

District of Maple Ridge Albion Flats Environmental Baseline Report#



*Deep Roots
Greater Heights*

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1. Executive Summary

The Albion Flats site in the District of Maple Ridge occupies 125.8 hectares (310.9 acres) of primarily ALR land within the District of Maple Ridge. The area is bounded by Lougheed Highway (Hwy. 7) to the west and southwest, Tamarack Lane and 105 Avenue to the north and northwest and 240th Street to the east. The Albion Flats site is part of the Kanaka Creek watershed and is contained within the historic Fraser River floodplain. The site contains two parks, a sports complex, commercial developments, a community garden, an elementary school, and agricultural uses.

As the site is located on prime soil as well as being located within the Kanaka Creek watershed, it comprises numerous salient environmental features including:

- 109.2 hectares (269.8 acres) of vegetated area;
- 20.9 hectares (51.6 acres) of mainly natural vegetation;
- 5,966 metres (19,573 feet) of confirmed or probable fish bearing streams;
- 91.3 hectares (225.6 acres) of soils with probability of liquefaction severity;
- 105.4 hectares (260.4 acres) of floodplain;
- 77.8 hectares (191.7 acres) of developed area (areas of human modification);
- 19.1 hectares (47.2) of impervious area (paved, rooftop and compact gravel);
- 56.5 hectares (139.6 acres) of prime soils (Capability Classes 2 & 3);
- 111.6 hectares (275.8 acres) of ALR; and
- 49.3 hectares (121.8 acres) of SPR (Streamside Protection Regulation) setbacks.

Each of the above features along with supporting figures, tables, information, and observations are thoroughly explored within this document.

A summary of important environmental components is discussed in the final section. In an attempt to synthesize the various areas of inquiry, a baseline of environmental constraints has been created from five key features:

1. Important Ecological Features (Section 4, Section 5 & Section 8)
2. Streamside and Wetland Setbacks (Section 6 & Section 12)
3. Flood Plain (Section 9)
4. Surficial Geology (Section 9)
5. Steep Slopes (Section 9)

Each of the above key features can be considered as singular entities, but can also be overlaid to understand which areas may be of greater environmental concern. Correspondingly, they have been combined into a final environmental constraints map that may be used to visually assess which areas of Albion Flats should be considered as environmentally sensitive or require further studies in advance of future development. Table 4 summarizes the overlapping constraints. In total 11% of the site has no environmental or one environmental constraints, 79% of the site has two or three constraints and 9% of the site has four constraints.

2. Introduction

This report describes the ecological and physical environmental features and values of the Albion Flats area in the District of Maple Ridge as background for the preparation of a land use concept plan for the area. Information was collected through a review of existing environmental baseline information and field assessment of the study area. The information has been synthesized and mapped into discrete areas of inquiry as well as combined into a preliminary summary map of environmental attributes. It is important to note, that while effort has been made to verify all findings, the information contained within this document should be considered draft and further review is needed prior to any final land use decisions being made, or prior to a formal area planning process taking place.

The following tasks were undertaken as part of this investigation:

1. Existing information on ecological features and values was reviewed and summarized;
2. Areas of natural and semi-natural vegetation were mapped using an established classification system;
3. Vegetation and wildlife values were surveyed in the field across the study area;
4. Watercourses were surveyed to confirm their location and assess channel characteristics and flow permanence;
5. Important ecological features were mapped and described;
6. Physical environment features such as floodplains and hazards areas were mapped and described;
7. Human modified areas, and impervious areas were mapped and described;
8. Agricultural operations, agricultural intensities and soil capabilities were mapped;
9. Regulatory environments affecting environmental features were briefly discussed; and
10. A preliminary map outlining key environmental constraints was developed.

3. Existing Information

This section summarizes existing information on environmental features and values in Albion Flats including watercourse mapping, previous wildlife or fisheries studies, environmentally sensitive areas (ESA) mapping, and Metro Vancouver's regional scale biodiversity mapping and analyses.

District of Maple Ridge Watercourse Mapping. In anticipation of the need for comprehensive stream mapping to assist in the designation of stream setbacks for development and other uses, the District retained an independent consultant in early January 2000 to upgrade District stream base mapping using GPS (Global Positioning System) and to collect some basic stream feature inventory data (District of Maple Ridge website). This included the Albion Flats area. The data collected is similar to Sensitive Habitat Inventory Mapping (SHIM) and includes information on stream location, size, channel characteristics, riparian condition, and level of disturbance. The data also includes wildlife sightings and other habitat information. Watercourse information was endorsed by Council and Fisheries and Oceans Canada in 2004 and forms an integral part of Maple Ridge's environmental management information. Although the data is quite comprehensive for Albion Flats, sections of some watercourses were not mapped and not all previously mapped watercourses have been verified.

Fisheries Information Summary System (FISS). A summary of fisheries-related information available on Spencer Creek (one of two named watercourses through Albion Flats) was accessed through the

Fisheries Information Summary System (FISS, 2010). It includes information on obstructions, enhancements and fish species present. The summary report can be found in Appendix 2.

Fish sampling during road construction activities. Due to recent development around the study area, existing roads have been expanded and new roads have been constructed requiring instream works to improve culvert crossings. As part of these construction activities, fish salvage was undertaken as part of pre-construction salvage or post-construction monitoring. Three reports, all from 2004, were accessed from the provincial Ecological Reports Catalogue (ECOCAT). Coho salmon and cutthroat trout have been trapped in Spencer Creek, as well as the Brassy Minnow, formerly listed as Vulnerable (formerly blue-listed; now S4) in B.C.

District of Maple Ridge fish observations. The District has recorded incidental observations of fish present in some watercourses in Albion Flats. Observations of both chum and coho salmon have been made in parts of Spencer Creek in Albion Flats. This confirms that, although the pump station on Spencer Creek at Tamarack Lane is thought to be a barrier to fish passage at some times of year, salmonids do occur upstream of the pump station.

Historical airphotos. A series of historical airphotos dating back to 1938 for the northern section of Albion Flats were provided by District staff. Airphotos show the history of watercourse channelization, agricultural ditching, and vegetation on the site in comparison to present-day conditions.

B.C. Conservation Data Centre (CDC) rare element occurrence records. Databases at the B.C. Conservation Data Centre were searched for occurrences of both sensitive and non-sensitive occurrences of rare species and ecological communities. No rare element occurrence records were found for the Albion Flats area although a potential breeding record for Green Heron from 1990 was found in the Kanaka Creek area adjacent to Albion Flats (CDC, 2009).

District of Maple Ridge Environmentally Sensitive Areas (ESA) mapping. The District has conducted broad-scale environmentally sensitive areas mapping to act as an information resource to assist decision makers and stakeholders at various scales with sustainable conservation and development options. It is not a regulatory tool, nor is it intended to replace or override site specific field verification assessments carried out by professional consultants through the development application process. It is designed to help guide stakeholders through the development process with useful background information on where and what the potential environmental constraints and opportunities are at different planning scales including the site, neighbourhood, watershed, and municipal level. Most of Albion Flats has been rated as moderate with some sections related as high, particularly wetlands and natural stream corridors with some intact riparian vegetation.

District of Maple Ridge spatial data. A variety of spatial data layers were used as provided by the District of Maple Ridge. Many of these data were also utilized for spatial analysis and reporting. Data provided by the District of Maple Ridge detailed aspects of agriculture, cadastre fabric, environmental features, and systems such as stream inventories and topographic features, natural hazards, transportation networks, and zoning strategies and policies. Data derived from these sources includes areas of agricultural use, regions of development constraint, generalized land use and zoning classification, and areas of steep slope, surficial geology, and inundation hazards. Satellite imagery was also used to identify between built and natural environments in defining natural areas, agricultural areas, and impervious surfaces.

Regional Biodiversity Conservation Strategy. Metro Vancouver Regional District mapped and assessed biodiversity value across the region resulting in a series of maps and reports (see Axys, 2005). They showed three aspects of regional biodiversity: (1) 'relative biodiversity', which was estimated from land cover; (2) 'habitat reservoirs and refuges' which identifies the largest areas of natural land cover in the region; and (3) 'habitat connectivity' which indicates the relative ability of wildlife and other species to move through the landscape. These maps indicate that Albion Flats supports a moderate level of biodiversity in the context of Metro Vancouver, mainly because of its predominantly cleared landscape with small to medium-sized natural areas. The moderate connectivity depicted on the habitat connectivity map is related to wildlife movement associated with the Fraser River.

Canada Land Inventory (CLI). This data was used for Soil Capability for Agriculture Classes and Limitations. Land capability for agriculture ratings are determined by a combination of soil and climatic capability for agriculture with soil characteristics. Soils are inventoried and classified with key limitations of the land for agriculture. Agricultural land capability classes range from Class 1 to Class 7, with Class 1 to 3 considered as "Prime", Classes 4-6 requiring improvements and Class 7 as non-arable. Additionally, the inventory also provides for each soil area an unimproved classification that indicates the capability of the soil in its native state and the main limitations on its capability. More information available at Geogratis (CLI).

Canadian Digital Elevation Data (CDED). Consists of an ordered array of ground elevations at regularly spaced intervals. This data was used to providing estimated values of elevation points in analysis of inundation areas. More information available at Geobase (CDED).

4. Habitat Mapping and Assessment

Methods. As a first step in assessing environmental values in Albion Flats, natural and semi-natural vegetation has been mapped using orthophotos taken in 2009. Vegetation mapping was conducted in ArcGIS 9 at a scale of 1:2,500 with a minimum polygon size of approximately 0.1 ha. Each polygon was assigned a class and subclass, with modifiers and submodifiers where appropriate. Very small areas of vegetation (e.g., individual trees or landscaping) in developed areas were not mapped if natural or semi-natural vegetation was not the dominant land cover type. While small polygons are a part of the overall green infrastructure of the study area, mapping efforts were focused on the larger areas of natural and semi-natural vegetation.

The classification system (based on the US National Vegetation Classification) separates natural and semi-natural vegetation into a series of physiognomic (structural) classes: forest, shrubland, herbaceous, and sparse vegetation. Subclasses are used to further divide the classes based on vegetation composition and character. Examples of subclasses are evergreen forest, deciduous forest, and mixed evergreen-deciduous forest. To encompass some natural areas that do not have vegetation but can be important ecologically, such as waterbodies or recently cleared sites, one additional class, unvegetated, with two subclasses, unconsolidated material and water has been added. To further characterize vegetation, modifiers and submodifiers were added to denote more specific land cover types or uses (e.g., pasture, forage crops, playing fields) that affect vegetation management. Furthermore, the

naturalness of each polygon on a scale of 1 (least natural) to 5 (most natural) has been classified to identify areas that are relatively undisturbed by human activities.

