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February 25, 2015

Manitoba Mineral Resources  
Petroleum Branch  
Suite 360, 1395 Ellice Avenue  
Winnipeg, Manitoba  
R3G 3P2  
Attention: Mr. Leonardo Leonen, Technical Engineering Officer

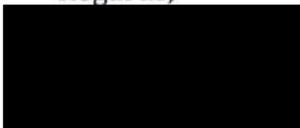
Re: Sinclair Unit No. 9: 2014 Annual EOR Report

Dear Mr. Leonen:

Please accept the attached annual EOR report for the Sinclair Unit No. 9. This was the second year of operation for the Sinclair Unit No. 9 Waterflood project.

Should you require any further information or clarification; please contact Ben MacIsaac at 403-930-2842 or via email at [bmacisaac@redriveroil.ca](mailto:bmacisaac@redriveroil.ca) at your earliest convenience.

Regards,



Ben MacIsaac  
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Red River Oil Inc.  
403-930-2842 (dir)  
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## Sinclair Unit No. 9: EOR Report 2014

### Overview

The Sinclair Unit No. 9 waterflood is a one section (30-007-29W1), one pattern flood within the Bakken Three Forks formation operated by Red River Oil Inc. ("Red River" or the "Company"). The pattern consists of seven horizontal wellbores oriented north-south and spaced at 185-300m. Three injectors are located at 00/13-30, 00/14-30 and 00/15-30 while four producers are located at 02/14-30, 02/15-30, 00/16-30 and 02/16-30. There is one abandoned vertical well at 11-30. Figure 1 below is a Unit map showing the wellbore layout.

