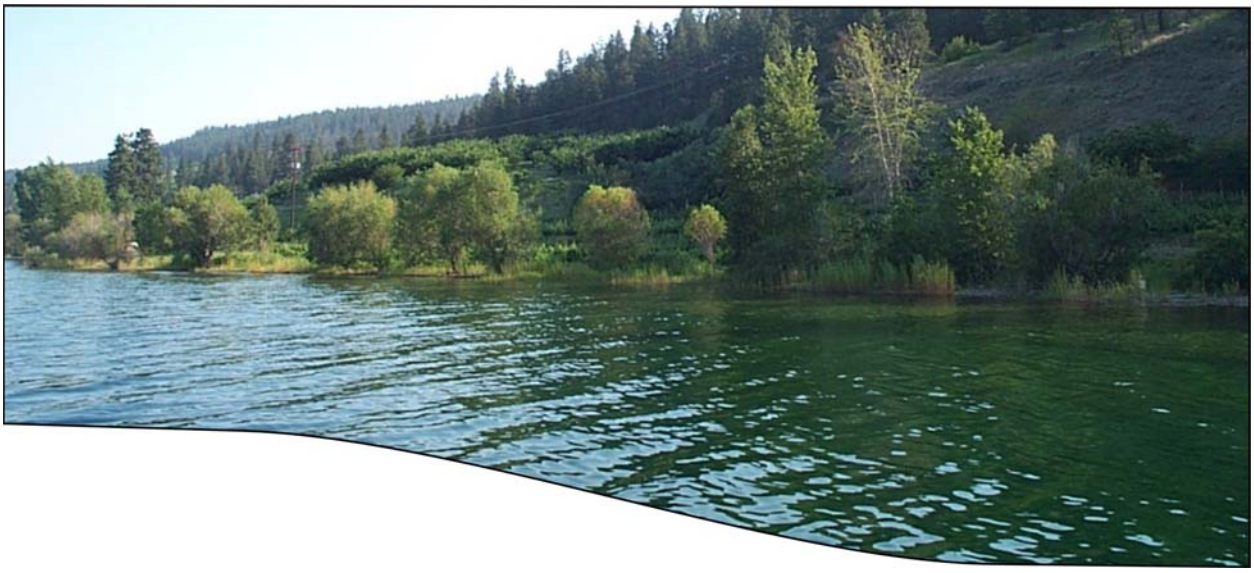

CENTRAL OKANAGAN LAKE FORESHORE PLAN

UPDATE
November 19, 2007

PREPARED BY

Development Services Department
Regional District of the Central Okanagan

EXECUTIVE SUMMARY

Central Okanagan Lake Foreshore Plan outlines the objectives and policies laid out by the local community and water resource agencies for the management, development, and use of Okanagan Lake shoreline within the Regional District of Central Okanagan. Foreshore plans are necessary in rapidly growing or heavily used areas abutting British Columbia's waterways, lakes, and seashores. The adoption of foreshore plans provides for integration of development policies from multiple levels of government holding jurisdiction over different aspects of the foreshore.

The Central Okanagan is one of the most rapidly growing areas in Western Canada, and much of the growth is occurring near the shores of Okanagan Lake. The Regional District of Central Okanagan has been involved in foreshore planning since the late 1980s and is a pioneer in the task of foreshore management.

In this document, the Regional District sets out a Foreshore Plan that is reflective of community interests and is supported by the government agencies involved. The management policies of this Plan were originally developed by the Regional District of Central Okanagan in June 1990. The updated plan is intended to serve as a companion to the 2005 Central Okanagan Lake Foreshore Inventory.

Support for this Plan was affirmed by the Regional Board of Directors on November 19, 2007, and subsequent development proposals will be evaluated in accord with the Foreshore Plan policies. Due to rapid population growth and increasing demands on the lake, it is clearly necessary to implement the Foreshore Plan in order to protect provincial water quality objectives for Okanagan Lake.

This Foreshore Plan has been prepared with the confidence that all individuals, groups, and government agencies with an interest in Central Okanagan foreshore areas recognize the difficulty of producing an acceptable and workable management program and will provide their full co-operation towards achieving towards achieving the goal of sustainable foreshore management.

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THE FORESHORE
PLANNING INITIATIVE

Problem Statement

Okanagan Lake is the most significant natural feature in the Regional District of Central Okanagan (RDCO). The lake attracted native people to the valley, and their descendants stayed and used the resources in the lake, streams, and adjacent lands for millennia. Likewise, the first white settlement grew on the shores of Okanagan Lake, and today the lake continues to be a dominant attraction for people choosing to live in the region.

Since the 1960s, population growth within the RDCO has been substantial. From 1966 to 2006, the area population grew from 34,000 to 170,000 (BC Stats) with no abatement in sight (Figure 1). The region's rapid growth is responsible for an increase and diversification of activities that impact Okanagan Lake. The lake is used for water supply, treated wastewater disposal, recreational activities (including swimming, fishing, and water sports), and transportation (by water and air). A wide variety of private and public residential, commercial, and industrial activities also occur along the foreshore area (Figure 2).

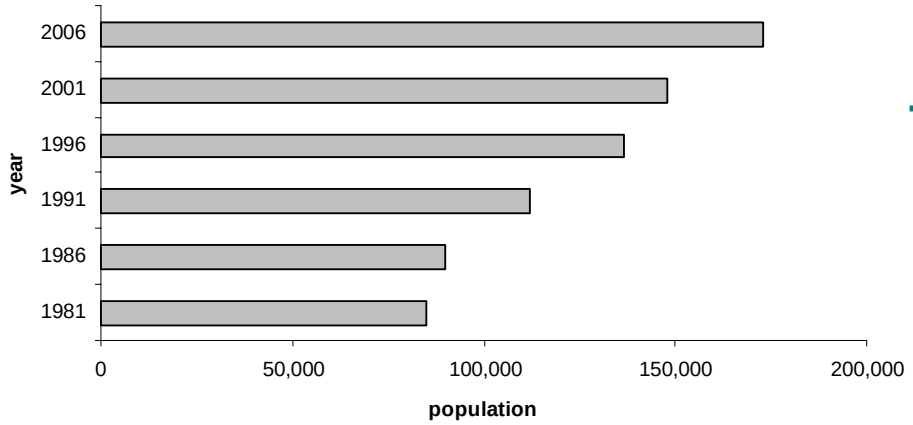

Figure 1

This graph shows the rapid increase in population of the RDCO over the past 25 years.

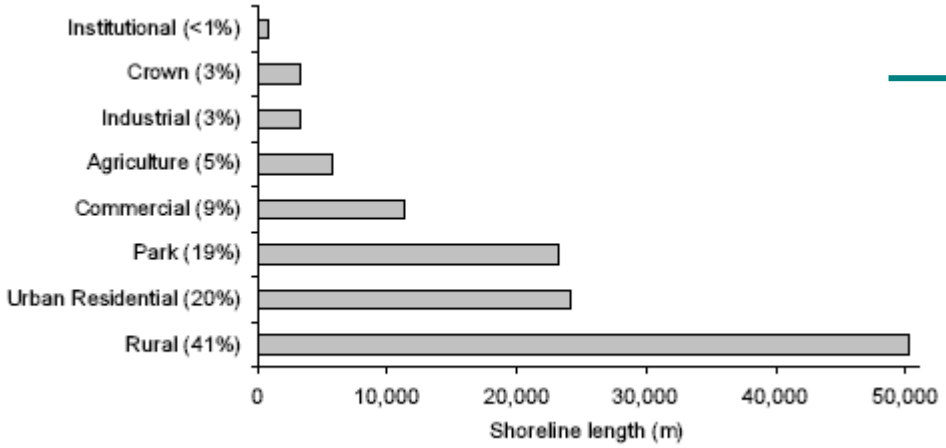

Figure 2

The land use on areas adjacent to the foreshore for the study area.

The current uses of the lake foreshore differ considerably from traditional uses and are associated with increased noise, pollution, and traffic. The many activities that take place in, on, and near the lake limit its ability to maintain natural ecosystem processes and sustain the local flora and fauna.

