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TITLE       **SSA Application for a Type A Water Licence**  
SECTION    2:   Type A Water Licence Application  
SUBJECT    1:   Summary

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**APPLICATION SUMMARY**

**Applicant:**               Imperial Oil Resources Ventures Limited  
**Regulatory Agency:**   Mackenzie Valley Land and Water Board  
**Application Type:**     Type A Water Licence  
**Location:**               Sahtu Settlement Area

<b>Proposed Undertaking:</b>	<b>Description</b>	<b>Estimated Total Water Requirements</b>
	<ul style="list-style-type: none"> <li>• withdraw water from 84 potential water sources</li> </ul>	----
	<ul style="list-style-type: none"> <li>• water use and deposit to: <ul style="list-style-type: none"> <li>• develop and maintain about 414 km of temporary winter roads to access camps, borrow sites and the pipeline right-of-way during construction of the Mackenzie Gas Project</li> </ul> </li> </ul>	337,200 m <sup>3</sup>
	<ul style="list-style-type: none"> <li>• develop and maintain about 513.9 km of right-of-way travel lane and temporary workspace</li> </ul>	996,000 m <sup>3</sup>
	<ul style="list-style-type: none"> <li>• water use and treated water deposits for: <ul style="list-style-type: none"> <li>• consumption at the Little Chicago infrastructure site</li> <li>• consumption at the Little Chicago facility site</li> <li>• consumption at the Fort Good Hope infrastructure site</li> <li>• consumption at the Norman Wells facility site</li> <li>• consumption at the Norman Wells infrastructure site</li> <li>• consumption at the Little Smith Creek infrastructure site</li> <li>• pressure test two pipelines, totalling about 802.1 km in the SSA</li> <li>• installation of HDD watercourse crossings in the SSA</li> </ul> </li> </ul>	79,900 m <sup>3</sup> 11,100 m <sup>3</sup> 79,900 m <sup>3</sup> 7,100 m <sup>3</sup> 93,200 m <sup>3</sup> 55,400 m <sup>3</sup> 13,500 m <sup>3</sup> 17,600 m <sup>3</sup>
	<b>Total Water Use Requirements</b>	1,690,900 m <sup>3</sup>
	<b>Total Potential Water Deposits</b>	1,690,900 m <sup>3</sup>
	<b>Total Operational Requirements</b>	120 m <sup>3</sup>

- Overview Map:** [Figure 2-1](#) and [Figure 2-2](#) are overview maps of activities in the SSA.
- Schedule:** Following the receipt of all approvals and a decision to proceed, construction is scheduled to begin in mid-2006 with substantial completion scheduled for year-end 2009.
- Other Related Applications:**
- Sahtu Settlement Area – Type B water licence application including watercourse crossings, training, and diversions
  - Inuvialuit Settlement Region – Type A and B water licences
  - Gwich'in Settlement Area – Type A and B water licences
  - Deh Cho Region – Type A and B water licences

Figure 2.1 has been moved to reduce file size. To view it, click on the link to the figure in the web page List of Figures for this document.

Figure 2.2 has been moved to reduce file size. To view it, click on the link to the figure in the web page List of Figures for this document.



**Mackenzie Valley Land and Water Board**  
**7th Floor - 4910 50th Avenue**  
**P.O. Box 2130**  
**YELLOWKNIFE NT X1A 2P6**  
**Phone (867) 669-0506**  
**FAX (867) 873-6610**

## **APPLICATION FOR A NEW WATER LICENCE OR AMENDMENT OF EXISTING LICENCE**

### **1. Name and Mailing Address of Applicant**

Imperial Oil Resources Ventures Limited  
P.O. Box 2480, Station M  
Calgary, Alberta T2P 3M9

Attn: A.D. (Sandy) Martin  
Manager, Regulatory Affairs  
Mackenzie Gas Project

Telephone number: (403) 237-2864  
Fax number: (403) 237-2208  
Email: sandy.d.martin@esso.ca

### **2. Address of Head Office in Canada if Incorporated**

Mackenzie Gas Project  
Imperial Oil Resources Ventures Limited  
425 First Street S.W.  
Calgary, Alberta T2P 3M9

### **3. Location of Undertaking (describe and attach a map, indicating watercourses and location of any proposed waste deposits).**

The Mackenzie Gas Project within the Sahtu Settlement Area extends from the boundary with the Gwich'in Settlement Area in the north to the boundary with the Deh Cho Region in the south.

