

Site Analysis 3



MILL LAKE
PARK

City of Abbotsford
Mill Lake Park Master Plan
2025



3 Site Analysis

3.1 Legal Parcels & Land Use

Mill Lake Park is 44.95 ha in area including 16.35 ha covered by the lake. Property acquisition to expand the Park has occurred since 1986 in accordance with City policy based on the Master Plans and Action Plans prepared for the Park. Additional properties may be considered for acquisition in future to further improve the Park.

The majority of the park is zoned P1 (Civic Institutional Zone) or P2 (Park, Open Space and School Zone). Some recently purchased residential lots are zoned RS3.

3.2 Gateways & Entrances

Probably due to the fact that the Park has been assembled gradually over numerous decades, the main pedestrian, cyclists and vehicular entrances to the Park do not provide clear identification as a Park entry.

The Park has limited identification/wayfinding signage at the entry points along its edges. Many Park users have requested information boards be placed at the

Park entrances to provide information about upcoming activities and events occurring in the Park. There is a need for wayfinding signage to allow visitors to easily navigate their way through the Park.

The west entry to the Park from Emerson Street provides the best treatment as a Park entry, incorporating high quality materials and an accessible route into the Park.

Elements to be considered for the Park entrances include:

- Park identification signage
- Wayfinding signage
- Regulatory signage
- Accessible pathways
- Lighting
- Site furnishings



3.3 Park Character, Facilities & Amenities

The following ‘character areas’ have been identified in the park:

- natural area;
- passive parkland;
- riparian zone;
- active recreation/recreation infrastructure;
- community facility zone.

These demonstrate the varied aesthetic character of the park from substantially natural forest areas to highly developed recreation space.

3.4 Biophysical Analysis

A desktop biophysical analysis has been conducted for the Park including information provided by the City. It broadly addressed the following:

- Landform, Surficial Geology and Soils
- Waterbodies and Watercourses
- Vegetation
- Wildlife including species at risk

The following includes extracts from the Overview Environmental Assessment conducted by PGL Environmental Consultants documented in a report dated May 2022. This report was appended in full to the Key Findings Report for Mill Lake Park. Other existing biophysical information for the Park was also obtained from previous studies of the area and City information.

3.4.1 Landform, Surficial Geology and Soils

Mill Lake is set in gently rolling to flat terrain. To the north-west, there are slopes of 30% and greater while to the south and east the land is almost flat. The steep slopes, especially with their dense vegetation, visually enclose the lower Park area. The surficial geology of the area consists mostly of glaciofluvial deposits, including recessional outwash sands and gravels up to 38 m thick, overlain by dune sand up to 7.6 m thick.

The soils in the study area fall into two groups. Those immediately adjacent to and north-east of Mill Lake have imperfect drainage and perched water tables. The north-east area of Mill Lake may also be structurally unstable due to sawdust deposition from the former mill. Generally, the soils farther away from the lake have no structural imitations and moderate to good drainage.

3.4.2 Waterbodies and Watercourses

Mill Lake is about 16.35 hectares in size, roughly 40% of the entire Park. A recent bathymetric survey of the lake bottom reported an average depth of 3.7m and maximum depth of 12.75m (AquaCoustics, 2021).

Mill Lake is fed by both groundwater and stormwater draining from the adjacent neighbourhoods and roadways (City of Abbotsford, 2021). Water leaves Mill Lake through a series of culverts to Ravine Park where it daylights as Willband Creek (City of Abbotsford, 2021). Mill Lake is main contributor of water to this branch of Willband Creek. Mill Lake’s storage capabilities have resulted in reduced peak flows to downstream systems but also flooding of nearby properties (Urban Systems, 2019).

Mill Lake water quality is considered poor due to poor circulation and stratification. Stormwater entering Mill Lake is believed to carry high levels of sediment and particulate that accumulate on the lake bottom. The abundance of Canada geese and other waterfowl on and around Mill Lake could contribute to elevated faecal coliform levels.