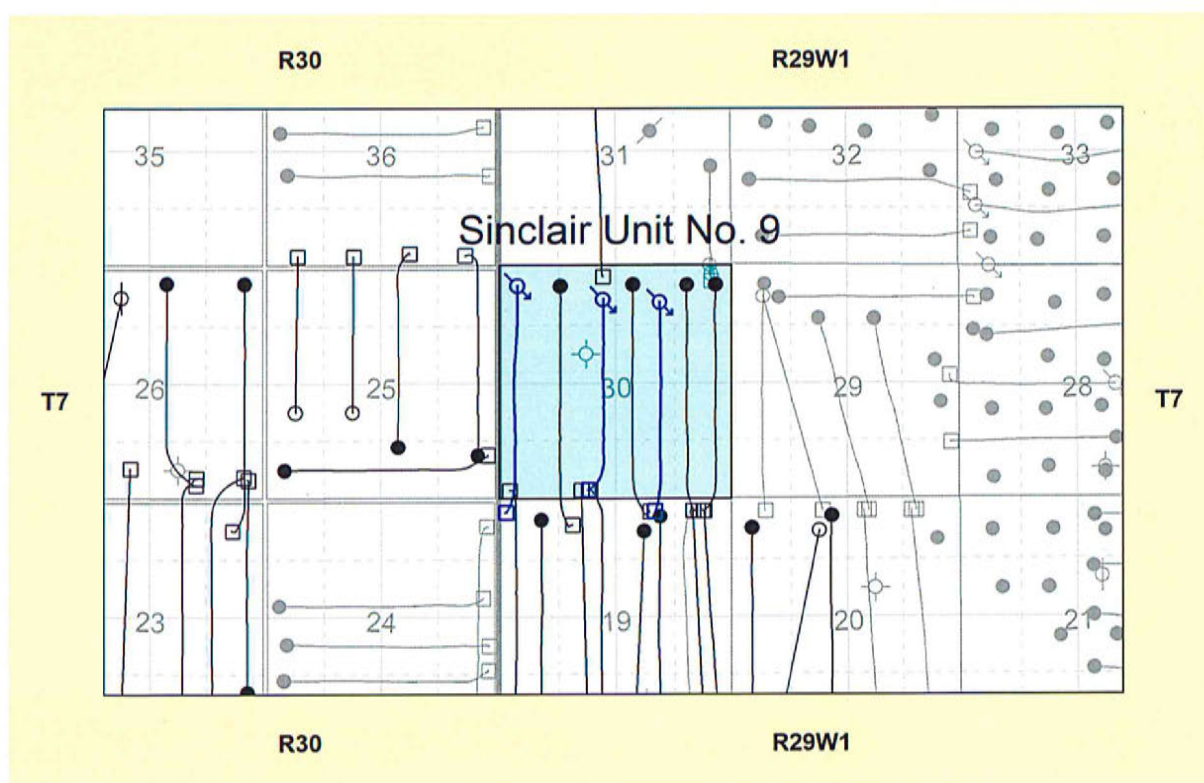


Figure 1: Sinclair Unit No.9 Map

Production from Section 30-007-29W1 commenced in July 2009 (00/16-30), with the most recent horizontal (02/16-30) coming on production July 2013. All horizontals in the section have been multi-stage hydraulically fractured, ranging from 8 to 23 zones of 3.4 to 12 tonnes

per stage. Water injection in Unit No. 9 commenced in late October 2013 (00/13-30 – Oct 19, 00/15-30 – Oct 21, 00/14-30 – Oct 23).

The main productive zones within the Three Forks in section 30-007-29W2 are the Upper Devonian Lyleton A Dolomitic Siltstone member and the overlying Mississippian Middle Bakken Siltstone member. Horizontal wells in section 30 have undulated through both the Three Forks Lyleton A Member and the Bakken Siltstones over the length of the laterals.

Red River estimates that original-oil-in-place for Unit No. 9 is  $1,212 \times 10^3 \text{ m}^3$  (7,629 mstb). Current recovery to date is  $22.5 \times 10^3 \text{ m}^3$  (141.3 mstb) or 1.9% of the OOIP. Primary recovery was originally estimated to recover 3.1% based on 4 wells per section and 5.5% with infill drilling. An incremental 10-15% secondary recovery is expected, bringing the total estimated recovery factor to 15-20%.

## Performance Discussion

Performance results to date in the Sinclair Unit No. 9 flood have been positive. The pattern as a whole has observed a general flattening of total fluid decline while maintaining stable oil-cuts. Figures 2 and 3 below help display the Unit performance trends. Note that production from the 191/01-25-007-30W1 well is included in figures 2-3 for information purposes only as it is offset by the 13-30 injection well.