The location and other details regarding the proposed winter roads, pipeline right-of-way travel lane construction (travel lane), pressure testing of the

pipelines, and site-specific water use requirements are covered in the site-specific sections in this application. See also Appendix C – Foldout Maps.

#### 4. Description of Undertaking (describe and attach plans)

This Type A water licence application covers certain types of undertakings related to water use and deposits. The types of proposed undertakings are included in the industrial, municipal, and miscellaneous classifications in Schedule II of the *Northwest Territories Waters Regulations*.

The water use undertakings in this application meet or exceed the Type A licensing criteria in schedules IV, VI, and VII of the *Northwest Territories Waters Regulations*. Wastewater deposit activities, which would ordinarily require a Type B water licence, are also included in this application.

The proposed water use and deposit requirements include:

- constructing and maintaining about 195.8 km of winter roads from 55 borrow sites to sites such as the Little Chicago, Fort Good Hope, Norman Wells, Tulita (West), 12 Mile Point and Little Smith Creek infrastructure sites, the Little Chicago and Norman Wells facility sites, the pipeline right-of-way and other existing transportation corridors (see [Section 4](#))
- constructing and maintaining about 218.2 km of winter roads, including 107.3 km of access from 84 potential water sources and 110.9 km of direct pipeline construction access to the pipeline right-of-way and other existing transportation corridors (see [Section 4](#))
- constructing and maintaining about 513.9 km of pipeline right-of-way travel lane and temporary workspace from the GSA boundary to the DCR boundary, including 10.4 km on SSA private lands within the DCR (see [Section 5](#))

Additional water use and treated water deposits include:

- water consumed at the Little Chicago, Fort Good Hope, Norman Wells and Little Smith Creek infrastructure camps and the Little Chicago and Norman Wells facility sites ([Section 7](#))
- deposits of treated wastewater from the camps ([Section 7](#))
- potential deposits of treated pressure test water ([Section 6](#))
- water use and deposit of HDD drilling fluids and solids in accordance with the project's reclamation plans ([Section 5](#))

The locations and detailed descriptions of the proposed undertakings are included in each section.

Table 2-1 is a summary of the proposed use for each water source on Crown and private lands within the SSA. These sources are shown on the site-specific maps in this application.

**Table 2-1: SSA Water Source and Use Summary**

Water Source No.	Kilometre Post (KP)	Water Use and Location						Total Amount Required (m <sup>3</sup> per year)
		Infrastructure	Testing <sup>a</sup> (m <sup>3</sup> )	ROW	Access Roads			
					Infrastructure	Borrow	Pipeline	
104	187.8	-	-	Yes	-	-	-	1,622
Mackenzie River	189.1	-	-	Yes	-	-	-	7,543
105	199.6	-	-	Yes	-	-	-	2,003
106	204.5	-	-	-	Little Chicago infrastructure site	-	-	1,815
107	204.5	-	-	-	-	20.200P	-	4,354
108	204.5	-	-	Yes	-	-	-	4,255
Mackenzie River	204.5	Little Chicago infrastructure site	Spreads D1, D2	-	Little Chicago infrastructure site	-	-	38,005
109A	208.4	-	-	-	-	20.200P	-	2,627
110	214.4	-	-	Yes	-	5.036P 20.200P	-	2,185
111	215.8	-	-	Yes	-	-	-	5,709
114	219.0	-	-	Yes	-	20.043P	-	3,763
115	224.2	Little Chicago facility site	-	Yes	-	5.041PB 5.043AP	-	14,285
115B	223.0	Little Chicago facility site	-	Yes	-	-	-	3,693
I-08	223.5	-	-	Yes	-	-	-	491
117	228.6	-	-	Yes	-	-	-	2,317
118	239.2	-	-	Yes	-	-	-	259
119	239.2	-	-	Yes	-	-	-	936
120	240.4	-	-	Yes	-	6.012P	-	6,135

