2023

Project to Create Medicinal Honey Environmental Assesment

CROWN LANDS

APPLICATION NO.: 159579

TYPE: License to Occupy

PURPOSE: Agriculture

LOCATION: Canning's Lake, NL

Trevor Tuck

Owner/Operator

Tuck's Bee Better Farm

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PROPONENT:

i. **Name of Corporate Body**: Tuck's Bee Better Farm

(i) **Chief Executive Officer**:

a. Name: Trevor Tuck

b. Official Title: Owner/Operator

(ii) **Principal Contact Person:**

a. Name: Tonya Belbin

b. Official Title: Project Manager

THE UNDERTAKING:

(i) Name of the Undertaking: Creation of Medicinal Honey

(ii) Purpose/Rationale/Need for the Undertaking:

Tuck's Bee Better Farm is looking to expand its business into the viable medicinal honey market by securing 2000 Crown Land hectares, Lease application number #159579 around the Cannings Lake area. Please see Appendix A, Map A.1 for the proposed site.

Honey, a hyperosmolar substance produced by bees, is about 20% water and 80% sugar. It also contains enzymes, amino acids, carbohydrates, vitamins, hydrogen peroxide, and organic acids. The exact composition varies greatly depending on the location and type of plant from which the bees collected nectar.[1]

Honey may contain toxic compounds when plants in honey harvesting areas are treated with herbicides and pesticides or are polluted with industrial heavy metals, and antibiotics, or are exposed to environmental pollution.[2] The honey most commonly in use for medicinal honey today comes from bees that collect pollen and nectar from trees in New Zealand and Australia. It's imperative that the areas the bees collect pollen and nectar from be as organic as possible.

The island of Newfoundland is one of the few places in the world that does not have to treat its honeybees with antibiotics or chemicals. Newfoundland is one of the few safe havens for honeybees globally because it is untouched by the vicious Varroa mite that

[1] Robson V, Dodd S, Thomas S. Standardized antibacterial honey (Medihoney) with standard therapy in wound care: randomized clinical trial. *J Adv Nurs*. 2009;65(3):565–575.

[2] Renée Hermanns, Cristina Mateescu, Andreas Thrasyvoulou, Chrysoula Tananaki, Frank A.D.T.G. Wagener & Niels A.J. Cremers (2020) Defining the standards for medical grade honey, Journal of Apicultural Research, 59:2, 125-135, DOI: 10.1080/00218839.2019.1693713
https://www.tandfonline.com/doi/abs/10.1080/00218839.2019.1693713?journalCode=tjar20

is decimating global bee populations.[3] That, in connection with a pristine environmental area, is key to producing medicinal honey.

The medicinal importance of honey has been documented in the world's oldest medical literature, and since ancient times, it has been known to possess antimicrobial properties as well as wound-healing activity. The healing property of honey is due to the fact that it offers antibacterial activity, maintains a moist wound condition, and its high viscosity helps to provide a protective barrier to prevent infection. Its immunomodulatory property is relevant to wound repair too. The antimicrobial activity in most kinds of honey is due to the enzymatic production of hydrogen peroxide. However, another kind of honey, called non-peroxide honey (*viz.*, manuka honey), displays significant antibacterial effects even when the hydrogen peroxide activity is blocked. Its mechanism may be related to the low pH level of honey and its high sugar content (high osmolarity) which is enough to hinder the growth of microbes. Medical grade honeys have potent *in vitro* bactericidal activity against antibiotic-resistant bacteria causing several life-threatening infections to humans. But there is a large variation in the antimicrobial activity of some natural kinds of honey, which is due to spatial and temporal variations in sources of nectar. Thus, identification and characterization of the active principle(s) may provide valuable information on the quality and possible therapeutic potential of honey (against several health disorders of humans and animals). [4]

Support for this project will allow the spread of our honey to the medical, pharmaceutical, cosmetic, and nutraceutical markets and put Newfoundland on the global market for organic and medicinal honey production. The financial benefit for Newfoundland, outside of the taxes, will come in the form of employment, provincial contracts, and partnering with research teams at the College of the North Atlantic and/or Memorial University for any number of possibilities. This project can affect the island's economy in a very real way.

