

# 2021 Marcellus Shale and Utica-Point Pleasant Production Summary

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This summary was prepared by the West Virginia Geological and Economic Survey (WVGES). The data summarized herein were reported by operators to the West Virginia Department of Environmental Protection (WVDEP) Office of Oil and Gas for calendar year 2021.



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**Disclaimer:**

These production volumes represent data posted by WV Department of Environmental Protection Office of Oil & Gas as of July 2022. Data from several operators reporting Marcellus and Utica-Point Pleasant production in 2021 may not have been available at the time of this report; therefore, the values listed above may change as more data become available.

**Glossary**

**bbl**-barrel

**Tcf**-trillion cubic feet

**Bcf**-billion cubic feet

**Mcf**-thousand cubic feet

**NGL**-natural gas liquids

**LL**-completed lateral length

**BOE**-barrels of oil equivalent

## 2021 Marcellus Production Summary

Wells included in this overview all report production from the Marcellus and are classified as 'Deviated' from their original surface location. Beginning in 2013, WVDEP Office of Oil and Gas reporting requirements stated that natural gas liquids (NGLs) were to be reported separately from oil production. However, the reporting requirements and definition of the NGLs to be reported has changed several times. The current reporting for NGLs as stated in HB4270 (effective beginning for 2018 production reporting) requires that downstream natural gas liquids accounted to a well will be reported as NGL to that well API while wellhead oil and lease condensate will be reported together as crude oil.

Selected data from previous years are shown in blue for comparison.

**Number of horizontal Marcellus wells reporting production: 3,134** (2020: 3,251; 2019: 2,758 wells)

Average measured depth reported: 14,777 ft.

Longest/Deepest measured depth reported: 31,541 ft.

## Marcellus Gas

**Total Deviated Marcellus Gas Production 2021:** 2,060.1 Bcf (2020: 2,321.9 Bcf; 2019: 1,968.1 Bcf)

### Top Marcellus Gas Producing Counties 2021

1. Tyler (473.4 Bcf)	2020: Tyler (600.8 Bcf)
2. Doddridge (314.7 Bcf)	2020: Doddridge (376.0 Bcf)
3. Marshall (287.4 Bcf)	2020: Marshall (293.4 Bcf)
4. Wetzel (188.5 Bcf)	2020: Ritchie (253.6 Bcf)
5. Harrison (186.2 Bcf)	2020: Wetzel (214.7 Bcf)
6. Ritchie (183.6 Bcf)	2020: Harrison (159.6 Bcf)
7. Monongalia (133.8 Bcf)	2020: Monongalia (126.8 Bcf)
8. Ohio (116.5 Bcf)	2020: Ohio (121.1 Bcf)
9. Brooke (84.2 Bcf)	2020: Brooke (83.1 Bcf)
10. Marion (39.7 Bcf)	2020: Marion (34.6 Bcf)

### Top Operators for Marcellus Gas Production 2021

1. Antero Resources Corp. (828.4 Bcf)	2020: Antero Resources Corp. (1078.6 Bcf)
2. Southwestern Prod Co. (366.0 Bcf)	2020: Southwestern Prod Co. (355.2 Bcf)
3. EQT Production Co. (233.8 Bcf)	2020: EQT Production Co. (246.0 Bcf)
4. HG Energy (134.1 Bcf)	2020: Tug Hill Operating (116.7 Bcf)
5. Northeast Natural Energy (125.6 Bcf)	2020: Northeast Natural Energy (113.7 Bcf)
6. Tug Hill Operating (122.0 Bcf)	2020: HG Energy (108.5 Bcf)
7. CNX Gas (71.1 Bcf)	2020: CNX Gas (64.6 Bcf)
8. Arsenal Resources (49.6 Bcf)	2020: Arsenal Resources (55.8 Bcf)
9. Jay-Bee Oil & Gas (34.8 Bcf)	2020: Jay-Bee Oil & Gas (42.6 Bcf)
10. XTO Energy (31.3 Bcf)	2020: Chevron Appalachia (41.1 Bcf)

