

Rosen Lake Shoreline Management Guidelines



Submitted to:
East Kootenay Integrated Lake Management Partnership

Submitted by:
**AMEC Earth & Environmental
Nelson, BC**

29 October 2010

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a division of AMEC Americas Limited**

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PREFACE

This report has been prepared to provide Shoreline Management Guidelines for Rosen Lake. The intention of these guidelines is to provide a visual description of the location of important habitats for fish and wildlife in Rosen Lake, and a protocol for lakeshore residents, developers, and regional governments to follow when considering alterations to shoreline areas. The development of shoreline guidance documents for lakes in the East Kootenay region have been commissioned by the East Kootenay Integrated Lake Management Partnership (EKILMP), a collaborative effort between community groups, First Nations, homeowner associations, conservation groups and various levels of government. The Guidelines are focused around the protection, conservation and restoration of important fish and wildlife values. EKILMP believes the Guidelines will help focus where new development could be located on the lake, while sustaining priceless natural public assets and maintaining the economic viability of the area.

Increased pressure for recreational and urban development along the foreshore of lakes, such as Rosen, in the East Kootenay has created concern for the state of natural resources and habitats in the area. In order to balance the functioning of a healthy, natural ecosystem with other social, economic and cultural values, an understanding of the aquatic and riparian resource values is required. Thus, by collecting detailed, spatially accurate information of existing shoreline habitats and their condition, more informed land use planning decisions can be made that better balance the different pressures that exist.

The Guidelines included herein have been prepared following this general process:

1. Foreshore Inventory and Mapping (FIM) surveys were integrated with information collected during additional fish and wildlife surveys to identify the state of the Rosen Lake foreshore and identify sensitive habitat features¹.
2. An Aquatic Habitat Index (AHI) was generated using the FIM data to determine the relative habitat value of the shoreline. This index follows that developed for Moyie and Monroe Lakes and is similar to that used for Okanagan and Windermere Lakes.
3. Shoreline Management Guidelines have been prepared for the shorelines surveyed to facilitate making informed land use decisions for our watersheds. The Guidelines are intended to provide background information to stakeholders, proponents, and governmental agencies when land use changes or activities are proposed that could alter the shoreline thereby affecting fish and wildlife habitat.

This approach provides a science-based assessment of areas of highest natural value requiring the highest level of on-going protection. There are four colour zones from red, which calls for the highest level of shoreline protection and are identified as conservation areas, to grey zones, where there is already significant impact from development and

¹ Lawrence, C. and L. Porto. 2010. Rosen Lake Foreshore Inventory and Mapping. Prepared by AMEC Earth and Environmental, Nelson, BC. Prepared for East Kootenay Lake Management Partnership.

potential for redevelopment and restoration. The risks of selected development activities have been determined for each colour zone, identifying activities, which require additional review and consideration. A flow chart has been developed based on activity risk, which outlines the review process at a broad scale.

This report only provides direction relating to fish and wildlife habitat values, and as such, does not consider other development factors (such as erosion hazards, drinking water quality or navigation considerations). Although some mention is made to potential permits required, the guidelines do not fully outline the regulatory agency permit planning process.

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1.0 INTRODUCTION

Shoreline Management Guidelines for Rosen Lake (herein referred to as Guidelines) are intended to streamline land use decision making processes between different agencies and stakeholders. Guidelines were initially prepared by the East Kootenay Integrated Lake Management Partnership (EKILMP) for Windermere Lake. Guidelines have since been developed for Moyie and Monroe lakes, and are currently being produced for Tie, Columbia and Wasa lakes, using the Windermere Lake² template. The Moyie Lake³ template, developed from the Windermere Lake Guidelines, was used to complete the Guidelines for Rosen Lake to maintain consistency throughout the East Kootenay. These guideline documents will not be further referenced throughout the duration of this document to promote readability. However, similarities may exist between the present document and those cited above as the templates developed for Windermere and Moyie lakes were used to complete Guidelines for Rosen Lake.

1.1 Zones of Sensitivity

Following fieldwork, literature review and professional consultation, several habitat types and locations were identified as being highly important to fish and wildlife, and sensitive to development. These locations were classified as zones of sensitivity (ZOS) and included: wetlands, aquatic macrophyte beds, tributaries, outlets, as well as valuable fish and wildlife areas including turtle habitat and loon nesting locations. The ZOS are depicted in the Rosen Lake shoreline map in Appendix A. The ZOS were not factored into the Shoreline Vulnerability Color Zones and should be treated as vulnerable habitats. Appropriate approvals must be obtained from regulatory agencies prior to development in these areas (see Section 2.3).