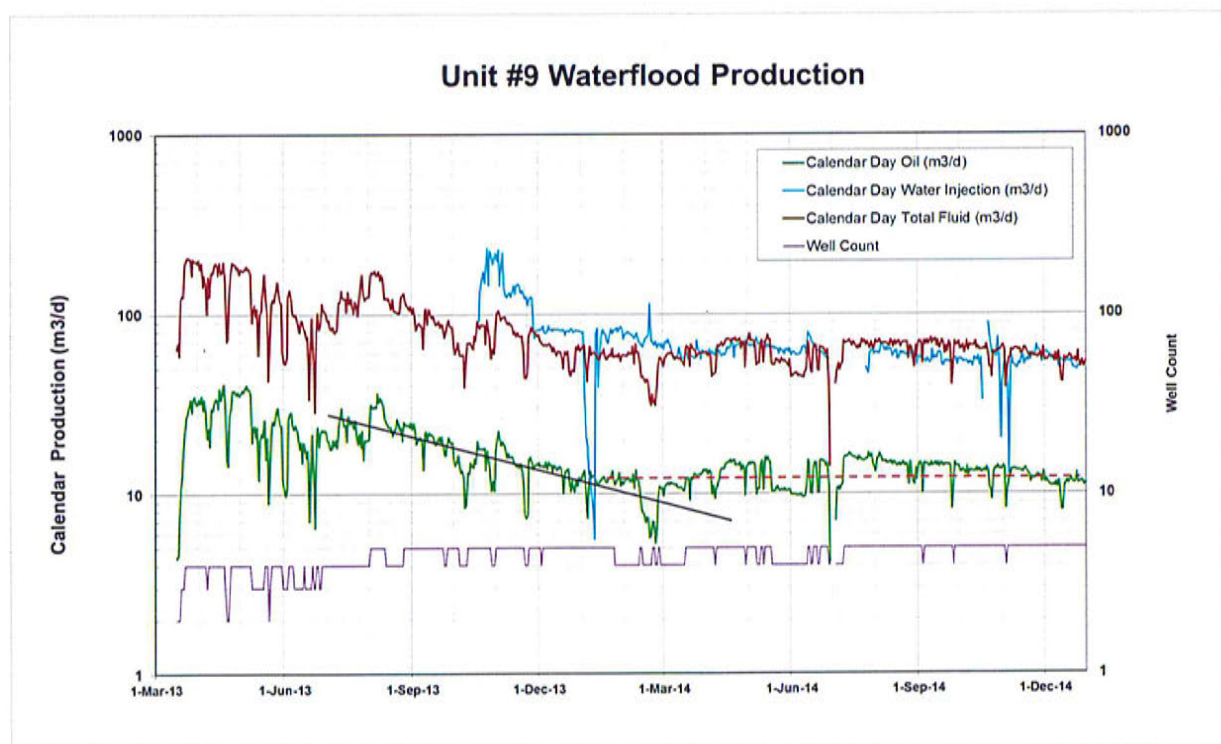


Figure 2: Sinclair Unit No. 9 Production



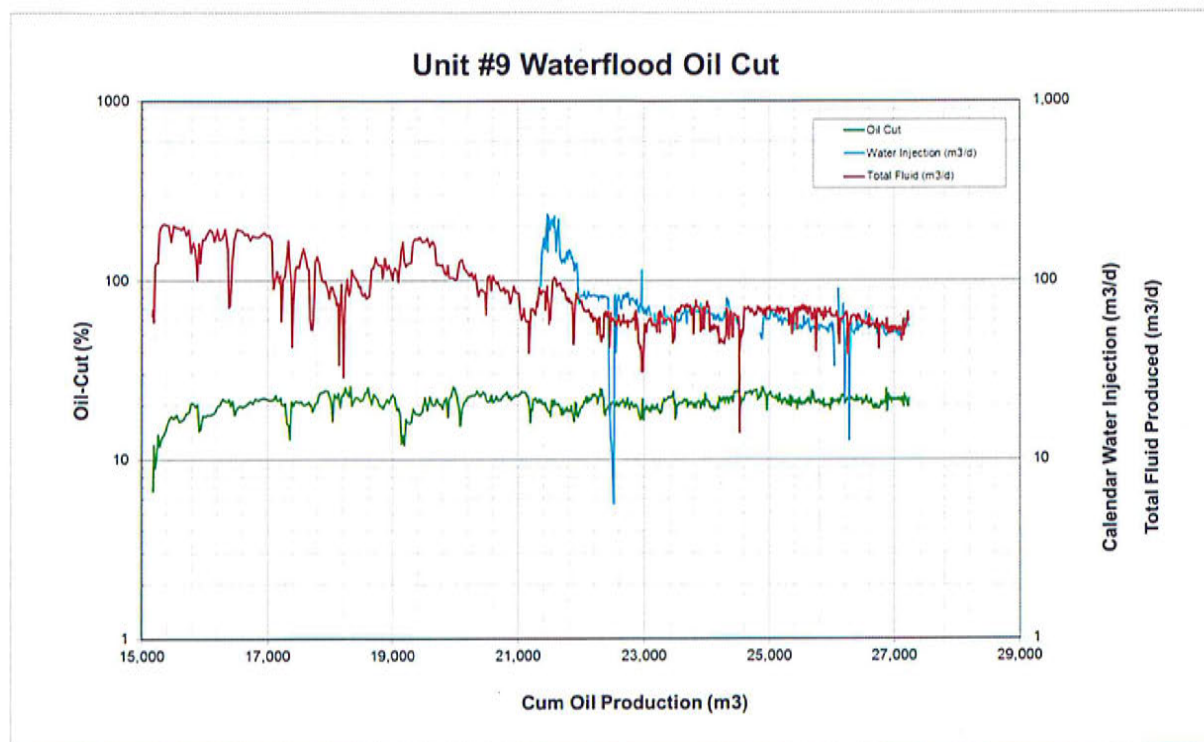


Figure 3: Sinclair Unit No. 9 Oil Cut

As can be seen in figure 2, initial waterflood response was observed approximately 3 months after injection commencement. Red River attributes this quick response to the under saturated nature of the reservoir, the solution gas to oil ratio ( $R_s$ ) is very low, the primary drive mechanism is depletion-drive. Limited gas voidage within the reservoir is a direct result of the low  $R_s$ ; in turn this results in a quick 'piston-drive' type waterflood response. Considering the nature of the reservoir and performance observed to date, it is Red River's opinion that best results will be achieved by remaining patient in the fill-up stage of development. Red River has seen positive results while targeting an instantaneous VRR between 1.2-1.5.

