

BEFORE THE CORPORATION COMMISSION  
OF THE STATE OF KANSAS

IN THE MATTER OF THE APPLICATION	)	DOCKET NO. 19-CONS-3269-CUNI
OF BEREXCO LLC FOR AN ORDER	)	
AUTHORIZING UNITIZATION AND UNIT	)	CONSERVATION DIVISION
OPERATION OF THE ARROYO UNIT IN	)	
STANTON COUNTY, KANSAS	)	LICENSE NO. 34318

PREFILED TESTIMONY

OF

DANA G. WREATH  
VICE PRESIDENT  
ON BEHALF OF  
BEREXCO LLC  
APRIL 18, 2019

1 Q Would you please state your name, title, and business address?

2 A My name is Dana G. Wreath. I am a Vice President with BEREXCO LLC. Our  
3 office is at 2020 N. Bramblewood, Wichita, Kansas 67206.

4 Q How long have you practiced your profession?

5 A Since 1989.

6 Q Have you appeared before this commission on prior occasions and been qualified as  
7 an expert Petroleum Engineer to give testimony regarding applications being held by  
8 this commission?

9 A Yes, I have appeared before the KCC and have been qualified as an expert in  
10 petroleum engineering a number of times. I have testified with respect to various  
11 applications before this commission.

12 Q Are you familiar with the application filed by BEREXCO LLC, for the Unitization  
13 and Unit Operation of the Arroyo Unit?

14 A Yes.

15 Q As an engineer working for BEREXCO, is Stanton County part of your area of  
16 responsibility?

17 A Yes.

18 Q Have you made or supervised the engineering studies and the exhibits regarding this  
19 Application to prepare yourself to testify today in support of this Application?

20 A Yes, I have reviewed all of the drilling reports, drill stem tests, electric logs,  
21 completion reports, and production reports in preparation for this hearing.

22 Q Have you prepared, or caused to be prepared under your supervision and direction,  
23 exhibits prefiled in this docket?

1 A Yes, a number of Exhibits were prepared under my supervision. These include a map  
2 showing the 16 tracts within the proposed Arroyo Unit boundary (Exhibit #1). Note  
3 the Lauman wellbore within Tract 12 is a separate tract #12A. Exhibit #2 shows the  
4 dates drilled of the wells in the Arroyo Field area. Exhibit #3 is a map showing the  
5 initial production of all wells in the Unit including a color code of the Morrow  
6 interval perforated. Exhibit #4 is a type log showing the Morrow interval being  
7 unitized. Also included is a Keyes Structure Map (Exhibit #5). Exhibits #6, 7, 8  
8 and 9 are reservoir volume (phi-H) maps for the main Morrow producing intervals -  
9 Keyes and Briggeman, showing both oil reservoir volume and oil and gas reservoir  
10 volume. Exhibit #10 is a map showing cumulative oil and gas recovery by tract.  
11 Exhibit #11 is a tabulation of cumulative oil recovery, remaining primary oil recovery  
12 and estimated ultimate oil recovery by tract. Exhibit #12 is an oil and gas decline  
13 curve for the leases in the proposed Arroyo Unit showing the total oil production  
14 performance of the field, estimated remaining primary and the anticipated secondary  
15 recovery from the project. The proposed Arroyo Unit injection pattern, waterflood  
16 facilities, and the planned pipeline layout is shown in Exhibit #13.

17 Q Would you please explain Exhibit #1?

18 A Exhibit #1 is a plat that shows the area of the proposed Arroyo Unit and the 16 Tracts  
19 we propose to put into this Unit. It includes the following land in Stanton County,  
20 Kansas:

21 The Southwest Quarter (SW/4) of Section 14, the Southeast Quarter (SE/4) of  
22 Section 15, the Southeast Quarter (SE/4) of Section 17, the East Half (E/2) of  
23 Section 20, all Section 21, all Section 22, the West Half (W/2) of Section 23,  
24 the North Half of the North Half (N/2 N/2) of Section 27 and the North Half

(N/2) of Section 28, all in Township 29 South, Range 41 West, Stanton  
County, Kansas.

Q Would you briefly explain the production and well history of this area?

A The Keyes and Briggeman are Morrow sandstones that are Pennsylvanian in age. The Keyes is the upper of the two intervals and is locally called the Keyes K-1. The Briggeman is a localized name for the deeper of these Morrow intervals. The Keyes is found at an average depth of 5,380' in the Arroyo Field and the Briggeman is found at an average depth of 5,425'. The field produces from a valley fill system cut into the Mississippian St. Gen.

Field development took place in two phases: the discovery and early development which happened from 1989 to 1993, and then a second phase of development from 2008 to 2013. Exhibit #2 shows the dates wells were drilled in the area. Exhibit #3 shows the initial potential of the wells.

The discovery well for the Arroyo Field was the Pro Farms #27-1, located in the NW NE SW Section 27-29S-41W in Stanton County, Kansas as shown on Exhibit #1.

This well is located outside the Unit area, was drilled by JM Huber Corp in October 1989 and was completed in the Keyes with an initial potential 58 BOPD + 38 BWPD + 21 MCFD. A Keyes drill stem test recovered 3,500 ft Gas, 240 ft of oil and 185 ft of oil cut mud with a FSIP of 1,353 psi ( $P^* = 1,382$  psi). This well is over 5/8 of a mile away from the nearest Keyes production in the proposed Arroyo Unit, and will not be in the Unit. The Briggeman interval was not productive in this well.

The Pro Farms #27-2 was drilled in March of 1990 at a location about 2,500' north northwest of the discovery well. A Keyes DST recovered 30' mud with a FSIP of 870 psi. A Briggeman DST flowed 370 MCFD and recovered 300' GCM with a

1 FSIP of 1443 psi. This well had an IP of 1196 MCFD from perforations in the  
2 Briggeman sand. It produced 485 BO and 1,178 MMCF before being plugged in  
3 2006.

4 The next well drilled was the Kendrick #14-1 well in November 1990. It was drilled  
5 approximately 2 miles north northeast of the discovery well (~S/2 NW SW Sec 14-  
6 29S-41W). A DST that covered both the Keyes and the Briggeman flowed 6,439  
7 MCFD and recovered 10' of condensate and 60' muddy water with a FSIP of 1434  
8 psi. It was completed in both the Keyes and Briggeman for a flowing IP of 3,443  
9 MCFD and NW. It has produced 10.5 MBO and 4.6 BCF.

10 Next the Kendrick #23-1 was drilled in February 1992. The Keyes and most of the  
11 Briggeman were cored, but the well did not have any DSTs. Core analysis of the  
12 Keyes had three (one foot) samples with a horizontal permeability of over 2 md. The  
13 Briggeman had 29 feet analyzed with an average horizontal permeability 87 md.  
14 Nine Briggeman samples had an average vertical permeability of 29 md. The  
15 Kendrick #23-1 was completed in the St. Louis below the St. Gen. It had an IP of  
16 62.5 BOPD + 177 BWPD + 8 MCF. It produced 110 MBO from the St. Louis. This  
17 oil recovery is not included in the Unit production since the St. Louis is not a unitized  
18 formation. The Briggeman interval was perforated in 2005, but was found to be  
19 depleted, and the Kendrick #23-1 was plugged in 2006.

20 The next well drilled was the Lauman #28-1 (E/2 NE NW Sec 28-29S-41W) in  
21 March 1992. It had no DSTs. The lowest 10' of Briggeman pay was perforated and  
22 had a flowing IP of 17.6 MMCFD and 137 BOPD – NW. It's BHP was 1437 psi. It  
23 is apparent that this well must have very high vertical permeability to the upper gassy  
24 part of the reservoir. In December 2005, 50' of additional Briggeman interval was

1 perforated (5354'-5436'), which caused only a small increase in the gas production.

2 The Keyes was perforated in November 2010, which increased production by about  
3 2.5 BOPD. This well has now produced 159 MBO and over 3 BCF of gas.

4 The Santa Fe #21-1 (~E/2 SW SE Sec 21-29S-41W) was drilled in May 1992. It had  
5 no DSTs. Twenty three feet (23') of Keyes was perforated and 57' of Briggeman.

6 The well's BHP was 1403 psi. It had an IP of 10 BOPD + NW + 2,324 MCFD. It has  
7 produced 90 MBO and 1.2 BCF of gas.

8 The Santa Fe #22-1 (~E/2 SW SW Sec 22-29S-41W) was drilled in June 1992. It  
9 was not drill stem tested. Seven feet in the lowest part of the Briggeman was initially  
10 perforated. It's BHP was 1422 psi. It has an IP of 6 BOPD + NW + 600 MCFD.

11 Sixteen feet of additional upper Briggeman was perforated in October 2010 with a  
12 small increase in production. It has produced 112 MBO and 674 MMCF of gas.

