



## **Deer Lake Eco-Marina Environmental Assessment**

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**3/8/2019**

Town of Deer Lake  
34 Reid's Lane  
Deer Lake, NL  
A8A 2N2

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## Deer Lake Eco-Marina: Environmental Assessment Document

### Introduction

Given its unique location at the northern end of one of Newfoundland's largest freshwater lakes and its ever-growing importance as a tourist destination, an ecological marina would be a sound investment for Deer Lake to make. The recreational boating industry is booming in our province and examples of marinas expanding their docks are plentiful across the island. A modern, well-designed marina will be able to capitalize on that growth. Moreover, a marina could contribute significantly to Deer Lake's position as a tourist destination. The lake is a unique asset for the region and a marina could expand the water activities offered in the community. Please see the accompanying development plan for the marina, attached.

Marinas are a major part of their natural environment and have inevitable effects on the eco-system in which they are being built. Therefore, the Town believes that it is important to act as environmental stewards. An eco-marina means that construction and operation are environmentally-sound, and the marina will be integrated in its natural environment with the smallest footprint possible. In doing so, Deer Lake plans to offer the first-ever eco-marina in Newfoundland and Labrador.

### Freshwater Eco-Marina

The purpose of this project is to create an eco-marina facility containing a proper small vessel launchway, a breakwater providing shelter, a floating dock for 40 berths and a building for the storage of boats. The proposed development will occur within 656 feet (200 metres) of Deer Lake, a scheduled salmon waterway. The location is near the exit/entrance ramp for the community of St. Jude's. The site was chosen because there is sufficient land between the St. Jude's road and the shores of Deer Lake, such that any development would not encroach upon the shoreline reserve. In addition, it appears that the water depth is greater in that area of the lake than it is closer to the powerhouse.



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## Environmental Assessment - Registration of Undertaking

**Name of Undertaking:** Deer Lake Eco-Marina

**Proponent:**

1. **Name of Corporate Body:** Town of Deer Lake
  
2. **Address:** 34 Reid's Lane  
Deer Lake, NL A8A 2A2
  
3. **Chief Executive Officer:**  
Name: Maxine Hayden  
Official Title: Town Manager
  
4. **Address:** 34 Reid's Lane  
Deer Lake, NL A8A 2A2  
**Telephone No.:** 709-635-0100
  
5. **Principal Contact Person for purposes of environmental assessment:**  
Name: Damon Clarke  
Official Title: Economic Development Officer/Town Planner
  
6. **Address:** 34 Reid's Lane  
Deer Lake, NL A8A 2A2  
**Telephone No.:** 709-635-0165  
**E-mail address:** [deerlakeedo@nf.aibn.com](mailto:deerlakeedo@nf.aibn.com)

**The Undertaking:**

1. **Name of the Undertaking:** Deer Lake Eco-Marina
  
2. **Purpose/Rationale/Need for the Undertaking:** To create an eco-marina to accommodate pleasure craft using Deer Lake and the Humber River.



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### Description of the Undertaking:

1. **Geographical Location:** From the northern extremity of the Local Service District of St. Jude's, the marina site extends approximately 920 feet (280 metres) northwards, where it encounters the southern boundary of the Town of Deer Lake.
2. **Physical Features:** The waters of Deer Lake form the western boundary of the site, while the Trans-Canada Highway runs parallel to the site, forming its eastern boundary. Land located in the northern-most end of the local service district of St. Jude's forms a southern boundary for the site. There are no buildings on the site, which has one area with some fairly thick growth of mostly small trees and a beach area where the land meets the waters of Deer Lake. The lake itself is home to Atlantic salmon.

**Construction:** If approved, preparations for the placement of the breakwater, launchway and building, along with related roads, would commence once approval has been received. The completion of these tasks would take approximately four months. The construction work itself may cause sedimentation and there are potential pollution sources that could occur from boats and during operation.

