



Canadian Natural

PRIMROSE AND WOLF LAKE IN SITU OIL SANDS PROJECT DIRECTIVE 054 ANNUAL PERFORMANCE PRESENTATION

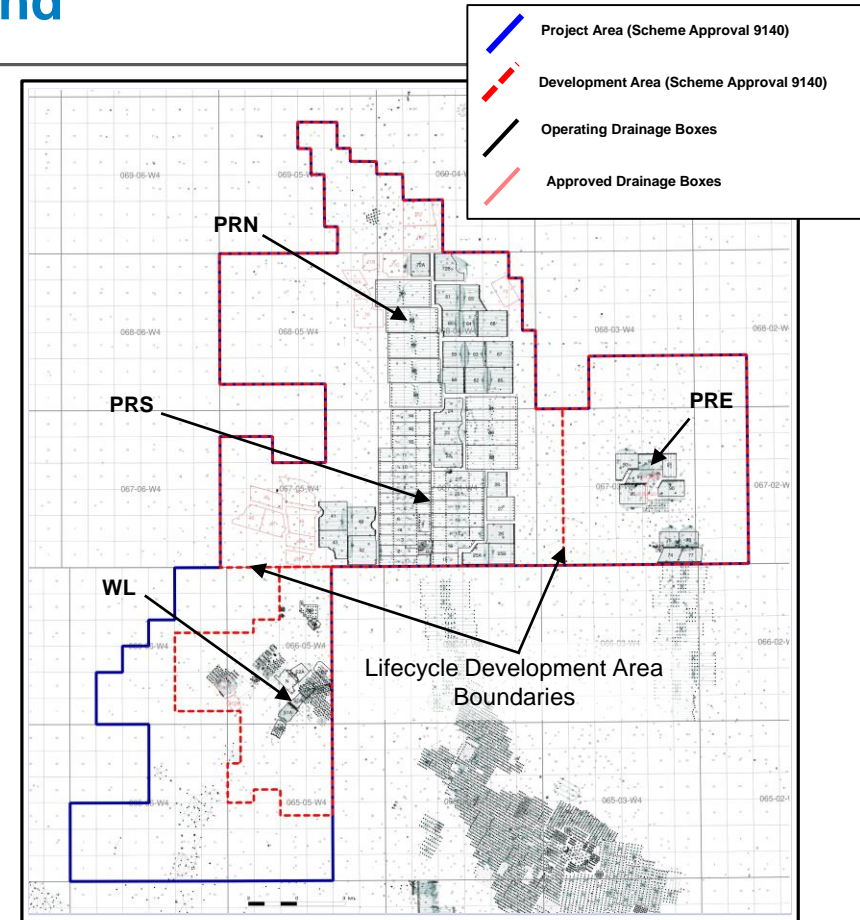
Commercial Scheme Approval 9140 (as amended)
June 30, 2022



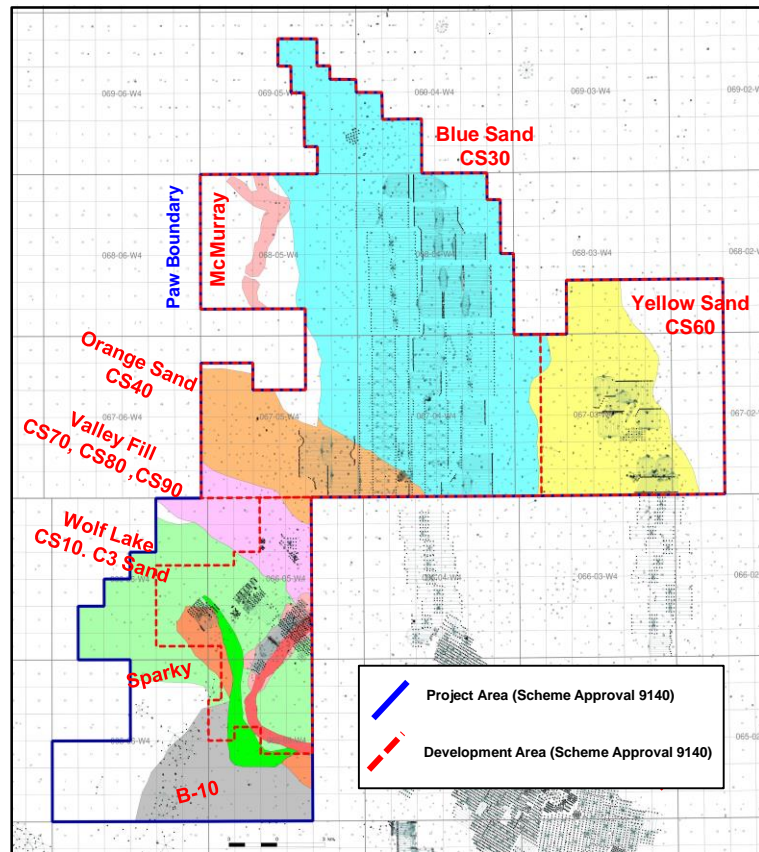
4.1 Introduction

4.1, 1) Scheme Setting and Background

- The Primrose and Wolf Lake In Situ Oil Sands Project (PAW Project) is located in east central Alberta, in the northern portion of the Cold Lake Oil Sands Area.
- The Clearwater, Grand Rapids and McMurray formations are the bitumen-bearing sands and the target of steam injection in the Primrose and Wolf Lake operating areas. Recovery processes used include Cyclic Steam Stimulation (CSS), Steam Assisted Gravity Drainage (SAGD) and Steamflood (SF).
- The PAW Project is split into the following four operating areas:
 - Wolf Lake (WL)
 - Primrose South (PRS)
 - Primrose North (PRN)
 - Primrose East (PRE)



4.1, 1) Scheme Setting and Background (cont'd)



Development History for PAW

Orange/Blue Sand (Primrose South and North)

1981-1983 (Dome): Moore Pilot Vertical Well CSS
 1992 (Amoco): CDD Pilot Phase 5 Horizontal Well Steam Drive
 1993-1999 (Amoco): Phase 1-20 Horizontal Well CSS
 1996 (Amoco): Phase 2-3 MWSDD Steam Drive Drainage Pilot
 1998 (Amoco): BD-18 SAGD Pilot
 2000 (CNRL): Phase 21 Horizontal Well CSS
 2003-2004: Phase 29-31 Horizontal Well CSS
 2004-2006: Phase 51-55 Horizontal Well CSS
 2003: Phase 14 Surfactant in Steam CSS
 2003: Phase A1-A2 Cyclic Gas
 2004: Phase A1 Cyclic Rich Gas
 2005: Phase B2 Solvent in Steam CSS
 2005-2007: Phase 27, 17 in-fill, 28 Horizontal CSS
 2006: Phase BD-18 VAPEX
 2008-2009: Phase 58, 59, 62, 63, 66, 67 Horizontal Well CSS
 2010-2011: Phase 22-24 Horizontal Well CSS
 2011-2012: Phase 25-26 Horizontal Well CSS
 2011-2013: Phase 60,61,64,65,68 Horizontal Well CSS
 2013: Phase 40-43 Horizontal Well CSS
 2014: Phase 40-43 Horizontal Well CSS
 2018-2019: Phase 72A-72B Horizontal Well CSS

Yellow Sand (Primrose East)

1986-1988 (Suncor): Phase 14A-14B Slant Pads
 1996 (Suncor): Burnt Lake Pilot SAGD
 2007-2008 (CNRL): Phase 74, 75, 77, 78 Horizontal Well CSS
 2011-2012: Phase 90-95 Horizontal Well CSS
 2021: PH 77-78 re-drill

Valley Fill (Wolf Lake)

1988 (BP): Z8 Vertical Well CSS
 1989 (Amoco): HWP1 SAGD Pilot
 2005 (CNRL): Z13 Vertical Well CSS

C3 Sand (Wolf Lake)

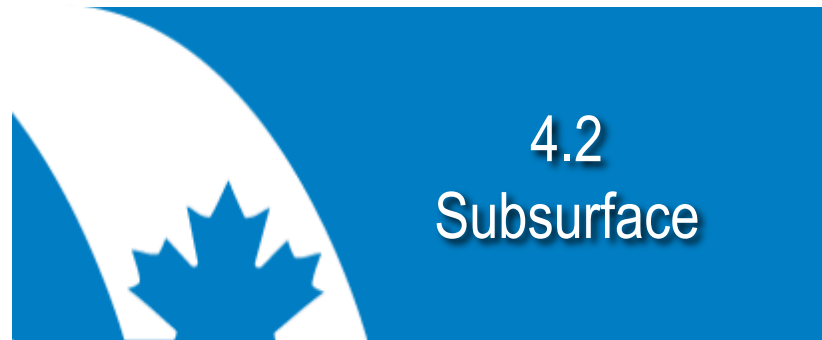
1966 (BP): Phase A Vertical Well Pilot
 1978-1988 (BP): Marguerite Lake Pilot
 1980-1985 (BP): Wolf Lake 1 West Vertical Well CSS
 1980-1985 (BP): Wolf Lake 1 East Vertical Well CSS
 1987-1988 (BP): Wolf Lake 2 Vertical Well CSS
 1994 (Amoco): Wolf Lake 1 East Horizontal MWSDD
 1996 (Amoco): Wolf Lake 1 West Horizontal MWSDD
 1999-2000 (CNRL): Phase E2 and N Horizontal CSS

B10 Sand (Wolf Lake)

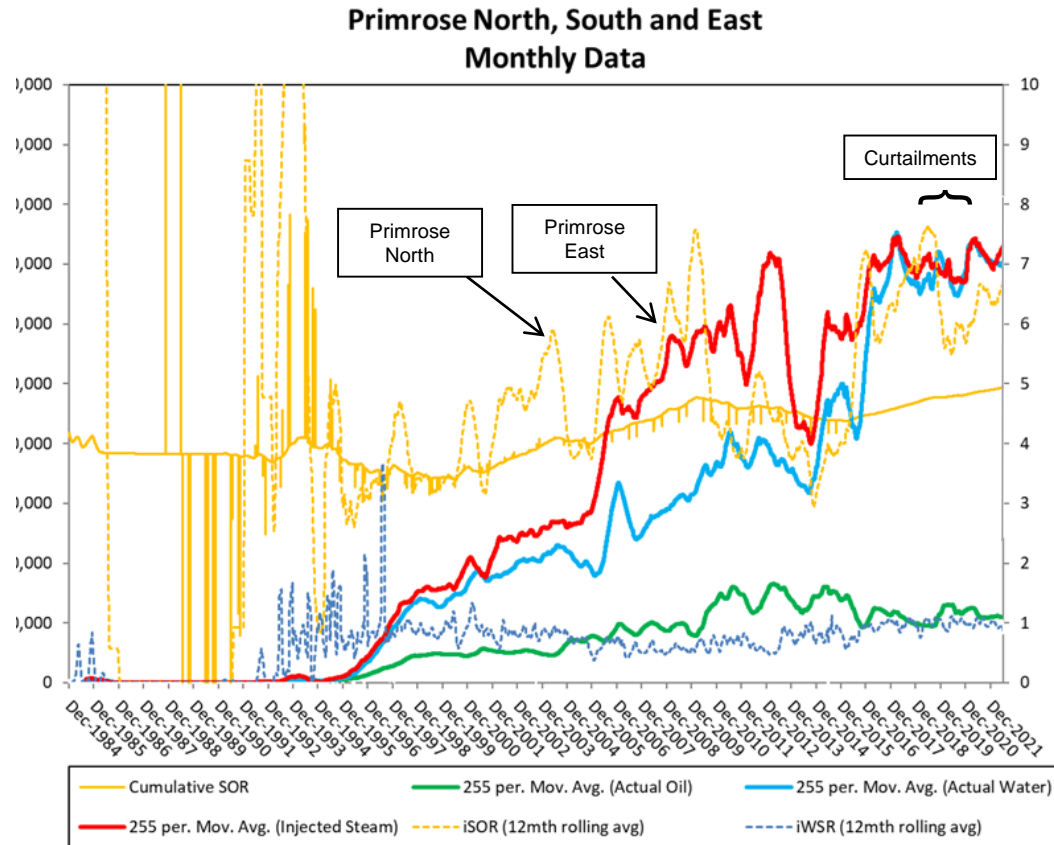
1989 (BP): E14 Vertical Well CSS Pilot
 1997 (Amoco): D2 Pair 1 SAGD
 2000 (CNRL): D2 Pair 2-6 SAGD
 2000-2001: SD9 SAGD
 2001: S1A SAGD
 2004: S1A SAGD re-drill
 2010: S1B SAGD
 2017: S1A SAGD re-drill

McMurray Sand (Wolf Lake)

