

API WELL NO. 45 - 105 - 21186  
State County Permit

Date: August 29, 19 88

Operator's  
Well No. 8810

VIRGINIA OIL AND GAS INSPECTOR  
Department of Labor & Industry  
Oil and Gas Section  
205 W. Main Street  
Abingdon, Virginia 24210  
Phone 703 628-8115

*LE-1101*

CERTIFICATION OF LOCATION OF A NEW WELL

I, the undersigned, hereby certify that I am familiar with the well plat showing the permitted location of the new well authorized by Permit No. 1186 and that the well has been drilled in compliancace with the standard of Regulation 4.02 of the Regulations promulgated pursuant to the Virginia Oil and Gas Act, as follows:

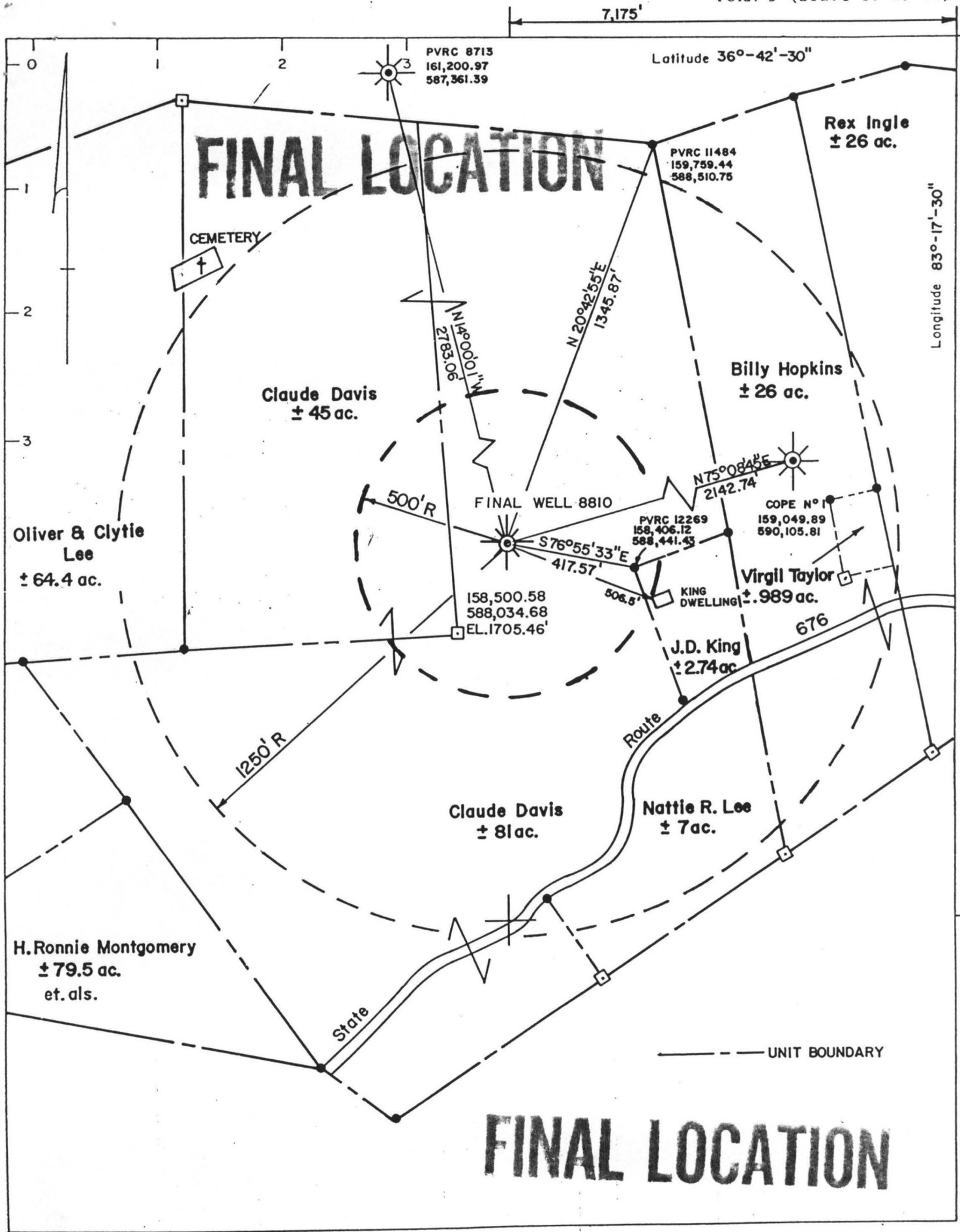
         within three feet of the location as permitted in an area underlain by known coal seams identified by the Chief of the Division of Mines pursuant to Code of Virginia § 45.1-333, or

  X   within ten feet of the location permitted other areas.

