Sinclair Unit No. 8

Waterflood Progress Report 2017

January 1st through December 31st 2017

Prepared for:

Manitoba Industry, Economic Development and Mines

Petroleum Branch

Prepared by:

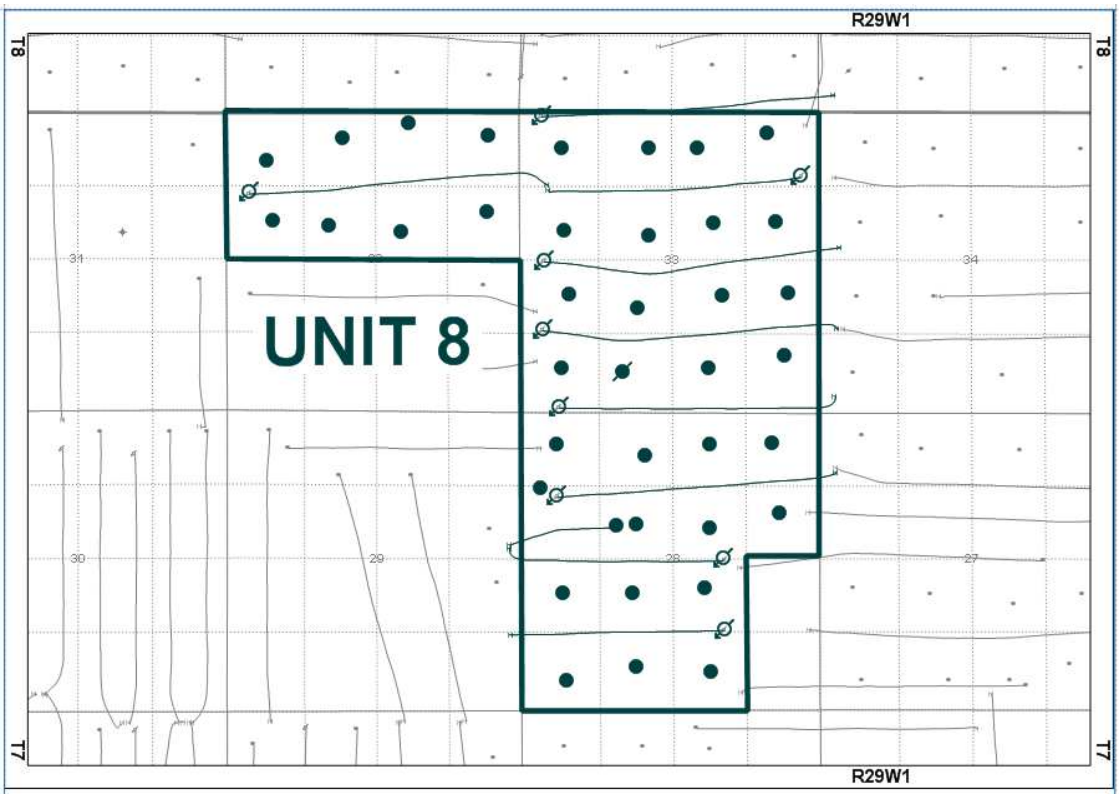
Tundra Oil and Gas

July 25, 2018

INTRODUCTION

Sinclair Unit No. 8 Enhanced Oil Recovery (EOR) Waterflood Project was approved under Waterflood Order No. 25 effective July 1, 2013 with Tundra Oil and Gas (Tundra) as Operator. The Unit area contains 38 vertical and 10 horizontal wells in 38 LSDs in Township 7 Range 29 W1 as shown in the figure below.

Figure 1: Sinclair Unit No. 8 Area Outline



Sinclair Unit No. 8

Tundra Oil and Gas (Tundra), as the operator of the Sinclair Unit No. 8 Enhanced Oil Recovery (EOR) project hereby submits the 2017 EOR report as per section 73 of the Drilling and Production Regulations.