Results. We mapped 109.2 hectares (269.8 acres) or 86.8% of Albion Flats as natural and semi-natural vegetation, including cultural vegetation such as pastures and playing fields (Figure 2). A total of 200 polygons were mapped ranging in size from 0.02 to 9.1 hectares (the mean polygon size was 0.55 hectares). Unmapped areas were highly developed areas where vegetation was absent or heavily modified (e.g., buildings, parking lots, landscaped areas) and any excluded vegetated areas were largely smaller than the minimum polygon size. Total areas and percentages of the different vegetation classes and subclasses are shown in Table 1.

At 54.8% of the total area, herbaceous grass vegetation, including pastures, forage crops, playing fields, and road verges, is the dominant vegetation type in Albion Flats (69.0 hectares or 170.5 acres;). Forest accounts for 19.6% of the total area (24.6 hectares or 60.7 acres); forested areas include a mosaic of with deciduous forest covering 4.6% (5.8 hectares or 14.3 acres) of the site, evergreen forest covering 3.8% (4.7 hectares or 11.6 acres) of the site and mixed forest covering 11.2% (14.1 hectares or 34.8 acres) of the site. At 9.5 % of the site, shrub vegetation is also a significant component of the vegetation in Albion Flats (11.3 hectares or 27.9 acres).

Of the 109.2 hectares (269 acres) of vegetation mapped in Albion Flats, approximately 26.7% (33.6 hectares or 83.0 acres) was classified as cultural vegetation and 18.7% (23.5 hectares or 58.1 acres) was classified as altered vegetation. 24.8% (31.2 hectares or 77.1 acres) of the site were classified as semi-natural vegetation and 16.6% (20.9 hectares or 51.6 acres) was mainly natural vegetation (Figure 2). No polygons were classified as natural vegetation.

Table 1. Summary of natural and semi-natural vegetation in Albion Flats.

Class	Subclass	Area (hectares)	Area (acres)	Percent by Total Area
Forest Vegetation		24.6	60.8	19.1
	Deciduous Forest	5.8	14.3	4.6
	Evergreen Forest	4.7	11.6	3.8
	Mixed Forest	14.1	34.8	11.2
Herbaceous Vegetation		72.6	179.4	57.7
	Annual (e.g., gardens)	0.4	1	0.4
	Grass	69.0	170.5	54.8
	Hydromorphic (wet)	3.2	7.9	2.5
Shrub Vegetation		11.3	27.9	9.5
	Deciduous	11.3	27.9	9.5
Sparsely-vegetated		0.2	0.5	0.1
	Unconsolidated	0.2	0.5	0.1
Unvegetated		0.5	1.2	0.4
	Unconsolidated	0.1	0.2	0.1
	Water	0.4	1	0.3

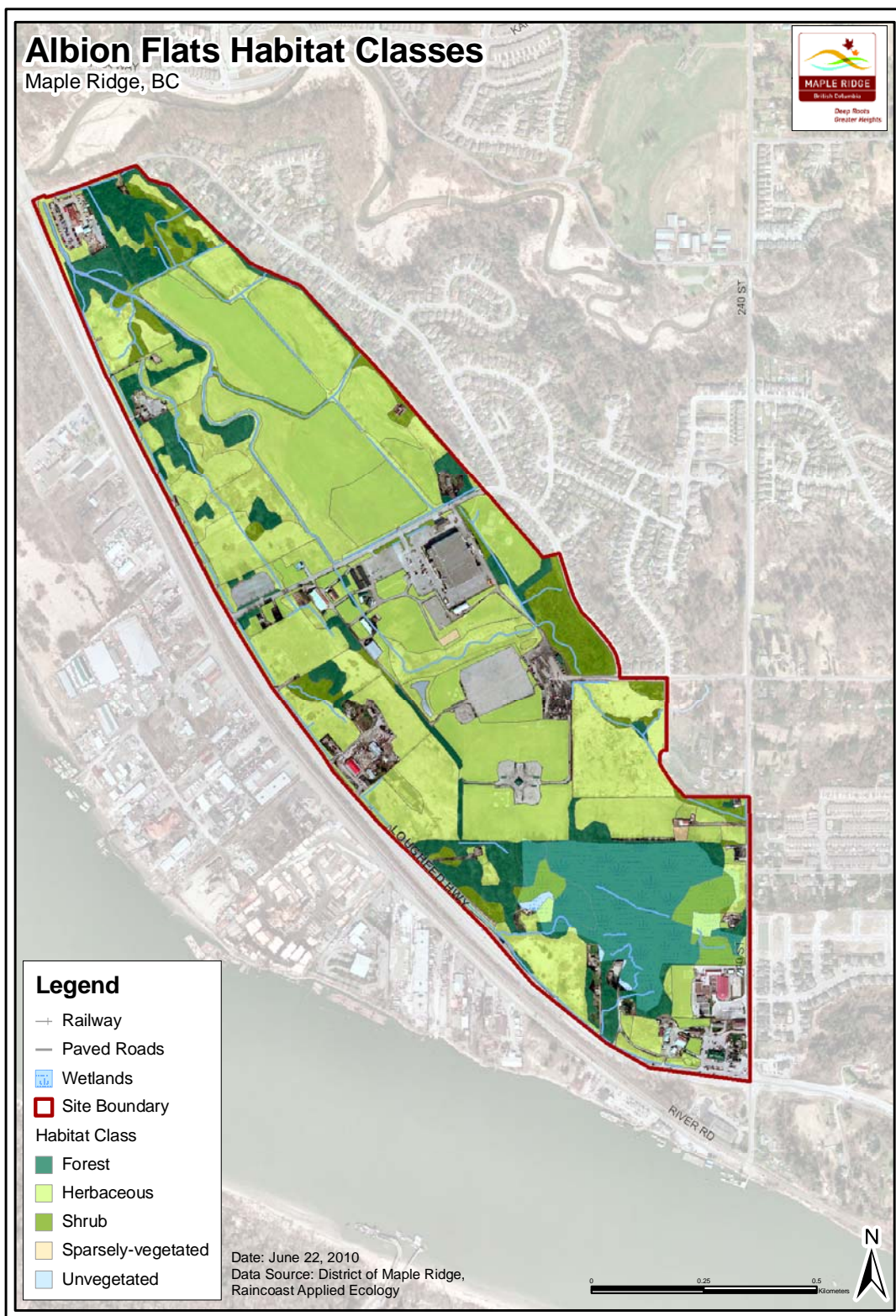


Figure 1 Habitat Classes

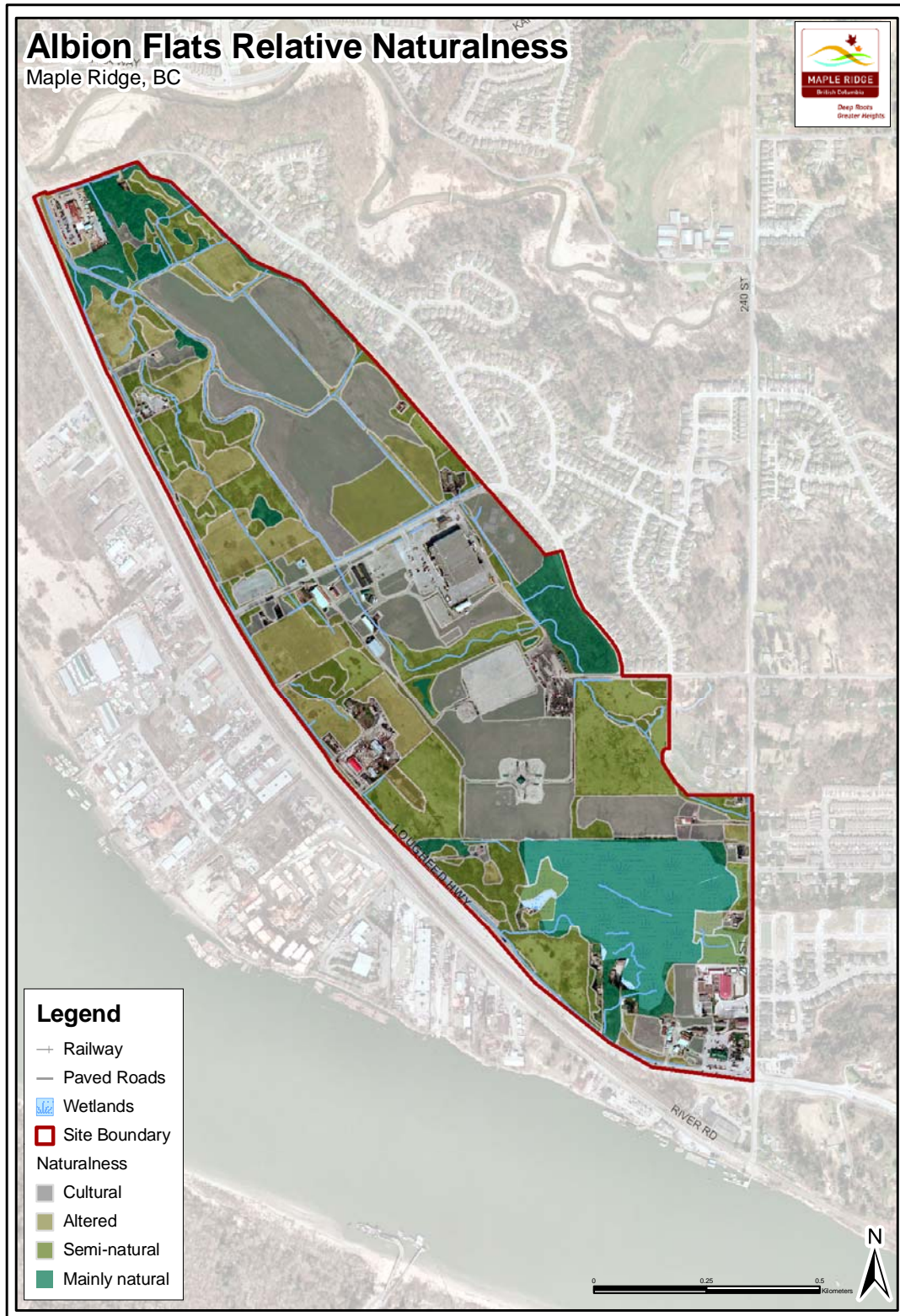


Figure 2 Relative Naturalness

5. Vegetation Survey

Methods. Aerial photographs of the study area were examined to prioritize locations for field surveys. A site visit occurred on June 3, 2009. Sites surveyed were documented using GPS data points. Photographs of the vegetation were taken and notes were made on habitat features, especially species of conservation significance, disturbance factors, and the presence of invasive species. Incidental wildlife observations were documented. It should be noted that more comprehensive surveys of plant communities and searches for rare or endangered plant species should be undertaken later in the growing season.