2.0 MANAGEMENT GUIDELINES OVERVIEW

The Guidelines utilize a risk based approach to shoreline management. This approach determines the risk of a proposed activity in each of the identified Vulnerability Zones. Vulnerability Zones relate to the environmental sensitivity of the shoreline, as determined by the Aquatic Habitat Index (AHI). Vulnerability Zones have been color coded to help more easily understand the risk matrix.

The following is a “How To” Guide to Development Planning along the Rosen Lake Shoreline:

1. Determine the Shoreline Vulnerability Color Zone your application is situated in using maps in Appendix A. See Section 2.1 below.

² EKILMP. 2009. Windermere Lake Shoreline Management Guidelines for Fish and Wildlife Habitats. Prepared by Interior Reforestation Co. Ltd. Prepared for East Kootenay Integrated Lake Management Partnership. 11 p + 3 app.

³ Ecoscape Environmental Consultants Ltd. 2009. Shoreline Management Guidelines: Moyie and Monroe Lakes. Prepared for East Kootenay Integrated Lake Management Partnership. 10 p + 3 app.

2. Determine what the Risk is of your proposed activity using the risk matrix (see Section 2.2 below.) If the proposed activity has not been identified within the table, please assume the activity is High Risk and contact FrontCounter BC or the Regional District of East Kootenay for further advice and information. If your identified activity is considered High Risk, determine if you can move your activity to a different colour zone or select a lower risk activity.
 - a. If a Species at Risk is present or identified by a Qualified Environmental Professional (QEP), the risk of proposed activities is greater. If identified, the Modified Column for Species at Risk should be used.
3. Use the flow chart contained in this document to determine your application review needs based upon the risk of your proposed activity.

2.1 Step 1- Shoreline Vulnerability Color Zones

The Shoreline Vulnerability Color Zones are best viewed graphically, as they relate to specific shoreline areas. The Shoreline Vulnerability Color zones are based upon fisheries and wildlife information collected during field surveys and the AHI that was prepared for the shorelines. Appendix A contains the Shoreline Vulnerability Zones.

The following provides a brief summary of the different Vulnerability Color Zones.

Red Shoreline
<p>Defined by: Very High by the Aquatic Habitat Index.</p> <p>Background: These areas have been identified as essential for the long term maintenance of fish and/or wildlife values through the AHI analysis process. This zone includes most creek mouths, wetland areas, and zones essential for fish and/or wildlife populations around the lake. Red Zones are considered very high habitat value because of their biophysical characteristics which create habitats of high diversity. These areas are considered integral to the maintenance of a healthy ecosystem. Wetlands, stream confluences, and other important identified habitats (e.g., spawning features) are all identified as Red Zones. Red Zones account for 2.2% of the Rosen Lake Shoreline.</p> <p>EKILMP recommends that these areas be designated for conservation use, and that no development that can impact these sensitive communities occur within them. Low impact water access recreation and traditional First Nation uses are permissible in these areas, but permanent structures or alteration of existing habitats is not considered to be acceptable. Habitat restoration may be appropriate in these areas where warranted. Invasive aquatic plant removal is acceptable, provided there is an approved aquatic plant removal program including trained persons. Please contact a plant specialist if uncertain of a plant species.</p>

Orange Shoreline

Defined by: High Value Habitats identified by the Aquatic Habitat Index.

Background:

These shoreline segments have been identified as High Value Habitat Areas for fish and/or wildlife. These are made up of areas that are relatively natural; possibly have high value spawning habitats and/or other features that could be impacted by proposed land uses or activities. These areas are sensitive to development, continue to provide important habitat functions, but may be at risk from adjacent development pressures. Activity Risks in this zone will trigger the requirements to have an environmental assessment conducted by a QEP. Restoration opportunities potentially exist in these areas. Proponents should consider moving high risk activities to other areas if possible, or pursuing activities that have lower risks associated with them. Orange shorelines account for 0% of Rosen Lake.

Yellow Shoreline

Defined by: Moderate Value Habitats identified by the Aquatic Habitat Index

Background:

These areas have generally experienced more intensive development disturbance and pressures. Generally, these areas do not contain critical habitat features required by fish and wildlife to maintain viable populations. However, these areas still maintain important general living habitats that are important to fish and wildlife that and they should be considered when changes to land uses are proposed. Yellow shorelines account for 0% of Rosen Lake.

Development is more appropriate on these shorelines, and should incorporate protection of habitat features that remain. Intensive development below the high water mark and/or within riparian areas could have unacceptable environmental impacts without proper planning. Restoration may be an option in some areas that have experienced some developments. Development may proceed for low risk activities provided a Best Management Practices (BMP) or Regional Operating Statement (ROS) is followed. High risk activities without a BMP or ROS will require a report from a QEP.