## Top Marcellus Gas Wells In 2021

1. **4710303308**, 7.55 Bcf; Southwestern Production Co., Wetzel County, Total Measured Depth 19,209'
2. **4705102302**, 6.87 Bcf; Southwestern Production Co., Marshall County, Total Measured Depth 15,745'
3. **4705102295**, 6.52 Bcf; Southwestern Production Co., Marshall County, Total Measured Depth 14,748'
4. **4705102301**, 6.17 Bcf; Southwestern Production Co., Marshall County, Total Measured Depth 15,817'
5. **4705102127**, 6.10 Bcf; Southwestern Production Co., Marshall County, Total Measured Depth 15,886'

## Annual Comparison of Marcellus Gas Production

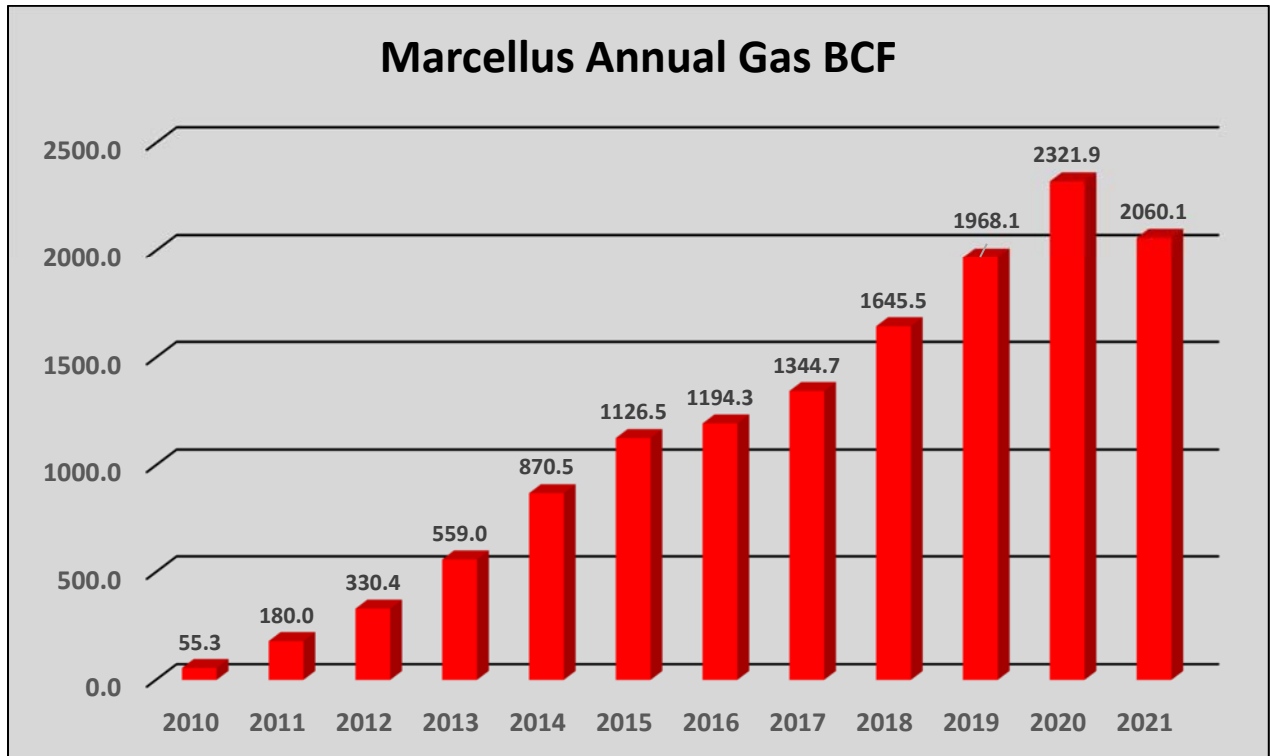


Figure 1. Chart of annual Marcellus gas production. Production declined slightly from 2020 highs, but continued to remain above 2 Tcf for 2021.

