

2018 Annual Report on Oil and Gas Activities

State Oil and Gas Council Meeting – April 17, 2019

Larry “Boot” Pierce, RG
Missouri Geological Survey

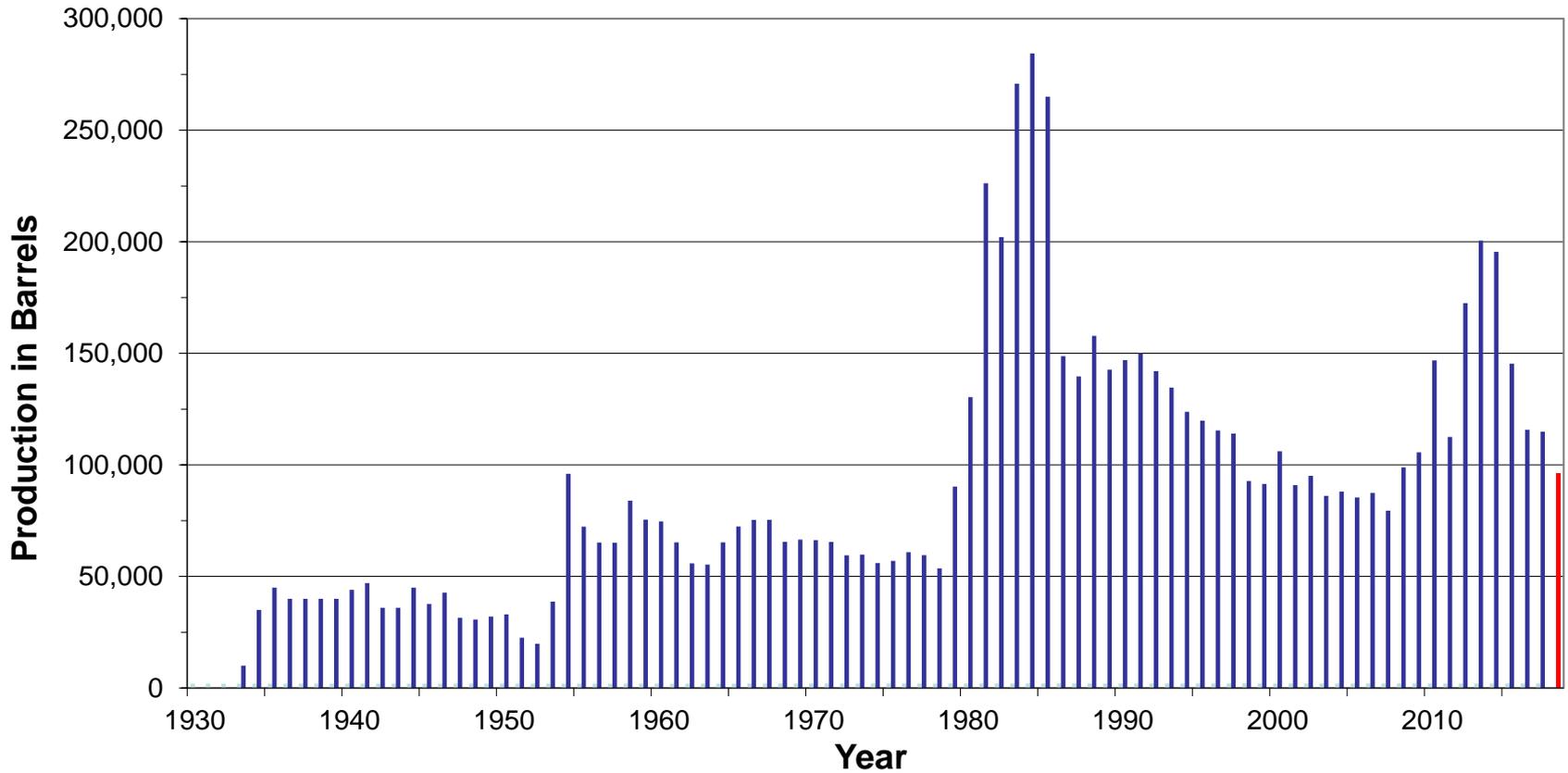
Oil Production in 2018

- 466 active producing oil wells
- 96,147 barrels of oil produced
- Valued at about \$5.46 million
- Price per barrel ranged \$32.00 – \$63.70
- Currently produced in 5 counties
- 21 licensed operators
- 11 companies reported production

5-year Average Price for Missouri Oil

- Average price per barrel in 2018 – \$56.85
– (↑35%) (ranging from \$32.00 to \$63.70)
- Average price per barrel in 2017 – \$41.48
– (↑~26%) (ranging from \$31.95 to \$52.24)
- Average price per barrel in 2016 – \$32.77
– (↓~14%) (ranging from \$17.13 to \$48.14)
- Average price per barrel in 2015 – \$38.71
– (↓~47%) (ranging from \$24.00 to \$53.30)
- Average price per barrel in 2014 – \$82.38
– (↓~7%) (ranging from \$45.50 to \$98.20)

