

GOODLANDS UNIT NO. 2

Waterflood Progress Report 2020

Prepared for:

Manitoba Industry, Economic Development and Mines

Petroleum Branch

Prepared by:



TUNDRA OIL & GAS

Date: 2021-08-26

Introduction

Goodlands Unit No. 2 Enhanced Oil Recovery (EOR) Waterflood project was approved under Waterflood Order No. 57 effective December 2016 with Tundra Oil and Gas (Tundra) as Operator. THE EOR project area contains wells covering 90 LSDs in Township 1, Range 24W1. The Unit contains 162 wells. 63 producers, 19 injectors, and 80 abandoned/suspended/other.

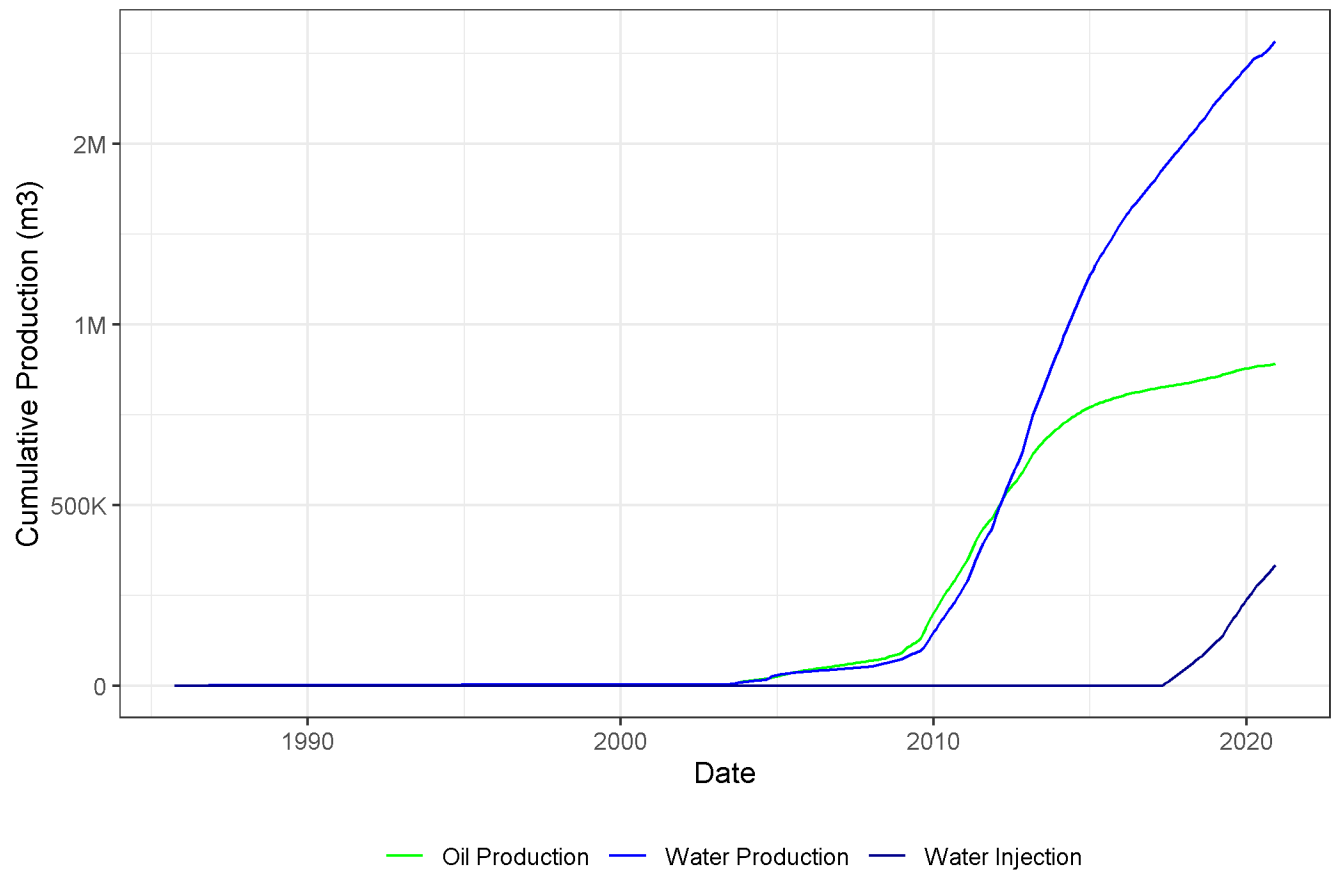
Monthly oil and water production rates, injection rate, GOR and WOR