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[3] Stokes, Carolyn. "Let It Bee: How an Infestation Led Me to Become so Passionate about the Beauty of Bees." *CBC Nfld. & Labrador·Point of View*, 27 Jan. 2019, https://www.cbc.ca/news/canada/newfoundland-labrador/carolyn-stokes-bees-1.4952445.

[4] Manisha Deb Mandal and Shyamapada Mandal. "Honey: It's medicinal property and antibacterial activity." Asian Pac J Trop Biomed. 2011 Apr; 1(2): 154–160. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3609166/

DESCRIPTION OF THE UNDERTAKING:

(i) **Geographical Location:**

- It's approximately 18 km southeast of Grand Falls-Windsor
- The Center of Canning's Lake is 1.8 km east of Highway 360

(ii) ***Description of the Proposed Site***

- The entire boundary is in Forest Management Zone 4
- Distance of land from the publicly maintained road is 100 feet
- There is a Hydro line that borders above the proposed area, therefore there is no encroachment of Hydro roads or highways
- The land will be accessed from Route 360, the Bay D'Espoir Highway, by Hayne's Lake Access Road, which is an existing woods road
- There is an existing parcel of land leased by Trevor Tuck on the proposed site, Lease #154152, where the Bee Yard will be located
- Bee Yard will be approximately 50'x50' and fenced in by a solar-powered electric fence
- Boundary lines will be indicated with signage and a public awareness campaign with social media posts and media coverage will alert the public to the farms' existence and operation
- According to the Crown Lands online information, this land is zoned for Silviculture.

Please see Appendix A, Map A.2 for labeled areas and A.3 for the Crown Lands zoning information.

(iii) **Physical Features:**

- Canning's Lake is the main body of water on the parcel of land. You can see it identified on Maps A.2 and A.6.
- There is a brook that runs from Hayne's Lake to Canning's Lake (noted in A.2)
- The land ranges from rugged to barren with minimal points of elevation
- Needed land area is 2000ha
- There are cutovers with berry bushes and wildflowers and a small swath of old-growth forest that would be beneficial to keep for the medicinal honey project
- Boundary lines will be indicated with signage and a public awareness campaign with social media posts and media coverage will alert the public to the farm's existence and operation
- Trail cameras will be placed in strategic areas

a. ***Size of the Proposed Area***

To have medicinal honey grade there is a need to be able to control the environment within the 2,600 m radius that the bees travel. That is why such a large portion of land is required. The success of the project entails occupying the required footprint and ensuring proper utilization of the surrounding area.

> "Usually foraging for the bee is limited to food sources within its own area. Foraging requires energy and the honeybee's evaluation as to where, what, and how long to forage is all related to the economics of energy consumption and the net food gain to the colony. For example, foraging bees may not access a high-quality food source when its collection requires more energy than what the food source can offer. Bees generally fly only as far as necessary to secure an acceptable food source from which there is a net gain. Factors that influence foraging behaviour include: - weather e.g. wind, temperature, and sunlight, - distance of the food source from the hive (including differences in elevation), - food quality (concentration of sugar, protein content of the pollen), - quantity of nectar or pollen."[5]

Requiring control of the land, within the project scope, is defined as limiting development on the land, i.e., no buildings, no use of pesticides or toxic chemicals. There would be no requirement to limit access with respect to trails, berry picking or hunting that people occur. Also, as mentioned below under *Resource Conflicts – Forestry*- no further silviculture. There are no issues with continued harvesting. Any concerns regarding silviculture is addressed under the noted heading.

(iv) **Construction**

There will be no construction on the proposed site. The area can be accessed by the existing woods roads and honey will be brought back to the production facility located in Grand Falls – Windsor.

(v) **Operation:**

The initial stage of the project is the placement of the beehives on the existing site leased by Trevor Tuck #154152 noted on various maps in Appendix A. He will transport 25 hives to Canning's Lake in a regular truck. In year two, the number of colonies can be doubled to 50. The same will occur in years three to five with the number of colonies increasing to 100, 200, and 400 respectively.

The farm will be operated year-round. An employee will visit the area weekly throughout the harvesting season to monitor the hive and collect honey. Mr. Tuck will be using well-maintained transportation which includes trucks, ATVs, or skidoos, as needed. As it is imperative that there be no pollutants in the area, all vehicles will be equipped with spill kits. In the winter, monitoring will be reduced to every two weeks and then once per month, as the weather allows.