Results. Albion Flats contains a wide array of vegetation types (see representative photos in Appendix 1). These include upland and riparian forest, forested swamps and shrub-swamps, agricultural and playing fields, hedgerows, and regenerating vegetation in previously-cleared areas (e.g., old fields). The most ecologically important areas of vegetation surveyed were:

- A 12.0 hectare (29.6 acre) mixed forest swamp northwest of Albion Elementary School, at the south end of Albion Flats. Some of the portions of this area were tentatively classified as Black Cottonwood – Red Alder/Salmonberry Forest, an ecological community that is provincially rare and ranked as Vulnerable (blue-listed; S3) in B.C. (BC CDC, 2010). The patch's size and moisture regime make it suitable habitat for many rare species, including Red-legged Frog and Pacific Water Shrew. Very recent clearing has removed approximately 20% of this forest patch along the northern boundary.
- A smaller 1 hectare (2.5 acre) forested swamp along Spencer Creek south of Hyundai car dealership, at the confluence of Spencer and Mainstone creeks. This area was also classified as the blue-listed Black Cottonwood – Red Alder/Salmonberry Forest ecological community.
- A 2.5 hectare (6.2 acre) shrub-swamp along 105 Ave, north of 104 Ave and northeast of the Albion Sports Complex parking lot. Spencer Creek flows through this area and the vegetation shares similar characteristics to the Black Cottonwood – Sitka Willow wetland ecological community, although black cottonwood is limited to perimeter areas of the swamp. The Black Cottonwood – Sitka Willow wetland ecological community is listed as Vulnerable (S2S3) in B.C. (BC CDC, 2010).

Forested and shrub-dominated wetlands were the best examples of natural habitats in the watershed and were mostly classified as mainly natural. Dominant understory shrub species were typically native species and included salmonberry, willow, hardhack, red-osier dogwood, Nootka rose, and red elderberry. Due to limited disturbance, these wetlands are not heavily invaded by invasive species, such as Himalayan blackberry or reed canarygrass, although they may be present. Other wetlands present in the Albion Flats area include cattail marshes and man-made ponds.

Other areas of natural or semi-natural vegetation included larger forest patches, riparian forest, and old fields. Black cottonwood was the most common mature native tree species, although other coniferous and deciduous species were present throughout the areas. In addition to the forested wetlands mentioned above, other large non-wetland forest patches are found in Rieboldt Park, along the escarpment between Albion Flats and the houses along the eastern section of Tamarack Lane and at the corner of 104 Ave and 240 St. Deciduous tree canopy is dominated by black cottonwood and red alder. Evergreen tree canopy is dominated by coastal Douglas-fir and western redcedar. Large forest patches

have more interior and less edge habitat and provided unique habitat for interior forest species, such as Brown Creeper and Swainson's Thrush.

Shrub vegetation is dominated by deciduous species such as willow, hardhack (native), and Himalayan blackberry (non-native). Forest patches and field margins often had mature black cottonwood trees suitable for supporting nesting raptors. Mature trees increased the value of an area by providing more vertical habitat structure for birds and other species. Rieboldt Park (along Tamarack Lane) is unique in that it has a tree canopy composed partially of ornamental and other planted tree species not native to this area, such as pines and spruces. However, many of the understory shrub species are native and it provides significant habitat value as part of a large mature forest patch at the north end of the study area.

Due to the past and existing land uses in Albion Flats, riparian forest is lacking on many of the natural and channelized watercourses. Riparian corridors have more ecological value when they have intact riparian vegetation, with tree species such as black cottonwood, red alder, western red cedar, and shrubs such as salmonberry, willow, red elderberry, and red-osier dogwood. In contrast, Himalayan blackberry and reed canarygrass dominate most banks of watercourses lacking riparian forest, although some areas have scattered shrubs and trees. The restored riparian corridor through the Albion Sports Complex is generally transitioning from reed canarygrass-dominated area to a forested corridor as riparian trees regenerate. The presence of a watercourse generally enhances the ecological value of the area, providing a water source for wildlife, habitat for invertebrates such as dragonflies, which in turn provide a food source for bird species.

Because agricultural activities have been abandoned in many areas of Albion Flats, a high proportion of the fields have also 'Old Field' characteristics. Old fields are significant as they provide important habitat for prey species taken by raptors, such as Townsend's Vole. Higher value old fields generally had more cover of native species and other features, such as scattered trees or old hedgerows. Lower value old fields were typically dominated by reed canarygrass, orchard grass, and Himalayan blackberry. Some actively-used agricultural fields north of 105 Ave also have areas that are seasonally wet. These seasonally-flooded fields can be important water sources for wildlife and foraging locations for ducks, geese, and other wading birds. Developed park lands were visited but contained primarily mowed grass and were therefore of little ecological value.

In addition, no rare or endangered species were located on site during the vegetation survey although, due to time constraints, the survey was not comprehensive and further surveys are needed that cover different times of year. Based on available habitat, the most likely rare plant species to be found in Albion Flats is Vancouver Island beggarticks, which is ranked as Vulnerable (S3) in B.C. and designated as a species of Special Concern by COSEWIC in 2001. It occurs along the edges of ponds, lakes, streams, creeks, channelized watercourses, swamps, and other wetlands with fluctuating water levels in the Lower Mainland, the Gulf Islands, or Vancouver Island.

Most disturbed areas had a high degree of invasive plants. Himalayan blackberry and reed canarygrass were the most frequently encountered non-native invasive plant species. Several notable species were also found to be present. Sycamore Maple, a tree species which is sometimes used in landscaping and as a street tree, is present on some properties along the Lougheed Highway. It is becoming a problematic invasive plant species in riparian corridors in North Vancouver and appears to be spreading in Albion Flats. Japanese knotweed (and its related species) is present in Albion Flats, although its distribution is still quite limited and potentially could be controlled. Only two small knotweed patches (along Spencer

Creek through the Maple Ridge Agricultural Fairgrounds and along 240 St) were located during the survey.

6. Watercourse Mapping and Assessment

Methods. Watercourse mapping was also confirmed and revised as part of the field assessment undertaken on June 3, 2009. Surveys included walking mapped watercourses to confirm their location, locating any previously unmapped watercourses, observing fish presence (if possible) and fish habitat features, and inspecting fish passage at possible obstruction points. Wetland boundaries were also mapped as an additional data layer since these have significant fish and wildlife value and were often interconnected with the watercourse network. Both representative sites and features of interest were documented using photographs and GPS data points. At representative sites, notes were made on channel characteristics and riparian condition. Incidental wildlife observations were documented. It should be noted that this was an overview survey and more detailed surveys of watercourses will be needed to confirm any stream setbacks required.

Results. Figure 4 shows the locations and types (natural stream, channelized stream, or constructed ditch) of watercourses in the Albion Flats study area. Most of the added watercourses from previous mapping were small perimeter ditches or connecting watercourses between previously mapped sections. Each of the major watercourses or other features are described below. Additionally, in appendix 4, there is a detail map of watercourses that have been mapped in the course of this project.

Spencer Creek

Spencer Creek is a major tributary of Kanaka Creek and the largest watercourse running through Albion Flats (Figure 10, photos in Appendix 1). Due to the limited topography in the area, Spencer Creek is largely a low-gradient, slow-moving stream. During agricultural development, sections of the stream were channelized eliminating natural meander although the watercourse maintains its general location within the study area. Both coho and chum salmon have been observed by City staff. The lack of gravel substrate limits the availability of spawning habitat. Prominent functions are providing connectivity to headwater reaches and rearing habitat for juvenile salmonids. Many of the wetlands are connected to watercourses and provide additional off-channel rearing habitat. Riparian vegetation has been lost through most of the central agricultural areas although some larger riparian forest patches remain, such as immediately downstream of 104th Ave and downstream of the confluence with Mainstone Creek. The section of Spencer Creek running through the Albion Sports Complex has recently undergone restoration. Fluvial wetland areas have been created to improve turbidity, the natural meander of the stream has been restored, and riparian trees have been planted. The headwaters of Spencer Creek, which generally lie in the central part of Albion Neighbourhood between 104th and 108th Ave, have undergone significant urbanization within the last 5-15 years.

Mainstone Creek

Mainstone Creek is the largest tributary to Spencer Creek in Albion Flats. Historically, Mainstone Creek ran parallel to Spencer Creek through the south part of the Albion Flats, parallel to Lougheed Highway. Due to development along Lougheed Highway, sections of the original stream channel have been disrupted and some of the flow has been diverted to the ditch running along Lougheed Highway. As a result, the main channel has little or no flow in most of the remnant sections and has become choked

with reed canarygrass. The headwaters of Mainstone Creek are currently undergoing rapid urbanization. Mainstone Creek enters Spencer Creek south of Rieboldt Park, about 300 m upstream the floodgates and the confluence of Spencer and Kanaka creeks.

Agricultural and Perimeter Ditches

Many agricultural and perimeter ditches have been added increasing the total length of watercourses in Albion Flats and altering drainage patterns. Most of the lowland ditches contain slow-moving or standing water and appear to be wet year-round (Appendix 1c & 1d). Since most ditches are interconnected with Spencer Creek and have no significant barriers to access (e.g., floodgates, gradient changes), a high proportion would be expected to be fish-bearing.

Wetlands

Wetlands mapped included forested swamps, shrub-swamps, cattail marshes, and man-made ponds (Appendix 1c & 1d). The largest forested swamps are northwest of Albion Elementary School, at the south end of Albion Flats and along Spencer Creek south of Hyundai car dealership, and at the confluence of Spencer and Mainstone creeks. Smaller forested wetlands are located along Spencer Creek and in Rieboldt Park. The largest shrub-swamp is located along 105 Ave, north of 104 Ave and northeast of the Albion Sports Complex parking lot, although smaller shrub-swamps can be found along the downstream reaches of Mainstone Creek. Several inline ponds can be found on Spencer Creek in the recently restored area and man-made ponds can be found in adjacent areas of the Albion Sports Complex. From an ecological perspective, freshwater wetlands are typically ‘hotspots’ for biodiversity. They are important for plant species richness, birds, mammals, amphibians, and invertebrates such as dragonflies. Most rare and endangered species on B.C.’s South Coast depend on wetlands for at least a portion of their life cycle.

Fish Species

Table 2 shows the fish species that have been previously documented in the Spencer Creek watershed. Due to the limited nature of this assessment, no additional fish sampling was undertaken.

Table 2 Fish species documented in Spencer Creek and its Tributaries.

Fish Species	Reference(s)
Coho Salmon	FISS report, DMR staff, ECL-Envirowest 2004
Chum Salmon	DMR staff
Cutthroat Trout	FISS report, Jacques Whitford 2004, ECL-Envirowest 2004
Brassy Minnow	FISS report
Dolly Varden	Jacques Whitford 2004
Largemouth Bass	FISS report
Northern Pike	FISS report, ECL-Envirowest 2004
Peamouth Chub	FISS report
Prickly Sculpin	FISS report
Pumpkinseed	FISS report
Redside Shiner	FISS report
Sucker (general)	FISS report
Threespine Stickleback	FISS report, Jacques Whitford 2004, ECL-Envirowest 2004

One fish species of conservation concern is known from the Albion Flats area. Dolly Varden was trapped in Spencer Creek in August 2004. It is blue-listed in B.C. (S3S4). Brassy Minnow is also known from Spencer Creek and was previously blue-listed in B.C. but has been downgraded based on new information on its abundance and distribution.