Red River continues to optimize the Unit No. 9 waterflood through close monitoring of production/injection rates and pressures and the interaction between wells within the pattern. Opportunities to improve sweep efficiencies through wellbore cleanouts and frac ball seat drill outs are expected to become more evident as the flood matures and response is further quantified.

### 73(1) (a-c)(f) Production and Injection Data

The requested data referred to in clauses 1(a) to (c) and (f) of subsection 73(1) of the Oil and Gas Act (C.C.S.M. c. 034) is attached in appendix A as follows:

1. Figure 4: Monthly produced fluids and ratios in graphical and tabular format

2. Table 1: Monthly and cumulative produced fluids and ratios in tabular format
3. Individual injection well rate and pressure profiles:
  - a. 100/13-30
  - b. 100/14-30
  - c. 100/14-30
4. Table 2: Monthly average injection rate and pressure data

### **73(1) (d) Reservoir Pressure Surveys**

There were no pressure surveys executed in Unit #9 in 2014.

### **73(1) (e) Well Servicing**

In February 2014 Red River completed a nitrified water coil cleanout workover on the 102/14-30-007-29W1 well. In the months prior to the workover, production in 102/14-30 fluid had been declining at a higher than typical rate. Sand bridging in the lateral section was suspected to be the root cause of this decline thus a coil cleanout was decided upon as the best remedial method. During the workover, sand bridges were encountered and removed from the wellbore successfully. In result, production was restored to typical production levels and the well has continued to perform as such ever since.

Other than routine pump changes and the 102/14-30 workover, there were no well servicing operations completed within Unit No. 9 in 2014.

### **73(1) (g) Injection Fluid Quality Control and Treatment**

In October 2014 Red River began trucking in Bakken-Three Forks produced to the 15-18-007-29W1 injection facility for use in the Unit No. 9 waterflood. Previously, injection water was sourced from the 15-18 Lodgepole source water well. The primary reason for the water change was due to filtration challenges caused by the heavy solids loading of the 15-18 source water. Since the switch to Bakken-Three Forks water, filter run times at the 15-18 injection facility have been greatly improved and there have been no operational concerns. At the 15-18 facility the water is cascaded through two water production tanks to allow any large solids and residual oil to gravity separate, the water then is pumped to the filtration skid where it completes three stages of filtration. The primary filter stage is a 1-micron nominal bag filter, secondary is a 1-micron absolute bag filter and a tertiary 0.5-micron polisher cartridge filter. After the water is filtered it enters the injection pipeline system via a positive displacement pump. The injection pressure is limited to 5,000 kpa. All water is treated with scale and biocide inhibitors prior to being injected into Unit No. 9.