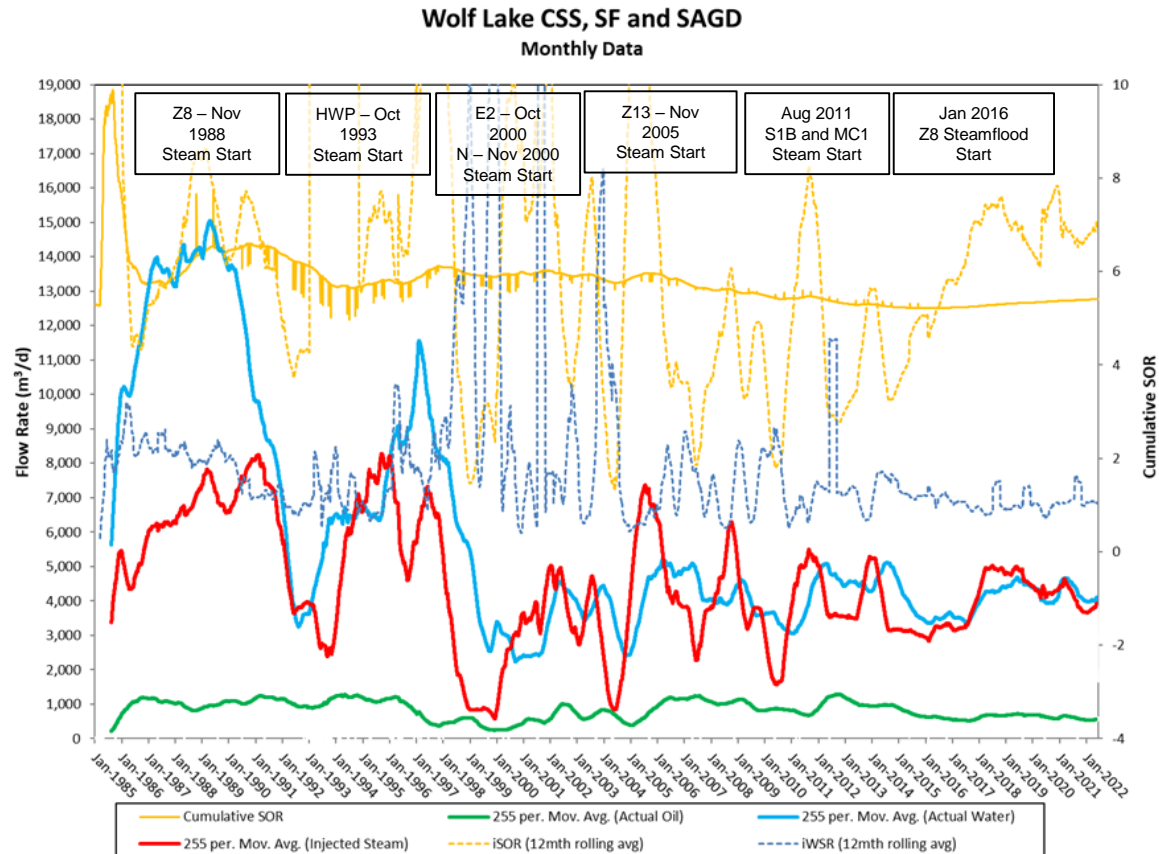
2010 (CNRL): MC1 SAGD



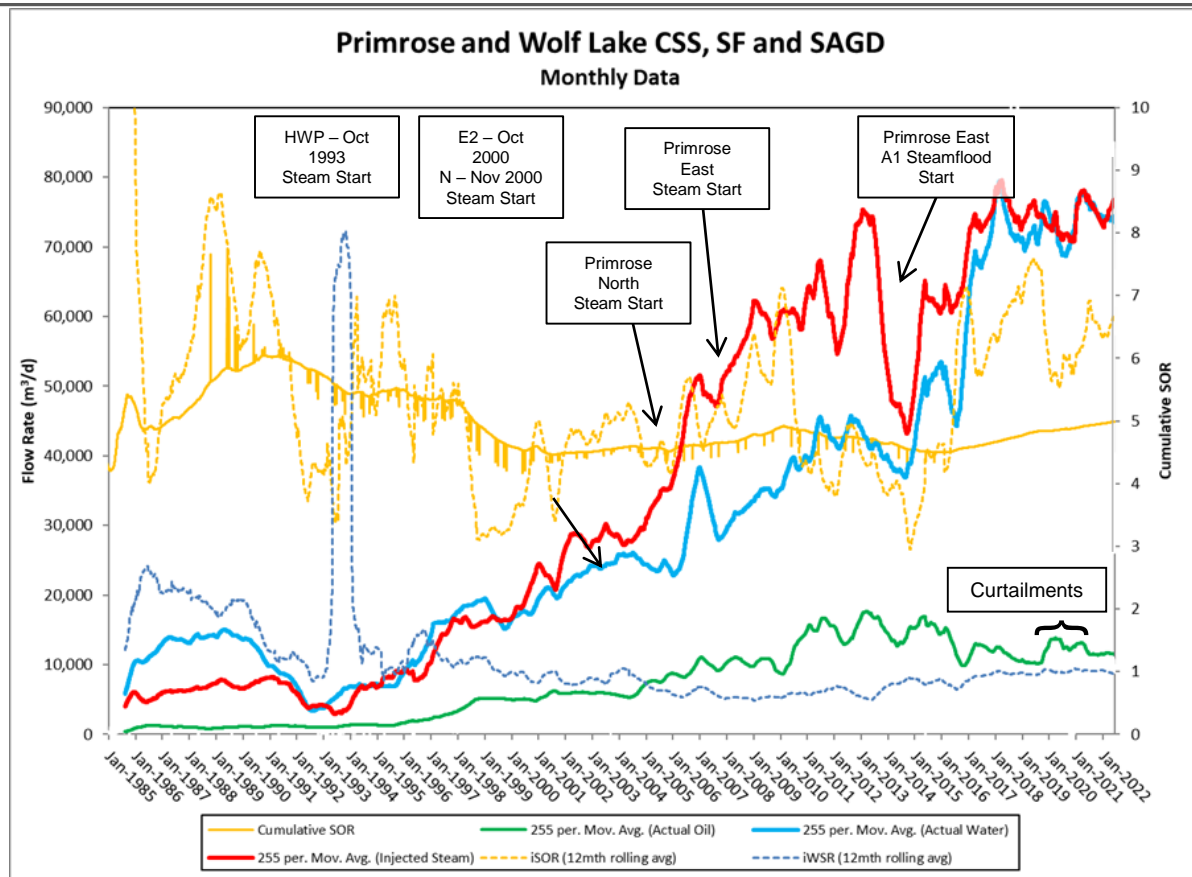
4.2, 2) Production Plot - Primrose



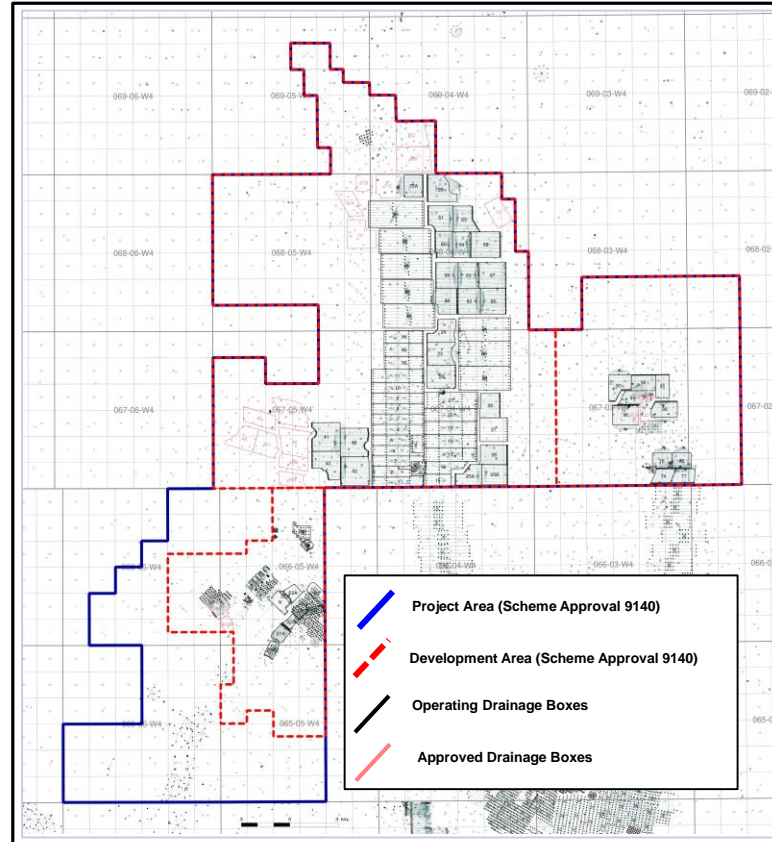
4.2, 2) Production Plot - Wolf Lake



4.2, 2) Production Plot - Primrose and Wolf Lake

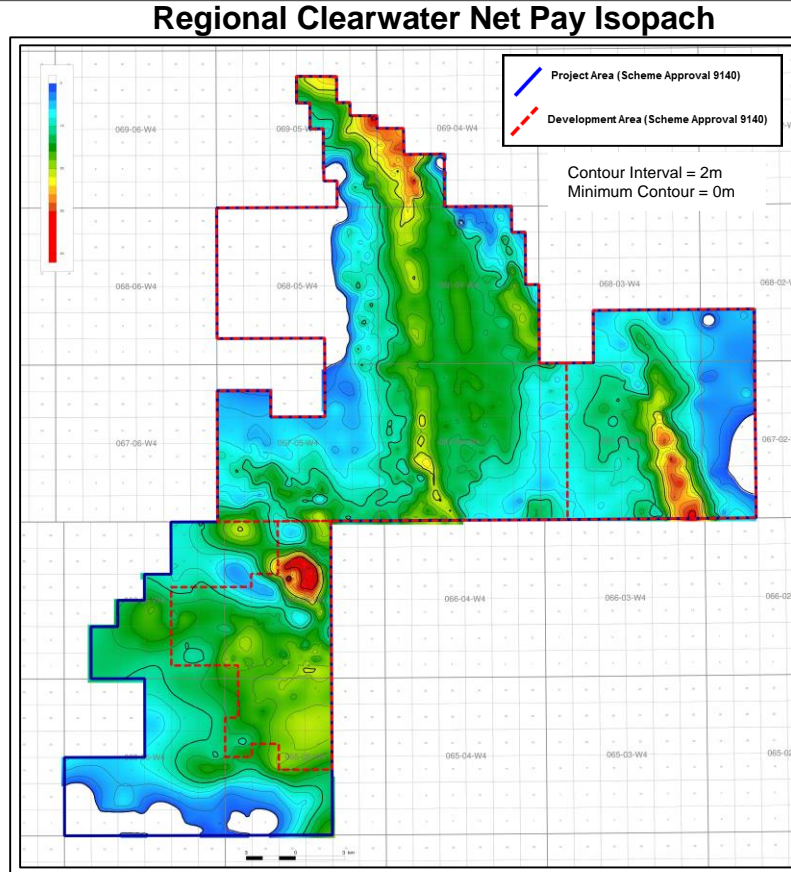


4.2, 3 a) Drilled and Approved Drainage Boxes



4.2, 3 b) Net Pay Isopach with Resource Cut-off

Clearwater



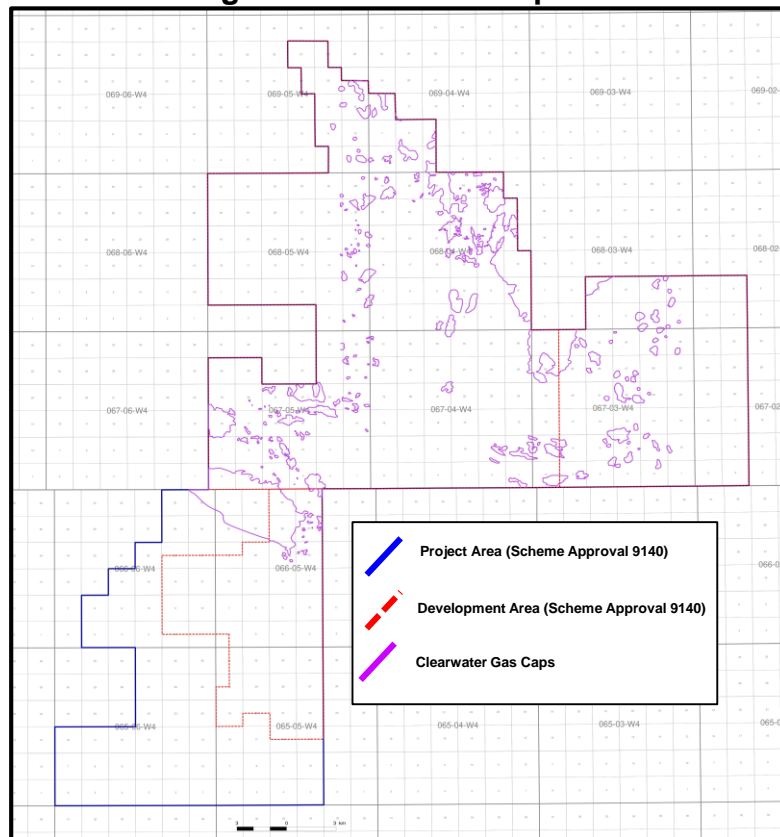
Primrose and Wolf Lake Pay Cut-offs:

- Bitumen weight (bit wt%) greater than 6%
- Continuous pay with less than 1 m shale baffles

4.2, 3 c) Major Gas and Water Intervals

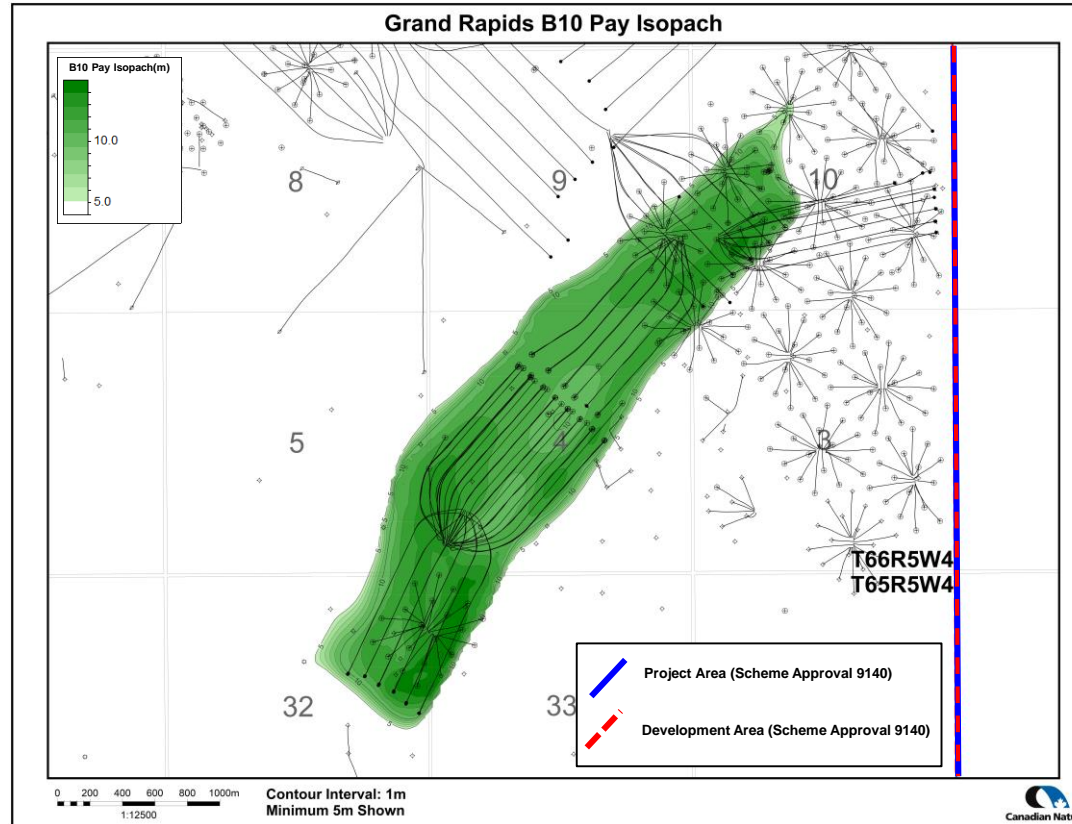
Clearwater Top Gas

Regional Clearwater Top Gas



4.2, 3 b) Net Pay Isopach with Resource Cut-off

Wolf Lake Grand Rapids B10

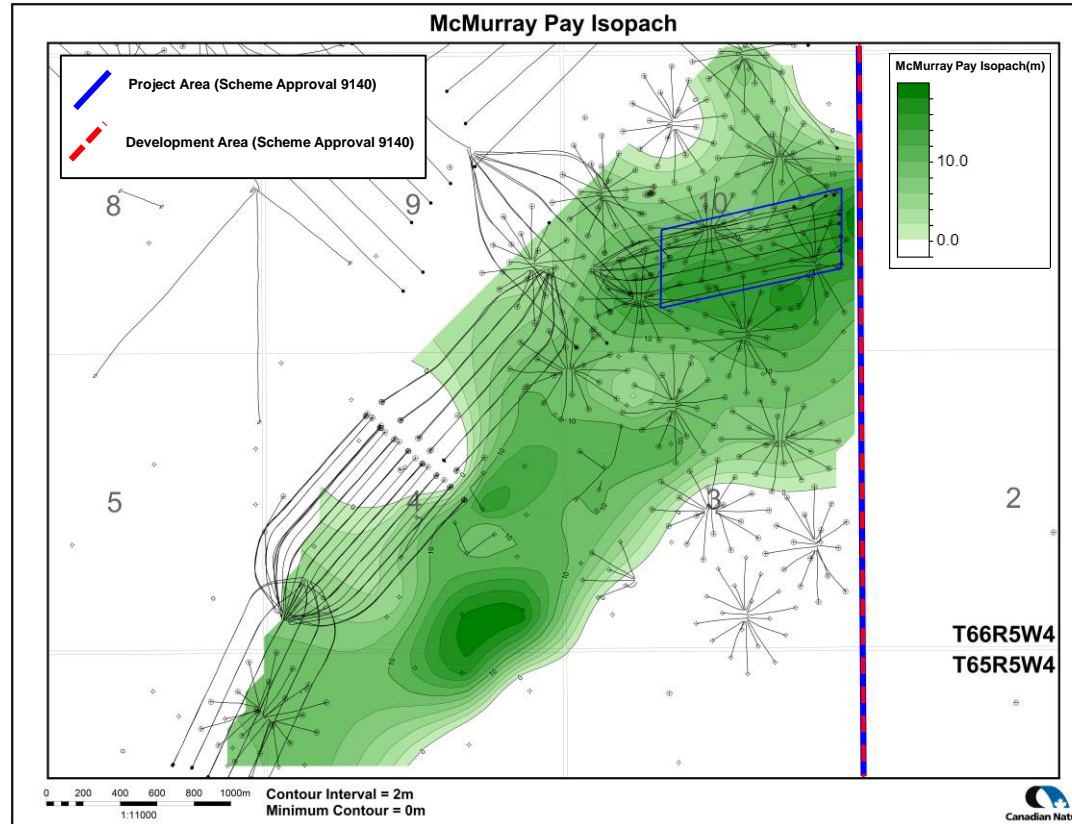


Grand Rapids B10

- Shoreface deposits in FA4 & FA5, with Bit wt% >8%
- Net pay >10m for development

4.2, 3 b) Net Pay Isopach with Resource Cut-off

Wolf Lake McMurray SAGD

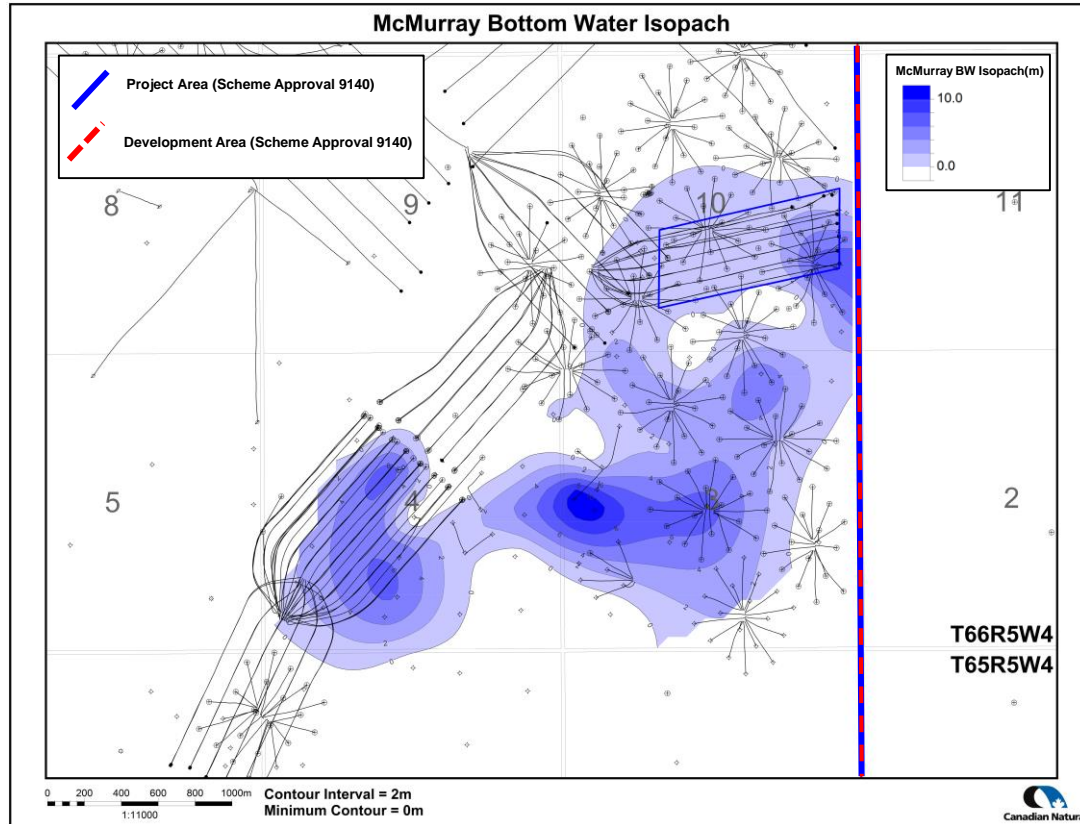


McMurray Pay Isopach

- Pay defined as continuous clean sand and breccia. IHS not included.
- Channel deposits with bit wt% >8%
- Net pay >10 m for development
- MC1 McMurray SAGD pad highlighted as blue polygon

4.2, 3 c) Major Gas and Water Intervals

Wolf Lake McMurray Bottom Water Isopach



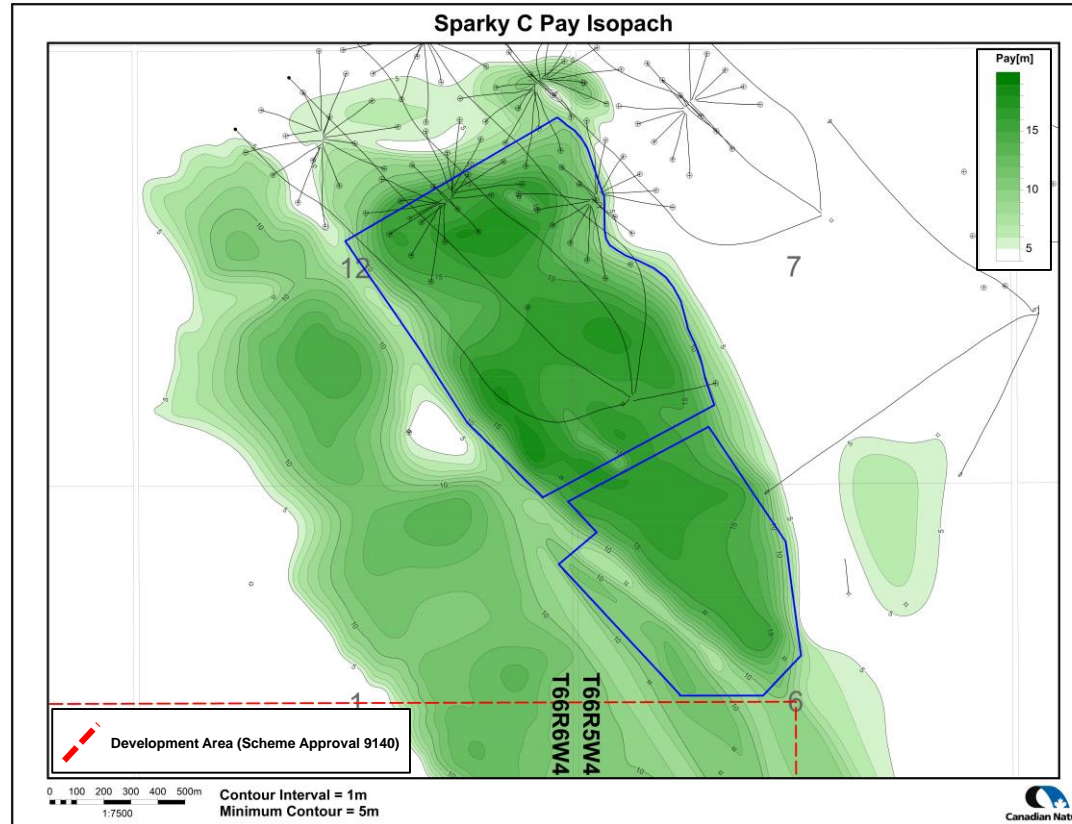
McMurray Bottom Water Isopach

- Cut-off is <6 ohmm
- Isopach represents a gross water interval
- MC1 McMurray SAGD pad highlighted as blue polygon

