

**City of Black Diamond
Grant No. G1000014**

DRAFT REPORT

**Shoreline Restoration Plan Component of the Shoreline
Master Program for the City of Black Diamond**

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SHORELINE MASTER PROGRAM UPDATE SHORELINE RESTORATION PLAN

1. INTRODUCTION

The City of Black Diamond's Shoreline Master Program applies to activities in the shoreline jurisdiction. Activities that have adverse effects on the ecological functions and values of the shoreline must provide mitigation for those impacts. By law, the proponent of that activity is not required to return the subject shoreline to a condition that is better than the baseline level at the time the activity takes place. How then can the shoreline be improved over time in areas where the baseline condition is severely, or even marginally, degraded?

Section 173-26-201(2)(f) WAC of the Shoreline Master Program Guidelines¹ says:

“master programs shall include goals and policies that provide for restoration of such impaired ecological functions. These master program provisions shall identify existing policies and programs that contribute to planned restoration goals and identify any additional policies and programs that local government will implement to achieve its goals. These master program elements regarding restoration should make real and meaningful use of established or funded nonregulatory policies and programs that contribute to restoration of ecological functions, and should appropriately consider the direct or indirect effects of other regulatory or nonregulatory programs under other local, state, and federal laws, as well as any restoration effects that may flow indirectly from shoreline development regulations and mitigation standards.”

However, degraded shorelines are not just a result of pre-Shoreline Master Program activities, but also of unregulated activities and exempt development. The new Guidelines also require that “[l]ocal master programs shall include regulations ensuring that exempt development in the aggregate will not cause a net loss of ecological functions of the shoreline.” While some actions within shoreline jurisdiction are exempt from a permit, the Shoreline Master Program should clearly state that those actions are not exempt from compliance with the Shoreline Management Act or the local Shoreline Master Program. Because the shoreline environment is also affected by activities taking place outside of a specific local master program's jurisdiction (e.g., outside of city limits, outside of the shoreline zone within the city), assembly of out-of-jurisdiction actions, programs and policies can be essential for understanding how the City fits into the larger watershed context. The latter is critical when establishing realistic goals and objectives for dynamic and highly inter-connected environments.

As directed by the Guidelines, the following discussions provides a summary of baseline shoreline conditions, lists restoration goals and objectives, and discusses existing or potential programs and projects that positively impact the shoreline environment. Finally, anticipated scheduling, funding, and monitoring of these various comprehensive restoration elements are provided. In total, implementation of the Shoreline Master Program (with mitigation of project-

¹ The Shoreline Master Program Guidelines were prepared by the Washington Department of Ecology and codified as WAC 173-26. The Guidelines translate the broad policies of the Shoreline Management Act (RCW 90.58.020) into standards for regulation of shoreline uses. See <http://www.ecy.wa.gov/programs/sea/sma/guidelines/index.html> for more background.

related impacts) in combination with this Restoration Plan (for restoration of lost ecological functions that occurred prior to a specific project) should result in a net improvement in the City of Black Diamond's shoreline environment in the long term.

In addition to meeting the requirements of the Guidelines, this Restoration Plan is also intended to support the City's or other non-governmental organizations' applications for future grant funding to implement elements of this Restoration Plan.

2. SHORELINE INVENTORY SUMMARY

2.1 Introduction

The City of Black Diamond retained AHBL and Otak to conduct an inventory and characterization of the Lake Sawyer shoreline in 2010. The purpose of the shoreline inventory was to facilitate the City's compliance with the State of Washington's Shoreline Management Act (SMA) and updated Shoreline Master Program Guidelines. The inventory describes existing physical and biological conditions in the Lake Sawyer shoreline zone within City limits, including recommendations for restoration of ecological functions where they are degraded. The full *Final Shoreline Analysis Report* is included as an appendix to the Shoreline Master Program, and is summarized below.

2.2 Shoreline Boundary

As defined by the Shoreline Management Act of 1971, shorelines include certain waters of the state plus their associated "shorelands." Shorelands are defined as:

"those lands extending landward for 200 feet in all directions as measured on a horizontal plane from the ordinary high water mark; floodways and contiguous floodplain areas landward 200 feet from such floodways; and all wetlands and river deltas associated with the streams, lakes, and tidal waters which are subject to the provisions of this chapter...Any county or city may determine that portion of a one-hundred-year-floodplain² to be included in its master program as long as such portion includes, as a minimum, the floodway and the adjacent land extending landward two hundred feet therefrom (RCW 90.58.030)"

Shorelands in the City of Black Diamond include areas within 200 feet of the ordinary high water mark of Lake Sawyer, as well as its associated wetlands. Black Diamond contains no streams or rivers under shoreline jurisdiction. Ravensdale Creek and Rock Creek flow into Lake Sawyer from the south and southeast, but the mean annual flow of each stream is below the minimum 20 cubic feet per second (cfs) required to be regulated by the Shoreline Management Act (RCW 90.58.030). Covington Creek flows out of Lake Sawyer on the west side of the lake and is included in King County's shoreline jurisdiction; a small portion of the creek buffer is located within Black Diamond's shoreline jurisdiction.

² According to RCW 173-220-030, 100-year floodplain is "that land area susceptible to being inundated by stream derived waters with a one percent chance of being equaled or exceeded in any given year. The limit of this area shall be based upon flood ordinance regulation maps or a reasonable method which meets the objectives of the act;"

During the shoreline assessment, a large wetland complex at the southern end of the lake was identified as obviously being associated with Lake Sawyer. While physically separated from the lake by an access road, the wetlands are hydraulically connected to Lake Sawyer by Rock Creek and are included in the City's shoreline jurisdiction. Another physically separated wetland was identified near the northeast corner of the lake, but local residents and City information has confirmed that it does not have a surface water connection to Lake Sawyer. As such, this wetland is not considered an associated wetland and is not included in Black Diamond's shoreline jurisdiction.

2.3 Inventory

The shoreline inventory is divided into seven main sections: Introduction, Current Regulatory Framework Summary, Shoreline Inventory, Conditions by Inventory Segment: Lake Sawyer, Analysis of Ecological Functions and Ecosystem Wide Processes, Land Use Analysis and Shoreline Management Recommendations. The City's shoreline jurisdiction for Lake Sawyer is divided into six segments: Area A (Residential), Area B (Lake Sawyer Boat Launch Park), Area C (North Single Family Parcel), Area D (Northwest Wetland, later determined to be outside the SMA), Area E (Islands), Area F (Lake Sawyer Regional Park) and Area G (Regional Park Wetland). These segments are based on existing land use patterns and current zoning.

2.3.1 Land Use and Physical Conditions

1. Existing Land Use: The City of Black Diamond's shoreline area is extensively developed, the most dominant land use being single-family housing. King County Assessor records indicate that less than 8% of the shoreline jurisdiction is classified as vacant, and those non-vacant parcels not occupied by residential development consist mostly of recreational uses, including two city-owned parks and an RV Park.
2. Parks and Open Space/Public Access: Parks and open space account for approximately 24% of the land in the shoreline jurisdiction, and the majority of this acreage is concentrated at the southern end of the lake in the City-owned Lake Sawyer Regional Park. This park provides trails, passive recreation, and non-motorized shoreline access. The City also owns a small park on the northwest shore of the lake that features the only public boat ramp on Lake Sawyer. Other opportunities for public access to the shoreline are limited, due to the extent of private residential development.
3. Shoreline Modifications: The Lake Sawyer shoreline has been extensively modified, including construction of docks, piers, and a variety of shoreline armoring. Approximately 66% of the shoreline has been armored, and approximately 90% of shoreline properties have an overwater structure. The Residential segment (Segment A) has the most heavily altered shoreline, with 80% armored with a variety of materials, including placed concrete bulkheads, concrete blocks, boulders, or wood.

The full shoreline inventory includes a more in-depth of discussion of the above topics, as well as information about transportation, stormwater and wastewater utilities, historical/archaeological sites, among others.

2.3.2 Biological Resources and Critical Areas

Outside of the wetland complex in the Lake Sawyer Regional Park, the Lake Sawyer shoreline zone has relatively few high-quality biological resources due to extensive residential development and associated shoreline modifications in the area. However, the shoreline jurisdiction does contain some environmentally critical areas and scattered wildlife habitat.