Once honey production is underway, Tucks Bee Better Farm will be partnering with Memorial University and the College of the North Atlantic to begin testing the quality and components of the honey. If we find that certain hives are of better quality, research will

[5] Ministry of Agriculture, Food and Fisheries. "Apiculture Factsheet." Factsheet #111. Government of British Columbia. https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/animal-and-crops/animal-production/bee-assets/api_fs111.pdf

go into trying to find the source of the difference, with the goal of creating an exceptional medicinal honey product.

In time, three employees will need to be working with the bees, collecting honey, opening the colonies, producing queens, and checking for bear or rodent damage.

There will be no use of chemicals, cleaners, or land-clearing equipment. The only things stored on site will be the beehives on site #154152.

*(vi) **Details of any Potential Causes of Resource Conflicts:***

Environment: No anticipated conflicts as nothing will be done to the land in this License to Occupy #159579. An official in the Department of Environment did indicate that forestry would need to provide a detailed description of the current five-year operating plan for this specific area and compare it to the proposed changes (no further silviculture) to that area. Surrounding land users will not be impacted as the bees do not fly outside of the 2000ha. Any conflicts relating to tree harvesting and silviculture are addressed in the following explanation under Forestry.

Tuck's Farm will have surveillance to watch for wildlife interactions, dumping, or vandalizing. We commit to monitoring and advising any and all relevant departments of anything we discover.

Forestry: Harvesting is not an issue as it is important that harvesting continues in order to make the land viable for bee foraging. Harvesting can continue throughout the year and is not restricted by the honey production. The more food sources that are available for the bees as a result of the harvesting, the more colonies Mr. Tuck can place on the land.

This proposal is asking that any further silviculture be put on hold for five years until this project is evaluated. The natural flora growth in the harvested areas is key to keeping the bees in the necessary 2600m radius. This ensures they are only foraging in the pristine, pesticide-free environment. Given that the earning potential from year one to five goes up to $875,000, it would be financially justifiable to halt further planting until the five-year time line is completed.

It is acknowledged that there has been recent investment ($200,000 - $300,000) – In 2020 and 2021 silviculture investments including site preparation (305ha) and plantations (290ha) have occurred inside the proposed area. This investment will not be harmed, in fact, by allowing Tuck's Bee Better Farm to use 2000ha as a foraging buffer zone for bees, the natural environment with have the best chance to thrive.

Tuck's Farm would also like Forestry to contact the harvesters in the area and ask them to leave the old-growth forests in their specified areas. Old growth has no value to the harvesters as those trees are not structurally fit for lumber, however, they are required to cut it. It would provide an opportunity for them to save money and time to leave the old-growth forest. The Government of BC found that by removing old growth trees there was a high risk of loss of

biodiversity in many ecosystems. These trees provide the bees and nature with all of the things it needs to remain healthy. They produce polypores and a network of *micro psyllium*. That network is like an immune system for the whole forest. Bees feed on the polypore or fungi that are known to produce a wide array of chemicals with antimicrobial activity, including compounds active against bacteria, other fungi, or viruses.[6] Therefore, if we allow the old growth to stay on the proposed site, the bees will be able to access the polypore production, the very medicinal substances that ensure and improve the health of the bee, and the medical efficacy of the honey.

Mining: As per the resource map on the Government of Newfoundland and Labrador's website, there are no mining interests in the area.

Newfoundland and Labrador Hydro: There is a hydro line indicated on the map, however, there are no hydro lines within the Crown parcel under the application.

Crown Lands*:* It is key to not allow any cabin permits or dwellings as cabins bring pollution and will halt any production of medicinal or organic honey.

(vii) **Occupations**

At this time, it will be the owner, Mr.Tuck, who will be involved in the operation. Within the first five years, it is estimated that there will be at least three new hires. These people will be general labourers or beekeepers in training. In time, the farm hopes to hire an estimated 6-8 people full-time to work on the farm to assist with the honey removal and care of the hives.

The only occupation is beekeeper/farmer. There will be no hazardous occupations involved in the project.

People who are hired to assist with the bee colonies will help by inspecting the hives for any issues and gathering honeycombs to transport to the processing facilities in Grand Falls Windsor and raising queens and making more bee colonies.