Salish Sucker is a small inconspicuous fish that inhabits lowland streams in the lower Fraser Valley and Puget Sound. It is red-listed (S1) in B.C. and has been designated as Endangered by COSEWIC (in 2002). It prefers small streams with mud, silt or gravel bottoms and slow currents. It is threatened by water pollution, removal of overhanging streamside vegetation, and the introduction of non-native predators. Based on available habitat, there is a possibility that it could be present in Spencer Creek or its tributaries.

7. Wildlife Assessment

Methods. A one-day wildlife survey occurred in Albion Flats on June 8, 2010. Most forested and shrub-dominated polygons were examined, as well as most natural or semi-natural herbaceous areas. Priority was given to those areas likely to have higher habitat value. Amount of time spent, time of day of the surveys, and other factors such as traffic noise were not controlled.

To conduct the survey, the study area was divided into 16 significant habitat units. Wildlife observations were associated with these mapped polygons (Figure 3). Each polygon was visited and the presence of bird, mammal, and amphibian species noted. In some cases, other forms of evidence (e.g. vocalization, tracks, burrows, scat) were used to infer the presence of species rather than using sight records. The locations of significant sightings or features (e.g., raptor sightings, nests) were also documented with a hand-held GPS. Examination of aerial photography and Google Earth imagery supplemented the fieldwork. Incidental wildlife observations made during the plant and ecosystem field component were added to the data collected.

Results. A total of 28 bird species and four mammal species (black bear, black-tailed deer, American mink, and possibly Townsend's Vole), and one amphibian (American bullfrog) were observed during the field survey (Table 3).

Albion Flats supports a range of resident and migratory breeding bird species. The most common and widespread bird species observed were Song Sparrow, American Robin, Northwestern Crow, Common Yellowthroat, Cedar Waxwing, and Black-capped Chickadee. Some of these species are associated with more open habitats while others forage in dense underbrush. The most interesting observations were of Barn Swallow and Lazuli Bunting. Barn Swallows were formerly abundant in B.C. but have been declining recently and are now listed as Vulnerable (Blue-listed; S3S4) in B.C. Barn swallows were observed in the pasture areas north of 105 Ave (Polygon 15). Although not of conservation concern in B.C., Lazuli Bunting is an interior bird species which is now occurring at a small number of abandoned agricultural areas in the lower mainland. It was found in the pastures and old field areas north of 105 Ave (Polygons 10 and 15).

One Red-tailed Hawk was observed on the northern edge of the larger forested swamp at the southeast corner of the Albion Sports Complex. A Cooper's Hawk was also observed hunting in the agricultural

fields across 105 Ave opposite the Planet Ice parking lot. Both of these raptor species potentially nest in trees in Albion Flats or adjacent area. There is enough suitable hunting habitat to support nesting pairs of both species.

Many of the large cottonwood trees throughout the area are suitable nest sites for Great Blue Herons, Bald Eagles, and Red-tailed Hawks, but the time of year of the survey was not appropriate to determine the presence of nests. Surveys for nests of these species are best conducted when the leaves are off of the trees. No specific evidence of nesting herons was observed, though small colonies can be hard to detect and there is enough foraging habitat nearby for a small colony. The nearest documented active Great Blue Heron colony is on the Alouette River (Semproni and Ogilvie, 2007). Dense shrub-swamp and other wetland habitats have the potential to provide nesting habitat for Green Heron, however, this is a very secretive bird and sightings are very uncommon. There is a CDC occurrence record for Green Heron for the nearby Kanaka Creek area (BC CDC, 2010). Both the coastal subspecies of Great Blue Heron (*fannini* subspecies) and Green Heron are listed as Vulnerable in B.C. and Great Blue Heron *fannini* subspecies is also designated as Special Concern by COSEWIC.

The only amphibian observed during the surveys was American Bullfrog. It was present in several locations, in natural wetlands as well as ponds and ditches with standing or slow-moving water. Northern Red-legged Frog, ranked as Vulnerable (S3S4) in B.C. and designated as a species of Special Concern by COSEWIC (2004) has been previously found in the Spencer Creek watershed during post-construction fish monitoring (ECL-Envirowest 2004). Northwestern Salamander was also observed during the same project (ECL-Envirowest 2004). Western Toad, designated as a species of Special Concern by COSEWIC (2002), also has the potential to be present but has not been found in the area to date.

In general, wildlife species richness within each polygon was a reflection of habitat diversity. The best wildlife habitats appear to be in Polygons 1, 5, 9, and 10, while 15 is important for the species that prefer lightly used agricultural habitats, which were never common and are increasingly less common east of Pitt Meadows and west of Mission. The value of Polygons 7, 9, and 10 is a function of the unintended enhanced habitat value that is often associated with abandoned/unused rural residential/small acreage parcels.

More comprehensive surveys should be conducted throughout the year to determine use of the area by resident, migratory, and breeding bird species. More comprehensive amphibian surveys and basic invertebrate (e.g., butterfly, dragonfly, gastropods) surveys should also be carried out to include other taxa which were not the focus of this initial overview survey.

Albion Flats Wildlife Survey Results

(Observations occurred during a one-day field visit on 8 June 2010.)

Table 3 Wildlife Field Survey Results

Species	Map Polygon																	Comments
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
Amphibians																		
Amer. Bullfrog										1					2		3	Introduced invasive

Species	Map Polygon																	Comments
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
Mammals																		
Townsend's Vole		?					?		?	?					?			Did not look for evidence, but likely; are food for some predators.
American Mink?															?			Scat with crustacean parts by ditch
Black Bear?					~ 1 ?					2 ?			*		1 ?			Beds &/or trails. ~ reported. *posted sign indicating recent sighting
Mule Deer					~													~ Reported
Birds																		
Mallard															?		1	? Webbed footprints in mud
Cooper's Hawk															1			Hawk caught large dark bird, possibly a R-w Blackbird (fem?)
Red-tailed Hawk					1													
Western Wood-pewee					<u>2</u>													
Willow Flycatcher	1	<u>2</u>									<u>1</u>				<u>1</u>			
Northwestern Crow	2	1					1		5	2			2		1 0			
Violet-green Swallow		1					2											
Barn Swallow															4			Blue listed
Black-capped Chickadee	2		2				2		2				2					
Brown Creeper					<u>2</u>													
Bewick's Wren	1																	
Golden-crowned Kinglet													<u>2</u>					
American Robin	3		<u>1</u>		<u>3</u>		1			<u>7</u>	1		<u>2</u>		1		<u>2</u>	
Swainson's Thrush	1						<u>1</u>							<u>1</u>				
European Starling			1	1			1			2					1			
Cedar Waxwing	4		2		5					2	2		2					
Yellow Warbler										<u>1</u>								
Common Yellowthroat		<u>4</u>			<u>1</u>					2	<u>1</u>				<u>5</u>		<u>3</u>	

Species	Map Polygon																	Comments
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
Black-headed Grosbeak	<u>2</u>	2			<u>1</u>													
Lazuli Bunting										<u>1</u>					<u>1</u>			Interior species, now occurring in a few LM locations in abandoned rural landscapes.
Spotted Towhee	<u>1</u>		<u>1</u>		<u>2</u>					<u>4</u>	<u>1</u>		<u>1</u>					
Savannah Sparrow		<u>1</u>													<u>1</u> <u>0</u>			
White-crowned Sparrow							1			<u>1</u>								
Song Sparrow	<u>3</u>	<u>2</u>	<u>2</u>		<u>2</u>					<u>4</u>	<u>3</u>				<u>1</u>		<u>1</u>	
Brown-headed Cowbird				6														With horses
Red-winged Blackbird															* <u>1</u>	<u>2</u>		*Male agitated at my presence, & then presence of Cooper's Hawk.
House Finch															2			
American Goldfinch	1																	

#: Number recorded

#: Evidence of breeding for birds (singing, agitated, carrying food for young, etc.) & bullfrogs (croaking) included in number

Grey cells: no time spent observing in these polygons.

Map area without polygon numbers were not surveyed. These included areas of intensive human use such as buildings, parking lots, mowed playgrounds/parks, etc.

Polygons in which observations conducted, and selected observations.



Based on the above information, the following is a summary of important ecological features that have been identified in Albion Flats based on existing and new information. They are important either for

their inferred ecological value or the presence of one or more ecological communities or species of conservation concern:

Watercourses

Spencer Creek and its tributaries, including Mainstone Creek, are important habitat for salmonid and other fish species, including chum salmon, coho salmon, cutthroat trout, and Dolly Varden, a blue-listed species in B.C. Most of the watercourses are permanent and interconnected, and therefore have the potential to be fish-bearing. Riparian vegetation is lacking on a high proportion of the watercourses affecting habitat value and representing opportunities for restoration.

Freshwater Wetlands

Wetlands are likely hotspots for biodiversity in the Albion Flats area and support a disproportionate amount of biodiversity although further surveys are needed. Several significant large natural forested swamps and shrub-swamps are present which are composed of at least one and possibly two ecological communities which are blue-listed in B.C. (Black Cottonwood – Red Alder/Salmonberry forest and Black Cottonwood – Sitka willow forest) due to their increasing rarity within the lower Fraser Valley and sensitivity to disturbance from development. Many of the larger wetlands are interconnected with watercourses flowing through them and likely provide rearing habitat for juvenile salmonids. Smaller swamps, marshes, and ponds are also significant ecological features. Wetlands represent the most probable habitat for several species of conservation concern, including Green Heron, Northern Red-legged Frog, and Pacific Water Shrew.

Mature Forest Patches

Forest patches with mature trees and intact understory vegetation are also important biodiversity features and can be found in several areas of Albion Flats. In addition to the forested wetlands mentioned above, other large non-wetland forest patches are found in Rieboldt Park, along the escarpment between Albion Flats and the houses along the eastern section of Tamarack Lane and at the corner of 104 Ave and 240 St. Larger forest patches have more interior and less edge habitat, provided unique habitat for interior forest species, such as Brown Creeper and Swainson's Thrush.

Old Fields

Due to the abandonment of agricultural fields in some areas of Albion Flats, many areas with herbaceous vegetation exhibit "Old Field" characteristics. Old fields support higher rodent populations, such as Townsend's Vole, and are important hunting grounds for raptors such as Red-tailed and Cooper's Hawk when found adjacent to suitable perch sites.

Seasonally-flooded Fields

Seasonally-flooded fields can be important water sources for wildlife and foraging locations for ducks, geese, and other wading birds and are found in areas of the fields north of 105 Ave.

Scattered Large Trees

Scattered large trees are important habitat features within open landscapes, providing perch and nest sites for raptors in close proximity to hunting grounds.