Geological hazard areas (slopes greater than 40%) are common throughout much of the shoreline jurisdiction, though the overall area is relatively small (7 acres). Steep slopes are most commonly arranged in bands running parallel to the shoreline between upland development and the OHWM.

Washington Department of Fish and Wildlife (WDFW) mapping of Priority Habitat and Species indicates the presence of bald eagle nest buffers within the shoreline jurisdiction, and all of Lake Sawyer is classified as a waterfowl concentration area. In addition, Covington Creek is listed as habitat for Coastal Cutthroat, Winter Steelhead, and Coho salmon. Ravensdale and Rock Creeks are listed as habitat for Coastal Cutthroat and Coho salmon. Coho and steelhead are also found in Lake Sawyer.

There are no critical aquifer recharge areas located within the shoreline jurisdiction. However, two wellhead protection zones overlap portions of the shoreline jurisdiction, and the shoreline falls within the 5- and 10-year zones for these wellheads.

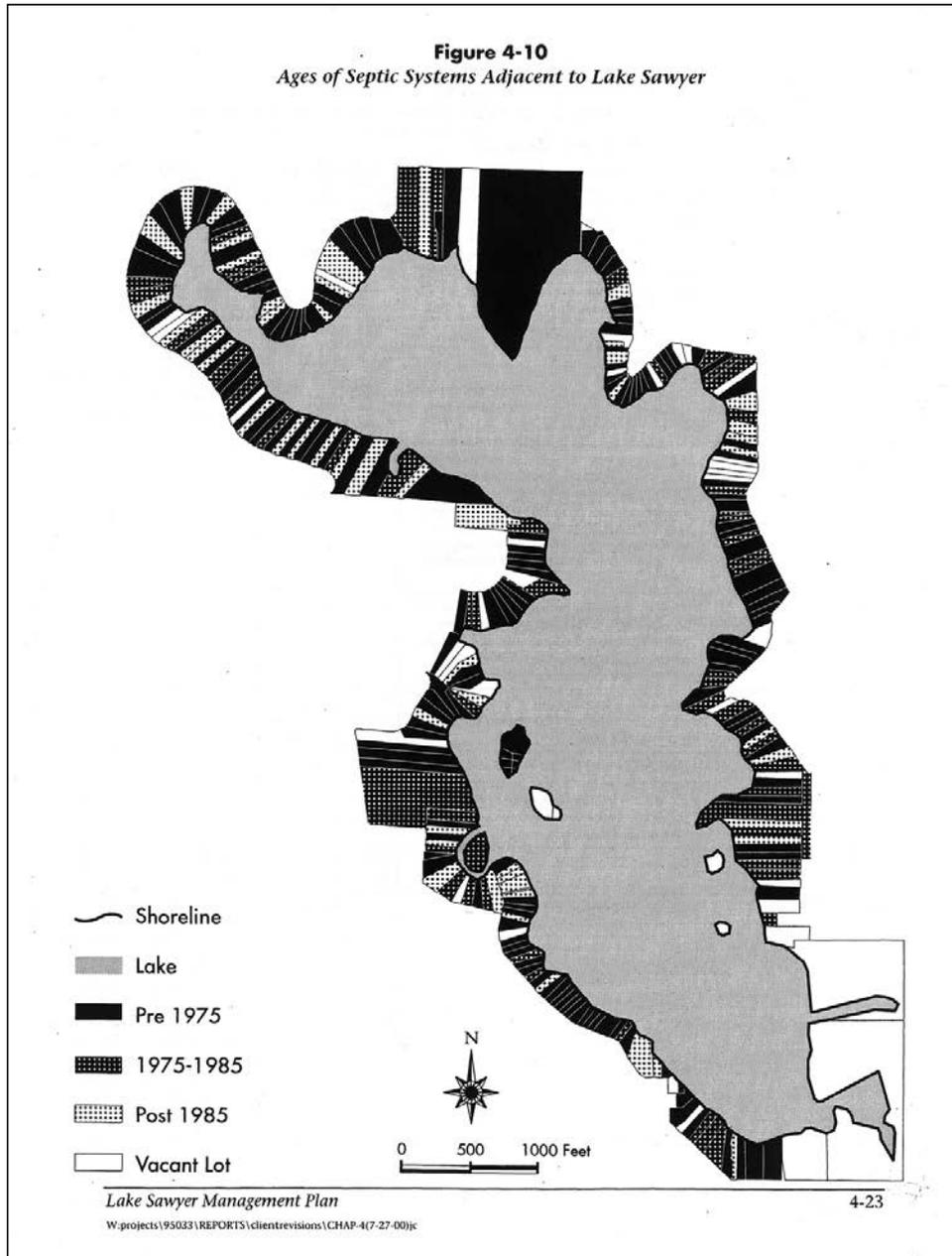
2.3.3 Impaired Function, Degraded Areas, and Sites with Potential for Ecological Restoration

As noted in Section 2.3.1, Lake Sawyer has been heavily modified, primarily as a result of extensive residential development. Only approximately 14 of the lakeshore parcels were vacant in 2009. The shoreline area is not anticipated to see an appreciable growth in density over existing conditions because the majority of the properties are already significantly built out, with the larger single family property in Area C being a possible exception. In addition, development of primarily passive park improvements on the large open parcel at the south end of the lake is expected. It is expected that the size and nature of housing surrounding the lake may shift in the coming years, following a pattern of larger single-family residences replacing the smaller more modest homes left around the lake.

Hydrologic, vegetation, hyporheic and habitat functions have all been negatively impacted by development both within the larger watershed and adjacent to the shoreline of Lake Sawyer. Segment A (most Residential areas) has the highest level of modification and the lowest overall function. Segment G (Regional Park Wetland) and Segment C (Forested Large Lot Single Family Parcel) have the highest overall function, based largely on their more natural conditions.

As noted in more detail in the Shoreline Analysis Report, water quality is a key management issues for Lake Sawyer. In 2000, there were more than 270 OSS in the nearshore area of Lake Sawyer. Figure 1 depicts the distribution and ages of OSS surrounding Lake Sawyer, as documented by the *Lake Sawyer Management Plan* in 2000.

Figure 1. Ages of Septic Systems Adjacent to Lake Sawyer



As illustrated in Figure 1, properties adjacent to Lake Sawyer contained a large number of septic systems constructed prior to 1975. While it is anticipated that some of these have been replaced since the *Lake Sawyer Management Plan* was published, it is likely that many older systems still exist and are now reaching the end of their design life, increasing potential risks to water quality.

Due to the high use of septic systems around the lake, input from stormwater runoff, and sources of phosphorus within the lake itself, phosphorus levels continue to be monitored. As part of the NPDES Phase II permit compliance, the City currently has various programs to control stormwater pollution through maintenance of public facilities and inspection of private facilities, as well as conducting construction site inspections and requiring appropriate spill control and response measures. Monitoring has been done by volunteers and staff with funding coming out of the City's stormwater utility in Lake Sawyer in association with a Total Maximum Daily Load (TMDL) Plan for phosphorus in the lake that was developed by Ecology in 1991, and the water quality has generally improved since 1993 when the TMDL was approved by the EPA. In 2002, Ecology produced a document titled *Effectiveness Monitoring for Total Phosphorus Total Maximum Daily Loads for Fenwick and Sawyer Lakes*. The report concluded that the lake is meeting the long-term goal of reducing phosphorus. However, the anticipated growth in the watershed could have a negative impact on the health of the lake. Ecology has produced a follow-up document titled *Lake Sawyer Total Phosphorus Total Maximum Daily Load Water Quality Implementation Plan* (2009), which provides a framework for corrective actions to address ongoing and future sources of phosphorus pollution in Lake Sawyer and the surrounding watershed.

The TMDL was originally issued relating to phosphorus levels as a result of a failed experimental wastewater treatment facility that utilized the wetlands in Area G, but is now used to manage stormwater facilities because the primary source of phosphorus is from stormwater runoff. The City is continuing to work towards meeting the requirements of the NPDES permit by 2012. Some of the current goals the City is working towards include establishing updated maintenance standards for facility function, performing maintenance within required timeframes, annual inspection of all municipally owned or operated permanent stormwater treatment and flow control facilities, conducting checks of potentially damaged stormwater facilities after major storm events, and several activities and educational opportunities relating to public involvement and participation (PacWest Engineering 2009).