When they are at a point of growth, Tuck's Bee Better Farm will post jobs open to the public and will utilize various media and social community groups to reach as many people as possible. They look forward to being an equal-opportunity employer and we believe there is a place for everyone at Tuck's Bee Better Farm.

[6] Ministry of Forests. "B.C. introduces new measures on old growth, innovation, forest stewardship." Government of British Columbia. February 15, 2023. https://news.gov.bc.ca/releases/2023FOR0009-000191

APPROVAL OF THE UNDERTAKING:

There is no other requirement other than the License to Occupy for the proposal.

SCHEDULE:

2023 - The hives will be relocated to the site and settled in to prepare for the honey production season. Once the hives are in place, the solar-powered electric fence will be installed.

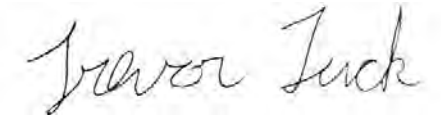
April 2024 – hiring one or two employees to train and subsequently assist, with the hive development and collection of honey. Once enough honey has been collected to process, we will be connecting with Memorial and CNA to start testing the samples.

Fall 2024 – Prepare hives to overwinter.

This process will be the same each year until the License to Occupy is nearing the end of the five-year term. If the venture has proven successful, we will apply for an additional five years.

FUNDING:

This project is not reliant on any grants or loans from the government or any other agency. There are no foreseeable capital costs.



August 22, 2023

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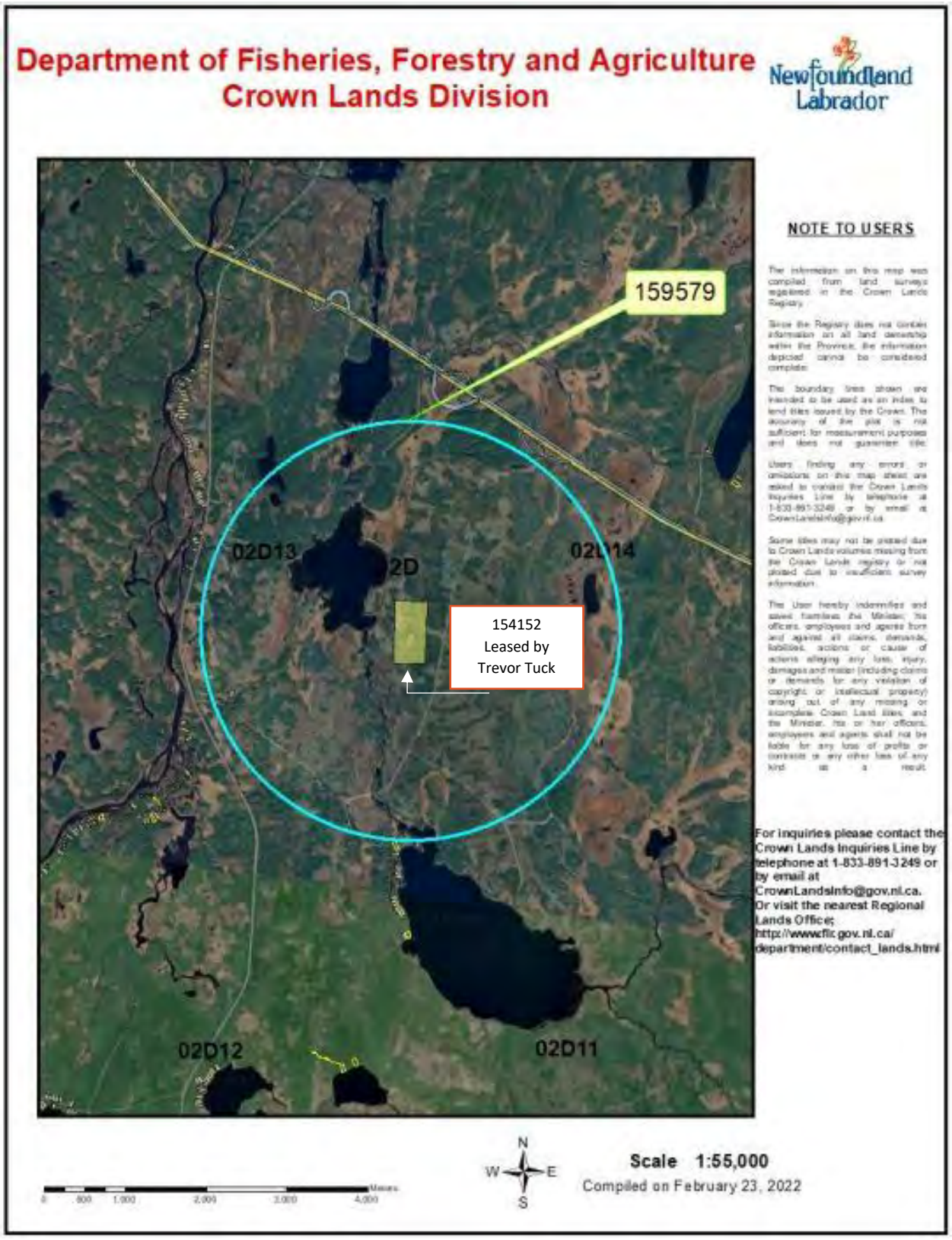
Date Signature of Chief Executive Officer