Recognizing the growing threat to water quality and the increasing impact on public use and access to Okanagan Lake, in the spring of 1986, the Regional Board called a meeting and invited participation from the administrators of the valley's three Regional Districts (North Okanagan, Central Okanagan, and Okanagan Similkameen) and three major cities (Vernon, Kelowna, and Penticton). The intention of the meeting was for the participants first to consider the issues related to the use of Okanagan Lake and then to work with all municipalities abutting Okanagan Lake to address the issues associated with development and recreational use of the shoreline.

One of the recommendations from 1986 was:

> *"THAT the municipalities and regional districts in the Okanagan Basin that have lakeshore within their boundaries, in consultation with the appropriate ministries, prepare and adopt foreshore plans."*

As a result of this recommendation, the RDCO prepared a Foreshore Plan for the Central Okanagan, which was completed in the summer of 1990 (Woodroffe Consulting). In 2007, this plan was updated to incorporate the Central Okanagan Lakeshore Inventory (RDCO, 2005) and to reaffirm the Board policies as they apply to Okanagan Lake foreshore abutting the Central Okanagan East and Westside Electoral Areas.

CENTRAL OKANAGAN LAKE FORESHORE PLAN

SECTION 2.0
BACKGROUND
TO THE REGION

Physiographic Features

This section provides a concise overview of the background information that has been assembled and used in the preparation of the Foreshore Plan. More extensive information is available upon request from either the Regional District Development Services office or the relevant government agency.

The Southern Interior is characterized by major physiographic divisions of continental and exotic (from the Pacific) origin (Roed, 1995). The Foreshore Plan area comprises two physiographic divisions: the Thompson Plateau and the Okanagan Highland (respectively on the west and east side of Okanagan Lake). The Thompson Plateau consists mainly of volcanic and sedimentary rocks, while the Okanagan Highland is dominated by metamorphic rock such as gneiss and granite.

The Thompson Plateau was uplifted in response to the rise of the Rocky Mountains. Extensive erosion created a peneplain (a relatively flat land surface created by erosion), which was dissected by streams during the Late Tertiary or Early Quaternary periods, resulting in the formation of deep valleys.

The Okanagan Highland consists of the remnants of an ancient mountain system. Monashee gneisses, originally at the edge of North America, were brought to the surface with rising of the Highland and westward movement along a massive fault known as Okanagan Fault.

A pre–Ice Age, high-energy drainage system that covered much of interior British Columbia left important gravel deposits in the Okanagan Valley. This drainage system differed extensively from the present drainage system. The gravel deposits in the Okanagan Highland occur up to 1,000 metres above the floor of the present Okanagan Valley and can be up to 50 metres thick. The gravel deposits of the Thompson Plateau are known to contain exploitable minerals.

The last glaciation (about 25,000–10, 000 years ago) and pressure exerted by the Okanagan Fault shaped Okanagan Valley and created the present drainage system, including Okanagan Lake. Large alluvial fans were deposited at the mouth of the rivers, creating the typical “benchland” topography (Roed, 1995).

Figure 3

This image illustrates a typical escarpment found along Okanagan Lake and its tributaries. (Image: K. Hawes)

Today, the region is characterized by rolling hills, deep canyons, glacial moraines, sharp escarpments, and terraced hills (Figure 3). There are also many unique landforms such as the White Lake Formation, Okanagan Fault, Layer Cake Hill, terraces, and hoodoos. The complexity of soils found in the region combined with steep slopes and drainage issues accounts for the challenging geotechnical conditions associated with land development.

Drainage Basin

Okanagan Lake is the largest of five interconnected lakes within the Okanagan Drainage Basin shown on the Drainage Basin Map (Figure 4). The narrow, 113 km long lake is fed by a number of streams, which in turn are fed by snowmelt in the spring.

The residence time for water in Okanagan Lake is approximately 53 years, this being the average time water spends in the lake before flowing through the outlet at the south end of the lake into Okanagan River. The lake is considered a closed basin as the annual outflow is a small 2% of the lake volume (Nordin, 2005). Lakes with long residence times generally take longer to deteriorate, but once deteriorated, it takes many years for them to recover, even under careful management.

The level of the lake is controlled at Penticton via a dam in order to maintain the optimum water level for irrigation, fisheries, water-based recreation facilities, and other lake-reliant activities. Control of water flow through the dam also minimizes the danger of downstream flooding, which occurred frequently prior to construction of the present dam in 1954 as part of the Okanagan Flood Control Works.

Okanagan Lake's water levels are typically maintained within a four-foot range: 341.2 m to 342.54 m (1119.8 feet to 1123.8 feet G.S.C.) with an average surface water elevation of 342 m above sea level (Nordin, 2005). The established flood level of 343.66 m (1127.5 feet) (Ministry of Environment, 1992) provides for additional storage during periods of high inflow from rapid spring melt. Due to the large variation in annual inflows to Okanagan Lake and the difficulty of forecasting these inflows accurately, water level in the lake fluctuates considerably from year to year. Since most shoreline development accounts only for the normal operating range of lake level, fluctuations can cause inconvenience and damage to foreshore properties.

When high inflow is anticipated, the lake is drawn down in early spring to accommodate the freshet. However, this drawdown must be performed sensitively to maintain sufficient water for kokanee hatching along the shoreline of Okanagan Lake, to minimize the risk of scouring gravel beds where sockeye salmon are hatching downstream in the Okanagan River, and to avoid flooding or otherwise damaging waterways and shoreline structures.

Figure 4

Okanagan Lake is one of five interconnected lakes in the region, and its water supply is replenished each year through its many tributaries, which are, in turn, fed by snow melt. (Natural Resources Canada – Okanagan Basin Waterscape).

Climate

The Okanagan Valley is located within the Southern Interior climatic region, characterized by hot summers with normal daytime highs of 27 °C and cool winters with daytime highs at the freezing mark of 0 °C (Environment Canada). The Coast Mountains act as a barrier to the moist westerly air flow, resulting in moisture falling before reaching the Southern Interior. This rainshadow effect creates arid summer conditions and mild winter conditions. Due to the mild winters, size and depth of Okanagan Lake, it is generally ice-free. Ice cover forms in localized areas during extended cold periods.

In summer, convective currents draw moisture from the valley-bottom lakes to the adjacent highlands, and the warm air generates summer thunderstorms in the plateau area. In winter and early spring, cold, dense Arctic air frequently penetrates the valley, because there is no effective barrier to the north. The cold air generates a temperature inversion and associated valley fog, resulting in poor air quality in the valley during wintertime.

Vegetation

The Okanagan Valley is a north to south corridor that connects the dry interior landscapes in the north to the grassland ecosystems of the Columbia basin in the south (Figure 5). This corridor is the principal entry route for plants and animals moving from the south into B.C.'s dry interior (Iverson and Cadrin, 2003).

Figure 5

Typical grassland ecosystem in the Okanagan Valley (Photo: B. Magnan).

Most of the foreshore of central Okanagan Lake is found in the Hot Dry Ponderosa Pine Biogeoclimatic (BEC) zone. A stretch of the north-western shoreline (beginning south of Fintry and extending north to the RDCO boundary) lies in the Hot Dry Interior Douglas Fir BEC zone. These zones contain sensitive ecosystems, which are primarily riparian, mature forest, coniferous woodland, and sparsely vegetated areas, with lesser instances of broadleaf woodland and grasslands occurring adjacent to the lake (Iverson and Cadrin, 2003). The vegetative communities adjacent to Okanagan Lake are particularly unique due to their proximity to water in the dry Okanagan landscape.

Within the vegetated ecosystems of the Okanagan, deciduous species such as trembling aspen, water birch, Douglas maple, willow, dogwood, alder, and the increasingly rare cottonwood grow in moist areas adjacent to the shoreline, near springs, or at the confluence of streams flowing into the lake. Coniferous species are dominated by ponderosa (yellow) pine, found on drier sites, and Douglas fir, primarily found on wetter sites. Isolated occurrences of western red cedar can also be found at extremely moist sites.

Invasive Species

Introduction of non-native plant species has significantly altered the species composition of some upland ecosystems. Drier ecosystems are vulnerable to invasion by annual bromes (particularly cheatgrass) and diffuse knapweed, while moister ecosystems are often invaded by common hound's-tongue and common burdock (Figure 6). These invasions often reduce diversity by displacing native plant species, reducing the structural complexity of vegetation, and reducing soil stability (Iverson and Cadrin, 2003).