No major gas intervals in communication with pay

4.2, 3 b) Net Pay Isopach with Resource Cut-off

Wolf Lake Sparky "C" SAGD



Sparky C Pay Isopach

- Channel deposits with bit wt% >8%
- Isopach represents continuous clean sand
- Sparky C Drainage boxes SC07 and SC06 represented as blue polygons

Wolf Lake Sparky “C” Bottom Water and Transition Thickness

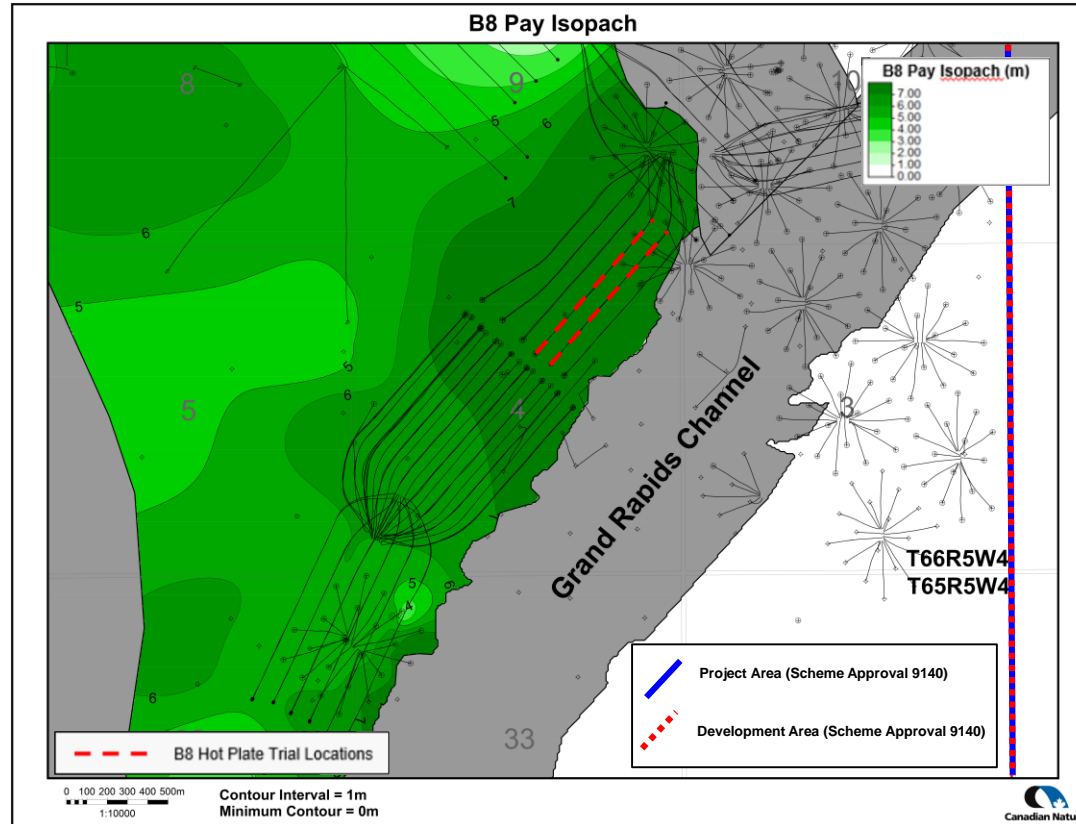


- Map represents combined thickness of bottom water and transition zone below Sparky C pay
- Bottom water defined as <2.5 bit wt % (4 ohmm)
- Transition defined as 2.5-8% bit wt % (6 ohmm)
- Sparky C Drainage boxes SC07 and SC06 represented as blue polygons

No major gas intervals in communication with pay

4.2, 3 b) Net Pay Isopach with Resource Cut-off

Wolf Lake B8

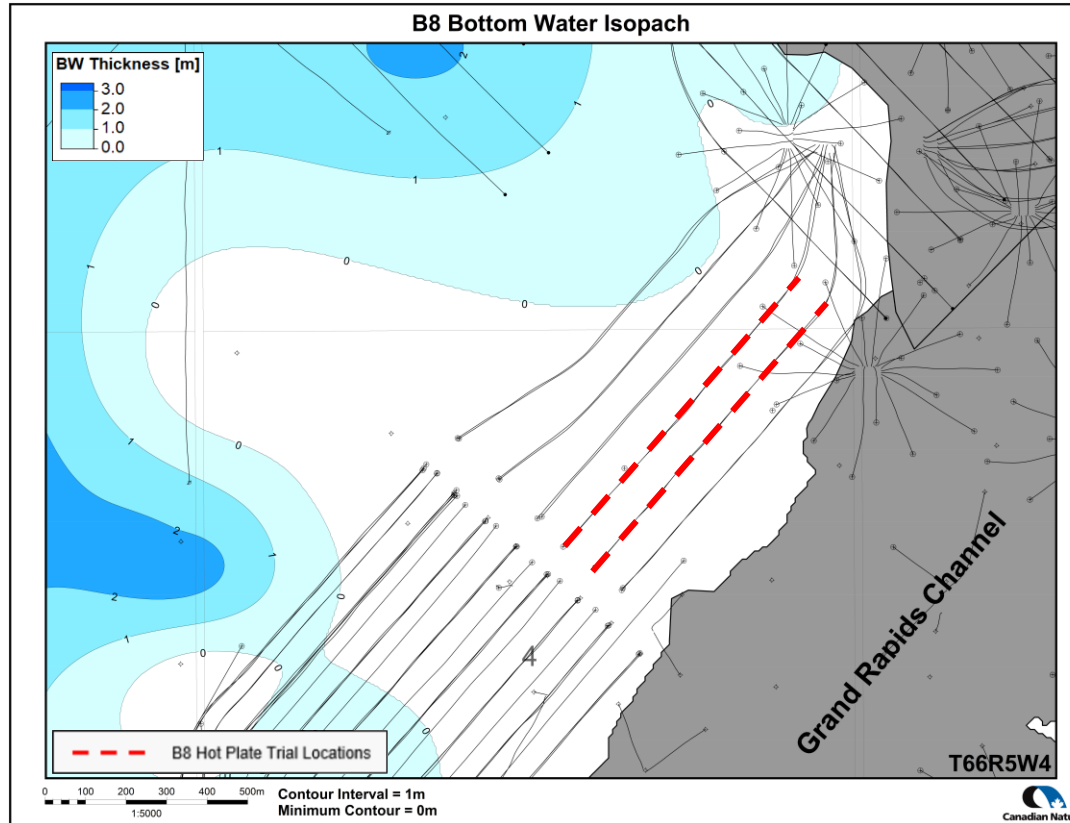


B8 Reservoir

- Pay represents sand deposits with bit wt % >8%

4.2, 3 c) Major Gas and Water Intervals

Wolf Lake B8 Bottom Water Isopach



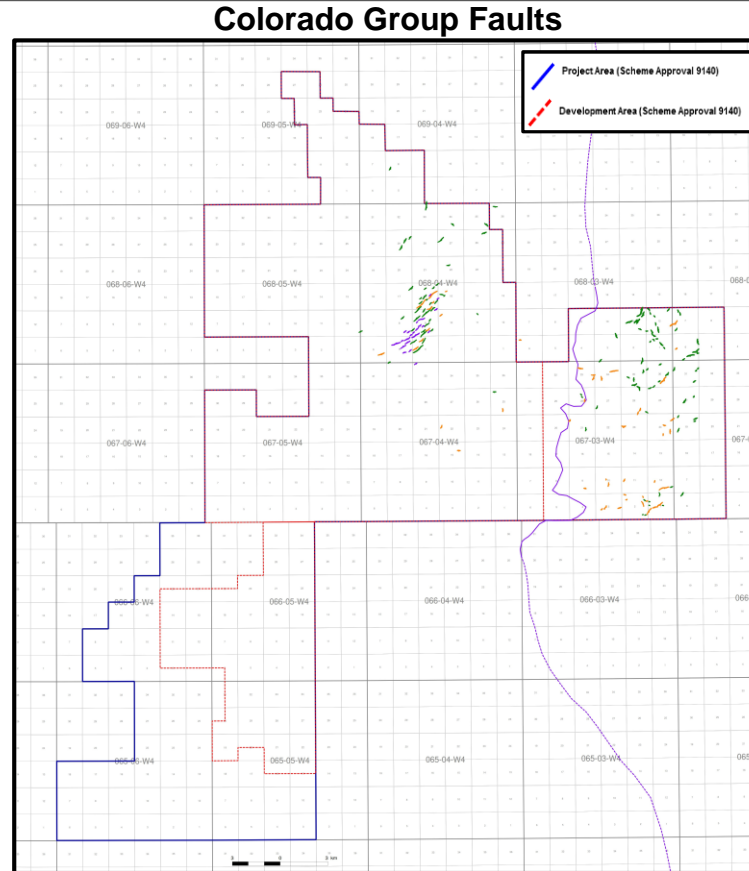
B8 Bottom Water

- Water-saturated sand defined as $S_w > 70\%$
- 1-3 m of bottom water occurs within the B8, but is not expected to be encountered in immediate development area





No major gas intervals in communication with pay

4.2, 3 d) Geomechanical Anomalies

Colorado Group Faults

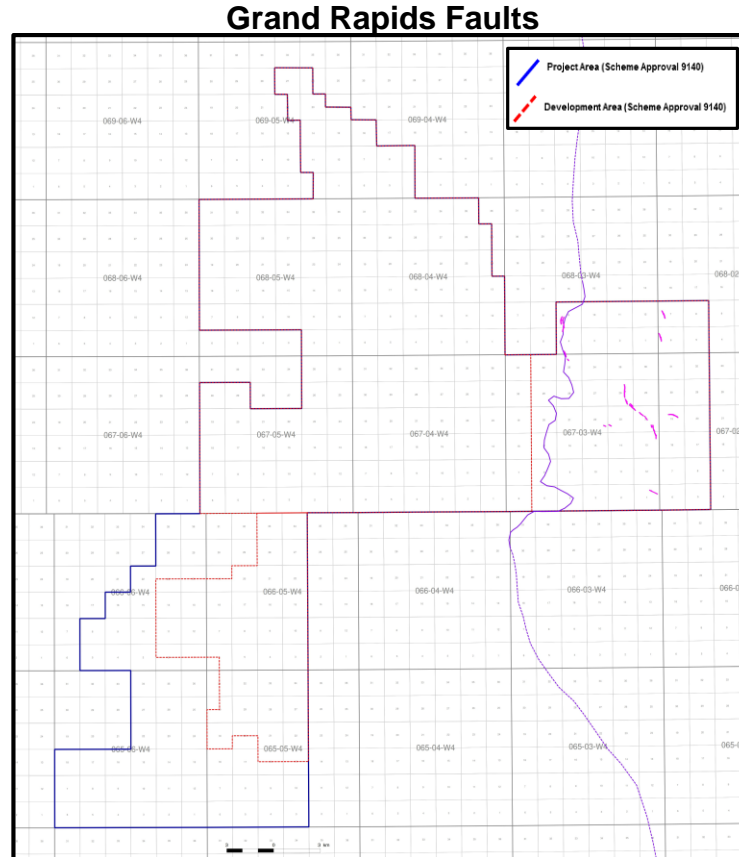


LEGEND



-  Faults terminating in Viking
-  Faults terminating in Westgate
-  Faults terminating in Second White Specks
-  Salt Dissolution Front