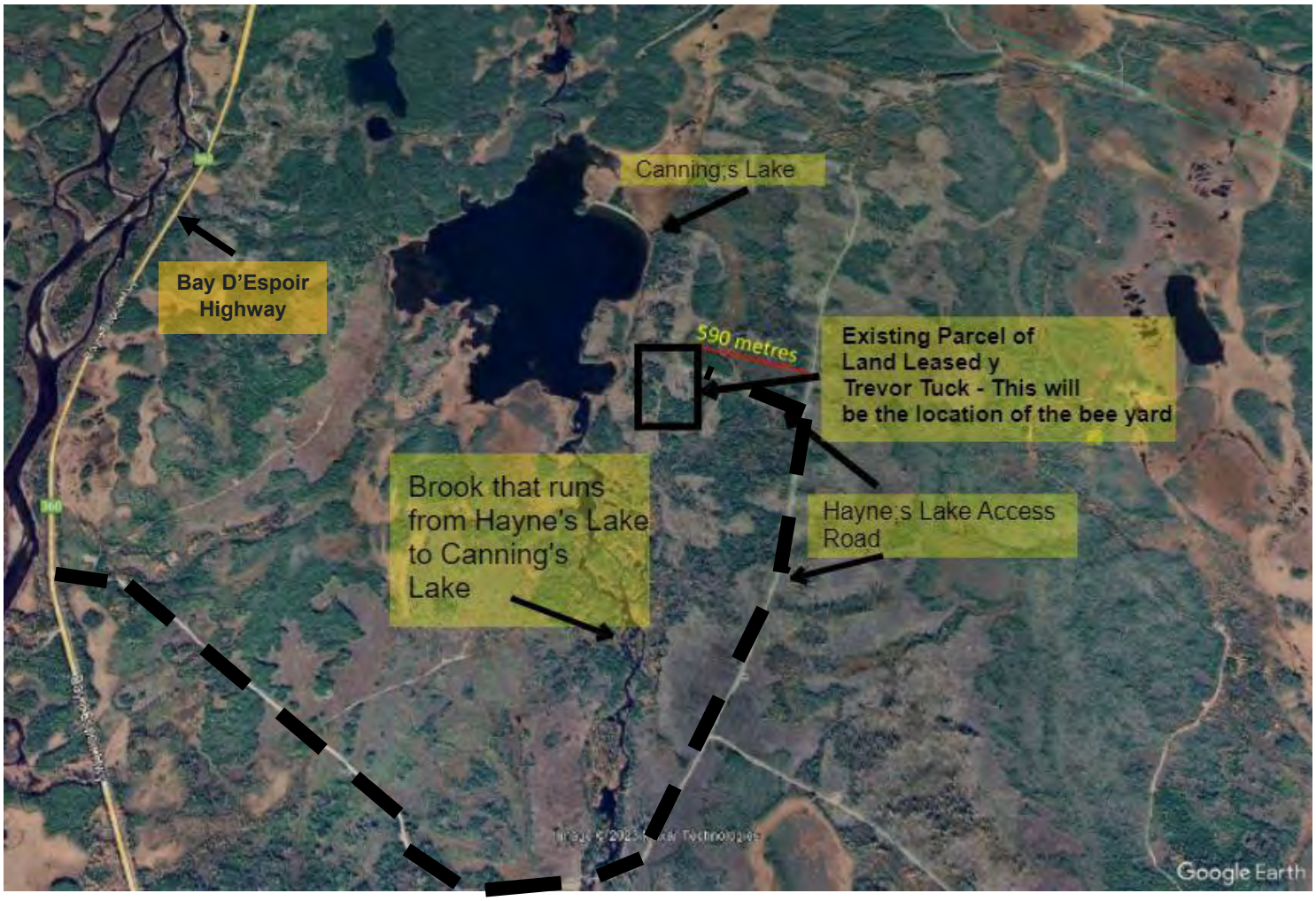
APPENDIX A – MAPS

A.1 - Proposed Site

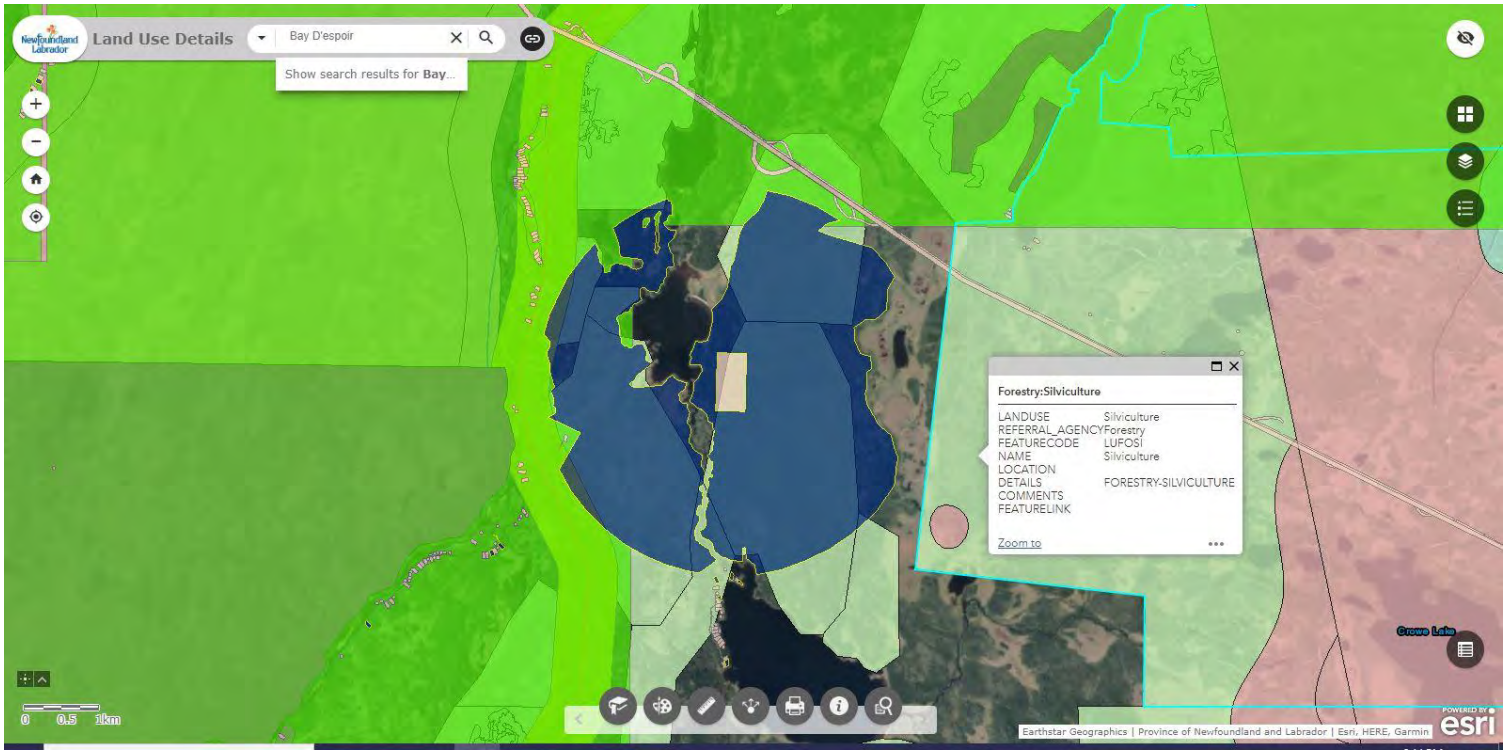


A.2 Labeled Map of the Proposed Area

