



**Environmental Assessment:
Registration of Undertaking**

Feasibility Study:

Deer Lake Underwater Log Survey Project

May 18, 2018

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Environmental Assessment - Registration of Undertaking

Name of Undertaking: Feasibility Study: Deer Lake Underwater Log Survey Project

Proponent:

1. **Name of Corporate Body:** Deer Lake Tourism Development Corporation (DLTDC)

2. **Address:** c/o Town of Deer Lake
34 Reid's Lane
Deer Lake, NL A8A 2A2

3. **Chief Executive Officer:**
Name: Damon Clarke
Official Title: Administrator

4. **Address:** 34 Reid's Lane
Deer Lake, NL A8A 2A2

Telephone No.: 709-635-0165

5. **Principal Contact Person for purposes of environmental assessment:**

Name: Damon Clarke
Official Title: Administrator, DLTDC
(Economic Development Officer/Town Planner)

6. **Address:** 34 Reid's Lane
Deer Lake, NL A8A 2A2

Telephone No.: 709-635-0165

The Undertaking:

1. **Name of the Undertaking:** Feasibility Study: Deer Lake Log Survey and Recovery Project

Purpose/Rationale/Need for the Undertaking: Beginning in the mid-1920s and continuing for the next 60 years, four-foot-long pulp logs destined for the paper mill in Corner Brook were directed from the Humber Canal into the northern end of Deer Lake, where they were gathered into booms and towed to the southern end of the lake. From there, the logs were funnelled down the Humber River to its mouth at Corner Brook in the Bay of Islands and stored there in booms until they were needed for processing at the paper mill. Over the course of six decades,

many of the logs sank to the bottom of Deer Lake, where they remain, well-preserved in the cold waters of the lake. Today, there are sunken log recovery operations based in British Columbia, the Great Lakes and along the Mississippi River. The wood recovered in those areas has good value and is used in the creation of furniture, flooring and musical instruments.



A boom containing pulp logs is shown in front of the power house at Deer Lake during the 1960s.

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The Town of Deer Lake wishes to establish a partnership to avail of the province’s research capabilities to determine the environmental and economic implications of recovering these logs for processing and eventual sale to specialty markets. We need to know the volume of logs that has accumulated on the lake bottom, the quality of the wood contained within them and where they are concentrated. This knowledge would be gathered through a bathymetric survey of the lake bottom utilizing side-scan sonar technology and filming of the bottom using remotely-operated vehicles equipped with video cameras.

Description of the Undertaking:

1. **Geographical Location:** The body of water known as Deer Lake is located in Western Newfoundland, between the communities of Corner Brook and Deer Lake (Please see Figures 1 and 2, below). The lake has a surface area of 6,915 hectares (26.7 square miles).