Grey Shoreline

Defined by: Low and Very Low Habitats identified by the Aquatic Habitat Index

Background:

These are shorelines identified by the AHI analysis that have a lower ecological value. However, they still may contain valuable habitats requiring some protection, such as in-lake wetlands, or gravel/cobble substrate areas. Grey shorelines account for 97.8% of Rosen Lake.

Residential development has been concentrated in these areas and has resulted in disturbances to the natural fish and wildlife habitat. In keeping with the objective of concentrating development in areas that are already disturbed or of low value, new developments may be considered in these areas. Redevelopment will also be considered. New developments or redevelopment proposals shall incorporate fish and wildlife habitat restoration or improvement features where feasible and practicable. For example, a retaining wall redevelopment may be moved back from the high water mark and/or incorporate re-vegetation, bioengineering or other fish and wildlife features in the design.

2.2 Step 2- Activity Risk Matrix and Analysis

Different shoreline activities have been assigned risk ratings based on the potential level of risk that they may have on fish and wildlife habitat values. Risks have been determined based upon the different habitat values present and typical requirement to complete the proposed activity. The table below provides the risks of different activities in each of the different shoreline Vulnerability Zones identified. Risks have been determined as Not Acceptable (NA), High (H) or Low (L). To account for the limited survey information, a species at risk modifier column has also been provided and should be used in cases where a species at risk has been identified in the project area.

Table 1: Activity risk table for each shoreline vulnerability colour (NA = Not Acceptable, High = H, Low = L).

Activity	Shore Zone Colour and Activity Risk				Modifier
	Red	Orange	Yellow	Grey	Zone has Species at Risk
Over water piled structure (i.e. building, house, etc.) ¹	NA	NA	NA	NA	NA
Boat house (below HWM) ¹	NA	NA	NA	NA	NA
Dredging (new proposals)	NA	NA	NA	NA	NA
Beach creation above HWM	NA	NA	H	H	H
Beach creation below HWM	NA	NA	H	H	H
Aquatic vegetation removal	NA	NA	H	H	H
Upland vegetation removal	NA	NA	H	H	H
Marina ²	NA	H	H	H	H
Breakwater	NA	H	H	H	H
Boat launch upgrade	NA	H	H	H	H
New boat launch	NA	H	H	H	H
Infill	NA	H	H	H	H
Groynes	NA	H	H	H	H
Fuel facility ³	NA	H	H	H	H
Boat house (above HWM with vegetation removal) ¹	NA	H	H	H	H
Waterline trenched	NA	H	H	L	H
Erosion protection hard-joint planted	NA	H	H	L	H
Erosion protection vertical wall or retaining wall ⁴	NA	H	H	L	H
Invasive weed removal	H	H	H	L	H
Boat house (above HWM without vegetation removal) ¹	NA	H	L	L	H
Permanent rail launch system	NA	H	L	L	H
Removable rail launch system	NA	H	L	L	H
Dock ¹	NA	H	L	L	H
Erosion protection (soft-bioengineered)	NA	H	L	L	H
Elevated boardwalk below HWM	NA	H	L	L	H
Mooring buoy	NA	H	L	L	H
Maintenance dredging (previously approved)	NA	H	L	L	H
Boat lift – temporary	NA	H	L	L	H
Geothermal loops – open ⁵	NA	H	L	L	L
Geothermal loops – closed	NA	H	L	L	L
Habitat restoration ⁶	H	H	L	L	H
Public beach maintenance	NA	L	L	L	H
Waterline drilled	NA	L	L	L	L

1. These Guidelines are to be used in the initial development planning stage and do not cover all legislative requirements. Docks and boathouses are an example of an activity that could require additional approval process through Transportation Canada or Ministry of Agriculture and Lands.

2. Marinas or marina expansions in orange zones may not be acceptable.

3. Fuel facilities are inherently high risk, and if approved will be subject to all other regulations.

4. Retaining wall redevelopment should be designed to restore fish and wildlife values where feasible and practical.

5. Geothermal loops open (water) versus closed (glycol) and associated risk must also be assessed and ranked for physical habitat and water quality aspects.

6. Habitat restoration proposals are listed as high risk in red and orange zones because individual objectives and proposals must be reviewed.

In cases where multiple activities with differing risk are proposed, the combined risk may increase. In these cases, proponents should default to the highest risk identified and retain a QEP to help determine if the overall risk has increased. If your activity is not listed, contact FrontCounter BC for advice. The Activity Risk Table also distinguishes between activities above the high water mark (HWM) and below the HWM. The HWM as opposed to the 'natural lake boundary' is the standard practice used by Fisheries and Oceans Canada (DFO) when considering impacts to fish and wildlife values because the natural lake boundary often contains very important emergent vegetation communities that are important to fish and wildlife.