Final Location Moved 1.04' Southwest from the Permitted Location.

*[Signature]*  
Authorized Agent

APPROVED B. J. Innes  
TITLE State Oil and Gas Inspector  
DATE 8-30-88



(FOR OFFICE USE ONLY: API Well No. 45 - -  
State County Permit

Date: 8-26-, 1988

Operator's Well No. 8810

VIRGINIA OIL AND GAS INSPECTOR  
DEPARTMENT OF LABOR AND INDUSTRY  
DIVISION OF MINES  
219 Wood Avenue  
Big Stone Gap, Virginia 24219-1799  
Phone 703-523-0335

WELL PLAT

+ Denotes location of well on United States Topographic Maps, scale 1 to 24,000. Latitude and longitude lines are represented by border lines as shown.

This plat is new \_\_\_ / updated X /

This plat is \_\_\_ / is not X / based on a mine coordinate system established for the areas of the well location.

Well operator PENN VIRGINIA RESOURCES CORPORATION

Address PO BOX 386 DUFFIELD, VIRGINIA

Farm CLAUDE C. DAVIS

Tract \_\_\_\_\_ Acres ± 81 Lease No. \_\_\_\_\_

Elevation 1705.46'

Quadrangle ROSE HILL

County LEE District ROSE HILL

Registered Engineer X Registration No. 11439

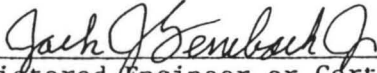
Certified Land Surveyor \_\_\_\_\_ Cert. No. \_\_\_\_\_

File No. \_\_\_\_\_ Drawing No. \_\_\_\_\_

Date 2/10/88 Scale 1" = 400'

Certification of Well Plat

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 regulations of the Virginia Well Review Board.

  
\_\_\_\_\_  
Registered Engineer or Certified Land Surveyor  
in Charge

VIRGINIA OIL AND GAS CONSERVATION BOARD  
Virginia Oil and Gas Inspector  
P. O. Box 1416  
Abingdon, Virginia 24210  
703 628-8115

LE-16A

## NOTICE OF COMPLETION OF A WELL UNDER ARTICLE 2

Pursuant to Regulation 2.02 of the Regulations under the Virginia Oil and Gas Act, applicable to, "each jurisdictional well completed or recompleted...in a pay zone deeper than 3,000 feet from the surface", the undersigned well operator hereby notifies the Virginia Oil and Gas Conservation Board of the completion of the referenced well, as completion is defined in Regulation 1.02(4), on October 6, 1988, in Rose Hill District, Lee County, Virginia as follows:

The completion was to perform all those acts which resulted in the well being capable of producing oil or gas

The well proved to be incapable of commercial production, and was plugged and abandoned

The undersigned will also file with the Inspector a Report of Completion of Well Work (Form 16) within the time period provided in Regulation 4.06(a).

Other well operators, if any, who have an interest in the well have been mailed a copy of this Notice. The names and addresses of such other operators are typed below:



APPLICANT: Penn Virginia Resources Corporation  
BY: William M. Ryan *William M Ryan*  
ITS: Senior Petroleum Geologist  
ADDRESS: P.O. Box 386, Duffield, VA 24244  
TELEPHONE: (703) 431-2831

VIRGINIA OIL AND GAS CONSERVATION BOARD  
Virginia Oil and Gas Inspector  
P. O. Box 1416  
Abingdon, Virginia 24210  
703 628-8115

## INITIAL TEST OF A WELL UNDER ARTICLE 2

Fursuant to Regulation 2.02 (c) of the Regulations under the Virginia Oil and Gas Act, applicable to, "each jurisdictional well completed or recompleted...in a pay zone deeper than 3,000 feet from the surface", the undersigned well operator hereby reports to the Virginia Oil and Gas Conservation Board the initial tests of the referenced well, which was completed on 10-6-88 in Rose Hill District, Lee County, Virginia.

The results of (i) the initial indicated potential flow test and (ii) the initial gas/oil ratio test are set out on the following form. The names and addresses of such other operators are listed below.