Enhancement of lakeshore vegetation, reductions or modifications to shoreline hardening, and minimization of in- and over-water structures would each increase one or more ecological parameters of the City's shoreline. These options could be implemented voluntarily by the City or City residents or, depending on specific project details, could be required to mitigate adverse impacts of new shoreline projects. The *Habitat Limiting Factors and Reconnaissance Assessment Report, Green/Duwamish and Central Puget Sound Watershed (Water Resource Inventory Area 9)* (Kerwin and Nelson 2000) identifies the numerous limiting habitat factors and impacts in WRIA 9, many of which are particularly important in Black Diamond's shoreline jurisdiction:

- Dams which block upstream and downstream passage for salmonids, change the natural flow, cause gravel starvation and scouring and reduce amount and size of large woody debris (e.g. the fish way dam at Lake Sawyer's outlet);

- Logging practices which create reduced riparian habitat, fish passage barriers, excessive sedimentation, decreased water quality and altered stream hydrology (e.g. logging practices upstream of Lake Sawyer may contribute to increase sediment and reduced water quality in the lake);
- Reduced forest cover and increased impervious surface from land development which disrupts hydrologic stream flow, decreases water quality and increases sedimentation (e.g. continued development and impervious surfaces in Black Diamond);
- Urbanization, water diversions, and revetments that are lowering the floodplain and disconnecting off-channel habitats, reducing large woody debris, causing chronic water quality problems and severely reducing riparian habitats and associated functions (e.g. these events upstream of Lake Sawyer can impact the lake and its associated streams and wetlands); and
- Introduction of non-native plant and animal species (non-native plants and animals are associated with Lake Sawyer and its associated streams and wetlands).

Opportunity areas were initially identified during the review of the reference materials, review of aerial photographs, and a brief site visit in December 2009. More detailed descriptions of each area can be found in Section 4.0 below. Restoration opportunities on public lands exist at the two City-owned parks in the shoreline jurisdiction. Many of the restoration opportunities are similar for each of the segments and include:

- Replacement of non-native invasive plants, such as purple loosestrife, which is found onshore (Lake Sawyer Management Plan 2000), with appropriate native species;
- These areas could be enhanced by encouraging private homeowners to implement bulkhead removal and shoreline enhancement projects (including installation of native vegetation) and replace deteriorating piers. New construction should discourage the installation of bulkheads or other forms of shoreline modification. Regulations can also address the installation or replacement of one dock for use by two parcels. Homeowner education should also focus on discouraging the use of chemicals on lawns and shrubs.
- Educational opportunities for lakeshore residents that include topics such as the use of fertilizers and pesticides, the installation of native plant species, and the use LID and green building techniques.
- Removal or modification of bulkheads and limiting the number of new or replacement docks to one dock per two parcels.
- The use of LID and green building techniques for the redevelopment of the City parks in shoreline jurisdiction.
- Active monitoring of septic systems and required conversion of homes on septic systems to the City's sewer system when sewer is available and/or significant new development is proposed.
- In areas of natural or semi-natural shoreline condition, education regarding the preservation and maintenance of these features is highly encouraged.

Overall, the highest priority areas for restoration are those areas within Lake Sawyer Regional Park that have been heavily modified, including clearing and shoreline armoring. The highest

priority areas for protection are wetland areas in the Regional Park, Area C and private property on the east shore of the lake just north of the Regional Park containing regulated wetlands.

Please see Section 5.1 for recommended site specific projects.

3. RESTORATION GOALS AND OBJECTIVES

The results of the City's Shoreline Analysis Report, the direction of Ecology's *Shoreline Master Program Guidelines*, and input from the Shoreline Citizen Advisory Committee are the foundation for the goals and objectives of the City of Black Diamond's restoration strategy. Lake Sawyer receives run-off from surrounding areas, and the existing dam/weir maintains a relatively stable lake water elevation and allows normal flows to pass through to Covington Creek and ultimately to the Green-Duwamish River.

Lake Sawyer lies within the Green/Duwamish watershed, which corresponds to Water Resource Inventory Area (WRIA) 9. In 2002, the WRIA 9 Steering Committee published the *Green/Duwamish and Central Puget Sound Watershed (Watershed Resource Inventory Area or WRIA 9) Near-Term Action Agenda for Salmon Habitat Conservation*. According to this analysis, "the Green/Duwamish watershed suffers from detrimental conditions for fish and fish habitat due to major engineering changes, land use changes which have resulted in direct and indirect impacts to salmon habitat, and water quality which has declined due to wastewater and industrial discharges, erosion, failing septic systems and the use of pesticides." (WRIA 9 Steering Committee 2002).

Although the *WRIA 9 Near-Term Action Agenda for Salmon Habitat Conservation* and the *Salmon Habitat Plan: Making our Watershed Fit for a King* (hereafter collectively referred to as the *WRIA 9 Plan*) are salmon-centered, pursuit of ecosystem-wide processes and ecological functions performance that favors salmon generally captures those processes and functions that benefit all fish and wildlife. The goals and objectives of this restoration plan incorporate some of the elements of the WRIA 9 Plan. However, the presence of the previously discussed dam/weir at Covington Creek, Lake Sawyer is somewhat more isolated from the rest of the watershed than other water bodies; while flows are free leave the lake via Covington Creek, the dam/weir poses a barrier to fish. As a result of this isolation, water quality, shoreline armoring, and upland impervious cover are considered higher priorities than salmon habitat in Lake Sawyer.

Black Diamond's *Shoreline Analysis Report* (Otak/AHBL 2010) provides supporting information that identifies water quality and shoreline modification issues on Lake Sawyer. Key issues include loss of lakeshore vegetation, absence of large woody debris, shoreline armoring, and increased stormwater pollutants and run-off. The following goals and objectives have been identified for the City of Black Diamond's restoration strategy:

Goal 1 – Prevent further degradation of water quality in Lake Sawyer from non-point pollution associated with stormwater and wastewater. Restore and enhance lake water quality to protect beneficial uses of the lake and watershed-wide fish habitat and other resources.

Goal 2 – Restore and enhance shorelines that have been altered through installation of bulkheads and other forms of hard armoring.

Goal 3 – Restore riparian vegetation and increase the prevalence of native species in shoreline areas to provide habitat for area wildlife.

Goal 4 – Contribute to conservation and recovery of salmon and other anadromous fish, focusing on preservation, protection, and restoration of spawning and rearing habitat in Lake Sawyer, Rock Creek, and Ravensdale Creek.

Goal 5 – Explore potential changes in the regulation of motorized boating activities on Lake Sawyer to address wake cause shoreline erosion, intensity of use, safety, pollution and other issues.

Restoration Objectives

- Improve the water quality of Lake Sawyer by managing the quality and quantity of stormwater in contributing systems, consistent at a minimum with the latest Washington Department of Ecology *Stormwater Management Manual for Western Washington*.
- Improve the health of lake shorelines by removing bulkheads and replacing these features to the extent feasible with bioengineered stabilization solutions to improve aquatic habitat conditions.
- Improve tributary stream health by eliminating man-made barriers to anadromous fish passage, preventing the creation of new barriers, and providing for transport of water, sediment, and organic matter at all stream crossings.
- Improve tributary stream and lake health by identifying hardened and eroding lakeshores and correcting to the extent feasible with bioengineered stabilization solutions.
- Improve tributary stream and lake health by increasing large woody debris recruitment potential through plantings of trees in the riparian corridors. Where feasible, install large woody debris to meet short-term needs.
- Increase quality, width and diversity of native vegetation in protected corridors adjacent to lake habitats to provide safe migration pathways for fish and wildlife, food, nest sites, shade, perches, and organic debris. Strive to control non-indigenous plants or weeds that are proven harmful to native vegetation or habitats.
- Target Lake Sawyer Regional Park for habitat enhancements that are designed and sited to be compatible with the increased recreational use anticipated at this park in the future. Opportunities include removing the timber bulkheads and providing bioengineered shoreline stabilization, limiting excess impervious surface, improved drainage using infiltration and planting of native vegetation where appropriate.

- Target single family residential properties with incentives, outreach and information for homeowners who are willing to voluntarily remove bulkheads, plant native vegetation and encourage large woody debris recruitment.
- Target single family residential properties with outreach and information regarding the water quality impacts associated with fertilizer and pesticide use in the shoreline jurisdiction.
- Decrease the amount and impact of overwater and in-water structures along Lake Sawyer through minimization of structure size and use of more environmentally friendly materials, including light-permeable decking.
- Target Lake Sawyer Regional Park for the use of environmentally friendly materials and design during the future construction of overwater structures at this site.
- Where feasible, protect, enhance, and encourage the restoration of lake areas and wetlands throughout the contributing basin where functions have been lost or compromised.