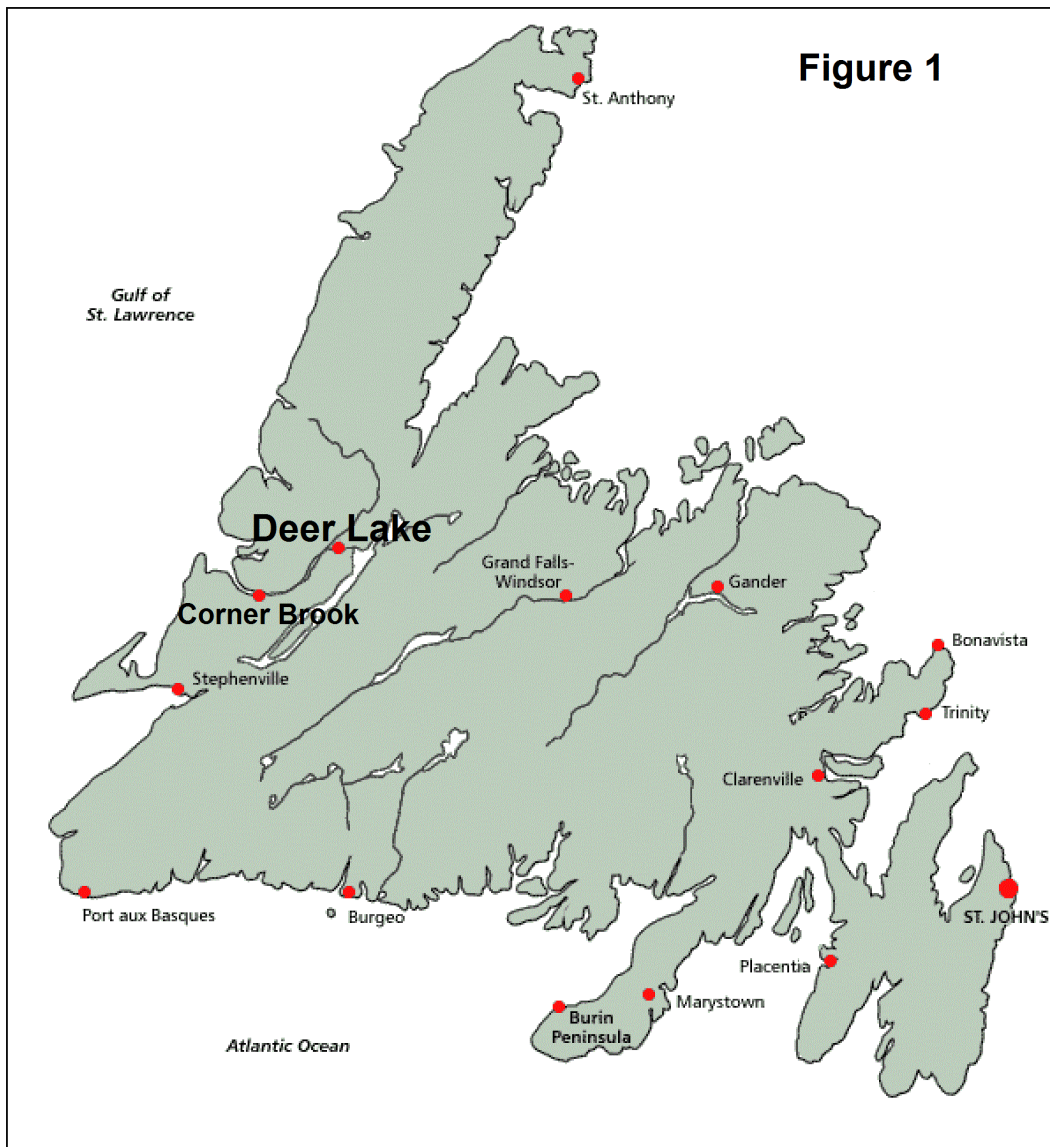


Figure 1: The island of Newfoundland.

The map below (Figure 2) shows Deer Lake (the body of water) and the communities which are located near its shores.

Figure 2



Figure 2: The area around Deer Lake

The primary inflow of the lake is the Upper Humber River, while the primary outflow is the lower Humber River, which drains Deer Lake near the community of Little Rapids. (Please see Figure 3, below)

