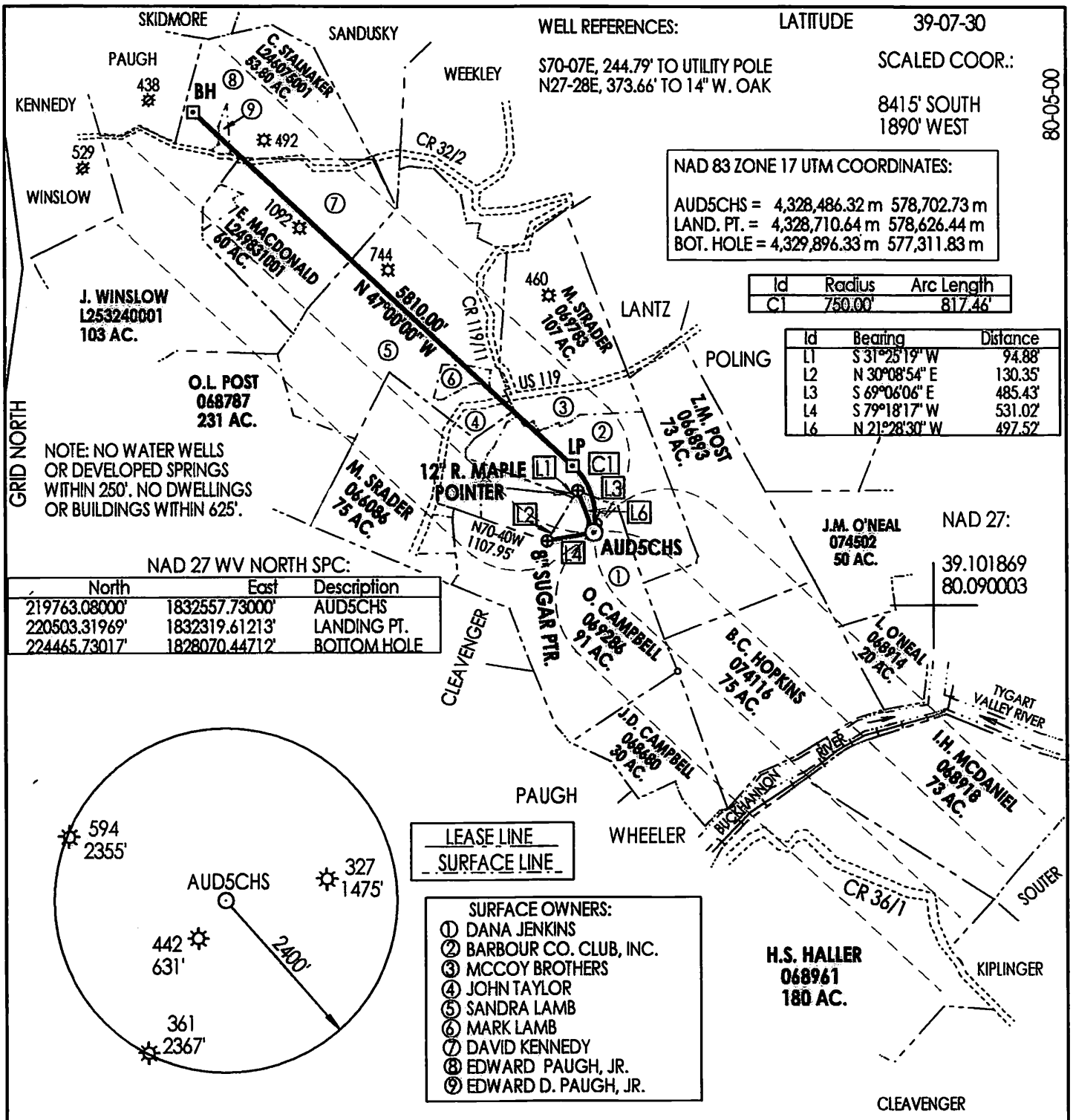
Casing Schematic

SCHEMATIC NOT TO SCALE



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FEB 23 2015

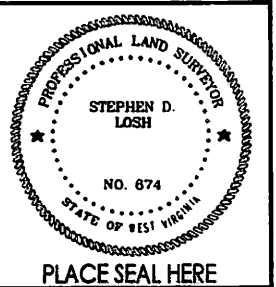


(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS

FILE NUMBER: _____
 DRAWING NUMBER: CNXAUD5CHSR4.PCS
 SCALE: 1" = 1600'
 MINIMUM DEGREE OF ACCURACY: SUBMETER
 PROVEN SOURCE OF ELEVATION: RTK GPS SURVEY
CENTIMETER SYSTEM

I THE UNDERSIGNED, HEREBY STATE THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENERGY.