4.2, 3 d) Geomechanical Anomalies

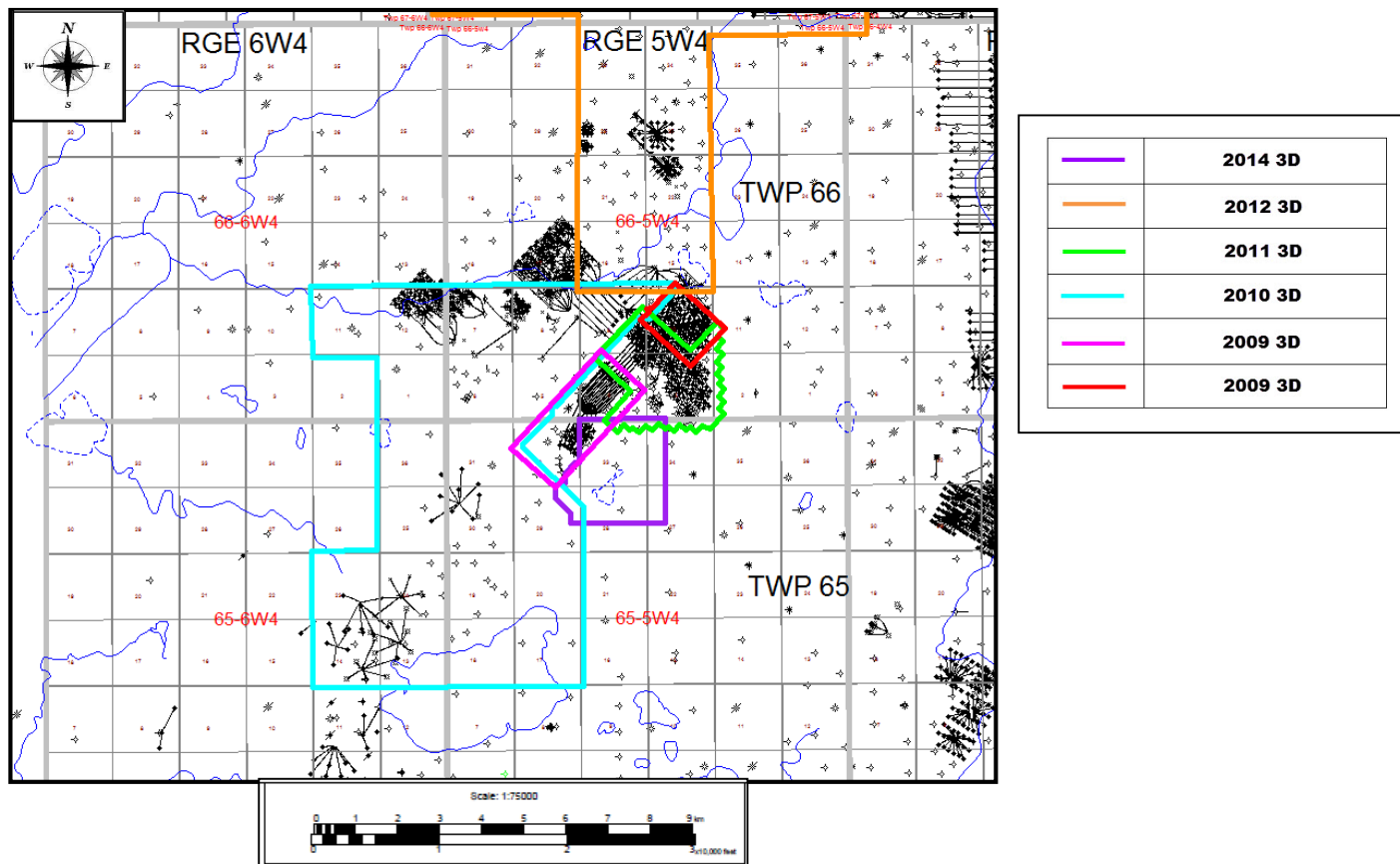
Grand Rapids Faults



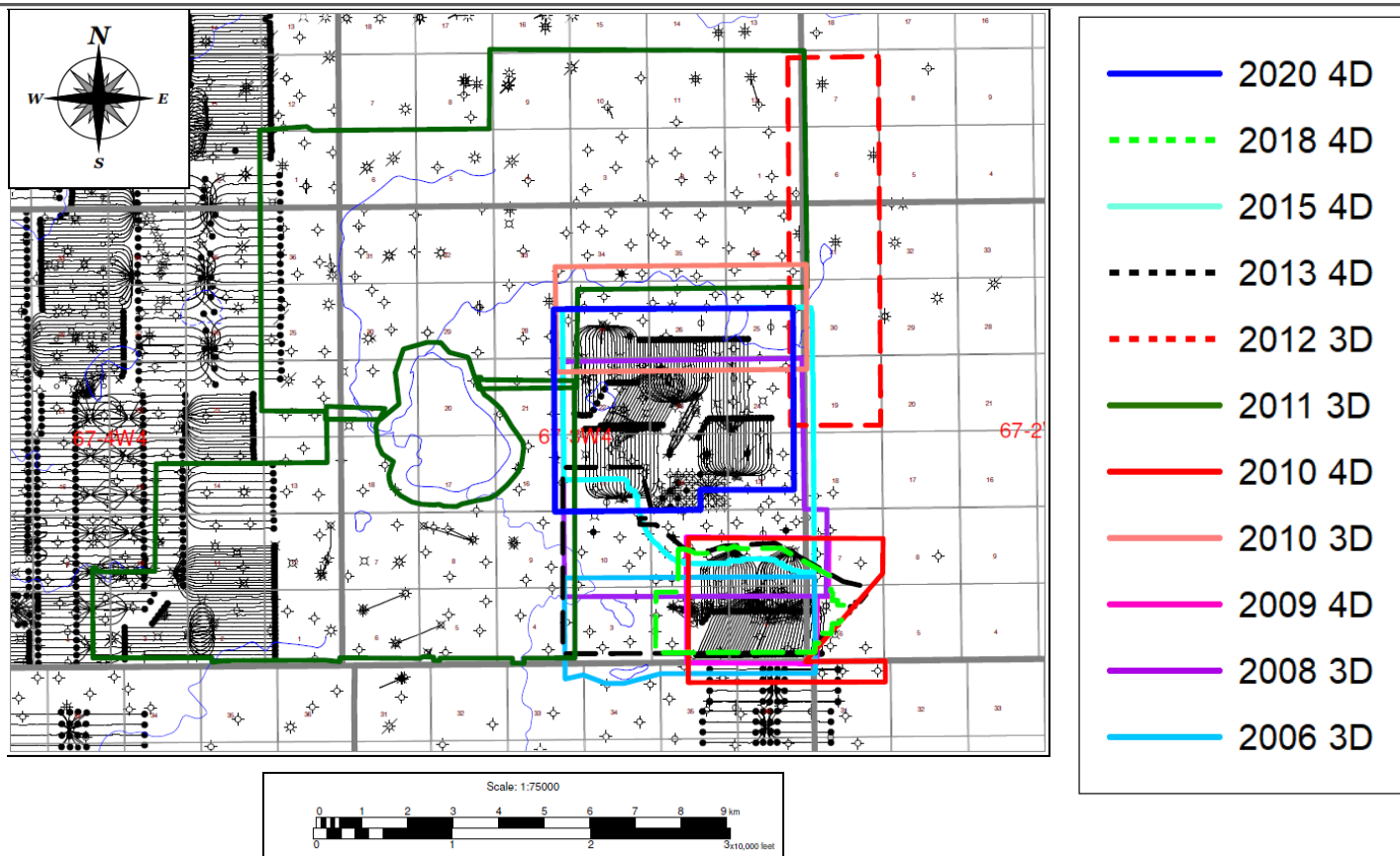
LEGEND

-  Salt Dissolution Front
-  Grand Rapids Faults

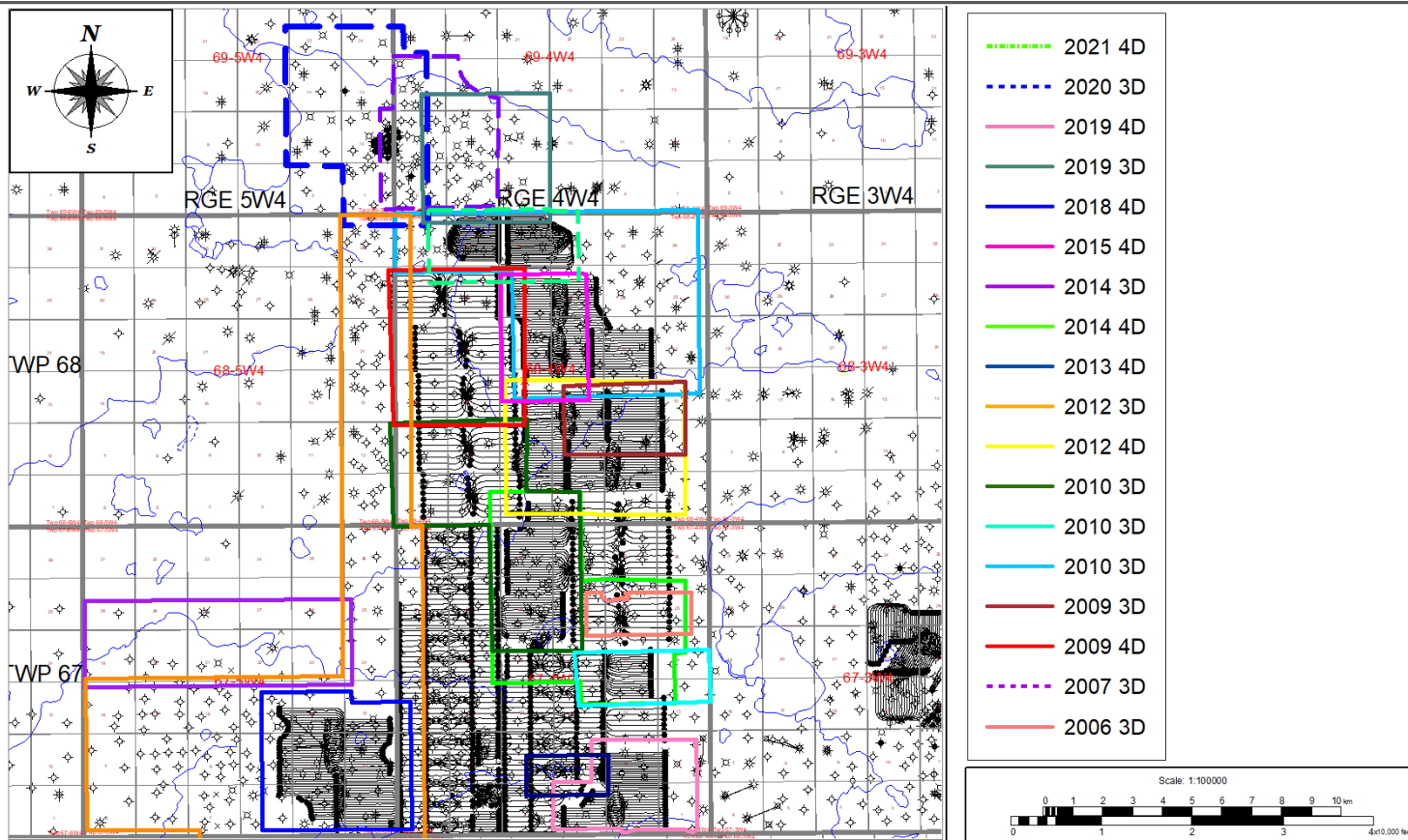
4.2, 3 e) Seismic - Wolf Lake (3D)



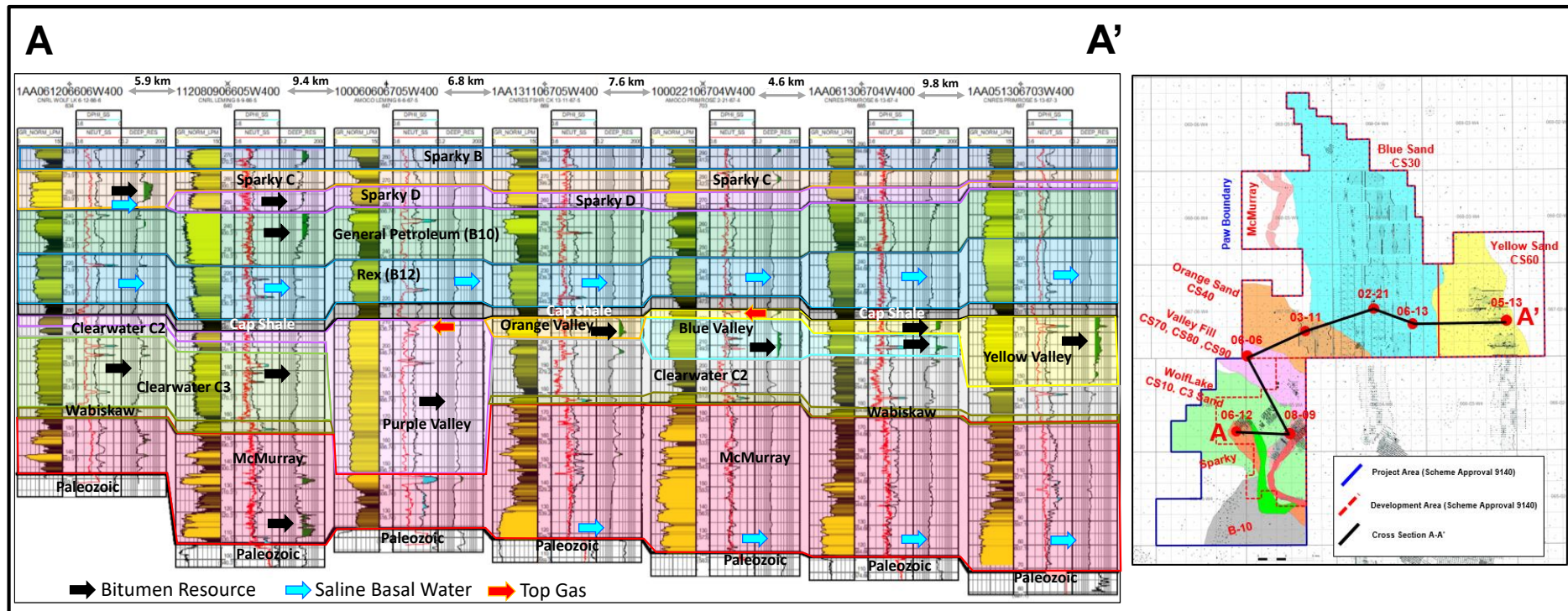
4.2, 3 e) Seismic - Primrose East (3D/4D)