Historic Oil Production

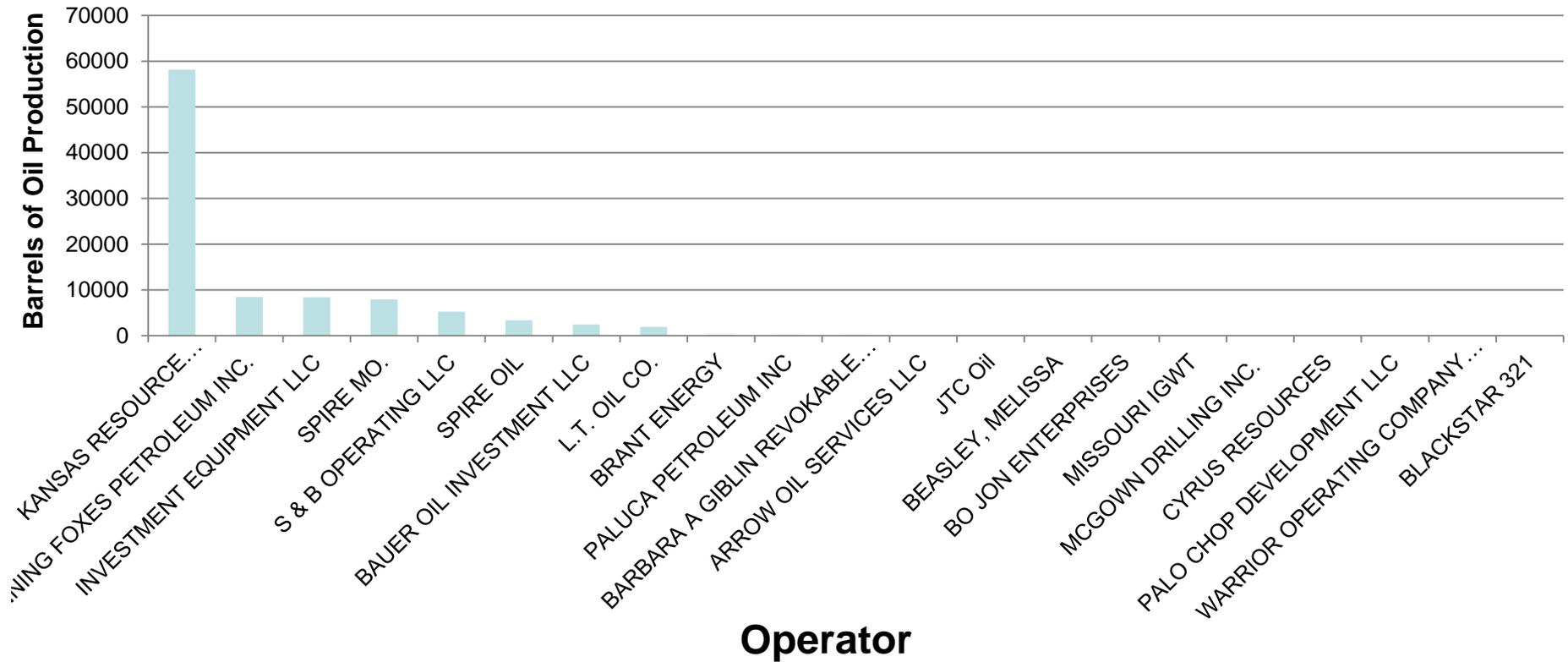


2018 Crude Oil Production by Operator

Company	Production in BBLs	Percent of total
KANSAS RESOURCE EXPLORATION AND DEVELOPMENT	58,129	60.46%
RUNNING FOXES PETROLEUM INC.	8,438	8.78%
INVESTMENT EQUIPMENT LLC	8,366	8.70%
SPIRE MO.	7,901	8.22%
S & B OPERATING LLC	5,228	5.44%
SPIRE OIL	3,354	3.49%
BAUER OIL INVESTMENT LLC	2,449	2.55%
L.T. OIL CO.	1,884	1.96%
BRANT ENERGY	184	0.19%
PALUCA PETROLEUM INC	110	0.11%
BARBARA A GIBLIN REVOKABLE TRUST	103	0.11%
ARROW OIL SERVICES LLC	0	0.00%
JTC Oil	0	0.00%
BEASLEY, MELISSA	0	0.00%
BO JON ENTERPRISES	0	0.00%
MISSOURI IGWT	0	0.00%
MCGOWN DRILLING INC.	0	0.00%
CYRUS RESOURCES	0	0.00%
PALO CHOP DEVELOPMENT LLC	0	0.00%
WARRIOR OPERATING COMPANY INC.	0	0.00%
BLACKSTAR 321	0	0.00%