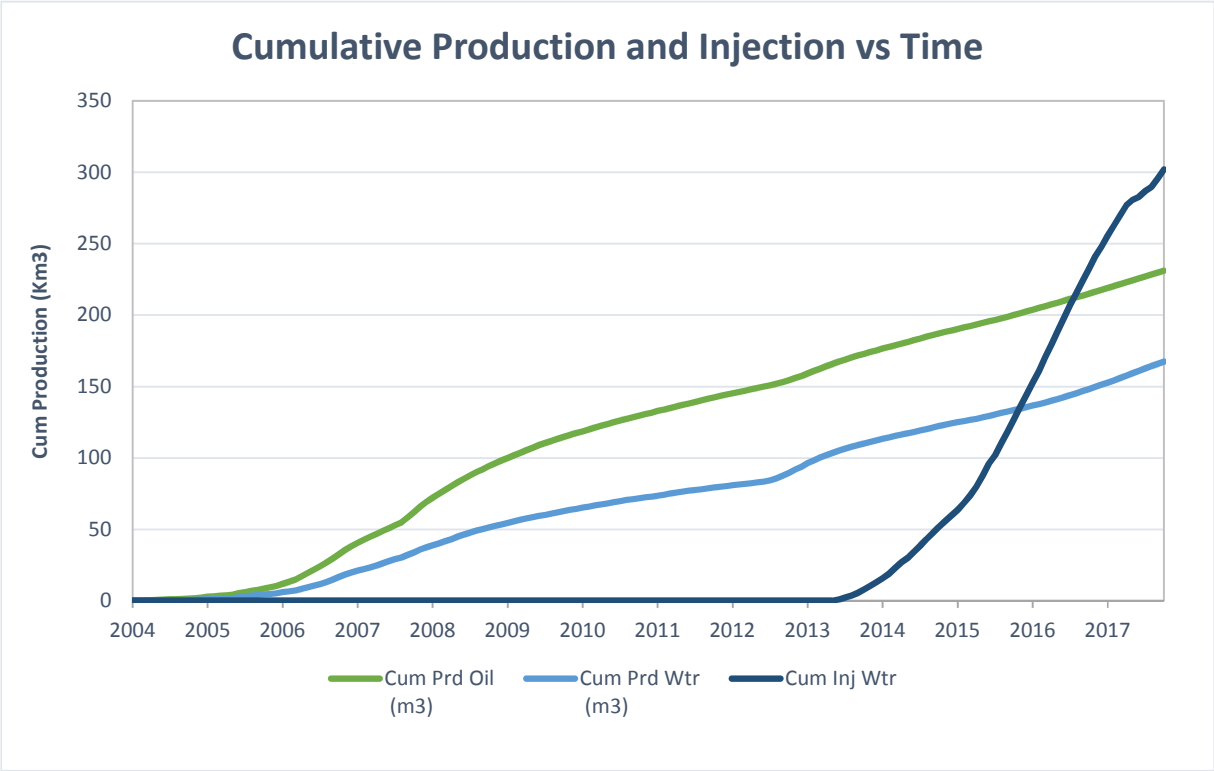
a) Monthly oil and water production rates, injection rate, GOR and WOR

MONTH	Cal Dly Oil m^3/day	Cal Dly Wtr m^3/day	Cal Inj Wtr m^3/day	WOR m^3/m^3	GOR m^3/m^3
Jan-2017	41.78	49.70	271.03	1.19	0
Feb-2017	45.90	49.55	247.93	1.08	0
Mar-2017	46.35	49.15	250.00	1.06	0
Apr-2017	44.43	50.83	248.13	1.14	0
May-2017	42.59	53.87	231.42	1.26	0
Jun-2017	43.94	53.73	228.63	1.22	0
Jul-2017	44.54	56.59	122.84	1.27	0
Aug-2017	43.07	55.93	61.97	1.30	0
Sep-2017	43.16	54.34	134.43	1.26	0
Oct-2017	46.12	53.25	97.97	1.15	0
Nov-2017	43.69	52.46	200.47	1.20	0
Dec-2017	42.93	52.25	198.23	1.22	0

b) Cumulative volume of oil, gas and water produced and fluid injected

2017 PRODUCTION	
Produced Oil (m^3)	16,071
Produced Gas (m^3)	0
Produced Water (m^3)	19,221
Fluid Injected (m^3)	69,529
CUMULATIVE PRODUCTION	
Produced Oil (m^3)	231,040
Produced Water (m^3)	167,436

