

The U.S. CO₂ Enhanced Oil Recovery Survey

An update of enhanced oil production totals and CO₂ supplies for active CO₂ EOR projects in the U.S. as of end-of-year 2022.

Advanced Resources International has completed an update of the U.S. CO₂ Enhanced Oil Recovery Survey for active CO₂ EOR projects as of the end-of-year 2022.

The updated survey shows that incremental oil recovery from CO₂ EOR in the U.S. was approximately 245,000 bbl/d in 2022 — a decline of about 2% from the 2021 Survey total of 250,000 bbl/d. The updated survey also shows a total of 1.9 MMcf/d of CO₂ was supplied for CO₂ EOR in 2022, including about 1.5 MMcf/d from natural sources and 0.4 MMcf/d from industrial sources. This is a marginal decrease to the 2021 Survey CO₂ supply total of 2.0 MMcf/d.

Supplies of CO₂ captured from industrial sources, including natural gas processing plants, nitrogen plants, and ammonia plants, decreased by about 200 MMcf/d from 2021 to 2022. On the other hand, naturally sourced production increased by 100 MMcf/d during the same period.

Looking ahead to 2023 oil and gas prices above 2015-2020 levels may lead to a rebound in CO₂ EOR oil production and increased CO₂ supply. Furthermore, as successful implementation of 45Q tax incentives continues, CO₂ EOR remains an attractive option for generating revenue while storing CO₂ emissions.

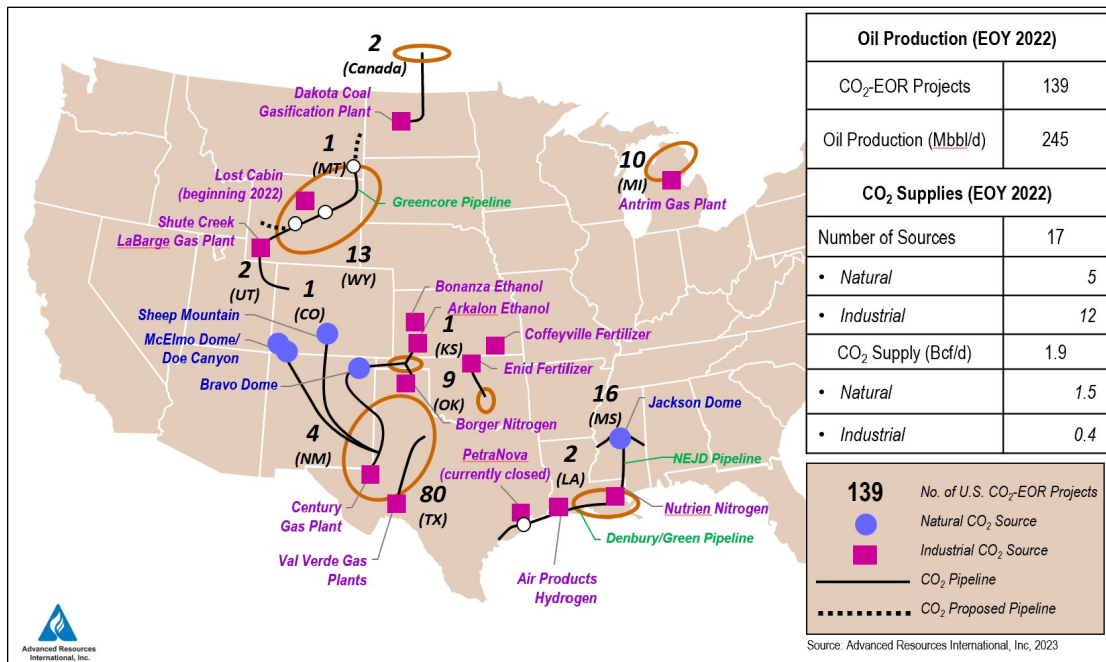
Survey at a Glance

Total projects: 139

Total operators: 24

Total CO₂ EOR oil prod.:
245,000 bbl/d

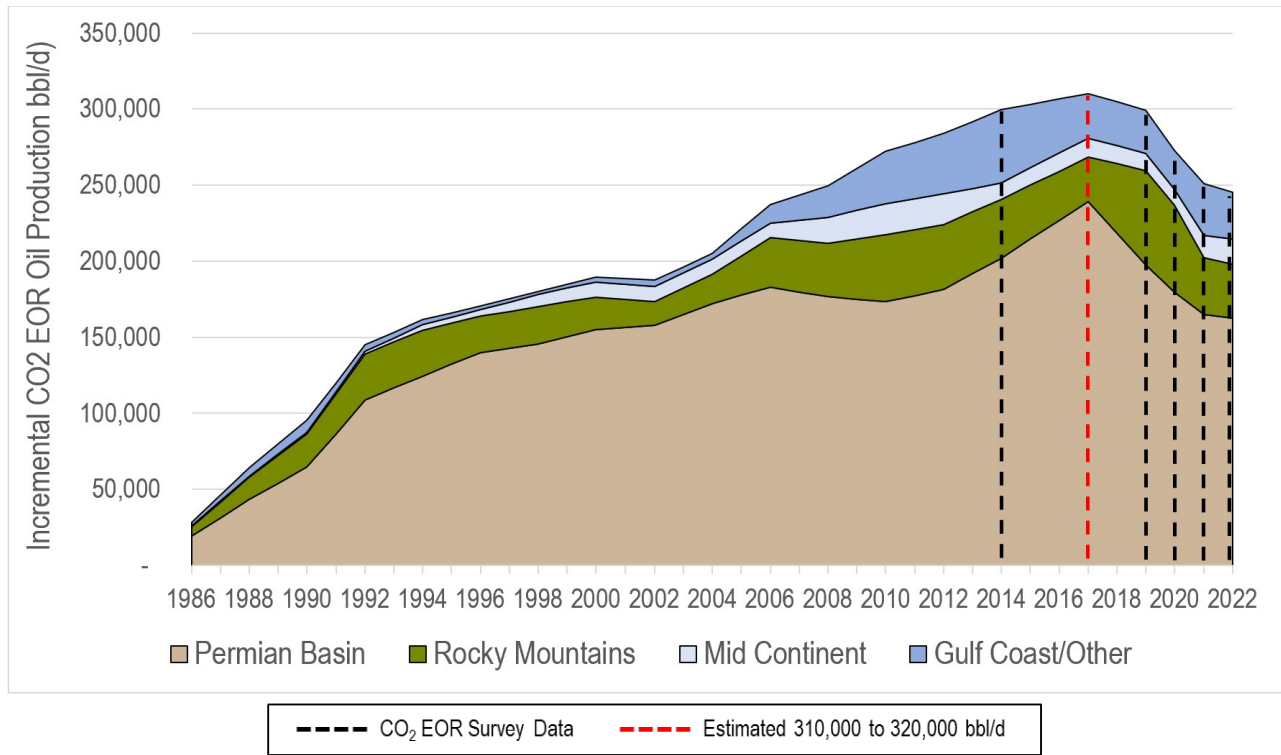
- **Permian Basin (TX, NM):**
162,000 bbl/d
 - **SE Gulf Coast (MS, LA, TX):**
30,000 bbl/d
 - **Mid-Continent (OK, KS):**
17,000 bbl/d
 - **Rockies (CO, UT, WY, MT):**
36,000 bbl/d
 - **Michigan:**
1,000 bbl/d
- Total CO₂ Supply: 1.9 Bcf/d**
- **“Natural” CO₂:** 1.5 Bcf/d
 - **“Industrial” CO₂:** 0.4 Bcf/d



The U.S. CO₂ EOR Survey report is compiled and provided as a public resource by Advanced Resources International. Special thanks to Mr. Steve Melzer of Melzer Consulting and Lon Whitman of the Enhanced Oil Recovery Institute (EORI) for providing valuable information on CO₂ EOR projects and CO₂ supplies as part of the U.S. CO₂ EOR Survey. Additional thanks to Mr. Jack Maloy and Mr. Clay Overholt for conducting incremental oil recovery decline curve analysis as part of this update. The next update to the U.S. CO₂ EOR Survey is anticipated for the Fall of 2024.