Figure 6

Hound's Tongue (left) and Knapweed (right) are two of the most common invasive species in the Okanagan.

The Okanagan Basin Water Board has taken measures to control the spread of Eurasian milfoil in Okanagan Lake. This introduced aquatic plant forms mats of tangled weeds, drastically alters the ecology of the lake and interferes with recreational activities such as swimming, fishing, water sports and boating.

Fish Stocks

Okanagan Lake has a native rainbow trout population, which is the chief game fish in the lake. Historically, there was also a successful and productive recreational fishery for kokanee salmon. The fishery was closed in 1995 due to a substantial decline in the population in the 1980s, and since then, stocks have begun to rebound in conjunction with the Okanagan Lake Action Plan (Andrusak et al., 2005). The Action Plan aims to rebuild and maintain the diversity of wild kokanee stocks in Okanagan Lake. One of several factors in kokanee survival is the condition of shore-spawning habitats in Okanagan Lake (Figure 7). The Ministry of Environment has been collecting detailed information on kokanee and cataloguing kokanee shore-spawning areas throughout Okanagan Lake since 2001; less detailed data have been recorded since 1972 (Figure 8).

Figure 7

Rocky shorelines as shown in this image provide important spawning grounds for Kokanee (Photo: A. Wilson).

Native fish species including lake whitefish, northern pike minnow and burbot are also found within the lake. Invasive species such as the common carp are plentiful, particularly in shallow littoral areas near the shore. Bass, yellow perch, lake trout, and pumpkinseed sunfish were also introduced into the lake.

Human History

Humans first occupied the Okanagan Valley more than 9,000 years ago. The Syilx (Okanagan) Nation, which is part of the Interior Salish Group, occupied an area extending through the Nicola, Okanagan and Kootenay Valleys of BC south into Washington State (Figure 8). They were a semi-nomadic people, moving between fishing grounds such as Okanagan Falls and hunting grounds, and settling in pit houses for the winter. Pit houses and other archaeological sites have been found around Okanagan Lake and in the Plateau areas.

Okanagan Lake, Okanagan River, and tributaries were traditional transportation routes for the Syilx people. Trading occurred between southern tribes near Osoyoos and in Washington and northern tribes as far as Shuswap Lake. The Syilx people enjoyed a sustainable existence provided by Okanagan Lake and its rich resources, and they successfully populated shoreline, plateau, and desert areas. Today, the Syilx Nation in British Columbia consists of seven member bands.

The first contact between the Syilx and Europeans is believed to have occurred in the late 1790s through the North West Company. The first recorded date of contact is 1805 at Fort Kamloops. Subsequently the Fur Brigade Trail became established through the Okanagan Valley, with part of it along the western side of Okanagan Lake; some sections can still be identified today. The trail quickly became a settlement corridor and a doorway to the valley. Cattle-driving and gold-seeking pioneers came to the valley, and eventually the Catholic Oblate Order, under Father Pandosy, established the first permanent settlement in 1858 close to the mouth of Mission Creek in present-day Kelowna.

The Shuswap and Okanagan Railway was completed in 1892, and this coupled with the Okanagan Lake steamer service (established in 1886) resulted in accelerated settlement adjacent to Okanagan Lake. The lake also provided irrigation water and allowed the development of cattle, fruit, and vegetable industries in the latter part of the nineteenth century. Fintry, Ellison, and Gellatly farms are important natural and historic sites occurring along the Okanagan lakeshore.

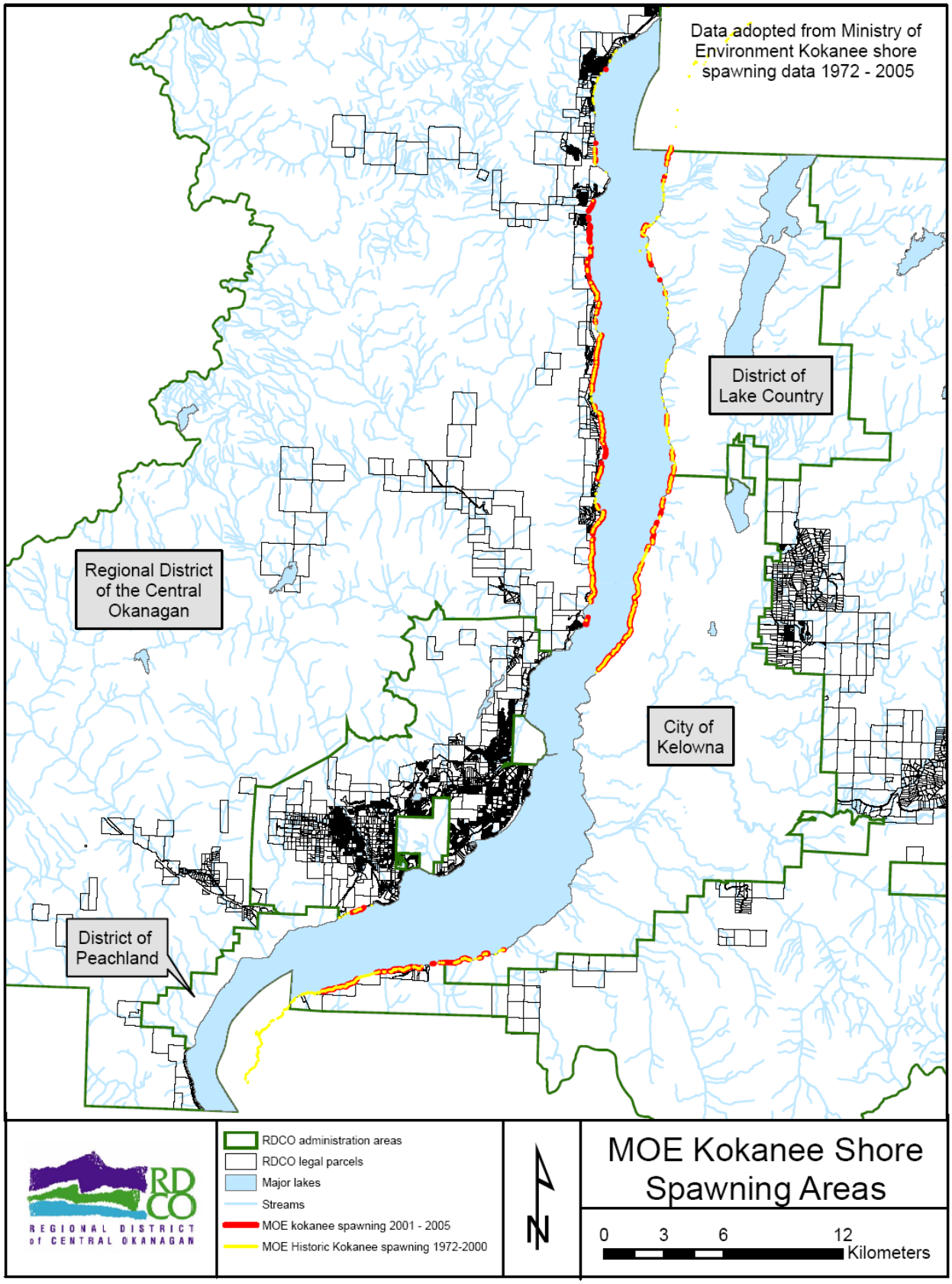

Figure 8: Ministry of Environment Kokanee shore spawning data 1972 – 2005.

Although the rate of settlement declined after the First World War, it accelerated after the Second World War with construction of Highway 97 and the Okanagan Lake bridge (opened in 1958). The ferry landings are no longer in use, but they remain as statements about the region's history and economic development.

The construction of the Okanagan Connector (Highway 97C, open in 1991) and expansions of the Kelowna Airport have substantially improved linkages between the Okanagan Valley, the Greater Vancouver region, Washington State and Alberta. The region's growth has been substantial in the last decade, with the immediate area supporting a university; a college; thriving agricultural, tourism and wine industries; diverse industrial uses, regional shopping centres, arenas and recreation centres; a cultural district; year-round festivals; vibrant communities; and a strong economy.

Land Use – Central Okanagan Shoreline

A land use survey was carried out during the summer of 1989 and updated in the summer of 2004. The land uses occurring in the upland area adjacent to the foreshore as well as along the foreshore itself are on maps available at the Regional District Development Services Department. Over 50% of the shoreline in the Central Okanagan region is now disturbed, as summarized below (Foreshore Inventory Mapping, RDCO, 2005).

