



CLOSURE AND RESTORATION PLAN

WATER LICENSE NO. S12L3-002

Report Prepared for:
GREAT BEAR LAKE LODGE LTD

Prepared by:
PLUMMER'S ARCTIC LODGES

Version 2.0
March 2019
Winnipeg, Manitoba

950 Bradford St.
Winnipeg, MB R3H 0N5
T 204.774.5775
www.plummerslodges.com

VERSION CONTROL & REVISIONS

Version	Date	Issue Type	Filename	Description
V1.0	1-Jun-2017	Final	Bear_ClosureRestorationPlan 2017-06-01 final V1.0.docx	Original Document
V2.0	04-Mar-2019	Final	Bear_ClosureRestorationPlan 2019-03-04 final V2.0.docx	Formatting

TABLE OF CONTENTS

1	THE WATER INTAKE FACILITIES.....	1
2	WATER TREATMENT FACILITY.....	1
3	SEWAGE AND SOLID WASTE.....	1
4	THE PETROLEUM AND CHEMICAL STORAGE AREAS.....	1
5	ANY SITE AFFECTED BY WASTE SPILLS.....	2
6	THE NATURAL RUNOFF WATERS FROM THE DEVELOPMENT SITE.....	2
7	THE RESTORATION OF NATURAL DRAINAGE AND THE RESTORATION OF STREAM BANKS AT THE OPERATION SITE(S).....	2
8	THE POTENTIAL FOR GROUNDWATER CONTAMINATION.....	2
9	ANY FACILITIES OR AREAS WHICH MAY HAVE BEEN AFFECTED BY DEVELOPMENT SUCH THAT POTENTIAL POLLUTION PROBLEMS EXIST.....	2
10	A PHASED APPROACH AND IMPLEMENTATION SCHEDULE.....	3
11	MAP DELINEATING ALL DISTURBED AREAS, BORROW MATERIAL LOCATIONS AND SITE FACILITIES.....	3
12	A PROPOSAL IDENTIFYING MEASURES BY WHICH RESTORATION COSTS WILL BE FINANCED BY THE LICENSEE UPON ABANDONMENT.....	3
13	APPENDIX A – LOCATIONS OF DISTURBED AREAS, BORROW MATERIAL LOCATIONS AND SITE FACILITIES.....	4

1 THE WATER INTAKE FACILITIES

The water intake is located on the North side of the lodge building composed of an intake unit, hoses, and water pump. The water intake will be pulled out of the water and brought to Yellowknife.

2 WATER TREATMENT FACILITY

The water treatment facility will be brought to Yellowknife.

3 SEWAGE AND SOLID WASTE

- Contamination remediation
 - Should there be an occurrence that results in a contaminated site the contamination will be dealt with according to the approved 'Spill Contingency Plan' attached to the license.
- Leachate
 - There will be no leachates as all wastes will have been removed from the non-leaking storage tanks.
- Considerations of altered drainage patterns
 - The remediation of the site will not have any impact on current drainage patterns.
- Type and source of cover material
 - There are four sewage and solid waste tanks on site. Two 1000 gallon tanks and two 500 gallon tanks. These would be removed from the ground and transported to Yellowknife for sale or disposal. The remaining holes would be filled with gravel and dirt that is readily available on site.
 - The site has only been disturbed on the surface and the local cover material that exists throughout the site will be more than adequate to accomplish the remediation.
- Hazardous wastes
 - The only hazardous waste on site would be the annual accumulation of used oil and oil filters. These would be returned to Yellowknife.

4 THE PETROLEUM AND CHEMICAL STORAGE AREAS

The company has two airplanes to assist in moving crews in and moving materials out. The vehicles and heavy equipment will be transported to Deline during the summer on the barge that is at the lodge. From there it will be transported to Yellowknife on the winter road for sale or disposal. This is also how the above ground fuel storage tanks will be removed for resale. There is not any underground fuel storage at the site.