Sinclair Unit No. 8



c) Monthly wellhead injection pressure for each injection well

MONTH	02/04-33 Inj		02/05-33 Inj		02/07-28 Inj		02/12-28 Inj		02/12-32 Inj		02/13-33 Inj	
	Inj Water (m^3)	Avg Inj P (kPa)	Inj Water (m^3)	Avg Inj P (kPa)	Inj Water (m^3)	Avg Inj P (kPa)	Inj Water (m^3)	Avg Inj P (kPa)	Inj Water (m^3)	Avg Inj P (kPa)	Inj Water (m^3)	Avg Inj P (kPa)
Jan-2017	853.0	6246	597.0	6265	1115.0	2771	1144.0	6114	1137.0	4777	1066.0	6094
Feb-2017	528.0	5847	420.0	6032	809.0	3132	947.0	6264	967.0	4972	954.0	6200
Mar-2017	895.0	6037	639.0	6257	889.0	3157	898.0	6263	975.0	4964	1014.0	6202
Apr-2017	828.0	6254	568.0	6269	1171.0	4435	796.0	6270	885.0	4975	945.0	6271
May-2017	802.0	6252	557.0	6238	1111.0	4939	780.0	6270	888.0	5002	912.0	6193
Jun-2017	627.0	6151	532.0	6248	838.0	4820	716.0	6274	1050.0	5466	863.0	6267
Jul-2017	203.0	5732	300.0	6271	425.0	4569	391.0	6273	669.0	5593	479.0	6269
Aug-2017	303.0	5805	151.0	6006	220.0	3589	202.0	5835	332.0	4406	253.0	5657
Sep-2017	535.0	5558	317.0	5625	475.0	4068	443.0	4992	699.0	5079	549.0	4834
Oct-2017	309.0	5055	217.0	5242	422.0	4146	336.0	4517	517.0	4775	441.0	4270
Nov-2017	584.0	5213	476.0	5508	730.0	4551	612.0	5207	1010.0	5480	763.0	4822
Dec-2017	584.0	5363	459.0	5734	662.0	4943	613.0	5546	1098.0	6114	767.0	5118
Total	7051.0		5233.0		8867.0		7878.0		10227.0		9006.0	
Avg Inj P		5793		5975		4093		5819		5134		5683

MONTH	02/16-33 Inj		03/05-33 Inj		03/07-28 Inj		SU8	
	Inj Water (m^3)	Avg Inj P (kPa)	Inj Water (m^3)	Avg Inj P (kPa)	Inj Water (m^3)	Avg Inj P (kPa)	Inj Water (m^3)	Avg Inj P (kPa)
Jan-2017	1141.0	4445	917.0	6264	432.0	6228	8402.0	5467
Feb-2017	1101.0	4840	826.0	6267	390.0	6266	6942.0	5535
Mar-2017	1130.0	4951	888.0	6261	422.0	6267	7750.0	5595
Apr-2017	1004.0	4977	842.0	6269	405.0	6265	7444.0	5776
May-2017	876.0	4725	852.0	6262	396.0	6265	7174.0	5794
Jun-2017	1022.0	5155	818.0	6264	393.0	6267	6859.0	5879
Jul-2017	662.0	5208	460.0	6271	219.0	5918	3808.0	5789
Aug-2017	333.0	3769	12.0	5903	115.0	4998	1921.0	5108
Sep-2017	707.0	4636	62.0	3472	246.0	5286	4033.0	4839
Oct-2017	532.0	4363	54.0	3082	209.0	5027	3037.0	4498
Nov-2017	1011.0	6699	397.0	2854	431.0	5600	6014.0	5104
Dec-2017	1023.0	5708	444.0	3111	495.0	6315	6145.0	5328
Total	10542.0		6572.0		4153.0		69529.0	
Avg Inj P		4956		5190		5892		5393

c) Monthly wellhead injection pressure for each injection well

MONTH	Jan-2017	Feb-2017	Mar-2017	Apr-2017	May-2017	Jun-2017	Jul-2017	Aug-2017	Sep-2017	Oct-2017	Nov-2017	Dec-2017
Total m3	8402.0	6942.0	7750.0	7444.0	7174.0	6859.0	3808.0	1921.0	4033.0	3037.0	6014.0	6145.0
Daily (m^3/d)	271.03	247.93	250.00	248.13	231.42	228.63	122.84	61.97	134.43	97.97	200.47	198.23

2017 AVG. ANNUAL DAILY INJECTION =	191.09 m3/d
CUMULATIVE INJECTION TO Dec 31, 2016 =	232,422 m3
TOTAL 2017 ANNUAL INJECTION =	69,529 m3
CUMULATIVE INJECTION TO Dec 31, 2017 =	301,951 m3

d) Summary of the result of any survey of reservoir pressure conducted in 2017. N/A

e) Date and type of any well servicing.

Well	Service Description	Date
100.15-32-007-29W1.00	TBG Failure and Pump Change	2/3/2017