2018 Total Crude Oil Production – 96,147 bbls

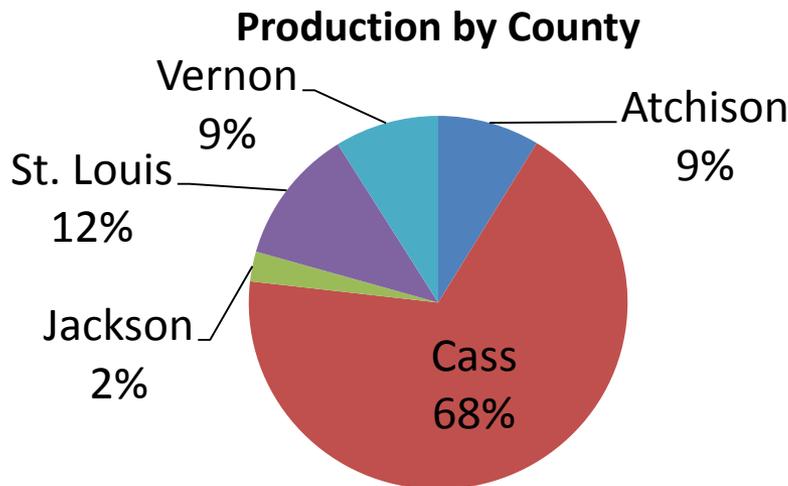
2018 Crude Oil Production by Operator





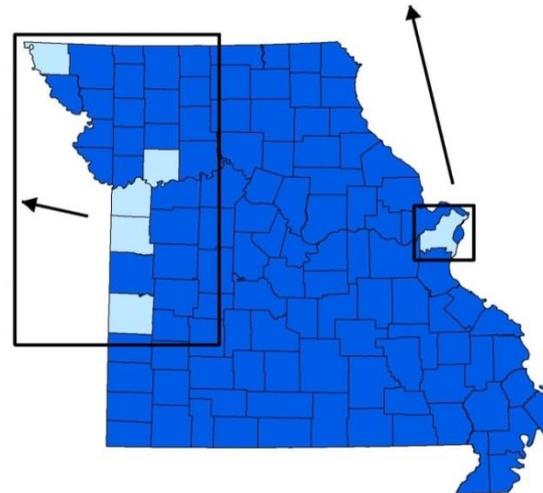
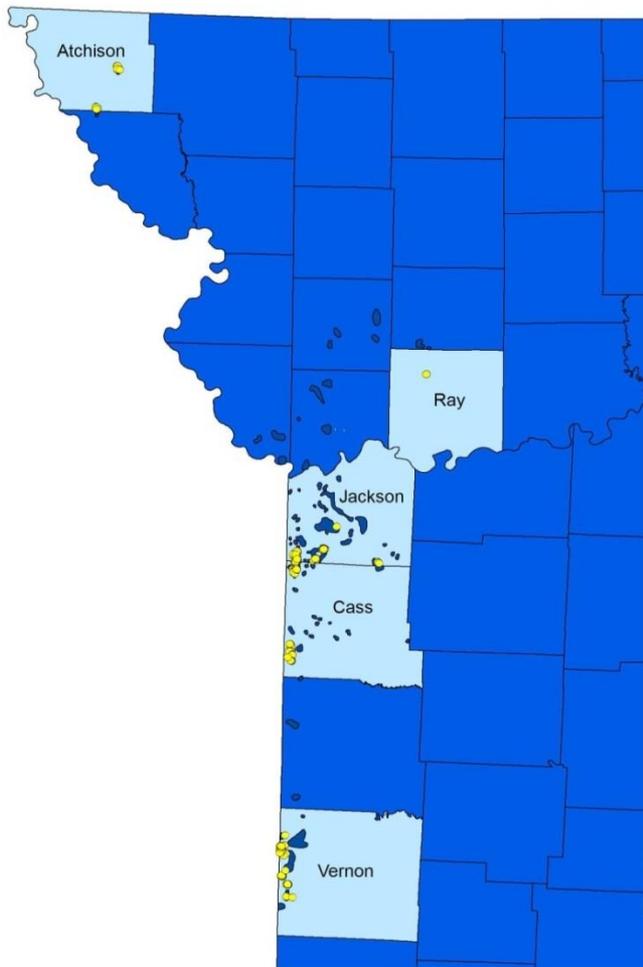
2018 Oil Producing Counties

County	BBL's of Oil	Production Value
Atchison	8,366	452,571
Cass	65,491	3,685,986
Clinton	0	0
Jackson	2,485	140,240
Ray	0	0
St. Louis	11,256	686,301
Vernon	8,548	501,137