**Table 2-1: SSA Water Source and Use Summary (cont'd)**

Water Source No.	Kilometre Post (KP)	Water Use and Location						Total Amount Required (m <sup>3</sup> per year)
		Infrastructure	Testing <sup>a</sup> (m <sup>3</sup> )	ROW	Access Roads			
					Infrastructure	Borrow	Pipeline	
120A	242.7	-	-	-	-	6.012P 6.011P 6.011PB	-	2,579
121	246.6	-	-	Yes	-	-	-	12,922
122	256.4	-	-	Yes	-	-	-	204
123	257.7	-	-	Yes	-	-	-	140
124	261.4	-	-	Yes	-	-	-	450
125	265.2	-	-	-	-	-	-	76
126	265.2	-	-	Yes	-	-	-	1,778
127	265.7	-	-	Yes	-	-	-	703
128	267.4	-	-	Yes	-	20.202P 6.036AP 6.034PA	-	9,408
130	270.1	-	-	Yes	-	-	-	0
129	270.1	-	-	Yes	-	-	-	8,027
131	283.3	-	-	Yes	-	-	-	4,084
132	289.3	-	-	Yes	-	6.042P 6.042BP 6.042CP	-	2,643
133	291.2	-	-	Yes	-	-	-	2,589
SKG19	295.0	-	-	Yes	-	-	-	7,112
135	301.1	-	-	Yes	-	-	-	1,853
136	304.3	-	-	Yes	-	6.053P	-	3,263
137	307.9	-	-	Yes	-	-	-	8,564
138	324.7	-	-	Yes	-	-	-	100
139	327.5	-	-	Yes	-	-	-	30
Hare Indian (Rabbit-skin) River	330.0	-	Spread C1, C2	Yes	-	20.112P	Shoofly	16,765

**Table 2-1: SSA Water Source and Use Summary (cont'd)**

Water Source No.	Kilometre Post (KP)	Water Use and Location						Total Amount Required (m <sup>3</sup> per year)
		Infrastructure	Testing <sup>a</sup> (m <sup>3</sup> )	ROW	Access Roads			
					Infrastructure	Borrow	Pipeline	
140	332.9	-	-	Yes	-	6.080P 6.077P	-	6,329
140A	335.6	-	-	-	-	20.113P	-	3,334
141	338.0	-	-	Yes	-	-	-	46
142	341.0	-	-	Yes	Fort Good Hope infrastructure site	-	-	2,806
Mackenzie River	341.9	Fort Good Hope infrastructure site	-	-	-	-	-	39,950
143	342.7	-	-	Yes	-	-	-	8,572
144	344.1	-	-	Yes	-	-	-	246
145	347.0	-	-	Yes	-	-	-	998
146	367.3	-	-	Yes	-	-	-	362
147	371.8	-	-	Yes	-	7.003AP 20.114P	-	6,358
148	384.8	-	-	Yes	-	7.006P 7.005P	-	12,315
150	397.2	-	-	Yes	-	7.015P 7.016P	-	16,192
151	411.9	-	-	Yes	-	-	-	374
ST1	418.7	-	-	Yes	-	7.016P 7.018P	-	5,283
152	424.1	-	-	Yes	-	7.021P	-	6,470
153	432.9	-	-	Yes	-	7.025P	-	4,919
155	439.7	-	-	Yes	-	7.035P	-	6,486
Mackenzie River	444	-	-	Yes	-	-	-	444
Mackenzie River	447.2	-	-	Yes	-	-	-	4,133