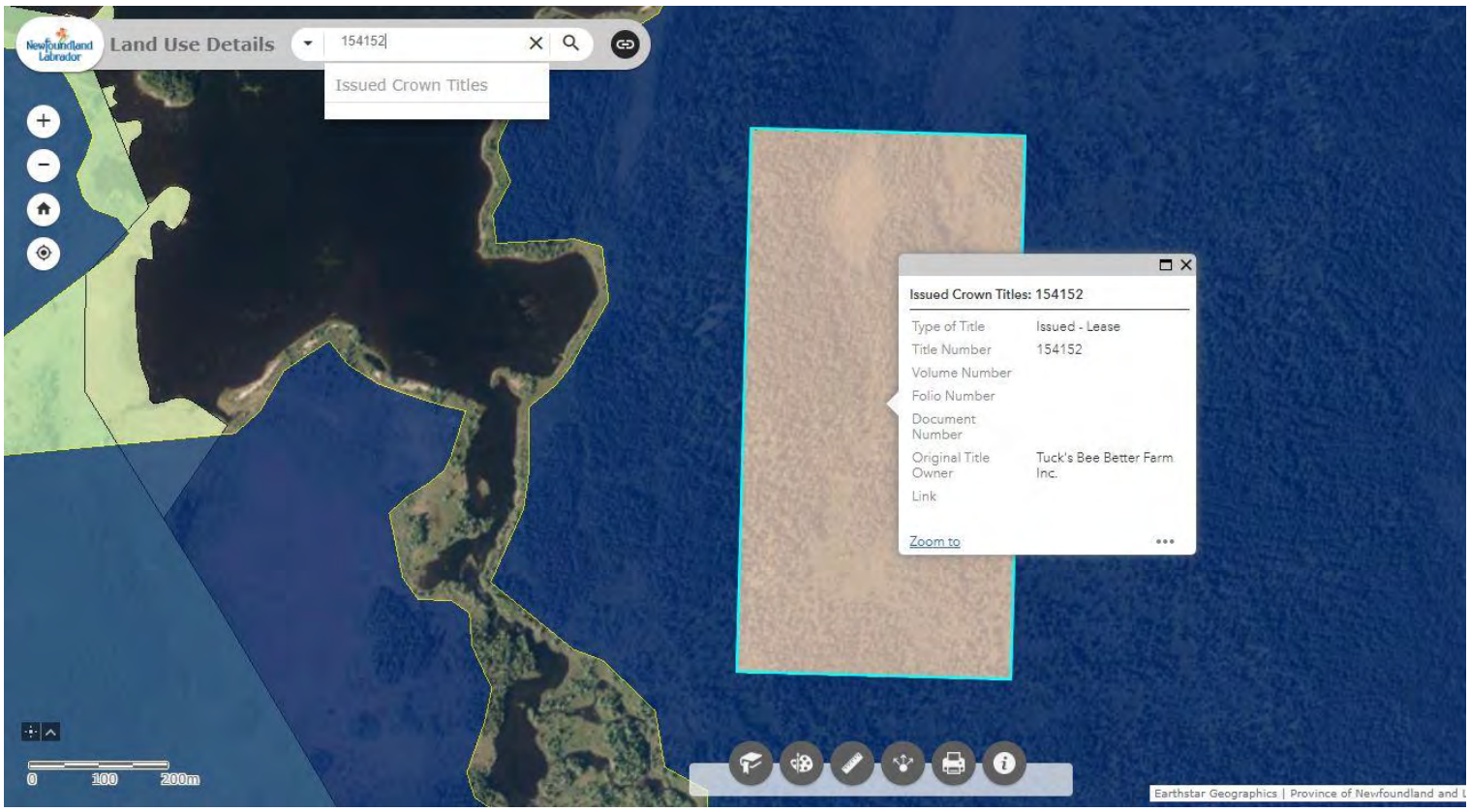
To access the parcel where the bees will be located, one drives south on Bay D'Espoir Highway and make a left turn on Hayne's Access Road. That road is noted by the dashed line below. That takes one direct to the parcel of land already leased by Trevor Tuck is Lease #154152 where the bees will be located.