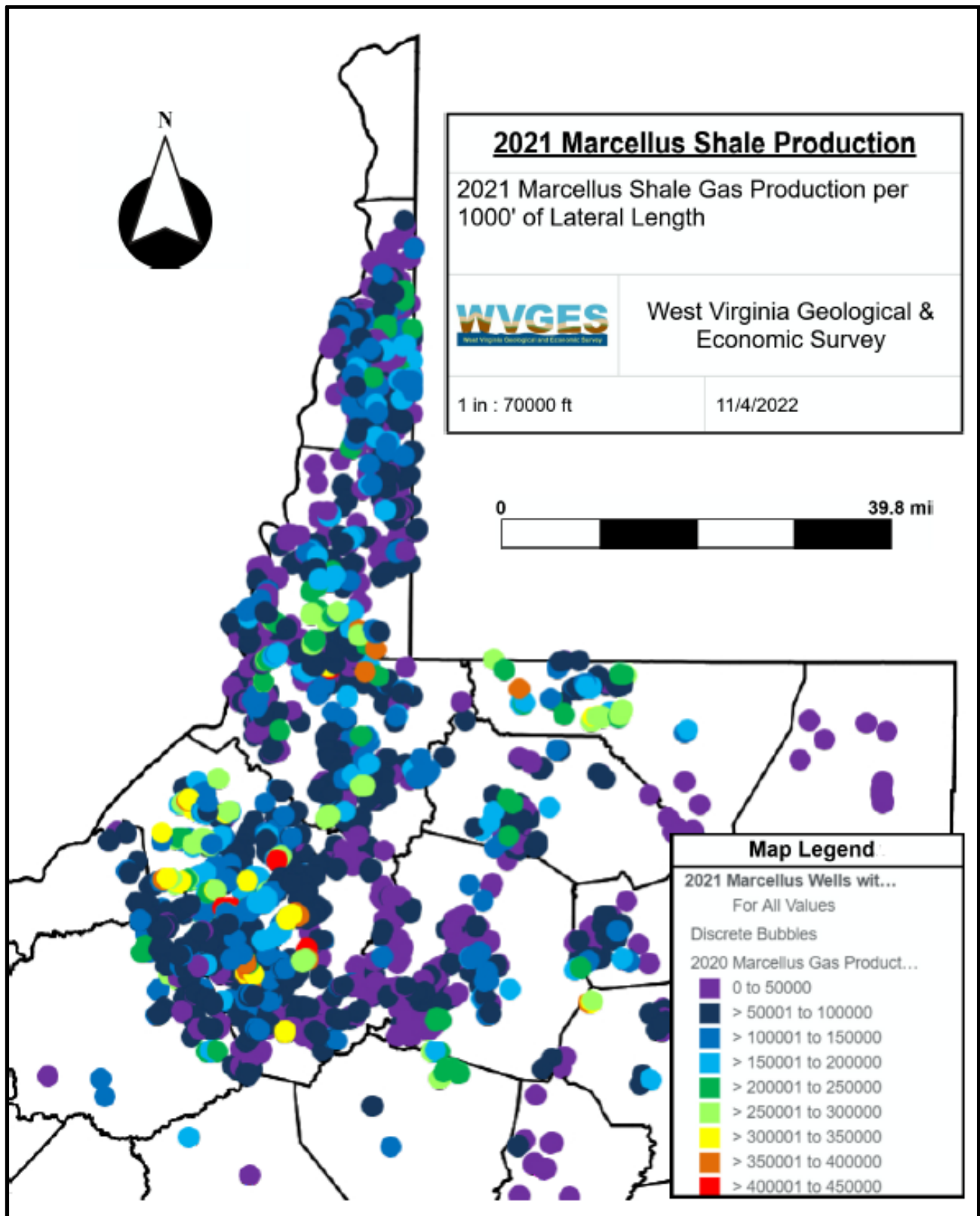


Figure 2. Map of Marcellus gas production color coded to highlight variations in gas volume.