4. LIST OF EXISTING AND ONGOING PROJECTS AND PROGRAMS

The following series of existing projects and programs are generally organized from the larger watershed scale to the City-scale, including City projects and programs and finally non-profit organizations that are also active in the City of Black Diamond area.

4.1 Comprehensive Plan Policies

The City completed its last major update to the Comprehensive Plan in 2009. The Comprehensive Plan, specifically *Chapter 4 – The Natural Environment* and *Chapter 5 – Land Use*, contains a number of goals and policies focused on preservation and restoration of shoreline habitat, including the following:

- Policy NE-4 Condition all development proposals to require sanitary sewer service prior to occupancy.
- Policy NE-7 Require temporary erosion control measures to be installed before construction begins and maintenance of those control measures through stabilization of the site following the completion of construction to control the quantity of sediment entering surface water.
- Policy NE-9 Protect sensitive areas from inappropriate land uses, activities, or development through continued application of and periodic updates to the sensitive areas ordinance (SAO) and development regulations. The City will monitor the effectiveness of its SAO and will modify this ordinance as necessary, based upon the information gathered during monitoring.

- Policy NE-10 Avoid disturbance to valuable fish and wildlife habitat through the proper location, design, construction, and management of new development.
- Policy NE-20 Minimize areas of vegetation loss and grading disturbance to protect water quality and prevent erosion, when developing on moderate and highly erodible soils.
- Policy LU-5 Use appropriate methods of acquisition or long-term protection to preserve sensitive natural areas.
- Policy LU-6 Use the open space system to protect surface and groundwater quality.

4.2 Environmentally Sensitive Areas Regulations

The City of Black Diamond environmentally sensitive areas regulations are found in Black Diamond Municipal Code Chapter 19.10. The City completed its last sensitive areas regulations update in 2009 consistent with best available science and all other requirements of the GMA. The regulations are based on “best available science,” and provide a high level of protection to sensitive areas in the City. The regulations categorize streams based on fish use and duration of flow, with standard buffers ranging from 25 feet to 100 feet. Wetland buffers range between 40 and 225 feet and are classified according to Black Diamond Municipal Code 19.10.210. Management of the City’s environmentally sensitive areas using these regulations should help insure that ecological functions and values are not degraded, and impacts to critical areas are mitigated. These sensitive areas regulations are one important tool that will help the City meet its restoration goals. The City’s critical areas regulations are adopted by reference into the Shoreline Master Program to regulate critical areas found within the shoreline zone.

4.3 Stormwater Management and Planning

Title 14 of the Black Diamond Municipal Code establishes the city stormwater utility and enumerates regulations for stormwater management and drainage design. BDMC 14.04.020 adopts by reference the February 2005 edition of the Department of Ecology’s Stormwater Manual for Western Washington. The purpose of the City’s establishment of drainage regulations is to:

“...promote public health, safety and welfare by establishing and operating a comprehensive approach to surface and storm water problems.”

In February 2007, Ecology approved the City’s National Pollution Discharge Elimination System (NPDES) Phase II permit. The NPDES Phase II permit is required to cover the City’s stormwater discharges into regulated lakes and streams. Under the conditions of the permit, the City must protect and improve water quality through public education and outreach, detection and elimination of illicit non-stormwater discharges (e.g., spills, illegal dumping, wastewater), management and regulation of construction site runoff, management and regulation of runoff from new development and redevelopment, and pollution prevention and maintenance for municipal operations. The policies and regulations of the proposed SMP and this Restoration Plan are intended to support the City’s ongoing NPDES Phase II Permit compliance efforts. Through the City’s NPDES permit the City has implemented private stormwater system

inspections, illicit discharge detection and outreach and capital improvement projects which include the installation of rain gardens and storm water filtration systems. The City also offers stormwater credits to individuals that can demonstrate that they are improving water quality and quantity within their own systems.

4.4 Public Education

The City of Black Diamond's Comprehensive Plan identifies policy statements based on goals associated with the Natural Environment element (excerpted below). These items help guide City staff and local citizen groups in developing mechanisms to educate the public and broaden the interest in protecting and enhancing local environmental resources.

Water Quality Policies

Policy NE-1 The City recognizes the need for aquifer protection and will continue to coordinate planning efforts with King County in maintaining the South King County Ground Water Management Plan through the South King County Groundwater Management Committee.

Policy NE-3 Promote the use of interlocal agreements with other agencies to restrict land use in sensitive aquifer recharge areas in order to minimize possible sources of pollution, potential for erosion, and to maintain infiltration volumes.

Critical Areas Policies

Policy NE-8 Coordinate with King County and the Muckleshoot Indian Tribe in the developing [sic] natural resources planning for the areas surrounding the City.

4.5 Other Programs and Projects

The following programs and projects are focused on no net increase of phosphorus in the Lake Sawyer Watershed within their respective project boundaries. Shoreline restoration or environmental protection are conducted in and around Lake Sawyer by groups not directly affiliated with the City of Black Diamond.

Lake Sawyer Community Club Noxious Weed and Water Quality Programs

The Lake Sawyer Community Club is a volunteer organization of Black Diamond residents, formed for the purpose of addressing "mutual problems, concerns, and interests" affecting Lake Sawyer and the surrounding environment. The club has been active in the Lake Sawyer area for 50 years and, in addition to promoting social gatherings for members, also currently conducts environmental programs.

As part of the club's noxious weed control program, members survey the lake twice a year for growth of invasive aquatic weeds, such as milfoil, and conduct removal operations. The club also works with the King County Lake Stewardship Program to conduct seasonal water quality sampling to evaluate overall lake health. Results of the water quality analyses are published in the club's newsletter.

Approved Master Planned Developments (MPDs)

The developer has proposed no net increase in phosphorous loading into the Rock Creek/Lake Sawyer system as part of The Villages and Lawson Hills MPDs. In addition, a Water Quality Review Committee is required to be established to review and evaluate compliance with the stormwater conditions imposed upon the MPDs and provide an annual report to the City Council. Galvanized and copper and similar roof and gutter materials, as well as roof treatments such as chemical moss killers are prohibited for any rooftop draining directly to wetlands, streams, or their associated buffers without treatment within the MPDs. The developer is required to fund training of City staff or a contractor so that the City may provide inspection services for City actions related to any NPDES permits granted by the Department of Ecology for MPD development.

4.6 Water Resource Inventory Area (WRIA) 9 Participation and Ongoing Efforts

The City was one of 16 members of the WRIA 9 Forum, which participated in financing and developing the *Salmon Habitat Plan: Making Our Watershed Fit for a King* (Steering Committee 2005). This effort includes the City of Black Diamond’s implementation commitment in the form of City Council Resolution #05-396, approved December 1, 2005 (Appendix A). The City’s preparation of the *Shoreline Analysis Report Including Shoreline Inventory and Characterization of City of Black Diamond’s Shoreline: Lake Sawyer* (Otak/AHBL 2010) and this *Shoreline Restoration Plan* are important steps toward furthering the goals and objectives of the *WRIA 9 Plan*. The City’s Shoreline Master Program update materials rely in part on the science included in the *WRIA 9 Plan*.

The *WRIA 9 Plan*, which was adopted by the City, lists a number of programs that can and do occur in Black Diamond, but also across the entire watershed, that would contribute to the recovery of habitat basin-wide. The 16 WRIA-wide (WW) actions in Chapter 7 of the *WRIA 9 Plan* and in Table 1 below are programmatic in nature and range from public education and stewardship to incentives to regulations and enforcement.