5 ANY SITE AFFECTED BY WASTE SPILLS

There were no contaminated sites at the time of the issuance of the Type B Water license and there is no anticipated generation of contaminated sites. Should there be an occurrence that results in a contaminated site the contamination will be dealt with according to the approved 'Spill Contingency Plan' attached to the license.

6 THE NATURAL RUNOFF WATERS FROM THE DEVELOPMENT SITE

The remediation of the site will not have any impact on current drainage patterns. The site has only been disturbed on the surface with the exception of a short road to the airstrip from the lodge site. There is one culvert that has been placed under this road that would be removed to restore the drainage. The road would overgrow and return to its natural state on its own in short order.

7 THE RESTORATION OF NATURAL DRAINAGE AND THE RESTORATION OF STREAM BANKS AT THE OPERATION SITE(S)

The remediation of the site will not have any impact on current drainage patterns. The site has only been disturbed on the surface with the exception of a short road to the airstrip from the lodge site. There is one culvert that has been placed under this road that would be removed to restore the drainage. The road would overgrow and return to its natural state on its own in short order.

8 THE POTENTIAL FOR GROUNDWATER CONTAMINATION

We do not expect any ground water contamination. There has never been any ground water contamination. The solid waste pit is over 300 metres away from the waters edge as well as over 20 metres above the water level. The gravel base serves as a natural filter to avoid any contamination.

9 ANY FACILITIES OR AREAS WHICH MAY HAVE BEEN AFFECTED BY DEVELOPMENT SUCH THAT POTENTIAL POLLUTION PROBLEMS EXIST

All material suitable for burning using an open pit methodology (i.e. untreated wood, paper, cardboard) will be incinerated on-site. Ash will be tested in an approved laboratory before it is placed into a landfill site. There is a Caterpillar dozer on site for the purpose of constructing a landfill and a grader for completion of these closure activities. Landfill material will be covered by a minimum of 90cm of fill.

All material unsuitable for open burning will be removed from site and disposed of in an approved facility. This includes hazardous materials and Great Bear Lake Lodge has registered to transport hazardous goods with the GNWT. There is a Caterpillar dozer on site for the

purpose of constructing a landfill and a grader for completion of the remediation. All empty drums will be crushed on site and removed to Yellowknife for recycling as well as all salvageable metals. All equipment, tools, and items that can be salvaged will be loaded onto the barge and transported to Deline to be shipped to Yellowknife on the winter road to await sale or disposal. This material will include all items deemed unacceptable for landfill by the inspector.

Once we stop grading the airstrip, the natural vegetation that we prevent from taking it over, would cover the airstrip and return it to its natural state. To promote natural re-vegetation, the company will consult with regulatory agencies to determine if additional steps were required (e.g. re-contouring or scarifying).

The site will be remediated to its pre-disturbed condition and will be suitable for any use that it would have been suited to prior to the establishment of the lodge.

10 A PHASED APPROACH AND IMPLEMENTATION SCHEDULE

The site, should the company choose to abandon it, would be remediated over the course of 12-14 months starting in the spring of the year of abandonment. The reason for the time frame is to make use of two summer seasons and one winter season for removal of all materials.

11 MAP DELINEATING ALL DISTURBED AREAS, BORROW MATERIAL LOCATIONS AND SITE FACILITIES

Please see attached map of site area in Attachment 1. It is anticipated that there will be no requirement for borrow or cover material as the site has only been disturbed on the surface.

12 A PROPOSAL IDENTIFYING MEASURES BY WHICH RESTORATION COSTS WILL BE FINANCED BY THE LICENSEE UPON ABANDONMENT

Before the site is abandoned, Great Bear Lake Lodge will have earned enough money throughout its century old existence to pay for the restoration costs.

13 APPENDIX A – LOCATIONS OF DISTURBED AREAS, BORROW MATERIAL LOCATIONS AND SITE FACILITIES

