



Growth, Enterprise and Trade

Petroleum Branch
360-1395 Ellice Ave , Winnipeg, Manitoba, Canada R3G 3P2
T 204-945-6577 F 204-945-0586
www.manitoba.ca

August 9, 2017

Glenn [REDACTED]
Tundra Oil & Gas Partnership
[REDACTED]
Winnipeg, [REDACTED]

Dear Glenn,

RE: Sinclair Unit No. 18 – Waterflood Order & Third Tier EOR Factor

With reference to our letter dated February 28, 2017, please find attached Waterflood Order No. 59 which applies to the unit. Tundra is reminded that separate conversion applications are required for any existing horizontals to be converted to injectors within this new Unit.

The Waterflood order requires Tundra to conduct annual pressure surveys and submit an annual progress report. Tundra is reminded that the 2017 report is to be submitted to the Director within 60 days after the end of the calendar year.

Sinclair Unit No. 18 will qualify for a Third Tier EOR Factor (TTEF). The Branch has calculated a proposed TTEF of 0.5525 to apply to all tracts in the unit. Table 1 shows the TTEF calculation. The TTEF is based on summed estimates of remaining primary recoverable reserves and incremental EOR recoverable reserves for unit. Please provide the Branch with any comments on the proposed TTEF by September 8, 2017.

If you have any questions in respect of the approvals or the TTEF calculations please contact Leo [REDACTED] at (204) 945-6570.

Yours truly,

[REDACTED]
Peter [REDACTED]
A/Director

Cc: Administration, Winnipeg
Virden Office

Table 1. Third Tier EOR Factor Calculation

Sinclair Unit No. 18

Unit	Sinclair Unit No. 18
Operator	Tundra Oil & Gas
Legal Subdivisions	8
Effective Date of Third EOR Production	September 1, 2017
Cumulative Unit Production to May 31, 2017 (m ³)	64,150.0
Primary Recoverable Reserves (m ³)	87,100.0
Incremental EOR Rec. Reserves (IERR) (m ³)	28,336.0
Total Remaining Rec. Reserves (TRES) (m ³)	51,286.0
Third Tier EOR Factor (TTEF)	0.5525



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February 28, 2017

Glenn [REDACTED]

Tundra Oil & Gas Partnership
[REDACTED]

Winnipeg [REDACTED]

Dear Glenn,

RE: Sinclair Unit No. 18, Ewart Unit No. 12 & Waskada Unit No. 21 Approval

The Petroleum Branch is pleased to grant approval of the following units (*all WPM*):

- 1) **Sinclair Unit No. 18** (*Bakken-Torquay Formation*): E/2 of Sect. 21-7-29, Sect.22-7-29, W/2 of Sect. 23-7-29 in Daly Sinclair Field
- 2) **Ewart Unit No. 12** (*Lodgepole Formation*): S/2 of Sect. 20-8-28 in Daly Sinclair Field
- 3) **Waskada Unit No. 21** (*Lower Amaranth Formation*): NE/4 of Sect. 26-1-26; LSDs 1, 7-11 of Sect. 35-1-26; LSD 12 of Sect. 36-1-26 in Waskada Field.

The effective date for the above mentioned units is March 1, 2017.

The execution pages of the Unit Agreements are signed and attached.

Tundra is reminded that there is no approval yet to start water injection and separate conversion applications are required for any existing horizontals to be converted into injectors within these new units. Please inform the Branch 1(one) month in advance of when Tundra wants to start injection so a Waterflood Order can be created and TTEF calculated, etc.

If you have any questions in respect of the applications required please contact Leo [REDACTED] Technical Engineering Officer, at (204) 9456570.

Yours truly, [REDACTED]

Keith [REDACTED]
Director

Cc: PB Virden Office
PB Waskada Office



**Minister of
Growth, Enterprise and Trade**

Legislative Building
WINNIPEG, MANITOBA, CANADA
R3C 0V8

MINISTERIAL ORDER

**Subsection 116(2)
THE OIL AND GAS ACT**

WATERFLOOD ORDER NO. 59

**Pertaining to Waterflood Operations
in Sinclair Unit No. 18**

- 1.0 The Unit Operator shall conduct waterflood operations by injecting water into the Bakken-Torquay Pool underlying Sinclair Unit No. 18 ("the Unit") through the wells listed in Schedule A. The Director may approve the conversion of additional wells in the Unit to water injection.
- 1.1 Every injection well shall be completed as approved under Section 47 of the Drilling and Production Regulation ("the Regulation").
- 1.2 The maximum wellhead pressure at which water may be injected is 8 300 kPa.
- 1.3 The Director may, from time to time, establish a maximum or minimum rate at which water may be injected into a well.
- 1.4 The annulus of each injection well shall be pressure tested in accordance with Section 50 of the Regulation.
- 2.0 The Unit Operator shall conduct an annual survey to determine the level and distribution of reservoir pressure in the Unit. A summary of the results of any pressure surveys conducted during the year are to be included in the annual waterflood progress report required under Section 73 of the Regulation.
- 2.1 The frequency of pressure surveys may be reduced where the Director is satisfied that more frequent surveys will not assist the Unit Operator in monitoring the effectiveness of the waterflood.
- 2.2 The Unit Operator is responsible for monitoring the effectiveness of the waterflood and for collecting such reservoir data and other information as is necessary to evaluate and optimize waterflood performance.

- 2.3 The Unit Operator shall advise the Petroleum Branch of the suspension of water injection at any well, any indication of channelling or breakthrough of injected water to a producing well or out of zone and any other detrimental effects that may be attributable to the waterflood operations.
- 3.0 The Unit Operator shall file a report of production or injection for each well in the Unit in accordance with Section 120 of the Regulation.
- 4.0 The Unit Operator shall file an annual waterflood progress report in accordance with Section 73 of the Regulation.
- 5.0 Only Bakken, Lodgepole and/or Manville Formation source waters are approved to be injected into the Unit. Any other source of water must be approved by the Petroleum Branch prior to injection.

Date

A/Director of Petroleum for
Minister Growth, Enterprise and Trade

SCHEDULE A

WATERFLOOD ORDER NO. 59

SINCLAIR UNIT NO. 18

WATER INJECTION WELLS

WELL NAME	LSD	SEC	TWP	RGE
Sinclair Unit No. 18 HZNTL WIW	11	23	07	29