**Breakwater, Boat Launch:** The Town plans to construct a floating breakwater some 150 feet (45.72 metres) long and located in a sheltered cove where 40 individual berths can be located. The boat launch will be an area some 30 feet (9.14 metres) wide and 40 feet (12.192 metres) long. It will be a concrete pad which extends into the waters of Deer Lake, so that boat owners can back their trailers into the water, making it easier to launch their boats.

**Road Access:** There will be a road created at the south end of the marina land, near the Local Service District of St. Jude's. This road, some 50 feet (15.24 metres) long, will provide access and take motorists to the parking area, which will be located near the launchway. There will be another 150-foot (45.72 metres) road from the parking area to the launchway. The parking area will be located in an area which is already cleared, around the boat storage building, and it will be capable of holding some 40 vessels. The boat storage building will be 40 by 40 feet (12.19 x 12.19 metres) and is intended as a winter storage facility. Please see Appendix 2, #2 for a drawing of the proposed access route.

The construction plan includes the following:

- ) **Stage 1 initiatives, spring to fall, 2019:**
  - Clearing and grubbing of land;
  - Creation of a road to access the site;
  - Creation of a concrete launchway;
- ) **Stage 2 initiatives, spring to fall, 2020:**
  - Construction of a breakwater;
  - Construction of seasonal wharves which can be removed from the water;
- ) **Stage 3 initiatives, spring to fall, 2021:**
  - Construction of a large building intended for the over-winter storage of boats.

During the construction periods, there will likely be airborne emissions and possibly liquid effluents resulting from the use of motorized equipment. It is not expected that these will be harmful to the environment, given the relatively low level of emissions and effluents that will result.

3. **Operation:** The marina will be operated by the Town of Deer Lake through its related organization the Deer Lake Tourism Development Corporation (DLTDC). The season will run from mid-May to mid-September. The intended audience will be local boating enthusiasts but the town intends to market the marina as another component of its tourism-related offerings. It is expected that there will be very little pollutants during the operating period.
4. **Occupations:** During Stages 1, 2 and 3 of construction there will be zero employees as it is expected all this work will be contracted out to a private firm through a Request for Proposals (RFP) process. Once the marina is built and is fully operational, it is anticipated the DLTDC will employ two (2) people (manager and assistant) from mid-May to mid-September (4 months). These employees will get the Marina ready for operation each season and will assist in operations such as boat launching and storage, maintenance of docking facilities, development of future growth plans, marketing the marina, and so on.

**Project-Related Documents:**

Uplands Studio Concept Plan: Drawings and figures contained in Appendix 2 were adapted from the Uplands document.

5. **Approval of the Undertaking:** The main permits, licences and approvals required for this undertaking include the following:



- 
- ) Crown Lands permit # 148073, Crown Lands Division, Department of Fisheries and Land Resources;
  - ) Commercial cutting permit, operating permit for the removal of trees and grub material from the site;
  - ) Municipal approval document; Town of Deer Lake
  - ) Department of Fisheries and Land Resources, Forest Resources and Agrifoods division;

Permits for marina-related work and construction have been or will be obtained from the following:

- ) (a) Department of Environment and Conservation, Lands (Crown Lands Division), Newfoundland Labrador (Permits 148072 and 148073);
- ) (b) Department of Environment and Conservation, Water Resources Management, Newfoundland Labrador (wharf and breakwater);
- ) (c) Department of Government Services, Newfoundland Labrador (septic system);
- ) (d) Fisheries and Ocean Canada, Area Habitat Office, Western Newfoundland (self-assessment);
- ) (E) Department of Transportation and Works, Government of Newfoundland and Labrador (highway access and road design) and
- ) (e) Transport Canada, Navigable Waters (NWPD).

Preparations for the placement of the breakwater, launchway and building, along with related roads, will commence once approval has been received. The completion of these tasks will take approximately four months. There have been no documents generated so far regarding the possible impact of pollutants.

**Schedule:** The earliest construction could commence is early June of 2019. The latest start date would be mid-July, 2019.