13 The next well drilled in the unit area was the Kendrick #22-1 (~E/2 SW SE Sec. 22-  
14 29S-41W) drilled in July 1992. The lowest 48' of Briggeman was perforated. A 7  
15 day BHP was 1406 psi. It was then fraced with 38,000 pounds of sand. It had an IP  
16 of 360 BOPD + 3000 MCFD + NW. In April 2013, the upper Briggeman was  
17 perforated as well as a short interval in the Keyes. This resulted in a small increase in  
18 gas production. The Kendrick #22-1 has been the best oil well in the Arroyo Unit and  
19 has produced 299 MBO and 1.58 BCF of gas.

20 The Santa Fe #22-2 (~E/2 SE SW Sec. 22-29S-41W) was drilled in September 1992.  
21 It was completed in both the Keyes and the Briggeman intervals and had a flowing IP  
22 of 36 BOPD + 3,446 MCFD + NW. It produced 25.4 MBO and 1.99 BCF before  
23 being plugged in 2006.

1 The Smith Trust #22-1 (NW NE NE Sec. 22-29S-41W) was drilled in February 1993.  
2 It was initially completed in the lower Briggeman. The BHP was 1313 psi. It had a  
3 flowing IP of 222 BOPD + 685 MCFD + NW. The Keyes and additional upper  
4 Briggeman were perforated in November 2002 resulting in a small increase in gas  
5 production. It has produced 65.8 MBO and 1.91 BCF.

6 The Scott #21-1 (NE SE NE Sec. 21-29S-41W) was also drilled in February 1993 and  
7 was completed in the Keyes interval. The BHP was 1203 psi. It had a flowing IP of  
8 2,353 MCFD + No Oil + NW. It has produced 3.4 MBO and 1.52 BCF.

9 The Kendrick #23-2 (~E/2 W/2 NW Sec. 23-29S-41W) was drilled in April 1993 and  
10 completed in the Keyes. The BHP was 1203 psi. It had a flowing IP of 1,375 MCFD  
11 + No Oil + NW. It only produced 739 MMCF, and no oil from the Keyes (K1).

12 Q Please explain the second phase of development history of this area.

13 A As shown on Exhibit #2 the remaining wells in the area were drilled between 2008  
14 and July 2014. The Haney #1-20 (NE NE SE Sec. 20-29S-41W) was drilled  
15 approximately three quarters of a mile northwest of the Lauman #1-28 in August  
16 2008. A Keyes DST recovered 120 of Gassy Oil Cut Mud with a FSI of 1123 psi.  
17 The Keyes was then perforated, fraced, and the well had an initial potential of 90  
18 BOPD + 1 BWPD + 45 MCFD.

19 The next well drilled was the Haney #2-20 (NE SE SE Sec. 20-29S-41W). It was  
20 drilled in July 2009. It was not drill stem tested. Sixteen feet of Keyes was  
21 perforated, fraced, and the well had an initial potential of 50 BOPD + NW + 50  
22 MCFD. The two wells on the Haney Lease have totaled 91.9 MBO and 102 MMCF.

1 The Baughman #1-20 (~SW SE NE Sec. 20-29S-41W) was drilled in August 2009. It  
2 was not drill stem tested. The Keyes was perforated, fraced, and the well had an  
3 initial potential of 100 BOPD + 10 BWPD + 192 MCFD.

4 The next three wells drilled were the Pro Farms #21-1, #21-2, and #21-3 spudded in  
5 February and March 2010. None had drill stem tests. In the Pro Farms #21-1 (NW  
6 SW Sec. 21-29S-41W) both the Keyes and Briggeman intervals were perforated,  
7 fraced, and the well had an initial potential of 74 BOPD + 12 BWPD + 140 MCFD.  
8 In the Pro Farms #21-2 (SW SW Sec. 21-29S-41W) the Keyes interval was  
9 perforated, fraced, and the well had an initial potential of 102 BOPD + 5 BWPD +  
10 125 MCFD. In the Pro Farms #21-3 (SE SW Sec. 21-29S-41W) both the Keyes and  
11 Briggeman intervals were perforated, fraced, and the well had an initial potential of  
12 37 BOPD + 1 BWPD + 135 MCFD.

13 The Tilley Painter #1 (NW NE Sec. 27-29S-41W) was drilled south of the Kendrick  
14 #22-1 in April 2010. A DST covering the Keyes and Briggeman recovered 10 of mud  
15 indicating no reservoir quality rock was present. It was plugged as a dry hole.

16 The next two wells drilled were the Baughman #2-20, and #3-20 spudded in June and  
17 July 2010. Neither had drill stem tests. In the Baughman #2-20 (~N/2 NW NE Sec.  
18 20-29S-41W) the Keyes was perforated, fraced, and the well had an initial potential  
19 of 53 BOPD + 8 BWPD + 27 MCFD. In the Baughman #3-20 (~SE NE NE Sec. 20-  
20 29S-41W) the Keyes was perforated, fraced, and the well had an initial potential of  
21 101 BOPD + 7 BWPD + 70 MCFD.

22 The next three wells drilled were the Bird #21-1, #21-2, and the Pro Farms #21-4,  
23 spudded in February and March 2011. None had drill stem tests. In the Bird #21-1  
24 (SW SW NW Sec. 21-29S-41W) the Keyes was perforated, fraced, and the well had



1 an initial potential of 72 BOPD + 9 BWPD + 135 MCFD. In the Bird #21-2 (SW SE  
2 NW Sec. 21-29S-41W) both the Keyes and Briggeman intervals were perforated,  
3 fraced, and the well had an initial potential of 41 BOPD + 19 BWPD + 260 MCFD.  
4 In the Pro Farms #21-4 (NE SW Sec. 21-29S-41W) the Keyes was perforated, fraced,  
5 and the well had an initial potential of 138 BOPD + 12 BWPD + 132 MCFD.  
6 The first three wells drilled on the KU B lease were the KU #B-1, #B-2, and #B-3  
7 wells, spudded in March, April, and September 2012. None had drill stem tests.  
8 Each was perforated and fraced in the Keyes interval. The KU #B-1 (SW SE Sec. 17-  
9 29S-41W) had an initial potential of 95 BOPD + 2 BWPD + 60 MCFD. The KU #B-  
10 2 (SW SE SE Sec. 17-29S-41W ) had an initial potential of 39 BOPD + 1.5 BWPD +  
11 31 MCFD. The KU #B-3 (NW SE Sec. 17-29S-41W) had an initial potential of 40  
12 BOPD + 55 BWPD + 24 MCFD.  
13 The Baughman #4-20 (~W/2 NE Sec. 20-29S-41W) was drilled in June 2012. The  
14 Keyes was perforated, fraced, and the well had an initial potential of 10 BOPD + 2  
15 BWPD + 10 MCFD.  
16 Three wells were drilled in December 2012. In the Santa Fe #21-2 (NW SE Sec. 21-  
17 29S-41W) both the Keyes and Briggeman were perforated and fraced. No initial  
18 potential was reported. In the Hume #28-1 (~N/2 NW NE Sec. 28-29S-41W) both  
19 the Keyes and Briggeman intervals were perforated, fraced, and the well had an initial  
20 potential of 30 BOPD + 4 BWPD. In the Smith Trust #22-2 (E/2 SW NE Sec. 22-  
21 29S-41W) the Keyes was perforated, fraced, and the well had an initial potential of 5  
22 BOPD + 3 BWPD + 0 MCFD. This well was put in temporarily abandoned status in  
23 October 2014.

1 The last four wells within the Arroyo Unit boundary were drilled in 2013. In the  
2 Hume #28-2 (SW NE Sec. 28-29S-41W) the Keyes and Briggeman intervals were  
3 perforated and fraced. No initial potential was reported. In the Kendrick #22-3 (SE  
4 SE Sec. 22-29S-41W) both the Keyes and Briggeman intervals were perforated and  
5 fraced. No initial potential was reported and the well was plugged as a dry hole in  
6 2014. In the KU #B-4 (~C SE Sec. 17-29S-41W) the Keyes was perforated, fraced,  
7 and the well had an initial potential of 4 BOPD + 1 BWPD + 1 MCFD.

8 The last well drilled in the Unit area was the LMS #1 (S/2 NE NW Sec. 22-29S-41W)  
9 drilled in August of 2013. It was completed in the St. Louis, but is now temporarily  
10 abandoned. This well has some log calculated pay in the Keyes interval which is  
11 probably now depleted. It will be recompleted in water productive zones (between  
12 the Hugoton and the Morrow shale) for use as a salt water supply well.

13 Note that there were a number of dry holes drilled in Sections 15, 16, 17, and 29 just  
14 outside of the proposed Arroyo Unit. These wells had no reservoir.