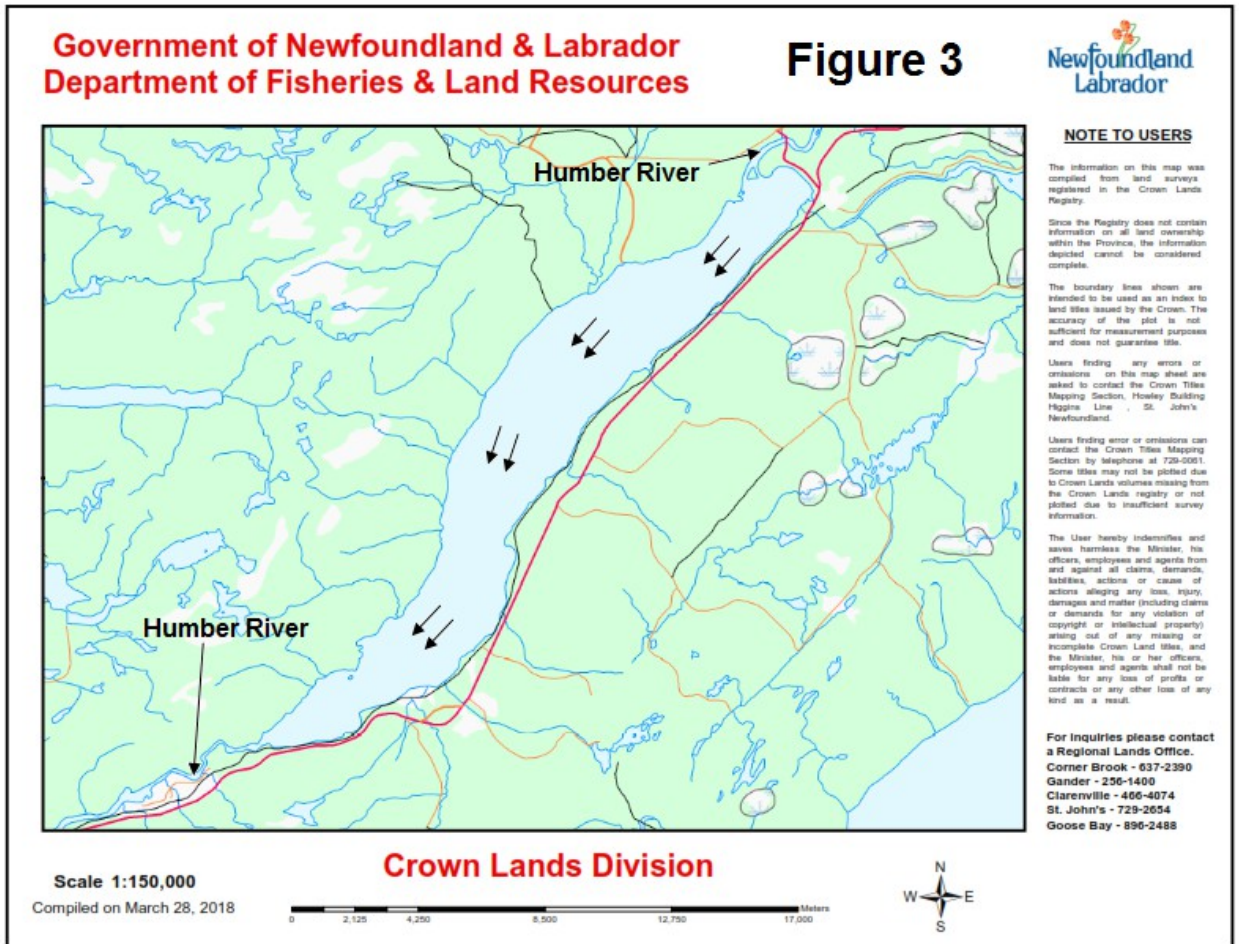


Figure 3: Deer Lake and surrounding area showing water inflows and outflows

The intention of this project is to survey the entire lake using side-scan sonar to determine where logs are concentrated. Side-scan sonar can be used for depths up to 200 metres and its minimum depth is 2 metres. It is also expected that a remotely-operated camera will be used to film underwater to provide complementary information about the quantity and location of the logs. The plan calls for the team to recover several logs to be examined with an eye to determining the quality of the wood. There are no plans to survey the immediate areas where the Humber River discharges into Deer Lake or the outflow of the Lower Humber River.

2. **Physical Features:** The body of water known as Deer Lake comprises part of the scheduled salmon river between the Upper Humber and the Lower Humber. The lake is home to salmon and trout. The actual survey will be of the floor of Deer Lake and part of the goal is to catalogue the geology of the lake bottom to determine areas where there may be sediment. (Please see Figure 3).