**Table 2-1: SSA Water Source and Use Summary (cont'd)**

Water Source No.	Kilometre Post (KP)	Water Use and Location						Total Amount Required (m <sup>3</sup> per year)
		Infrastructure	Testing <sup>a</sup> (m <sup>3</sup> )	ROW	Access Roads			
					Infrastructure	Borrow	Pipeline	
Oscar Creek	445.7	-	-	Yes	-	-	-	0
156	453.2	-	-	Yes	-	-	-	9,349
157	459.3	-	-	Yes	-	-	-	322
159	464.6	-	-	Yes	-	-	-	161
Mackenzie River	466.6	-	-	Yes	-	7.046P	-	8,252
Mackenzie River	476.3	-	-	Yes	-	7.054P 7.049P	-	6,141
Mackenzie River	499.7	-	-	Yes	-	7.070P 7.073PB 7.073PA 7.078P	-	25,519
Mackenzie River	512.2	-	-	Yes	-	-	-	10,889
163	528.1	-	-	Yes	-	-	-	405
Mackenzie River	538.4	-	-	-	-	7.155AP 7.155BP	Shoofly	11,075
ST11	538.6	-	-	Yes	-	7.090P 20.201P	Shoofly	20,692
Great Bear River	556	-	-	Yes	-	-	Shoofly	15,865
Mackenzie River	570	-	-	Yes	12 Mile Point infrastructure site	-	Shoofly	13,118
163A	581.1	-	-	Yes	-	-	-	5,366
ST15	587.1	-	-	Yes	-	-	-	30
Mackenzie River	588.9	-	-	Yes	-	20.086P	-	9,627
ST17	609.6	-	-	Yes	-	-	-	11,384
Big Smith Creek	613.1	-	-	Yes	-	-	-	0

**Table 2-1: SSA Water Source and Use Summary (cont'd)**

Water Source No.	Kilometre Post (KP)	Water Use and Location						Total Amount Required (m <sup>3</sup> per year)
		Infrastructure	Testing <sup>a</sup> (m <sup>3</sup> )	ROW	Access Roads			
					Infrastructure	Borrow	Pipeline	
164	620.4	-	-	Yes	-	-	-	663
Little Smith Creek	631.7	-	-	Yes	-	-	-	0
Mackenzie River	632	Little Smith Creek infrastructure site	Spread B1	Yes	-	9.022PA 9.010PA	-	39,700
Saline River	653.3	-	-	Yes	-	-	-	0
Mackenzie River	665.8	-	-	Yes	-	9.017P 9.024AP	-	21,146
164A	683.7	-	-	Yes	-	9.034PB	-	5,349
ST24	685.5	-	-	Yes	-	-	-	30
I-10	692.9	-	-	Yes	-	-	-	234

NOTE:  
<sup>a</sup>Represents the pressure testing volume of water required. This volume is not reflected in the total volume required per year.

**5. Type of Undertaking.**

- |                       |               |                  |               |
|-----------------------|---------------|------------------|---------------|
| 1. Industrial         | <u>  X  </u>  | 5. Agriculture   | <u>      </u> |
| 2. Mining and Milling | <u>      </u> | 6. Conservation  | <u>      </u> |
| 3. Municipal          | <u>  X  </u>  | 7. Recreation    | <u>      </u> |
| 4. Power              | <u>      </u> | 8. Miscellaneous | <u>  X  </u>  |

Industrial: Potential deposit of treated water for pressure testing the pipelines in the SSA

Municipal: Water use and treated water deposits related to the Little Chicago, Norman Wells, Fort Good Hope and Little Smith Creek infrastructure camps and the Little Chicago facility site

Miscellaneous: Winter road and travel lane construction

**6. Water Use**

To obtain water	<u>  X  </u>	Flood control	<u>      </u>
To cross a watercourse	<u>      </u>	To divert water	<u>      </u>
To modify the bed or bank of a watercourse	<u>      </u>	To alter the flow of, or store water	<u>      </u>

Other (describe): Potential treated wastewater deposits

**7. Quantity of water involved (litres per second, litres per day or cubic metres per year, including both quantity to be used and quality to be returned to source).**

Part 7 of each section in this application provides the quantity of water involved with each undertaking.