APPLICANT Penn Virginia Resources Corporation  
BY William M. Ryan *William M. Ryan*  
ITS Senior Petroleum Geologist  
ADDRESS P.O. Box 386, Duffield, VA 24244  
TELEPHONE (703) 431-2831

Virginia Oil and Gas Inspector

P. O. Box 1416

Abingdon, VA 24210

703 628-8115

## REPORT OF COMPLETION OF WELL WORK

Pursuant to Regulation 4.06 of the Regulations under the Virginia Oil and Gas Act, the undersigned well operator reports completion of the type(s) of well work specified below on the referenced well in Rose Hill District  
Lee County, Virginia on 6th day, October month, 19 88.

WELL TYPE: Oil \_\_\_ / Gas X / Enhanced Recovery \_\_\_ / Waste Disposal \_\_\_ / If Gas-Production X / Underground Storage \_\_\_ /

Exempt by Code Section 45.1-300.8.1. from general Oil and Gas Conservation Law yes \_\_\_ / no X /

WELL WORK: Drill X / Deepen \_\_\_ / Redrill \_\_\_ / Stimulate X / Plug Off Old Formation \_\_\_ / Perforate New Formation X /

Plug \_\_\_ / Replug \_\_\_ / Other physical change in well (specify) \_\_\_\_\_

The well work was done as shown in the Appendix(es) applicable to the type(s) of well work involved.

CONFIDENTIALITY STATUS UNDER CODE OF VIRGINIA SECTION 45.1-332

\_\_\_\_\_ Ninety days from the filing of this report

OR

X Two years from October 6, 1988, the date on which the referenced well was completed, the well being an exploratory well as defined in Code of Virginia, Section 45.1-288.21.

APPLICANT Penn Virginia Resources Corporation

BY William M. Ryan *William M. Ryan*

ITS Senior Petroleum Geologist

ADDRESS P.O. Box 386, Duffield, VA 24244

TELEPHONE (703) 431-2831

COMPLETION REPORT

WELL TYPE: Oil ( ) Gas Production (X) Gas-Underground Storage ( ) Enhanced Recovery ( ) Waste Disposal ( )

LOCATION

COUNTY Lee DISTRICT Rose Hill

SURFACE ELEVATION 1705.46' QUADRANGLE Rose Hill

LATITUDE 14,000 'S 36° 42' 30" " LONGITUDE 7,175 'S 83° 17' 30" "

DRILLING DATA

DATE DRILLING COMMENCED 8-25-88 DRILLING CONTRACTOR Ray Resources  
DATE DRILLING COMPLETED 9-7-88 ADDRESS 600 Commerce Square, Charleston, WV 25301  
DATE WELL COMPLETED 10-6-88 TELEPHONE NUMBER 304-344-8393  
TOTAL DEPTH OF COMPLETED WELL 4041' RIG TYPE X ROTARY        CABLE TOOL       

GEOLOGICAL DATA

FRESH WATER AT (1) N/A FEET        GPM: (2)        FEET        GPM  
SALT WATER AT (1) N/A FEET        GPM: (2)        FEET        GPM

COAL SEAMS: MINING IN AREA

NAME	TOP	BOTTOM	THICKNESS	YES	NO	MINED OUT
<u>N/A</u>						

OIL AND GAS SHOWS:

FORMATION	TOP	BOTTOM	THICKNESS	IFF (MCFD/BOPD)	PRESSURE	HOURS TESTED
<u>Trenton</u>	<u>2200</u>	<u>2220</u>	<u>20</u>	<u>Show Oil</u>	<u>Not Gauged</u>	
<u>Knox</u>	<u>3936</u>	<u>3944</u>	<u>8</u>	<u>30 Mcfd</u>	<u>Not Gauged</u>	

STIMULATION RECORD

ZONE (1) Knox FORMATION STIMULATED WITH 20,000# 20/40 Sand  
250,000 ScfN<sub>2</sub>, and 205 bbls. of Water

PERFORATED 3936 TO 3944 NO. OF PERFORATIONS 17 PERFORATION SIZE .34  
FORMATION BROKE DOWN AT 1800 PSIG AVERAGE INJECTED RATE 10 bbl/m with 50 0 foam BPM  
INITIAL SHUT IN PRESSURE 1610 PSIG 15 MINUTE SHUT IN PRESSURE 2978 PSIG