4.2, 3 e) Seismic - Primrose North and South (3D/4D)



4.2, 4) Representative Stratigraphic Cross-Section



4.2, 5) Project, Development and Combined Active Well Pattern Volumetrics

Primrose & Wolf Lake	PBIP/OBIP (e ⁶ m ³)	Development Area	PBIP/OBIP (e ⁶ m ³)	Pay Thickness (m)	Porosity (dec)	Avg. So	Cum % Recovery
Project Area	1,519	Primrose	965	12	0.32	0.61	9%
Development Area	1,310	Wolf Lake	345	19	0.34	0.55	2%
Combined Active Well Pattern Area	434						

Reservoir Sand	Development Area	Avg So	Max Net Pay Thickness (m)	Avg. Porosity	Avg. Horizontal Permeability (mD)	Avg. Vertical Permeability (mD)	Avg. Viscosity (cP @ 15°C)
CLGP Orange	Primrose South	0.65	20	0.32	3,000	900	100,000
CLGP Yellow	Primrose East	0.63	29	0.32	3,000	900	70,000
CLGP Blue	Primrose South/North	0.62	23	0.32	3,000	900	100,000
CLGP Valley Fill	Wolf Lake	0.57	42	0.32	3,000	2,000	100,000
CLGP C3	Wolf Lake	0.50	17	0.33	2,000	200	100,000
GDPD B8	Wolf Lake	0.64	8	0.33	1,400	1,100	150,000 (@ 20°C)
GDPD B10	Wolf Lake	0.75	16	0.33	3,200	2,500	450,000 (@ 20°C)
GDPD Sparky C	Wolf Lake	0.84	16	0.33	5,300	4,200	180,000 (@ 20°C)
MCMR	Wolf Lake	0.73	19	0.34	6,000	5,000	600,000 (@ 20°C)

GDPD = Grand Rapids

CLGP = Clearwater Group

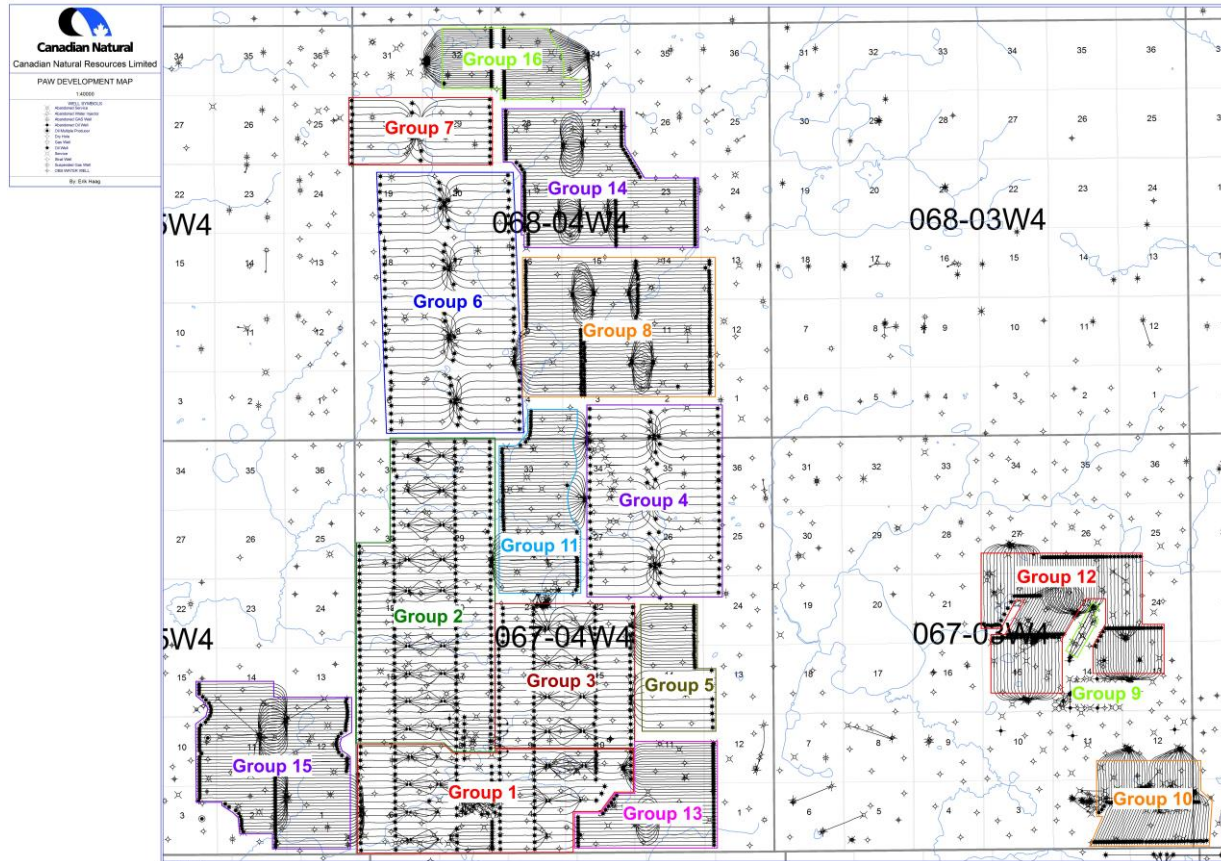
MCMR = McMurray

OBIP = Original Bitumen in Place

PBIP = Producing Bitumen In Place

Note at PAW: PBIP=OBIP

4.2, 6) Well Patterns Volumetrics – Primrose



4.2, 6) Well Patterns Volumetrics – Primrose (cont'd)

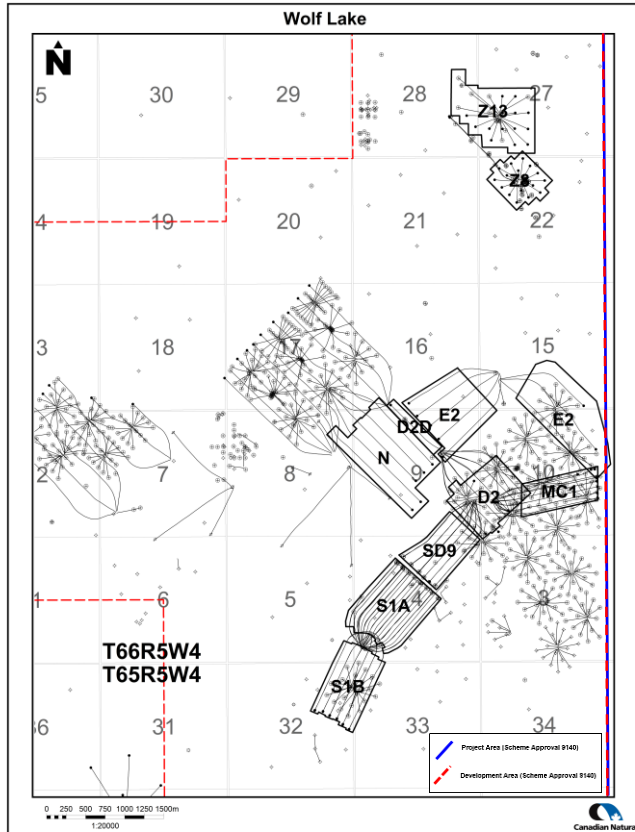
	PBIP/OBIP (e³m³)	Area (m²)	Pay Thickness (m)	Porosity (dec)	Avg. So	Cum Oil (e³m³)	Current Recovery	Potential Recovery Range
Group 1:								
1	5,780	2,048,000	14.1	0.32	0.62	1,433	25%	35-40%
2	3,934	1,536,000	12.6	0.32	0.64	658	17%	24-30%
3	3,901	1,792,000	10.5	0.32	0.65	763	20%	26-32%
P-MWSDD	2,495	768,000	17.5	0.32	0.58	574	23%	26-32%
4	3,533	1,664,000	10.1	0.32	0.66	572	16%	20-26%
15	4,139	1,280,000	15.4	0.32	0.66	521	13%	26-32%
16	3,377	1,280,000	13.1	0.32	0.63	427	13%	22-28%
16C	766	444,347	8.7	0.32	0.62	68	9%	15-21%
17	5,259	2,560,000	10.3	0.32	0.63	1,026	20%	30-35%
Subtotal	33,185					6,043	18%	
Group 2:								
5	3,221	1,536,000	9.9	0.32	0.66	600	19%	21-27%
CDD	998	896,000	6.0	0.32	0.58	185	19%	20-22%
D5	1,231	668,077	9.5	0.32	0.61	70	6%	16-22%
6	5,625	2,048,000	13.6	0.32	0.63	772	14%	20-26%
7	5,679	2,048,000	13.9	0.32	0.62	951	17%	23-29%
8	5,691	2,048,000	14.0	0.32	0.62	897	16%	21-27%
9	5,229	2,048,000	12.9	0.32	0.62	896	17%	23-29%
10	5,616	2,048,000	13.9	0.32	0.62	956	17%	28-34%
11	6,735	2,560,000	13.5	0.32	0.61	1,018	15%	26-32%
12	5,058	1,920,000	13.5	0.32	0.61	729	14%	22-28%
13	5,270	1,920,000	14.0	0.32	0.61	752	14%	20-26%
14	5,112	1,920,000	13.6	0.32	0.61	755	15%	21-27%
Subtotal	55,465					8,579	15%	
Group 3:								
18	5,772	2,560,000	11.2	0.32	0.63	1,127	20%	24-30%
19	5,592	2,560,000	10.9	0.32	0.62	1,236	22%	29-35%
20	5,723	2,560,000	11.1	0.32	0.63	1,137	20%	23-29%
21	7,055	3,072,000	11.2	0.32	0.64	1,145	16%	21-27%
Subtotal	24,142					4,645	19%	
Group 4:								
29	10,394	4,175,104	10.4	0.32	0.65	1,893	18%	20-26%
30	10,380	4,175,104	10.4	0.32	0.65	2,102	20%	21-27%
31	11,334	4,175,104	11.3	0.32	0.66	2,266	20%	21-27%
Subtotal	32,108					6,261	19%	

	PBIP/OBIP (e³m³)	Area (m²)	Pay Thickness (m)	Porosity (dec)	Avg. So	Cum Oil (e³m³)	Current Recovery	Potential Recovery Range
Group 5:								
27	4,628	2,726,635	8.3	0.32	0.64	970	21%	20-26%
28	2,028	900,000	11.0	0.32	0.64	919	45%	60%+
28B	2,083	900,000	11.3	0.32	0.64	729	35%	60%+
Subtotal	8,738					2,618	30%	
Group 6:								
51	14,533	4,817,343	15.1	0.32	0.63	1,660	11%	13-19%
52	14,247	4,817,343	14.6	0.32	0.63	1,469	10%	13-19%
53	14,800	4,817,343	15.8	0.32	0.61	1,384	9%	13-19%
54	15,585	4,817,343	15.7	0.32	0.64	1,928	12%	13-19%
Subtotal	59,165					6,441	11%	
Group 7:								
55	16,927	5,537,442	15.9	0.32	0.60	1,985	12%	13-19%
Subtotal	16,927					1,985	12%	
Group 8:								
58	5,441	2,064,800	14.0	0.32	0.59	1,791	33%	60%+
59	6,959	2,208,000	14.2	0.32	0.69	2,081	30%	60%+
62	6,343	2,230,006	13.2	0.32	0.68	1,736	27%	60%+
63	5,555	2,114,640	12.5	0.32	0.66	1,767	32%	60%+
66	6,708	2,582,960	12.0	0.32	0.67	1,823	27%	60%+
67	7,180	2,643,200	13.3	0.32	0.64	1,844	26%	60%+
Subtotal	38,186					11,043	29%	
Group 9:								
Burnt Lake	1,516	279,234	24.3	0.32	0.70	1,052	69%	60%+
Subtotal	1,516					1,052	69%	
Group 10:								
74	5,969	1,077,633	24.1	0.32	0.72	1,818	30%	60%+
75	7,138	1,234,303	25.1	0.32	0.72	2,971	42%	60%+
77	6,308	1,195,133	24.2	0.32	0.68	2,718	43%	60%+
78	6,584	1,200,000	25.3	0.32	0.68	2,119	32%	60%+
Subtotal	25,999					9,625	37%	
Group 11:								
22	6,736	2,531,371	13.2	0.32	0.63	1,374	20%	60%+
23	6,009	2,288,372	13.3	0.32	0.62	1,882	31%	60%+
24	5,204	1,926,224	13.4	0.32	0.63	1,444	28%	60%+
Subtotal	17,949					4,701	26%	

