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Ball Park Power Estimate Report

For:	[redacted]	Site Name or Number:	[redacted]
Email:	[redacted]	Site Location:	[redacted]
Phone:	[redacted]	Date:	November 14, 2012

Spot Hydraulic Power Estimate:
(Based on measurements you submitted on your letter of authorization)
Note: Hydraulic power is the power in the water. Electrical power output is lower because of reduction for mechanical efficiency losses and electrical efficiency losses.

5.4 kW (185 liters per second x 3 meters head x 9.81)

Implicit Rate earned per kWh if connected via Net Metering arrangement:
(Based on submitted electric bill, see worksheet)

15.4 cents per kilowatt hour

Rate earned if connected via a Feed in Tariff contract:

13.1 cents per kilowatt hour, 20% indexed to inflation

Possibility of physical screw placement at the site:
(Based on supplied pictures)

Yes, either side of the dam/bridge has enough room for physical installation. Most likely placement is the mill side of the dam as other side is another property owner.
Property owner indicates ownership of land under mill pond /mill/ dam, therefore lands affected by installation are owned except road. Installation under road possible.

Proximity to grid access:
(Based on supplied pictures)

Yes. Very close to grid access. 3 phase.

Relative attractiveness of Net metering versus Feed in Tariff contract:
(Based on supplied electric bill rates and usage)

Difficult to conclude at this point, as supplied electric bill does not cover a full year showing total kWh usage for a year. January to May period shows a 5 kW system would offset usage (114 kwh/day divided by 24 hours/day = 4.75kW), whereas in the period May 31/12 to Jul 4/12 period a 20kW system would offset usage. Therefore it is possible a system could offset all usage given the approximate size of the site.

To determine which arrangement would be more attractive, kWh usage per year would have to be studied as well as any plans for increased usage, as well as the kWh production annually from a planned system.

Other factors would also have to be considered such as the likely continued existence of the business to net meter against and future electricity prices.

Additional Comments:

Due to the close proximity of this site to our office, we visited this site and measured the existing head on Nov 14th/12 of 4.45 meters. Flow measurement was not possible due to debris accumulation at overspill point of the dam that would conflict with any water height measurement and therefore provide unreliable weir calculations of water flow. Flow visually estimated at roughly 500 liters per second on this date. Hydraulic power at this head and flow is 21.8 kW (9.81x 4.45m x 500lps)

MNR site number was determined: 2GB6 , they indicate estimated size of 10 kW. Head was estimated at 4.3 meters.

As dam owner indicated mill pond bed and dam was owned, this is likely not a crown site subject to Site Release, but this should be checked.

Dam stop log height was raised, with permission of owner, in recent past by float plane owners who use the mill pond, because they were bottoming in the pond, probably due to silting in of the pond in areas over the last 100 years. Owner indicated high flows get very close to top of opening between stop logs and road above. As well water gets very close to road height in these times. Should consider lowering of dam board height for safety reasons as dam over topping in severe flooding is the major cause of dam failure. In the event of severe high flows removal of stop logs at last minute would be almost impossible. The debris in front of the dam overspill that prevented flow measurement is also a concern that restricts flow over the dam. This debris should be removed to allow flow for safety reasons. Large fallen trees below the dam may also be restricting flow and causing increased water heights immediately below the dam. Both of these problems should be addressed prior to any further flow and head measurement.
Conclusion: A reduced head below the existing dam stop board height should be considered for any installation.

Conclusions: Does an opportunity exist?

Yes, because of the following;
- There is sufficient head and flow to make power production feasible
- Room exists at the site for an installation
- There is close proximity to the grid to allow feasible connection
- Site was formerly developed

Note:

The "Ball Park Estimate" indicates whether a site presents an opportunity worth investigating. After assessing this report and your situation, if you wish to proceed with us, the next step is a "Site Feasibility Assessment".

A "Site Feasibility Assessment" involves a GreenBug Energy representative visiting the site to ensure an installation is feasible. It involves further research into water flows to get a more accurate power estimate.

It also involves research into the potential connection and potential environmental issues. This work does not guarantee connection or environmental approvals nor does it determine the optimal system. It attempts to clarify these issues so that a decision can be made regarding moving forward with a "Detailed Project Plan", environmental approval, and connection applications.

You can learn more about this step and the entire site assessment process at this page on our website http://greenbugenergy.com/shop-hydro/shop-hydro-products-services/site-assessment-services/

The approximate cost of a Site Feasibility Assessment is $5000 CDN plus travel. To request a quote please contact us mikeslater@greenbugenergy.com or 519-582-8563.