MONTH	Cal Day Oil m3/d	Cal Day Water m3/d	Cal Day Injection m3/d	WOR	GOR
JAN 2020	39.92	225.46	305.13	5.65	0
FEB 2020	56.50	277.13	303.31	4.90	0
MAR 2020	64.15	288.08	305.97	4.49	0
APR 2020	57.06	277.01	355.77	4.85	0
MAY 2020	18.82	103.65	320.03	5.51	0
JUN 2020	16.95	91.17	173.53	5.38	0
JUL 2020	15.80	76.14	261.45	4.82	0
AUG 2020	33.72	211.77	295.65	6.28	0
SEP 2020	46.21	241.74	301.63	5.23	0
OCT 2020	50.51	287.62	282.26	5.69	0
NOV 2020	52.40	272.76	280.87	5.21	0
DEC 2020	46.87	231.84	259.00	4.95	0
Average	41.58	215.36	287.05		

Year summary of produced oil, gas, water and fluid injected

Categories	m3
Oil Production	15,183
Water Production	78,682
Gas Production	0
Water Injection	105,064
Cumulative Oil	891,700
Cumulative Water	1,782,163
Cumulative Injection	334,427

Cumulative Production and Injection



Monthly Wellhead Pressure

All readings are in kPa

UWI	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Average
100.01-03-001-24W1.00			-18	-91	-92	-89	-95	-94	-92	-90	-89	-88	-84
102.01-04-001-24W1.00	2,597	2,984	2,986	2,985	2,945	2,447	2,994	3,176	3,978	3,980	4,045	4,420	3,295
102.04-04-001-24W1.00	-84	-86	-72	1,264	1,906	817	1,973	2,215	2,983	3,015	4,904	3,323	1,846
102.05-03-001-24W1.00	4,975	4,975	4,975	4,975	4,949	4,502	4,913	4,957	4,976	4,974	4,974	4,975	4,927
102.05-04-001-24W1.00	-5	31	54	-92	-95	-97	-27	766	1,990	2,028	1,997	2,448	750
102.08-03-001-24W1.00	4,975	4,974	3,960	4,974	2,678	944	-72	234	-92	472	3,558	4,933	2,628
102.09-03-001-24W1.00	7,234	4,975	4,975	4,975	4,922	4,818	4,905	4,733	4,975	4,975	4,976	4,974	5,120
102.11-02-001-24W1.00	1,990	1,988	1,990	1,989	1,948	1,986	1,732	1,987	1,989	1,854	2,089	1,205	1,896
102.14-02-001-24W1.00	1,988	1,991	2,022	2,985	2,953	2,989	2,989	2,984	2,984	2,983	2,984	2,984	2,736
102.14-04-001-24W1.00	30	65	72	73	71	64	66	62	63	63	63	66	63
102.15-04-001-24W1.00	-14	-18	-22	-8	-8								-14
102.16-03-001-24W1.00	4,975	4,974	4,975	4,975	4,946	4,761	4,911	4,954	4,975	5,196	4,974	5,025	4,970
103.11-03-001-24W1.00	6,420	4,974	4,975	4,975	4,930	4,247	4,915	4,959	4,974	4,973	4,974	4,975	5,024
103.14-03-001-24W1.00	4,975	4,975	5,296	4,975	4,912	3,936	4,910	4,957	4,958	4,975	4,975	4,975	4,902
104.05-03-001-24W1.00	4,679	4,864	4,975	4,975	4,903	3,508	4,902	4,955	4,975	4,975	4,975	3,318	4,667
104.14-02-001-24W1.00	2,952	2,983	2,982	3,910	3,939	3,943	3,981	4,140	4,975	4,973	4,975	4,974	4,061
104.14-04-001-24W1.00	541	556	534	533	577	283	162	33	2				358
105.08-04-001-24W1.00	4,547	4,974	4,974	4,974	4,951	3,945	559	42	4,463	4,974	4,973	4,975	4,029
105.09-03-001-24W1.00	4,976	4,974	4,974	4,975	4,943	4,902	4,912	4,957	4,974	4,975	4,975	4,975	4,959