**8. Waste deposited (quantity, quality, treatment and disposal)**

Water deposits for winter access roads and the pipeline travel lane are described in [Part 8 of Section 4](#) and [Section 5](#). An overview of treated wastewater deposits is provided in [Section 3](#) and [Section 11](#).

**9. Other persons or properties affected by this Undertaking (give name, mailing address and location). Attach a list if necessary.**

A public involvement program, including aspects of the undertakings in this water licence application, has been conducted with local communities. For a summary of this program, see [Section 10](#).

**10. Predicted environmental impacts of Undertaking and proposed mitigation.**

Biophysical and human environment setting, effects and primary mitigation strategies are discussed on a regional basis in [Section 8](#). An overview of planned environmental protection plans is included in [Section 11](#).

**11. Contractors and sub-contractors (names, addresses and functions). Attach a list if necessary.**

The number of workers required for development activities at each site will depend upon the type, size and stage of each activity. An estimate of the personnel requirements for each aspect and the development is shown in Part 3 of the applications for land use permits on Crown and private land in the SSA.

**12. Studies undertaken to date. Attach a list if necessary.**

Detailed bathymetric surveys were conducted as part of the 2003 and 2004 field programs (Golder 2004). The surveys were intended to determine mean and maximum depths, and estimate summer and winter under-ice water volumes in potential water sources. This information will be used to determine the suitability of each lake as a potential water source, based on criteria established by Fisheries and Oceans Canada (DFO) in the *Draft DFO Protocol for Winter Water Withdrawal in the Northwest Territories* dated June 2004 (DFO Protocol).

The DFO Protocol is designed to protect fish and fish habitat and is based primarily on the following criteria:

- maximum water depth in the lake
- lake connectivity with other lakes
- maximum withdrawal of up to 5.0% of the under-ice volume

Seventy-eight lakes along the proposed pipeline corridor in the SSA were included in the 2003 and 2004 bathymetric surveys (Golder 2004). The lakes were initially identified based on their proximity to the location of planned use, available volumes from the source, source recharge capabilities and other related factors. Of the 78 lakes surveyed, two were eliminated in response to community concerns and for technical reasons and eight were added. Information on the potential requirements from each of the remaining 84 water sources is provided in [Table 2-1](#).

Water withdrawals from the majority of sources are not expected to exceed the 5.0% total volume criterion established by DFO. For lakes that do not exceed 5.0% criterion, no potential adverse environmental effects are expected.

Potential environmental effects and mitigation that might occur as a result of the withdrawal of water are shown in [Table 2-2](#).

**Table 2-2: Potential Environmental and Mitigation Effects**

Potential Effect	Primary Mitigation Strategy
Direct effects on fish habitat	Avoid spawning, rearing or overwintering habitats, unless authorized.
Direct effects on rare aquatic vegetation or riparian areas because of low snow pack	Avoid shoreline areas where these types of plants typically occur.
Loss of vegetation by access road construction	Reclaim sites according to regulations, policies, industry standards and best management practices.
Water withdrawals	Record the volume of the water withdrawal and ensure that volumes do not exceed regulatory limits stated in the water licence.

**13. Proposed time schedule.**

The anticipated duration of the proposed undertakings is included in the Schedule (Part 13) of the summary and site-specific sections in this application.

The term of the requested water licence is five years. This covers a three-year construction period and allows for subsequent demobilization, construction cleanup and reclamation activities.

**Applicant**

**Name (print):**

Imperial Oil Resources Ventures Limited  
425 First Street S.W.  
Calgary, Alberta T2P 3M9

Attn: A.D. (Sandy) Martin  
Manager, Regulatory Affairs  
Mackenzie Gas Project

**Signature:** \_\_\_\_\_

**Date:** \_\_\_\_\_

***FOR OFFICE USE ONLY***

**Please make all cheques payable to “Receiver General of Canada”**

**Application Fee Amount:            \$30.00            Receipt No: \_\_\_\_\_**

**Water Use Deposit Amount:        \$141.88            Receipt No: \_\_\_\_\_**