For more information, please contact Mr. Matt Wallace via e-mail at mwallace@adv-res.com.

Chart of U.S. CO₂ EOR Production



The chart above shows the history of incremental oil production using CO₂ EOR in the U.S. The 2014 O&G EOR Survey and the 2019-2022 U.S. CO₂ EOR Survey updates provide the most recent official estimates of incremental oil recovery from CO₂ EOR. However, no official survey was conducted between 2014 and 2019. The 2017 total, which is based on an informal survey of the data, is estimated between 310,000 and 320,000 barrels per day.

CO₂ EOR Stabilization

Incremental oil production from CO₂ EOR in the U.S. declined 1.8% from 2021 to 2022. This contrasts an overall increase of 5.7% in total U.S. crude oil production over the same time period. The decline in CO₂ EOR production aligns with a 5% decline in captured CO₂ supplies for EOR from 2021 to 2022.

The data show a slowly stabilizing U.S. CO₂ EOR industry. Since 2020, the yearly rate of decline in production has decreased from 10% to less than 2% in 2022. Recovery from negative oil prices and market

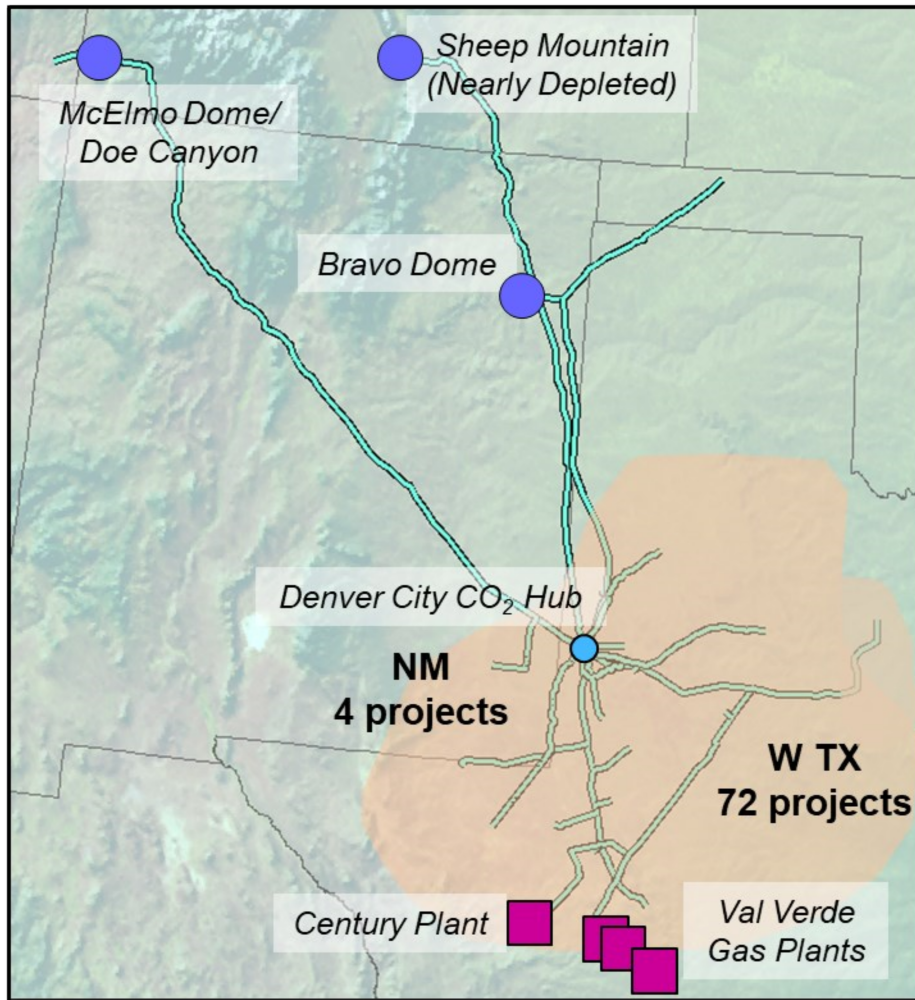
shocks in 2020 has likely been slowed by ongoing inflation and growing labor and material costs despite higher oil prices.

Natural gas and energy price increases may return the volume of CO₂ utilized for EOR to 2.0 Bcf/d or greater in the next few years. Furthermore, growth in infrastructure and implementation of 45Q tax credits may increase the volume of CO₂ stored with EOR in the future.

Change in CO₂ EOR and CO₂ Supply (2021 to 2022)

U.S. CO ₂ EOR	2021	2022	% Change
Incremental Oil Production (Mbbl/d)	0.250	0.245	- 1.8%
CO ₂ Supply/Storage (Bcf/d)	2.0	1.9	- 5%
CO ₂ Utilization (Mcf/bbl)	8	7.8	

The Status of Permian Basin CO₂ EOR



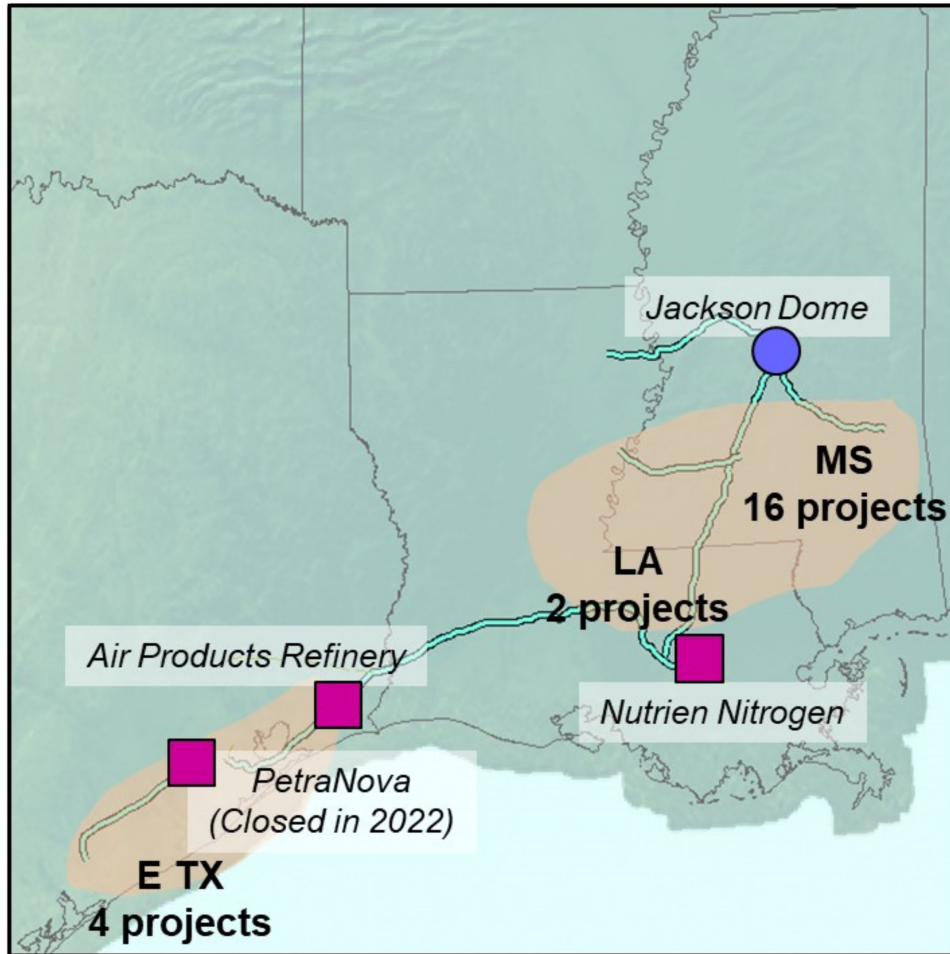
The Permian Basin produced about 162,000 bbl/d in 2022, around a 2% decrease from 2021's yield of 166,300 bbl/d. 13 Operators own 76 CO₂ EOR projects in Texas and New Mexico.