15 Q Please explain Exhibit #4.

16 A Exhibit #4 is an electric log from the Pro Farms #21-3 well located in the SE/4 SW/4  
17 of Section 21, Township 29 South, Range 41 West, Stanton County, Kansas. It  
18 shows that the Unitized Formation is the subsurface portion of the Unit area  
19 described as the stratigraphic equivalent of the Morrow Shale to the top of the  
20 Mississippian St. Gen formation, of Pennsylvanian age, as same is encountered  
21 between 5,000 feet to 5,452 feet, inclusive, below the surface (KB) in the Pro Farms  
22 #21-3 well located in the SE/4 SW/4 of Section 21- 29S- 41W, in Stanton County,  
23 Kansas. This overall interval is the Morrow Formation.

24 Q Please explain Exhibit #5.

1 A Exhibit #5 shows the structure of the Keyes interval. The highest areas in the  
2 northeast part of the Unit are where the gas cap originally existed. The Briggeman  
3 interval's structure is similar to Keyes structure.

4 Q Did you prepare Isopach Maps?

5 A Yes. These are Exhibits #6, 7, 8 and 9. Both the Keyes and Briggeman had gas cap  
6 areas on the eastern side of the Unit area. Isopachs were prepared for each of the  
7 Keyes and Briggeman intervals showing just the oil portion of the reservoir and then  
8 oil plus gas portions of the reservoir. There was no clear, consistent gas/oil contact in  
9 the wells, so mapping was done considering wells to be either gas wells, or oil wells,  
10 and mapped accordingly.

11 Q Please explain Exhibits #10 and #11.

12 A Exhibit #10 is a map showing cumulative oil and gas recovery by tract. Exhibit #11  
13 is a table of cumulative oil recovery, remaining primary oil recovery and estimated  
14 ultimate oil recovery by tract. Cumulative oil production was 1,298,811 STBO as of  
15 December 31, 2017. Exhibit #11 shows the total estimated remaining primary oil  
16 from the active wells which will add 90,976 STBO, making the total ultimate primary  
17 oil production 1,389,787 STBO.

18 Q Please explain the Arroyo Unit performance and projection curve shown in Exhibit  
19 #12.

20 A This decline curve represents the total oil and gas production performance from the  
21 producing wells in the proposed Arroyo Unit area. These wells peaked at  
22 approximately 20,000 BOPM in 1992 and had a later peak of approximately 16,000  
23 BOPM in 1993. Production has declined down to approximately 2300 BOPM in late  
24 2017. Exhibit #12 shows the decline curve for estimated remaining primary oil from

1 the active wells. In addition to the remaining primary performance of the proposed  
2 Arroyo Unit wells, Exhibit #12 also shows the projection of the estimated incremental  
3 secondary oil, which we believe will be recovered over approximately 15 years by the  
4 installation of this waterflood. It is estimated that installing the Arroyo Unit  
5 waterflood will increase the total recovery by about 694,900 STBO.

6 Q How was the estimate of secondary oil recovery determined?

7 A The secondary recovery estimate was determined through utilization of a ratio of  
8 secondary to primary recovery and analogy. The expected secondary to primary  
9 ratio is 50%, which is a commonly used percentage estimate for Morrow waterfloods  
10 in Kansas.

11 Q How did you arrive at 50%?

12 A Morrow waterfloods have achieved 100% secondary to primary recovery ratios, but  
13 in the case of the Arroyo Unit, the presence of a gas cap drive combined with the  
14 need to flood two distinct Morrow intervals - Keyes and Briggeman - caused the use  
15 of a conservative ratio such as 50%.

16 Q What does Exhibit #13 show?

17 A Exhibit #13 shows the planned waterflood pattern, injection lines, and the location of  
18 the consolidated tank battery and injection plant near the Santa Fe #21-1 well. The  
19 pattern will involve the conversion of twelve existing wells to water injection and the  
20 conversion of one existing TA well to a salt water supply well. One injection well  
21 will be drilled in the SE/4 of Section 22. The proposed injection wells have sufficient  
22 casing and cement to protect the useable water zones in this area. This plan will  
23 utilize fifteen existing wells as producers.

24 Q In the proposed operations, what injection rates and pressures do you recommend?

1 A Target rates for initial injection are 300 - 400 BWIPD per well. The injection rates  
2 may be later increased up to 750 BWIPD per well depending on performance. It is  
3 anticipated that the injection pressure would be 1,700 psi, or below, at the wellheads.  
4 In no event would the injection pressure exceed the fracture gradient of the Morrow  
5 formation in this area.

6 Q What is the estimated investment required to install the proposed Arroyo Unit  
7 waterflood, and does the estimated incremental secondary oil justify this investment?

8 A It is estimated it will cost \$3,700,908 to install this project. Economic runs indicate  
9 the waterflood project will result in a net BFIT income that totals over \$16,000,000.

10 Q Is it your further testimony that the proposed operations are economically feasible,  
11 and are necessary to prevent waste and protect correlative rights?

12 A Yes.

13 Q Have you reviewed the Unit Agreement and Unit Operating Agreement which have  
14 been filed with this Commission?

15 A Yes.

16 Q In your opinion, do these agreements provide fair, reasonable and equitable  
17 provisions for the efficient unitized management and control of the further  
18 development and operation of the proposed Arroyo Unit area for the recovery of oil  
19 from the common source of supply?

20 A Yes.

21 Q How was the tract participation determined?

22 A A two phase formula was used to protect current income. Phase I is based on 50%  
23 Current Barrels of Oil Equivalent (BOE) Production for the period January 1, 2017  
24 through December 31, 2017, and 50% Remaining Primary Reserves in Barrels of Oil

1           Equivalent (BOE) after December 31, 2017. Phase I will be in effect until the Arroyo  
2           Unit has produced 124,433 BOE of oil after December 31, 2017. Gas is converted to  
3           BOE at a ratio of 6 MCF per BOE.

4    Q       What is Phase II participation based on?

5    A       Phase II is based on 47.5% Ultimate Morrow Primary Oil Production as of December  
6           31, 2017, 47.5% Morrow Oil Reservoir Pore Volume and 5% Useable Wellbores.

7    Q       Are the participation formulas for Phase I and Phase II consistent with participation  
8           formulas for other similar waterfloods?

9    A       Yes. The formulas used for the Arroyo Unit are similar to formulas used for other  
10           similar type waterfloods in Kansas.

11   Q       Do you know what percentage of the interests have executed these agreements?

12   A       It is my understanding that over 96% of the working interest owners and over 97% of  
13           the royalty owners (excluding overriding royalty) have signed on both Phases.

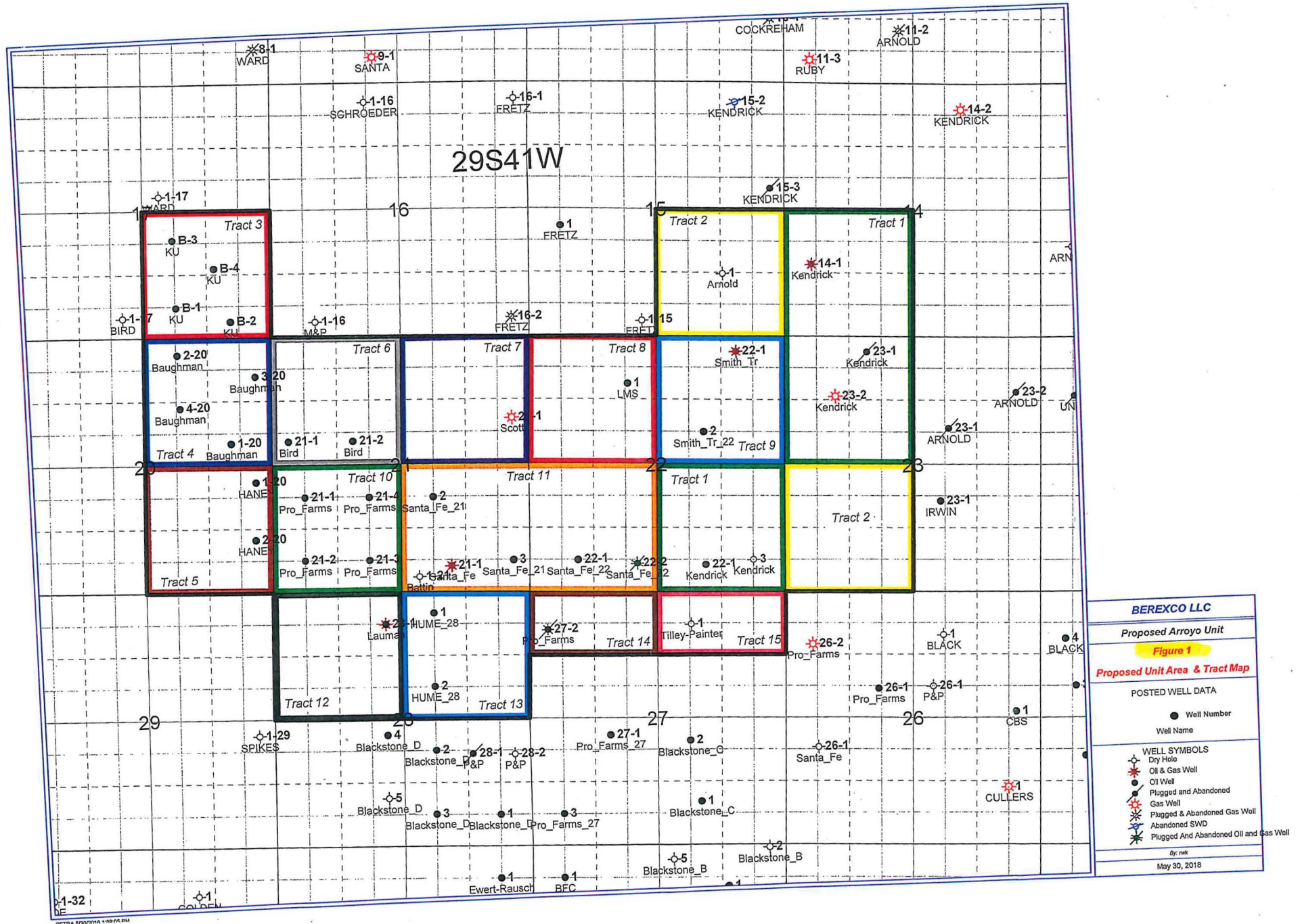
14   Q       Is it your opinion that the provisions of these agreements are fair and equitable to all  
15           working interest owners and royalty owners in the proposed Arroyo Unit area?