STIMULATION RECORD

ZONE (2)        FORMATION STIMULATED WITH       

PERFORATED        TO        NO. OF PERFORATIONS        PERFORATION SIZE         
FORMATION BROKE DOWN AT        PSIG AVERAGE INJECTED RATE        BPM  
INITIAL SHUT IN PRESSURE        PSIG        MINUTE SHUT IN PRESSURE        PSIG

FINAL PRODUCTION: ( ) NATURAL (X) AFTER STIMULATION

ZONE	BOB	MCFD	HOURS TESTED	ROCK PRESSURE	HOURS TESTED
<u>ZONE (1)</u>		<u>60 Mcfd</u>	<u>6 hrs.</u>	<u>1000#</u>	<u>14</u>

FINAL PRODUCTION IF GAS ZONES ARE COMINGLED        MCFD        HOURS TESTED        PSIG        HOURS TESTED

CASING AND TUBING

	SIZE	TOP	BOTTOM	LENGTH	PERFORATIONS FEET TO FEET	PACKERS OR BRIDGE PLUGS		
						KIND	SIZE	SET AT
<u>CONDUCTOR</u>	20	0	50	50				
<u>CASING</u> Circulated and Cemented to Surface	13 3/8	0	210.87	210.87				
<u>WATER PROTECTION</u> (Casing Set According to Section 45.1-334)	9 5/8	0	1034	1034				
<u>COAL PROTECTION</u> (Casing Set According to Section 45.1-334)								
<u>OTHER CASING AND Tubing Left In Well</u>	4 1/2	0	4001.42	4001.42				
<u>LINERS</u> Remaining in well								
<u>OTHER</u> used and not left								

Is the well underlain by Red Shales  Yes  No, If Yes, was coal protection string set to Red Shales?  
 Yes  No

REMARKS: Shut down, fishing jobs, depths and dates, caving, etc.

Caves at 419', 422', and 481'

DRILLER'S LOG

Compiled by William M. Ryan

Geological Age	Formation	General Lithology	Color	Depth		Thickness	Remarks
				Top	Bottom		

(ATTACH DRILLER'S LOG IN THIS FORMAT)



## Well 8810

<u>Geological</u> <u>Age</u>	<u>Formation</u>	<u>General</u> <u>Lithology</u>	<u>Color</u>	<u>Depth</u>		<u>Thickness</u>
				<u>Top</u>	<u>Bottom</u>	
Cambrian	Overthrust	Dolomite	Tan-gray	0'	626'	626'
Silurian	Clinton	Shale	Gray-green	626'	1060'	434'
Silurian	Clinch	Sandstone	White	1060'	1148'	88'
Silurian	Hagan	Shale	Gray	1148'	1208'	60'
Ordovician	Sequatchie	Silty Limestone	Red-gray	1208'	1484'	276'
Ordovician	Reedsville	Lime/Shale	Gray	1484'	1824'	340'
Ordovician	Trenton	Limestone	Gray-brown	1824'	2377'	553'
Ordovician	Egglestone	Limestone	Tan	2377'	2500'	123'
Ordovician	Stones River	Limestone	Gray	2500'	3610'	1110'
Ordovician	Knox	Limestone	Tan	3610'	4041'	431'

Samples and Cuttings

Will  Will not \_\_\_\_\_ be available for examination by a member of the Virginia Division of Mineral Resources  
 Will  Will not \_\_\_\_\_ be furnished to the Virginia Division of Mineral Resources upon request  
 Will \_\_\_\_\_ Will not  require sacks to be furnished by the Virginia Division of Mineral Resources

Electric Logs and Surveys:

Type of Electric Log(s) Ran: LDT/SNP, DIL/GR, TEMP/AUDIO, LITH-CYBER,

Did log disclose vertical location of a coal seam? Yes \_\_\_\_\_ No

Was log made at request of coal owner according to Section 45.1-333.B.1 of the Virginia Code? Yes \_\_\_\_\_ No

Note: If a coal seam was located; the part of the survey from the surface through the coal is attached in accordance with Section 45.1-333.B.3 of the Virginia Code

Deviation Surveys:

Deviation surveys were \_\_\_\_\_ were not  required under Section 45.1-333.C of the Virginia Code "to the bottom of the lowest published coal seam depth."

Note: If a deviation survey(s) was/were required, the survey results are as follows:

<u>Depth of Survey</u>	<u>Feet/Degree Deviated From True Vertical</u>	<u>Depth of Survey</u>	<u>Feet/Degree Deviated From True Vertical</u>	<u>Depth of Survey</u>	<u>Feet/Degree Deviated From True Vertical</u>
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

A continuous survey was \_\_\_\_\_ was not \_\_\_\_\_ required, under Section 45.1-333.D of the Virginia Code.