**Funding:** The town has budgeted funds in the 2019 fiscal year to begin the marina. This would be the first outlay of funds by the town for this project. In addition, the proponent plans to apply to the Atlantic Canada Opportunities Agency (ACOA) and the provincial Department of Tourism, Culture, Industry and Innovation (TCII) for project funding. It is anticipated the overall capital costs for this project are expected to be in the area of some \$3.5 million.

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**Date**

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**Signature of Chief Executive Officer**





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## Deer Lake Eco-Marina: Environmental Impact Assessment Document

### 1. Design

#### 1.1 Development and design plan

An eco-marina concept plan should take into consideration the needs of the marine and recreational boater industry. The plan should envision significant-built marina infrastructure in the water as well as on-shore structures. In this plan, the ecological guidelines should be specifically outlined.

##### 1.1.1 Geographical location

The marina will be located due north of St. Jude's. The proposed site is a strip of land located between the waters of Deer Lake and the Trans-Canada Highway (TCH). On the North, it is bounded by the outflow area from the powerhouse, an area known locally as the "Tailrace". To the West are the waters of Deer Lake and to the East is the TCH. The Southern boundary is formed by a piece of privately-owned land within the boundaries of the local service district of St. Jude's. The size of the area is approximately 43,125 square metres or 4.3 hectares. Plans call for the creation of a road with an entrance and exit, a one-way loop around the area to provide access to the proposed elements and providing room for further development.

#### Environmental considerations:

Considered	To consider
Location was chosen so that no development would encroach upon the shoreline reserve.	<ul style="list-style-type: none"><li>) Site should be selected that avoid high value habitat areas (survey of lake will clarify this).</li><li>) Physical and biological environments within the area potentially affected by the project would include Deer Lake (the body of water) and its resident fish population.</li></ul>

### 2. Preliminaries

#### 2.1 Bathymetric survey and sub-bottom profiling

A bathymetric survey will allow the Proponent to measure the depth of the lake and map the underwater features of the water body. This survey of the lake bottom in the marina area will be undertaken in the spring of 2019, utilizing the skills and equipment of Deer Lake Underwater Rescue and Recovery, which possesses side-scan sonar.



## 2.2 Environmental Impact Assessment (EIA)

Environmental assessment examines the environmental consequences of a plan, policy, program, or actual projects prior to the decision to move forward with the proposed action. Application needs to be made to the Government of Newfoundland and Labrador, Department of Environment and Climate Change.

### Environmental considerations:

Considered	To consider
Undertaking of an Environmental Impact Assessment.	Employing an environmentally sensitive marina design.

## 3. Earthworks

It is expected that once the underwater survey is completed, there may be a need to dredge and excavate the lake bottom near the site. This will not be known until the survey is completed.

## 4. Floating Breakwater

The breakwater will be some 150 feet (45.72 metres) long and constructed to create a sheltered cove where 40 individual berths can be located. Marina breakwaters are substantial structures that have a significant impact on the existing habitat in the marina area as well as the capital cost of marina construction. It is advised to opt for a floating breakwater as this would be better for the environment and would account for less capital costs. Floating breakwaters allow some wave energy to enter the mooring basin. However, as the marina will be located on a freshwater lake, it won't have the same wave energy that saltwater ocean marinas have. Floating breakwaters are a cost-effective and environmentally-sound option, and a great solution for partially protected sites where the wave heights to be dissipated are moderate.

Floating breakwaters have been increasingly aimed at protecting small craft marinas, and are very effective in coastal areas with mild wave environment conditions. Some of the conditions that favour floating breakwaters are:

- ) **Deep water:** In water depths in excess of 19.685 feet (6 metres), bottom connected breakwaters are often more expensive than floating breakwaters.
- ) **Water quality:** Floating breakwaters present a minimum interference with water circulation and fish migration.
- ) **Ice problems:** Floating breakwaters can be removed and towed to protected areas if ice formation is a problem. They may be suitable for areas where summer anchorage or moorage is required.