16   A       Yes.

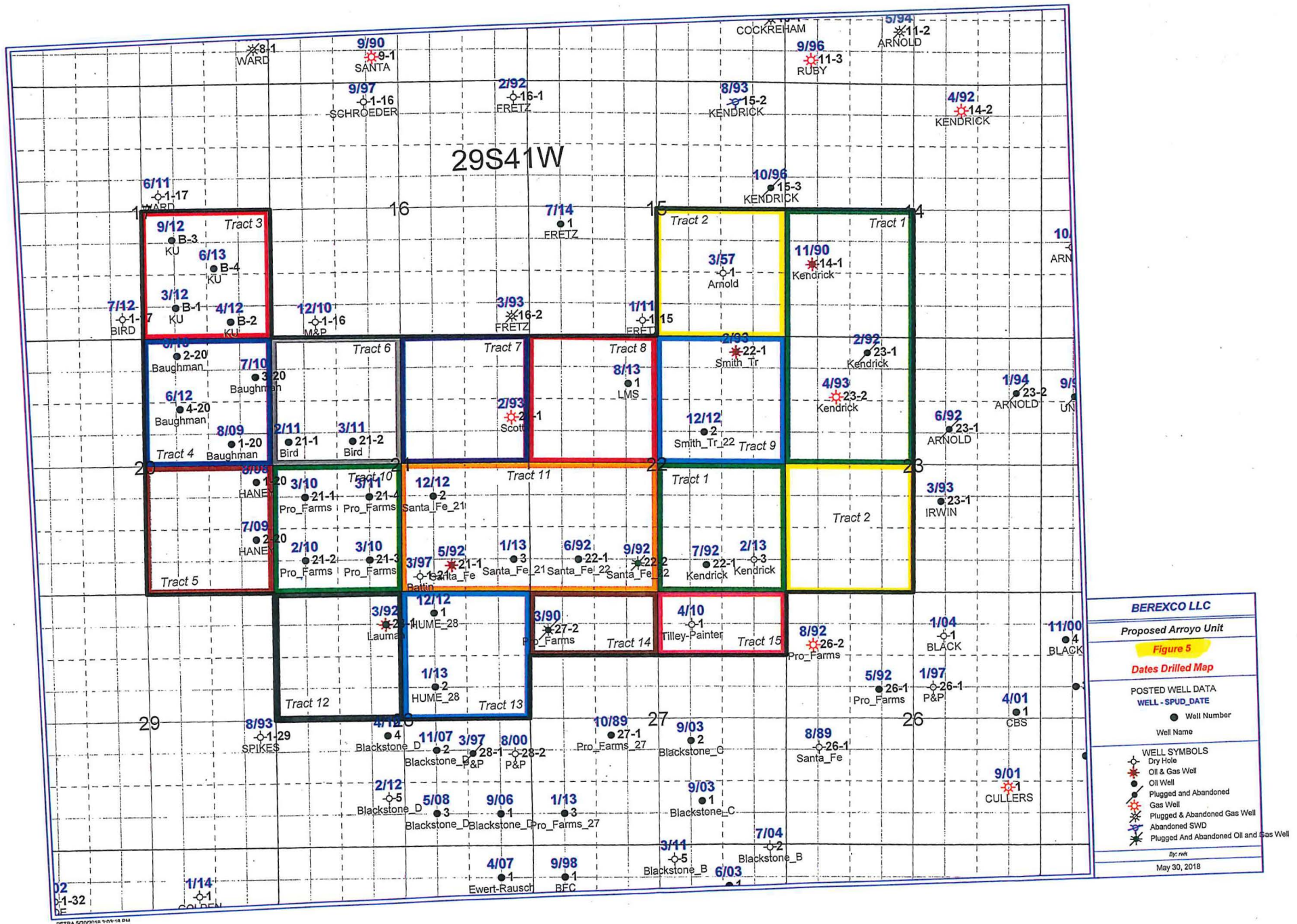
17   Q       Based on all of your studies, the exhibits you have provided, and your testimony here  
18           today, are you recommending that the Commission grant this application?