Note: If a continuous survey was required, the survey results are attached.

Changes in the Permitted Well Work:

The well operator did \_\_\_\_\_ did not  make any changes(s) in the permitted well work, verbally approved by the Inspector or Assistant Inspector under Regulation 4.03 of the Regulations under the Virginia Oil and Gas Act, for the purpose of insuring successful completion of the well work.

NOTE: The nature and purpose of each such change, if any, is set out below or on additional sheets if such are required.

Confidentiality Status:

Confidentiality status under Section 45.1-332 of the Virginia Code:

The operator requests that information herein and log(s) be kept confidential (after COMPLETION DATE of the well) for a period of

\_\_\_\_\_ Ninety (90) days  
 \_\_\_\_\_ (2) years, if the well is exploratory

VIRGINIA DIVISION OF MINERAL RESOURCES  
 Box 3667, Charlottesville, VA 22903

INTERVAL SHEET

Page 1 of 2

Well Repository No.: W- 7217

Date rec'd: Date Processed: 5-29-90

Sample Interval: from 450 to: 4030

PROPERTY: Claude C. Davis LE-161

Number of samples: 358

COMPANY: Well # 8810  
 Penn VA. Resources

Total Depth: 4030

COUNTY: Lee

Oil or Gas: Water: Exploratory:

From-To	From-To	From-To	From-To	From-To
450 - 460	800 - 810	1150 - 1160	1500 - 1510	1850 - 1860
460 - 470	810 - 820	1160 - 1170	1510 - 1520	1860 - 1870
470 - 480	820 - 830	1170 - 1180	1520 - 1530	1870 - 1880
480 - 490	830 - 840	1180 - 1190	1530 - 1540	1880 - 1890
490 - 500	840 - 850	1190 - 1200	1540 - 1550	1890 - 1900
500 - 510	850 - 860	1200 - 1210	1550 - 1560	1900 - 1910
510 - 520	860 - 870	1210 - 1220	1560 - 1570	1910 - 1920
520 - 530	870 - 880	1220 - 1230	1570 - 1580	1920 - 1930
530 - 540	880 - 890	1230 - 1240	1580 - 1590	1930 - 1940
540 - 550	890 - 900	1240 - 1250	1590 - 1600	1940 - 1950
550 - 560	900 - 910	1250 - 1260	1600 - 1610	1950 - 1960
560 - 570	910 - 920	1260 - 1270	1610 - 1620	1960 - 1970
570 - 580	920 - 930	1270 - 1280	1620 - 1630	1970 - 1980
580 - 590	930 - 940	1280 - 1290	1630 - 1640	1980 - 1990
590 - 600	940 - 950	1290 - 1300	1640 - 1650	1990 - 2000
600 - 610	950 - 960	1300 - 1310	1650 - 1660	2000 - 2010
610 - 620	960 - 970	1310 - 1320	1660 - 1670	2010 - 2020
620 - 630	970 - 980	1320 - 1330	1670 - 1680	2020 - 2030
630 - 640	980 - 990	1330 - 1340	1680 - 1690	2030 - 2040
640 - 650	990 - 1000	1340 - 1350	1690 - 1700	2040 - 2050
650 - 660	1000 - 1010	1350 - 1360	1700 - 1710	2050 - 2060
660 - 670	1010 - 1020	1360 - 1370	1710 - 1720	2060 - 2070
670 - 680	1020 - 1030	1370 - 1380	1720 - 1730	2070 - 2080
680 - 690	1030 - 1040	1380 - 1390	1730 - 1740	2080 - 2090
690 - 700	1040 - 1050	1390 - 1400	1740 - 1750	2090 - 2100
700 - 710	1050 - 1060	1400 - 1410	1750 - 1760	2100 - 2110
710 - 720	1060 - 1070	1410 - 1420	1760 - 1770	2110 - 2120
720 - 730	1070 - 1080	1420 - 1430	1770 - 1780	2120 - 2130
730 - 740	1080 - 1090	1430 - 1440	1780 - 1790	2130 - 2140
740 - 750	1090 - 1100	1440 - 1450	1790 - 1800	2140 - 2150
750 - 760	1100 - 1110	1450 - 1460	1800 - 1810	2150 - 2160
760 - 770	1110 - 1120	1460 - 1470	1810 - 1820	2160 - 2170
770 - 780	1120 - 1130	1470 - 1480	1820 - 1830	2170 - 2180
780 - 790	1130 - 1140	1480 - 1490	1830 - 1840	2180 - 2190
790 - 800	1140 - 1150	1490 - 1500	1840 - 1850	2190 - 2200