Monthly Injected Volumes

All Volumes are in m3

UWI	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
100.01-03-001-24W1.00			44	808	880	425	766	984	1,196	1,225	1,196	1,232	8,756
102.01-04-001-24W1.00	773	638	594	516	475	278	395	477	469	418	373	440	5,846
102.04-04-001-24W1.00	615	1,099	1,237	1,490	1,312	617	851	879	767	657	560	598	10,682
102.05-03-001-24W1.00	342	307	321	301	302	231	305	328	276	277	257	260	3,507
102.05-04-001-24W1.00	60	57	84	1,110	1,169	564	1,016	1,277	1,173	998	837	767	9,112
102.08-03-001-24W1.00	681	609	1,026	472	64					231	597	551	4,231
102.09-03-001-24W1.00	1,028	842	847	789	769	457	732	741	610	591	548	544	8,498
102.11-02-001-24W1.00	719	600	588	528	492	294	421	455	384	365	360	214	5,420
102.14-02-001-24W1.00	493	398	399	461	387	233	324	349	292	285	268	267	4,156
102.14-04-001-24W1.00	60	55	60	59	59	28	52	63	59	61	58	60	674
102.15-04-001-24W1.00	61	57	38										156
102.16-03-001-24W1.00	490	461	502	491	508	298	503	572	492	509	492	509	5,827
103.11-03-001-24W1.00	652	590	604	561	565	321	495	588	524	533	508	514	6,455
103.14-03-001-24W1.00	642	597	638	620	625	357	605	576	520	631	561	552	6,924
104.05-03-001-24W1.00	1,074	970	980	903	846	439	724	796	682	697	675	406	9,192
104.14-02-001-24W1.00	561	472	469	580	497	287	412	506	511	466	423	414	5,598
104.14-04-001-24W1.00	153	143	152	148	146	71	128	56					997
105.08-04-001-24W1.00	642	527	505	453	436	75		83	727	441	365	350	4,604
105.09-03-001-24W1.00	413	374	397	383	389	231	376	435	367	365	348	351	4,429
Grand Total	9,459	8,796	9,485	10,673	9,921	5,206	8,105	9,165	9,049	8,750	8,426	8,029	105,064

Voidage

All Volumes are in m3 Oil Formation Volume Factor (Rm3/Sm3) = 1.17								
MONTH	Oil	Water	Injection	Cumulative Oil	Cumulative Water	Cumulative Injection	VRR	Cumulative VRR
JAN 2020	1,236	6,989	9,459	877,752	1,710,477	238,822	1.121	0.087
FEB 2020	1,639	8,037	8,796	879,391	1,718,514	247,618	0.884	0.090
MAR 2020	1,990	8,931	9,485	881,381	1,727,445	257,103	0.842	0.093
APR 2020	1,713	8,311	10,673	883,094	1,735,756	267,776	1.035	0.097
MAY 2020	583	3,214	9,921	883,677	1,738,970	277,697	2.546	0.100
JUN 2020	509	2,735	5,206	884,186	1,741,705	282,903	1.563	0.102
JUL 2020	490	2,361	8,105	884,676	1,744,066	291,008	2.762	0.105
AUG 2020	1,045	6,564	9,165	885,721	1,750,630	300,173	1.177	0.108
SEP 2020	1,386	7,253	9,049	887,107	1,757,883	309,222	1.020	0.111
OCT 2020	1,567	8,918	8,750	888,674	1,766,801	317,972	0.814	0.113
NOV 2020	1,572	8,183	8,426	890,246	1,774,984	326,398	0.841	0.116
DEC 2020	1,453	7,186	8,029	891,699	1,782,170	334,427	0.904	0.118