The largest CO₂ EOR operator in the Permian Basin is Oxy Petroleum, who controls 55% of all enhanced production in the region at 90,000 bbl/d.

The CO₂ supplied to the Permian Basin increased from 1,000 MMcf/d in 2021 to 1,200 MMcf/d in 2022. CO₂ was sourced from 4 natural sources — McElmo Dome, Doe Canyon, and Sheep Mountain in Colorado and Bravo Dome in New Mexico. Two industrial sources — the Val Verde and Century gas plants — provided anthropogenic CO₂ for EOR as well.

CO ₂ EOR Projects		2021 Survey	2022 Survey
Operators		14	13
Enhanced Recovery (Kbbl/d)		166.3	162
Projects	TX	72	72
	NM	4	4
	Total	76	76
CO ₂ Sources	Natural	4	4
	Industrial	2	2
	Total	6	6
CO ₂ Supply (MMcf/D)	Natural	905	1,103
	Industrial	100	93
	Total	1,005	1,196

The Status of Gulf Coast CO₂ EOR



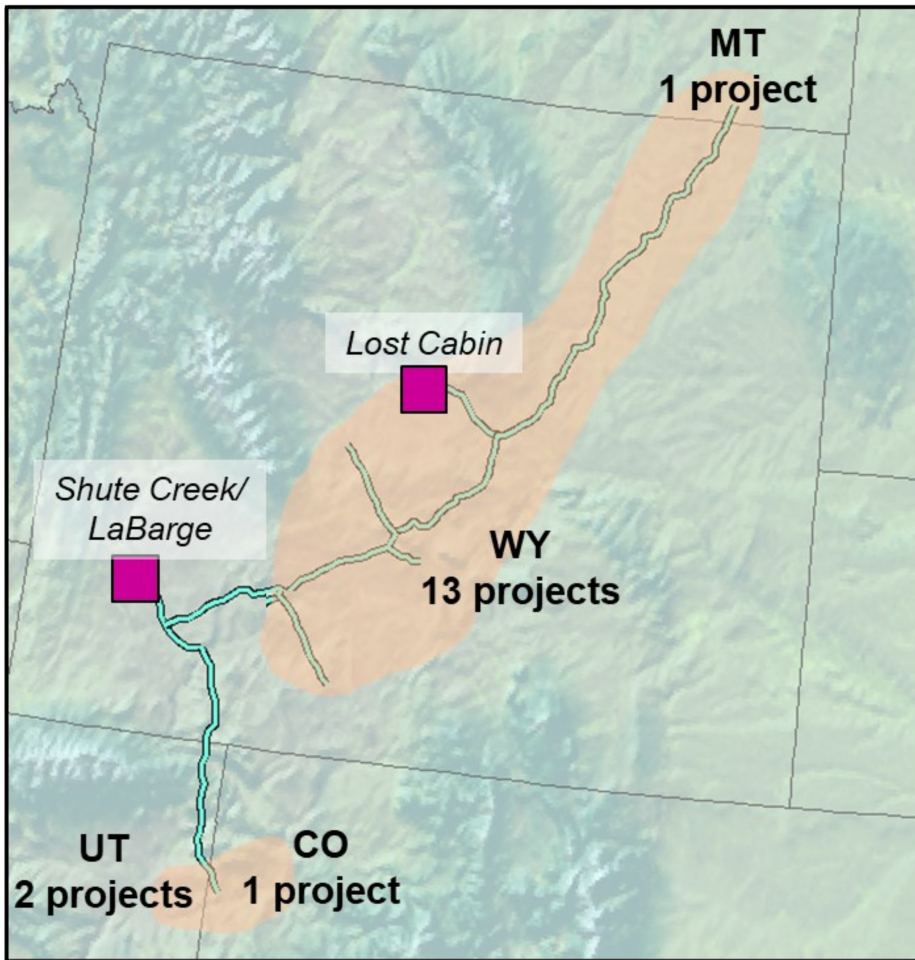
Enhanced oil recovery production in the Gulf Coast declined 10% from 33,000 bbl/d in 2021 to 30,000 bbl/d in 2022. A total of four operators own the 22 active CO₂ EOR projects in the Gulf Coast -- 16 projects in Mississippi, 2 projects in Louisiana, and 4 projects in East Texas.

Denbury is the largest operator in the Gulf Coast Region, producing 27,000 bbl/d in 2022. They produce over 90% of the Gulf Coast's enhanced production and operate 17 active CO₂ floods.

Total CO₂ supply for EOR declined from 470 MMcf/d in 2021 to 400 MMcf/d in 2022. CO₂ in the Gulf Coast is supplied from one natural source (Jackson Dome) and two industrial sources (Air Products and PCS Nitrogen).

CO ₂ EOR Projects		2021 Survey	2022 Survey
Operators		4	4
Enhanced Recovery (Kbbl/d)		33.2	30
Projects	MS	18	16
	TX	5	4
	LA	2	2
	Total	25	22
CO ₂ Sources	Natural	1	1
	Industrial	2	2
	Total	3	3
CO ₂ Supply (MMcf/D)	Natural	410	345
	Industrial	63	55
	Total	473	400