3. **Construction:** None...feasibility study only. Subsequent phases will proceed only if there are logs of sufficient quality and quantity found on the lake bottom. In addition, the development of any business would require approval from a host of provincial and federal government departments and agencies and the development of sufficient markets to sustain such an operation. Subsequent phases would include the following:
 - An Environmental Impact Study to determine the impact this activity would have on natural lake features such as fish and vegetation;
 - Exploration of markets for the logs;
 - The securing of funds to establish a business to recover, process and market the logs, and
 - Establishment of a kiln-drying operation and shore services such as a launchway, wharf and staging area.

4. **Operation:** The proponent is seeking approval for a feasibility study only at this point. Any operation will require environmental approval, demonstration of sufficient markets, securing of a kiln and establishment of a site, preferably on the shores of Deer Lake. In relation to the economic issues, the town hopes to determine:
 - If there is a market for the recovered logs, where will these markets exist?
 - What equipment would be required to transform the recovered logs into market-ready materials?
 - If the logs do possess economic value, what would be required for a local business to pursue the opportunity?

The proponent plans to utilize side-scan sonar technology that it already possesses. It has been proven that side scan sonar and the remotely-operated vehicle ROV is a very effective method of searching and recovering objects submerged underwater. Side Scan Sonar uses sound waves to map underwater terrain and objects, and covers large areas of sea floor with minimal manpower, fewer boats, and in less time. It also enhances the effectiveness of diving operations. Sample logs will be winched to a boat on the surface of Deer Lake and taken ashore for analysis, which will include cutting the logs to view their grain. Please see Figure 4, Page 8, in which the x marks the approximate location of logs. There is, according to anecdotal information, a larger gathering of logs at both the northern and southern end of the lake. In addition, logs are gathered on the bottom along the edges where the lake depth suddenly plummets.

Approximate Locations of Sunken Logs

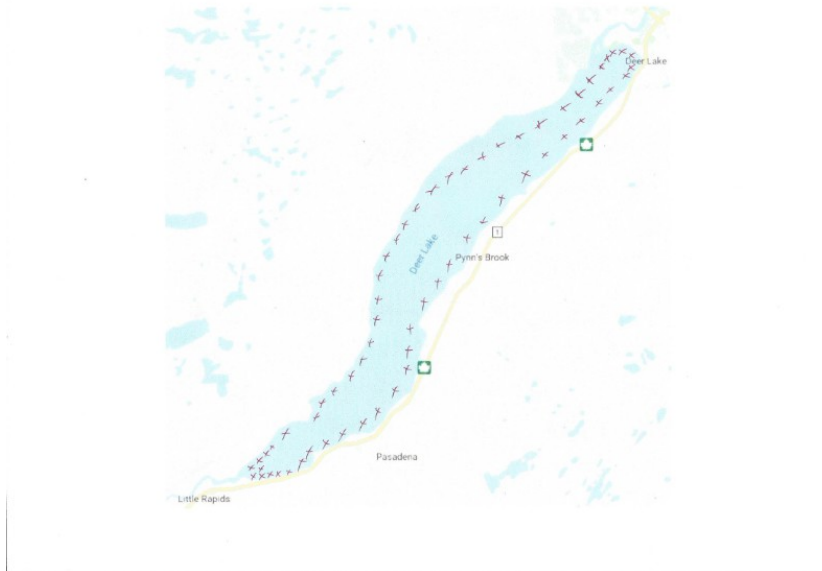


Figure 5, Areas that contain sunken logs

5. **Log Recovery Process:** It is proposed that sample logs be taken from several pre-determined locations around the lake. Possible sources of log samples will be found by using remotely-operated cameras to view log accumulations on the lake floor. These locations will be viewed and plotted and a diver will then go into the lake to secure the sample logs. It is anticipated these will be brought to the surface using a winch. The recovered logs will be marked with the time, date and location. This process is expected to proceed in June, in advance of major salmonid movements.

The logs will be analyzed by a representative of a company, such as AquaTimber, which is already active in the industry. Ideally, we would have a representative come here to assess the wood, rather than ship the log samples away.



Figure 6: This "towfish" is pulled behind the boat.