In total, 121,886 m of foreshore were surveyed and divided in to 165 contiguous segments. Less than half of the total foreshore length is in natural condition, and more than half is disturbed (Table 1). North Westside and City of Kelowna each have over 35,000 m of foreshore, which natural conditions occurring on two-thirds of North Westside's foreshore and on one third of City of Kelowna's foreshore (Figure 9). Westside has just over 20,000m of foreshore, approximately one third of which remains in natural condition. District of Lake Country has nearly 18,000 m of foreshore, of which just over half is natural. The South Slopes and Tsinstekeptum areas each have slightly less than 5,000 m in total. Over 80% of the South Slopes foreshore is natural, while only 2% of the Tsinstekeptum foreshore remains in natural condition (Figure 8).

Table 1

Total disturbed and natural shoreline for the Central Okanagan.

Foreshore	Length (m)	% of total
Disturbed	63,387	52
Natural	58,049	48
Total Foreshore	121,886	100

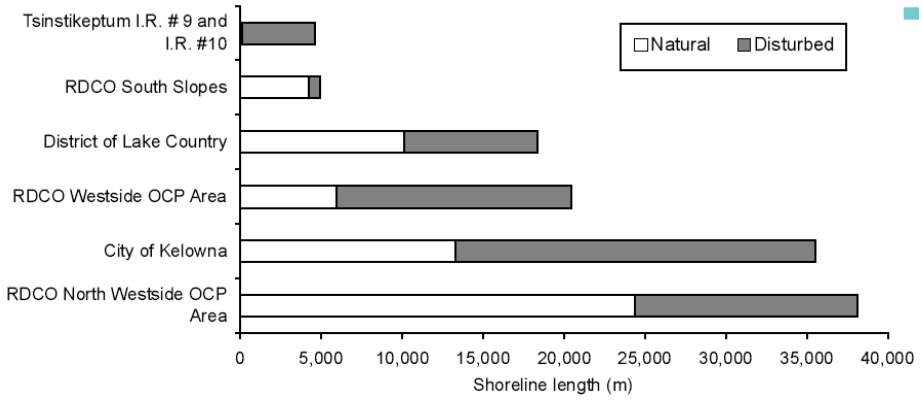

Figure 9

The length of natural and disturbed foreshore in each administration area. (RDCO, 2005)

Land use on areas adjacent to the foreshore is primarily rural, with park and urban residential each accounting for 20%. The remaining land uses are commercial, agricultural, industrial, Crown, and institutional, each occupying < 10% of adjacent lands (RDCO, 2005).

Shore type (Table 2) is divided among gravel beaches, which represent one third of the foreshore, and cliff/bluff, sand beach, and vegetated shore, each representing one fifth of the foreshore (Figure 9). Low rocky shore makes up the bulk of the remaining foreshore, with wetland accounting for <1%. Throughout the study area, there are nearly 700 retaining walls and over 1,000 docks for a frequency of nearly 10 docks per km (Figure 11). Additional foreshore modifications include groynes, boat launches, marine railways, and marinas.

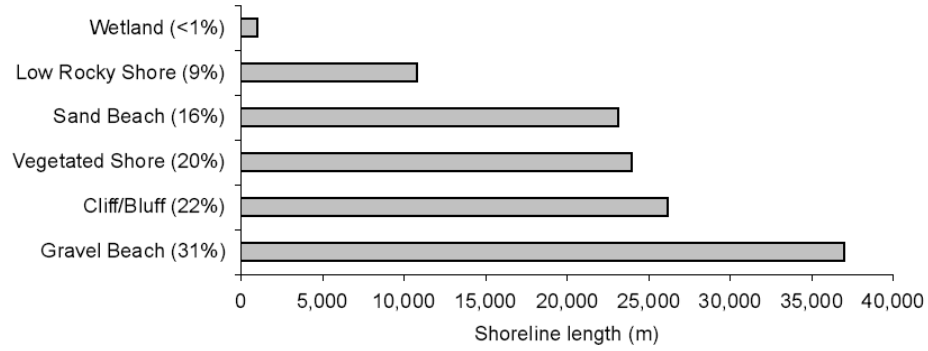

Figure 10

The length of each primary shore type in the study area.

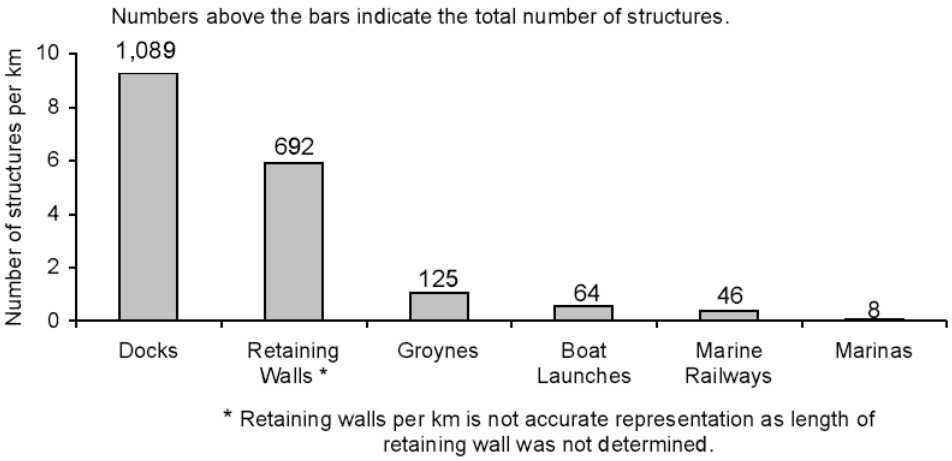

Figure 11

Modifications along the foreshore of the study area.

Table 2

Examples of predominant shore types. (Photos: T. Cashin)

Cliff/bluff

This shore type is characterized by very narrow littoral shelves comprised of rocky substrates. The talus at the bases of cliff bluffs provide habitat for shore spawning fish, such as Kokanee salmon.

Vegetated Shore

The vegetated shoreline is characterized by undisturbed foreshores with moderate littoral widths. Vegetation is commonly composed of shrubs and small trees, with overhanging vegetation occurring at the mean water level.

Sand Beach

The sand beach shore type is characterized by wide littoral shelves composed of fine sediments. Often, these beaches are associated with alluvial fans or other shoreline deposition areas.

Low Rocky Shore

Cobble, boulder, or bedrock substrates often characterize this shore type, along with narrow littoral widths.

Wetland

The wetland shore type typically features a wide littoral zone with fine substrates promoting abundant emergent vegetation, such as sedges, reeds, and cattails. This shore type is often characterized by riparian zones in which tall shrubs and trees are prevalent.

Gravel Beach

The gravel beach shore type is often associated with low gradient foreshores, coves with pockets of riparian vegetation among steeper hillsides, or alluvial fans. This example further illustrates an effective riparian band that remains unaltered.

CENTRAL OKANAGAN LAKE FORESHORE PLAN

SECTION 3.0
EXISTING JURISDICTION AND LEGISLATION

Government agencies, non-governmental organizations, First Nations, and the public all have interests in the foreshore of Okanagan Lake. In this section we provide information about parties with interests or jurisdictional powers.

Federal Agencies

The following federal agencies implement programs and oversee federal legislation applicable to Okanagan Lake shoreline attributes and interests:

Environment Canada

Environment Canada's mandate is to preserve and enhance the quality of the natural environment, including water, air and soil quality; conserve Canada's renewable resources, including migratory birds and other non-domestic flora and fauna; conserve and protect Canada's water resources; carry out meteorology; enforce the rules made by the Canada - United States International Joint Commission relating to boundary waters; and coordinate environmental policies and programs for the federal government

Canadian Wildlife Service

Canada's national wildlife agency handles wildlife matters that are the responsibility of the federal government. This includes the protection and management of migratory birds and nationally important wildlife habitat, endangered species, research on nationally important wildlife issues, control of international trade in endangered species, and international treaties.

Canadian Environmental Assessment Agency

The Canadian Environmental Assessment Agency is an independent federal body, accountable to Parliament through the Minister of Environment. The Agency works to provide Canadians with high-quality environmental assessments that contribute to informed decision making, in support of sustainable development.