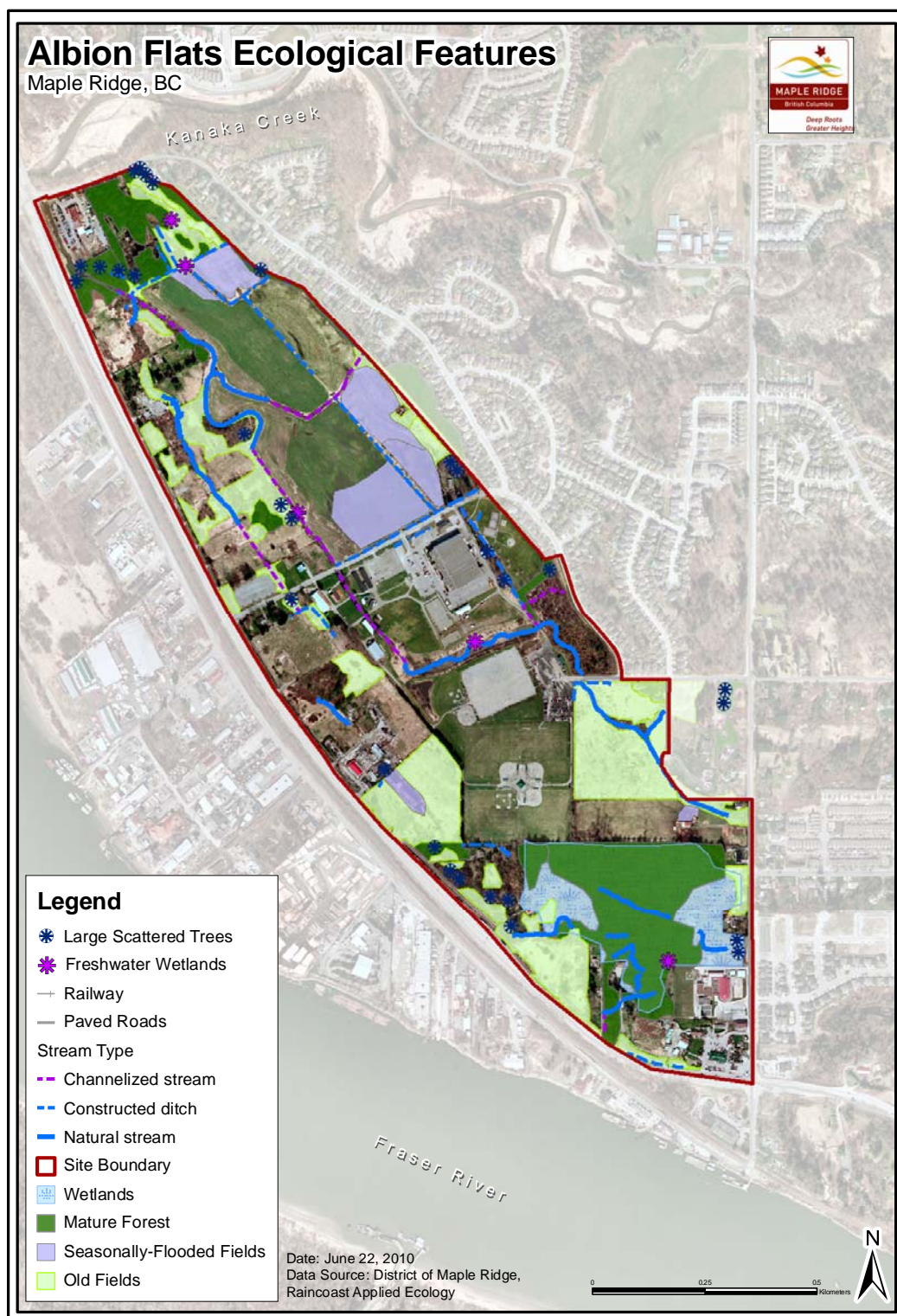


Figure 4 Important Ecological Features

9. Physical Environment Mapping

Geological Hazards

Figure 5 denotes areas that represent significant geological hazards on site. Two primary hazards have been identified: steep slopes and areas of relative liquefaction from ground motion. Steep slopes (slopes over 25% grade) occur on less than 1% (0.07 hectares or 0.2 acres) of the site. However, there are 0.98 hectares (2.39 acres) of steep slopes directly adjacent to the site that pose a potential threat for slope stability and erosion.

Liquefaction is the transformation that occurs when earthquake shaking (or other disturbance) causes a saturated granular soil (e.g. sand) to lose its strength and behave like a liquid. Liquefaction can be one of the major causes of damage during an earthquake. The susceptibility of a site to liquefaction is dependent upon the depth to water table and the density, grain size and age of the underlying deposits (e.g. Youd and Perkins, 1978). The severity of surface disruption caused by liquefaction is a function of the depth and thickness of the liquefiable units. In the case of Albion flats where the soil consists of mainly holocene sands, 72.6% (91.3 hectares or 225.6 acres) of the site is considered to have a very high hazard rating.