The following provides background, descriptions and examples of the Activity Risk Ratings. The risk ratings identify the potential risk activities pose to fish and wildlife. Activities identified as Not Acceptable (NA) or High (H) have the greatest potential, whereas activities identified as Low (L) risk have a reduced potential to impact fish and wildlife populations. This process recognizes that there is a greater possibility that High Risk activities may not be approved by regulators due to the potential impacts of the activity. The process also identifies that important habitats do exist in degraded and developed areas and that minimal standards are required to protect fish and wildlife habitat in the grey zone areas.

Not Acceptable Activities

Several activities have been rated as Not Acceptable and they generally occur in Red or Orange zones or are activities that have a high potential to impact fish or wildlife populations even in lower value habitat areas. These activities listed have potential to negatively impact fish and wildlife habitats and it is extremely difficult or impossible to mitigate or compensate for the activities. Applications for these types of development in the zones identified will not be considered.

High Risk Activities

Proposals within the High Risk category are known to have significant challenges related to providing adequate mitigation or compensation to address the loss of fish and/or wildlife habitat values. Acceptable mitigation measures would likely be very costly to implement. In addition, there is a high likelihood that a request for a Harmful Alteration, Disruption or Disturbance of Fish Habitat (HADD) authorization under the *Fisheries Act* would be triggered. Applicants are thus encouraged to avoid activities with a High Risk, consider activities that are a lower risk, or relocate the activity to an area where the environmental sensitivity is less. If the applicant wishes to proceed with a High Risk activity, a QEP should be retained to determine if there is a HADD &/or other environmental impacts which can be mitigated through design and relocation. The application will be reviewed by the applicable agencies. As identified in the Activity Risk Table, certain activities are rated High Risk for all shore colour zones and should be avoided if at all possible.

Low Risk Activities

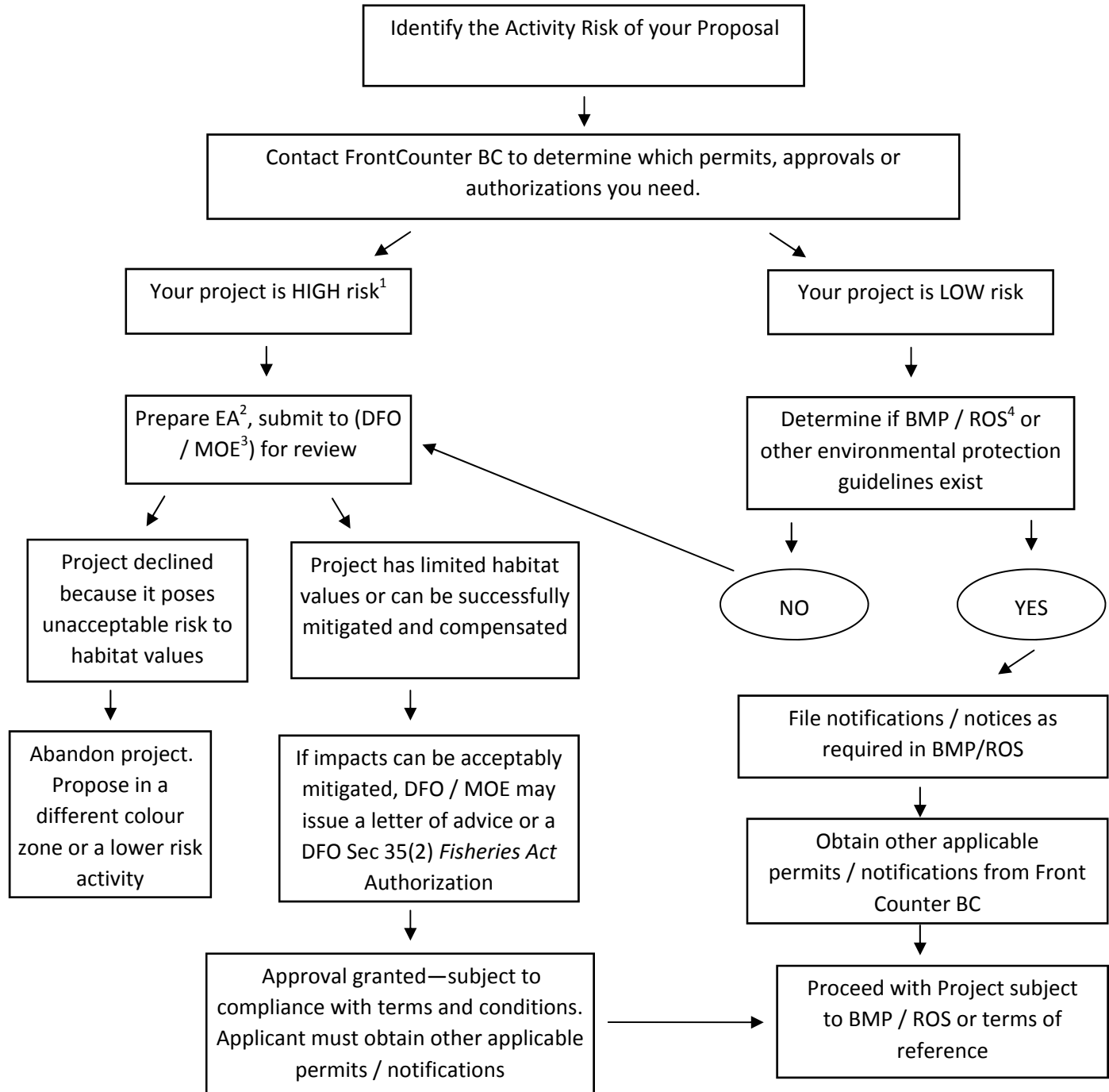
With appropriate design and planning, Low Risk activities could be incorporated along the foreshore with minimal impacts on fish and wildlife habitat values. These activities are to follow BMP and/or ROS, where available. Where BMP/ROS are not available, or a