The Status of Rockies CO₂ EOR



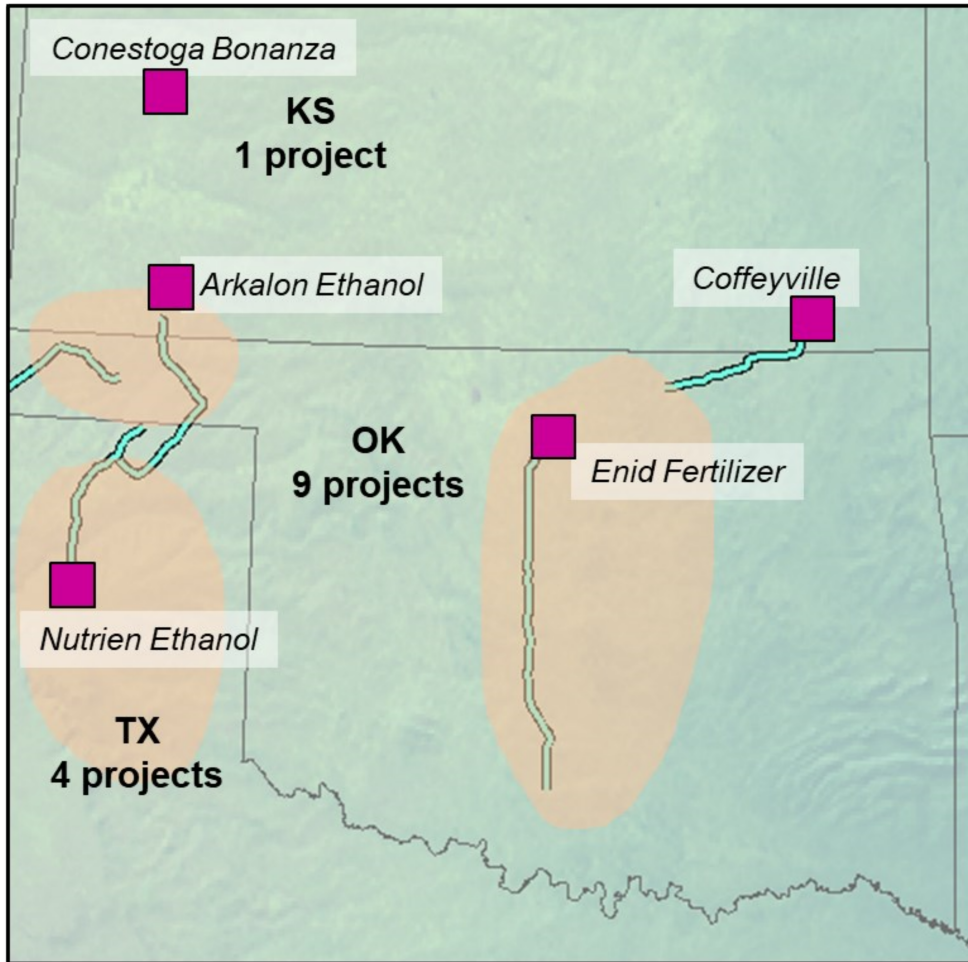
Enhanced oil recovery production in the Rockies declined 2%, with 36,400 bbl/d produced in 2022 and 35,600 bbl/d produced in 2021. A total of five operators own the 17 active CO₂ EOR projects in the Rockies -- 13 projects in Wyoming, 2 projects in Utah, 1 project in Montana, and 1 project in Colorado.

The largest CO₂ EOR operator in the Rockies is Maverick Natural Resources who produced ~65% of enhanced production in the Rockies with ~11,000 bbl/d.

Total CO₂ supply for EOR increased from 110 MMcf/d in 2021 to 200 MMcf/d in 2022. CO₂ in the Rockies is supplied from one natural source (McElmo Dome to Aneth) and two industrial sources (Shute Creek/LaBarge, and Lost Cabin).

CO ₂ EOR Projects		2021 Survey	2022 Survey
Operators		6	5
Enhanced Recovery (Kbbl/d)		36.4	35.6
Projects	WY	13	13
	UT	2	2
	CO	1	1
	MT	1	1
	Total	17	17
CO ₂ Sources	Natural	1	1
	Industrial	2	2
	Total	3	3
CO ₂ Supply (MMcf/D)	Natural	25	25
	Industrial	85	175
	Total	110	200

The Status of Mid Continent CO₂ EOR



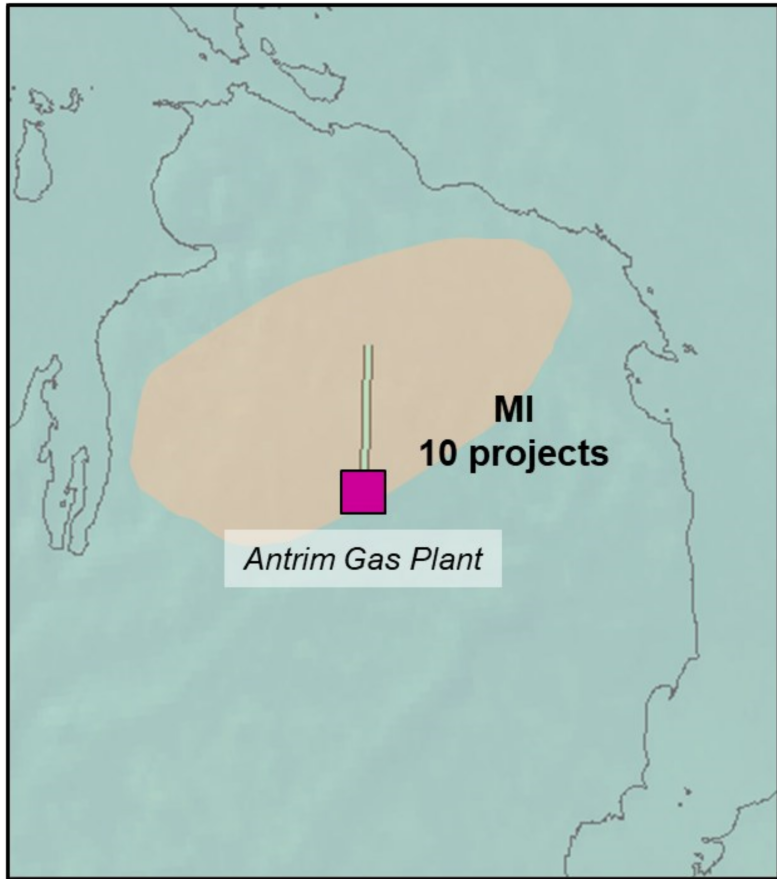
Enhanced oil recovery production in the Mid Continent increased to about 17,000 bbl/d in 2022. A total of four operators own the 14 active CO₂ EOR projects in the Mid Continent -- 4 projects in North Texas, 9 projects in Oklahoma, and 1 project in Kansas.

The largest CO₂ EOR operator in the Mid Continent is Maverick Energy, who operates a total of 4 CO₂ floods producing about 11,000 bbl/d.

Total CO₂ supply for EOR declined from 130 MMcf/d in 2021 to 123 MMcf/d in 2022. CO₂ in the Mid Continent is supplied from one natural source (Bravo Dome) and 5 industrial sources (Coffeyville, Enid Fertilizer, Agrium Ethanol, Arkalon Ethanol, and Conestoga Bonanza).

CO ₂ EOR Projects		2021 Survey	2022 Survey
Operators		4	4
Enhanced Recovery (Kbbl/d)		13.4	16.8
Projects	N. TX	4	4
	OK	9	9
	KS	1	1
	Total	14	14
CO ₂ Sources	Natural	1	1
	Industrial	5	5
	Total	6	6
CO ₂ Supply (MMcf/D)	Natural	25	22
	Industrial	105	101
	Total	130	123

The Status of Michigan CO₂ EOR



Enhanced oil recovery production in Michigan increased from 600 bbl/d in 2021 to 800 bbl/d in 2022. One operator, Core Energy, owns all 10 active CO₂ EOR projects in Michigan.