Table 1. WRIA-Wide Programs Recommended to Support Habitat and Implementation of WRIA 9 Goals in Black Diamond

Program #	Program	Black Diamond Implementation
1	Conduct Shoreline Stewardship Workshops and Outreach	Will begin with implementation of the City’s 2012 shoreline master program.
2	Increase/Expand Water Conservation Incentive Programs	The City has a webpage dedicated to water conservation efforts throughout the City.
3	Increase/Expand Natural Yard Care Programs for Landscapers	Efforts have been geared towards making residents more aware of natural yard care programs. Future programs will also target landscape construction and maintenance companies.
4	Increase/Expand Natural Yard Care Programs for Single Family Homeowners	The City hands out educational materials and writes newsletter

Black Diamond Shoreline Restoration Plan

Program #	Program	Black Diamond Implementation
		articles on natural yard care programs. The City has been actively pursuing the reduction in use of phosphorus based fertilizers throughout the City and conducted onsite soil sampling through the King Conservation District in determining phosphorus levels in area soils. The results concluded that very little Phosphorus is needed in order to ensure healthy lawn growth.
5	Promote the Planting of Native Trees	The City is actively engaged in planting native trees and is starting a program that provides free trees to residents that qualify and have a need for native trees.
6	Promote Better Volunteer Carwash Practices	The City has written a newsletter article on proper ways in which to wash your car within the watershed and is in the process of purchasing car wash kits for events held at local businesses.
7	Increase Public Awareness about What Healthy Streams and Rivers Look Like and How to Enjoy Recreating on Them	The City is actively engaged in educating youth within the community with regard water quality and conducts weekly sampling to verify good water quality resources throughout the City and where improvements are needed.
8	Increase Involvement of Volunteers in Habitat Stewardship	The City annually holds an earth day celebration in which volunteers are asked to participate.
9	Green/Duwamish Volunteer Revegetation Program	The City has participated and continues to participate in revegetation efforts throughout the City. The Natural Resources Department Coordinates activities and helps conduct events.
10	Support/Expand the Natural Resource/Basin Steward Programs	The City contributes financial resources to the efforts being promoted through the County throughout the basin.
11	Expand/Improve Incentive Programs	The City will allow a stormwater billing credit to ratepayers that properly maintain a private stormwater treatment and detention/retention pond and the associated facilities that adequately perform stormwater treatment functions. Ratepayers can receive a credit of up to 85% off their annual bill.
12	Improve Enforcement of Existing Land Use and Other Regulations	The City has a dedicated part-time code enforcement officer and full-time

Black Diamond Shoreline Restoration Plan

Program #	Program	Black Diamond Implementation
		Planner that works on relevant issues as they relate to our current land use and City regulations.
13	Increase Use of Low Impact Development (LID) and Porous Concrete	The City has adopted the 2005 Department of Ecology stormwater manual which includes components for low impact development. In addition, Yarrow Bay is proposing LID as a component to their Master Planned Developed Communities in order to meet no net increase in phosphorus loading on the Rock Creek and Lake Sawyer systems.
14	Provide Incentives for Developers to Follow Built Green™ Checklist Sections Benefiting Salmon	The City does not yet provide specific incentives for Built Green, but may see this type of development within the MPDs. Many of the elements of the program will be incorporated in the MPDs, with or without formal certification.
15	Develop a Coordinated Acquisition Program for Natural Areas	The City has actively participated in the acquisition of natural areas for the protection of these areas to benefit the environment.
16	Develop Salmon Restoration Tools Consistent with Agricultural Land Uses	The City has actively participated with the King Conservation District in protecting agricultural uses, while paying attention to the needs of salmon and salmon habitat.

4.7 Lake Sawyer Management Plan

In 2000, King County published the *Lake Sawyer Management Plan*, which contained the results of water quality studies conducted in Lake Sawyer from 1994 – 1995, as well as proposed management policies designed to protect the lake’s water quality from further degradation. These management goals were developed with in partners hip with the Lake Sawyer Community Club and reflect the desire of local residents to protect Lake Sawyer for future generations.

The plan establishes the following key management goals for Lake Sawyer:

1. To maintain the lake’s mesotrophic state and accommodate future growth
2. To reduce the main nonpoint sources of phosphorus loads to the lake.
3. To control the growth of macrophytes at levels that provide optimum recreational uses and prevent the growth of exotic macrophytes.

4. To achieve within a few years and maintain appropriate or adequate levels of dissolved oxygen at all depths in the lake.
5. To continue measuring Lake Sawyer water quality and to evaluate progress on achievement of management goals.
6. For the ~~stakeholders~~ Lake Sawyer Community Club to work with appropriate agencies, shoreline residents, landowners and other ~~stakeholders~~ in the watershed to minimize the impact of new and existing development on Lake Sawyer water quality and its beneficial uses.
7. For ~~stakeholders~~ the Lake Sawyer Community Club to work with agencies to educate lake users, waterfront owners, and other drainage basin residents, businesses, and cities on best management practices.
8. To control the water level in the lake to optimize the fisheries, flood control, and lake recreational uses.
9. To develop partnerships between the City of Black Diamond, King County, and ~~relevant non-profit groups~~ the Lake Sawyer Community Club to establish guidelines and standards for accommodating growth, maintaining beneficial uses, and protecting natural resources of the lake and its watershed.
10. For the City of Black Diamond, King County, and ~~non-profit organizations~~ the Lake Sawyer Community Club to mutually seek and acquire funds for implementation of the Lake Sawyer Watershed Management Plan.

Based on these goals, the management plan establishes 20 management measures, which are divided into six categories:

- **Stormwater Control Policies:** Includes implementation of updated stormwater control methods, erosion protection, and vegetation conservation.
- **Watershed Measures:** Includes recommended Best Management Practices to reduce pollutant loading from residences, commercial development, agriculture, and resource-extraction industries. In particular, several mining and sand/gravel operations are located within the watershed. Runoff and discharge from these sites can significantly increase downstream phosphorus loading, which leads to further degradation of water quality in Lake Sawyer.
- **Regional Stormwater and Phosphorus Control:** Implementation of a stormwater plan for the Rock Creek subbasin.
- **Aquatic Plant Management:** Includes efforts to control the spread of aquatic vegetation that can grow rapidly as a result of excess nutrient loading. Such growth of aquatic vegetation is a symptom of poor water quality in the lake and can hinder its recreational use if not controlled either through chemical or physical means.

- **Monitoring Activities:** Establishes goals for monitoring water quality in Lake Sawyer and associated streams.
- **Contingency In-Lake Measures:** Allows use of mechanical and chemical methods of preserving Lake Sawyer's trophic state in the event that other restoration methods are not immediately effective.

The management plan also recommends the establishment of a Lake Management District (LMD) for the purposes of funding implementation of the above goals and management measures. Under RCW 36.61, LMD's can levy special assessments for lake improvement projects, and revenue collected by LMD's can be used to satisfy the cash match requirements associated with Department of Ecology and EPA grants for pollution control projects.

5. LIST OF ADDITIONAL PROJECTS AND PROGRAMS TO ACHIEVE LOCAL RESTORATION GOALS

The following series of additional projects and programs are generally organized from the larger watershed scale to the City-scale, including City projects and programs and respective and willing/finally non-profit organizations that are also active in the Black Diamond area.

5.1 Recommended Projects

The following is partially developed from a list of opportunity areas identified within the *Shoreline Analysis Report*. The list of potential projects was created after assessing field conditions, and is intended to contribute to improvement of impaired functions.

General: Many shoreline properties have the potential for improvement of ecological functions through: 1) reduction or modification of shoreline armoring, 2) reduction of overwater cover and in-water structures (grated pier decking, pier size reduction, pile size and quantity reduction, moorage cover removal), and/or 3) reductions in impervious surface coverage. Similar opportunities would also apply to undeveloped lots which may be used as community lots for upland properties or local street-ends and utility corridors.

Segment A: Residential

Approximately 95% of the lake is surrounded by residential development, placing the majority of restoration opportunities in this segment on private property. These areas could be enhanced through outreach to private homeowners, encouraging them to implement restoration measures, such as bulkhead removal, shoreline vegetation enhancement, and replacement of deteriorating piers. Homeowner education with regard to use of chemicals on lawn areas is also recommended.

Segment B: Lake Sawyer Park Boat Launch

The City has recently made improvements at the boat launch park. Improvements include a new concrete boat ramp. Potential future improvements include restoration of the shoreline buffer vegetation and removal of timber steps and retaining wall, and installation of restroom facilities and playground equipment. Towards the north end of the park new beaches are proposed as well

as the removal of a timber bulkhead. Overall, the project design removes retaining walls and timber bulkheads; however, the design does include a small amount of log toe protection near the beach areas. Other improvement opportunities to consider include the use of LID techniques when replacing the boat ramp and construction of the dock; LID and green building techniques when constructing the restroom facilities; improved signage for the park leading users to the shore; and stormwater treatment for runoff from the road, parking areas, and boat ramp.