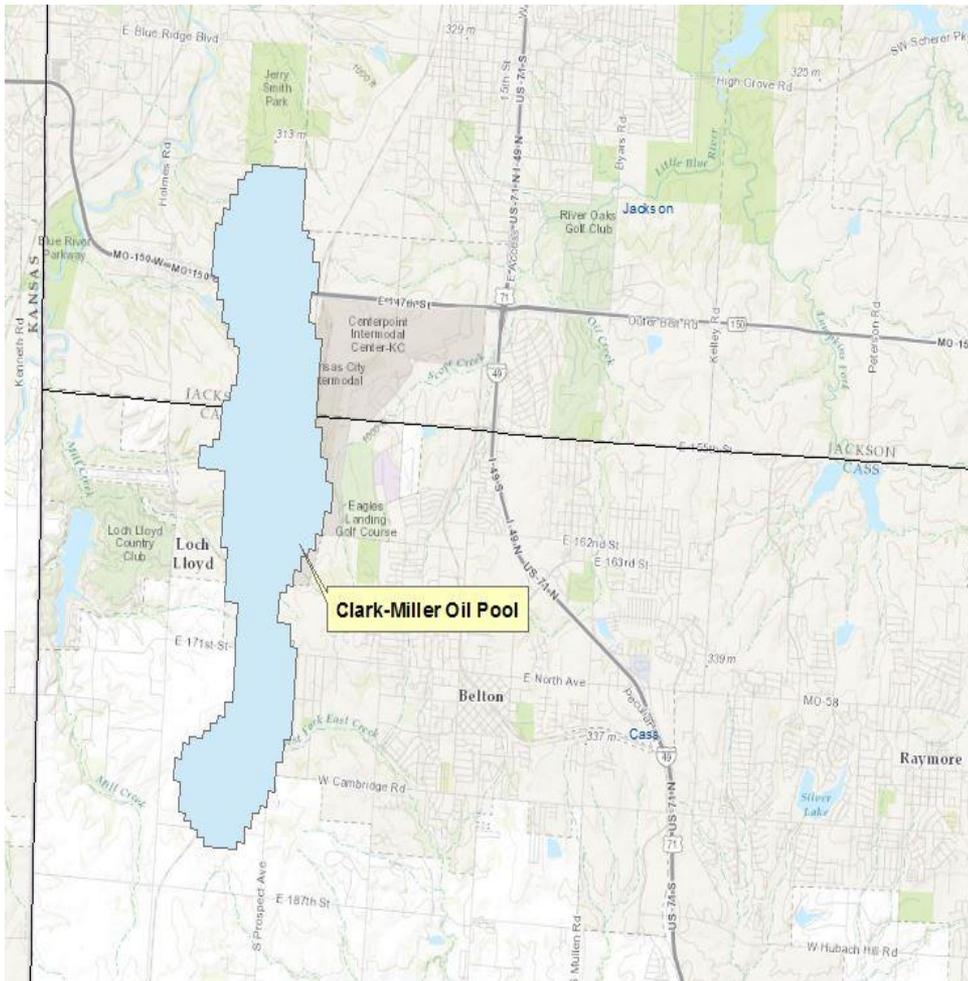


Total Production 96,147 bbls
Total Value \$5.46 Million

Oil Producing Counties and Known Fields



Top Producing County and Pool



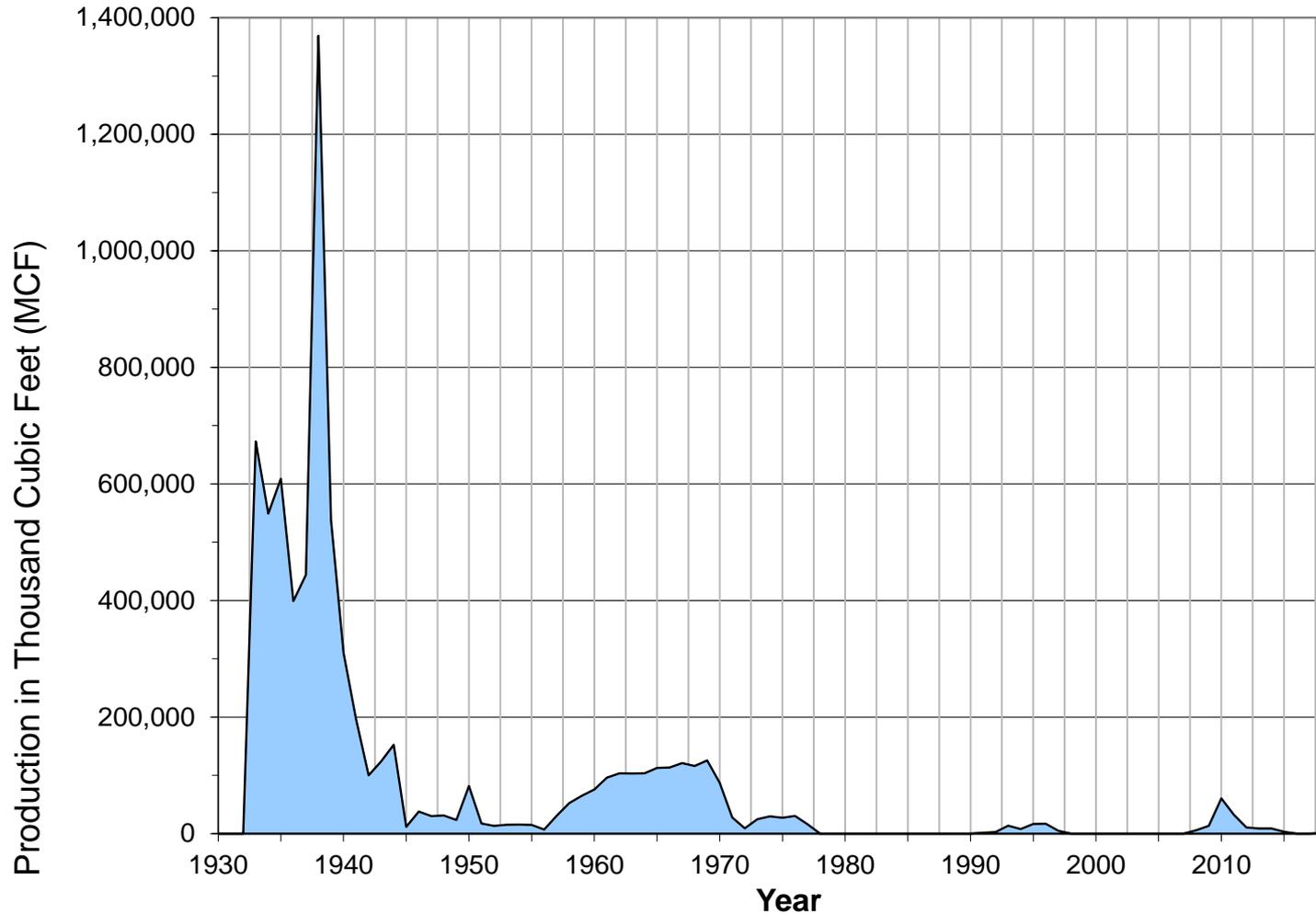
Top Oil Producing County
- Cass County
65,491 bbls
68 percent of the total oil
produced in Missouri

Top Oil Producing Pool
Clark-Miller Oil Pool
75,265 bbls
78 percent of total oil
produced in Missouri

2018 Commercial Gas Production

- 1 Active Company
- 14 active producing commercial gas wells
- Gas Production = 950 MCF
- Commercial Value = \$0 (none sold)
- Price per MCF average – \$0
- All 14 wells are in Clinton County