Fisheries and Oceans Canada

Fisheries and Oceans Canada is the lead federal government department responsible for developing and implementing policies and programs in support of Canada's economic, ecological and scientific interests in oceans and inland waters. This mandate includes responsibility for the conservation and sustainable use of Canada's fisheries resources while continuing to provide safe, effective and environmentally sound marine services that are responsive to the needs of Canadians in a global economy.

Habitat and Enhancement Branch

The Habitat and Enhancement Branch is responsible for the protection and restoration of fish habitat, Salmonid Enhancement Programs (SEP), integrated resource management planning, stewardship and community involvement programs and school programs.

Treaty and Aboriginal Fisheries Program

The Treaty and Aboriginal Fisheries Program works through consultation, cooperative management and stewardship activities to build strong, healthy relationships and a sustainable fishery. Economic and capacity building opportunities provide Aboriginal groups with tools that contribute to building healthy, sustainable Aboriginal communities.

Indian and Northern Affairs Canada

Indian and Northern Affairs Canada programs and services play a key role in achieving the goals of Gathering Strength - Canada's Aboriginal Action Plan. Gathering Strength has four main themes:

- Renewing the partnership;
- Strengthening Aboriginal governance;
- Developing a new fiscal relationship; and
- Supporting strong communities, people and economies.

Transport Canada

Transport Canada's mission is to develop and administer policies, regulations and services for the best transportation system for Canada and Canadians — one that is safe and secure, efficient, affordable, integrated and environmentally friendly.

Office of Boating Safety

The Office of Boating Safety delivers prevention-based programs to reduce the safety risks and environmental impacts of boating on Canadian waters.

Environmental Services

Transport Canada's Environmental Protection program focuses on ensuring the department's compliance with applicable environmental laws, regulations and policies.

Provincial Agencies

The following provincial agencies have an interest in the foreshore area of this plan:

Ministry of Agriculture and Lands

The Integrated Lands Management Bureau of this ministry oversees allocation of crown water and foreshore. The Bureau's functions include:

- Issuing "Licenses of Occupation" to landowners wishing to construct wharfs over Crown foreshore into the lake;
- Leasing of Crown foreshore and aquatic land for commercial and industrial purposes;
- Granting of right-of-ways on the bed of Okanagan Lake for public and private utilities; and
- Providing Crown Land for community facilities, including public boat launches and yacht clubs.

Ministry of Community Services

This ministry oversees the application of the Local Government Act and Community Charter.

Ministry of Environment

This ministry implements provincial environmental initiatives and manages provincial parks. Functions include:

- Managing and protecting fish and wildlife, watersheds, and water rights in coordination with the federal government;
- Monitoring environmental conditions;
- Issuing pollution control permits; and,
- Administering the Water Act which regulates works in and about a stream (and lakes).

Ministry of Health

The Interior Health Authority regulates septic tank and disposal field permits and manages the Drinking Water Protection Act on behalf of the Province of BC.

Ministry of Public Safety and Solicitor General

This ministry is responsible for the Provincial Emergency Program and the Police Services Division.

Ministry of Tourism, Sport and Arts

This ministry is responsible for encouraging and facilitating the protection, conservation, and public appreciation of heritage properties and archaeological resources as mandated by the Heritage Conservation Act; enhancing and developing all-season resorts and resort municipalities; and managing forest recreation sites around the province.

Ministry of Transportation

This ministry plans transportation networks, provides transportation services, develops and implements transportation policies, and administers many transportation-related acts and regulations. Where foreshore is adjacent to or within 1 kilometre of a highway or public road, the Ministry of Transportation has certain powers over access to and uses of the foreshore.

Agricultural Land Commission

This commission is responsible for preserving agricultural land and providing a land use framework that encourages and enables farming.

Regional District

Within the authority of the Local Government Act, the Regional District of Central Okanagan may implement the following (subject to approval by federal and provincial agencies where applicable):

- Development Cost Charge Bylaws
- Development Permit Bylaws
- Development Variance Permits
- Drainage Bylaws
- Noise Bylaws
- Official Community Plan Bylaw
- Rural Land Use Bylaw
- Screening regulations
- Subdivision and Servicing Bylaws
- Temporary Commercial and Industrial Permits
- Tree Cutting Permits
- Unsightly Premises Bylaws
- Zoning Bylaw

Other Levels of Government

The following other levels of government have an interest in the foreshore area of this plan:

Westbank First Nation

Unlike most First Nations in Canada, Westbank Lands are not governed under the *Indian Act*. Rather, Westbank Lands are governed under a modern comprehensive set of community laws. Through its self government agreement, WFN has full jurisdictional control over Westbank Lands and resources. It is currently in treaty negotiations with a claim to land and water resources within its traditional area.

Westbank First Nation has five reserves which consist of approximately 5,306 acres: Mission Creek No. 8 is approximately 5 acres, Medicine Hill No. 11 is approximately 1,274 acres, Medicine Creek No. 12 is approximately 1,637 acres, Tsinstikeptum No. 9 is approximately 1,640 acres, and Tsinstikeptum No. 10 is approximately 750 acres, of which only the latter two are densely populated. Medicine Hill and Medicine Creek Reserves are Westbank First Nation's latest Reserve additions.

The Lands Department administers a variety of services that include land management, property management, law development and enforcement, social housing, general maintenance, surveys, permits, licences, registration, inspections, collections, roads, bridges, water and special projects.

Okanagan Indian Band

The Okanagan Indian Band is part of the Okanagan Nation, which is comprised of 7 Indian Bands in the Okanagan and Similkameen Valleys. The Okanagan Indian Band is located at the head of Okanagan Lake in Vernon, BC, and totals 11,282 hectares. The Okanagan Indian Band offers a variety of services and facilities including health care, social services, and early childhood education to name a few.

Okanagan Nation Alliance

The Okanagan Nation Alliance Fisheries Department (formerly the Okanagan Nation Fisheries Commission, or ONFC) was established in 1995 under the direction of the Okanagan Nation Alliance and member communities to take a role in the management of fisheries and aquatic resources. The goal and mandate of the ONAFD is the conservation, protection, restoration, and enhancement of indigenous fisheries (anadromous and resident) and aquatic resources within Okanagan Nation Territory.

The Okanagan Nation Alliance Mandate is as follows:

- Advancement, assertion, support and preservation of the Aboriginal Rights of the Okanagan Nation.
- Promotion, advancement and support of all land claim initiatives undertaken by Member Bands of the Okanagan Nation, as identified by the Okanagan Nation Declaration of August 22, 1987.
- Protection, enhancement and preservation of the peoples, lands and resources of the Member Bands of the Okanagan Nation.
- Protection, enhancement and preservation of the environment, fish and wildlife resources located within the traditional territories of the Okanagan Nation.
- Promotion, enhancement and preservation of the Okanagan Native history, language and culture.
- To collectively undertake and resolve governmental policy issues that may have an overall adverse effect on Member Bands and individuals.
- Promote and create a public awareness of the Okanagan Nation Alliance concerns, position and accomplishments in the areas of political, social, economic and cultural development.

Municipalities – Kelowna, Lake Country and Peachland

Three municipalities within the Central Okanagan region have authority for land use and servicing within their municipal boundaries and are partner agencies to the Regional District of Central Okanagan.

Irrigation Districts and Improvement Districts

Community water purveyors have authority for provision of domestic and agricultural water within their service boundaries and operate under provisions of the Drinking Water Protection Act. It includes operating water storage reservoirs in upland areas of the Okanagan Basin.

Others

A number of non-governmental organizations, associations, and groups have varying measures of influence on the use and development of the foreshore. Although they don't necessarily have jurisdiction over foreshore areas, it is vital that these organizations participate in the planning process and have the opportunity to represent their particular interest.

The Public

Individual citizens, foreshore lease holders, and upland property owners clearly have vested interests in foreshore management and development. Participation by the public must be a key component for the success of this Foreshore Plan.

CENTRAL OKANAGAN LAKE FORESHORE PLAN

SECTION 4.0
THE FORESHORE PLAN

Purpose

The purpose of this Foreshore Plan is to articulate the Central Okanagan Regional Board's objectives and policies for future development and use of the foreshore area of Okanagan Lake. It is intended to be a guide for use by the current Regional Board—together with federal, provincial, and local governments; First Nations; public and private organizations and groups; and individuals—to know the direction the Regional Board wants to take in managing the foreshore.