Total CO₂ supply for EOR remained constant at 20 MMcf/d from 2021 through 2022. CO₂ in Michigan is supplied from a single natural source, the Antrim Gas Plant operated by Core Energy.

CO ₂ EOR Projects		2021 Survey	2022 Survey
Operators		1	1
Enhanced Recovery (Kbbl/d)		0.6	0.8
Projects	MI	10	10
	Total	10	10
CO ₂ Sources	Natural	0	0
	Industrial	1	1
	Total	1	1
CO ₂ Supply (MMcf/D)	Natural	0	0
	Industrial	20	20
	Total	20	20

A Survey of U.S. CO2 Enhanced Oil Recovery Projects

2022 Operator	Project	State	Start Date	Area	Prod. Wells	Injection Wells	Pay Zone	Lithology	Porosity	Soi	Sor	Avg.Perm.	Depth	Gravity	Oil Visc.	Res. Temp.	Prev. Prod.	2022 Tot. Prod.	2022 Enh. Prod.
				(ac)					(%)	(%)	(%)	(md)	(ft)	(Deg API)	(cp)	(Deg F)		bbl/d	bbl/d
Amplify Energy Operations	Lost Soldier	WY	5/1/1989	1,795	43	86	Tensleep	SS	11.0	90	-	10.0	5,600	35	1.3	158	WF	808	808
Amplify Energy Operations	Lost Soldier	WY	5/89	490	17	37	Darwin-Madison	S/LS-Dolo.	13.0	89	-	4.2	5,800	35	1.3	162	WF	743	743
Amplify Energy Operations	Lost Soldier	WY	6/96	80	8	17	Cambrian	SS	12.3	85	-	19.0	6,500	35	1.2	174	WF	200	200
Amplify Energy Operations	Wertz	WY	10/86	1,540	32	69	Tensleep	SS	10.0	90	-	20.0	6,600	35	1.2	176	WF	1,077	1,077
Amplify Energy Operations	Wertz	WY	3/99	890	15	35	Darwin-Madison	S/LS-Dolo.	10.0	89	-	5.0	6,800	35	1.0	180	WF	591	591
				4,795	115	244												3,419	3,419
Apache	Adair San Andres	TX	1997	5,338	95	59	San Andres	Dolo.	14.1	-	-	4.0	4,789	34	-	104	WF	943	605
Apache	Adair Wolfcamp	TX	2004	2,550	6	8	Wolfcamp	Dolo.	12.4	-	-	28.0	8,500	42	-	126	WF	40	32
Apache	Roberts	TX	2012	13,600	194	164	San Andres	Dolo.	8.5	-	-	-	-	-	-	-	-	1,227	847
Apache	Slaughter	TX	5/85	569	171	91	San Andres	Dolo.	12.5	-	-	6.3	4,900	32	1.3	110	WF	964	964
Apache	Slaughter Mallet	TX	6/89	8,559	118	83	San Andres	Dolo.	10.0	45	8	3.0	5,000	32	1.6	107	WF	1,117	1,117
				30,616	584	405												4,292	3,565
Capturepoint	NW Velma Hoxbar	OK	9/1/2010	410	64	9	Hoxbar	SS	26.0	77	-	280	2,228	27	2.4	84	WF	149	124
Capturepoint	Camrick	OK	4/01	2,320	45	34	Morrow	SS	15.0	52	-	63	7,260	39	2.2	152	WF	526	522
Capturepoint	Burbank	OK	6/6/2013	50,000	161	132	Burbank	SS	17.0	70	30	50	3000	37	3.0	122	WF	4,455	3,620
Capturepoint	East Seminole	TX	10/1/2013	160	32	34	San Andres	Dolomite	10.0	80	44	6	5,400	33	2.2	108	Prim/WF	253	209
Capturepoint	Wellman	TX	7/1/1983	1,400	25	7	Wolfcamp	LS	9.2	35	10	100	9800	44	0.5	151	WF	1,211	1,211
Capturepoint	North Perryton	TX	12/07	2,500	9	10	Upper Morrow	SS	15.2	52	-	63	7,300	38	2.0	152	WF	274	274
Capturepoint	Albert Spicer Unit	TX	10/2009	577	3	2	Upper Morrow	SS	21.0	51	-	50	8,060	39	2.0	177	WF	65	65
Capturepoint	Booker Trosper Unit	TX	10/2009	1,325	3	3	Upper Morrow	SS	20.0	56	-	50	8,060	39	2.0	177	WF	59	59
Capturepoint	Gramstorff Unit	TX	10/2009	829	5	4	Upper Morrow	SS	21.0	57	-	109	8,060	39	2.0	177	WF	183	183
Capturepoint	Farnsworth	TX	12/15/2010	10,300	33	20	Upper Morrow	SS	14.0	60	25	48	7,940	38	1.0	170	WF	883	859
Capturepoint	Emma Field	TX	01/2015	-	21	16	San Andres	Carbonate	-	-	-	-	-	-	-	-	-	372	372
				69,821	401	271												8,430	7,497
ConocoPhillips	South Cowden	TX	2/81	4,900	17	3	San Andres	Dolo.	11.7	70	50	11	4,500	38	1.0	101	Prim	53	53
				4,900	17	3												53	53
Contango	Patrick Draw Monell	WY	9/1/2003	6,400	154	90	Almond, UA-5	SS	19.6	60	34	32	4,750	42	0.5	108	Prim/WF	4,137	4,137
Contango	Salt Creek SD3	WY	2017	1,290	20	44	Sundance 3	SS	18.0	75	18	171	2,990	35	2.5	147	Prim	1,312	1,312
Contango	Salt Creek Southern Unit (Phase 15)	WY	2009	588	43	46	Wall Creek 1 (Frontier)	SS	16.0	75	32	32	1,500	40	1.4	95	Prim/WF	633	633
Contango	Salt Creek Southern Unit (Phases 15 & 16)	WY	2012	1,721	64	69	Wall Creek 2 (Frontier)	SS	19.0	77	29	52	2,000	37	3.1	100	Prim/WF	1,068	1,068
Contango	Salt Creek Light Oil Unit (Active Phases)	WY	2004	7,687	434	446	Wall Creek 2 (Frontier)	SS	19.0	77	29	52	2,000	37	3.1	100	Prim/WF	5,967	5,967
Contango	Salt Creek Light Oil Unit (Phase 7)	WY	2004	862	42	47	Wall Creek 1 (Frontier)	SS	16.0	75	32	32	1,500	40	1.4	95	Prim/WF	772	772
				18,548	757	742												13,890	13,889
Core Energy	Charlton 6	MI	2006	43	1	1	Silurian - A1/Niagaran	LS/Dolo.	4.0	79	46	0.1 - 100	5,450	43	0.8	103	Prim	0	-
Core Energy	Charlton 30-31	MI	2005	250	2	3	Silurian - A1/Niagaran	LS/Dolo.	4.0	62	35	0.1 - 100	5,450	42	0.8	103	Prim	85	85
Core Energy	Dover 33	MI	1996	82	3	1	Silurian - A1/Niagaran	LS/Dolo.	5.0	66	37	0.1 - 100	5,500	43	0.8	100	Prim	-	-
Core Energy	Dover 35	MI	2004	57	3	1	Silurian - A1/Niagaran	LS/Dolo.	3.0	72	36	0.1 - 100	5,500	41	0.8	101	Prim	58	58
Core Energy	Dover 36	MI	1997	160	1	2	Silurian - A1/Niagaran	LS/Dolo.	3.0	64	41	0.1 - 100	5,600	42	0.8	102	Prim	26	24
Core Energy	Chester 5	MI	2010	150	1	2	Silurian - A1/Niagaran	LS/Dolo.	10.0	65	35	0.1 - 100	5,500	42	0.8	101	Prim	226	226
Core Energy	Charlton 19	MI	2015	115	2	1	Silurian - A1/Niagaran	LS/Dolo.	8.0	69	38	0.1 - 100	5,200	43	0.8	102	Prim	54	54
Core Energy	Chester 16	MI	2017	185	2	1	Silurian - A1/Niagaran	LS/Dolo.	4.0	90	52	0.1 - 101	5,800	42	0.8	102	WF	90	60
Core Energy	Chester 2-10A	MI	2009	153	3	1	Silurian - A1/Niagaran	LS/Dolo.	4.0	62	39	0.1 - 102	5,600	42	0.8	102	Prim	224	224
Core Energy	Bagley 11-14-23	MI	2015	450	4	3	Silurian - A1/Niagaran	LS/Dolo.	4.0	77	39	0.1 - 103	6,050	42	0.8	104	Prim	300	25
				1,645	22	16												1,063	756
Daylight Petroleum	Golden Trend Northeast Purdy	OK	9/82	3,400	84	49	Springer	SS	13.0	-	-	44	9,400	38	1.2	148	WF	718	718
Daylight Petroleum	Golden Trend Bradley	OK	2/97	700	29	12	Springer	SS	14.0	-	-	50	9,400	38	1.0	150	WF	323	231
				4,100	113	61												1,041	949