# Marcellus Combined Oil & Natural Gas Liquids (NGLs)

**Total 2021 Combined Marcellus Oil & Natural Gas Liquids Production:** 103,607,622 bbl

HB4270 (effective for 2018 production reporting) requires that downstream natural gas liquids accounted to a well will be reported as NGL to that well API while wellhead oil and lease condensate will be reported together as crude oil. Previously, a 2016 legislative rule change in West Virginia required that condensate (lease condensate) data rather than NGL data are to be reported to WVDEP. The volumes reported are to be liquid condensate at the wellhead, not NGL volumes extracted downstream at processing plants. Beginning with 2020 production, both the oil and NGL volumes are being combined, whereas in prior years they were reported separately. Combining the Oil and NGL volumes will yield a total volume of liquid hydrocarbons produced per well. Finally, it should be noted that depending on individual operator reporting practices, wells that are anticipated to fall within the wet gas/ oil window of the play may not have liquid volumes reported to the state.

## Top Combined Marcellus Oil & Natural Gas Liquids Producing Counties 2021

1. Tyler (25,318,681 bbl)	<i>2020: Marshall (26,111,635 bbl)</i>
2. Marshall (21,844,591 bbl)	<i>2020: Tyler (18,495,841 bbl)</i>
3. Ohio (14,246,772 bbl)	<i>2020: Ohio (15,866,315 bbl)</i>
4. Brooke (12,611,899 bbl)	<i>2020: Brooke (11,873,800 bbl)</i>
5. Doddridge (11,729,406 bbl)	<i>2020: Wetzel (5,344,810 bbl)</i>
6. Ritchie (9,195,007 bbl)	<i>2020: Ritchie (4,552,532 bbl)</i>
7. Wetzel (7,716,542 bbl)	<i>2020: Doddridge (2,175,713 bbl)</i>

## Top Operators for Combined Marcellus Oil & Natural Gas Liquids Production 2021

1. Antero Resources Corp. (35,562,366 bbl)	<i>2020: Southwestern Prod. Co. (35,053,370 bbl)</i>
2. Southwestern Prod. Co. (35,150,146 bbl)	<i>2020: Antero Resources Corp. (18,356,234 bbl)</i>
3. Tug Hill Operating (11,052,292 bbl)	<i>2020: Tug Hill Operating (11,983,506 bbl)</i>
4. EQT Production Co. (10,567,259 bbl)	<i>2020: Chevron Appalachia (5,659,499 bbl)</i>
5. CNX Gas (4,319,864 bbl)	<i>2020: HG Energy LLC (3,993,229 bbl)</i>
6. Jay-Bee Oil & Gas (3,130,764 bbl)	<i>2020: Jay-Bee Oil &amp; Gas (3,437,855 bbl)</i>
7. HG Energy LLC (2,053,897 bbl)	<i>2020: CNX Gas (3,223,782 bbl)</i>
8. Tribune Resources (1,386,922 bbl)	<i>2020: Tribune Resources (1,614,877 bbl)</i>
9. Triad Hunter (380,165 bbl)	<i>2020: EQT Production Co. (772,480 bbl)</i>

## Top Combined Marcellus Oil & Natural Gas Liquids Wells In 2021

1. **4700900316**, 420,956 bbl; Southwestern Prod. Co., Brooke County, Total Measured Depth 20,828'
2. **4700900310**, 420,853 bbl; Southwestern Prod. Co., Brooke County, Total Measured Depth 24,334'
3. **4705102302**, 395,005 bbl; Southwestern Prod. Co., Marshall County, Total Measured Depth 15,745'
4. **4706900322**, 390,311 bbl; Southwestern Prod. Co., Ohio County, Total Measured Depth 17,629'
5. **4706900313**, 385,832 bbl; Southwestern Prod. Co., Ohio County, Total Measured Depth 18,004'