(SIGNED) _____
 STEPHEN D. LOSH, P.S. #674



STATE OF WEST VIRGINIA
 DIVISION OF ENVIRONMENTAL PROTECTION
 OFFICE OF OIL AND GAS
 #10 McJUNKIN ROAD
 NITRO, WV 25143-2506

FORM WW-6

LAND SURVEYING SERVICES
 21 CEDAR LANE, BRIDGEPORT, WV 26330
 PHONE: 304-842-2018 OR 842-5762

DATE: FEBRUARY 11, 2015
 OPERATORS WELL NO.: AUD5CHS
 API WELL NO. 47-001-03296 MOD
 STATE COUNTY PERMIT

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL CBM
 (IF "GAS") PRODUCTION STORAGE DEEP SHALLOW

LOCATION: ELEVATION 1621.50' (494.24 m) WATERSHED BUCKHANNON RIVER
 DISTRICT UNION COUNTY BARBOUR
 QUADRANGLE AUDRA LEASE NUMBER SEE ABOVE
 SURFACE OWNER DANA L. JENKINS ACREAGE 50.00 (10-42)
 OIL & GAS ROYALTY OWNER O. CAMPBELL, ET. AL. LEASE ACREAGE 122.80

PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
 PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE (SPECIFY) HORIZONTAL

TARGET FORMATION MARCELLUS PLUG & ABANDON CLEAN OUT & REPLUG
 ESTIMATED DEPTH TVD = 7670' TMD = 14298'

WELL OPERATOR CNX GAS COMPANY LLC DESIGNATED AGENT MATTHEW IMRICH
 ADDRESS P. O. BOX 1248 JANE LEW, WV 26378 ADDRESS P. O. BOX 1248 JANE LEW, WV 26378

COUNTY NAME PERMIT

Attachment - Form WW-6A-1 for AUD5CHS:

Lease No.	Grantor, Lessor, etc	Grantee, Lessee, etc	Royalty	Book/Page
069286	Orville Campbell, et al Hope Natural Gas Company Consolidated Gas Supply Corp Consolidated Gas Transmission Corp CNG Transmission Corp Dominion Transmission, Inc. Consol Energy Holdings LLC XVI Consol Gas Company	Hope Natural Gas Company Consolidated Gas Supply Corp Consolidated Gas Transmission Corp CNG Transmission Corp Dominion Transmission, Inc. Consol Energy Holdings LLC XVI Consol Gas Company CNX Gas Company, LLC	\$75.00/Gas Well; 1/8 Oil Assignment Assignment Merger/Name Change Merger/Name Change Assignment Merger/Name Change Merger/Name Change	42/46 53/261 99/481 Aol 51/795 Harrison Aol 58/362 Harrison 151/423 Col 16/577 Col 17/1
069783	Martha Dyer Strader, et al Consolidated Gas Supply Corp Consolidated Gas Transmission Corp CNG Transmission Corp Dominion Transmission, Inc. Consol Energy Holdings Consol Gas Company	Consolidated Gas Supply Corp Consolidated Gas Transmission Corp CNG Transmission Corp Dominion Transmission, Inc. Consol Energy Holdings, LLC Consol Gas Company CNX Gas Company LLC	1/8 Assignment Merger/Name Change Merger/Name Change Assignment Merger/Name Change Merger/Name Change	65 / 497 99 / 481 Aol 51/795 Harrison Aol 58/362 Harrison 151 / 423 Col 16/577 Col 17/1
068787	O.L. Post, et al Consolidated Gas Supply Corp Consolidated Gas Transmission Corp CNG Transmission Corp Dominion Transmission, Inc. Consol Energy Holdings, LLC Consol Gas Company	Consolidated Gas Supply Corp Consolidated Gas Transmission Corp CNG Transmission Corp Dominion Transmission, Inc. Consol Energy Holdings, LLC Consol Gas Company CNX Gas Company LLC	1/8 Assignment Merger/Name Change Merger/Name Change Assignment Merger/Name Change Merger/Name Change	66 / 504 99 / 481 Aol 51/795 Harrison Aol 58/362 Harrison 151 / 423 Col 16/577 Col 17/1
L249831001	Ethel Jane MacDonald Roberta Scofield Sammy Rohrbaugh Gale Espinoza Brenda Lagrou Nona Rauch Freddy Rohrbaugh Billy Rohrbaugh Kay Lutz	CNX Gas Company LLC CNX Gas Company LLC CNX Gas Company LLC CNX Gas Company LLC CNX Gas Company LLC CNX Gas Company LLC CNX Gas Company LLC CNX Gas Company LLC CNX Gas Company LLC	1/8 1/8 1/8 1/8 1/8 1/8 1/8 1/8 1/8	166/386 168/559 168/549 168/533 168/554 168/528 168/564 168/523 168/518
L246075001	Charles C. Stalnaker, et ux Phyllis Pitman	CNX Gas Company LLC CNX Gas Company LLC	1/8 1/8	165/121 165/126

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DEC 05 2014

WV Department of
Environmental Protection

03/06/2015



December 3, 2014

Ms. Laura Cooper
WV DEP Office of Oil & Gas
601 57th St., SE
Charleston, WV 25304

RE: CONSOL Energy's proposed AUD5CHS Well, in Barbour County, West Virginia
Drilling under County Route 32/2

Dear Ms. Cooper:

CONSOL Energy, Inc. (CNX) is applying for a drilling permit for the above referenced well. The State of West Virginia has raised some concern as to CNX's right to drill under County Route 32/2. Please be advised that according to the title information we have relied on in submitting this application, the State owns no oil and gas rights under said road(s) and/or railroad(s) that CNX has leased said rights from the appropriate parties as set forth on the accompanying Form WW-6A1.

Very truly yours,

A handwritten signature in blue ink that reads 'Kelly Eddy'.

Kelly Eddy
Permitting Supervisor

03/06/2015