Historic Commercial Gas Production



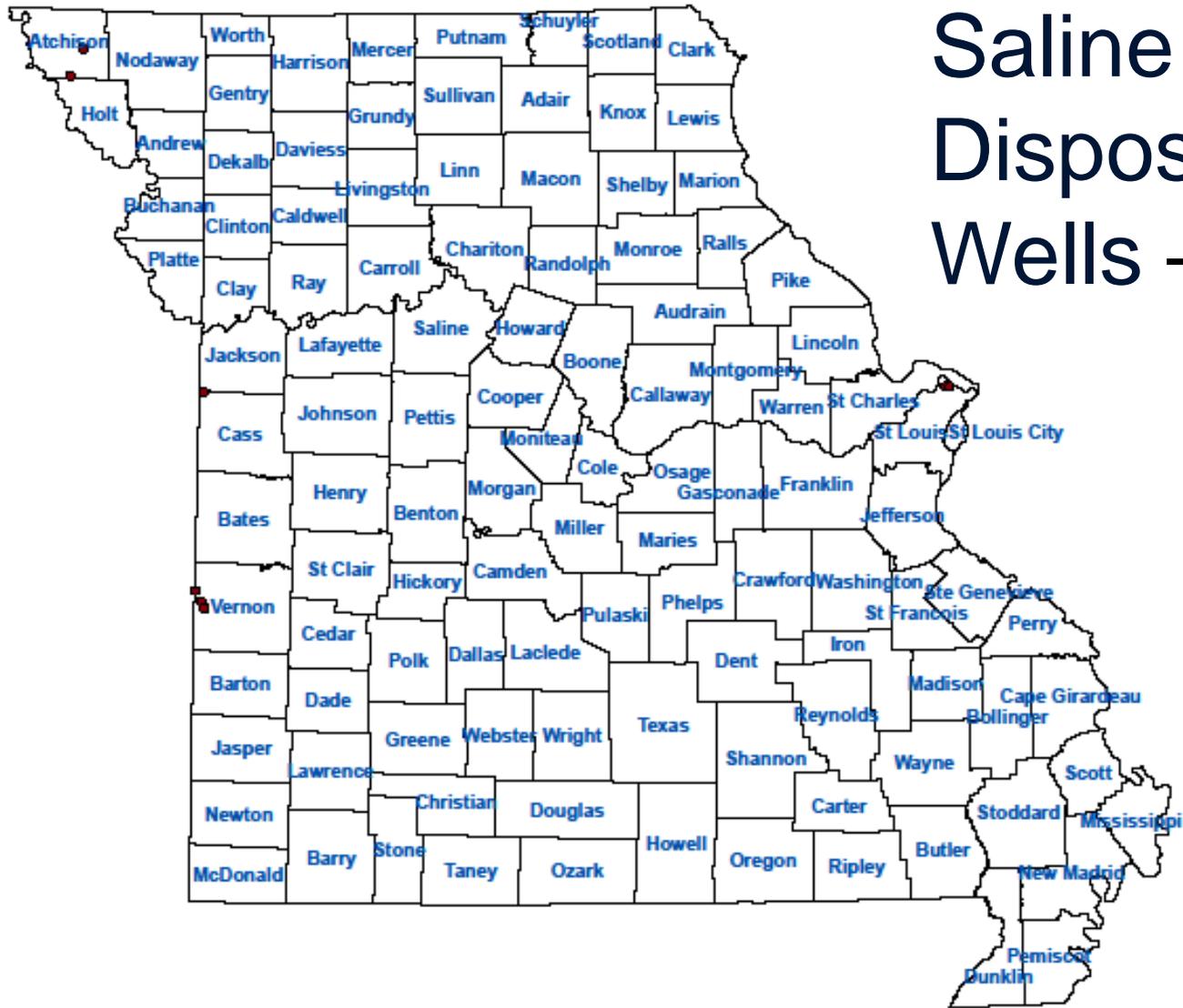
Missouri's Private Gas Wells

- 460 Private gas wells
 - 56 are known active
 - 404 unknown status
- Five counties have active private gas wells
 - Cass (34), Caldwell, Clay, Clinton and Jackson
- Production reporting is exempted