Compounded with high temperatures resulting from shallow water depths and poor circulation, water quality in Mill Lake during the summer and fall is expected to be further degraded.

Aquatic Ecosystems

The aquatic ecosystems within the Park include Mill Lake and Willband Creek. As almost all Willband Creek is culverted, the approximately 10m section of Willband Creek connecting Mill Lake to the culvert headwall was considered part of Mill Lake’s ecosystem. Invasive fragrant waterlily (*Nymphaea odorata*) grew in dense mats around much of the shallow perimeter of Mill Lake and was especially abundant in the southwest and northeast corners of the lake. East of the boardwalk, some Cattail, Douglas’ Water-Hemlock, and non-native Smartweed grew amongst the fragrant Waterlily; however, it was generally monotypic.



3.4.3 Existing vegetation

Most of the site is far removed from the natural ecosystems that likely once occurred here. Over 85% of the property has been cleared and disturbed through historical land uses and is now characterized by an assortment of recreational facilities and infrastructure, housing, and manicured lawns and gardens, as well as parking areas, roads, and trails. Some native forest or woodland stands remain on the site and there are numerous specimen trees throughout the Park.

The remnant forest vegetation type is typical of the coast forest zone. The slopes and higher ground contain Douglas Fir, Western Red Cedar, maple and birch, and the lower, wetter ground has alder, willows and cottonwood. In the wetter areas a dense shrub layer of hardhack survives.

Woodlots Ecosystems

The western section of Mill Lake Park includes several stands of young to maturing trees. In the southwest corner, there is a rectangular woodlot consisting of young and maturing Douglas Fir and Western Red cedar with native understories species

The narrow slope between the paved path and two Centennial Park ball diamonds is characterized by a band of young Douglas Fir with an occasional Western Red Cedar.

A stand of maturing Western Red Cedars and patchy understory species characterized the northwest corner of the Park.

East of Gladwin Road, between the northwest woodlot and the band of Douglas fir, there is a mixed stand of maturing Big leaf Maple and Douglas Fir with a few juvenile Western Red Cedar.

Trees

The Park includes many large native conifers and large Black Cottonwood trees. The forest understory is minimal in the large conifer stands due both to forest competition but also due to pro-active vegetation management for CPTED purposes. In the more open, mixed and deciduous stands, invasive plants are reducing biodiversity.

Riparian Ecosystems

The riparian vegetation around Mill Lake varies from narrow bands, like that along the south shore, to dense stands, like that in the southwest corner. Young Black Cottonwood with Cascara, Willow, Hardhack, Fireweed, Sedge and rush species with invasive Common Tansy, Reed Canary Grass, Himalayan Blackberry, and Yellow Flag iris characterize the north shore of Mill Lake, east of the beach.

Riparian vegetation in the northeast corner of the lake, consisted of Hardhack, Cattail, Douglas’ Water-Hemlock and Willows with non-native Himalayan Blackberry, Pennsylvania Smartweed, Reed Canary Grass, and Morning Glory.

Vegetation along the southeast section of the lake contained more trees, including Black Cottonwood, Red Alder, Mountain Ash, Big Leaf Maple, Western Red Cedar, and pine. Hardhack, Oso Berry, rose and willow are common shrub species; however, invasive species are quite common.

The western shore of Mill Lake is densely vegetated with the occasional path to or opening at the water’s edge. Maturing Black Cottonwood are the dominant tree species with Willows, Red Alder, Hardhack, and invasive Himalayan



Blackberry being the most common shrubs. Along the lake margin, patches of cattail, sedges, Marsh Cinquefoil, and non-native Pennsylvania Smartweed were observed. Non-native, ornamental, or invasive plants are common along the western shore; these include dense infestations of Morning Glory, English Ivy, and Creeping Buttercup.

As per the City's Streamside Protection Bylaw 1465-2005, Streamside Protection and Enhancement Areas (SPEAs) are determined by assessing existing or potential vegetation conditions from the top of bank or ravine, fish presence and ravine morphology. The City's Natural Environment Development Permit requirements are applicable, including the establishment of a setback in accordance with the bylaw (City of Abbotsford 2016).