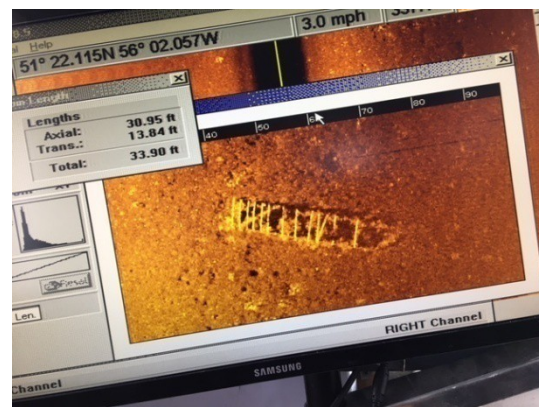


Figure 7: This image shows the side-scan sonar

6. **Occupations:** There will be zero employees at this stage. Volunteer members of the Deer Lake Underwater Rescue and Recovery Team will conduct the side-scan sonar information gathering, while graduate students from post-secondary institutions such as Memorial University, Grenfell College and College of the North Atlantic will focus on specific topics within their field of study, such as the impact on fish habitat. To that end, the proponent has entered a project description in Yaffle, a Memorial University program that pairs researchers with project proponents. The proponent was unable to find any National Occupation Code for volunteers or for researchers or post-secondary students.

7. **Project-Related Documents:** The proponent has attached to this submission several articles which explain the recovery process in areas such as British Columbia, products made from underwater logs and a profile of the company AquaTimber. Please see Appendices A, B and C, beginning on Page 5.

Approval of the Undertaking: The main permits, licences and approvals required for this undertaking would be issued through the Department of Environment.

Schedule: The earliest the feasibility study will begin in May of 2018. The latest start date would be mid-July, 2018.

Funding: The town has budgeted funds in the 2018 fiscal year to pursue this project. Additional funding to cover the students' costs will be accessed through funding sources such as MITACS and Memorial University's Co-operative Education program.

Date

Signature of DLTDC Administrator

Appendices:

Supporting Literature

Appendix A:

Underwater Logging in Quebec

Wood Story: Underwater logging in Quebec's Lake Memphremagog



Underwater Logging

Photos by Ross Spencer

The Inspiration

“What a great idea!” Richard Baird thought, as he watched a Learning Channel’s presentation on the underwater recovery of old growth logs. An American company was shown, pulling up logs from the bottom of Lake Superior. Richard watched intently as huge logs were recovered from the bottom of the lake, where they had been buried for over a hundred years. Richard remembers with awe and surprise: “The wood was as good as the day it sunk!”

The Learning Channel presentation really inspired him. Full of enthusiasm, Richard went to share his excitement with his cousin Ross Spencer, who owned and operated a marina on Lake Memphremagog, in Quebec. He also sought out Richard Thouin, a commercial diver who owned and operated the diving shop at the same marina. Both thought the idea of harvesting logs from Lake Memphremagog was worth looking into. Thouin added to the overall enthusiasm as he recounted seeing a lot of logs on his dives in the lake.

Researching the Business

They decided then and there to start doing research to determine if there were enough good logs in the lake to warrant getting excited about.

History records showed that there were a number of mills and logging crews working on the lake in the 1700-1800s. History records also tell us that water-powered grist mills and sawmills were built on the lake in 1798. In fact, Ross's great-grandfather had owned a large part of a nearby mountain and he and his men had logged it. They used to haul their logs to the lake, and then float them 25 miles to the sawmill where they were sold. Imagine Ross's excitement in learning he would be recovering (and ultimately sawing) the actual logs that his great-grandfather had chopped down over 100 years ago.

Having completed their research, and finding plenty of logs, the next phase was to acquire the proper permits and determine the most environmentally friendly way to recover the logs.



The Value Old Growth Timber

Over 200 hundred years ago trees were cut down, some by axe, and the logs were floated toward sawmills. The trees were originally harvested as far back as the 1700s. The timber from this period of history is referred to as “old growth timber”.