Workovers

UWI	Date	Description
100.03-03-001-24W1.00	2020-02-09	Cleanout & Selective Acid
100.11-03-001-24W1.00	2020-11-02	Rigless Acid Stimulation
102.01-03-001-24W1.00	2020-10-27	Rigless Acid Stimulation
102.03-03-001-24W1.00	2020-01-30	Open Heel Side Ports
102.05-06-001-24W1.00	2020-10-27	Rigless Acid Stimulation
102.08-04-001-24W1.00	2020-11-24	Rigless Acid Stimulation
102.14-03-001-24W1.00	2020-11-19	Rigless Acid Stimulation
103.14-04-001-24W1.00	2020-12-15	Rigless Acid Stimulation
103.14-04-001-24W1.00	2020-12-19	Pump Change & Acid
103.14-05-001-24W1.00	2020-11-24	Rigless Acid Stimulation
103.16-03-001-24W1.00	2020-11-02	Rigless Acid Stimulation
104.09-03-001-24W1.00	2020-12-15	Rigless Acid Stimulation
104.09-08-001-24W1.00	2020-11-24	Rigless Acid Stimulation

Well List

UWI	Type	Status
100.11-02-001-24W1.00	Horizontal	Producing
102.11-02-001-24W1.00	Horizontal	Injection
103.11-02-001-24W1.00	Horizontal	Producing
100.14-02-001-24W1.00	Vertical	Abandoned Zone
102.14-02-001-24W1.00	Horizontal	Injection
103.14-02-001-24W1.00	Horizontal	Producing
104.14-02-001-24W1.00	Horizontal	Injection
100.01-03-001-24W1.00	Horizontal	Injection
102.01-03-001-24W1.00	Horizontal	Producing
103.01-03-001-24W1.00	Horizontal	Producing
100.03-03-001-24W1.00	Horizontal	Producing
102.03-03-001-24W1.00	Horizontal	Producing
100.09-03-001-24W1.00	Vertical	Abandoned
103.12-05-001-24W1.00	Dir/Dev	Producing
100.08-06-001-24W1.00	Vertical	Abandoned
100.11-06-001-24W1.00	Vertical	Abandoned
100.02-08-001-24W1.00	Vertical	Abandoned Zone
100.14-08-001-24W1.00	Vertical	Abandoned
100.05-03-001-24W1.00	Horizontal	Producing
102.05-03-001-24W1.00	Horizontal	Injection
103.05-03-001-24W1.00	Horizontal	Producing
104.05-03-001-24W1.00	Horizontal	Injection
100.08-03-001-24W1.00	Horizontal	Producing
102.08-03-001-24W1.00	Horizontal	Injection
103.08-03-001-24W1.00	Horizontal	Producing
102.09-03-001-24W1.00	Horizontal	Injection
103.09-03-001-24W1.00	Horizontal	Producing
104.09-03-001-24W1.00	Horizontal	Producing
105.09-03-001-24W1.00	Horizontal	Injection
106.09-03-001-24W1.00	Horizontal	Producing
100.11-03-001-24W1.00	Horizontal	Producing
102.11-03-001-24W1.00	Horizontal	Producing
103.11-03-001-24W1.00	Horizontal	Injection
100.14-03-001-24W1.00	Vertical	Producing
102.14-03-001-24W1.00	Horizontal	Producing
103.14-03-001-24W1.00	Horizontal	Injection
100.16-03-001-24W1.00	Horizontal	Producing
102.16-03-001-24W1.00	Horizontal	Injection
103.16-03-001-24W1.00	Horizontal	Producing
100.01-04-001-24W1.00	Vertical	Producing
102.01-04-001-24W1.00	Horizontal	Injection
103.01-04-001-24W1.00	Horizontal	Producing
100.02-04-001-24W1.00	Vertical	Abandoned Zone