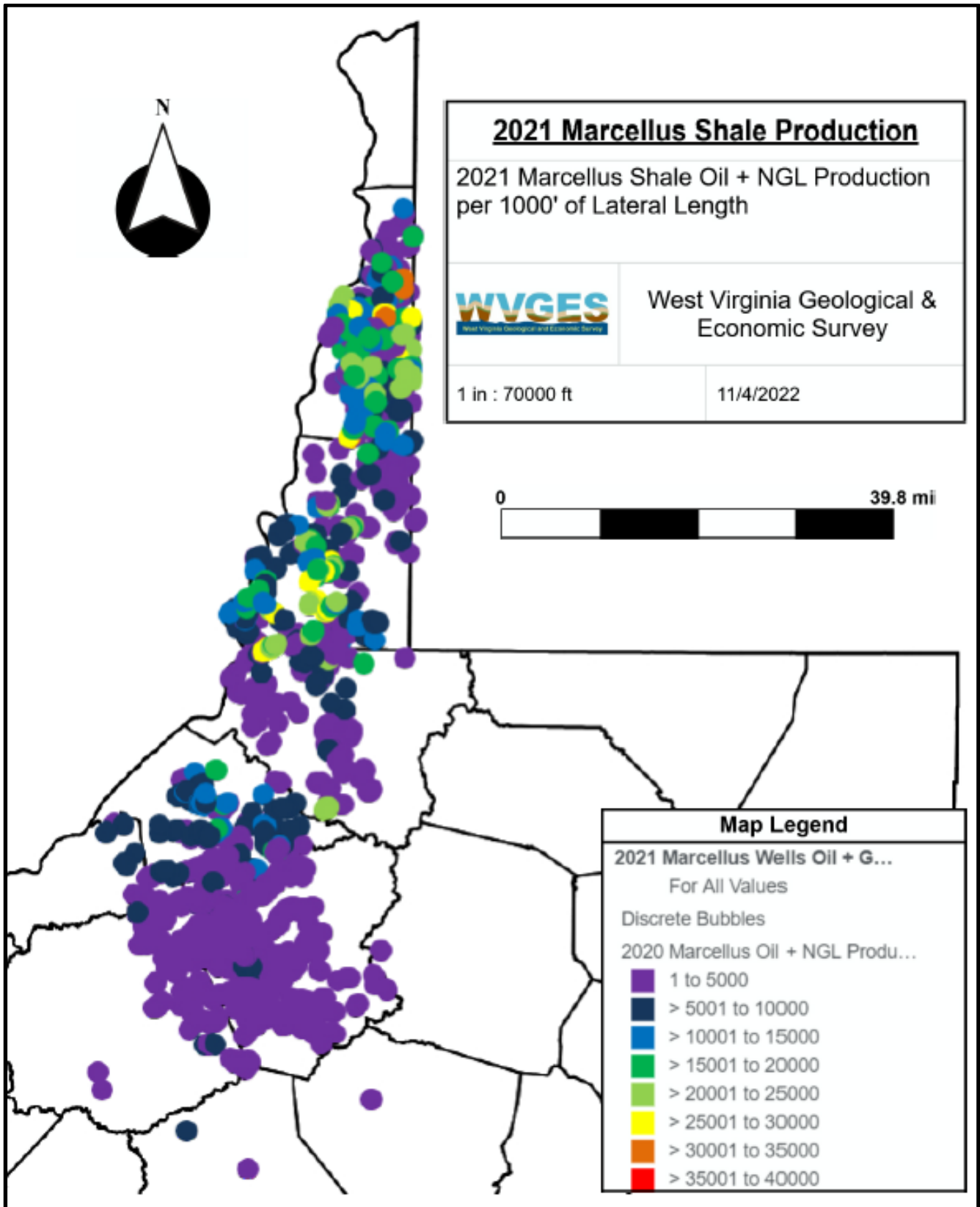


Figure 3. Map of Marcellus Oil and NGL production colored to show variations in liquids volume. Note that Marcellus liquids are geographically constrained to the western counties of the state.

# Marcellus Normalized BOE per 1,000' Lateral Length

In 2020, a new metric for comparing well results across wells, counties, and operators was introduced: barrels of oil equivalent (BOE) per completed lateral length (LL). BOE is calculated by converting gas volumes to barrels of oil equivalent by multiplying the gas by a 0.167 conversion factor. These equivalent barrels are then added to the previously reported Oil and NGL barrels to generate a total BOE value. The completed lateral length is determined by subtracting the depth of the last perforation at the “heel” of the horizontal portion of the well, from the depth of the first perforation at the “toe” of the horizontal wellbore. BOE is then divided by LL, and then multiplied by 1,000. Gross production volumes listed earlier in this report may be skewed by long lateral lengths. This new normalized metric gives an insight into the productive capacity of the wellbore per each thousand feet of rock traversed, thereby providing an “apples to apples” comparison of each well.