deviation to the BMP/ROS is proposed, a QEP is to be hired to determine if there is a HADD and design the project to minimize environmental impacts. The application will be reviewed by the applicable agencies. Examples of activities which have Low Risk along most/all of the shoreline are: maintenance dredging (previously approved) and erosion protection (soft-bioengineered).

2.3 Step 3- Decision Process Flow Chart

The flow chart below provides an outline for the decision-making process for the High and Low Risk activities. The chart is a tool to help depict the Guideline requirements outlined in the previous sections. Note that this process provides Guidelines on only the initial planning stages of development. There are other legal requirements that are not covered through this process (such as approvals/notifications through Transport Canada, BC *Water Act*, BC *Lands Act*), which are the responsibility of the applicant. Additional potential legal requirement listings are provided in Appendix E. If these Guidelines are followed, the intent is that the subsequent permitting process(es) should be more streamlined for the applicant.

Flow Chart: Decision-making process for High and Low Risk Activities for Fish and/or Wildlife Habitat authorizations



¹ Activities within the High Risk category raise significant concerns. These activities have significant challenges related to providing adequate mitigation or compensation to address the loss of fish and/or wildlife habitat values and could be costly to implement acceptable mitigation measures. With High Risk activities, there is a high likelihood that a request for a Harmful Alteration Disruption or Destruction of fish habitat (HADD) authorization under Sec 35(2) of the *Fisheries Act* would be triggered. Proponents are encouraged to avoid activities with a High risk, revise activities to a lower risk option, or relocate the activity to a less sensitive colour zone. ² Environmental Assessment; ³ DFO- Fisheries and Oceans Canada; MOE- Ministry of Environment; ⁴BMP – Best Management Practice; ROS – Fisheries and Oceans Canada Regional Operating Statement.

3.0 MITIGATION AND COMPENSATION CONSIDERATIONS

In order to assess impacts of a proposed project, it may be necessary to retain a QEP who could assess habitat values and sensitivities in the area. Information contained in this report will help with this task; however, further studies will likely be necessary to address site specific issues and because of the limitations of information currently available. The DFO principle of “no net loss” within the Policy for the Management of Fish Habitat 1986 applies to all proposals where there is the potential for a HADD under Section 35(2) of the federal *Fisheries Act*. This involves following a sequence of mitigation alternatives. Mitigation is a process for achieving conservation through the application of a hierarchical progression of alternatives, which include: (1) avoidance of impacts; (2) minimization of unavoidable impacts; and (3) compensation for residual impacts that cannot be minimized. These alternatives are described in the following sections.

3.1 Avoidance of Impacts

The first step, avoidance, involves the prevention of impacts, either by choosing an alternate project, alternate design or alternate site for development. It is the first and best choice of mitigation alternatives. Because it involves prevention, the decision to avoid a high value area or to redesign a project so that it does not affect a high value area must be taken very early in the planning process. It may be the most efficient, cost effective way of conserving important habitats because it does not involve minimization, compensation or monitoring costs. Avoidance may include a decision of not to proceed with the project.

3.2 Minimization of Unavoidable Impacts

Minimization should only be considered once the decision has been made that a project must proceed, that there are no reasonable alternatives to the project, and that there are no reasonable alternatives to locating the project within key/high value habitat. Minimization involves the reduction of adverse effects of development on the functions and values of the habitat at all project stages (including planning, design, implementation and monitoring), to the smallest practicable degree. Considering any planning efforts, DFO must deem a HADD to be acceptable before work can commence.

