



ADK/BOREALIS
GEOPOWER



FORT LIARD
GEOHERMAL
PROJECT

WASTE MANAGEMENT PLAN

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Introduction and Project Details

Borealis GeoPower (Borealis) has prepared this waste management plan for geothermal well drilling activities being undertaken within the Beaver Enterprises Basecamp brownfield site located within the Beaver Enterprises Basecamp brownfield site 1.5km east of the hamlet of Fort Liard, NWT. The plan demonstrates that Borealis GeoPower has appropriate waste management capabilities and measures in place to effectively reduce and properly dispose of all potential types of waste at its Fort Liard project site.

The referred to Beaver Enterprises Basecamp Beaver Enterprises Basecamp Facility is located ~2.5 km northeast of the Fort Liard Airport (refer to the accompanying Type A Land Use Permit). The Beaver Enterprises Basecamp Beaver Enterprises Basecamp Facility possesses the utilities necessary to further process and/or properly store the waste produced during project and drilling activities.

Company Name, Site Name, Site Location and Mailing Address

Company Name: Borealis GeoPower
Location: ~1.5km east of the hamlet of Fort Liard, NWT
Mailing Address: PO Box 668 – Station M, Calgary, Alberta, Canada, T2P 2J3
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Attention: Craig Dunn, Chief Geologist

Effective Date of Waste Management Plans

April 1, 2012

Company Environmental Policy

Borealis GeoPower aims to achieve clean and sustainable geothermal power generation while protecting the environment and having the least environmental impact possible. They are committed to maintaining the highest standards in public health and safety in an effort to protect the quality of the global environment for future generations. Borealis GeoPower is also further committed to ensuring that all applicable regulatory safety, health and environmental protection requirements are met or exceeded. Environmental considerations are integrated with business planning.

Effective programs will be maintained through safety departments and will be revised or updated as necessary to minimize negative environmental effects caused by company activities.

The management team will ensure that all employees are informed of the applicable policies and procedures and receive training that emphasizes individual responsibilities for sound environmental management and safe operations. All employees are required to

adhere to established policies and procedures and will participate in all provided training and meetings. Employee compliance with policies and procedures will be monitored on an ongoing basis.

Borealis GeoPower will undertake regular reviews to ensure compliance with this environmental protection program.

Purpose and Scope

This Waste Management Plan is a set of procedures to be followed to reduce and properly dispose of waste materials in order to protect the environment and community. It serves as a set of guidelines to deal with project-generated waste and minimize impacts to the land, water, air, wildlife, fish and vegetation of the Fort Liard project area. Due consideration will also be given to the impacts of waste and its disposal upon factors such as land use, the local economy and public interests. The project and drilling operations and this Waste Management Plan adhere to all conditions of applicable acts, regulations, authorizations, land-use permits and water licences.

Project Description

The Acho Dene Koe First Nation (ADKFN) is a band government of the Dene people based in Fort Liard, Northwest Territories, Canada. The ADKFN support renewable energy projects that represent a cheaper source of heat and power, the opportunity to generate new revenue streams, and more control over their own economic circumstances. ADKFN members have great respect for their traditional values and acknowledge the ADK/Borealis Geothermal Demonstration Project as a positive step in the reduction of GHG emissions. The extensive history of oil and gas drilling in the Fort Liard area assists in highlighting the geothermal resource potential at this location.

The location selected for the proposed well site is a field operations and basecamp *brownfield* site owned and operated by Beaver Enterprises. It is a 0.2755x0.2155 km (0.0599 km²) cleared, square piece of land sitting approximately 1.5 km outside of the hamlet of Fort Liard, NWT at a latitude of 60.243381N and a longitude of 123.433861W. Fort Liard itself sits within the southwest bottom corner of the region in the Liard Valley, on the banks of the Petitot and Liard Rivers. West of Fort Liard are the La Biche, Liard and Kotaneelee Mountain Ranges, and east is boreal forest. Fort Liard and the proposed well site both connect directly to the Liard Highway, thus allowing for easy transportation and access.

The project design will require constructing two conventional vertical wells (one production and one injection), and a binary surface power production facility. The project is to be located near Fort Liard in the Northwest Territories, taking advantage of geothermal features that suggest a potential heat reservoir sufficient for power and heat generation.



Figure 1 - Fort Liard project proposed well site. Southwestern Northwest Territories.