19   A       Yes

20   Q       I have no further questions for Mr. Wreath.

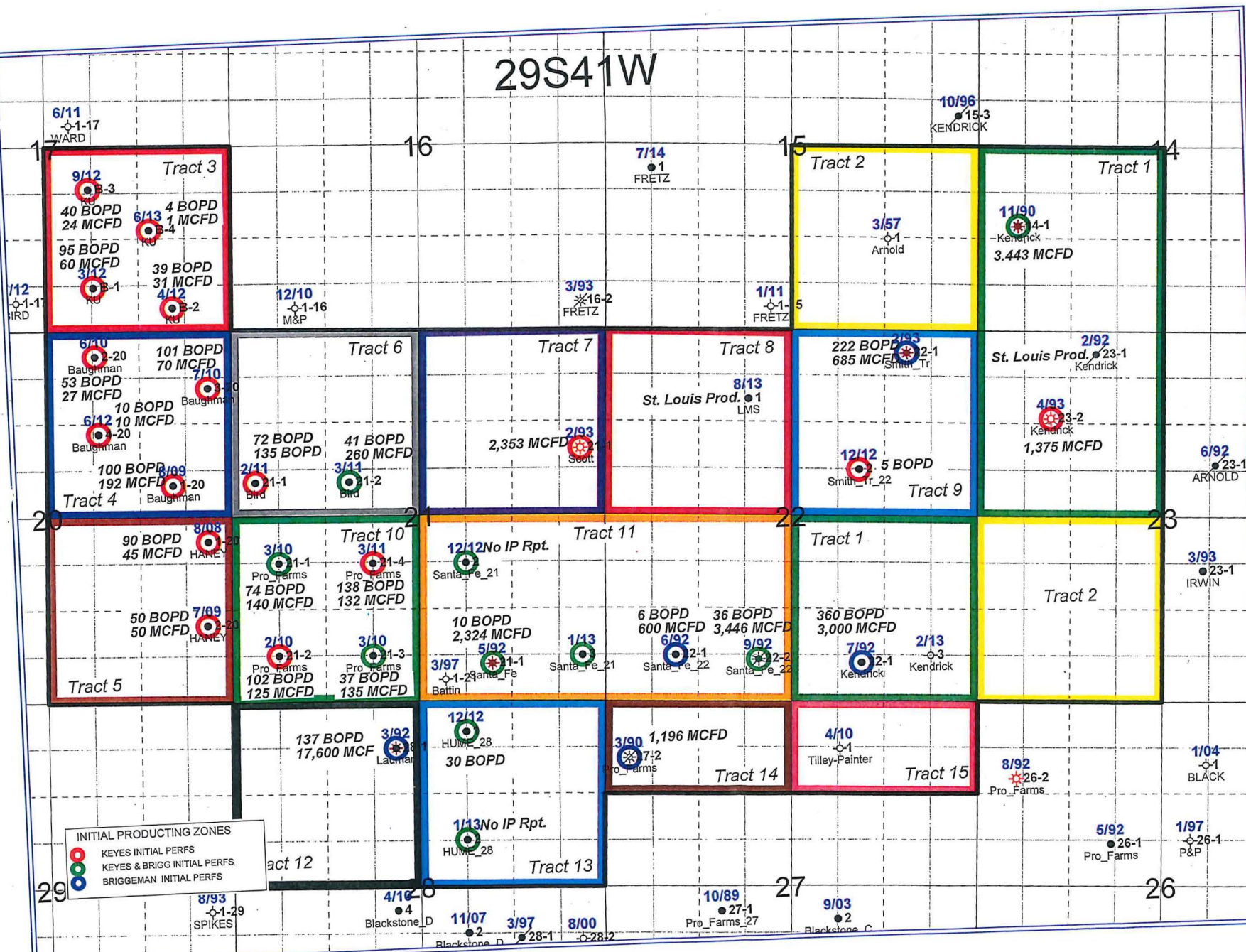








29S41W



**BEREXCO LLC**

**Proposed Arroyo Unit**

**Figure 6**

**Initial Potential Map**

**With Initial Producing Zones**

**POSTED WELL DATA**

**WELL - SPUD DATE**

- Well Number
- Well Name

**WELL SYMBOLS**

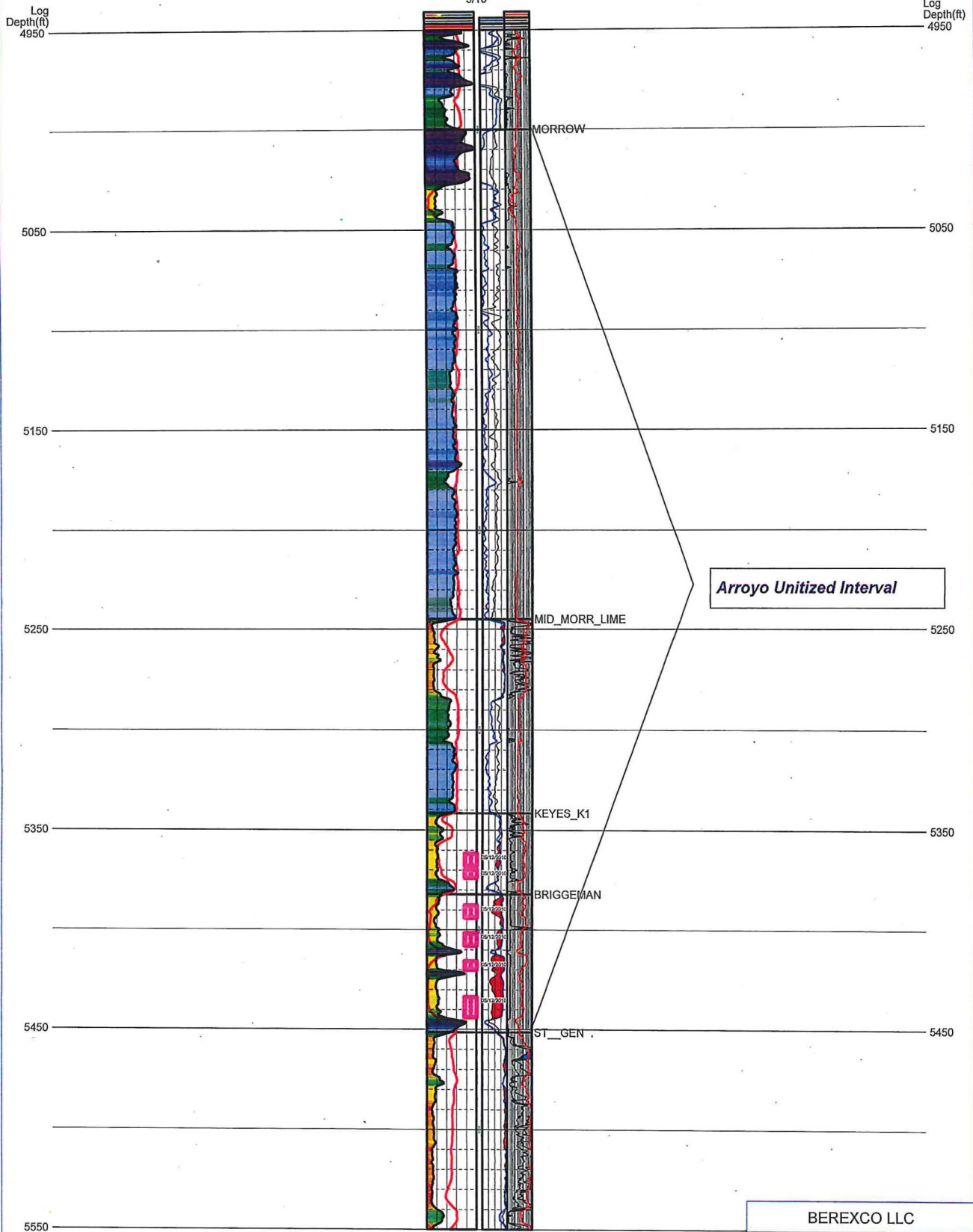
- Dry Hole
- Oil & Gas Well
- Oil Well
- Plugged and Abandoned
- Gas Well
- Plugged and Abandoned Gas Well
- Plugged And Abandoned Oil and Gas Well