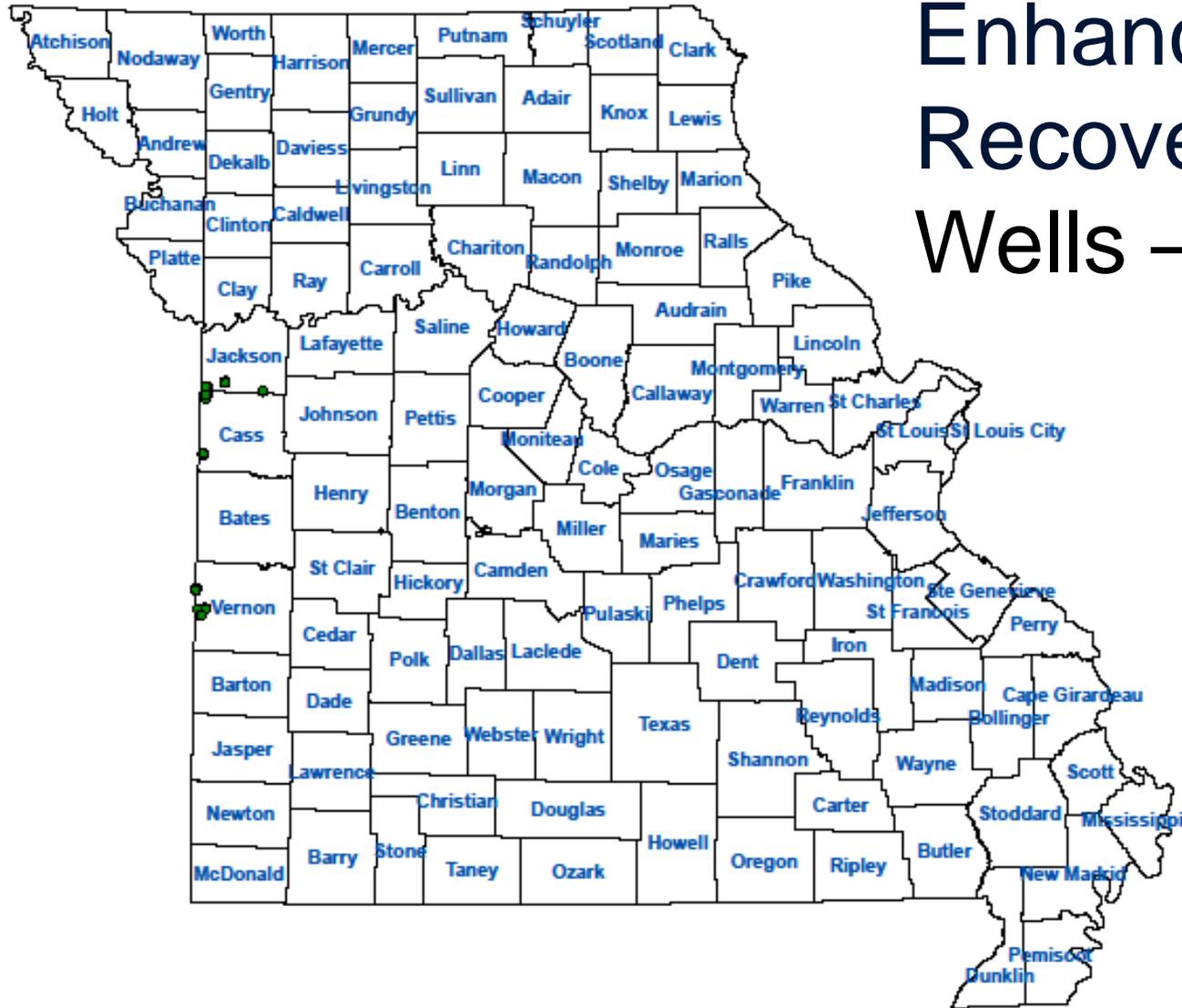


Class II Injection Wells

- Wells that inject fluids in connection with oil/gas production
 - Disposal of produced salt water
 - Injection of fluids for enhance recovery
- Missouri has 365 active Class II Wells
 - Saline Water Disposal – 9