Mill Lake's SPEA vegetation conditions are discontinuous with some areas of existing or potential vegetation less than 5m and others greater than 50m. Existing structures such as parking lots, asphalt trails, roadways, and residences are the main constraints to the vegetation around Mill Lake. Based on the existing and potential vegetation and fish presence, a 30m SPEA is anticipated for Mill Lake.

Other Vegetation

Invasive Plants

Invasive species in the park include Himalayan Blackberry, Morning Glory, Dead Nettle, English Ivy, Knotweed and Periwinkle. All of these, except the blackberry, will grow in low light conditions and are displacing native groundcover vegetation.

Blackberry thickets choke out the riparian vegetation and intrude onto pathways. They block lake views and cause significant resources to be expended to "control" them. The small "bog garden" was recently rejuvenated after being taken over by blackberry.

While wildlife suffered during and subsequently as a result of the mill's operation, water lilies have flourished. Vast amounts of organic matter in the form of decaying sawdust provides the perfect environment, and with the banning of the powerboats that held them in check, lilies now threaten to choke Mill Lake.

The invasive plant populations pose a significant threat to the long-term health of existing and future natural plant communities, both onsite and offsite. These species can threaten overall succession and sustainability of retained or enhanced ecological. Preparation of a Site-specific Invasive Plant Management Plan will be an important element to successful development of the property and preservation and enhancement of ecological values.



Vegetation & Landscape Assessment

Wetlands and riparian areas

These shoreline wetlands situated around Mill Lake are sensitive ecosystems and critical habitat for a number of species and need to be protected. They are prominent where stormwater enters Mill Lake. There is much opportunity for riparian area enhancements in the forested areas of the lakeshore as well as at in-flow points where urban creek enhancement could also occur.

Coarse woody debris

A management plan is required for ecological management of wood debris and hazardous trees. This must be balanced with public safety and visual aesthetics. Fine forest fuels must be managed to avoid creation of excessive fuel loads easy ignition. Ladder fuels should be managed in the conifer stands to reduce the chances for an intense crown fire.

Heritage Trethewey Douglas-Firs

Douglas Fir trees played an important historical role in the economy of the area. This species of tree and a number of others found in the former John Mahoney Park, are mentioned in the publication "Our Sylvan Heritage". There is an opportunity to provide interpretive signage in the Park that documents the importance of Douglas Fir trees and other tree species in the Park.

Bevan conifer stand

This large conifer stand requires "stand management" as the trees mature to ensure healthy, structurally stable trees in the long term. In the understory of this stand of trees, there are opportunities for enhancement and a trail network through this area could provide an opportunity for a "working forest" interpretive walk.

Specimen trees

There are opportunities to build on these plantings and create an interpretive "tree walk". Large, native specimen trees occupy the SE quadrant of the Park. Opportunities include creating "tree islands" to connect root systems and reduce mechanical compaction by mowers. Complimentary native, horticultural style plantings and other habitat enhancements could occur in these areas.

Deciduous stands surrounding the lake lack seed source for forest succession to occur. Forest succession planning is required. This includes stand management as well as supplemental plantings and soil amendments. (From Shawn Gurney – City of Abbotsford)



3.4.4 Wildlife including species at risk

Wherever possible, ecosystems were estimated and mapped for the site, however, all of the Mill Lake Park lands exhibited some level of notable disturbance either through land clearing and development, or through significant non-native plant invasion. The vegetated portions of the property that do exist are far-removed from the climax plant communities/ecosystems the British Columbia Conservation Data Centre (BCCDC) seeks to conserve.

BCCDC mapping was used to identify previously recorded known occurrences of species and ecosystems at risk on or within 1km of Mill Lake Park. Occurrences of Red-listed Western Painted Turtle have been documented in and around Mill Lake. Additionally, most of Mill Lake Park is identified as Western Painted Turtle critical habitat. Historical occurrences of Red-listed Oregon Forest Snail (*Allogona Townsendiana*) were documented southwest of Abbotsford in 1954. The occurrence is mapped directly southeast of Mill Lake Park. Occurrence of Red-listed Roell's Brotherella (*Brotherella Roellii*) – a species of moss were identified near the edge of Willband Creek in Ravine Park, east of Mill Lake Park and in a swampy area of Boa Brook, north of the Park.