The proposed operations will include:

- A) Open access (Early April, 2012 to May 2012)
 - Prepare the access from Valley Main Street into the Beaver Enterprises brownfield field operations and basecamp site.
- B) Break ground drilling
- C) Drilling of Production and Injection wells
- D) Casing
- E) Potential acid stimulation
- F) Initiate pumping
- G) Installation of surface power generation facilities
- H) Site clean-up/reclamation and waste disposal
- I) Ongoing geothermal power plant operations

Site Description & Location for all Waste Management Activities

The well site is to be located ~1.5 km east of the hamlet of Fort Liard, NWT (Figure 2). It will sit within the southern portion of Beaver Enterprises Enterprises' brownfield field operations and base camp. Approximate dimensions of the well and plant well and plant site are 55 55m x 55 55m (3.025 ha). The region it sits in is relatively flat with some undulating hills and an average elevation of 220m above sea level. The La Biche, Liard and Kotaneelee mountain ranges sit off to the west while boreal forest extends to the east. The site is connected to the Liard Highway (Hwy #7) via the site access road (0.27km SW) and Valley Main Street (~3.42km E). Fort Liard is connected to Hwy #7 via Valley Main Street (~4.7km from the edge of town). Figure 1 above shows a general site location while Figures 2 & 3 & 3 show the the specific site location.

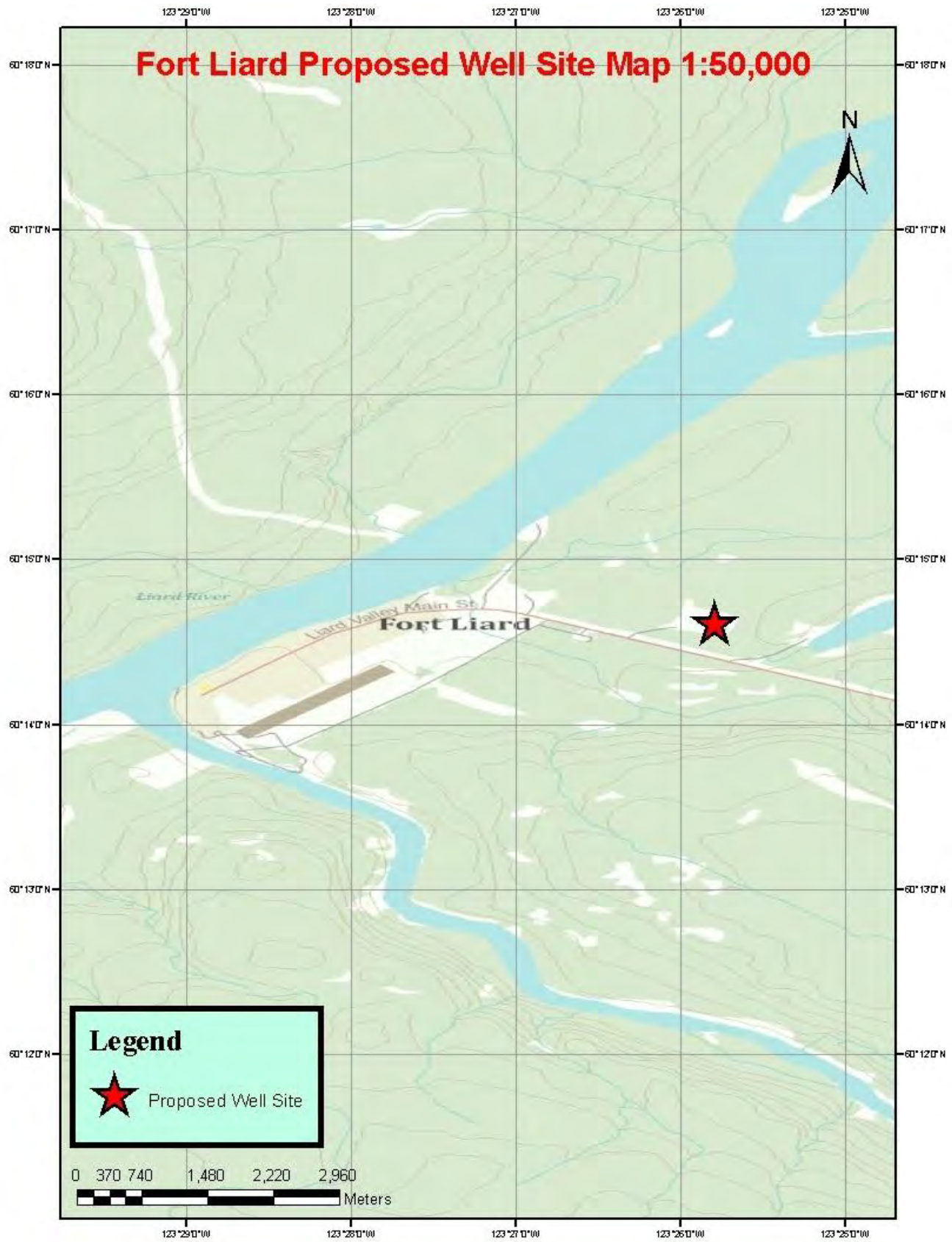


Figure 2 - 1:50,000 map of the Fort Liard area and site location.