	PBIP/OBIP (e³m³)	Area (m²)	Pay Thickness (m)	Porosity (dec)	Avg. So	Cum Oil (e³m³)	Current Recovery	Potential Recovery Range
Group 12:								
90	5,235	1,542,997	17.0	0.32	0.63	1,753	33%	60%+
91	2,992	1,234,816	11.5	0.32	0.66	582	19%	60%+
92	6,185	1,485,956	19.0	0.32	0.69	1,265	20%	60%+
93	4,558	1,770,368	12.7	0.32	0.63	994	22%	60%+
94	4,355	1,200,403	16.7	0.32	0.68	402	9%	15-20%
95	4,752	1,969,724	11.9	0.32	0.64	1,166	25%	60%+
Subtotal	28,077					6,162	22%	
Group 13:								
25A	2,718	1,727,106	7.0	0.32	0.71	537	20%	60%+
25B	2,565	2,034,990	5.5	0.32	0.72	627	24%	60%+
26	3,077	2,083,550	7.0	0.32	0.66	852	28%	60%+
Subtotal	8,360					2,017	24%	
Group 14:								
60	5,052	1,720,000	14.2	0.32	0.65	1,316	26%	60%+
61	6,923	2,362,000	13.7	0.32	0.67	1,611	23%	60%+
64	5,262	1,856,000	12.9	0.32	0.69	1,463	28%	60%+
65	5,055	2,107,081	11.3	0.32	0.67	1,353	27%	60%+
68	7,220	2,894,006	10.5	0.32	0.74	1,918	27%	60%+
Subtotal	29,512					7,661	26%	
Group 15:								
40	4,106	3,008,352	6.8	0.32	0.63	981	24%	60%+
41	5,272	3,014,070	8.1	0.32	0.68	1,341	25%	60%+
42	6,761	3,130,144	10.2	0.32	0.66	1,224	18%	60%+
43	5,423	2,492,978	11.0	0.32	0.62	1,269	23%	60%+
Subtotal	21,561					4,816	22%	
Group 16:								
72A	5,329	1,649,715	17.4	0.32	0.58	1,035	19%	60%+
72B	6,595	2,456,054	12.2	0.32	0.69	1,347	20%	60%+
Subtotal	11,924					2,382	20%	
PR Total	412,815					86,029	21%	

OBIP = Original Bitumen in Place
PBIP = Producing Bitumen In Place
Note at PAW: PBIP=OBIP

4.2, 6) Well Patterns Volumetrics – Wolf Lake



	PBIP/OBIP (e ³ m ³)	Area (m ²)	Reservoir	Pay Thickness (m)	Porosity (dec)	Avg. So	Cum Oil (e3m3)	Current Recovery	Potential Recovery Range
WL:									
D2	1,358	352,881	GDPD	14.3	0.34	0.79	315	23%	25-75%
SD9	1,819	505,041	GDPD	13.4	0.34	0.79	1,107	61%	62-68%
S1A	2,327	647,488	GDPD	13.4	0.34	0.79	1,308	56%	57-62%
S1B	1,972	586,786	GDPD	12.5	0.34	0.79	625	32%	33-39%
MC1	1,929	589,214	MCMR	11.9	0.34	0.81	787	41%	42-58%
Z8	2,995	485,616	CLGP	38.4	0.32	0.50	827	28%	29-34%
Z13	3,947	639,394	CLGP	38.8	0.32	0.50	450	11%	12-37%
E2/N/D2D	4,890	1,918,183	CLGP	14.3	0.33	0.54	1,090	22%	23-26%
WL Total	21,237						6,510	31%	

OBIP = Original Bitumen in Place
 PBIP = Producing Bitumen In Place
 Note at PAW: PBIP=OBIP

GDPD = Grand Rapids
 CLGP = Clearwater Group
 MCMR = McMurray

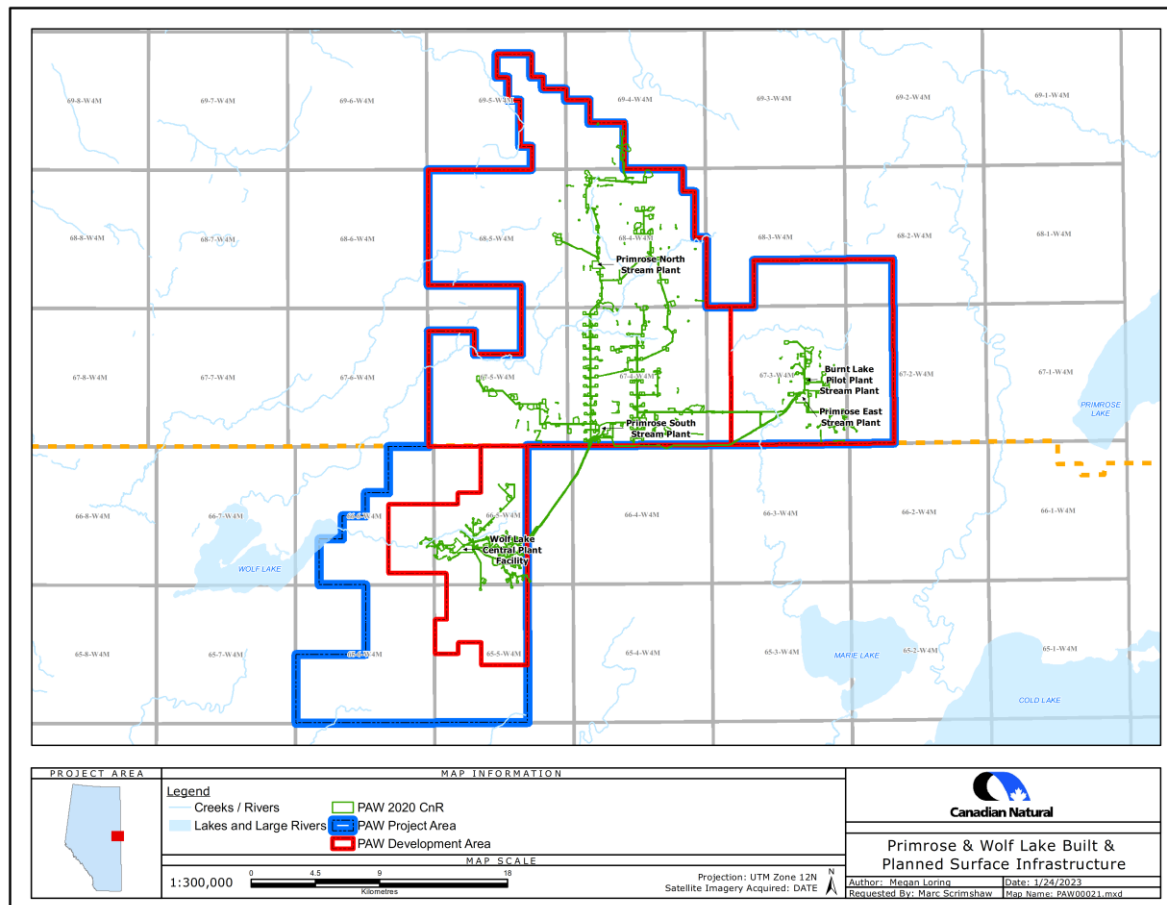
4.2, 7) Co-Injection

- There were no co-injection activities that took place associated with the Primrose and Wolf Lake Project in 2021.



4.3 Surface

4.3, 8 a) Built and Planned Surface Infrastructure Map



4.3, 8 b) Modifications to the Central Processing Facility

- Summary of modifications:
 - Sulphur removal unit (SRU) was added to Primrose South Plant to meet ID 2001-3 guidelines
 - Commissioning of SRU was conducted in Q4 2021 for the commencement of operations on January 1, 2022

4.3, 8 c) Annual Operational Bitumen and Steam Rates

	Design (m ³ /d)	Actual (m ³ /d)
PAW Bitumen	23,000	11,556
PAW Steam Total	90,800	70,980
Primrose South	32,500	23,557
Primrose North	22,400	21,819
Primrose East	26,400	22,049
Wolf Lake	9,000	3,555
Burnt Lake	500	0



4.4, 9) Suspension and Abandonment Activity

- No thermal in situ wells were suspended or abandoned in 2021.
- No well patterns were suspended or abandoned in 2021.
- No well patterns are on active blow-down or ramp down in 2021.

4.4, 10 a) Regulatory Approvals

Application Description	Application Number	Submission Date	Approval Date
Sulphur Management Compliance Assurance Plan	1932191	02/09/2021	03/31/2021
Phases 90-95 Modified Steaming, Risk Assessment, and Mitigation	1932795	04/13/2021	05/04/2021
Primrose North Temporary SO2 Application (EPEA Approval 11115-04-05)	1933137	05/27/2021	07/06/2021
South Sulphur Removal Unit Installation (EPEA Approval 11115-04-06)	1933468	06/24/2021	09/07/2021
Wolf lake Central Processing Facility Sulphur Management (EPEA Approval 11115-04-07)	1934606	10/18/2021	12/15/2021

4.4, 10 a) Regulatory Approvals (cont'd)

Application Description	Application Number	Submission Date	Approval Date
Amendment to FTS Prevention and Mitigation Monitoring Clause	1934623	10/19/2021	02/10/2022
Wolf lake CPF Unit 15 Reverse Osmosis Project Approval	1934961	11/23/2021	01/13/2022
Wolf Lake Pads SD9, S1A and S1B Non-Condensable Gas Co-injection	1935318	12/21/2021	05/26/2022

4.4, 10 b) Events with Potential to Impact to Scheme Performance

- Scheme Performance:
 - Maturing CSS, injection strategy
 - Increasing temperature & sulphur production as development matures
 - Modifying steam injection strategies to increase understanding of reservoir and maximize fluid containment
 - Maturing Steamflood recovery process
 - Increasing emulsion temperature
 - Increasing sulphur handling requirements
 - 4 re-drills executed in 2021

4.4, 10 c) Primrose CSS & SF Learnings

- Cyclic Steam Stimulation
 - CSS continues to be a highly effective initial recovery method in the Clearwater reservoir (enhances vertical permeability)
 - Conditions reservoir for follow-up recovery processes like steamflood
 - Skin damage mitigated through repeated acid stimulations to maximize recovery
 - Optimizing acid blends and deployment to reduce plant upsets and improve effectiveness
- Steamflood
 - Steamflood performance primarily driven by conformance, net pay, well placement, skin damage and artificial lift capacity
 - Skin effects also impact steamflood operations mitigated with acid stimulations and/or perforations
 - Skin restricts both gross production and steam rates, continued and repeat stimulations deemed necessary
 - Continuing to understand and improve longitudinal inter-well conformance remains a primary objective for 2022
 - Continued DTS implementation leads to enhanced understanding of conformance, further guiding well servicing interventions
 - Re-drills effective mitigation to broken liners and accessing full drainage area
 - Steam-oil-ratio optimization continuing:
 - Mitigation of adverse conformance impacts through steam management
 - Minimization of pressure differentials within well patterns where appropriate
 - Ongoing producer/injector diagnostics and associated interventions
 - Continued scoping of sulphur handling solutions to address increasing forecasted sulphur rates from maturing steamfloods

4.4, 10 d) 2021 Regulatory and Operational Changes

- There were no pilots or major technical innovations during 2021.

4.4, 11) Compliance History

- Reportable Incidents - Releases:
 - 7 total release incidents with a volume of 5.7 m³
- All releases were recovered and associated remediation action were taken if required.
 - February 13, 2021 - Ref. # 376039
 - March 9, 2021- Ref. # 376803
 - July 26, 2021- Ref. # 382137
 - July 30, 2021- Ref. # 381933
 - July 30, 2021- Ref. # 381934
 - November 17, 2021- Ref. # 385563
 - November 29, 2021- Ref. # 385956

4.4, 11) Compliance History (cont'd)

- Voluntary Self Disclosures
 - No Voluntary Self Disclosures during the 2021 reporting period

4.4, 11) Compliance History (cont'd)

- Contraventions – Air Related
 - March 17, 2021: Exceeded daily SO₂ limit (2.0 t/day) at Primrose North Plant at 2.042 t/day due to procedural error (Ref. # 376803).
- Contraventions – Water Related
 - January 20, 2021: Flare knock out fluids entered an Industrial Water Source Well as a result of a failed pump and check valves (Ref. # 375401).
 - June 1, 2021: The pressure transducer at an Industrial Water Source Well malfunctioned during download of the May 2021 monthly pressure data. The faulty transducer was then sent to the supplier; however, the data could not be retrieved. The faulty transducer was replaced at that time with a new transducer (June 1) (Ref. # 387200).