Avifauna

Over 100 bird species have been recorded at Mill Lake Park including a pair of resident Bald Eagles. The Bald Eagles have a nest northwest of the lake and are often observed perched in the large Black Cottonwoods along the western shoreline (PGL – Overview Environmental Assessment 2021)

Canada Geese are protected under the Migratory Birds Convention Act, 1994 (MBCA). Canada Geese may remain throughout the nesting season, and in some areas, throughout the winter. Canada Geese are pro-actively managed in the Park for population control.

Fish

Little Brown Myotis is a species at risk. Combinations of adjacent habitat types such as forest, meadow, wetland, can exponentially improve habitat values compared to more homogeneous or cultured landscapes.

Other

There are limited occurrences of American Bullfrog in the Park. This species can multiply quickly and decimate native amphibian populations.

Eastern Grey Squirrel have displaced the native Douglas-Squirrels and chipmunks. These squirrels are omnivorous and kill young songbirds and other native wildlife in considerable numbers.

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3.5 Safety & Security

Compared with other Abbotsford Parks, Mill Lake Park has a relatively high number of calls to City Bylaw enforcement. There was a total of 80 files generated in 2023. In 2024 there were 58 files generated.

The Park has a number of areas that are hidden from view from adjoining streets or houses, by landform or vegetation. Some structures in the Park, such as shelters, provide attractive locations for illegitimate Park behaviors to occur.

Calls to City Bylaw
Enforcement:
80 Files Generated
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Regular
Events &
Festivals are
Held in
the Park

3.6 Events & Seasonal Programming

3.6.1 Events in the Park

Within the Park there are a number of events. Some key examples are as follows:

- Run for Water
- Symphony in the Park
- Abbotsford Police Department Movie in the Park
- Indigenous Arts and Culture Day

3.6.2 Go Play Outside Program

The City's Go Play Outside program utilizes the power of play to connect community through accessible arts, heritage, culture, and recreation programming. The program provides free drop-in activities in Parks throughout Abbotsford, encouraging participation from all ages and abilities. Go Play Outside also hosts community organizations, artists, and recreational partners. Mill Lake Park is often used for this program.



3.7 Key Park Projects

3.7.1 Aquatics Strategy

The City of Abbotsford is conducting a review and analysis of the aquatics services and infrastructure in Abbotsford.

The outcome of the study is a strategy containing recommended actions for effective aquatic services as well as an implementation plan to guide future work and ensure alignment with City priorities.

The Strategy may further influence the future of Centennial Pool.



3.7.2 Tree & Vegetation Inventory

A tree and vegetation inventory of the Park was completed by City staff in 2021 and informed the Key Findings Report for the project.

3.7.3 Lake Fountain Including Power Service Upgrade to Park

In 2019, the City established a Mill Lake Park Reserve Fund and received a notable donation for improvements to the Park. The first capital improvement using these funds was authorized by Council to be an aeration fountain to improve the water quality of Mill Lake, and in turn the surrounding ecosystem, and to provide a beautiful aesthetic addition to the City's premier Park.

The fountain, installed in 2022, sprays lake water 30 metres into the air and has LED lighting to allow colours to be changed as desired.

3.7.4 Reconstruction of Dock

A nature observation and fishing dock was constructed and installed in 2022. The floating dock is rectangular and measures 22 metres long x 5 metres wide with twin 2.5 metre wide pedestrian access walkways. The floating dock features lightweight, environmentally friendly, aluminum construction, an accessible design and guardrails to help ensure a safe and enjoyable visit for all.

3.7.5 Bike Lanes Around the Edge of the Park

The City is planning to enhance the existing bike lanes along Bevan Avenue. A future amenity station in the Park including a bench with tools and a water bottle filling station could be considered.