## Top Normalized Marcellus BOE per 1,000' Lateral Length Counties 2021

1. Pleasants – 31,552 BOE/1,000'LL
2. Tyler – 25,739 BOE/1,000'LL
3. Monongalia – 21,360 BOE/1,000'LL
4. Ohio – 19,028 BOE/1,000'LL
5. Marshall – 18,599 BOE/1,000'LL
6. Ritchie – 18,372 BOE/1,000'LL
7. Brooke – 17,862 BOE/1,000'LL
8. Wetzell – 14,779 BOE/1,000'LL
9. Doddridge – 13,770 BOE/1,000'LL
10. Marion – 13,017 BOE/1,000'LL

## Top Normalized Marcellus BOE per 1,000' Lateral Length Operators 2021

1. CNX Gas – 25,827 BOE/1,000'LL
2. Tug Hill Operating – 22,409 BOE/1,000'LL
3. Northeast Natural Energy – 21,268 BOE/1,000'LL
4. HG Energy – 20,261 BOE/1,000'LL
5. Southwestern Production Co. – 18,301 BOE/1,000'LL
6. Triad Hunter LLC – 17,797 BOE/1,000'LL
7. Antero Resources Corp. – 17,706 BOE/1,000'LL
8. Tribune Resources – 17,394 BOE/1,000'LL
9. Jay-Bee Oil & Gas – 16,446 BOE/1,000'LL
10. XTO Energy, Inc. – 13,891 BOE/1,000'LL

## Top Normalized Marcellus BOE per 1,000' Lateral Length Wells In 2021

1. **4705102302**, 97,929 BOE/1,000'LL; Southwestern Prod Co., Marshall County, Lateral Length 15,745'
2. **4705102295**, 96,134 BOE/1,000'LL; Southwestern Prod Co., Marshall County, Lateral Length 14,748'
3. **4705102301**, 87,013 BOE/1,000'LL; Southwestern Prod Co., Marshall County, Lateral Length 15,817'
4. **4705102127**, 85,965 BOE/1,000'LL; Southwestern Prod Co., Marshall County, Lateral Length 15,886'
5. **4705102294**, 85,201 BOE/1,000'LL; Southwestern Prod Co., Marshall County, Lateral Length 13,133'