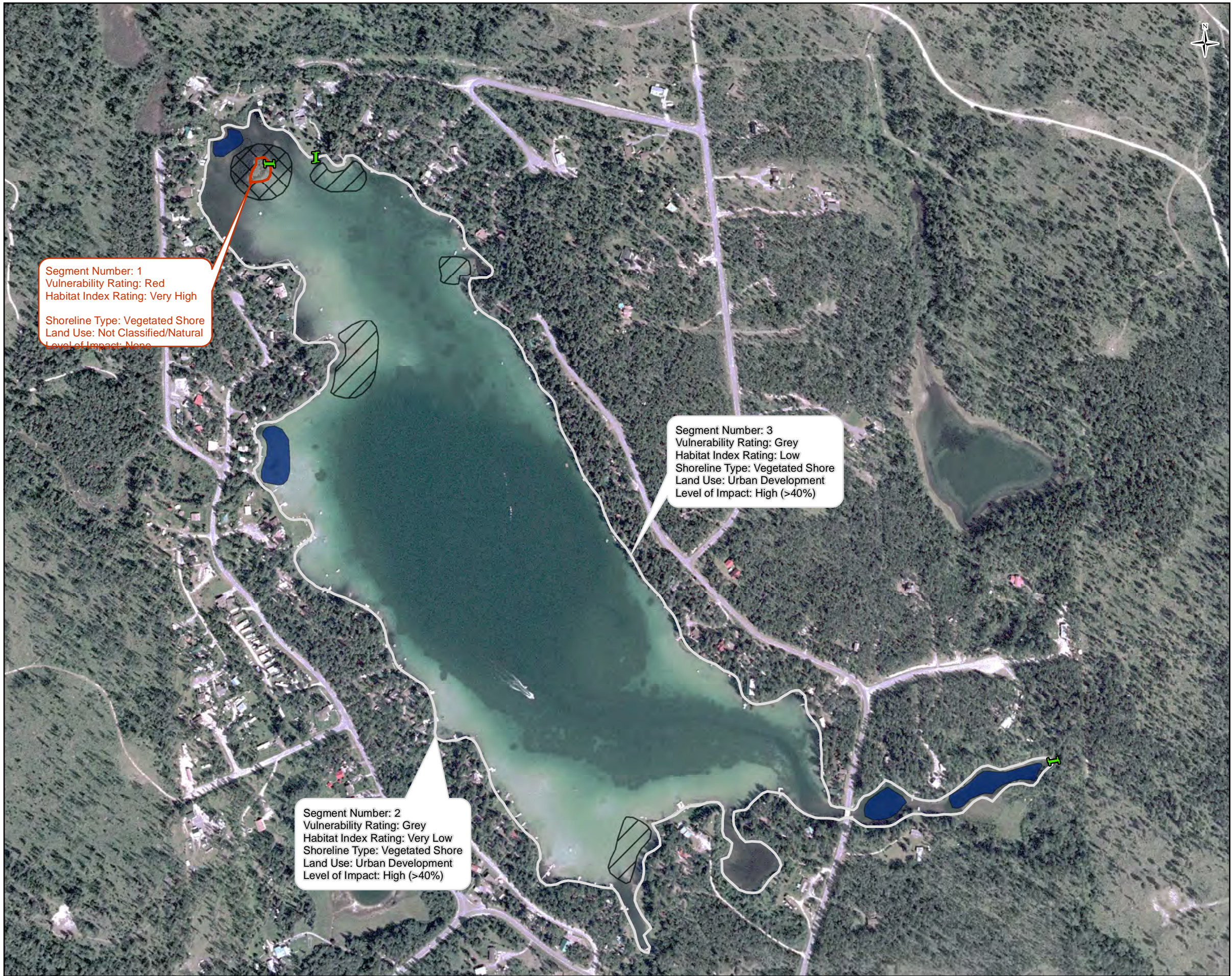
3.3 Compensation

Compensation is the last resort in the mitigation process, an indication of failure in the two earlier steps. It should only be considered for residual effects that were impossible to minimize. Compensation refers to a variety of alternatives that attempt to “make up for” the unavoidable loss of or damage to habitat functions and values. Habitat compensation may be an option for achieving “no net loss” when residual impacts of projects on habitat productive capacity are deemed harmful after relocation, redesign or mitigation options have been implemented. After reviewing the project proposal and the potential impacts to fish habitat, DFO may determine that the impacts are not acceptable if the habitat to be affected is critical habitat or compensation is not feasible. In addition, compensation for deposit of a deleterious substance into water frequented by fish is not acceptable. Habitat compensation involves replacing the loss of fish habitat with newly

created habitat or improving the productive capacity of some other natural habitat. Depending on the nature and scope of the compensatory works, habitat compensation may require, but not be limited to, several years of post-construction monitoring and evaluation. In the event that functional objectives of the compensation are not achieved (i.e., due to failure or inadequate maintenance), additional remediation or redevelopment of the compensation works may be required to achieve the compensation objectives. There is no guarantee that projects in high value fish habitats that result in HADD will be authorized under Section 35(2) if application is submitted.