VIRGINIA DIVISION OF MINERAL RESOURCES  
 Box 3667, Charlottesville, VA 22903

INTERVAL SHEET  
 Continued

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Well Repository No.: W- 7217

From-To	From-To	From-To	From-To	From-To
2200 - 2210	2600 - 2610	3000 - 3010	3400 - 3410	3800 - 3810
2210 - 2220	2610 - 2620	3010 - 3020	3410 - 3420	3810 - 3820
2220 - 2230	2620 - 2630	3020 - 3030	3420 - 3430	3820 - 3830
2230 - 2240	2630 - 2640	3030 - 3040	3430 - 3440	3830 - 3840
2240 - 2250	2640 - 2650	3040 - 3050	3440 - 3450	3840 - 3850
2250 - 2260	2650 - 2660	3050 - 3060	3450 - 3460	3850 - 3860
2260 - 2270	2660 - 2670	3060 - 3070	3460 - 3470	3860 - 3870
2270 - 2280	2670 - 2680	3070 - 3080	3470 - 3480	3870 - 3880
2280 - 2290	2680 - 2690	3080 - 3090	3480 - 3490	3880 - 3890
2290 - 2300	2690 - 2700	3090 - 3100	3490 - 3500	3890 - 3900
2300 - 2310	2700 - 2710	3100 - 3110	3500 - 3510	3900 - 3910
2310 - 2320	2710 - 2720	3110 - 3120	3510 - 3520	3910 - 3920
2320 - 2330	2720 - 2730	3120 - 3130	3520 - 3530	3920 - 3930
2330 - 2340	2730 - 2740	3130 - 3140	3530 - 3540	3930 - 3940
2340 - 2350	2740 - 2750	3140 - 3150	3540 - 3550	3940 - 3950
2350 - 2360	2750 - 2760	3150 - 3160	3550 - 3560	3950 - 3960
2360 - 2370	2760 - 2770	3160 - 3170	3560 - 3570	3960 - 3970
2370 - 2380	2770 - 2780	3170 - 3180	3570 - 3580	3970 - 3980
2380 - 2390	2780 - 2790 No sample	3180 - 3190	3580 - 3590	3980 - 3990
2390 - 2400	2790 - 2800	3190 - 3200	3590 - 3600	3990 - 4000
2400 - 2410	2800 - 2810	3200 - 3210	3600 - 3610	4000 - 4010
2410 - 2420	2810 - 2820	3210 - 3220	3610 - 3620	4010 - 4020
2420 - 2430	2820 - 2830	3220 - 3230	3620 - 3630	4020 - 4030
2430 - 2440	2830 - 2840	3230 - 3240	3630 - 3640	-
2440 - 2450	2840 - 2850	3240 - 3250	3640 - 3650	-
2450 - 2460	2850 - 2860	3250 - 3260	3650 - 3660	-
2460 - 2470	2860 - 2870	3260 - 3270	3660 - 3670	-
2470 - 2480	2870 - 2880 No sample	3270 - 3280	3670 - 3680	-
2480 - 2490	2880 - 2890 No sample	3280 - 3290	3680 - 3690	-
2490 - 2500	2890 - 2900	3290 - 3300	3690 - 3700	-
2500 - 2510	2900 - 2910	3300 - 3310	3700 - 3710	-
2510 - 2520	2910 - 2920	3310 - 3320	3710 - 3720	-
2520 - 2530	2920 - 2930	3320 - 3330	3720 - 3730	-
2530 - 2540	2930 - 2940	3330 - 3340	3730 - 3740	-
2540 - 2550	2940 - 2950	3340 - 3350	3740 - 3750	-
2550 - 2560	2950 - 2960	3350 - 3360	3750 - 3760	-
2560 - 2570	2960 - 2970	3360 - 3370	3760 - 3770	-
2570 - 2580	2970 - 2980	3370 - 3380	3770 - 3780	-
2580 - 2590	2980 - 2990	3380 - 3390	3780 - 3790	-
2590 - 2600	2990 - 3000	3390 - 3400	3790 - 3800	-