- ) **Breakwater layout:** Floating breakwaters can usually be rearranged into a new layout with minimum effort.

Floating breakwaters are very effective when their width is of the order of half the wavelength and when their natural period of oscillation is much longer compared to the wave period.

A design analysis is required to determine whether such floating breakwater is suitable for our site.

**Environmental considerations:**

Considered	To consider
Floating breakwater is the most environmentally-sound option.	Environmentally-sensitive design for breakwater.

## 5. Coastal Development

### 5.1 Road construction (2019)

There will be a road created at the south end of the land, near the community of St. Jude's. This road, some 50 feet long, will provide access and take motorists to the parking area, which will be located near the launchway. There will be another 150 foot road from the parking area to the launchway. Please see Appendix 2, #4.

### 5.2 Parking facilities construction (2020)

The current best practice for Marina developments is to plan for 0.6 single vehicle parking spaces per berth. 40 berths therefore account for 24 parking spaces. The parking area will be located in an area which is already cleared, around the boat storage building, and it will be capable of holding some 40 vehicles.

### 5.3 Facilities area (2021)

Main facilities include:

- ) Septic system for sewage treatment and solid waste disposal;
- ) Restroom utilities and
- ) Electrical systems.

Marina electrical systems should be adequate to supply the power demands for boat slips, lighting, fuel stations, sewage pump-out stations, buildings, navigation aids, and maintenance and repair work. From the electrical outlets, power is supplied to a berthed boat via a portable electrical cord that extends between the outlet and a boat. The portable cord is usually stored on the boat when not in use.



**Environmental considerations:**

Considered	To consider
	Solid waste collection and disposal: having recycling bins in place. Storm water run-off collection and treatment.

**6. Marina Infrastructure**

**6.1 Construction of boat storage building (2020)**

The boat storage building will be 40 by 40 feet (12 x 12 metres) and is intended as a winter storage facility. Dry land storage is normally used in marinas where climatic conditions are such that safe year-round moorage cannot be provided, as is the case in Deer Lake.

**Environmental considerations:**

Considered	To consider
Dry land storage inherently excludes negative impact from float installation on the water habitats.	

**6.2 Boat launch construction (2020)**

The boat launch will be an area some 30 feet wide and 40 feet long (9 x 12 metres). It will be a concrete pad which extends into the waters of Deer Lake, so that boat owners can back their trailers into the water, making it easier and safer to launch their boats.

Launch ramps of eco-marinas should be designed so that the greatest amount of excavation occurs above the water line, with the underwater portion of the launch ramp closely matching the mud line topography whenever possible. This will reduce the required cut or fill in the submerged/submersible zone and decrease any resulting environmental impacts and issues.

Typical alignment of a launch ramp is oriented perpendicular to the bank line, up to 45 degrees rotation downstream to best fit the river flow line at the specific site. Launch ramp slope must be steep enough to float a boat from the trailer before the tow vehicle tires reach the water, and not so steep that tow vehicle traction becomes a concern.

**6.3 Floating dock construction (2020)**

The creation of floating docks with concrete anchors to accommodate up to 40 boat slips. These slips will be installed as double berths as to decrease the impact on the natural environment.



HDPE docks and floats are recommended as they are flexible and abrasion-resistant. HDPE is UV-stabilized, meaning it will not be affected by sun exposure. It is not affected by chemical or petroleum exposure and does not support biological growth. Minimum expected lifespan is 50 years. It can be used in salt or freshwater. It can flex and bend with ease in rough waves. It will not dent and in the unlikely event of a puncture it will remain floating. HDPE pipe will float even if filled with water. HDPE will not break down over time and is environmentally friendly.