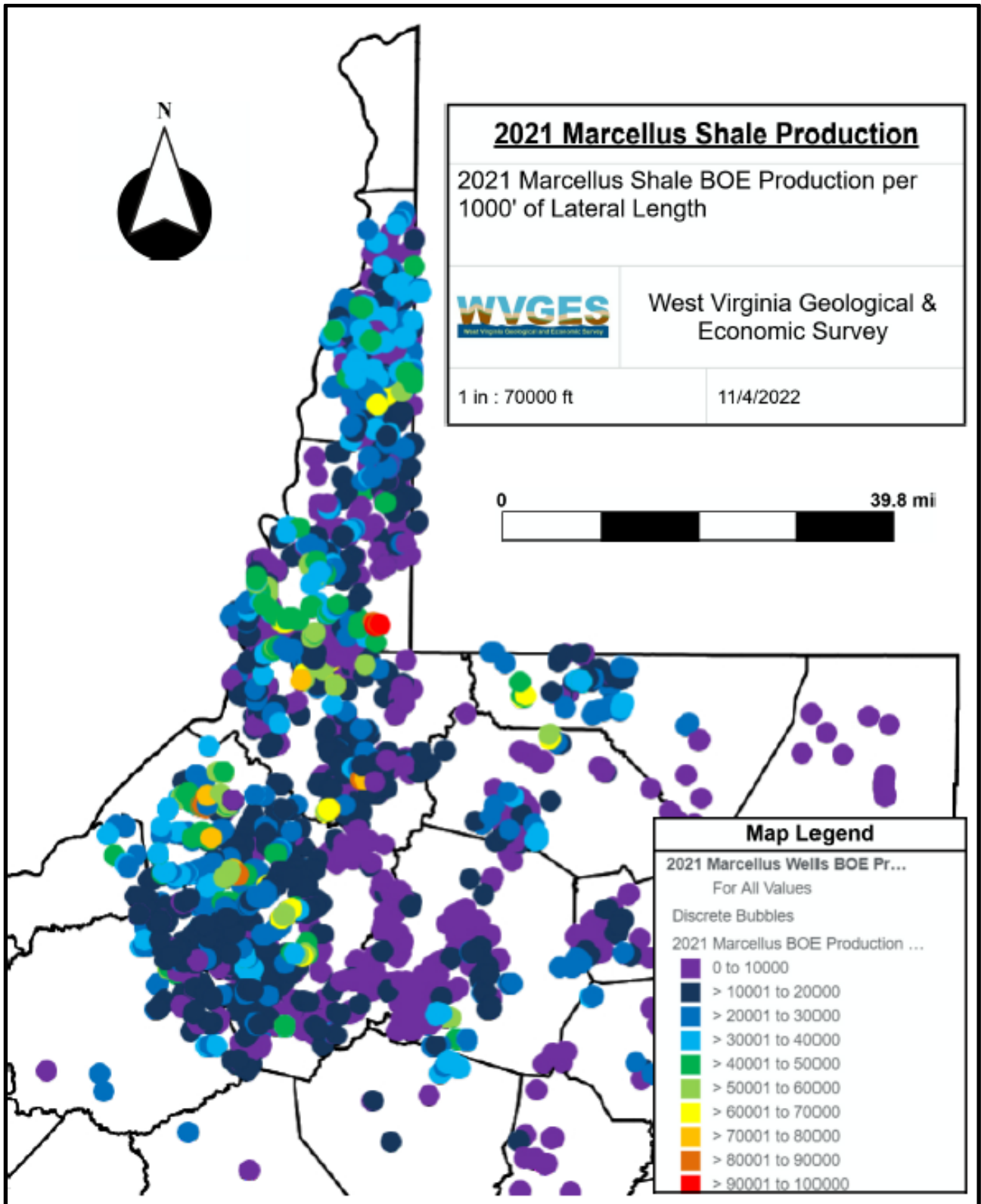


Figure 4. Map of Marcellus BOE production colored to show variations in produced volume.

# 2021 Activity in Utica-Point Pleasant Play

Development of the Utica-Point Pleasant natural gas play in West Virginia continues to accelerate. Records currently on file with WVDEP and/or WVGES indicate that 72 wells have reported 2021 production, up from 66 in 2020. The Utica-Point Pleasant play is predominantly dry gas, with small amounts of oil or NGL reported in Pleasants, Tyler, and Wetzel Counties. This report focuses on the gas production only.

**Total 2021 Utica-Point Pleasant Gas Production:** 162.6 Bcf      *(2020: 149.9 Bcf)*

Average measured depth reported: 20,546 ft.

Longest/Deepest measured depth reported: 28,221 ft.

## Top Utica-Point Pleasant Gas Producing Counties 2021

1. Marshall (137.0 Bcf)
2. Pleasants (20.5 Bcf)
3. Tyler (3.3 Bcf)
4. Monongalia (1.0 Bcf)
5. Wetzel (0.6 Bcf)

## Top Operators for Utica-Point Pleasant Gas Production 2021

1. Tug Hill Operating (113.0 Bcf)
2. Jay-Bee Oil & Gas (23.2 Bcf)
3. HG Energy (14.5 Bcf)
4. CNX Gas (5.0 Bcf)
5. American Petroleum Partners (4.0 Bcf)
6. EQT Production Co. (1.8 Bcf)
7. Southwestern Production Co. (0.5 Bcf)

## Top Utica-Point Pleasant Gas Wells In 2021

1. **4705102272**, 5.9 Bcf; Tug Hill Operating, Marshall County, Total Measured Depth 22,462'
2. **4705102031**, 5.8 Bcf; Tug Hill Operating, Marshall County, Total Measured Depth 23,723'
3. **4705102191**, 5.8 Bcf; Tug Hill Operating, Marshall County, Total Measured Depth 25,077'
4. **4705102123**, 5.8 Bcf; Tug Hill Operating, Marshall County, Total Measured Depth 24,961'
5. **4705102273**, 5.7 Bcf; Tug Hill Operating, Marshall County, Total Measured Depth 23,081'