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2022 Operator	Project	State	Start Date	Area	Prod. Wells	Injection Wells	Pay Zone	Lithology	Porosity	Soi	Sor	Avg.Perm.	Depth	Gravity	Oil Visc.	Res. Temp.	Prev. Prod.	2022 Tot. Prod.	2022 Enh. Prod.
				(ac)					(%)	(%)	(%)	(md)	(ft)	(Deg API)	(cp)	(Deg F)		bb/d	bb/d
Denbury	Bell Creek	MT	5/13	21,771	104	92	Muddy	SS	23.0	-	-	1,035	4,500	36	2.8	108	Prim/WF	4,763	4,763
Denbury	Eucutta	MS	3/06	2,100	57	52	Eutaw, Tuscaloosa	SS	27.0	42	-	250	5,050	22	-	152	Prim/WF	1,705	1,626
Denbury	Martinville Wash-Fred 8500	MS	9/06	180	3	2	Wash-Fred 8500	SS	27.0	86	-	107	8,500	11	-	198	Prim	120	120
Denbury	Tinsley	MS	01/07	13,160	115	77	Woodruff	SS	23.0	30	-	500	5,000	34	-	164	Prim/WF	3,721	3,721
Denbury	Heidelberg, West	MS	12/08	2,500	63	52	Eutaw, Christmas	SS	28.0	37	-	300	4,800	22	-	152	WF	1,815	1,815
Denbury	East Heidelberg	MS	6/1/2011	857	84	58	Eutaw, Christmas, Tuscaloosa	SS	28.0	-	-	10-700	5,050	23	17.4	152	Prim/WF	3,033	3,236
Denbury	West Hastings	TX	12/1/2010	4,420	88	48	Frio	SS	30.0	30	-	1,000	5,700	31	1.2	165	Prim	5,436	5,436
Denbury	Oyster Bayou	TX	12/1/2010	3,912	40	30	Frio	SS	25 - 28	-	-	210-2300	8,600	40	0.5	190	Prim/WF	4,047	4,047
Denbury	Little Creek	MS	1985	6,200	21	19	Lower Tuscaloosa	SS	23.0	44	-	90	10,750	40	-	250	WF	161	161
Denbury	Lazy Creek	MS	12/01	840	5	3	Lower Tuscaloosa	SS	23.4	27	-	65	10,400	39	-	242	Prim	86	86
Denbury	West Mallalieu	MS	11/01	3,574	29	23	Lower Tuscaloosa	SS	26.0	44	-	75	10,550	40	-	248	Prim	605	605
Denbury	East Mallalieu	MS	12/03	880	6	3	Lower Tuscaloosa	SS	26.0	52	-	75	10,550	40	-	248	Prim/WF	50	50
Denbury	McComb	MS	11/03	12,600	16	13	Lower Tuscaloosa	SS	26.0	52	-	90	10,900	40	-	250	Prim	371	371
Denbury	Smithdale	MS	3/05	4,100	10	7	Lower Tuscaloosa	SS	23.0	50	-	90	11,000	41	-	250	Prim	114	114
Denbury	Brookhaven	MS	1/05	9,200	53	50	Lower Tuscaloosa	SS	25.5	47	-	60	10,300	40	-	250	Prim/GI/WF	1,233	1,233
Denbury	Martinville Rodessa	MS	3/06	200	1	-	Rodessa	SS	12.0	64	-	200	11,600	42	-	250	WF	1	1
Denbury	Soso	MS	4/06	2,648	57	23	Bailey 11,701, Cotton Valley	SS	17.0	50	-	273	11,950	43	-	234	WF	906	906
Denbury	Cranfield	MS	07/08	7,750	20	25	Tuscaloosa	SS	23.0	32	-	100	10,300	39	-	260	Prim/GI	914	914
Denbury	Delhi	LA	11/1/2009	13,636	108	46	Tuscaloosa, Paluxy	SS	30.0	-	-	1,000	3,500	42	0.8	135	Prim/WF	2,559	2,559
Denbury	Grieve	WY	4/1/2018	2,280	9	10	Muddy	SS	20.0	-	-	275	6,700	37	-	138	Prim/GI	1,025	1,025
Denbury	Beaver Creek	WY	7/08	16,526	20	16	Madison	Dolo.	10.0	60	50	10	11,100	40	0.6	232	Prim/WF	2,117	2,117
				129,334	909	649												34,782	34,906
Elk Petroleum	Aneth Unit	UT	10/98	16,800	136	138	Desert Creek	LS	12.0	80	37	5	5,700	42	0.6	129	WF	3,394	2,616
Elk Petroleum	McElmo Unit	UT	1/1/1985	12,640	112	85	Desert Creek	LS	14.0	80	37	5	5,600	41	0.6	125	WF	3,065	2,296
				29,440	248	223												6,458	4,913
Fasken	Hanford East	TX	3/97	340	7	7	San Andres	Dolo.	10.0	45	19	4	5,500	32	1.4	105	WF	31	31
Fasken	Hanford (San Andres)	TX	7/09	150	23	20	San Andres ROZ	Dolo.	10.0	50	-	5	5,700	32	1.0	105	Prim	152	102
Fasken	River Bend (Devonian)	TX	4/09	400	8	7	Devonian	Tripol.	23.7	55	46	5	5,500	42	0.5	105	WF	146	135
