

WASKADA UNIT NO. 6 - PM 44

Waterflood Progress Report 2020

Prepared for:

Manitoba Industry, Economic Development and Mines

Petroleum Branch

Prepared by:



TUNDRA OIL & GAS

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Introduction

Waskada Unit No. 6 Enhanced Oil Recovery (EOR) Waterflood Project was approved under Board Order No. PM 44 effective May 1985 and then amended into WF Order No. 1 in May 1995. Waskada Unit No. 6 area contains wells in 31 LSDs in Township 1, Range 26 W1. The Unit contains 48 wells. 9 producers, 5 injectors, and 34 abandoned/suspended/other.

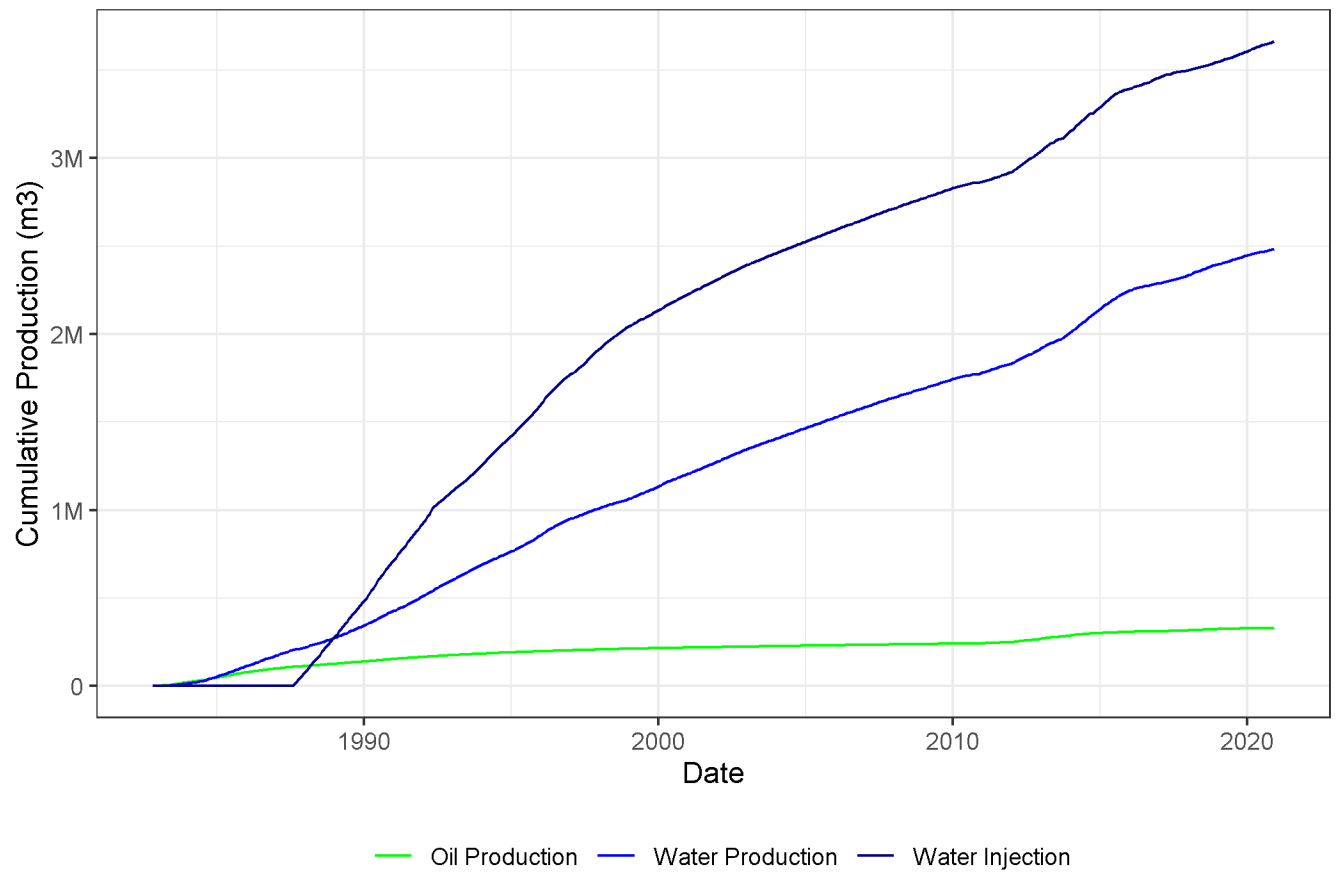
Monthly oil and water production rates, injection rate, GOR and WOR