 - Enhanced Oil Recovery – 354
- Abandoned Class II wells – 69



Saline Water Disposal Wells – 9



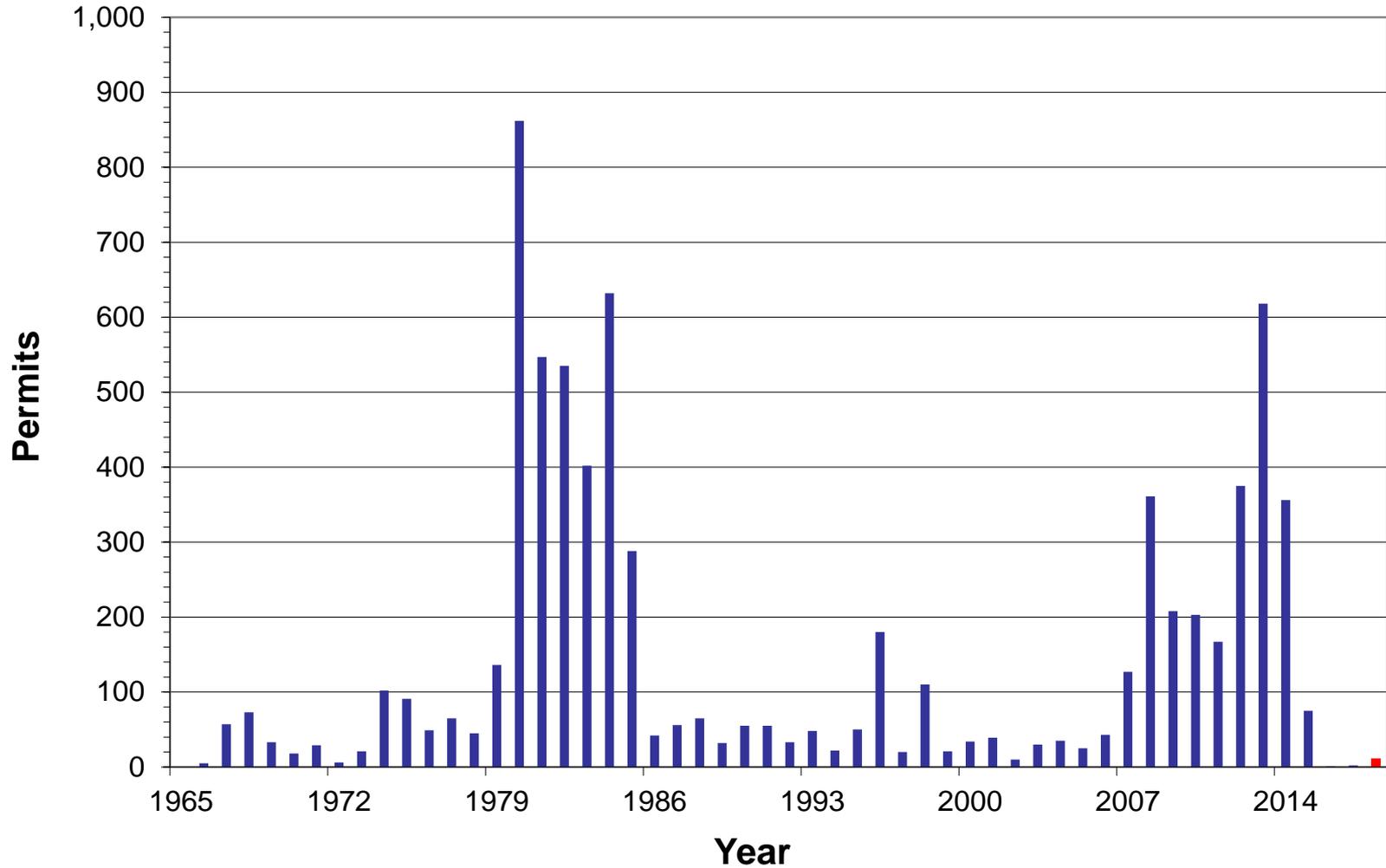
Enhanced Oil Recovery Wells – 354

2018 Permits Issued

Jackson County	1	Oil Production Well
Nodaway County	10	Strat Test Wells
Total permits	11	