Beaver Enterprises Basecamp & Fort Liard Geothermal Plant Facility



Beaver Ent. Basecamp & Ft Liard Geothermal Plant Facility

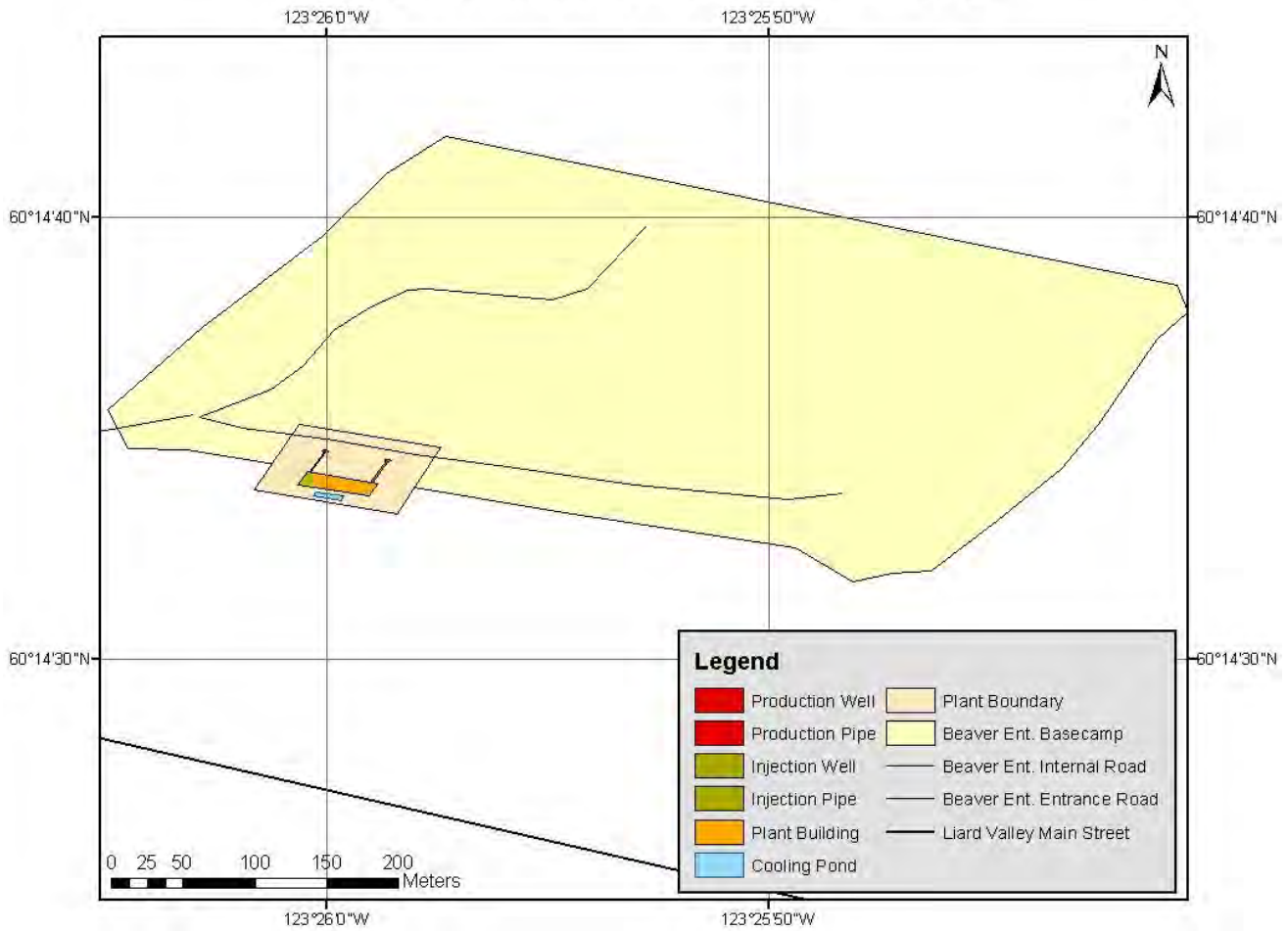


Figure 3 - Map of the Beaver Enterprise Basecamp site and Ft Liard Geothermal Plant Facility.

From the terrain perspective the location, at and around what is known as the “Base Camp” clearing, is consistent with a late-glacial, glaciofluvial deposition. Surficial inspection to a depth of 120-cm displays a consistent trend (starting from the land surface) of moderately fine-textured ‘overbank’ deposits quickly grading into coarse textured gravelly sand layers interspersed with variable layers of medium textured glaciolacustrine deposits. The terrain is relatively ‘flat’, comprising largely .5 – 2% slopes, however there are several small, remnant channels incised approximately 1-2 m into the land surface.