By: nwk

June 5, 2018

Pro Farms  
21-3  
PRO FARMS 21-3  
KERR-MCGEE  
C SE SW  
T29S R41W S21  
ELEV\_KB : 3,405

**Exhibit #4**  
**DOCKET NO. 19-CONS-3269-CUNI**  
**LICENSE NO. 34318**



BEREXCO LLC

Proposed Arroyo Unit

Figure 2

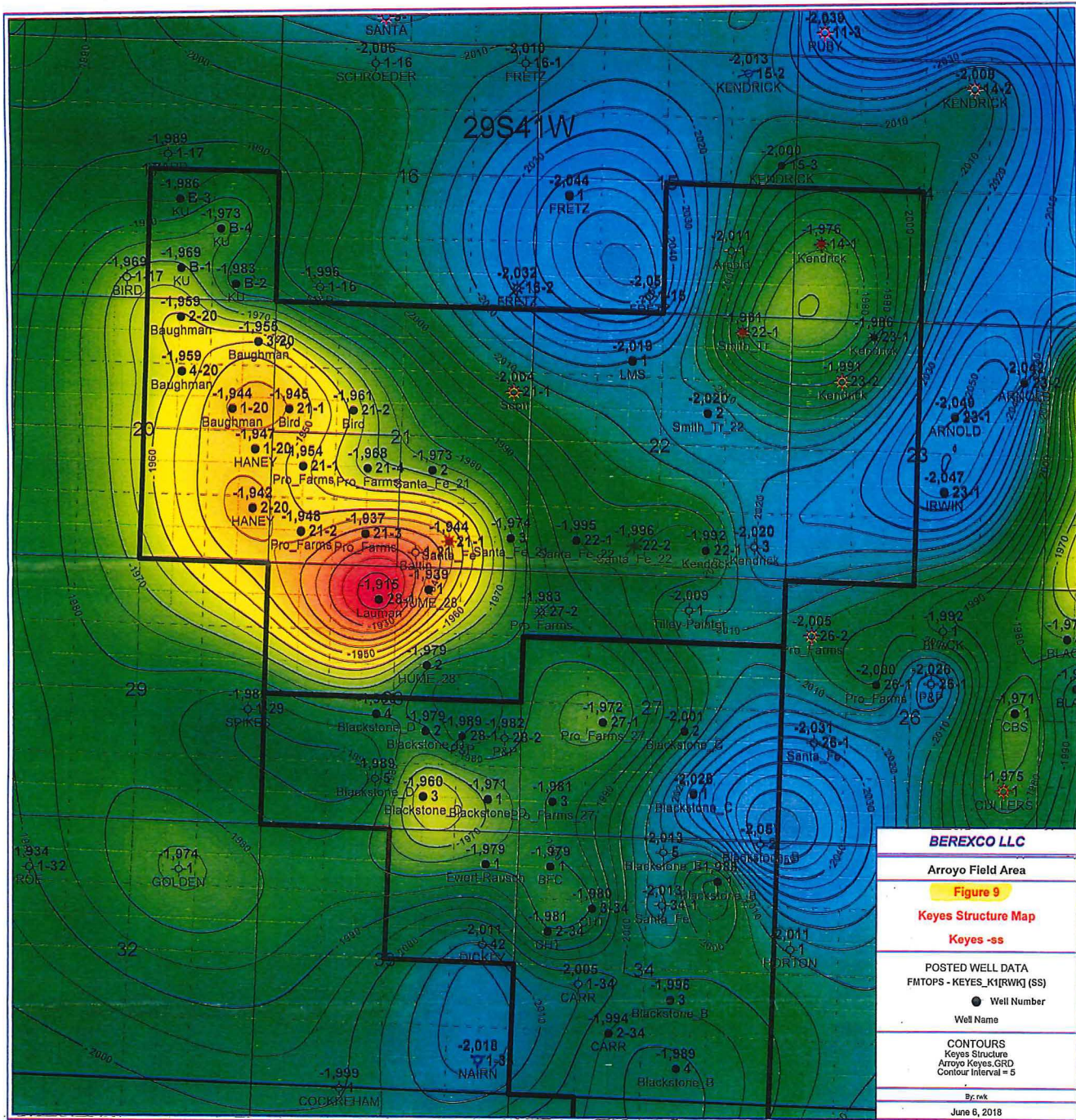
Arroyo Unit Type Log

Kiowa County, Kansas

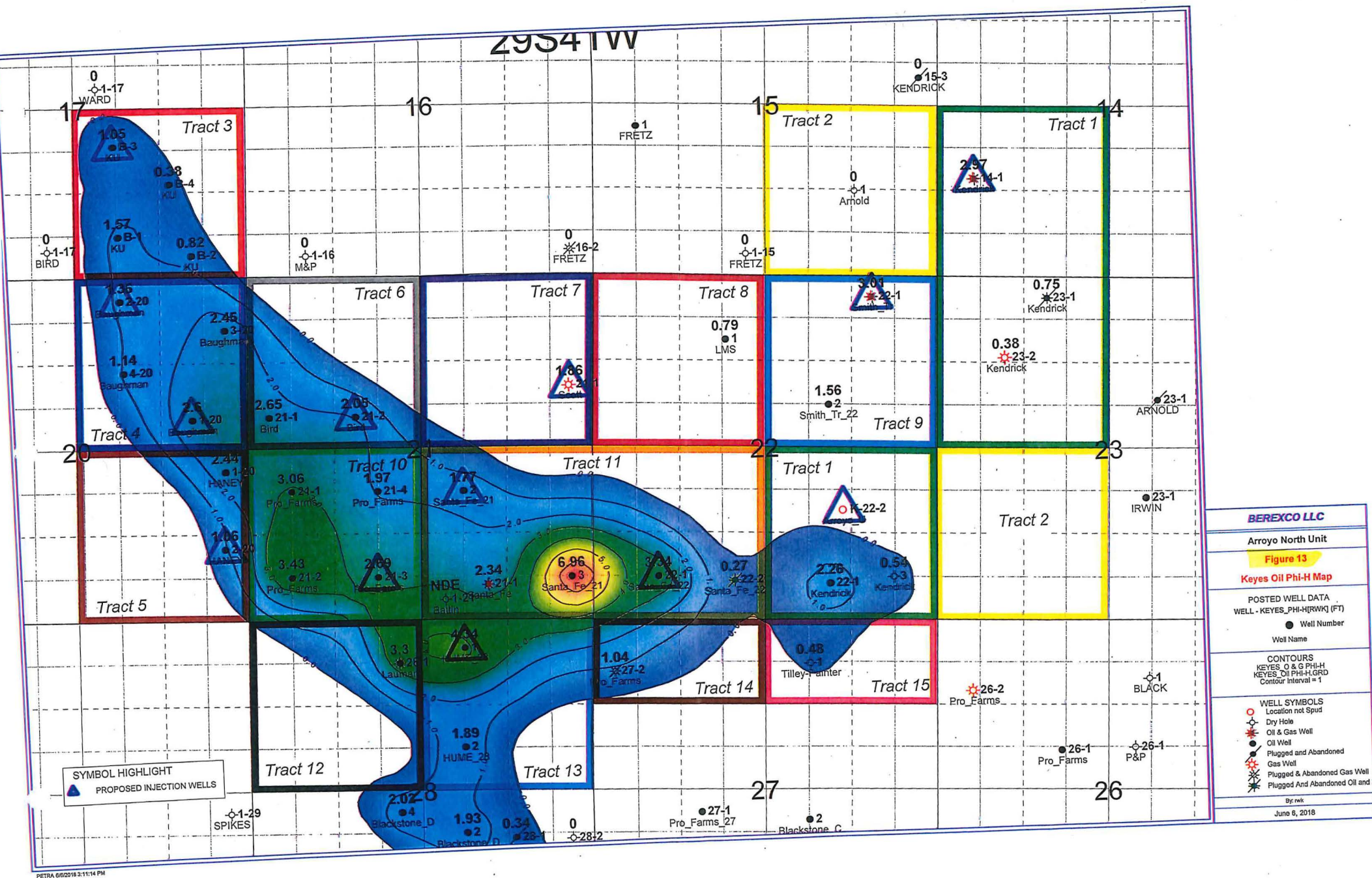
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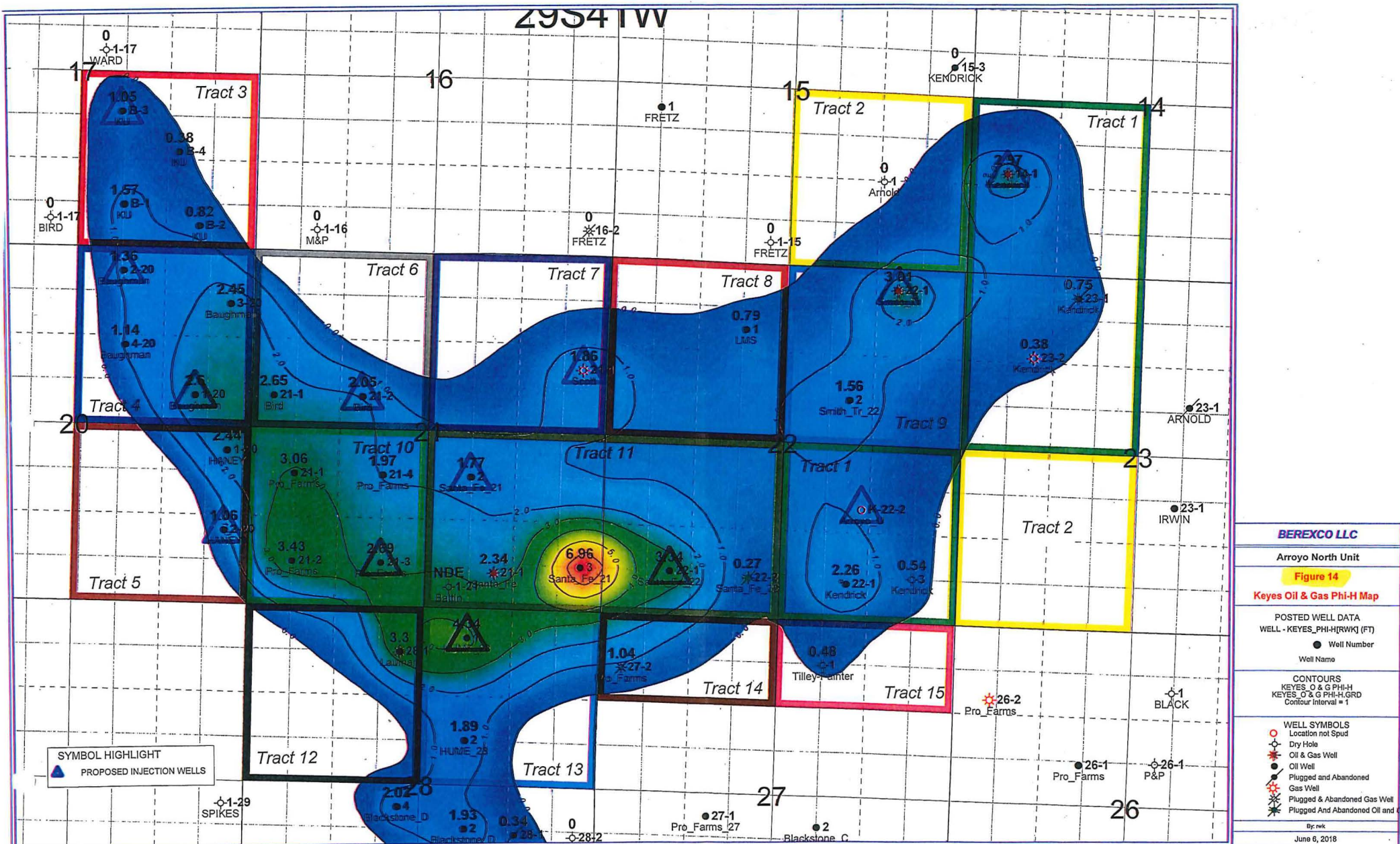
**Exhibit #5**  
**DOCKET NO. 19-CONS-3269-CUNI**  
**LICENSE NO. 34318**