MONTH	Cal Day Oil m3/d	Cal Day Water m3/d	Cal Day Injection m3/d	WOR	GOR
JAN 2020	10.73	154.96	190.39	14.44	0
FEB 2020	9.94	153.81	197.69	15.47	0
MAR 2020	9.33	91.38	196.90	9.79	0
APR 2020	9.33	156.56	197.23	16.78	0
MAY 2020	4.33	69.76	191.85	16.11	0
JUN 2020	6.40	99.24	195.78	15.51	0
JUL 2020	5.39	84.67	160.00	15.71	0
AUG 2020	5.49	76.74	137.23	13.98	0
SEP 2020	4.81	74.82	136.47	15.56	0
OCT 2020	5.56	129.27	137.87	23.25	0
NOV 2020	8.04	118.34	139.83	14.72	0
DEC 2020	6.07	102.84	137.16	16.94	0
Average	7.12	109.37	168.20		

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

Categories	m3
Oil Production	2,599
Water Production	39,927
Gas Production	0
Water Injection	61,506
Cumulative Oil	330,041
Cumulative Water	2,482,698
Cumulative Injection	3,662,965

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
102.07-01-001-26W1.00	3,578	3,553	3,615	3,614	3,544	3,500	2,322	1,116	1,224	1,149	1,101	1,145	2,455
103.03-12-001-26W1.00	2,331	2,337	2,348	2,366	2,382	2,470	2,448	2,374	2,657	2,714	2,739	2,776	2,495
103.10-01-001-26W1.00	714	1,210	1,562	1,839	2,115	2,378	3,597	4,500	4,472	4,472	4,521	4,528	2,992
103.10-12-001-26W1.00	-87	-89	-89	-89	-90	-89	-89	-89	-89	-90	-89	-89	-89
103.15-01-001-26W1.00	3,982	3,980	3,977	3,977	3,902	3,976	3,975	3,915	3,840	3,978	3,981	3,933	3,951

Monthly Injected Volumes

All Volumes are in m3

UWI	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
102.07-01-001-26W1.00	1,507	1,427	1,524	1,484	1,499	1,488	1,096	759	748	756	737	723	13,748
103.03-12-001-26W1.00	1,372	1,297	1,383	1,342	1,352	1,340	1,326	1,365	1,312	1,372	1,344	1,339	16,144
103.10-01-001-26W1.00	917	867	925	898	905	896	431						5,839
103.10-12-001-26W1.00	1,037	1,150	1,227	1,191	1,204	1,190	1,177	1,212	1,176	1,217	1,179	1,213	14,173
103.15-01-001-26W1.00	1,069	992	1,045	1,002	987	960	930	918	858	929	935	977	11,602
Grand Total	5,902	5,733	6,104	5,917	5,947	5,874	4,960	4,254	4,094	4,274	4,195	4,252	61,506

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	333	4,804	5,902	327,776	2,447,569	3,607,359	1.136	1.274
FEB 2020	288	4,460	5,733	328,064	2,452,029	3,613,092	1.195	1.274
MAR 2020	290	2,833	6,104	328,354	2,454,862	3,619,196	1.924	1.275
APR 2020	280	4,697	5,917	328,634	2,459,559	3,625,113	1.178	1.275
MAY 2020	134	2,162	5,948	328,768	2,461,721	3,631,061	2.565	1.276
JUN 2020	192	2,977	5,874	328,960	2,464,698	3,636,935	1.835	1.276
JUL 2020	167	2,625	4,960	329,127	2,467,323	3,641,895	1.759	1.277
AUG 2020	170	2,379	4,254	329,297	2,469,702	3,646,149	1.650	1.277
SEP 2020	144	2,245	4,094	329,441	2,471,947	3,650,243	1.696	1.277
OCT 2020	173	4,007	4,274	329,614	2,475,954	3,654,517	1.015	1.277
NOV 2020	241	3,550	4,195	329,855	2,479,504	3,658,712	1.095	1.277
DEC 2020	188	3,188	4,252	330,043	2,482,692	3,662,964	1.248	1.277