The soils of the area surrounding the Base Camp are dominantly Dark Gray Luvisols, with small percentage of Orthic Gray Luvisols. The loamy topsoil was generally less than 20-cm and was underlain by a clayey “Bt” horizon. The loam to clay loamy surface horizons grade into sandy subsoil usually beginning at 45-50 cm depth. It is suspected, due to the vigour and height of the forest cover, that there are clayey horizons at depth.

The Base Camp clearing hosts an “open” camp, the maintenance components of Beaver Enterprises Ltd., as well as other miscellaneous enterprises. The area has been used extensively to store used trucks/machinery, oil and fuel containers and associated light industrial debris, with associated areas of small gasoline/diesel/lubricating oil contamination. The gravelly fill to a depth of 45-cm shows shallow subsoils that are highly aromatic. Despite the small areas of contamination, there is no widespread surface contamination on these “brownfield” lands.

Identification and Management of Waste Types

Solid Waste Management

Domestic Waste

Common Domestic Waste will be collected in appropriate bins (i.e., in sturdy, wildlife-proof, leak-proof containers), collected on an appropriate time schedule and stored at the Beaver Enterprises Basecamp Facility to await processing and transportation. All wastes will be transported off-site and disposed of at an approved facility outside of the Northwest Territories (NWT)(i.e., Fort Nelson in BC or SHTC in AB).

Recycling

Recycling will be encouraged with recyclable materials to be collected in appropriate bins (i.e., sturdy, wildlife-proof, leak-proof containers), collected on an appropriate time schedule and stored at the Beaver Enterprises Basecamp Facility to await processing and transportation. At the Beaver Enterprises Basecamp Facility, the recyclable materials will be separated, transported and recycled through regionally operational recycling programs.

Human Waste (Toilet Waste)

The use of waterless chemical or container toilets and a self-contained Enviro-tank septic tank system will be maintained and the waste collected on an appropriate time schedule and handled by the Beaver Enterprises Basecamp Facility for storage and processing. At the Beaver Enterprises Basecamp Facility, all resulting sewage will be held on-site in Enviro-tank septic tanks with enough capacity to hold wastes if they are not regularly transportable (e.g., due to weather delays). The wastes will be stored (mixed) with the gray water developed during the Project; all human waste and gray water will be transported off-site and disposed of at an approved facility outside of the Northwest Territories (NWT)(i.e., Fort Nelson in BC or SHTC in AB).

Drilling Waste

Solid drilling waste will be obtained through centrifuging of the drilling mud in order to separate the solid and liquid portions. The solid portion of the drilling waste is to be appropriately stored and transported to an approved disposal facility located outside of the Northwest Territories (NWT) (the Rudiger Enterprises disposal site in northeastern British Columbia).

Other Waste

The remainder of the waste will be collected and stored appropriately (i.e., in sturdy, wildlife-proof, leak-proof containers) and stored at the Beaver Enterprises Basecamp Facility. At the Beaver Enterprises Basecamp Facility, the remainder of the waste will be compacted, bagged, stored appropriately (i.e., in sturdy, wildlife-proof, leak-proof containers), transported off-site and disposed of at an approved facility outside of the Northwest Territories (NWT) (i.e., Fort Nelson in BC or SHTC in AB). Beaver Enterprises will ensure that food, domestic wastes and petroleum-based chemicals (e.g., greases, gasoline, glycol-based antifreeze) are kept inaccessible to wildlife at all times.

Liquid Waste Management

Gray Water and Drilling Fluids

At the Beaver Enterprises Basecamp Facility, the gray water will be containerized (along with generated sewage wastes) and transported off-site and disposed of at an approved facility outside of the Northwest Territories (NWT) (i.e., Fort Nelson in BC or SHTC in AB). No gray water will be released to the land.

Drilling wastes are to be centrifuged in order to separate the solid and liquid portions. Dependent upon what drilling method is chosen (still to be decided between the Invert Mud and/or Gelchem mud program), the liquid portion of the drilling waste is to be disposed of in one of two ways:

- The fluids will be appropriately stored and transported off-site to be disposed of at an approved facility outside of the Northwest Territories (NWT). This is compulsory for the invert mud programs, as these fluids are recycled for other drilling programs.
- Gelchem fluids may be pumped into the project's disposal well created in conjunction with main well drilling; otherwise they will be disposed of as discussed above.

The Waste Management Plan will be updated accordingly once a drilling method is chosen.

Other Waste

Waste such as volatile materials (e.g., mineral spirits, used oils,) will be transported to the Beaver Enterprises Basecamp Facility for processing. At the Beaver Enterprises Basecamp Facility, the waste will be transported off-site and disposed of at an approved facility outside of the Northwest Territories (NWT) (i.e., in Fort Nelson in BC or SHTC in AB).