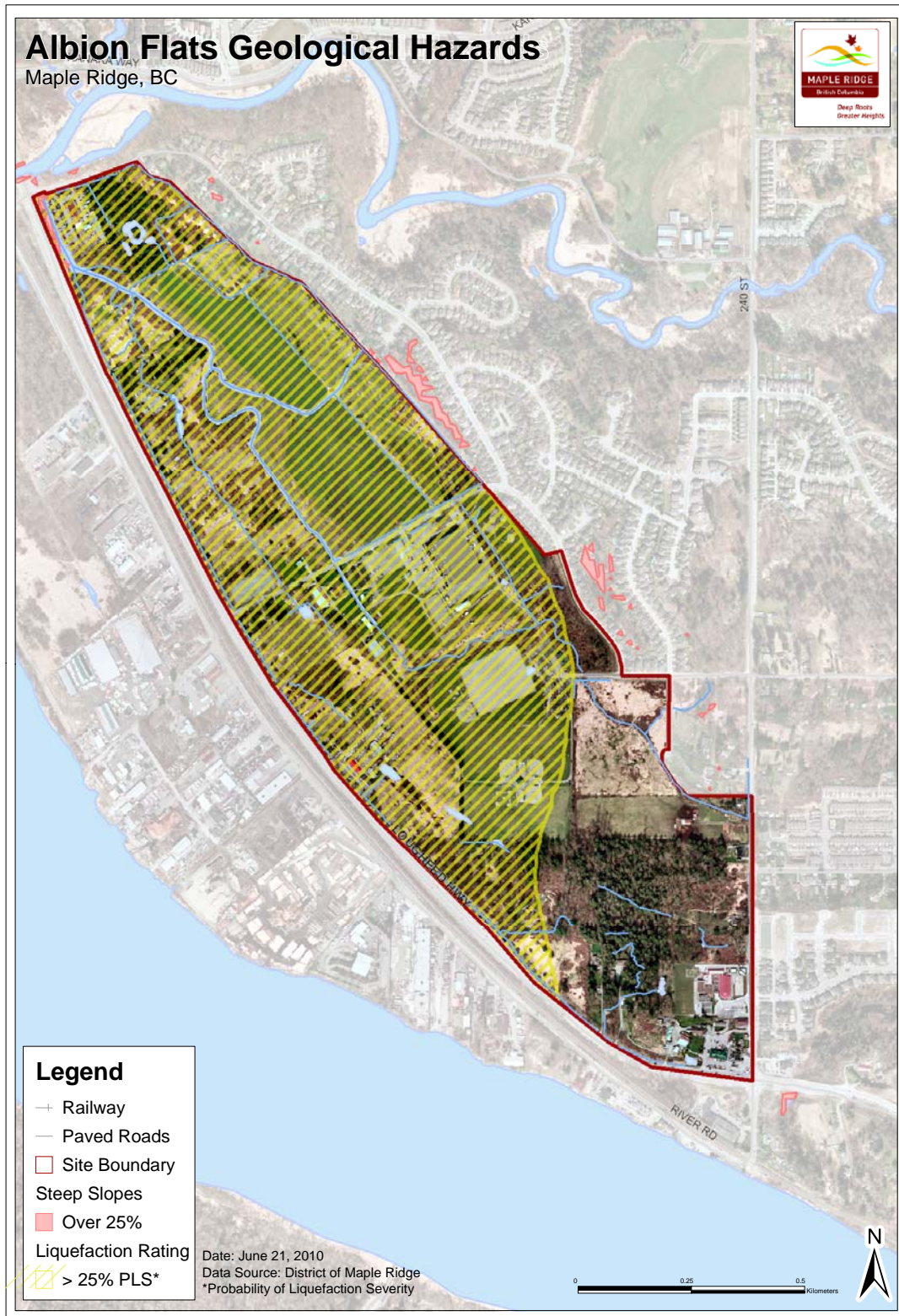


Figure 5 Geological Hazards

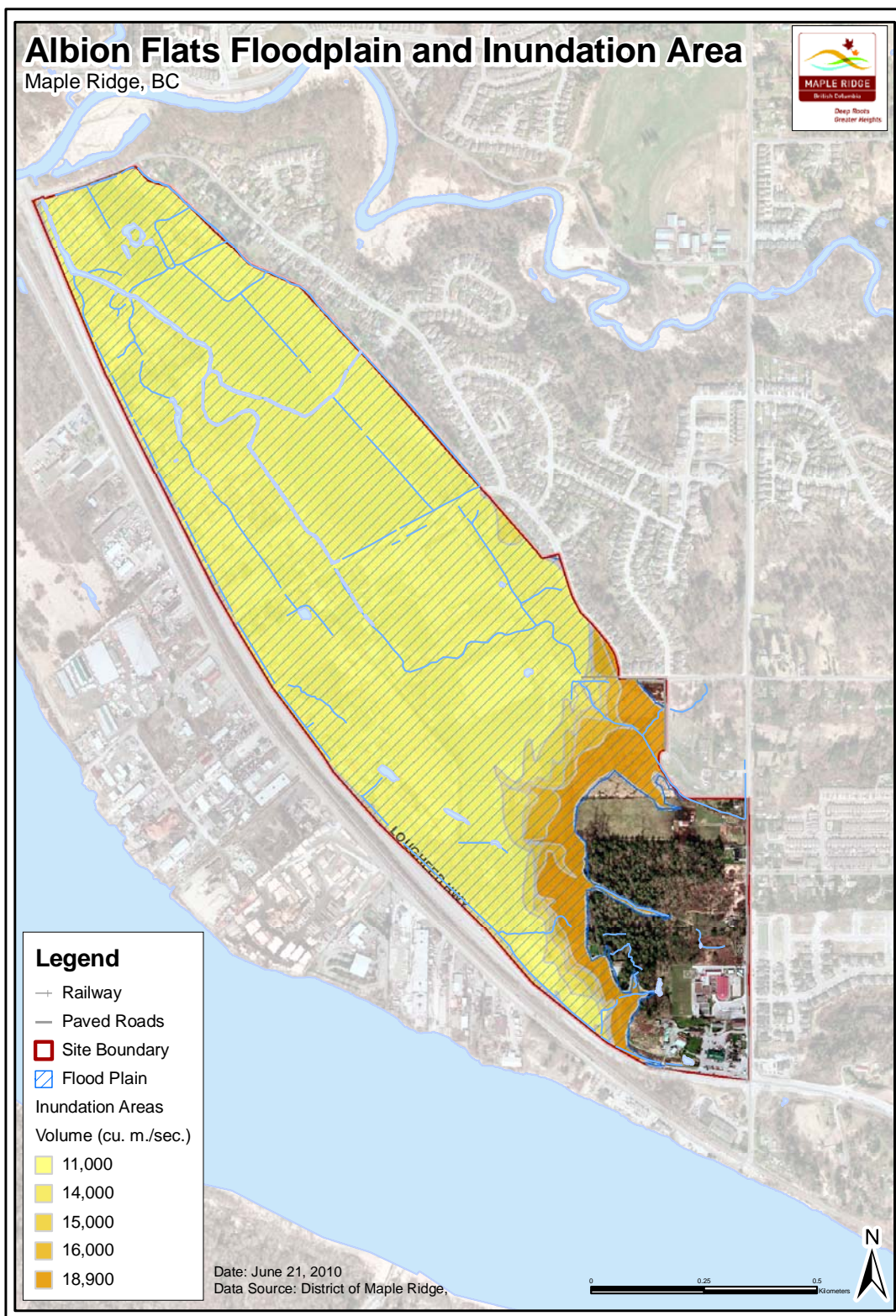


Figure 6 Floodplain and Inundation areas

Floodplain and Inundation Areas

As is shown above in Figure 6, floodplain covers 83.7% (105.4 hectares or 260.4 acres) of the site. Floodplains are areas that are considered low lying and at risk of flooding. For the Albion flats area the floodplain is considered as the areas which would be inundated at a flood volume of 19,900 cubic metres/second (as identified by the Fraser Basin Council). While the entire area is effectively dyked to 5-6 metres above sea level (Lougheed Highway is raised to 6 metres and Tamarack Lane is raised to a similar level), the barriers do not remove the area from the floodplain as the pump station serves as a point of entry for a severe weather event. In addition, it is likely that the entire site would be breached by sea level rise and given the nature of the interface between the Fraser and the ocean. As such, flooding can be considered as a risk throughout the site with the exception of the existing raised areas near the northeast and east boundaries.

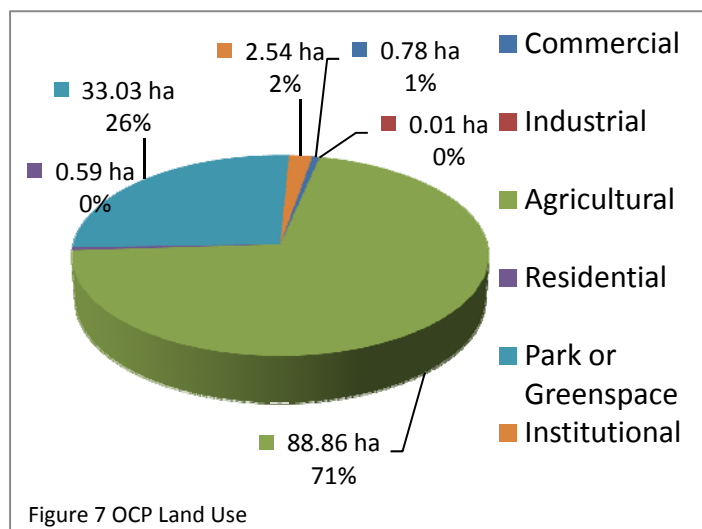
10. Human Environment Mapping

Human Impacted Areas

Shown below on Figure 8, human use of the Albion Flats site impacts 62% of the area with a development footprint of 77.8 hectares (209 acres). The intensity of this development ranges from intensive land uses such as the recreation facility and school (100% impervious areas), to less intensive uses of the land such as agricultural fields and gravel parking lots and infields. From an environmental perspective, areas of high development intensity do not support a broad range of environmental features and are typically not considered as supporting habitat for most species.

At 19.1 hectares (47.2 acres), impervious surfaces cover 15% of the site. At this level of coverage, there are expected to be slight impacts on hydrology (e.g., increased peak runoffs and lower summer baseflows) and minor impacts to water quality. Decreased baseflow may hamper the abundance of some salmonid species as well as reduce the capacity of the stream to support some benthic organisms such as crayfish, caddisflies, stoneflies, or mayflies.

Land Use



Land use, as defined by the Official Community Plan (OCP) for the site, consists of a mix of Commercial, Industrial, Agricultural, Residential, Park/Greenspace and Public uses. Figure 7 illustrates the areas and percentage of total site area for each designated land use category as described in the OCP. In line with the ALR coverage of the site, agricultural land use represents 71% of the total area, with parks and greenspace occupying 26% of the total area. It is important to note that the OCP land use does not reflect the actual land cover of the site. Correspondingly, only 23% of the site is

considered as actively agricultural as

opposed to 71% designated use and has been mentioned in the previous sections, 87% of the site is vegetated whereas only 26% of the site is considered greenspace.

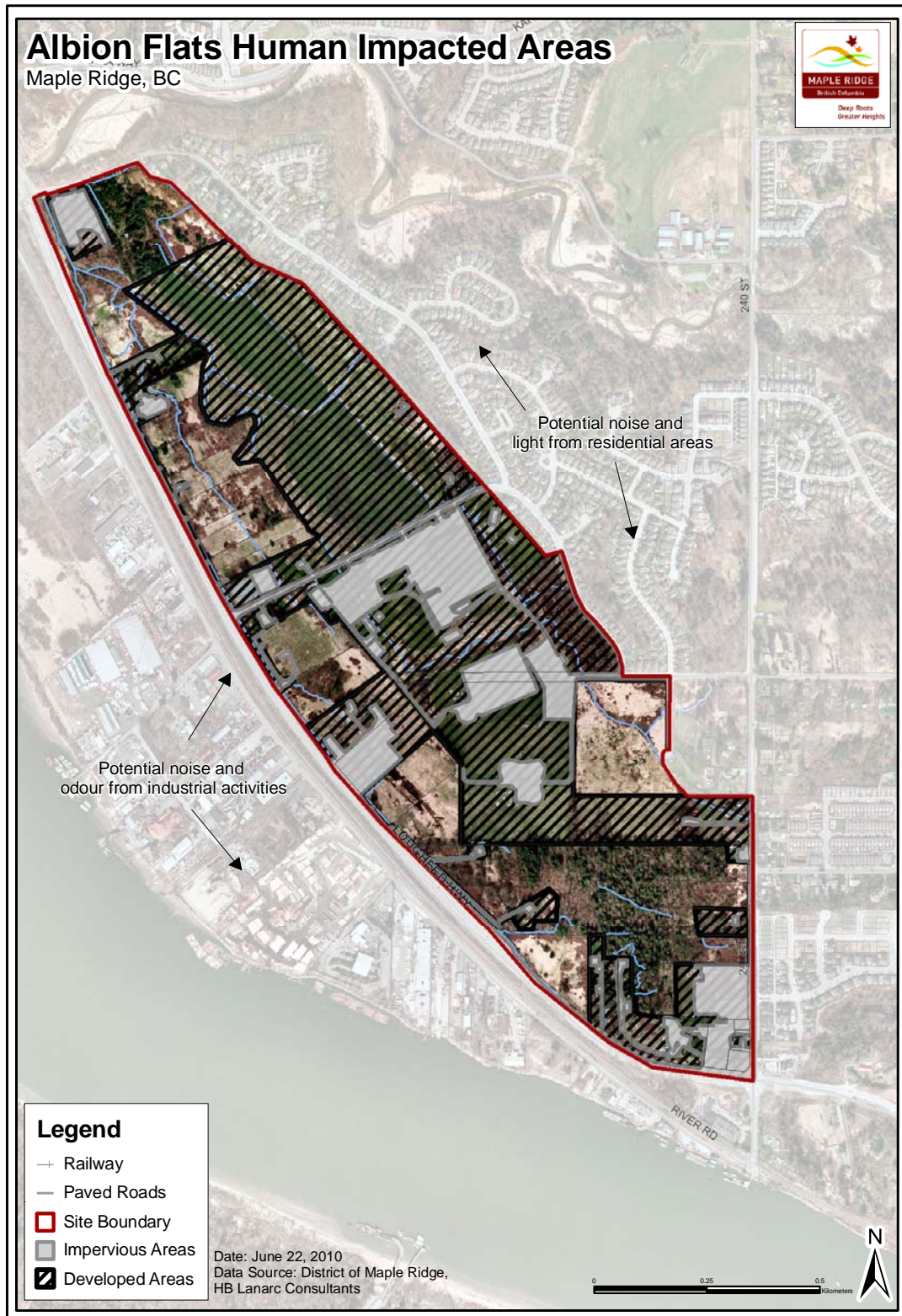


Figure 8 Human Impacted Areas

11. Agricultural Operations and Capability Mapping

As shown on Figure 9, a large portion of the Albion Flats site consists of areas within the Agricultural Land Reserve (ALR). This accounts for 89% of the site (111.6 hectares or 275.7 acres) and although not intensive, agricultural operations make up 23% of the site (28.5 hectares or 70.4 acres). Pasture land in the southern portion of the site covers 3.9 hectares (9.6 acres) and crop land in the north covers 24.7 hectares (61.0 acres).

Land capability for agriculture ratings are determined by a combination of soil characteristics and climatic capability/suitability for agriculture. A key limitation of the land for agriculture is identified through its agricultural capability class. Agricultural capability classes range from Class 1 to Class 7:

- Class 1 to 3 soils are considered as “prime”;
- Class 4 and 5 are marginal for many crops. They are generally well suited to perennial forage production. In some cases, they may also be well-suited to other crops like raspberries and grapes that require well drained soils;
- Class 6 soils are generally non-arable but may grow forage; and
- Class 7 soils are non-arable.

Soils on the site have an overall moderate agricultural capability rating with 45% (56.5 hectares or 139.6 acres) of the site consisting of prime agricultural soils (Class 1–3) and 55% (69.2 hectares or 171.0 acres) of the site consisting of Class 4 and 5 rated soils which are restricted in the range of crops or require special conservation practices for productivity.

In addition to the soil capability class, there are limitations on capability which, if removed, can increase the overall capability of the soil. In the instance of Albion Flats two main limitations are present excess wetness (W), Inundation (I) and topographic challenges (T). Soils with excess wetness require drainage improvements, soils that are limited by inundation may be seasonally flooded by streams and may require dyking and soils with topographic challenges must be levelled or terraced in order to achieve their full capability. Correspondingly, 95% (120 hectares or 296.5 acres) of all soils on the site require drainage improvements, 4% (4.5 hectares or 11.1 acres) require levelling or terracing and 1% (1.4 hectares or 3.4 acres) require dyking.