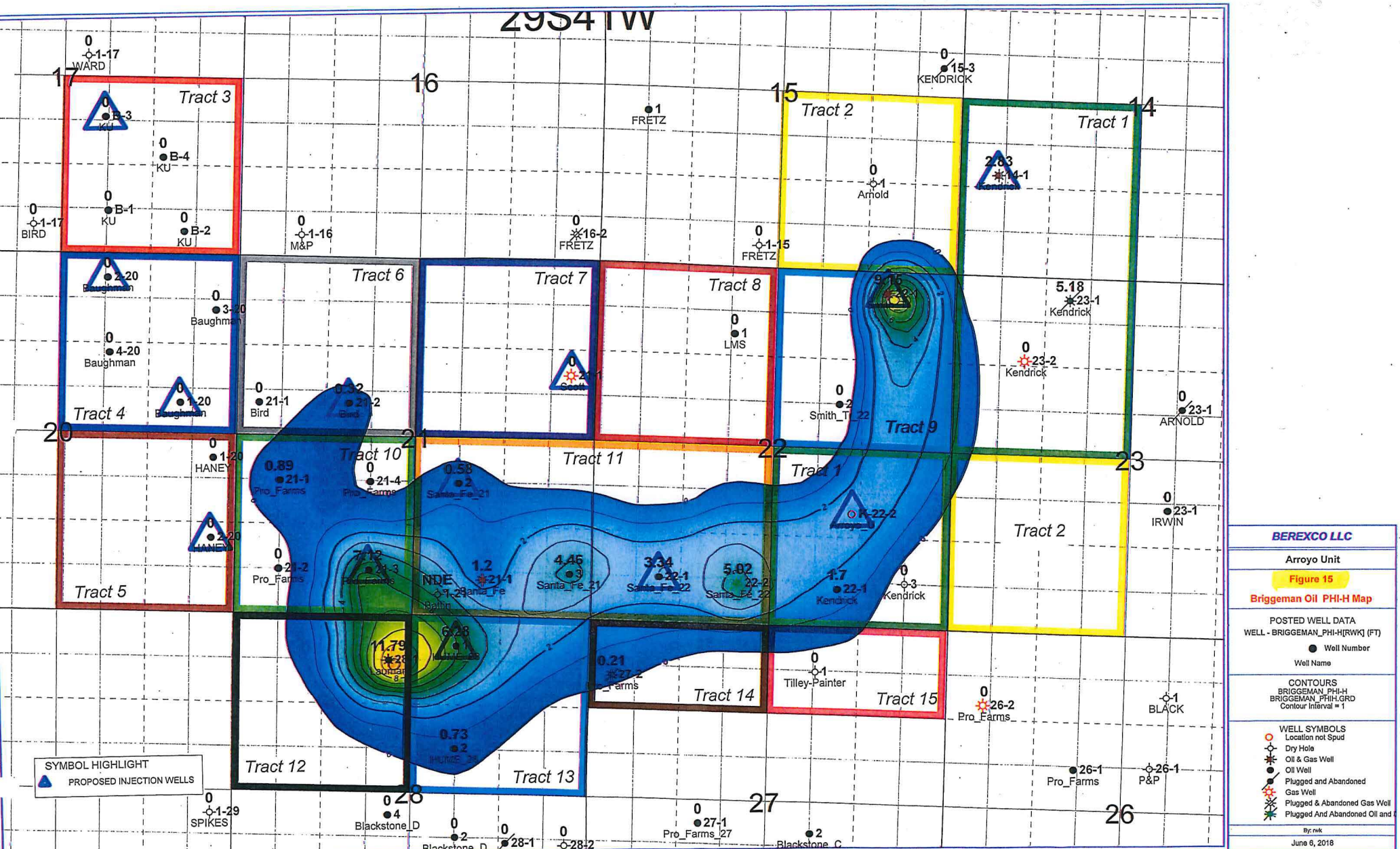




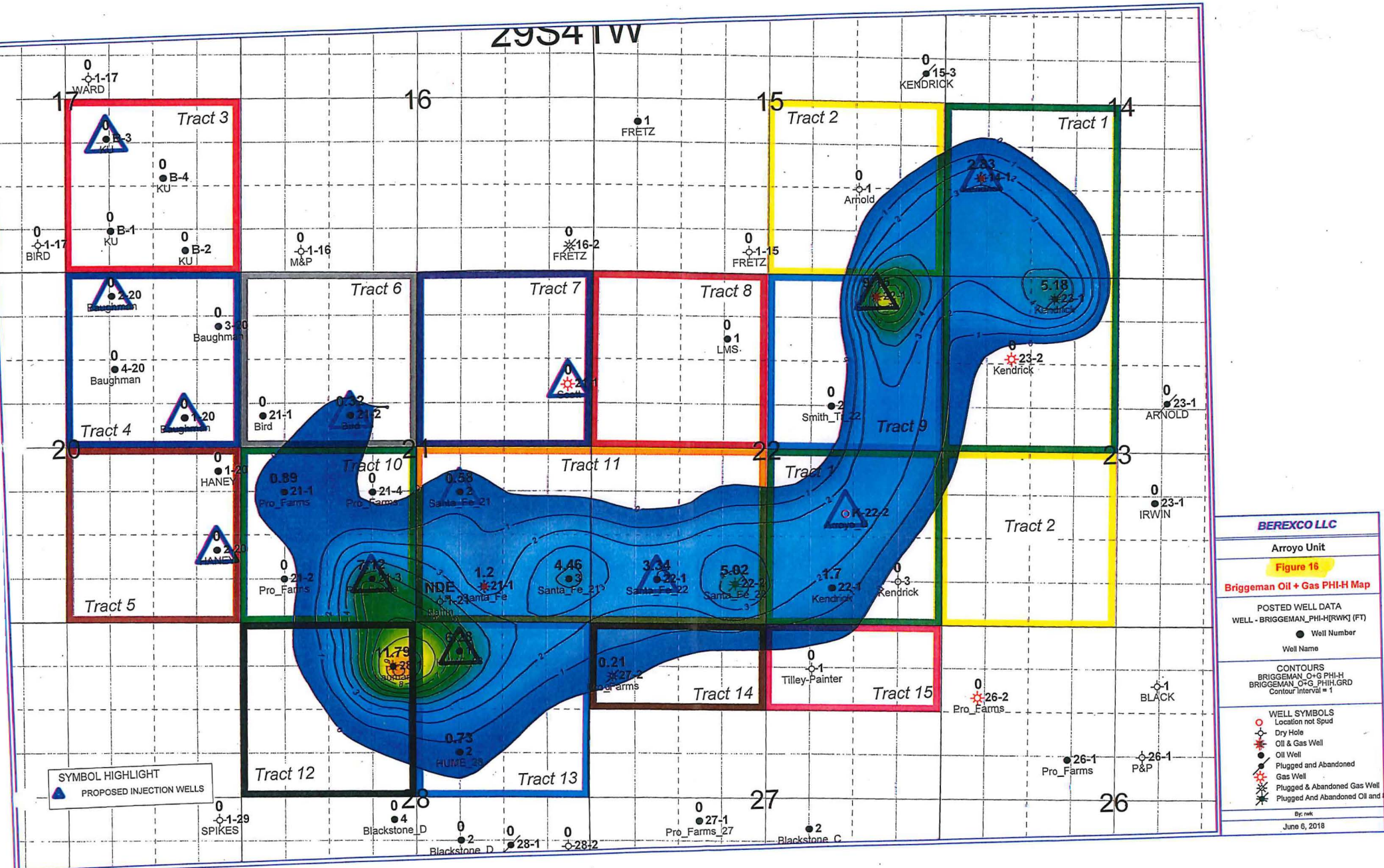






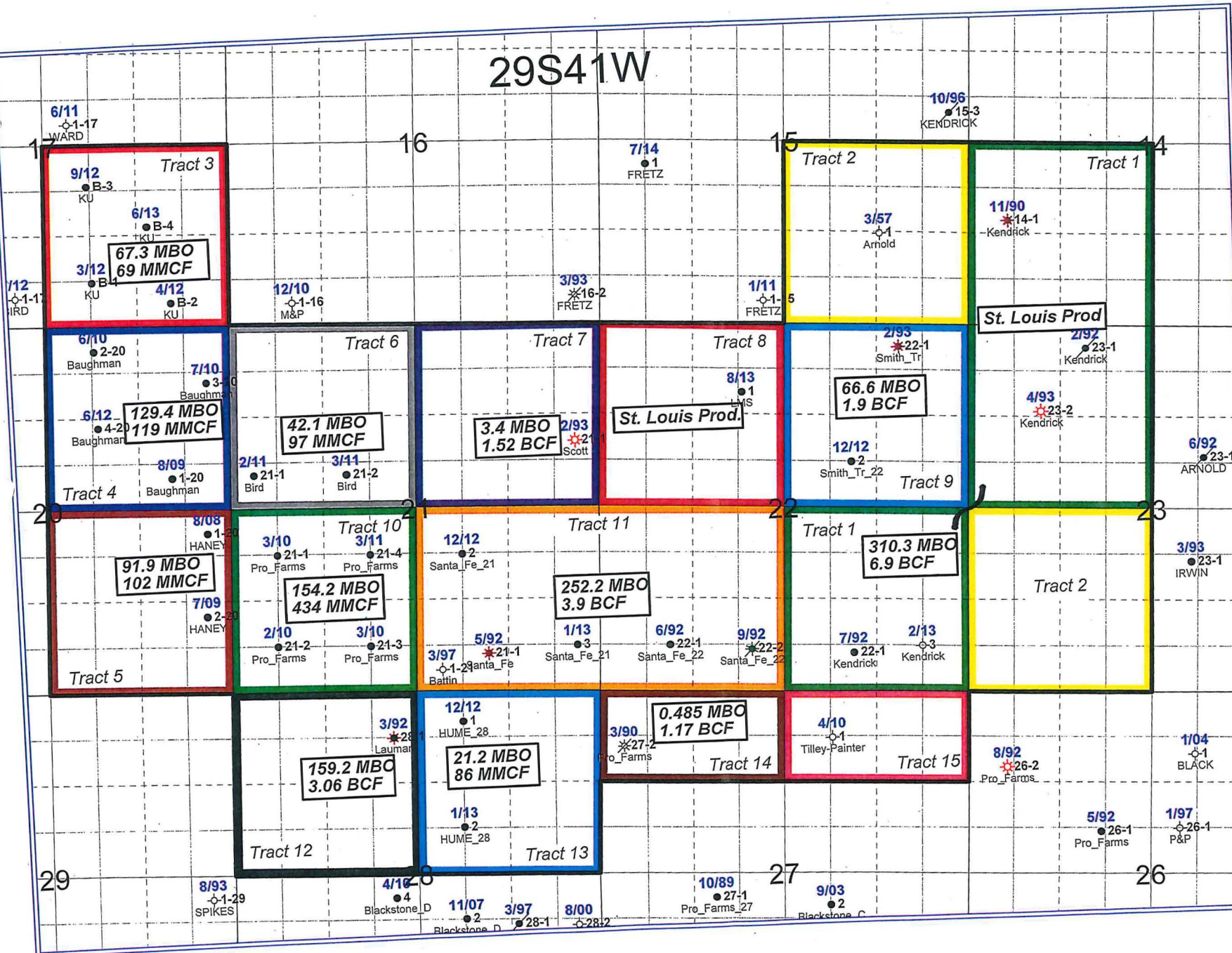








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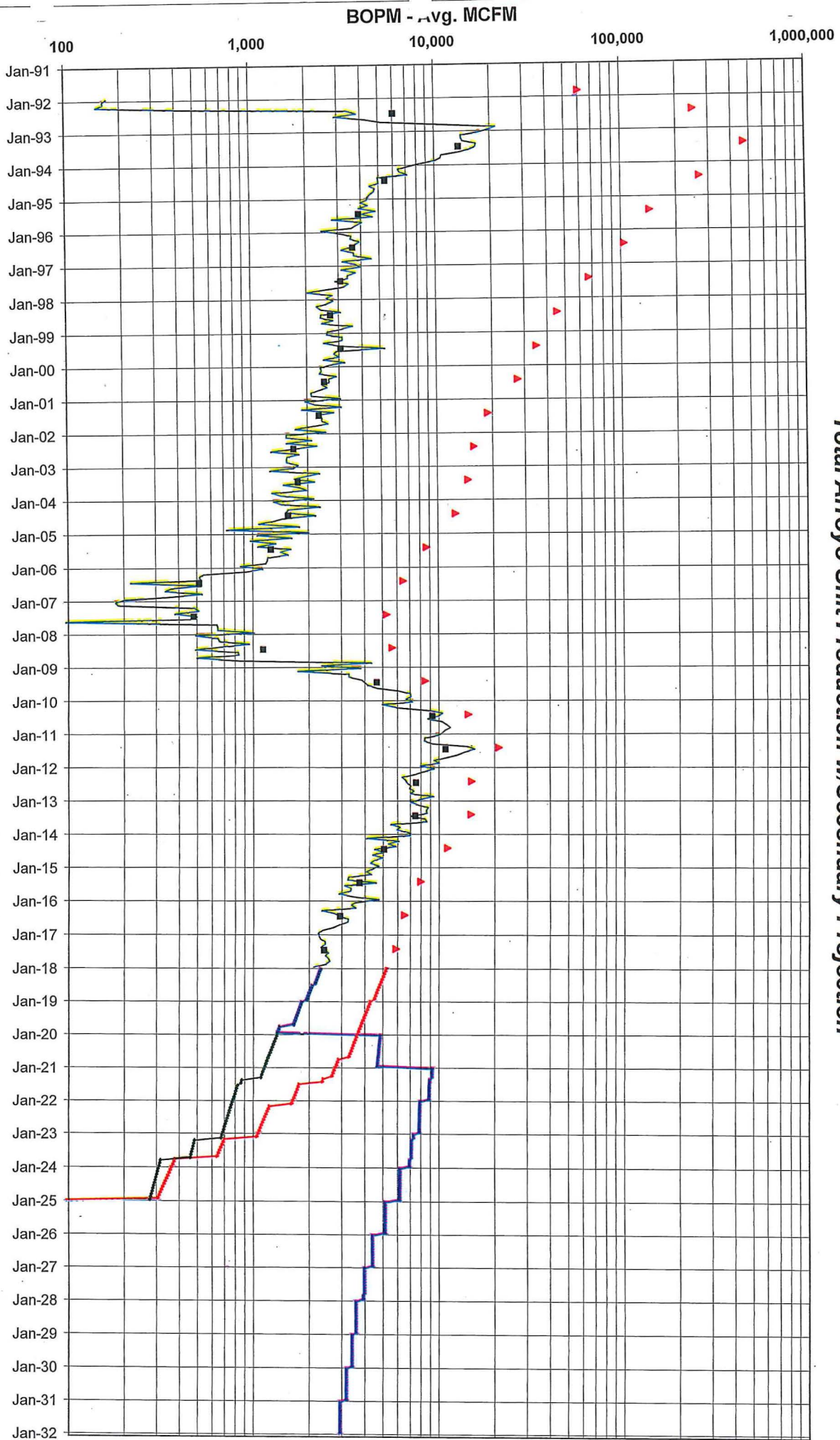


BEREXCO LLC	
Proposed Arroyo Unit	
Figure 7	
Cum. Oil & Gas by Tract	
Through 12-31-2017	
POSTED WELL DATA	
WELL - SPUD_DATE	
●	Well Number
●	Well Name
WELL SYMBOLS	
○	Dry Hole
●	Oil & Gas Well
●	Oil Well
●	Plugged and Abandoned Gas Well
●	Plugged and Abandoned Oil and Gas Well
●	Plugged and Abandoned Oil Well
By: nmk	
June 5, 2018	



<b>Proposed Arroyo Unit</b>				
<b>Cumulative Oil Production and Remaining Primary Oil Production</b>				
Tract	Lease Name	Cumulative Oil As of 12/31/17	Remaining Primary Oil - BO	Estimated Ultimate Primary - BO
1	Kendrick 14, 22, 23 Lease	310,362	12,805	323,167
2	Smith 15, Kendrick 23	0	0	0
3	KU B Lease	67,347	18,200	85,547
4	Baughman Foundation Lease	129,482	5,494	134,976
5	Haney Lease	91,942	375	92,317
6	Bird 21 Lease	42,182	1,223	43,405
7	Scott 21 Lease	3,452	0	3,452
8	LMS Lease	0	0	0
9	Smith Trust 22 Lease	66,601	0	66,601
10	Pro Farms 21 Lease	154,255	25,246	179,501
11	Santa Fe 21, 22 Lease	252,220	13,349	265,569
12	Lauman 28 Lease	0	0	0
12A	Lauman #28-1 Wellbore	159,281	12,388	171,669
13	Hume 28 Lease	21,202	1,896	23,098
14	Nairn	485	0	485
15	T & P	0	0	0
	<b>Totals</b>	<b>1,298,811</b>	<b>90,976</b>	<b>1,389,787</b>

*Total Arroyo Unit Production w/Secondary Projection*



6/11/2018

Figure 19