UWI	Type	Status
100.03-04-001-24W1.00	Vertical	Abandoned Zone
102.03-04-001-24W1.00	Horizontal	Producing
100.04-04-001-24W1.00	Vertical	Abandoned Zone
102.04-04-001-24W1.00	Horizontal	Injection
103.04-04-001-24W1.00	Horizontal	Producing
104.04-04-001-24W1.00	Horizontal	Producing
100.05-04-001-24W1.00	Vertical	Abandoned Zone
102.05-04-001-24W1.00	Horizontal	Injection
103.05-04-001-24W1.00	Horizontal	Producing
104.05-04-001-24W1.00	Horizontal	Producing
100.06-04-001-24W1.00	Vertical	Abandoned Zone
100.07-04-001-24W1.00	Vertical	Abandoned Zone
100.08-04-001-24W1.00	Vertical	Producing
102.08-04-001-24W1.00	Horizontal	Producing
104.08-04-001-24W1.00	Horizontal	Suspended
105.08-04-001-24W1.00	Horizontal	Injection
100.10-04-001-24W1.00	Vertical	Producing
100.12-04-001-24W1.00	Vertical	Producing
100.13-04-001-24W1.00	Horizontal	Producing
102.13-04-001-24W1.00	Horizontal	Producing
103.13-04-001-24W1.00	Horizontal	Producing
100.14-04-001-24W1.00	Vertical	Producing
102.14-04-001-24W1.00	Horizontal	Injection
103.14-04-001-24W1.00	Horizontal	Producing
104.14-04-001-24W1.00	Horizontal	Injection
100.15-04-001-24W1.00	Horizontal	Producing
102.15-04-001-24W1.00	Horizontal	Injection
100.16-04-001-24W1.00	Vertical	Producing
102.16-04-001-24W1.00	Horizontal	Producing
100.01-05-001-24W1.00	Horizontal	Producing
100.02-05-001-24W1.00	Horizontal	Producing
102.03-05-001-24W1.00	Horizontal	Producing
103.03-05-001-24W1.00	Horizontal	Producing
104.03-05-001-24W1.00	Horizontal	Producing
100.05-05-001-24W1.00	Horizontal	Producing
102.05-05-001-24W1.00	Horizontal	Suspended
100.06-05-001-24W1.02	Vertical	Producing
102.06-05-001-24W1.00	Horizontal	Producing
103.06-05-001-24W1.00	Horizontal	Producing
100.07-05-001-24W1.00	Horizontal	Suspended
100.08-05-001-24W1.00	Vertical	Producing
102.08-05-001-24W1.00	Horizontal	Producing
103.08-05-001-24W1.00	Horizontal	Producing
100.09-05-001-24W1.00	Vertical	Producing
102.09-05-001-24W1.00	Horizontal	Producing
100.10-05-001-24W1.00	Vertical	Producing
102.10-05-001-24W1.00	Horizontal	Suspended