During the period of “old growth”, hard wood trees took hundreds of years to grow to a diameter of 3-4 feet. Soft wood (coniferous) trees had grown up much faster and, as a result, blocked out the light for the hard wood trees. The hard woods, with their stunted growth, produced 40 to 60 growth rings per inch compared to today’s eight to 10 growth rings per inch. The greater number of growth rings per inch gives the old growth lumber a finer, much tighter grain pattern. The reduced light and oxygen levels contribute to the preservation of the wood and, because the logs have been under water for over 100 years, they also display different shades that just don’t exist in today’s wood. Some even have tinted or stained qualities, caused by the minerals in the silt on the bottom of the lakes. As the sap was leached out over the years it was replaced with the mineral qualities producing different colors of blue, green and gray. The effect is rare and only seen in certain logs and, even then, only in a few boards per log.

The density and beauty of the wood, along with its tendency not to shrink, make it very attractive to furniture builders, carvers, and cabinetmakers. The wood is used for flooring, musical instruments, wall and ceiling paneling and yacht interiors. Musical instruments made from this wood have superior sound. In addition to being very special when used in modern projects, old growth lumber is used to repair antique furniture, and in the restoration of old buildings, such as churches and cathedrals, because it more readily matches the grain of woods used long ago.



Today’s maple



Old growth maple

Starting the business

In June and July 2000, the three men went to work recovering logs, using two of Richard Baird's pontoon boats. It was hard work and long hours, in all kinds of weather, but they all agreed that the excitement and satisfaction of recovering 100-year-old, axe-cut hardwood logs, made it all worthwhile.

During those first two months they used Richard's boats by day. By night the three of them built a 34-foot pontoon boat. Ross designed the boat: two 34 foot aluminum pontoons; a flat deck with side storage boxes for equipment; and two 9-ton winches with a helm station to starboard. With their new boat they worked out a cooperative system: Richard Thouin found the logs, Ross Spencer drove the boat and Richard Baird ran the winches.

For the first two years of their business, they sold all of their harvest as logs. Then, in 2002 they started sawing their own logs, and have since milled over 30,000 board feet on a Wood-Mizer. Now they are in control of the entire process, from the recovery of the logs, to the sale of kiln-dried boards.



Now, three years into the endeavour, Richard Baird and Ross Spencer are still excited when they go out in search of underwater logs. Their company is Envirotech, Georgeville, Quebec.

Appendix B:

AquaTimber Products Made from Underwater Logs

Our Clients



Yale University, Lewis Walpole Library

Material: White Oak

Centerbrook Architects and Planners through PAC Group, LLC supplied and installed over 2,400 square feet of Aqua Timber's premium White Oak engineered flooring in the new 13,000 square foot addition to the existing Yale University, Lewis Walpole Library. Our product was chosen because it was found to be a very close match to the original library flooring and is produced from wood of that same era.

<http://www.library.yale.edu/walpole/>



MMM Group Head Office, Thornhill, Ontario

Material: Yellow Birch

Modo Design incorporated Aqua Timber's Yellow Birch in their entire project design. Our product was used for stair treads, solid flooring, ceiling and facings, beams and veneers. This \$20 million interior renovation was completed to LEEDS gold standard.

<http://www.mmm.ca/index.htm>



Sherk Residence

Material: Yellow Birch

This retail customer purchased our Yellow Birch engineered flooring for its beauty and historical significance. The raw timbers were recovered from Georgian Bay where the Sherk family resides.



Martyr's Shrine Roman Catholic Church

Material: Yellow Birch

Historical renovation Completed in 1925 this religious Landmark began to exhibit signs of its age when the exterior doors began to deteriorate. Aqua Timber was chosen to supply and manufacture new doors using historically correct material that was also local to the area. We ultimately provided doors that consisted of 4" grooved panels of Yellow Birch joined together and finished to withstand the harsh winters of Georgian Bay

<http://www.martyrs-shrine.com>



Sugi Guitars

Material: Various products including straight grain, curly and birds-eye Maple

Sugi Guitars based in Nagano, Japan has chosen our Maple products in the manufacturing of many of their high-end, custom guitars. Water-recovered, old-growth maple with its natural high density is superior to domestic maple in its ability to conduct quality sound through musical instruments making it the perfect choice of master craftsmen

<http://www.sugiguitars.com/english/>



Forest Reflections

Material: Maple, Oak and Birch veneers and solids

This customer was looking to source alternative raw material that would allow them to produce beautiful, high-end furniture. They chose Aqua Timber's solid lumber and veneers which resulted in the production of unique, one-of-a-kind finished pieces.