## **Appendix A: Sinclair Unit No. 9 Production and Injection Data**



Figure 4: Sinclair Unit #9 Produced Fluids

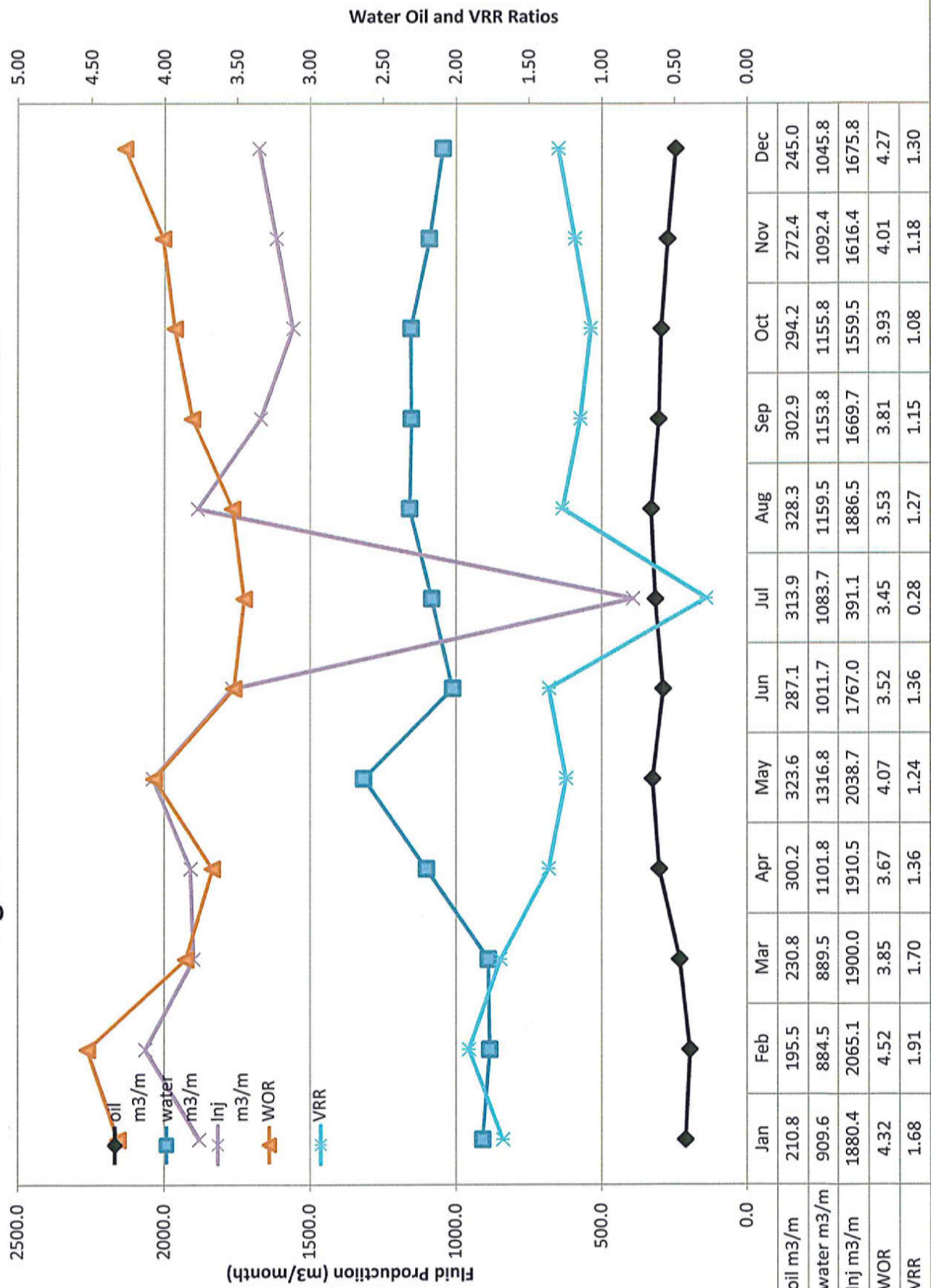


Table 1: Sinclair Unit #9 Produced Fluids

2014 Oil Production m3/month	Prior CTD	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2014	CTD
Sec 30-007-29W1	19156.9	210.8	195.5	230.8	300.2	323.6	287.1	313.9	328.3	302.9	294.2	272.4	245.0	3304.7	22461.6
Unit #9 Total Production	19156.9	210.8	195.5	230.8	300.2	323.6	287.1	313.9	328.3	302.9	294.2	272.4	245.0	3304.7	22461.6

2014 Water Production m3/month	Prior CTD	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2014	CTD
Sec 30-007-29W1	64063.3	909.6	884.5	889.5	1101.8	1316.8	1011.7	1083.7	1159.5	1153.8	1155.8	1092.4	1045.8	12804.9	76868.2
Unit #9 Total Production	64063.3	909.6	884.5	889.5	1101.8	1316.8	1011.7	1083.7	1159.5	1153.8	1155.8	1092.4	1045.8	12804.9	76868.2