4.4, 12 a) Future Plans: Upcoming 12 Month Activity

- Pending favorable economic conditions, the following potential future plans are under evaluation for 2022:
 - Primrose North 160-161 drills
 - 51 wells Q1-Q3 2022
 - Primrose East re-drills
 - 4-8 in Q3-2022
 - Wolf Lake SC07
 - 7 Sparky C well pairs drilled Q1-Q2 2022, steam-in August 2022
 - Primrose Delineation
 - 8 strat wells Q1 2022
 - 3 observation wells Q1 2022

[illegible]

4.4, 12 c) Future Plans: Upcoming 12 Month Applications

Application Description	Application Number	Submission Date	Approval Date
Sparky C Pad Warm Hydrocarbon Agent-Assisted Start-up Process Application	1935579	01/24/2022	05/19/2022
Primrose and Wolf Lake Pads MC1, SD9, S1A & S1B NCG Co-Injection Measurement Application	1937682	05/10/2022	06/01/2022
Primrose and Wolf Lake 72A FEI Application	1938237	06/06/2022	06/06/2022
Wolf Lake MC2 Development Application		Q3 2022	

- Note that the Primrose portion of the PAW Project received Lifecycle Approval on May 28, 2021 and will follow the Lifecycle process for Applications and Reporting from Q3 2021.

Scheme Approval 9140III Clause 8 Paragraph 3

Directive 054 Slides

- Non-saline, saline, produced and steam injection volumes

Primrose and Wolf Lake - 2021 Monthly Average Water and Steam Volumes

Month	Surface Water ¹	Non-Saline Groundwater ²	Saline Groundwater ³	Produced Water	Steam Injection	Actual Water Disposal	Water Disposal Limit ⁴
	m ³ /d	m ³ /d	m ³ /d	m ³ /d	m ³ /d	%	%
January	68	2682	7480	79387	80770	13.2	25.2
February	22	2846	8173	75594	83079	7.6	25.2
March	61	3048	6263	77021	82211	8.6	24.9
April	17	2671	8168	81901	79110	16.9	25.2
May	191	2893	7094	69576	67558	15.4	25.1
June	901	2718	7875	71766	73887	13.5	25.2
July	87	1988	7940	76018	70781	19.1	25.4
August	163	2016	9912	76653	75479	16.7	25.6
September	57	1945	7719	68869	76081	6.5	25.4
October	197	2192	10046	73661	76749	17.4	25.6
November	137	2120	9722	76776	76938	17.9	25.6
December	410	2242	7884	76423	74978	16.4	25.3
Average	193	2,444	8,188	75,307	76,414	14.2	25.3

Notes:

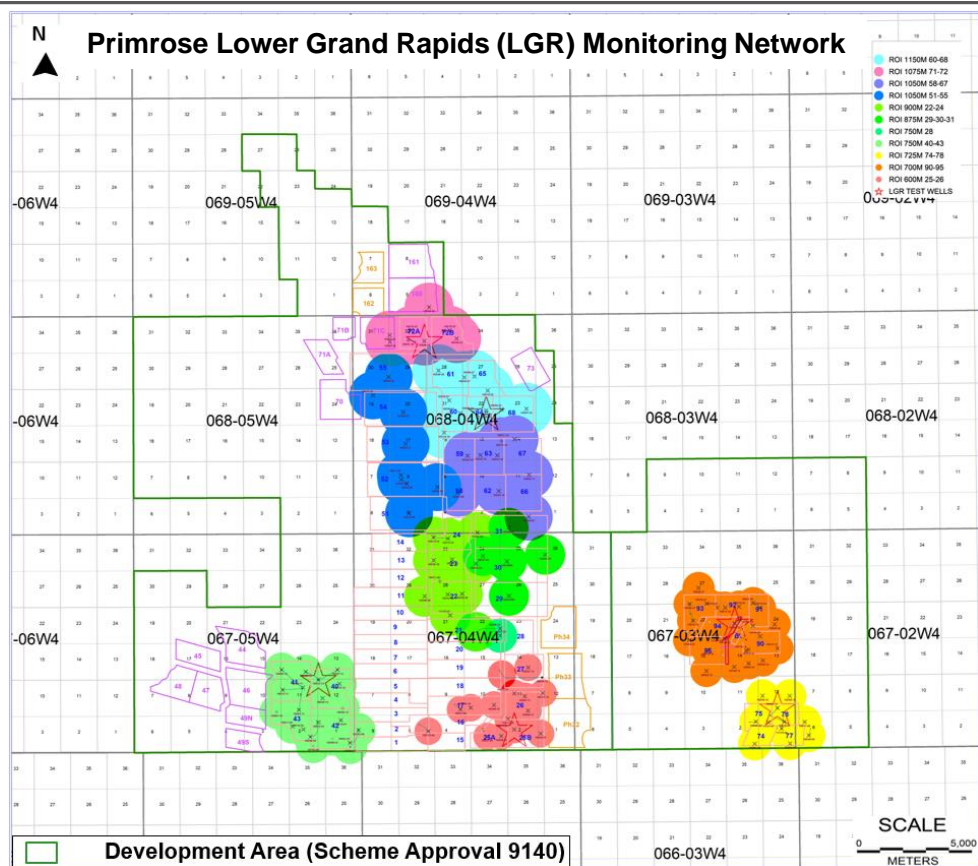
1. Surface water comprised of diversion from Primrose East E-Pond and surface water runoff.
2. Non-saline groundwater from Wolf Lake water source wells
3. Saline groundwater from McMurray Formation aquifer
4. Dir. 81 Water Disposal Limit as per Approval No. 9140MM

Approval 9140III OSCA Annual Report: Lifecycle Update

- No Lifecycle Developments were conducted in 2021
 - No new subsurface information is available related to approved lifecycle activities such as drainage area delineation and evaluation, well design, and development activity.
 - No reportable Lower Grand Rapids water sand observation well network changes outside of previously approved development projects.

Approval 9140III OSCA Annual Report: Lifecycle Update

- As outlined in Scheme Approval 9140III Clause 38(7) all CSS and steaming operations within 1,000 m of an FTS location must have complete LGR basal water sands pressure monitoring coverage
 - No new LGR observation wells drilled in 2021



Approval 9140III OSCA Annual Report: Lower Grand Rapids Water Sand Monitoring

- Summary of Grand Rapid Monitoring wells that had maintenance repair work completed within 2021.

Well Name	UWI	Workover/Repair Comments	Date
CNRL RE OBS FISHER 8-33-68-4	100/08-33-068-04W4/00	Replaced SRO	1/22/2021
CNRL OBS FSHR CK 8-32-68-4	100/08-32-068-04W4/00	Replaced SRO	2/11/2021
CNRL 3B55 PRIMROSE 8-30-68-4	100/08-30-068-04W4/00	Replaced SRO	5/14/2021
CNRL OBS MOORE 11-1-67-3	111/11-01-067-03W4/00	Replaced SRO	8/28/2021
3A9-2 OB2 MOORE 9-2-67-3	109/09-02-067-03W4/00	Replaced SRO	8/28/2021
CNRL 5A74B OB5 MOORE 9-1-67-3	110/09-01-067-03W4/00	Replaced SRO	10/12/2021

Special Note Regarding Forward-Looking Statements

Certain statements relating to Canadian Natural Resources Limited (the "Company") in this document or documents incorporated herein by reference constitute forward-looking statements or information (collectively referred to herein as "forward-looking statements") within the meaning of applicable securities legislation. Forward-looking statements can be identified by the words "believe", "anticipate", "expect", "plan", "estimate", "target", "continue", "could", "intend", "may", "potential", "predict", "should", "will", "objective", "project", "forecast", "goal", "guidance", "outlook", "effort", "seeks", "schedule", "proposed", "aspiration" or expressions of a similar nature suggesting future outcome or statements regarding an outlook. Disclosure related to expected future commodity pricing, forecast or anticipated production volumes, royalties, production expenses, capital expenditures, income tax expenses and other targets provided throughout this presentation and the Company's Management's Discussion and Analysis ("MD&A") of the financial condition and results of operations of the Company, constitute forward-looking statements. Disclosure of plans relating to and expected results of existing and future developments, including, without limitation, those in relation to the Company's assets at Horizon Oil Sands ("Horizon"), the Athabasca Oil Sands Project ("AOSP"), Primrose thermal oil projects, the Pelican Lake water and polymer flood projects, the Kirby Thermal Oil Sands Project, the Jackfish Thermal Oil Sands Project, the North West Redwater bitumen upgrader and refinery, construction by third parties of new, or expansion of existing, pipeline capacity or other means of transportation of bitumen, crude oil, natural gas, natural gas liquids ("NGLs") or synthetic crude oil ("SCO") that the Company may be reliant upon to transport its products to market, the development and deployment of technology and technological innovations, and the financial capacity of the Company to complete its growth projects and responsibly and sustainably grow in the long term also constitute forward-looking statements. These forward-looking statements are based on annual budgets and multi-year forecasts, and are reviewed and revised throughout the year as necessary in the context of targeted financial ratios, project returns, product pricing expectations and balance in project risk and time horizons. These statements are not guarantees of future performance and are subject to certain risks. The reader should not place undue reliance on these forward-looking statements as there can be no assurances that the plans, initiatives or expectations upon which they are based will occur.

In addition, statements relating to "reserves" are deemed to be forward-looking statements as they involve the implied assessment based on certain estimates and assumptions that the reserves described can be profitably produced in the future. There are numerous uncertainties inherent in estimating quantities of proved and proved plus probable crude oil, natural gas and NGLs reserves and in projecting future rates of production and the timing of development expenditures. The total amount or timing of actual future production may vary significantly from reserves and production estimates.

The forward-looking statements are based on current expectations, estimates and projections about the Company and the industry in which the Company operates, which speak only as of the earlier of the date such statements were made or as of the date of the report or document in which they are contained, and are subject to known and unknown risks and uncertainties that could cause the actual results, performance or achievements of the Company to be materially different from any future results, performance or achievements expressed or implied by such forward-looking statements. Such risks and uncertainties include, among others: general economic and business conditions (including as a result of effects of the novel coronavirus ("COVID-19") pandemic and the actions of the Organization of the Petroleum Exporting Countries Plus ("OPEC+") which may impact, among other things, demand and supply for and market prices of the Company's products, and the availability and cost of resources required by the Company's operations; volatility of and assumptions regarding crude oil and natural gas and NGLs prices including due to actions of OPEC+ taken in response to COVID-19 or otherwise; fluctuations in currency and interest rates; assumptions on which the Company's current targets are based; economic conditions in the countries and regions in which the Company conducts business; political uncertainty, including actions of or against terrorists, insurgent groups or other conflict including conflict between states; industry capacity; ability of the Company to implement its business strategy, including exploration and development activities; impact of competition; the Company's defense of lawsuits; availability and cost of seismic, drilling and other equipment; ability of the Company and its subsidiaries to complete capital programs; the Company's and its subsidiaries' ability to secure adequate transportation for its products; unexpected disruptions or delays in the mining, extracting or upgrading of the Company's bitumen products; potential delays or changes in plans with respect to exploration or development projects or capital expenditures; ability of the Company to attract the necessary labour required to build, maintain, and operate its thermal and oil sands mining projects; operating hazards and other difficulties inherent in the exploration for and production and sale of crude oil and natural gas and in mining, extracting or upgrading the Company's bitumen products; availability and cost of financing; the Company's and its subsidiaries' success of exploration and development activities and its ability to replace and expand crude oil and natural gas reserves; the Company's ability to meet its targeted production levels; timing and success of integrating the business and operations of acquired companies and assets; production levels; imprecision of reserves estimates and estimates of recoverable quantities of crude oil, natural gas and NGLs not currently classified as proved; actions by governmental authorities (including production curtailments mandated by the Government of Alberta); government regulations and the expenditures required to comply with them (especially safety and environmental laws and regulations and the impact of climate change initiatives on capital expenditures and production expenses); asset retirement obligations; the sufficiency of the Company's liquidity to support its growth strategy and to sustain its operations in the short, medium, and long term; the strength of the Company's balance sheet; the flexibility of the Company's capital structure; the adequacy of the Company's provision for taxes; the continued availability of the Canada Emergency Wage Subsidy ("CEWS") or other subsidies; and other circumstances affecting revenues and expenses.

The Company's operations have been, and in the future may be, affected by political developments and by national, federal, provincial, state and local laws and regulations such as restrictions on production, changes in taxes, royalties and other amounts payable to governments or governmental agencies, price or gathering rate controls and environmental protection regulations. Should one or more of these risks or uncertainties materialize, or should any of the Company's assumptions prove incorrect, actual results may vary in material respects from those projected in the forward-looking statements. The impact of any one factor on a particular forward-looking statement is not determinable with certainty as such factors are dependent upon other factors, and the Company's course of action would depend upon its assessment of the future considering all information then available.

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