The Plan is intended to:

- Assure that future uses and developments in the foreshore will not be in conflict with the environmental protection policies presently in place.
- Determine the type of uses and developments that should be encouraged in the foreshore.
- Assure that public access to the lake will be maintained, and where possible increased.
- Safeguard the rights of upland landowners.
- Increase the awareness of the public as to the type of development and uses that will be encouraged in the foreshore and how they will be managed.
- Assure that the uses and developments occurring within the foreshore operate in harmony with each other.

The Plan reflects community goals and objectives that strive to balance environmental, social, and economic attributes of Okanagan Lake. An overriding objective is to maintain rights of public access to Crown foreshore and water resources, while protecting the fragile natural environment of the lake and shoreline.

Once objectives and policies for foreshore management have been determined, measures must be taken to ensure that the objectives are realized within the powers and enabling legislation available. Therefore, in addition to providing objectives and policies, this Plan provides direction to decision makers concerning the need to enhance foreshore management.

Boundaries

The area covered by this Foreshore Plan is a narrow strip of land and water immediately adjacent to and in Okanagan Lake, as shown on the Foreshore Plan Area map (Figure 11). Specifically, the foreshore extends from the high-water mark or upland boundary where Crown Land terminates out into the lake for two hundred metres.

Upland property above the high-water mark is not included in this Plan. It does, however, play a substantial role in the foreshore's future and, therefore, is considered integral to foreshore planning.

The geographic area of the Foreshore Plan includes the Central Okanagan East Electoral Area, the Central Okanagan West Electoral Area, and the waters abutting Tsinstikeptum I.R. 9 and 10 (Figure 12).

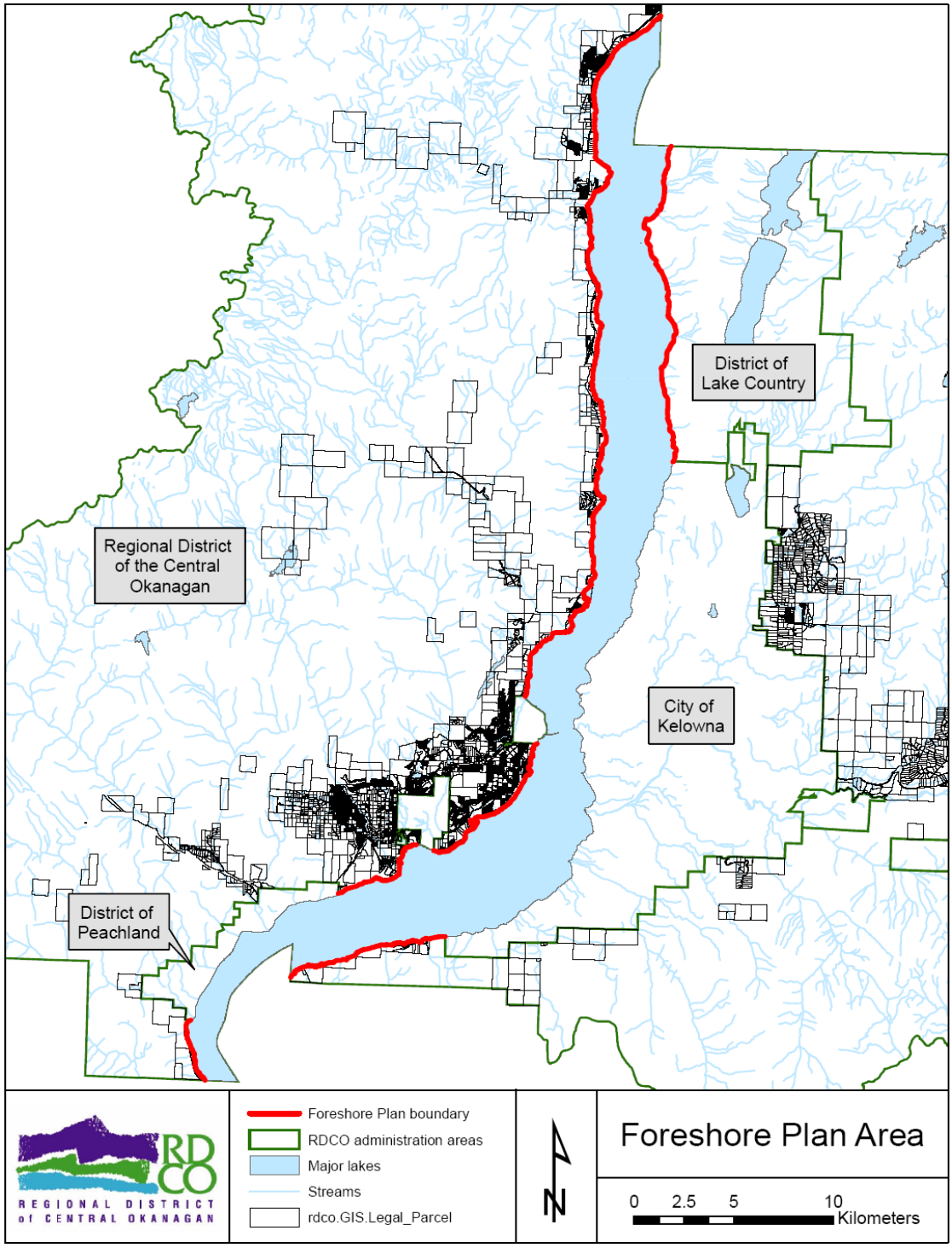

Figure 12: Foreshore Plan Area

Management Considerations and Objectives

It is essential that Okanagan Lake and its immediate foreshore be maintained in the best possible condition if the valley is to continue to be attractive as a settlement and recreational area. Successful management of the lake and foreshore is also needed to maintain equilibrium between the lake ecosystem and the demands placed on it.

This section describes the considerations of the Foreshore Plan as they pertain to the Regional District's environmental, social and economic objectives.

Environment

The environment of Okanagan Lake and its foreshore has been deteriorating since the development of large, permanent settlements in the Okanagan Valley, and especially in the last three or so decades. The deterioration includes reduced water quality, increased problems with algal blooms, declines in fish populations, a shift in species relationships through non-native introductions, loss of shore habitat and loss of overall biodiversity. If the lake environment continues to deteriorate, it will reach a level where social and economic considerations will be of little consequence, because both of these depend on the lake remaining healthy, clean, and visually pleasing.

The Regional Board's objective is to preserve and enhance the lake's environment and ecology, so that the lake continues to sustain the social and economic viability of the region.

Society

Many people moved to the Okanagan Valley for the lifestyle it offers. The lake and foreshore are of paramount importance to this lifestyle and must continue to be accessible and developed in a manner that will benefit the population who live in the region and consider Okanagan Lake a part of their natural heritage.

The Regional Board's objective is to protect and enhance the lifestyle of its citizens and to maintain the qualities that initially attracted people to make a home or business in the region.

Economy

For a community to thrive, it requires revenue-producing businesses that contribute through employment and taxation to sustaining a healthy economy. On Okanagan Lake, traditional industries of farming, transportation, fishing, and forestry have been augmented by many secondary and service industries, particularly tourism. This recent industrial and commercial growth has been facilitated by excellent roads and airports.

New businesses and industries are much sought after by communities, and there is considerable competition to attract them. They are highly selective in deciding where to operate in the Okanagan, because they, in turn, must compete for highly skilled workers, who will often consider the location, availability of housing, and access to other amenities over the actual employer. Okanagan Lake and its foreshore are significant attractions in the valley, and therefore, they must be managed carefully to continue drawing people and businesses to the region to support a vibrant economy.

The Regional Board's objective is to ensure that the lake foreshore be used and developed in a manner that will continue to enhance the economic prosperity of the area.

Designations & Strategic Policies

To attain the environmental, social, and economic objectives of this Plan, different strategies are needed for different uses and activities on the foreshore.