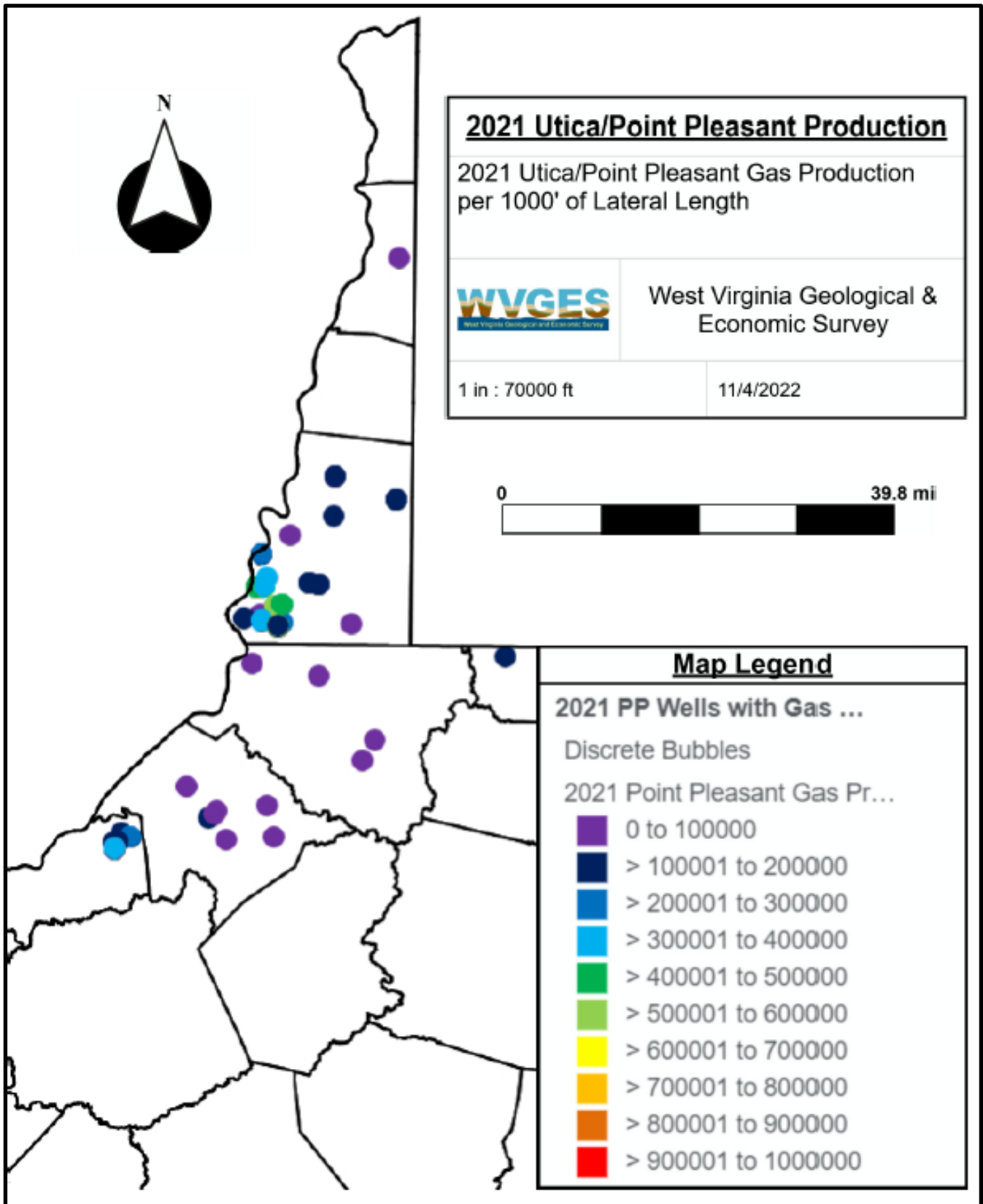


Figure 5. Map of Point Pleasant production colored to show variations in produced volume.