**Environmental considerations:**

Considered	To consider
HDPE is environmentally friendly	<ul style="list-style-type: none"><li data-bbox="873 730 1437 871">) Construction timing or “work windows”: construction timing should be avoiding the periods when the site is heavily utilized by fish or other wildlife.</li><li data-bbox="873 875 1437 1008">) Construction work itself may cause sedimentation and there are potential pollution sources that could occur from boats and during operation.</li></ul>

## Operation

Once completed, the Town of Deer Lake would oversee all operational issues. These include the storage of boats in the building, the launching of boats, and the use of the docks by boats. There is potential for pollution to occur from re-fuelling and the spill of fuel into the lake. The Town of Deer Lake will create a contingency plan to deal with spills into the lake which will outline measures to prevent pollution. The Town intends to have staff person (s) working at the site in-season, which is approximately May to the end of October.

## Occupations

It is estimated that a crew of workers would be required for construction of the building, the launchway, the breakwater and docks. All this work will be contracted out to the private sector. The undertaking will require a fully-executed title before any work begins. This will include approvals from those government agencies and departments which have jurisdiction over waterlines, shoreline reserves, roadways, and so on. Specifically, these would include the federal Department of Fisheries and Oceans and the provincial departments of Environment and Conservation (Water Resources Division) and Transportation and Works, and private entities such as Deer Lake Power.



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## Schedule

In all likelihood, the earliest that this development could proceed would be in the spring of 2019, as per the table below:

No.	Program Element	Schedule	Duration
1.	Site Design	April to May, 2019	2 months
2.	Bathymetric survey of lake bottom	May, 2019	2 days
3.	Clearing trees from site	May, 2019	2 weeks
4.	Construction of Access Road	May, 2019	1 month

## Eco-Marina Guidelines

The eco-marina acknowledges the crucial importance of conserving the natural environment for the upkeep of its activities. Therefore, the marina will try to reach following objectives:

- ) Eliminate direct and indirect contamination of the lake water;
- ) Minimize the release of pollutants to the atmosphere;
- ) Avoid soil contamination;
- ) Adopt waste management (reduce, reuse, recycle) strategies;
- ) Optimize energy and water conservation;
- ) Encourage all involved parties to adopt ecological practices and
- ) Abide by and where possible, exceed the requirement of all relevant legislation.

The marina will integrate these ecological practices in all aspects of its activities, and these guidelines will be clearly communicated to all clients. The marina will engage itself in establishing a continuous evaluation to improve its environmental efficiency.

## Project budget

### Capital costs

Starting up an eco-marina requires a significant financial investment. However, it is expected that this investment will pay itself back in: in property value, due diligence, public relations, competitive advantage, cost reduction and higher revenues.



### **Funding**

In addition to its own resources, the proponent will seek funds to assist with the development of this project from the Atlantic Canada Opportunities Agency (ACOA) and the provincial Department of Tourism, Culture, Industry and Innovation (TCII). Capital costs of this project are anticipated to be in the area of \$3.5 million.

### **Income**

A marina business' primary source of revenue comes from providing docking, mooring and storage for boats. Docking and storage fees are often charged based on the size of a boat. Other potential sources of revenue include:

- ) Selling boating supplies and equipment
- ) Marina shops/restaurants/entertainment

### **Eco-Certification**

An eco-certification program attests to the environmentally-friendly management of marinas. Marinas that sign up go through a certification audit. Even though Newfoundland and Labrador does not have such program in place, there are examples across the country including the Clean Marina Green Leaf Eco-Rating Program (ON), QMA Eco-certification (QC) and Clean Marine BC (BC). Another option the Town could look into is the Blue Flag Certification.



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## Appendix 1: Zoning of Site

Since beginning work on the Marina project some six years ago, the Town of Deer Lake has almost completed a process to renew its 10-Year Plan and Development Regulations.

The new regulations contain a designation of Open Space in the marina area. Within this zoning, a marina is a discretionary use of the Town.