Strategic policies of this plan are categorized as follows:

- Policies applicable to all uses and activities on the Okanagan Lake foreshore;
- Rural and agricultural lands;
- Neighbourhood and resort developments;
- Site specific developments; and,
- Marine structures

Together, the general and specific strategies are intended to signify the Regional Board's current attitude to the future of the foreshore. These strategies may be modified, changed, or added to as the situation warrants and proves to be for the betterment of the foreshore.

Policies Applicable to Okanagan Lake Foreshore

The following Regional Board policies apply to all foreshore areas within the Plan boundaries, regardless of use or activity, except where specifically noted.

- Public access to the foreshore is a basic right; if not available, it will be established.

- Public foreshore shall be protected, maintained, restored, and enhanced when necessary.

- Crown foreshore shall remain in public ownership for public use and shall not be alienated by sale or lease, except where the public interest is being served.

- Provided that public access is not restricted nor the public interest adversely affected, riparian and littoral claims by upland owners respecting:
  - The protection of their land;
  - The quality and quantity of water flow to their property;
  - The natural accretion of land to their property; and
  - The access to water from their property shall be supported.

- A Foreshore Structure Bylaw shall be prepared and adopted, for the purpose of managing the construction, siting, and use of all wharfs, docks, boathouses, and structures within the foreshore.

- Subdivisions and developments adjacent to the foreshore shall provide, where deemed necessary, public access to Crown foreshore.

- Trees and vegetation shall be retained within the foreshore.

- The construction within the foreshore of breakwaters, groynes, bulkheads, or other structures designed to control water and land, as well as any filling or dredging, shall not be permitted unless approved by the Ministry of Environment and Department of Fisheries and Oceans. Exceptions may be considered in order to prevent erosion or to protect the environment.

- The construction of wharves, jetties, and docks shall be permitted in compliance with the current Provincial Best Management Practices for Small Boat Moorage for Lakes or a regional Foreshore Structure Bylaw (if applicable), providing they do not interfere with public access nor be so designed as to encourage the proliferation of Eurasian water milfoil, to trap sediments, or to disturb fish spawning areas.

- When constructing wharves, docks, and jetties, identify and flag areas where mechanized construction activity will be confined. Install sediment and erosion practices as needed.

- When subdivision, lease, or development is situated within 100 metres of a domestic or irrigation water intake, the intake shall be clearly identified and no mechanized activity shall occur without measures to control sediment and the development will be conducted in accordance with The Ministry of Environment Waterline Intake Best Management Practices.

- On parcels that have water lines traversing a portion of the lot, the water line shall be identified by easement registered on title or a statutory right of way, and there shall be a 4.6-metre-wide maintenance corridor kept clear of structures including retaining walls, buildings, and other structures.

- When subdivision or development is proposed adjacent to the foreshore and is situated within a designated floodplain, it shall adhere to provincial floodplain regulations and to Regional District setbacks and flood elevations. Prior to considering exemptions from flood regulations, the Regional Board shall require a geotechnical study be undertaken by a professional engineer with experience in geotechnical engineering. The professional engineer must be retained by the developers at their expense.

- Fish spawning areas and sensitive wildlife habitats shall be protected as follows:

- Development and activities within the high, moderate, and low categories (as per RDCO Foreshore Inventory Mapping, 2005 and MOE Foreshore Protocol) will only be approved or permitted to operate when they can be shown to be compatible with natural features, environments of the location, and kokanee spawning. Activities that involve foreshore modifications, such as dredging, hauling in sand to create a beach, breakwaters, retaining walls, groins, bulkheads, etc., that impact natural shoreline processes are not acceptable.

- New development and activities within shore-spawning habitat, prior to their approval, shall be referred to Fisheries and Oceans Canada, and the Ministry of Environment for their comments. Wharves, docks, and marinas are subject to the MOE Foreshore Protocol agreement (2007). New development and activities within shore-spawning habitat shall:
    i. be encouraged to limit the number of wharves or docks, and to share such structures.
    ii. be subject to considerations of the MOE Foreshore Protocol agreement (2007).
    iii. be confined to the period of May 1 to September 30 of any calendar year.
    iv. not include solid core wharves, breakwaters, groins, or other such structures.
    v. construct wharves to permit wave action beneath such structures. Pile driven wharves are recommended rather than floating ones.
    vi. keep disturbance of the foreshore to an absolute minimum.
    vii. shall be considered acceptable if they enhance fish habitat.
    viii. consider direct impacts such as: changes to fish assemblages, changes to predator – prey relationships, changes to shore zone habitat structures, changes to shading and ambient light penetration, changes or disruption of water flow pattern and wave energy; and, indirect impacts such as physical/chemical environmental disruption and operational impacts.

- Development and activities within the foreshore shall consider effects on adjacent streams which may be used as spawning tributaries to Okanagan Lake. Foreshore areas are often used as staging areas for stream spawning fish.

- Development and activities within the foreshore that tend to encourage the proliferation of Eurasian water milfoil will be required to design and operate in a manner so as to limit the spread of the plant.

- All development and uses within the foreshore shall be in accordance with Federal, Provincial, and Regional District legislation, bylaws, and policies.

- Developments, uses, and activities proposed within the foreshore and located within one kilometre of an adjoining regional district, municipality, or First Nation reserve shall be referred to that jurisdiction for comment and recommendation.

- The Regional Board supports the policies of the Okanagan Basin Water Board in the control of Eurasian water milfoil.

- The Regional Board, in accordance with Sections 919 and 920 of the Local Government Act, may designate development permit areas where it is deemed necessary to protect:
  - the natural environment.
  - development from hazardous conditions.

- Where Okanagan Lake foreshore is not designated a development permit area, Regional Board policies shall apply in accordance with the provincial Riparian Areas Regulation.

Policies Applicable to Rural and Agricultural Lands

- Within 200 meters of rural upland properties, the use of the foreshore or lease of the water surface for agricultural, commercial, or recreation purposes shall not be supported.

- Where the foreshore abuts upland within the Agriculture Land Reserve, the objectives and policies of the Provincial Agriculture Land Commission shall be supported.

- Fish farming or hatcheries are permitted where the upland is designated ALR subject to approval of a closed tank or a manmade upland reservoir with no disruption of Kokanee spawning grounds.

- Intensive agriculture is permitted where the upland is designated ALR subject to a 30 m setback from high water mark and fencing to limit access to the shore zone.

- Fuel storage or processing within 500 metres of the foreshore shall not be supported due to the high tourism and recreational values of Okanagan Lake.

- Swimming areas, lakeshore resorts, and public boat launch sites shall be situated a minimum 500 metres from designated or leased log-storage areas.

- Aggregate extraction, storage, or processing, where permitted, shall be situated a minimum 1,000 metres back from the foreshore in order that dust, noise, and visual impacts are buffered from Okanagan Lake.

Policies Applicable to All Site Developments

- Within development areas, shorelines shall be maintained in a predominantly natural state with natural riparian tree cover and ground vegetation.
- Cluster designs shall be encouraged and density bonusing may be considered in conjunction with shoreline conservation initiatives where applicable.

- Private roads accessing shoreline lots shall be designed with aesthetic and storm drainage considerations in mind, including tree removal, unobtrusive cuts and fills, alignments that follow contours, use of gravel rather than pavement, and other design elements resulting in road construction that is well suited to the landscape.
- Within residential developments, private driveways to the primary dwelling shall be designed with aesthetic and storm drainage considerations in mind. Driveways extending beyond the primary dwelling or building toward the lakeshore shall be discouraged. Pedestrian, not vehicular, access shall be encouraged to accessory buildings including docks and storage buildings situated adjacent to the shoreline.
- Surface drainage shall be managed so as to avoid direct discharge into Okanagan Lake and to maximize stormwater retention.
- Developments shall avoid the use of retaining walls at the water's edge and introduce more natural treatment, including rocks and native riparian plantings set into a stable slope (2:1 maximum).
- Site works shall be discouraged on slopes with a grade over 20% and in designated floodplains. Slopes shall be measured over a horizontal distance 45 metres inland from the shoreline.
- Septic disposal fields and uses that require an environmental control permit shall be situated a minimum 100 metres from Okanagan Lake. If a property owner wishes to encroach on this setback, the owner must engage an appropriately qualified professional engineer or geoscientist to design the septic field or use in a manner that ensures there will be no detrimental impact on Okanagan Lake. Any remedial measures recommended by the engineer or geoscientist must be implemented by the property owner at the property owner's expense.
- On level lots, site development shall be confined to maintain the lakeshore in its natural state. A 30-metre setback area from the lake shall be maintained as follows:
    - Principal and accessory buildings, privacy screens, and fences shall not be situated within the setback. Pumphouses and marine storage buildings may be supported within the setback but not less than 15 metres from the foreshore and shall be guided by applicable aquatic development permit area guidelines.
    - Moorage facilities may be supported on the foreshore subject to riparian area regulations, aquatic development permit area guidelines, applicable zoning, and design guidelines detailed below.
    - Septic fields, backup fields, and parking areas shall not be situated within the setback.
    - Within the setback, the natural landscape shall be retained. Clearing the site to create lake views shall be limited to a maximum of 30% of the lot frontage on the

lake. Where trees and understory are removed, native landscape materials shall be re-introduced and allowed to re-establish to create a contiguous buffer.