Fasken	Abell (Devonian)	TX	4/09	809	16	5	Devonian	Tripol.	21.9	45	-	3	5,300	42	0.5	105	WF	105	94
Fasken	Hanford	TX	7/86	1,120	32	27	San Andres	Dolo.	10.5	61	19	4	5,500	32	1.4	104	Prim	183	183
				2,819	86	66												617	545
George R. Brown	Garza	TX	11/09	1,778	430	108	San Andres	Carbonate	-	-	-	-	3,000	-	-	-	-	997	239
				1,778	430	108												997	239
Hillcorp Energy Company	West Ranch	TX		4,000	72	33	41A	SS	23-27	-	-	895	5750	32	0.7	171	-	599	599
Hillcorp Energy Company	West Ranch	TX		4,000	72	33	98A	SS	30.0	70	-	497	6100	41	0.3	178	-	599	599
				8,000	144	66												1,198	1,198
Kinder Morgan	Reinecke	TX	1/98	700	26	10	Cisco Canyon Reef	LS/Dolo.	10.4	35	10	170	6,700	44	0.4	139	WF	68	68
Kinder Morgan	SACROC	TX	1/72	50,000	529	492	Canyon	LS	4.0	78	39	19	6,700	39	0.7	135	Prim/WF	23,922	23,922
Kinder Morgan	Katz	TX	1/1/2011	7,200	69	68	Strawn	LS	16.5	70	40	75	4,950	38	2.2	117	Prim/WF	1,320	1,320
Kinder Morgan	Goldsmith-Landreth San Andres	TX		6,166	84	49	San Andres	Carbonate	12.0	80	35	32	4,100	35	1.3	95	Prim/WF	995	995
Kinder Morgan	Yates	TX	3/04	26,000	605	175	San Andres	Dolo.	17.0	75	54	175	1,400	30	6.0	82	GI	14,549	12,761
Kinder Morgan	Tall Cotton	TX	11/14	180	40	22	San Andres	Dolo.	10.9		35	5	5300	32	1.3	102		1,110	1,110
				90,246	1,353	816												41,963	40,175
Maverick	East Vacuum	NM	2/81	5,732	158	107	San Andres	Dolo.	11.7	70	50	11	4,500	38	1.0	101	Prim	5481	5207
Maverick	Postle - PUMU	OK	11/1/1995	4,032	43	36	Morrow	SS	16.0	75	25	10-40	6,200	40	1.3	145	WF	1396	1396
Maverick	Postle - HMAU	OK	11/1/1995	3,396	38	29	Morrow	SS	16.0	75	25	10-40	6,200	40	1.3	145	WF	947	947
Maverick	Postle - WHMU	OK	1/1/1998	7,724	96	74	Morrow	SS	16.0	75	25	10-40	6,200	40	1.3	145	WF	3718	3718
Maverick	Postle - HMU	OK	8/1/2007	5,415	61	43	Morrow	SS	16.0	75	25	10-40	6,200	40	1.3	145	WF	4761	4761
				26,299	396	289												16,303	16,029
Occidental	Anton Irish	TX	4/1/1997	7,030	245	92	Clearfork	Dolo.	11.0	85	35	8	5,250	34	1.2	105	Prim/WF	2,667	2,096
Occidental	Cedar Lake	TX	8/1/1994	5,188	207	132	San Andres	Dolo.	10.0	81	36	2	4,850	32	1.4	108	WF	1,830	822
Occidental	Cogdell	TX	10/1/2001	15,000	121	101	Canyon Reef	LS	0.2	70	25	5	6,700	41	0.6	130	WF	2,590	2,552
Occidental	El Mar	TX	4/1/1994	7,100	7	6	Delaware	SS	16.0	40	-	20	4,500	41	1.1	97	Prim/WF	-	-
Occidental	GMK South	TX	10/1/1982	1,949	24	17	San Andres	Dolo.	11.0	55	37	2	5,400	32	1.4	108	Prim	38	38
Occidental	Levelland (Levelland)	TX	9/1/2004	2,673	472	357	San Andres	Dolo.	8.5	69	20	3	4,950	32	1.4	105	WF	3,685	1,827
Occidental	Devonian Unit (Mid Cross)	TX	7/1/1997	1,085	13	8	Devonian	Tripol.	14.0	65	31	2	5,200	43	0.4	105	Prim/GI	253	253
Occidental	Devonian Unit (North Cross)	TX	4/1/1972	1,530	28	20	Devonian	Tripol.	18.0	65	31	3	5,250	44	0.4	105	Prim/GI	696	696
Occidental	North Cowden	TX	2/1/1995	465	521	346	Grayburg	Dolo.	11.0	55	36	2	4,200	32	1.4	108	WF	2,287	-
Occidental	North Dollarhide Devonian	TX	11/1/1997	1,280	23	15	Devonian	Tripol.	25.0	73	28	8	8,000	40	0.4	121	WF	200	22
Occidental	North Hobbs	NM	3/1/2003	21,258	190	151	San Andres	Dolo.	8.7	70	30	2	4,100	33	1.4	95	WF	8,380	6,584
Occidental	South Hobbs	NM	7/7/2005	4,530	62	52	San Andres	Dolo.	12.0	32	35	8	4,400	34	1.0	105	WF	5,882	5,034