UWI	Type	Status
103.10-05-001-24W1.00	Horizontal	Suspended
100.11-05-001-24W1.00	Vertical	Producing
102.11-05-001-24W1.02	Horizontal	Producing
100.12-05-001-24W1.00	Vertical	Producing
102.12-05-001-24W1.00	Horizontal	Producing
100.13-05-001-24W1.00	Vertical	Producing
100.14-05-001-24W1.00	Vertical	Producing
102.14-05-001-24W1.00	Horizontal	Suspended
103.14-05-001-24W1.00	Horizontal	Producing
104.14-05-001-24W1.00	Horizontal	Producing
100.15-05-001-24W1.00	Vertical	Abandoned Zone
100.16-05-001-24W1.00	Vertical	Producing
102.16-05-001-24W1.00	Horizontal	Producing
103.16-05-001-24W1.00	Horizontal	Suspended
104.16-05-001-24W1.00	Horizontal	Suspended
100.04-06-001-24W1.00	Horizontal	Producing
102.04-06-001-24W1.00	Horizontal	Producing
103.04-06-001-24W1.00	Horizontal	Producing
100.05-06-001-24W1.00	Horizontal	Producing
102.05-06-001-24W1.00	Horizontal	Producing
103.05-06-001-24W1.00	Horizontal	Producing
100.07-06-001-24W1.00	Horizontal	Producing
102.07-06-001-24W1.00	Horizontal	Producing
103.07-06-001-24W1.00	Horizontal	Producing
102.11-06-001-24W1.00	Horizontal	Producing
103.11-06-001-24W1.00	Horizontal	Producing
104.11-06-001-24W1.00	Horizontal	Producing
105.11-06-001-24W1.00	Horizontal	Producing
100.14-06-001-24W1.00	Horizontal	Producing
102.14-06-001-24W1.00	Horizontal	Producing
100.01-07-001-24W1.00	Horizontal	Suspended
102.01-07-001-24W1.00	Horizontal	Suspended
100.02-07-001-24W1.00	Vertical	Producing
102.02-07-001-24W1.00	Horizontal	Producing
100.08-07-001-24W1.00	Vertical	Abandoned Zone
102.08-07-001-24W1.00	Horizontal	Suspended
103.08-07-001-24W1.00	Horizontal	Producing
100.01-08-001-24W1.00	Vertical	Producing
102.01-08-001-24W1.00	Horizontal	Suspended
103.01-08-001-24W1.00	Horizontal	Suspended
102.02-08-001-24W1.00	Horizontal	Producing
100.03-08-001-24W1.00	Vertical	Producing
102.03-08-001-24W1.00	Horizontal	Suspended
103.03-08-001-24W1.00	Horizontal	Suspended
104.03-08-001-24W1.00	Horizontal	Suspended
100.04-08-001-24W1.00	Vertical	Producing
100.06-08-001-24W1.00	Vertical	Producing

UWI	Type	Status
102.06-08-001-24W1.00	Horizontal	Producing
103.06-08-001-24W1.00	Horizontal	Suspended
100.07-08-001-24W1.00	Vertical	Producing
102.07-08-001-24W1.00	Horizontal	Suspended
103.07-08-001-24W1.00	Horizontal	Producing
100.08-08-001-24W1.00	Vertical	Producing
102.08-08-001-24W1.00	Horizontal	Producing
100.09-08-001-24W1.00	Vertical	Producing
102.09-08-001-24W1.00	Horizontal	Suspended
103.09-08-001-24W1.00	Horizontal	Producing
104.09-08-001-24W1.00	Horizontal	Producing
100.10-08-001-24W1.00	Vertical	Abandoned Zone
100.11-08-001-24W1.00	Horizontal	Producing
102.11-08-001-24W1.00	Horizontal	Suspended
103.11-08-001-24W1.00	Horizontal	Suspended
104.11-08-001-24W1.00	Horizontal	Suspended
102.14-08-001-24W1.00	Horizontal	Suspended
100.15-08-001-24W1.00	Vertical	Producing
100.16-08-001-24W1.00	Vertical	Producing
102.16-08-001-24W1.00	Horizontal	Producing
103.16-08-001-24W1.00	Horizontal	Producing
104.16-08-001-24W1.00	Horizontal	Producing
100.01-17-001-24W1.00	Horizontal	Suspended
102.01-17-001-24W1.00	Horizontal	Producing
100.04-17-001-24W1.00	Horizontal	Suspended