Workovers

UWI	Date	Description
102.03-12-001-26W1.00	2020-11-25	Rigless Acid Stimulation
102.06-12-001-26W1.00	2020-11-05	Rigless Acid Stimulation
102.07-12-001-26W1.00	2020-11-17	Rigless Acid Stimulation
102.10-12-001-26W1.00	2020-10-22	Rigless Acid Stimulation
102.15-01-001-26W1.00	2020-11-04	Rigless Acid Stimulation

Well List

UWI	Type	Status
100.12-06-001-25W1.00	Vertical	Abandoned
100.13-06-001-25W1.00	Vertical	Injection
100.04-07-001-25W1.02	Vertical	Abandoned
102.05-07-001-25W1.00	Vertical	Abandoned
100.11-07-001-25W1.00	Vertical	Abandoned
103.12-07-001-25W1.00	Vertical	Producing
102.13-07-001-25W1.00	Vertical	Injection
102.14-07-001-25W1.00	Vertical	Abandoned Zone
100.15-07-001-25W1.00	Vertical	Injection
100.16-07-001-25W1.00	Vertical	Producing
102.16-07-001-25W1.00	Horizontal	Producing
103.16-07-001-25W1.00	Horizontal	Producing
100.03-18-001-25W1.00	Vertical	Abandoned Zone
100.04-18-001-25W1.00	Vertical	Abandoned
102.04-18-001-25W1.00	Horizontal	Suspended
100.05-18-001-25W1.00	Vertical	Abandoned
100.06-18-001-25W1.00	Vertical	Abandoned
100.07-01-001-26W1.00	Vertical	Abandoned
102.07-01-001-26W1.00	Horizontal	Injection
103.07-01-001-26W1.00	Horizontal	Producing
100.08-01-001-26W1.02	Vertical	Abandoned Zone
100.09-01-001-26W1.00	Vertical	Abandoned
100.10-01-001-26W1.02	Vertical	Abandoned Zone
102.10-01-001-26W1.00	Horizontal	Producing
103.10-01-001-26W1.00	Horizontal	Injection
100.15-01-001-26W1.02	Vertical	Abandoned
102.15-01-001-26W1.00	Horizontal	Producing
103.15-01-001-26W1.00	Horizontal	Injection
100.16-01-001-26W1.02	Vertical	Abandoned Zone
100.01-12-001-26W1.00	Vertical	Abandoned
100.02-12-001-26W1.02	Vertical	Abandoned
100.03-12-001-26W1.02	Vertical	Abandoned
102.03-12-001-26W1.00	Horizontal	Producing
103.03-12-001-26W1.00	Horizontal	Injection
100.05-12-001-26W1.00	Vertical	Abandoned
100.06-12-001-26W1.02	Vertical	Abandoned Zone
102.06-12-001-26W1.00	Horizontal	Producing
100.07-12-001-26W1.00	Vertical	Abandoned
102.07-12-001-26W1.00	Horizontal	Producing
100.08-12-001-26W1.00	Vertical	Abandoned Zone
102.09-12-001-26W1.00	Vertical	Source
100.10-12-001-26W1.00	Vertical	Abandoned
102.10-12-001-26W1.00	Horizontal	Producing

UWI	Type	Status
103.10-12-001-26W1.00	Horizontal	Injection
100.15-12-001-26W1.00	Vertical	Abandoned
102.15-12-001-26W1.00	Horizontal	Producing
102.16-12-001-26W1.00	Vertical	Abandoned Zone
104.16-12-001-26W1.00	Horizontal	Producing