

Geothermal Park Summary Report

(Ray Hickey, Executive Director of the Cumberland Energy Authority presented an update on the Geothermal Industrial Park to Cumberland Council on March 10th. A copy of the presentation follows.)

The Springhill Geothermal Business Park has been a long-standing goal of the community of Springhill since the former coal mines ceased operation, they naturally flooded with water over time. This water is both large in volume - thanks to the expansive former mine workings - and relatively high in ambient temperature due to the depths of these mines. Since the late 1980's, both private and public efforts have been made to harness this energy resource with increasing success as technology, knowledge and need have advanced.

In the early 2010's, the former Town of Springhill began working with the County of Cumberland and the Cumberland Regional Economic Development Agency (CREDA) to develop a business park using geothermal energy. A Cumberland Regional Energy Strategy was completed and in 2012 the Cumberland Energy Authority (CEA) was formed. Just prior to the dissolution of the Town of Springhill a Mineral Rights Lease was granted to

the County of Cumberland to control further development of the Geothermal Resource. Several studies were commissioned to further assess the project potential and evaluate historical work. These include Researching the Geothermal Potential of the Former Springhill Mine by the Verschuren Centre at Cape Breton University, and a Management Without Boarders research project through Dalhousie University.

Upon completion of these research studies, it was decided the next steps would be to quantify the economic and environmental value of using mine water geothermal energy, and to further study the mine workings to ensure they were harnessed properly. The Energy Use Study, completed in 2017 by Efficiency One, evaluated current geothermal users in Springhill and compared them with similar facilities elsewhere using traditional heating and cooling methods. Case studies included the Springhill Community Centre and Byway Packaging. It was found those using mine water geothermal used between 48-78% less energy. The results were extremely encouraging and prompted support from both ACOA and Nova Scotia Business Inc. for business park

development. A Deep Mine Workings Review was also completed in 2017 by CBCL, which verified the locations of mine workings below the surface, and suggested the best options for tapping into the mine water resource.

In 2019 the process began for designing a business park using minewater geothermal energy. A Concept Pre-Design was completed by Design Point outlining a business park design, a District Energy System to distribute heating and cooling to customers, and cost estimates. Draft reports are included. Final reports will be submitted this month, and include some optional work examining supplying geothermal energy to the downtown Springhill area.

Moving forward, the next phase of work is to complete detailed designs for initial construction. The PreDesign took into account that it is not fiscally responsible to complete an entire new business park prior to attracting business development. Initial detailed design work would be limited to constructing access to early building lots and a limited-scope District Energy System to supply these lots with geothermal energy. As building lots are sold, the park could be expanded in phases, eventually

connecting with the highway connector, allowing commercial traffic to bypass local residential streets.

In addition to construction, there is also a need to do subsidence testing on the lands above the former mine workings to provide assurance to developers there is little risk of sink holes or other mine related issues. The risk is believed to be very low, but third party testing can confirm this. There is also need for an aggressive marketing plan to attract new businesses and policy work for potentially establishing a new energy utility to operate the District Energy System.

Spending on the Geothermal Business Park to date has included studies, well drilling and a minor land purchase. The current Pre-Design phase of the park was budgeted at \$250,000, with the total to date at \$215,530 with one more invoice to come. The Deep Mine workings Review totaled \$187,857.08, including two test wells. Both of these projects were funded 50% by ACOA. The cost of the Efficiency One Energy Use Study was \$60,785, and a small home was purchased at the potential new entry to the park near the highway connector for \$32,891.

Management Without Borders

(Part of Ray Hickey's presentation to council on March 10th included the lengthy 49 page analysis Dalhousie University, Management Without Borders study. The executive summary follows.)

This report seeks to provide a comprehensive external/internal analysis and a preliminary communications plan to the Cumberland Energy Authority for the development of the Springhill

Geothermal Green Industrial Park.

The Cumberland Energy Authority (CEA) is a joint municipality energy development initiative in the County of Cumberland, Nova Scotia. The authority's mandate is to promote, develop, and attract renewable and alternative energy in the region. The Springhill mine water geothermal resource is encompassed in the CEA's mandate for development.

The Springhill mine water resource is a now flooded former coal mine. The flooded

mine workings

allow for temperate water to be pumped to the surface and used for heating in the winter and cooling in the summer due to the heat differential below the surface. Since heat is extracted or transferred back into the water, the same water source can be used for heating or cooling, depending on the needs of the user.

This 49 page report consisted of examining existing data collected from various sources on the resource. An external analysis was conducted using a PESTEL and an internal/external analysis was conducted using a SWOT. A jurisdictional scan and communications plan were also developed. Several recommendations have been proposed for advancing the Geothermal Industrial Park. A greater understanding into the capacity, integrity, and future development opportunities of the mine water resource must be achieved prior to proceeding with substantial marketing and

communications. As the integrity of the system is directly proportional to the monitoring and control of its use, it is essential to communicate clear management of the resource to potential investors.

The multipage report included analysis of the following topics: Project overview, scope, methodology, proposed communications

plan, purpose, background, environmental analysis, swot analysis, pestel, political - economic and social analysis; social, technology, environmental, legal and analysis/synthesis considerations; communications objectives; strategic considerations, plus key audiences (target markets), marketing mix, product, pricing, promotion, market

strategy - target market for agriculture/aquaculture, and manufacturing. Other items within the report included comparison to other global locations which have or use geothermal energy as well as data from Statistics Canada relative to population trends and other economic data.

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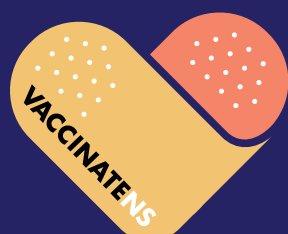


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