A Survey of U.S. CO2 Enhanced Oil Recovery Projects

2022 Operator	Project	State	Start Date	Area	Prod. Wells	Injection Wells	Pay Zone	Lithology	Porosity	Soi	Sor	Avg.Perm.	Depth	Gravity	Oil Visc.	Res. Temp.	Prev. Prod.	2022 Tot. Prod.	2022 Enh. Prod.
				(ac)					(%)	(%)	(%)	(md)	(ft)	(Deg API)	(cp)	(Deg F)		bb/d	bb/d
Occidental	Devonian Unit (South Cross)	TX	6/1/2988	2,747	114	67	Devonian	Tripol.	16.0	65	31	3	5,200	43	0.4	105	Prim/Gl	3,195	3,065
Occidental	Salt Creek	TX	10/1/1993	15,000	222	132	Canyon	LS	0.2	70	25	5	6,700	41	0.6	130	WF	3,102	2,076
Occidental	Sharon Ridge	TX	2/1/1999	7,780	44	30	Canyon Reef	LS	7.0	81	30	5	2,300	28	2.7	108	WF	671	671
Occidental	Slaughter (Alex Slaughter Estate)	TX	8/1/2000	4,530	1	4	San Andres	Dolo./LS	15.0	52	35	20	4,100	34	1.0	105	WF	37	17
Occidental	Slaughter (Central Mallet Unit)	TX	12/1/1984	340	161	137	San Andres	Dolo.	14.9	72	30	4	4,900	32	2.0	97	WF	1,532	1,312
Occidental	Slaughter (Frazier Unit)	TX	12/1/1984	1,600	56	34	San Andres	Dolo./LS	11.4	50	23	3	4,500	34	1.0	100	WF	325	186
Occidental	Slaughter (H.T. Boyd)	TX	8/1/2001	6,304	37	21	San Andres	Dolo.	14.9	72	30	4	4,900	32	2.0	97	WF	440	411
Occidental	Slaughter (Igoe Smith)	TX	9/1/2005	16,381	49	37	San Andres	Dolo.	11.0	55	36	2	4,850	32	1.4	108	WF	1100	477
Occidental	Slaughter (North West Mallet)	TX	1/1/1992	3,040	104	60	San Andres	Dolo.	12.6	68	31	2	5,200	31	1.1	90	WF	846	495
Occidental	Slaughter (Slaughter Estate Unit)	TX	12/1/1984	5,700	165	137	San Andres	Dolo./LS	11.0	82	35	4	5,000	32	1.4	108	WF	1,422	686
Occidental	Slaughter (Smith Igoe)	TX	8/5/2014	16,381	6	3	San Andres	Dolo.	11.0	55	36	2	4,850	32	1.4	108	WF	118	52
Occidental	Slaughter (West RKM Unit)	TX	11/1/2006	3,896	176	141	San Andres	Dolo.	11.0	71	32	4	4,900	32	1.4	105	WF	1,446	882
Occidental	South Wasson Clearfork	TX	10/1/1984	4,720	84	2	Clearfork	Dolo.	7.0	70	35	2	6,600	35	1.1	120	WF	733	-
Occidental	South Welch	TX	9/1/1993	5,428	116	42	San Andres	Dolo.	10.0	72	32	2	5,000	32	1.4	105	WF	316	-
Occidental	T-Star (Slaughter Consolidated)	TX	7/1/1999	4,472	55	26	Abo	Dolo.	6.2	75	45	2	7,600	30	1.9	135	Prim	1,418	1,418
Occidental	Wasson (BRU)	TX	6/1/1995	1,246	286	72	San Andres	Dolo.	11.1	84	35	4	5,040	32	1.4	100	WF	4,994	4,619
Occidental	Wasson (Denver Unit)	TX	4/1/1983	27,000	1,086	83	San Andres	Dolo.	9.2	51	38	3	4,925	33	1.2	105	WF	18,887	18,823
Occidental	Wasson (ODC Unit)	TX	11/1/1984	2,820	422	137	San Andres	Dolo./LS	12.0	49	30	18	4,900	34	3.4	92	WF	6,405	4,861
Occidental	Wasson (Willard Unit)	TX	1/1/1986	26,423	472	143	San Andres	Dolo.	17.0	56	40	175	1,400	30	7.6	82	WF	5,201	5,078
Occidental	West Welch	TX	10/1/1997	13,379	170	113	San Andres	Dolo.	9.0	85	35	1	5,250	32	1.2	105	WF	635	-
Occidental	Levelland (South East Levelland)	TX	4/1/2014	1,581	83	58	San Andres	Dolo.	9.9	49	32	1	4,800	32	1.4	108	WF	1,708	1,102
Occidental	West Seminole San Andres Unit	TX	7/1/2013	17,347	338	211	San Andres	Dolo.	11.0	58	32	10	5,300	34	1.1	104	WF	3,967	3,827
Occidental	Seminole Unit	TX	3/1/1983	5,951	52	31	San Andres	Dolo.	11.0	82	35	4	5,000	32	1.4	108	WF	18,352	18,352
Occidental	Slaughter (Sundown Unit)	TX	6/1/2017	7,879	125	72	San Andres	Dolo.	11.0	85	35	5	5,250	32	1.2	105	WF	346	207
Occidental	Slaughter (West Sundown Unit)	TX	11/1/2018	11,954	9	5	San Andres	Dolo.	13.3	49	33	3	4,900	34	3.4	92	WF	2,306	1,707
Occidental	Collett, Eugenia	TX	8/1/2017	344	308	144	San Andres	Dolo.	8.7	70	30	2	4,850	33	1.4	95	WF	166	-
				283,331	6,654	3,239												108,174	90,248
Orla Petco	East Ford	TX	7/95	1,953	11	4	Delaware, Ramsey	SS	23.0	49	36	30	2,680	40	0.8	82	Prim	34	34
				1,953	11	4												34	34
Patriot Production	Twofreds	TX	1/74	4,392	27	5	Delaware, Ramsey	SS	19.5	50	-	32	4,900	36	1.5	105	WF	47	47
				4,392	27	5												47	47
PetroSantander	Stewart	KS	1/1/2012	8,500	53	40		SS	-	-	-	-	4,750	-	-	-	-	142	142
				8,500	53	40												142	142
Remnant Energy	Hansford Marmaton	TX	6/80	2,010	21	3	Marmaton	SS	18.1	43	-	48	6,500	44	1.6	142	Prim	-	-
				2,010	21	3												-	-
Sabinal Energy	Slaughter Sundown	TX	1/94	5,500	170	161	San Andres	Dolo.	11.0	41	25	6	4,950	33	1.4	105	WF	2,495	2,495
Sabinal Energy	East Penwell (SA) Unit	TX	5/96	1,020	118	108	San Andres	Dolo.	10.0	55	40	4	4,000	34	2.0	86	WF	495	241
				6,520	288	171												2,990	2,736
Scout Energy	Rangely Weber Sand	CO	10/86	19,153	365	279	Weber SS	SS	12.0	38	29	3	6,500	35	1.7	160	WF	7,588	5,455
Scout Energy	Mabee	TX	1/92	4,409	163	92	San Andres	Dolo.	10.5	36	10	10	4,700	32	3.3	106	WF	1,010	1,010
Scout Energy	Dollarhide (Devonian) Unit	TX	5/85	4,800	75	62	Devonian	Dolo./Trip.	13.5	35	22	9	7,800	40	0.4	120	Prim/WF	791	791
Scout Energy	Dollarhide (Clearfork "AB") Unit	TX	11/95	2,800	37	44	Clearfork	Dolo.	10.5	30	10	11	6,300	37	0.5	110	Prim/WF	335	335
Morningstar	Central Vacuum	NM	7/97	1,268	155	112	San Andres	Dolo.	12.0	36	15	22	4,550	38	1.0	101	WF	3654	3471
				32,430	795	589												13,378	11,062
Tellus	West Yellow Creek	MS	03/2017	3,500	24	-	Eulaw	SS	-	-	-	-	-	-	-	-	-	1,297	1,156
				3,500	24	-												1,297	1,156
TMR Exploration	Lockhart Crossing	LA	12/07	3,500	34	4	Wilcox	SS	20.0	32	-	30	10,100	40	-	212	Prim/WF	461	461
				3,500	34	4												461	461
Two P Partners	North Ward Estes	TX	5/07	16,300	661	479	Yates	SS	16.0	27	21	37	2,600	36	1.6	83	Prim/WF	3,817	3,727
				16,300	661	479												3,817	3,727
XTO Energy Inc.	Goldsmith	TX	12/96	330	119	1	San Andres	Dolo.	11.6	-	-	32	4,200	35	-	105	WF	581	581
XTO Energy Inc.	Cordona Lake	TX	12/85	2,084	70	27	Devonian	Tripol.	22.0	-	-	4	5,500	40	0.5	101	WF	568	568
XTO Energy Inc.	Wasson (Cornell Unit)	TX	7/85	1,923	126	87	San Andres	Dolo.	8.6	-	-	2	4,500	33	1.0	106	WF	1,517	1,517
XTO Energy Inc.	Wasson (Mahoney)	TX	10/85	640	65	33	San Andres	Dolo.	13.0	54	39	6	5,100	33	1.0	110	WF	656	656
XTO Energy Inc.	Means (San Andres)	TX	11/83	8,500	453	14	San Andres	Dolo.	9.0	-	-	20	4,300	29	6.0	97	WF	4,882	4,311
				13,477	833	360												8,204	7,633

TOTAL	273,049	245,378
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