APPENDIX A
Rosen Lake Mapsheet

Y:\GIS\Projects\VE\VE1966_T16_Rosen_Lake_FIM\Mapping\XDDrafts\rosen_lake_vuln_v2.mxd



Legend

 Segment Break

Shoreline Vulnerability Rating:

 Red

 Orange


 Yellow

 Grey

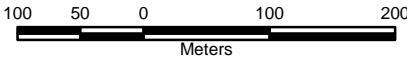
Zones of Sensitivity:

 Loon Nesting

 Wetland/Aquatic Vegetation

 Creek Mouth or Outlet

Scale: 1:6,000



Note

Location of zones of sensitivity are approximate

Reference

Rosen Lake Inventory- EKILMP

CLIENT:

EKILMP

PROJECT:

Rosen Lake Shoreline Management Guidelines

Rosen Lake Foreshore Inventory and Mapping, 2008

DATE:
April 8, 2010

ANALYST:
EO

Mapsheets 1

JOB No:
VE51966

QA/QC:
CL

PDF FILE:
rosen_lake_vuln.pdf

GIS FILE:
rosen_lake_vuln.mxd

PROJECTION:
UTM Zone 11

DATUM:
NAD83



APPENDIX B
Additional Legal Requirements

This Appendix was reproduced from the Windermere Lake Shoreline Management Guidelines. All credit should be given to the original authors of that document.

Laws and regulations provide the regulatory ‘teeth’ to uphold environmental protection and management. Applicable legislative requirements must be met for a project to be in compliance with the law. Legal requirements have been presented here in the following categories: Federal, Provincial, and Regional District. The reader is cautioned that other legislation (not listed) may apply to their development, and they are encouraged to consult with the appropriate agency prior to proceeding with any proposed works.

1. Federal Legislation

All federal legislation is administered by the parliament of Canada (federal government).

Canada Migratory Birds Convention Act

This Act implements an internationally recognized Convention between Canada and the United States to protect various species of migratory game birds, migratory insectivorous birds and migratory non-game birds including herons. The taking of nests or eggs of these birds is prohibited, except for permitted scientific or propagating purposes.

Fisheries Act

The *Fisheries Act* is administered by the federal Department of Fisheries and Oceans and is one of the most important pieces of legislation for managing aquatic resources in Canada. The fish habitat provisions of this Act enable the federal government to protect marine and freshwater habitats supporting those species that sustain fisheries, namely fish, shellfish, crustaceans and marine mammals.

Navigable Waters Protection Act

This act is administered by Transport Canada and is primarily applicable to protecting, maintaining, and developing opportunities for the public to access and use waterbodies for navigation and recreation. Any activities that may affect movement of people or goods, near or on water are affected (i.e. dock/marina construction, dredging, shoreline development).

Pesticides Act

The Pesticides Act is intended to 1) prevent and mitigate harmful effects to the environment and human health, and 2) rationalize and reduce the use of pesticides. The Act promotes the analysis, assessment and control of the effects of the use of pesticides through specific activities intended to widen knowledge about these products (environmental monitoring, for example).

Species at Risk Act

This act prevents Canadian indigenous species, subspecies and distinct populations from becoming extirpated or extinct, provides for the recovery of endangered or threatened species and encourages the management of other species to prevent them from becoming at risk.

Canadian Environmental Assessment Act (CEAA)

The CEAA requires federal departments to conduct environmental assessments (EA) for prescribed projects and activities before providing federal approval or financial support.

The EA is a planning tool used to identify potential effects of projects or activities on the environment. This includes the air, water, land and living organisms, including humans.

Indian Act

The *Indian Act* provides legislation relating to Indians and Lands Reserved for Indians. The *Indian Act* is administered by the Minister of Indian Affairs and Northern Development.

2. Provincial Legislation

All provincial government legislation within B.C. is administered by the legislative assembly of British Columbia (provincial government).

Land Act

The *Land Act* is the main legislation governing the disposition of provincial Crown (i.e. public) land in British Columbia. Crown land is any land owned by the Province, including land that is covered by water, such as the foreshore and the beds of lakes, rivers and streams. The *Land Act* is administered by the Ministry of Sustainable Resource Management.

Wildlife Act

The provincial Ministry of Environment administers the *Wildlife Act*, which includes legislation relating to the conservation and management of wildlife populations and habitat, issuing licenses and permits for fishing, game hunting, and trapping. A provision of the *Wildlife Act*, which may be pertinent to shoreline development is the prohibition, to take, injure, molest, or destroy a) a bird or its egg; b) the nest of an eagle, peregrine falcon, gyrfalcon, osprey, heron, or burrowing owl; c) or the nest of any other bird species when the nest is occupied by a bird or its egg.