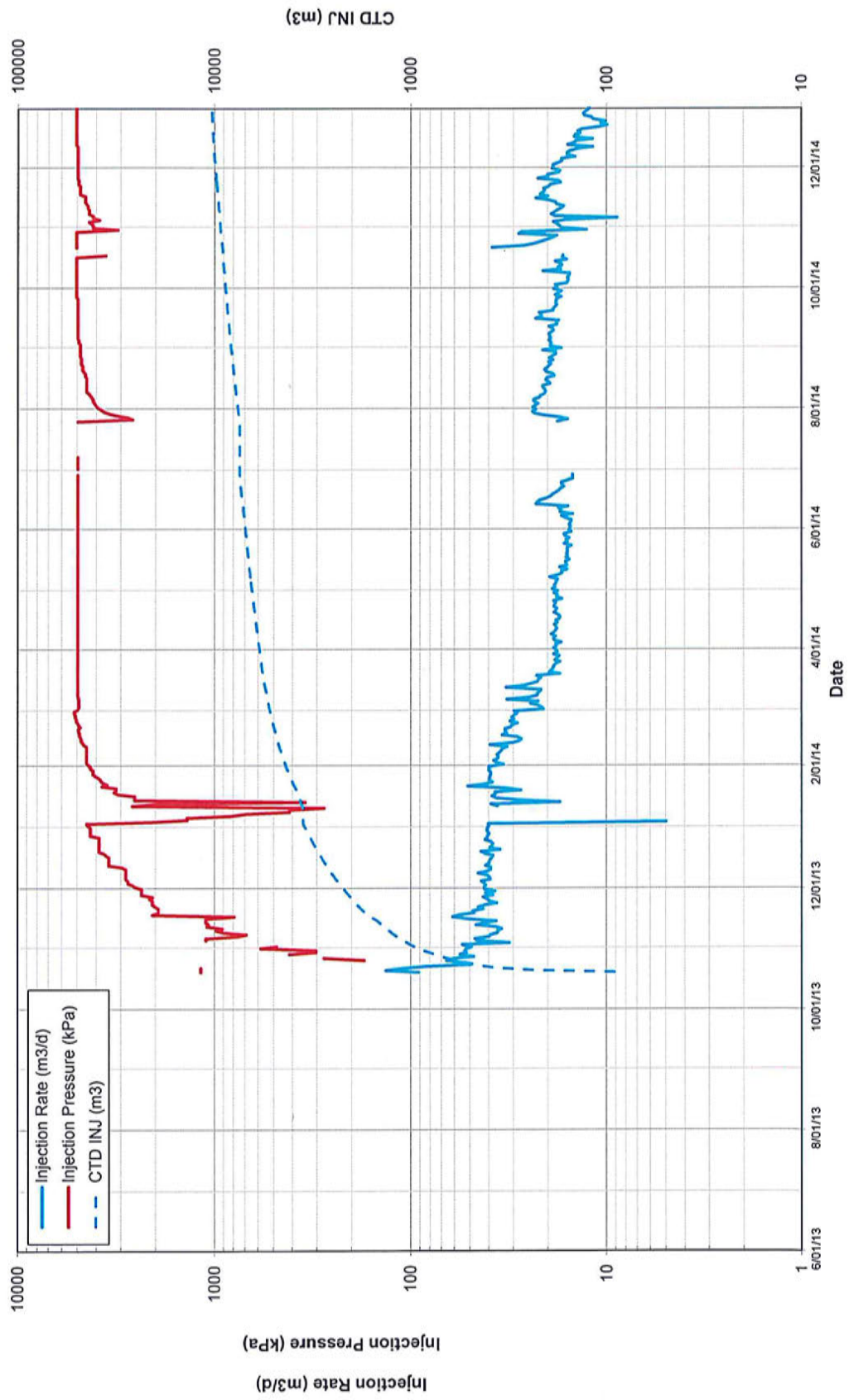
Unit #9 WOR	3.34	4.32	4.52	3.85	3.67	4.07	3.52	3.45	3.53	3.81	3.93	4.01	4.27	3.87	3.42
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2014 Water Injection m3/month	Prior CTD	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2014	CTD
Sec 30-007-29W1	8877.3	1880.4	2065.1	1900.0	1910.5	2038.7	1767.0	391.1	1886.5	1669.7	1559.5	1616.4	1675.8	20360.6	29237.9
Unit #9 Injection	8877.3	1880.4	2065.1	1900.0	1910.5	2038.7	1767.0	391.1	1886.5	1669.7	1559.5	1616.4	1675.8	20360.6	29237.9