<http://forest-reflections.com>



Aquila Office Furniture

Material: Birch, Oak, Maple

A high-end furniture manufacturer who was looking for the beauty and elegance that old-growth wood produces. We were able to supply wood that is unique in patina, grain and colour.



Akroyd Furniture

Material: Flamed Yellow Birch

This "custom made" furniture producer uses our products to design one-of-a-kind furniture pieces that meet their customers' needs and desires. This flamed yellow birch table is a sample of the unusual shape and design that can be obtained when using our wood.

<http://www.akroydfurniture.ca/>



Caron Industries

Material: Birch

Manufacturers, designers and architects are incorporating "greener" designs into their projects today. Caron Industries recently introduced environmentally friendly cabinet doors to their product line using wood supplied to them by Aqua Timber

<http://www.caronind.com/>



Coherent Speakers

Material: Yellow Birch, Oak, Maple

Coherent Speakers combines our veneer and solid wood products together with their technical know-how to create custom, high-end speakers for the entertainment and home theatre market. The result is a finished product that is both beautiful and meets their acoustical needs.

<http://www.coherentspeakers.com/>



Laser Engraved Plaques and Cookies

Material: Yellow Birch

Description: United Nations Educational, Scientific and Cultural Organization (UNESCO) commissioned Aqua Timber Inc. to produce plaques for their "Man and the Biosphere Program", a sustainable development initiative. The plaques were laser engraved on yellow birch and finished with a "green" hard wax oil finish.

<http://www.dvgfineartsandframing.com/>



DVG Fine Arts & Framing

Material: Yellow Birch, Oak, Maple

DVG Fine Arts & Framing was looking for a wood product that would complement their custom artwork. Aqua Timber provided DVG with our old-growth, water-recovered hardwood for their framing material because of its beautiful patina, spectacular grain and historical significance.

<http://www.dvgfineartsandframing.com/>

Appendix C: AquaTimber, The Company

The Company



Aqua Timber consists of a team of entrepreneurs who have learned to capitalize on their individual talents and use them collectively to produce a winning business model. The Company is lead by Mark and Peter Hamelin. Mark is a successful entrepreneur who has used his technical background to turn several small start-up Companies into multi-million dollar enterprises. Peter is a certified professional diver with extensive experience in the marine salvage and lumber industry.

Aqua Timber’s mission is to provide you, the environmentally-responsible individual, with a 100% environmentally-friendly supply of water-recovered, old-growth lumber. We are committed to continuously finding new ways to minimize the ecological footprint of our company and to ensuring that the environment is not harmed in our recovery or processing operations. We currently take as many steps as financially-possible to operate as a ‘green corporation which includes investing in a million-dollar [RFV](#) kiln that dry’s our lumber using a fraction of the energy required to dry lumber in a conventional air drying kiln. While we realize that we still have a long way to go we look forward to the day when we can further reduce our carbon footprint with the implementation of wind power generation and geothermal heating.

What We Do Best

Aqua Timber takes great pride in retrieving historic logs from their numerous resting places. Once historic research of a particular waterbed is completed, extensive scanning and sonar imaging of the underwater timberlands begin. After permits are approved the site is opened and the retrieval process begins.



Our 40' vessel is outfitted with a custom lift mechanism and hydraulic capstans that enable us to retrieve up to 30,000 lb. payloads. The recovered logs are then transported from the site to our state-of-the-art mill, where the logs are identified, inspected and processed for our end use.



By harvesting and marketing old logs, Aqua Timber Inc. meets the high demand for high-quality, unique, century-old lumber while cleaning up the lakes and rivers for generations to come.