f) Calculations of voidage replacement ratio on a monthly and cumulative basis

VOIDAGE CALCULATIONS

OIL FORMATION VOLUME FACTOR (Rm3/Sm3) = 1.071

MONTH	Mth Oil Prod (m3)	Cum Oil Prod (Km3)	Mth Water Prod (m3)	Cum Water Prod (Km3)	Mth Water Inj (m3)	Cum Water Inj (Km3)	VRR	Cum VRR
Jan-2017	1295.2	216.26	1540.6	149.76	8402.0	240.82	2.870	0.631
Feb-2017	1285.1	217.55	1387.5	151.14	6942.0	247.77	2.512	0.645
Mar-2017	1437.0	218.99	1523.6	152.67	7750.0	255.52	2.531	0.660
Apr-2017	1332.8	220.32	1524.8	154.19	7444.0	262.96	2.521	0.674
May-2017	1320.4	221.64	1670.0	155.86	7174.0	270.13	2.326	0.687
Jun-2017	1318.1	222.96	1612.0	157.47	6859.0	276.99	2.268	0.699
Jul-2017	1380.6	224.34	1754.2	159.23	3808.0	280.80	1.178	0.703
Aug-2017	1335.2	225.67	1733.8	160.96	1921.0	282.72	0.607	0.702
Sep-2017	1294.9	226.97	1630.1	162.59	4033.0	286.76	1.337	0.707
Oct-2017	1429.8	228.40	1650.8	164.24	3037.0	289.79	0.954	0.709
Nov-2017	1310.8	229.71	1573.9	165.82	6014.0	295.81	2.020	0.718
Dec-2017	1330.9	231.04	1619.7	167.44	6145.0	301.95	2.018	0.728

g) An outline of the method used for quality control and treatment of the injected fluid

The injection water for Sinclair Unit No. 8 will be sourced from the 16-32-007-29W1 well (Lodgepole formation). The water is treated at the 03-04-008-29W1 battery where it is filtered to 0.5 microns and has scale inhibitor added. The injection water is then distributed to the injectors through the dedicated infrastructure system.

h) A report of any unusual performance problems and remedial measures taken or being considered. N/A

i) Any other information necessary to evaluate the project

Sinclair Unit No. 8 Well List

UWI	*Type*	*Status*	*Future Plans*
102/02-28-007-29W1/0	Vertical	Producing	-
100/03-28-007-29W1/0	Vertical	Producing	-
100/04-28-007-29W1/0	Vertical	Producing	-
100/05-28-007-29W1/0	Vertical	Producing	-
100/06-28-007-29W1/0	Vertical	Producing	-
100/07-28-007-29W1/0	Vertical	Producing	-
102/07-28-007-29W1/0	Horizontal	Injection	-
103/07-28-007-29W1/0	Horizontal	Injection	-
100/09-28-007-29W1/0	Vertical	Producing	-
100/10-28-007-29W1/0	Vertical	Producing	-
100/11-28-007-29W1/0	Vertical	Producing	-
102/11-28-007-29W1/0	Horizontal	Producing	-
100/12-28-007-29W1/0	Vertical	Producing	-
102/12-28-007-29W1/0	Horizontal	Injection	-
100/13-28-007-29W1/0	Vertical	Producing	-
100/14-28-007-29W1/0	Vertical	Producing	-
100/15-28-007-29W1/0	Vertical	Producing	-
100/16-28-007-29W1/0	Vertical	Producing	-
100/09-32-007-29W1/0	Vertical	Producing	-
100/10-32-007-29W1/0	Vertical	Producing	-
100/11-32-007-29W1/0	Vertical	Producing	-
100/12-32-007-29W1/0	Vertical	Producing	-
102/12-32-007-29W1/0	Horizontal	Injection	-
100/13-32-007-29W1/0	Vertical	Producing	-
100/14-32-007-29W1/0	Vertical	Producing	-
100/15-32-007-29W1/0	Vertical	Producing	-
100/16-32-007-29W1/0	Vertical	Producing	-
100/01-33-007-29W1/0	Vertical	Producing	-
100/02-33-007-29W1/0	Vertical	Producing	-
100/03-33-007-29W1/0	Vertical	Suspended	-
100/04-33-007-29W1/0	Vertical	Producing	-
102/04-33-007-29W1/0	Horizontal	Injection	-
100/05-33-007-29W1/0	Vertical	Producing	-
102/05-33-007-29W1/0	Horizontal	Injection	-
103/05-33-007-29W1/0	Horizontal	Injection	-
100/06-33-007-29W1/0	Vertical	Producing	-
100/07-33-007-29W1/0	Vertical	Producing	-
100/08-33-007-29W1/0	Vertical	Producing	-
100/09-33-007-29W1/0	Vertical	Producing	-
100/10-33-007-29W1/0	Vertical	Producing	-
100/11-33-007-29W1/0	Vertical	Producing	-
100/12-33-007-29W1/0	Vertical	Producing	-
100/13-33-007-29W1/0	Vertical	Producing	-
102/13-33-007-29W1/0	Horizontal	Injection	-
100/14-33-007-29W1/0	Vertical	Producing	-

Sinclair Unit No. 8 Well List

UWI	*Type*	*Status*	*Future Plans*
100/15-33-007-29W1/0	Vertical	Producing	-
100/16-33-007-29W1/0	Vertical	Producing	-
102/16-33-007-29W1/0	Horizontal	Injection	-