Historic Permitting



2018 Well Permits by Type

Well Type	Total	Active	Under Construction	Shut-in	Temporarily Abandoned	Plugged	Cancelled
Oil Production	1	0	1	0	0	0	0
Injection EOR	0	0	0	0	0	0	0
Injection SWD	0	0	0	0	0	0	0
Stratigraphic Test	10	0	0	0	0	10	0
Observation	0	0	0	0	0	0	0
Private Gas	0	0	0	0	0	0	0
Commercial Gas	0	0	0	0	0	0	0
Area Permits	0	0	0	0	0	0	0
Total	11	0	1	0	0	10	0

Wells Plugged

Includes oil, gas, injection, stratigraphic test

- 2012 – Wells Plugged = 44
- 2013 – Wells Plugged = 348
- 2014 – Wells Plugged = 354
- 2015 – Wells Plugged = 139
- 2016 – Wells Plugged = 129
- 2017 – Wells Plugged = 31
- 2018 – Wells Plugged = 64

2018 Staff Efforts

- MITs were performed on = 203 wells
 - Staff witnessed MIT's = 4 well (2%)
- Field inspection of wells = 781
- In-office well reviews = 177 wells
- Lease site visits performed = 53
- In-office lease reviews = 50
- Oil/gas phone calls and inquiries = 1,724
- Wells plugged with Oil and Gas remedial funds = 0

2018 Enforcement Actions

- Compliance Assistance Letters = 10
- Letters of Warning = 1
 - Cases started at LOW = 0
- Notice of Violations = 0
- Total Cases = 10
 - Resolved cases = 7
 - Resolved at CA letter = 7

2018 Enforcement Actions

- Unresolved cases = 3
 - Bo Jon Lake enterprises – Compliance Schedule plugging planned for April.
 - KRED and S&B, Signage needed on wells, Compliance Schedule - 25 wells per company per month, until all wells have signs.
 - Arrow Oil, Shut-in wells to have MIT, Compliance schedule – 6 month to complete with a March 14, 2019 deadline
 - Failed to complete - 20/78 wells completed



Missouri Total Open Wells

Item	Well Type	Number of Wells
Total Open Wells		5,933
	Post-Law Wells	1,326
	Pre-Law Well	4,607
Abandoned Wells		4,843
	Post-Law Commercial	348
	Post-Law Private Gas	8
	Pre-Law Commercial	4,091
	Pre-Law Private Gas	396
82 percent of all open wells are abandoned		
85 percent of all abandoned wells are commercial wells		
		As of 3-1-2019

Fund and Bonding Balances

- Oil and Gas Remedial Fund balance as of March 1, 2019
 - \$8,482
- Oil and Gas Resource Fund balance as of March 1, 2019
 - \$108,256
- Total Bonding held as of March. 1, 2019
 - \$1,041,453

Comparison of 2016, 2017 and 2018

Item	2016	2017	2018
Active Oil Wells	559	443	466
Oil Production in bbl	115,765	114,895	94,147
Average Price/bbl	\$32.77	\$41.48	\$56.85
Total Oil Value*	\$3,835,648	\$4,802,587	\$5,466,235
Active Gas Wells	14	1	14
Gas production in MCF	1090	820	950
Average Price/MCF	\$0	\$0	\$0
Total Gas Value*	\$0	\$0	\$0
Permits	1	2	11
Wells Inspected	233	151	781
MITs Performed	26	41	203
MITs Witnesses	0	0	4
Leases Inspected	51	55	53
Phone Inquiries	1,090	948	1,724

* Total commodity value based on price at which commodity was sold, not the average commodity price



MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

Questions?

Larry Pierce

573-573-368-2191 or 800-361-4827

larry.pierce@dnr.mo.gov

dnr.mo.gov

Oil and Gas Unit Updates and Upcoming Council Activities

State Oil and Gas Council Meeting – April 17, 2019

Larry “Boot” Pierce, RG
Missouri Geological Survey

Unit Activities

- ERU is currently going through an EPA program review for both:
 - 1425 Class II
 - Oil and gas injection wells
 - Disposal and EOR wells
 - 1422 Class V
 - Other injection wells
- Working with EPA to conduct a “Crosswalk”
 - Comparison of state and federal rules to ensure our program is meeting all federal requirements



MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

Questions?

Larry Pierce

573-573-368-2191 or 800-361-4827

larry.pierce@dnr.mo.gov

dnr.mo.gov