Segment C: Forested Single Family Parcel

The property is currently enrolled in the open space taxation program, indicating the owner's current management objectives. Upland and overhanging shoreline vegetation on this property provides a high level of ecological function. Maintaining the shoreline in terms of vegetation and armoring will also provide protective shoreline habitat for small fish, invertebrates, and amphibians. In the long term, the City should work with the owner of this property to ensure the permanent protection of this property and prevent the possibility of future conversion or subdivision.

Segment D: Islands

It is likely that these homes were originally very small fishing cabins with infrequent visitors that generated very little waste. These now appear to be large homes that likely support more than one bathroom, as well as a kitchen. Due to the apparent lack of utilities, namely sewer/septic service, the City should work with the King County Health District to provide public information and enforce existing regulations. If these systems are discharging improperly treated wastewater conversion to composting toilets should be encouraged. Additional development on these islands should not be permitted unless adequate wastewater facilities are provided. In the long term, the City should work with the owners of these properties to explore options for permanent protection of these sensitive islands. City should also vigorously enforce adopted regulations requiring proof of legal water and wastewater services to obtain a building permit.

Segment F and G: Lake Sawyer Regional Park and Wetland

The wetland complex that characterizes this segment is located adjacent to Lake Sawyer Regional Park and is separated from the lake shore by the passive recreation areas of the park. As described in the Shoreline Analysis Report, portions of the wetland buffer are degraded, and there is significant opportunity for restoration in these areas. The City should integrate restoration of the wetland buffers with improvements at the regional park, including controlling access and directing use to the outer buffer area for trails, wildlife viewing, and other educational activities, with overlooks where appropriate. Non-native invasive species are present in the wetland and buffer and should be removed and replaced with native species.

Conceptual improvements for this area of the regional park include the enhancement of the existing trail system; improved access and parking; and restrooms. Any active uses, such as athletic fields, should be located outside of the SMA. Areas closest to the lake should be encouraged to be enhanced or developed for the purpose of water access. Due to the high value habitat at the southern end of the lake, it is suggested that the City consider a ban on motor boats and jet skis in this area in order to protect the habitat. Other improvement opportunities to

consider include the use of LID and green building techniques when building the restroom facilities, trails, and parking areas and limited wayfinding signage for the park.

Hydrologic restoration opportunities in this segment include the removal of existing rock and timber bulkheads and replacement with soft shoreline treatments. In particular, there is a large area of failing timber bulkhead that could be removed. Much of the area behind the timber bulkhead is wetland and would be highly susceptible to shoreline erosion. Stabilization of this shoreline with vegetation and potentially gravel or logs may be an option, but the restoration plan should explore the optimum design to restore natural wetland conditions in this area. Re-grading the nearshore, limited use of in-water fill materials, planting aquatic vegetation and other enhancements should be considered. It is recommended that restoration activities include additional restrictions to the use of motorized craft in this area to protect against wake caused erosion.

Rock bulkheads could also be removed and replaced with soft shoreline treatments, which would be relatively straightforward in non-wetland areas. Enhancements could also include the replacement of existing culverts with a footbridge and removal of rip rap located at the existing culverts on Rock and Ravensdale Creeks.

Overall, the high priority areas for restoration in the SMA are those areas with Lake Sawyer Regional Park that have been heavily modified, including clearing and shoreline armoring.

5.2 Public Education/Outreach

Chapter 7 of the WRIA 9 Plan identifies numerous WRIA-wide (“watershed-wide”) actions that could contribute to the recovery of ecosystem health. These actions range from public education and stewardship to incentives to regulations and regulatory enforcement. Specific public education and stewardship efforts listed in the report that are applicable to Black Diamond and Lake Sawyer include:

- Conduct Shoreline Stewardship Workshops and Outreach
- Increase/Expand Water Conservation Incentive Programs
- Increase/Expand Natural Yard Care Programs for Landscapers
- Increase/Expand the Natural Yard Care Program for Single Family Homeowners
- Promote the Planting of Native Trees
- Promote Better Volunteer Carwash Practices
- Increase Involvement of Volunteers in Habitat Stewardship
- Green/Duwamish Volunteer Revegetation Program
- Support/Expand the Natural Resource/Basin Steward Programs
- Expand/Improve Incentives Programs
- Improve Enforcement of Existing Land Use and Other Regulations
- Increase Use of Low Impact Development techniques and Porous Concrete
- Develop a Coordinated Acquisition Program for Natural Areas
- Develop Salmon Restoration Tools Consistent with Agricultural Land Uses

Specific details about these public education, outreach and stewardship programs may be found at <http://your.kingcounty.gov/dnrp/library/2005/kcr1876/CHAPTERS/Ch7-Actions.pdf>.

6. RESTORATION PRIORITIES

The process of prioritizing actions that are geared toward restoration of Black Diamond's shoreline area involves balancing ecological goals with a variety of site-specific constraints. Constraints in Black Diamond include an extensively developed shoreline area, relatively small lots sizes on average, heavy motorized recreation use, and predominantly private land ownership (which limits those areas where habitat enhancement can be assured). These goals and constraints were used to develop a hierarchy of restoration actions to rank different types of projects or programs associated with shoreline restoration. Programmatic actions, like providing public education and outreach programs to local residents, tend to receive relatively high priority opposed to restoration actions involving private landowners.

Although restoration project/program scheduling is summarized in the following section (Table 2), the actual order of implementation may not always correspond with the priority level assigned to that project/program. This discrepancy is caused by a variety of obstacles that interfere with efforts to implement projects in the exact order of their perceived priority. Some projects, such as those associated with riparian planting, are *relatively* inexpensive and easy to permit and should be implemented over the short and intermediate term despite the perception of lower priority than projects involving extensive shoreline restoration or large-scale capital improvement projects. Straightforward projects with available funding should be initiated immediately for the worthwhile benefits they provide and to preserve a sense of momentum while permitting, design, site access authorization, and funding for the larger, more complicated, and more expensive projects are under way.

6.1 *Priority 1 – Improve Water Quality and Reduce Sediment and Pollutant Delivery*

Maintaining and improving water quality within Lake Sawyer and its contributing drainage basin is considered the highest restoration priority for the City of Black Diamond. The water quality of Lake Sawyer directly influences recreational uses such as swimming and boating, as well as fish and wildlife habitat. In addition, water from Lake Sawyer flows west through Covington Creek, eventually joining Soos Creek and then the Greek River, thus affecting regional downstream water quality.

The City received its final National Pollutant Discharge Elimination System (NPDES) Phase II permit in January 2007 from Ecology. The NPDES Phase II permit is required to cover the City's stormwater discharges into regulated lakes and streams. Under the conditions of the permit, the City must protect and improve water quality through public education and outreach, detection and elimination of illicit non-stormwater discharges (e.g., spills, illegal dumping, wastewater), management and regulation of construction site runoff, management and regulation of runoff from new development and redevelopment, and pollution prevention and maintenance for municipal operations.

The City has adopted Ecology's 2005 Stormwater Manual for Western Washington, and the proposed standards in the SMP require the use of feasible and applicable Low Impact Development techniques in the shoreline area whenever possible.

Watershed-wide programmatic actions listed in the *WRIA 9 Plan* include four actions focused on addressing water quality and stormwater controls. While the *WRIA 9 Plan* has a salmon-centric focus, the three actions below have much broader implications to improving overall water quality and reducing sediment and pollutant delivery.

- Program WW-11: Expand/Improve Incentives Programs
- Program WW-12: Improve Enforcement of Existing Land Use and Other Regulations
- Program WW-13: Increase Use of Low Impact Development and Porous Concrete

These recommendations emphasize the use of low impact development techniques, on-site stormwater detention for new and redeveloped projects, and control of point sources that discharge directly into surface waters. They involve protecting and restoring forest cover, riparian buffers, wetlands, and creek mouths by revising and enforcing critical areas ordinances and Shoreline Master Programs, incentives, and flexible development tools.