This section contains the zoning regulations for that area once the Town's new Development Regulations take effect in the spring of 2019. Please see below:

### Marina Site: Future Zoning

#### 9.16 Open Space (OS) Zone

##### PERMITTED USE CLASSES

(See Regulation 8.4)

Conservation Open space

##### DISCRETIONARY USE CLASSES

(See Regulations 3.22 and 8.5)

Catering (See Condition 4)

Cemetery (See Condition 3)

Energy generation facility (See Regulation 5.8)

General assembly

Indoor assembly

Marina

Outdoor assembly

Outdoor market (See Condition 5)

Personal use agriculture

Recreational open space

Take--out food service (See Condition 4)

Transportation





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## Appendix 2: Figures

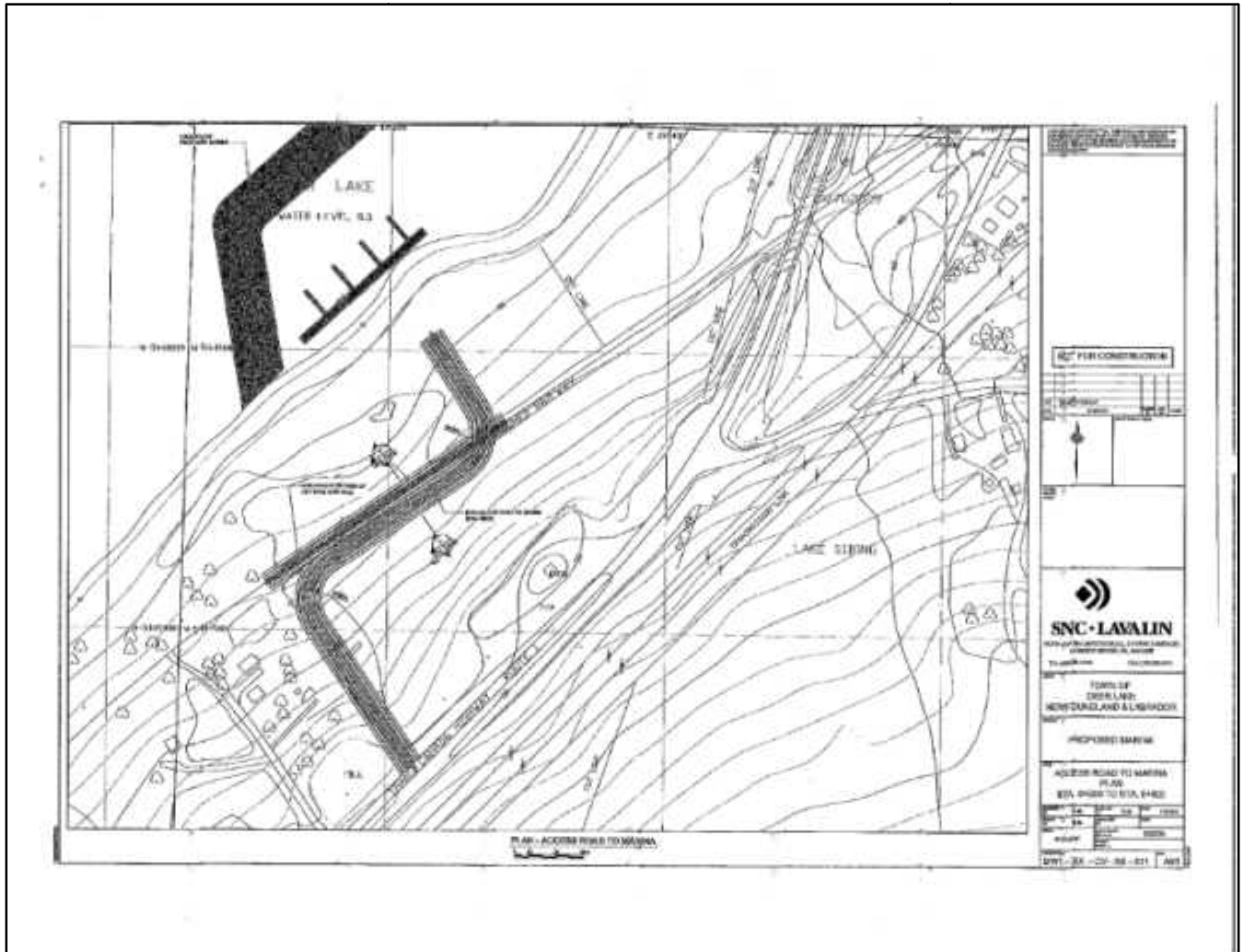
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1. Aerial Photos showing outline of Marina area