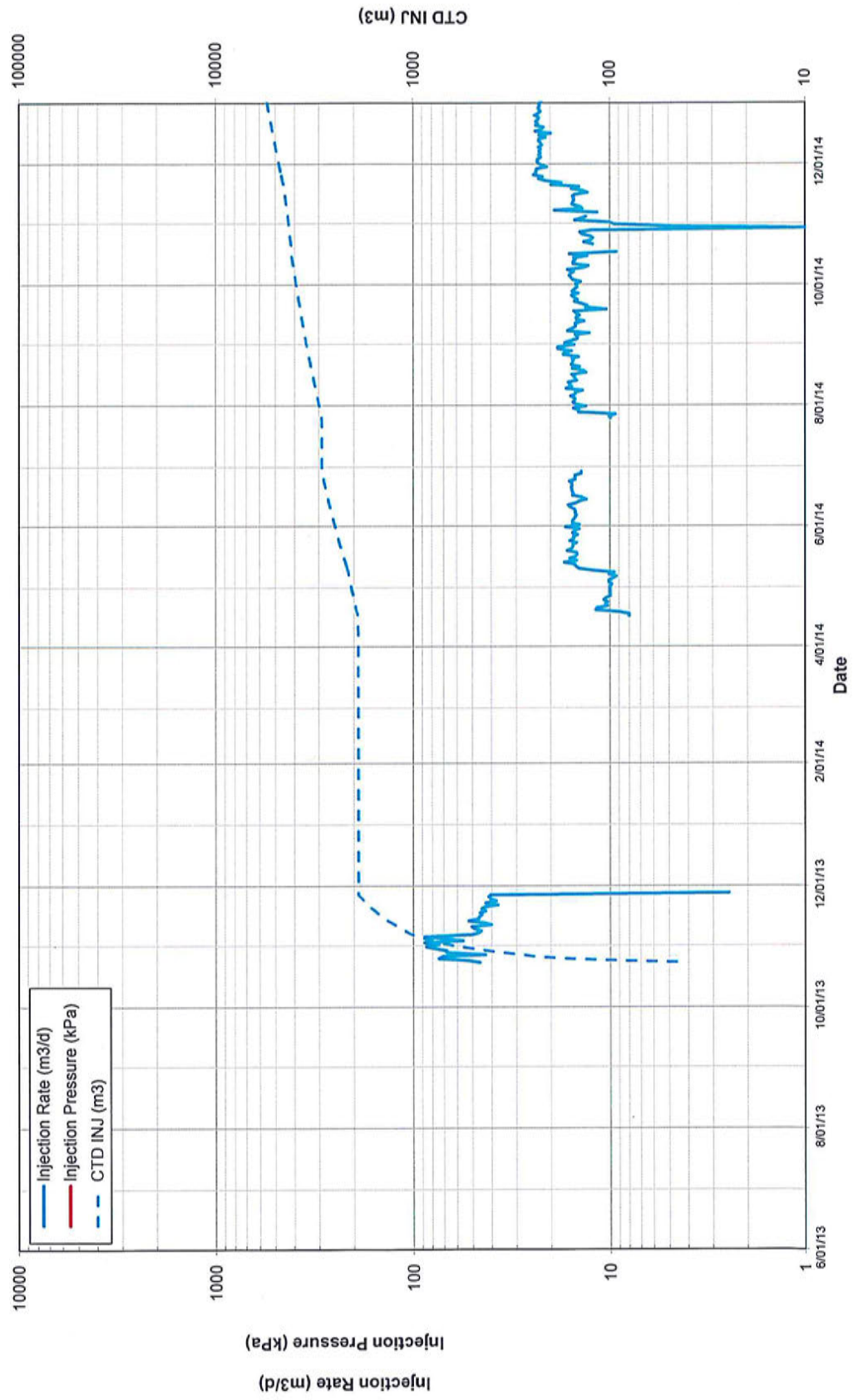
Unit #9 VRR	0.11	1.68	1.91	1.70	1.36	1.24	1.36	0.28	1.27	1.15	1.08	1.18	1.30	1.26	0.29
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00/13-30-7-29 W1M