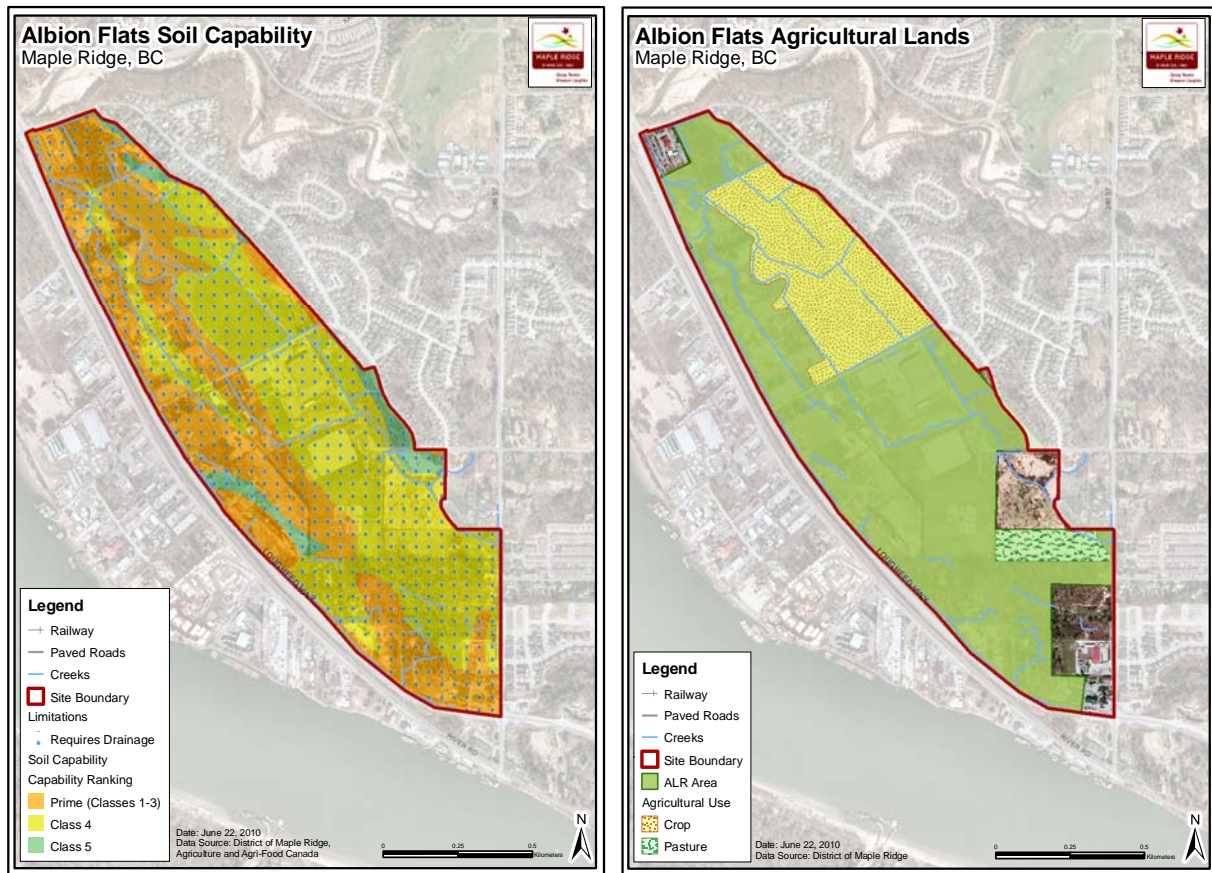


Figure 9 Soil Capability and agricultural lands

12. Regulatory Summary

Two key regulatory environments affect the environmental functioning of Albion Flats:

Agricultural Land Commission Act

The Agricultural Land Commission Act provides the legislative framework for the preservation of BC's agricultural land. The legislation provides for the establishment of the provincial Agricultural Land Commission and outlines its objectives, powers, processes, use of land within the ALR, and the relationships with local governments. The act takes precedence over most other provincial legislation and local government bylaws. The purposes of the Agricultural Land Commission are:

- 1) to preserve agricultural land;
- 2) to encourage farming on agricultural land in collaboration with other communities of interest; and
- 3) to encourage local governments, First Nations, the government and its agents to enable and accommodate farm use of agricultural land and uses compatible with agriculture in their plans, bylaws and policies.

Accordingly, the Agricultural Land Commission plays a very significant role in the establishment of land use policy and in the land use decision-making at the local government level.

Historical Streamside Protection Regulation (SPR) and current Riparian Areas Regulation (RAR)

The federal Fisheries Act provides legal protection for fish habitat, including streamside areas to protect the integrity of urban salmon streams. To protect its streamside areas, the District of Maple Ridge has established a Development Permit Area (DPA) 50 m from the top of bank of all of its streams. Within the DPA, a “watercourse protection area” is designated using guidelines based on the former provincial Streamside Protection Regulation (SPR), which was written prior to the current Riparian Areas Regulation (RAR)¹. To aid in understanding the legal requirements for riparian protection along watercourses in Albion Flats, tentative stream setbacks using the SPR protocol were applied to all mapped watercourses and wetlands based on known or inferred information on stream permanence and fish presence. These setbacks are based on limited information and should be treated as preliminary. They are meant to be a planning tool and should not be interpreted as legal boundaries. Also, as watercourses are currently mapped as lines, actual setbacks will be larger as SPR requires setbacks be designated from the top of bank (or top of ravine bank). Setbacks may also be adjusted with further detailed surveys or other site-specific information, or based on input from the District’s Environmental Review Committee.

¹ Municipalities in B.C. may use alternate guidelines to designate streamside protection areas if they meet or exceed the protection provided under the current Riparian Areas Regulation (RAR).



Figure 10 Streams and Streamside Protection Regulation Setbacks

13. Conclusions and Summary of Environmental Constraints

A summary of important environmental components is discussed below and is shown on Figure 11 (a full size version of the image is available in Appendix 3). In an attempt to synthesize the various areas of inquiry, a baseline of environmental constraints has been created from five key features:

1. Important Ecological Features (Section 4, Section 5 & Section 8)
2. Streamside and Wetland Setbacks (Section 6 & Section 12)
3. Floodplain (Section 9)
4. Surficial Geology (Section 9)
5. Steep Slopes (Section 9)

While each of the above key features have been considered as singular entities in their respective sections, an overlaid analysis was considered useful in order to summarize the diversity and overlap of environmental constraints across different sites within Albion Flats. The analysis used is a simple binary addition of the five layers (that is to say important ecological features + stream and wetland setbacks + flood plain + surficial geology + steep slopes). In future planning exercises, a matrix or weighted addition can be considered, but for the purposes of this document, the more simple approach was taken. Accordingly, the overlay consists of areas of intersection between the five key features where five intersections is valued at 5, four intersections at 4 and so on, until areas 0 intersections which is equated to no overlapping constraints.

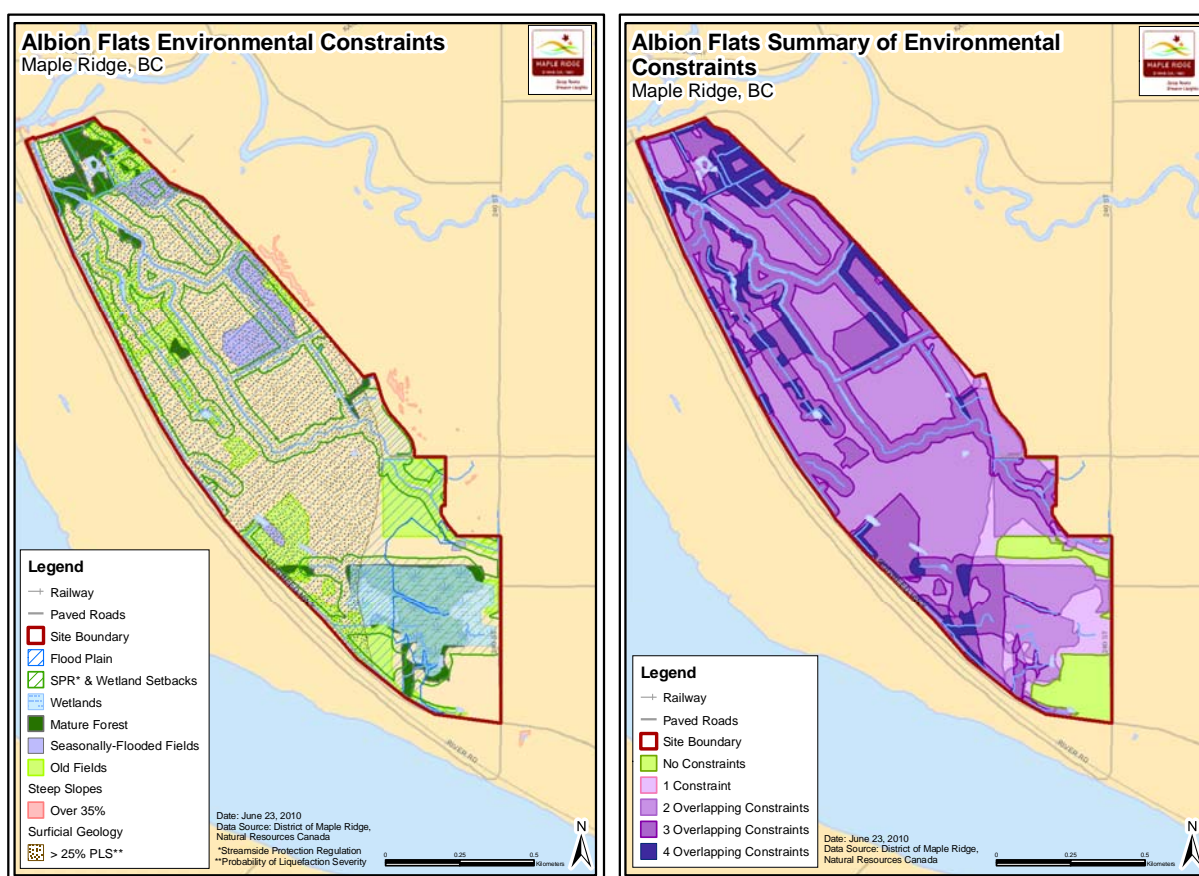


Figure 11 Draft Summary of Environmental Constraints

The above Draft Summary of Environmental Constraints map (Figure 11) that can be used to visually assess which areas of Albion Flats should be considered as environmentally sensitive or require further studies in advance of future development. Table 4 - Summary of Constraints summarizes the overlapping constraints. In total 11% of the site has no environmental or one environmental constraints, 79% of the site has two or three constraints and 9% of the site has four constraints².