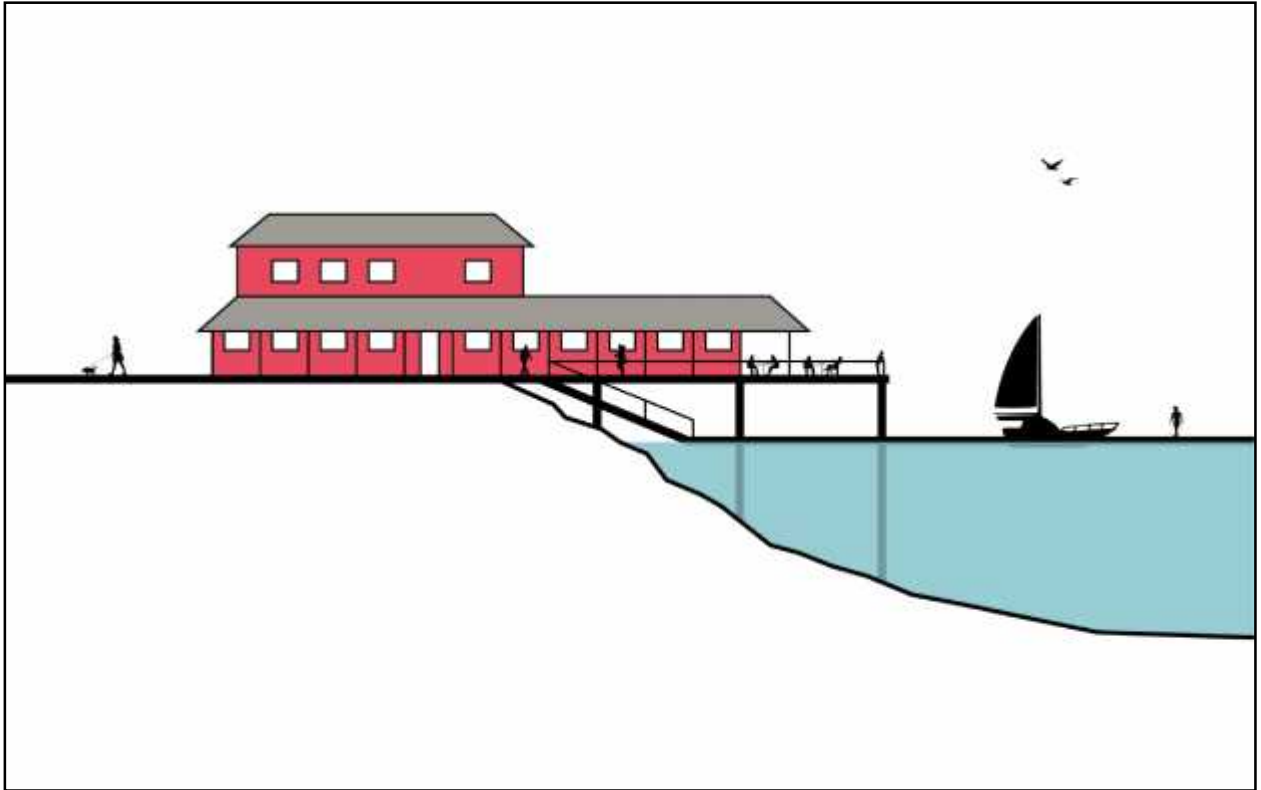




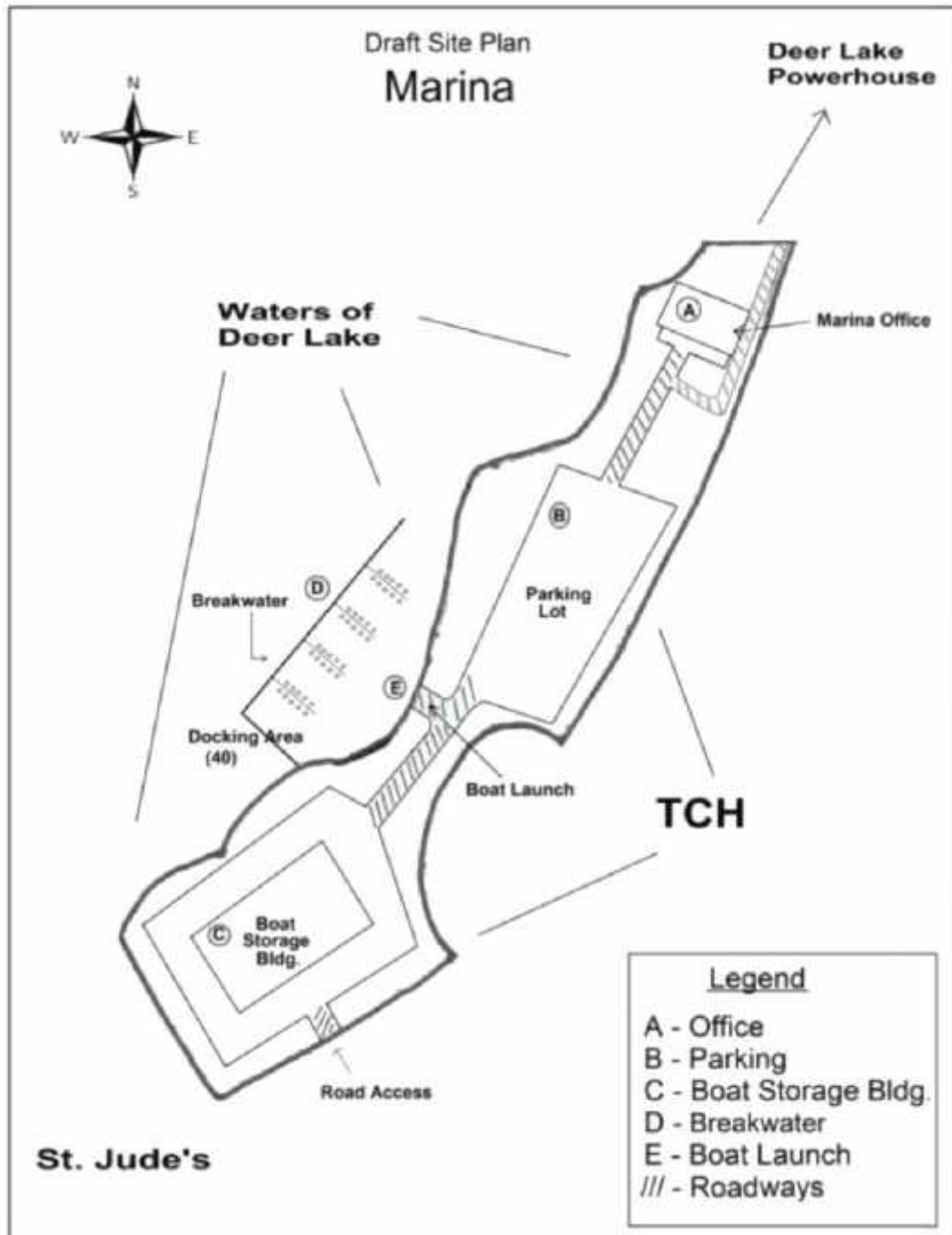
## 2. Road Access to Marina Site



### 3. Architectural Concept, Marina Building



#### 4. Site Plan



## 5. Marina





## 6. Boat Launch and Storage





## 7. Parking



## 8. Facilities