# 00/14-30-7-29 W1M



00/15-30-7-29 W1M

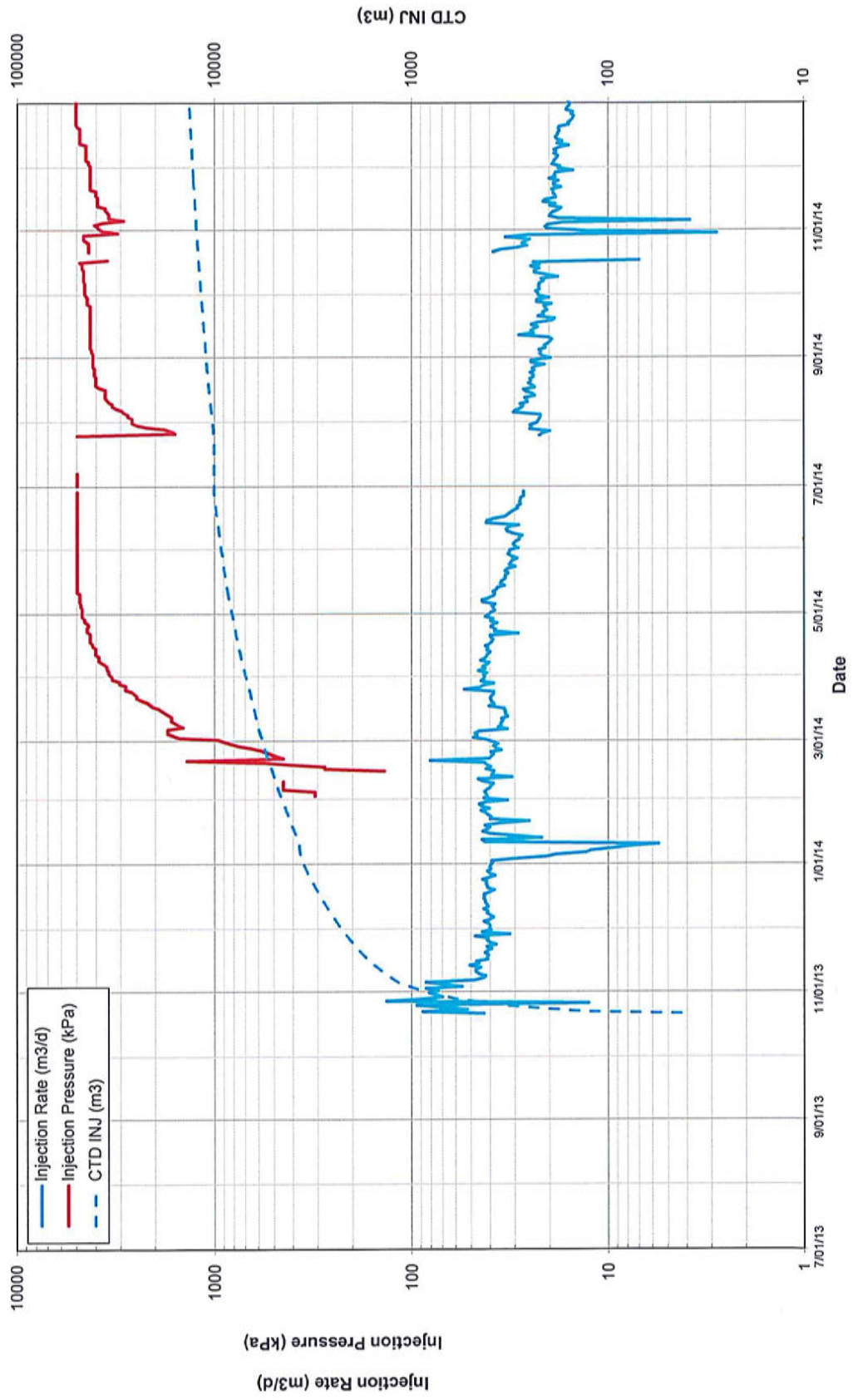




Table 2: Sinclair Unit #9 Monthly Average Injection Data

2014 Monthly Averages	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
00/13-30 Injection Rate (m3/d)	28	32	22	18	17	17	10	20	19	19	19	14
00/13-30 Injection Pressure (kPa)	2751	4759	4952	4964	4964	4964	4226	4513	4962	4881	4599	5009
00/14-30 Injection Rate (m3/d)	0	0	0	5	14	15	6	15	15	13	17	23
00/14-30 Injection Pressure (kPa)	0	0	0	0	0	0	0	0	0	0	0	0
00/15-30 Injection Rate (m3/d)	33	41	40	40	35	31	12	25	22	23	18	17
00/15-30 Injection Pressure (kPa)	0	426	2125	4078	4902	4964	3718	3616	4286	4440	3939	4766