Water Act

The *Water Act* is the primary provincial statute regulating water resources. Under the *Water Act*, a stream is defined as “a natural watercourse or source of water supply, whether usually containing water or not, and a lake, river, creek, spring, ravine, swamp and gulch.” Section 9 of the *Water Act* requires that a person may only make “changes in and about a stream” under an Approval or Notification where required; or under a Water License or Order.

Weed Control Act

The B.C. *Weed Control Act* imposes a duty on all land occupiers to control designated noxious plants. The purpose of the Act is to protect our natural resources and industry from the negative impacts of foreign weeds.

Public Health Act

The *Public Health Act* contains Sewerage System Regulations which require homeowners installing new sewage systems to retain the services of an authorized person who may be a professional engineer or a registered onsite wastewater practitioner. The authorized person assesses both the owner's needs and the lot's capability for sewage treatment and dispersal, then plans or designs a septic system that meets those needs. The plan is filed with the health authority and an authorized person installs the system according to the plan.

3. Regional District of East Kootenay

The Regional District of East Kootenay (RDEK) provides local government services to rural areas outside municipal boundaries. The RDEK functions as a partnership of the municipalities and electoral areas (unincorporated areas) within its boundaries. These local governments work together through the RDEK to provide and coordinate services in both urban and rural areas. Regional districts are governed by the *Local Government Act* and other provincial legislation. Three bylaws regulate private land development around Rosen Lake: Jaffray, Tie Lake, Rosen Lake Land Use and Floodplain Management Bylaw No. 1414 (1999); Subdivision Servicing Bylaw No.1954 (2008); and Building Regulation Bylaw No. 1735 (2004).

APPENDIX C
Best Management Practices and Regional Operating Statements

This Appendix was reproduced from the Windermere Lake Shoreline Management Guidelines. All credit should be given to the original authors of that document.

Many provincial and federal agencies have developed Best Management Practices (BMP) in order to provide consistent direction to the public on acceptable development methods. The BMPs provide information to help ensure that proposed development activities are planned and carried out in compliance with the various applicable legislation, regulations, and policies. The range of activities that associate BMPs is broad.

The province of BC has, over a period of many years, developed a series of BMPs. These have evolved into “Develop with Care: Environmental Guidelines for Urban and Rural Land Development in British Columbia.” The Develop with Care Guidelines have links to several provincial BMPs related to shoreline development activities. Examples are as follows:

- ◆ Standards and Best Management Practices for Instream Works;
- ◆ Best Management Practices for Small Boat moorage on Lakes;
- ◆ Timing and Terms and Conditions for Changes In and About a Stream Specified by MOE Habitat Officers, Kootenay Region;
- ◆ Small Boat Moorage;
- ◆ Boat Launch Construction and Maintenance on Lakes;
- ◆ Lakeshore Stabilization;
- ◆ Installation and Maintenance of Water Line Intakes;
- ◆ Best Management Practices for Raptor Conservation during Urban and Rural Land Development in British Columbia;
- ◆ Best Management Practices for Amphibians and Reptiles in Urban and rural Environments in BC; and
- ◆ Best Management Practices for Recreational Activities on Grasslands in the Thompson and Okanagan Basins.

The Regional Operating Statements (ROS) developed by DFO, provide information regarding several low risk activities associated with shoreline development, including but not limited to:

- ◆ Aquatic Vegetation Removal in Lakes;
- ◆ Bridge & Culvert Maintenance;
- ◆ Dock and Boathouse Construction in Freshwater Systems;
- ◆ Routine Maintenance Dredging for Navigation;
- ◆ Public Beach Maintenance;
- ◆ Clear Span Bridges;
- ◆ Culvert Maintenance;
- ◆ Directional Drilling;
- ◆ Small Moorings;
- ◆ Underwater Cables in Freshwater Systems;
- ◆ Overhead Line Construction;
- ◆ Maintenance of Riparian Vegetation in Existing Rights of Ways;
- ◆ Dry Open Cut Stream Crossing; and
- ◆ Isolated Ponds.

APPENDIX D

Restoration Techniques

This Appendix was reproduced from the Windermere Lake Shoreline Management Guidelines. All credit should be given to the original authors of that document.

A variety of techniques have been developed to restore productive habitat (aquatic and terrestrial) and maintain/enhance productivity and biodiversity. There are a variety of groups' currently leading/undertaking restoration activities within the East Kootenay, using proven restoration techniques and concepts. For information contact local environmental groups, local government, or provincial government offices.

Even small restoration efforts will help improve our ecosystems.