- Mature trees shall be retained as much as possible.
- Exposed soils caused by site grading should be reseeded as soon as possible.
- When selecting plant material to be introduced to the site, preference should be given to native species which are drought tolerant.

- Site development shall avoid the creation of artificial sand beaches.
- Site development shall avoid dredging or filling when constructing docks, decks, and other shoreline structures.
- Site development shall avoid areas susceptible to erodible soils and steep slopes.

Policies Applicable to Neighbourhood and Resort Developments

- New neighbourhoods, tourist resorts, and/or residential clusters situated on lands adjacent to the foreshore shall be designed so that a minimum of 50% of the shoreline is conserved in natural state.

- At time of development, provisions shall be put in place to ensure long-term sustainable management of the foreshore.

- Development shall be designed so that foreshore conservation areas include: areas of archaeological and cultural significance, kokanee spawning grounds, wetlands, stream corridors, steep slopes, rock outcrops, cliffs, species at risk, and areas designated and areas of high environmental sensitivity.

- Development shall be designed so that routes of access to rural resources, to marine docking, to infrastructure (e.g., pump houses, pump-out stations, solid waste disposal), to marine rental, to moorage, and to community recreation sites is incorporated within the portions of foreshore that is proposed for development.

- Development design shall plan for utility corridors and consolidate corridors within public right-of-ways.

- Based on a comprehensive development design that provides for foreshore conservation areas, the Regional District may support an increase of the distance between required highway access right-of-ways to the lakeshore.

- Islands (natural or artificial) and natural waterfalls shall be retained in public ownership.

- Encouragement shall be given to limit the number of wharves or docks and to develop shared marine facilities in association with the highway access right-of-ways.

- The development of new facilities for public recreational activities shall be encouraged within foreshore lying immediately adjacent to public-owned park property.

- Designated public swimming areas, boat launches, recreational boating areas, fishing piers, picnicking, and other passive and active recreational activities shall be designed at the same time as new neighbourhoods and resorts.

- Provision shall be made in the upland for adequate public parking (including boat trailers), washrooms, and other necessary facilities and conveniences.

- Provision shall be made for safe boat moorage at time of planning for new neighbourhoods or resorts.

- Marine residential use (houseboats, float camps, or vessels used for temporary or permanent residence) shall not be situated on the foreshore or within 200 metres of the foreshore unless at a designated marine park approved by the appropriate agencies including Transport Canada. Permanent marine residential use shall not be supported due to the high tourism and recreational values of Okanagan Lake.

Policies Applicable to Design of Marine Structures

- Regional District of Central Okanagan supports the Private Moorage Guidelines for the Okanagan Valley and the issuance of permits for docks and structures that comply fully with these guidelines.

- Design of moorage facilities other than the above, and design of any other structures on the foreshore or within 200 metres offshore, shall be undertaken by registered professionals experienced in marine engineering, aquatic processes, and biology. The registered professionals shall apply Best Management Practices and adhere to all provincial and federal regulations.

- Design of moorage facilities with more than 10 berths should include provisions for public moorage.

CENTRAL OKANAGAN LAKE FORESHORE PLAN

SECTION 5.0
GOVERNMENT AND PUBLIC INPUT

Referral Agencies

Following is a summary of federal, provincial, municipal, and regional district responses to this updated Foreshore Plan.

It is imperative that this Foreshore Plan reflect and be compatible with the policies of those government agencies that have jurisdiction over the various aspects of Okanagan Lake's use and development. It may be a long time before the existing multi-agency involvement is simplified.

Transport Canada

The agency noted that the Navigable Waters Protection Act is well established in law and the Foreshore Plan should avoid potential conflicts. With respect to vessel moorage, the agency noted that temporary moorage up to two weeks in duration is considered reasonable. A vessel moored temporarily along the shoreline needs to carry safety equipment in accord with the Canada Shipping Act and needs to deal with wastewater without creating a nuisance. A number of recommendations have been incorporated into the document.

Department of Fisheries and Oceans

The agency supported undertaking of the Central Okanagan Foreshore Inventory, a companion document to this plan.

Westbank First Nation Council

The response addresses protocol of crown land alienation within the territory of the Okanagan Nation. Treaty negotiations between Westbank First Nation and the province are in process.

Ministry of Forests, Okanagan Shuswap Forest District

The Ministry indicated no concerns with the updated plan.

Ministry of Agriculture and Lands

Their response indicated a need to protect or provide for continued access to the lake for irrigation water supply wherever necessary. Further recommendations have been incorporated into the plan to provide consistency with Best Management Practices and agricultural regulations.

Ministry of Transportation

No response to date.

Integrated Land Management Bureau

This agency, responsible for issuing foreshore tenures noted consistency of the updated plan with the Okanagan Shuswap Land and Resource Management Plan and general support for the updated plan.

Ministry of Environment – Environmental Stewardship Division

Their response indicated a number of recommendations that have been incorporated into the document. The Ministry's response referred to several initiatives underway to guide foreshore management through the issuance of provincial Best Management Practices and agency protocols. As this work is completed, it will lend further direction to the application of this plan.

Ministry of Environment – BC Parks

BC Parks stated no concerns with the Foreshore Plan update.

City of Kelowna

City of Kelowna staff made a number of recommendations that have been incorporated into the document.

The Public

Public Displays were held on May 2 and 3, 1990, in the Regional District Board Room to offer the public and opportunity to view the Foreshore Plan and to answer their questions. During the two days, sixty-four people from all areas of the region attended the display. Copies of the Foreshore Plan were also distributed to key interest groups for their input. Subsequently, thirteen briefs were received from the public and considered by the Regional Board.

CENTRAL OKANAGAN LAKE FORESHORE PLAN

SECTION 6.0
GLOSSARY OF TERMS

Accretion: The gradual accumulation of land out of the lake. Accretion is of two kinds: (i) by alluvium, where sand and soil wash up and form firm ground on shore; and (ii) by dereliction, where the water retreats below the usual high-water mark.

Floodplain: Level lowland along the margins of the hydraulic channel(s) of a stream or river onto which water flows during the flood stage.

Foreshore: In this Foreshore Plan, the area of the lakeshore from the legal high-water mark or boundary of Crown Land out into the lake two hundred metres.

Groyne: A structure of rock and earth, usually perpendicular to the shore.

Littoral: The area of shallow water near the shore. This is a biological term relating to the penetration of sunlight through the water to the subsurface.

Marine Railway: A rail system extending below the high water mark designed to bring water craft out of the water. Typically in association with a boat house located on the foreshore.

Natural Boundary: The useable high-water mark of a body of water, where the common or regular presence of water leaves a mark on soils and vegetation.

Riparian Area: The area adjacent to a water body that links aquatic and terrestrial ecosystems.

Riparian Rights: The rights and privileges that are associated with the ownership of land fronting onto a body of water.

Structure: A construction fixed to, supported by, or sunk into the land or water.

Upland: Land lying immediately adjacent to the foreshore, as defined in this Foreshore Plan.

Wetland: Land that is inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that normally does support, vegetation. The vegetation is typically adapted for life in saturated soil conditions. Types of wetlands include swamps, marshes, bogs, fens, estuaries, and similar areas that are not part of the active floodplain of a water body.

Wharf or Pier: A structure erected on the foreshore for the purpose of mooring watercraft.

CENTRAL OKANAGAN LAKE FORESHORE PLAN

SECTION 7.0
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