On-site sewer systems (OSS) have a high potential to negatively impact lake water quality by polluting runoff with excess nutrients, human pathogens, hazardous household waste, and organic substances. OSS generally have a maximum effective life of 20-40 years, and potential for failure increases after this time. The *Lake Sawyer Management Plan* contains the following management strategy regarding OSS:

- **LS-5: On-Site Septic System Maintenance.** **Relevant stakeholders** **The Lake Sawyer Community Club (LSCC)** should work in cooperation with King County Department of Public Health on annual education workshops, inspection days, and community sponsored pump-out days.
- As part of efforts to improve water quality in Lake Sawyer, the City should support ongoing water quality monitoring by forming partnerships with other agencies and community groups who have conducted or are currently conducting water quality monitoring in the area. The following groups have conducted water quality monitoring surveys in the Lake Sawyer area within the last 25 years:
 - King County Water and Land Resources Division
 - Washington Department of Ecology
 - **Local non-profit organizational members** **Lake Sawyer Community Club**
 - The City of Black Diamond

The eventual conversion of properties with on-site sewer systems (OSS) is also included under this priority. While this action applies to lands with the City limits throughout the watershed,

greater benefit for shoreline function can be achieved in areas within closest proximity to Lake Sawyer. Over the short term, the City should continue to restrict further subdivision until sewer is provided and require connection to the sanitary sewer when it is available. The City should consider potential funding sources and establish a timeline for construction of appropriate wastewater facilities and conversion of all areas on Lake Sawyer to sanitary sewer.

6.2 *Priority 2 – Enhance Habitat at Lake Sawyer Regional Park and Wetland as Part of Planned Park Improvements*

Improving the ecological function of the shoreline in Lake Sawyer Regional Park and its associated wetland complex is the most tangible site-specific restoration opportunity in the shoreline jurisdiction. The City's 2008 Lake Sawyer Park Development Concept Plan indicates that future development at the park will include construction of trails and picnic areas, as well as a canoe/kayak launch and fishing pier. The concept plan also includes several habitat restoration projects in the park near Rock and Ravensdale Creeks, as well as the removal of existing timber and rock bulkheads along the shoreline. Significant opportunity exists for removal of invasive vegetation, planting of native multilayered vegetation and amending soils along the shoreline that have been negatively impacted by previous clearing, grading and compaction from vehicles and heavy equipment.

The Lake Sawyer Regional Park wetland complex also provides substantial opportunities for habitat restoration and public education. Portions of the buffer around the wetland have been degraded, and restoration of these areas could provide park visitors with wildlife viewing, as well as the opportunity to see habitat restoration in progress. Removal of the existing culvert between the wetland complex and lake, and replacement with an open bottom culvert or bridge could also be explored. A wetland boardwalk could also be developed to provide public access and interpretive opportunities in a manner that is consistent with protection of the ecological functions of the wetland.

6.3 *Priority 3 – Develop, Expand and Implement Public Education and Involvement Programs*

Public education and involvement should be a high priority in the City of Black Diamond due to the extent of residential development along the Lake Sawyer shoreline. While Lake Sawyer Regional Park provides excellent opportunities for restoration and enhancement on public land, the majority of the shoreline is in private ownership. Therefore, in order to achieve the goals and objectives set forth in this Restoration Plan, many restoration projects would need to occur on private property. Thus, providing education opportunities and involving the public are keys to success, and would possibly entail coordinating the development of a long-term Public Education and Outreach Plan to gain public support. This could include local workshops to educate shoreline property owners and other shoreline users on maintaining healthy shoreline environments, promoting enhancement and restoration opportunities, and use of low impact development techniques.

An important subset of this priority is the need to educate boaters and other recreationalists about the potential impacts to lake functions from this activity. This includes efforts to minimize introduction of noxious aquatic weeds, reduce the potential for shoreline erosion from vessel

wakes, minimize the potential for introduction of petroleum products and other chemicals and prevent litter and dumping.

6.4 Priority 4 – Revise City Regulations and Plans

The City should explore possible additional time, place and manner limitations on motorized boating to reduce the current level of shoreline erosion associated with vessel wake. Also included in this Priority is the continued and enhanced enforcement of City zoning and other regulations. Of particular note, is the importance for the enforcement of City regulations pertaining to vessel speed and maintaining an appropriate distance from the shoreline to reduce the potential for shoreline erosion associated with boat wakes. Significant outreach and discussion with property owners, residents and other lake users will be necessary to determine a feasible course of action.

City Zoning, Regulatory, and Planning Policies are listed as being of lower priority in this case simply because they were recently reviewed and updated in 2008-2009. The City's Sensitive Areas regulations were also reviewed at this time and updated to be consistent with the Best Available Science for sensitive areas, including those within the shoreline zone. The City should review the Comprehensive Plan during the next major update to ensure that policy direction in the updated SMP is reflected in other element and should consider additional efforts to forward restoration priorities as part of future major Comprehensive Plan updates. For example, current City policy direction and restoration priorities pertaining to Lake Sawyer Regional Park and the Boat Launch Park, could be refined in future updates to the Comprehensive Plan, the Parks, Recreation and Open Space Plan and park specific planning efforts.

In addition to updating existing City plans and regulations, the City should partner with King County and other stakeholders ~~the Lake Sawyer Community Club~~ to update the *Lake Sawyer Management Plan*, which has not been revised since 2000. With additional input from City staff and community stakeholders, the plan could help guide lake management and restoration in conjunction with the Shoreline Master Program.

6.5 Priority 5 – Reduce Shoreline Bank Armoring along Lake Sawyer, Create or Enhance Natural Shoreline Conditions

Approximately 66 percent of Lake Sawyer's shoreline is armored at or below the ordinary high water mark. (Otak/AHBL 2010) Since the majority of the City's shoreline is residential, no specific project sites on private property have been identified under this restoration priority. However, emphasis should be given to future public project proposals that restore shoreline areas to more natural conditions, and the City should continue to develop incentives and education for property owners to remove existing armoring or replace with softer stabilization systems. Setback incentives included in the proposed SMP regulations, in combination with bulkhead regulations which require property owners to implement soft shoreline stabilization where feasible and limit new bulkheads to those instances where soft shoreline stabilization will not be adequate to protect existing structures, are expected to encourage and require more widespread implementation of shoreline treatments which positively benefit shoreline ecological functions.

6.6 Priority 6 – Reduce In-water and Over-water Structures

Reduction of in- and over-water cover by piers, docks, and other boat-related structures is one mechanism to improve shoreline ecological functions. Pier and docks are extensive along Lake Sawyer, with approximately 89 percent of all residential parcels having a pier or dock. The Washington Department of Fish and Wildlife already regulates the size and materials for in- and over-water structures throughout the State and generally recommends finding ways to reduce both the size and density of these structures. Although no specific project sites to reduce in-water and over-water structures within residential areas are identified here, future project proposals involving reductions in the size and/or quantity of such structures should be emphasized. Such future projects may involve joint-use pier proposals or pier reconstruction and may be allowed an expedited permit process or promoted through project incentives. In addition, standards in the SMP require the use of grated decking and other materials that result in less impacts on salmonids.

6.7 Priority 7 – Improve Riparian Vegetation, Reduce Impervious Coverage

Similar to the priority listed above to improve water quality and reduce sediment and pollutant delivery, improved riparian vegetation and reduction in impervious surfaces are emphasized throughout the WRIA 9 Salmon Habitat Plan. Actions to address these concerns apply not just within the Shoreline Management Area, but throughout the watershed within the City limits and potential annexation areas. Watershed-wide programmatic actions described in the Salmon Habitat Plan include many references to improving vegetative conditions and reducing impervious surface coverage. Specific reference to planting vegetation is listed in Program WW-5: Promote the Planting of Native Trees. The reduction of impervious surface and stormwater runoff can be mitigated through use of low-impact development techniques, pervious paving materials and development incentives as listed in Program WW-13: Increase Use of Low Impact Development and Porous Concrete.

The *Lake Sawyer Management Plan* also includes provisions for the protection and preservation of forested areas:

- **LS-2: Forest Retention/Conservation.** An incentive program to encourage landowners to retain their forest in the rural areas of the basin should be implemented. Alternatively, forestland or its development rights can be purchased for dedicated open space.

Previous experimental wastewater treatment facilities have been shown to increase the phosphorus loading from the Rock Creek subbasin. Partnering with King County, the King Conservation District and other non-profit organizations to increase native vegetation retention in this area could play an important role in protecting lake water quality.

6.8 Priority 8 – Encourage Conservation of Remaining Undeveloped Private Lands

The City should encourage the continued stewardship and future conservation of remaining undeveloped or minimally developed private properties. The City should work with property owners, local residents and interested stakeholders to identify priorities, partners and

conservation and stewardship funding resources. ~~The City~~ Key areas include the large lot single family property on the forested peninsula at the north end of the lake (Area C) as well as undeveloped properties north of Lake Sawyer Regional Park. The intent of this priority is to set the stage for potential permanent conservation of these properties if the owners are willing, while ensuring that adequate and objective development standards that ensure no net loss are in place should property owners choose to develop their land.