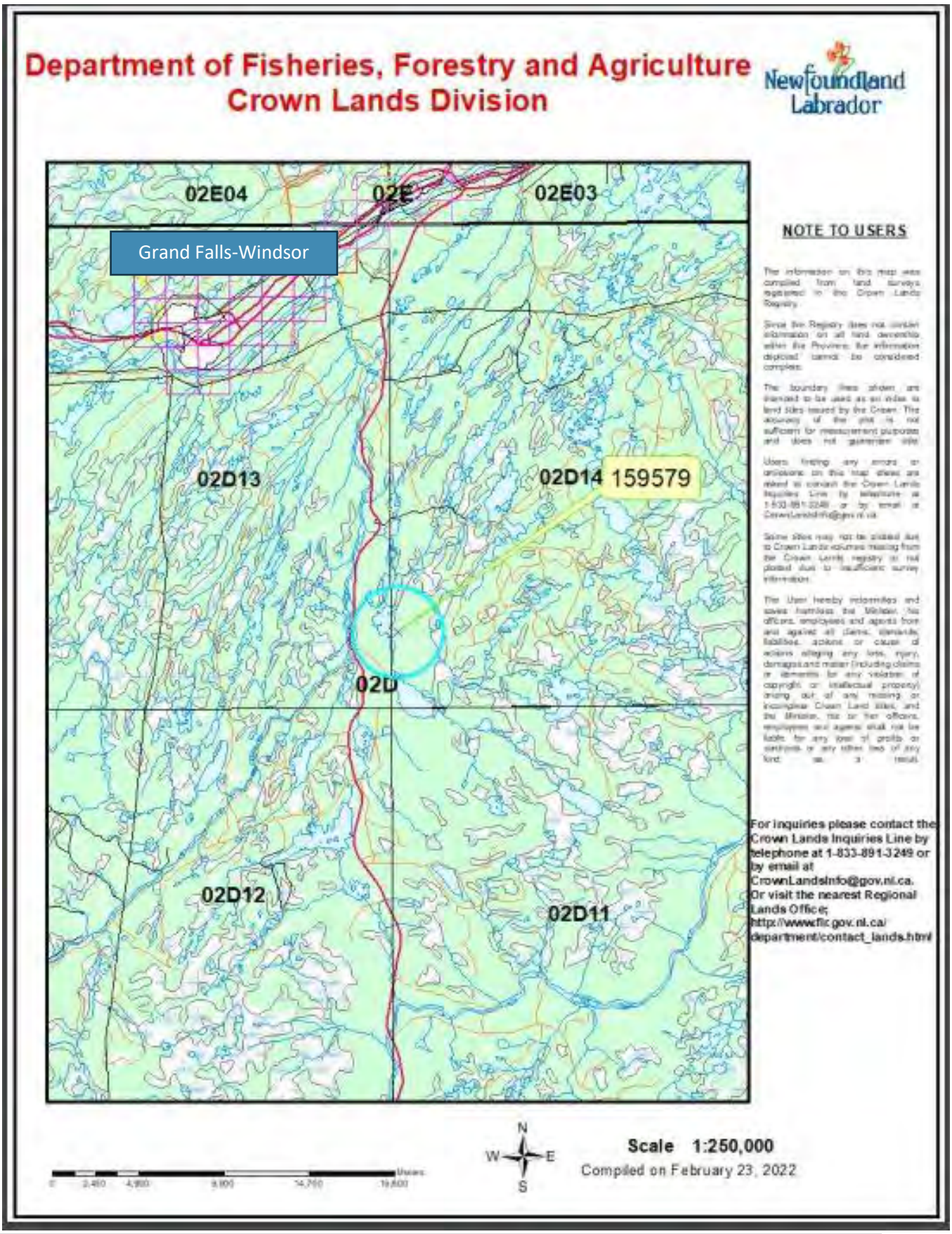
A.3 Crown Lands – Land Use Details



A.4 Existing Lease on the Proposed License to Occupy Site



A.5 Ratio 1:250,000



A.6 Other Close-Up Images