6.9 Priority 9 – Continue Water Resource Inventory Area (WRIA) 9 Participation

Of basic importance is the continuation of ongoing, programmatic, basin-wide programs and initiatives such as the WRIA 9 Forum. However, the City should explore ways to increase participation in this regional effort. This may include expanding collaborative work with other jurisdictions and stakeholders in WRIA 9 to implement the actions called for in the related plan. This process provides an opportunity for the City to keep in touch with its role on a basin-wide scale and to influence habitat conditions beyond its borders, which, in turn, come back to influence water quality and quantity and habitat issues within the City.

7. PROPOSED IMPLEMENTATION TARGETS AND MONITORING METHODS

As previously noted, the vast majority of the City’s shoreline zone is occupied by single-family residences, with small areas of vacant property, the Boat Launch Park, and the Lake Sawyer Regional Park. Due to its size and location near two creeks and a large wetland complex, the regional park represents the City’s greatest opportunity for directly improving shoreline ecological function. Restoration and enhancement opportunities outside the regional park would consist primarily of promoting restoration and healthy practices on private property. The City of Black Diamond can also continue improvement of shoreline ecological functions along the Lake Sawyer shoreline through a more comprehensive watershed approach, which combines the both public education programs and lakefront improvements.

The following table (Table 2) outlines a possible schedule and funding sources for implementation of a variety of efforts that could improve shoreline ecological function, and are described in previous sections of this report.

Table 2. Implementation Schedule and Funding for Restoration Priority Projects, Plans and Programs

Restoration Project/Program	Timeline or Benchmark	Funding Source or Commitment
1. Water Quality Improvements	Ongoing	The City adopted a Storm and Surface Water Plan in 2009. In addition, the City prepares annual updates to its Stormwater Management Program, pursuant to the conditions of its NPDES permit. Implementation of watershed-level BMP’s and future contingency work (excluding aquatic weed control) may be funded by grants from the Washington Department of Ecology Centennial Clean Water Fund. Eligible non-infrastructure projects include stream restoration, on-site septic repair/replacement, and education/outreach. The federal Clean Water Act Section 319 grant

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Restoration Project/Program	Timeline or Benchmark	Funding Source or Commitment
		<p>program, administered by EPA and Ecology, can provide funding for non-point source pollution control projects similar to the Centennial program. The Department of Ecology also offers funds the removal of aquatic weeds that may interfere with fish populations through its Aquatic Weeds Management Fund Grant Program.</p>
<p>2. Habitat Enhancement in City Parks</p>	<p>Ongoing</p>	<p>The City commits substantial staff time to the review of projects and programs to ensure consistency and compliances with the goals and policies of the City's Parks, Recreation and Open Space Comprehensive Plan. Restoration, where opportunities present themselves, could include shoreline armoring removal and the installation of native plants along lake shoreline and stream and wetlands areas and buffers. These projects would be completed as opportunities present themselves and as potential mitigation projects come forward. Staff time and materials are paid for through the City's general fund. The City has committed to keep a majority of Lake Sawyer Regional Park in passive recreation. The Lake Sawyer Concept plan does call for ball fields outside of shoreline jurisdiction. A majority of the funds dedicated to both passive and active recreation will be obtained through grants and money dedicated by the Lake Sawyer Park Foundation.</p>
<p>3. Public Education and Involvement</p>	<p>Started in School year 2010 and is ongoing.</p>	<p>The City currently works within the Enumclaw School District, specifically Black Diamond Elementary in teaching about water quality and habitat issues that pertain to Black Diamond. Staff time and materials are paid for through the City's general fund and grants.</p>

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Restoration Project/Program	Timeline or Benchmark	Funding Source or Commitment
<p>4. Revise City Regulations and Management Plans</p>	<p>Ongoing</p>	<p>The City intends to re-examine the current local boating regulations and enforcement to address shoreline erosion caused by vessel wake and related resource and potential safety concerns associated with seasonally high levels of motorized use on the lake. Extensive input from the community and stakeholders will be needed on this issue. This review effort is expected to occur over the next year.</p> <p>The Lake Sawyer Management Plan (2000) recommends the establishment of a Lake Management District (LMD). LMD's can levy special assessments for lake improvement projects, and revenue collected by LMD's can be used to satisfy the cash match requirements associated with Department of Ecology and EPA grants for pollution control projects. To date, community interest in a LMD has been minimal, but the City will bring this up in the context of SMP adoption, and refinement of boating regulations and other lake related issues.</p> <p>In addition, during the next major comprehensive plan update, the City will review (and as necessary, revise) comprehensive plan policies related to the shoreline. Future refinements of the Lake Sawyer Regional Park Plan are also expected. Changes to the Sensitive Area Ordinance and other development regulations are not expected in the immediate future because these have been revised recently.</p>
<p>5. Reduce Shoreline Bank Armoring</p>	<p>Starting with SMP adoption in 2012</p>	<p>Implementation of the incentive based setback standards and other elements of the code are expected to address this priority. Additional site specific efforts with willing private parties will be implemented when funding is obtained, either through grants or through partnerships with other agencies or non-profit groups, or as required by critical areas regulations or the Shoreline Master Program during project-level review by the City.</p>
<p>6. Reduce In-water Structure Coverage</p>	<p>Starting with SMP adoption in 2012</p>	<p>Implementation of the incentive based setback standards and other elements of the code are expected to address this priority. Additional site specific efforts with willing private parties will be implemented when funding is obtained, either through grants or through partnerships with other agencies or non-profit groups, or as required by critical areas regulations or the Shoreline Master Program during project-level review by the City.</p>

Black Diamond Shoreline Restoration Plan

Restoration Project/Program	Timeline or Benchmark	Funding Source or Commitment
7. Improve Vegetation and Reduce Impervious Surface Coverage	Ongoing	Implementation of the incentive based setback standards and other elements of the code are expected to address this priority. Additional site specific efforts with willing private parties will be implemented when funding is obtained, either through grants or through partnerships with other agencies or non-profit groups, or as required by critical areas regulations or the Shoreline Master Program during project-level review by the City.
8. Encourage Conservation of Remaining Undeveloped Lands	Ongoing	No specific timeline or funding source has been identified. Development of the SMP has provided an opportunity for initial outreach and to begin the community and landowner conversations regarding the desirability and possibility of permanent conservation of these areas. Regardless of the interest or outcome, the new SMP will ensure no net loss of ecological function, while respecting private property rights, should owners of remaining undeveloped and minimally developed lands chose to develop their properties.
9. Continue WRIA 9 Participation	Ongoing	The City is an active member of the WRIA 9 Forum. Membership at this time entails a commitment of time from a City Council member and staff member. Money for the staff member currently comes out of the City's general fund.

The City is required to monitor development under the Shoreline Master Program to ensure no net loss. We recommend that City planning staff track all land use and development activity, including exemptions, within shoreline jurisdiction, and incorporate actions and programs of the Parks and Recreation and Public Works departments as well. We recommend that a report be assembled that provides basic project information, including location, permit type issued, project description, impacts, mitigation (if any), and monitoring outcomes as appropriate. Examples of data categories might include square feet of non-native vegetation removed, square feet of native vegetation planted or maintained, reductions in chemical usage to maintain turf, linear feet of eroding shoreline stabilized through plantings, or linear feet of shoreline armoring removed. The report could also update Tables 1 and 2 above, and outline implementation of various programs and restoration actions (by the City or other groups) that relate to water quality and shoreline health.

The staff report could be assembled to coincide with Comprehensive Plan updates and could be used, in light of the goals and objectives of the Shoreline Master Program, to determine whether implementation of the Shoreline Master Program is meeting the basic goal of no net loss of ecological functions relative to the baseline condition established in the *Shoreline Analysis Report* (Otak/AHBL 2010). In the long term, the City should be able to demonstrate a net improvement in the City of Black Diamond's shoreline environment. Based on the results of this assessment, the City may make recommendations for changes to the Shoreline Master Program.

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APPENDIX A

CITY OF BLACK DIAMOND RESOLUTION #05-396 RATIFYING THE WRIA 9 SALMON HABITAT PLAN