Table 4 - Summary of Constraints

Overlapping Constraints	Area (hectares)	Area (acres)	Percentage of Area
No Environmental Constraints	6.6	16.3	5%
1 Constraint	7.5	18.5	6%
2 Overlapping Constraints	54.3	134.2	43%
3 Overlapping Constraints	45.8	113.1	36%
4 Overlapping Constraints	11.7	28.8	9%
Total	125.8	310.9	100%

² It is important to note that 0% of the site has five constraints as it is physically impossible to have steep slopes in the floodplain, therefore the maximum category is four constraints.

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15. Appendix 1 - Photos

#



a



b



c



d



e



f

Appendix 1a. Representative photos of Albion Flats habitat types: a) Blue-listed Black Cottonwood – Red Alder/ Salmonberry forested swamp northwest of Albion Elementary School at south end of Albion Flats; b) potential blue-listed Black Cottonwood – Sitka Willow shrub-swamp along 105 Ave, northeast of the Albion Sports Complex parking lot; c) riparian cottonwood forest along Spencer Creek, downstream of confluence with Mainstone Creek; d) stand of mature bigleaf maple trees near corner of 104 Ave and 240 St; e) deciduous shrub vegetation in Rieboldt Park; and, f) hardhack shrubs along wet ditch. All photos by Patrick Lilley.



a



b



c



d



e



f

Appendix 1b. Representative photos of Albion Flats habitat types (continued): a) active agricultural field in Albion Flats; b) unmaintained rough grass along ditch on north side of 105 Ave; c) well-developed old field with large scattered trees north of 105 Ave; d) seasonally-flooded field north of 105 Ave; e) example of mowed and unmowed grass in Belle Morse Park; and, f) mowed grass in Maple Ridge Agricultural Fairgrounds. All photos by Patrick Lilley.



a



b



c



d



e



f

Appendix 1c. Representative photos of watercourses and wetlands in Albion Flats: a) Spencer Creek downstream of pump station at confluence with Kanaka Creek; b) channelized portion of Spencer Creek upstream of pump station; c) and d) naturally meandering portion of Spencer Creek through north end of Albion Flats; e) channelized portion of through the Maple Ridge Agricultural Fairgrounds, upstream of 105 Ave; and f) Spencer Creek, east of Stratford Pl, downstream of 104 Ave. All photos by Patrick Lilley.



a



b



c



d



e



f

Appendix 1d. Representative photos of watercourses and wetlands in Albion Flats (continued): a) Reed canarygrass-infested Mainstone Creek, downstream of 105 Ave; b) agricultural ditch through fields north of 105 Ave; c) overgrown perimeter ditch (now part of Mainstone Creek) along Loughheed Highway; d) forested swamp area in Rieboldt Park; e) inline pond on Spencer Creek within Albion Sports Complex; and f) manmade pond with cattails in Albion Sports Complex. All photos by Patrick Lilley.

16. Appendix 2 - FISS Report for Spencer Creek

[Back](#) [Main Queries Page](#)

FISS Report

Gazetted Name : SPENCER CREEK
Watershed Code : 100-037400-06300
Waterbody Identifier : 00000LFRA
Region : 2
Alias :
Type : **S**
Report created on : [Wed Jun 23 12:12:37 PDT 2010](#)

Water Quality Stations

No records found
Water Survey Stations

No records found

Management Objectives

Habitat Type	Objective 1	Objective 2
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Inland River

Enhancement

Activity	Start Year	Finish Year	Species Name	Comments	Reference Number
1232 Planting	2000	2000		HYDROSEEDING OF THE BANKS	HQ1778
120 Habitat Enhancement	1999	1999		COHO GRAVEL PLACED ON THE	HQ1778

(unspecified)				BOTTOM OF THE BOX CULVERT TO A MINIMUM DEPTH OF 0.3 METRES	
110 Water Quality and Quantity	2003	2004		Dissolved Oxygen, Water Temp, and pH were recorded in Feb, March, July, and Nov.for 2003 and 2004.	PUB4323
213 Fish Sampling	2003	2004	Redside Shiner, Cutthroat Trout, Threespine Stickleback, Coho Salmon	2003-2004 fish sampling results: Coho, Cutthroat trout, Threespine stickleback, Redside shiner, Peamouth Chub, Single Crayfish, Prickly Sculpin, Northern Pike minnow, Pumpkinseed, Large Mouth Bass, Sucker spp, Brassy Minnow.	PUB4323
1221 LOD Placement	2000	2001		2 wood structures were installed instream.	DFO268
1232 Planting	2000	2001		Native trees and shrubs were planted.	DFO268
210 Biophysical Surveys (unspecified)	1995				2PUB599
215 Biophysical Inventory/Assessment	2000	2001		Mapping and inventory of the creek was conducted.	DFO331

Harvests and Uses

No records found

Resource Use

No records found

Resource Values

No records found

Resource Sensitivities

No records found

Land Use

No records found

Fisheries Potentials and Constraints

Activity	Impact	Degree of Impact	Comments	Species Name	Reference Number
600 Flow Regime	Describing constraint for increasing fisheries production	Not Specified			2PUB599

Obstructions

Description	Height	Length	Comments	Species Name	Reference Number
Culvert	1.8	1.2	REPLACEMENT OF 3 300MM CORRUGATED STEEL PIPE CULVERT WITH BOX CULVERT		HQ1778
OTHER	0	0			2PUB599

Escapements

No records found

Fish Distributions

Species Name	Stock / Stock Type	Stock Char	Management Class	Activity	Comments	Refs And Dates
Brassy Minnow	/ NOT SPECIFIED	Not Specif	Not Specified	OBL Fish observed at this point or zone		(PUB4323, 01-JAN-2004)
Coho Salmon	/ NOT SPECIFIED	Anadromous	Not Specified	OBL Fish observed at this point or zone		(PUB4323, 01-JAN-2004)
Cutthroat Trout	/ NOT SPECIFIED	Not Specif	Not Specified	OBL Fish observed at this point or zone	2 SALVAGED	(HQ1778, 01-SEP-2000)
Cutthroat Trout	/ NOT SPECIFIED	Not Specif	Not Specified	OBL Fish observed at this point or zone	4 SALVAGED AT THIS LOCATION	(HQ1778, 01-SEP-2000)
Cutthroat Trout	/ NOT SPECIFIED	Not Specif	Not Specified	OBL Fish observed at this point or zone		(PUB4323, 01-JAN-2004)
Largemouth Bass	/ NOT SPECIFIED	Not Specif	Not Specified	OBL Fish observed at this point or zone		(PUB4323, 01-JAN-2004)
Northern	/ NOT	Not Specif	Not	OBL	minnow	(PUB4323, 01-JAN-

Pike	SPECI F		Specified	Fish observe d at this point or zone		2004)
Peamouth Chub	/ NOT SPECI F	Not Specif	Not Specified	OBL Fish observe d at this point or zone	1 SALVAGE D AT THIS LOCATION	(HQ1778, 01-SEP-2000)
Peamouth Chub	/ NOT SPECI F	Not Specif	Not Specified	OBL Fish observe d at this point or zone		(PUB4323, 01-JAN- 2004)
Prickly Sculpin	/ NOT SPECI F	Not Specif	Not Specified	OBL Fish observe d at this point or zone		(PUB4323, 01-JAN- 2004)
Pumpkinsee d	/ NOT SPECI F	Not Specif	Not Specified	OBL Fish observe d at this point or zone		(PUB4323, 01-JAN- 2004)
Redside Shiner	/ NOT SPECI F	Not Specif	Not Specified	OBL Fish observe d at this point or zone	2 SALVAGE D AT THIS LOCATION	(HQ1778, 01-SEP-2000)
Redside Shiner	/ NOT SPECI F	Not Specif	Not Specified	OBL Fish observe d at this point or zone		(PUB4323, 01-JAN- 2004)
Sucker (General)	/ NOT SPECI F	Not Specif	Not Specified	OBL Fish observe d at this point or zone		(PUB4323, 01-JAN- 2004)
Threespine Stickleback	/ NOT SPECI	Not Specif	Not Specified	OBL Fish	2 SALVAGE	(HQ1778, 01-SEP-2000)

	F			observe D d at this point or zone		
Threespine Stickleback	/ NOT SPECI F	Not Specif	Not Specified	OBL Fish observe d at this point or zone	42 SALVAGE D AT THIS LOCATION	(HQ1778, 01-SEP-2000)
Threespine Stickleback	/ NOT SPECI F	Not Specif	Not Specified	OBL Fish observe d at this point or zone		(2PUB599, 01-APR- 1995)
Threespine Stickleback	/ NOT SPECI F	Not Specif	Not Specified	OBL Fish observe d at this point or zone		(PUB4323, 01-JAN- 2004)

Species and Life Phase History

No records found

Fiss References

Search EcoCat for keywords: [SPENCER CREEK](#)

Reference
Number : 2PUB599

Title : **ALBION MASTER DRAINAGE PLAN DRAFT REPORT**

Description : MAINSTONE CR. AND TRIBS/SPENCER CR. AND TRIBS/MAGGY CR. AND TRIBS/SIGEL CR. AND TRIBS/DUNLOP CR. AND TRIBS/THORNVALE CR. AND TRIBS/KANAKA CR. AND FISH (GENERAL).

Location : MELP REGIONAL OFFICE, SURREY.

Reference
code : Company (eg. Alcan)

Year : 1995

Author : FUNG R

Reference Number :	2PUB599
Title :	ALBION MASTER DRAINAGE PLAN DRAFT REPORT
Description :	MAINSTONE CR. AND TRIBS/SPENCER CR. AND TRIBS/MAGGY CR. AND TRIBS/SIGEL CR. AND TRIBS/DUNLOP CR. AND TRIBS/THORNVALE CR. AND TRIBS/KANAKA CR. AND FISH (GENERAL).
Location :	MELP REGIONAL OFFICE, SURREY.
Reference code :	Company (eg. Alcan)
Year :	1995
Author :	STRILCHUK S.S

Reference Number : DFO268

Title : **ALOUETTE WATERSHED STEWARDSHIP**
Description : HRSEP 2000/2001 Final Report, 26 pp.
Location : DFO, Vancouver
Reference code : Community Group Report
Year : 2001
Author : ALOUETTE RIVER MANAGEMENT SOCIETY

Reference Number :	HQ1778
Title :	ENVIRONMENTAL MONITORING REPORT: HEADWALL REPLACEMENT AT 104 AVENUE AND CULVERT REPLACEMENT UNDER SLATFORD PLACE, MAPLE RIDGE, B.C.
Description :	6 PAGE REPORT + APPENDICIES
Location :	MINISTRY OF FISHERY
Reference code :	Consultant Report
Year :	2000
Author :	ECL ENVIROWEST CONSULTANTS LIMITED

Reference Number : DFO331

Title : **KANAKA WATERSHED STEWARDSHIP**
Description : HRSEP 2000/2001 Final Report, 10 pp. plus maps
Location : DFO, Vancouver
Reference code : Community Group Report
Year : 2001
Author : KANAKA EDUCATION & ENVIRON. PARTNERSHIP SOCIETY

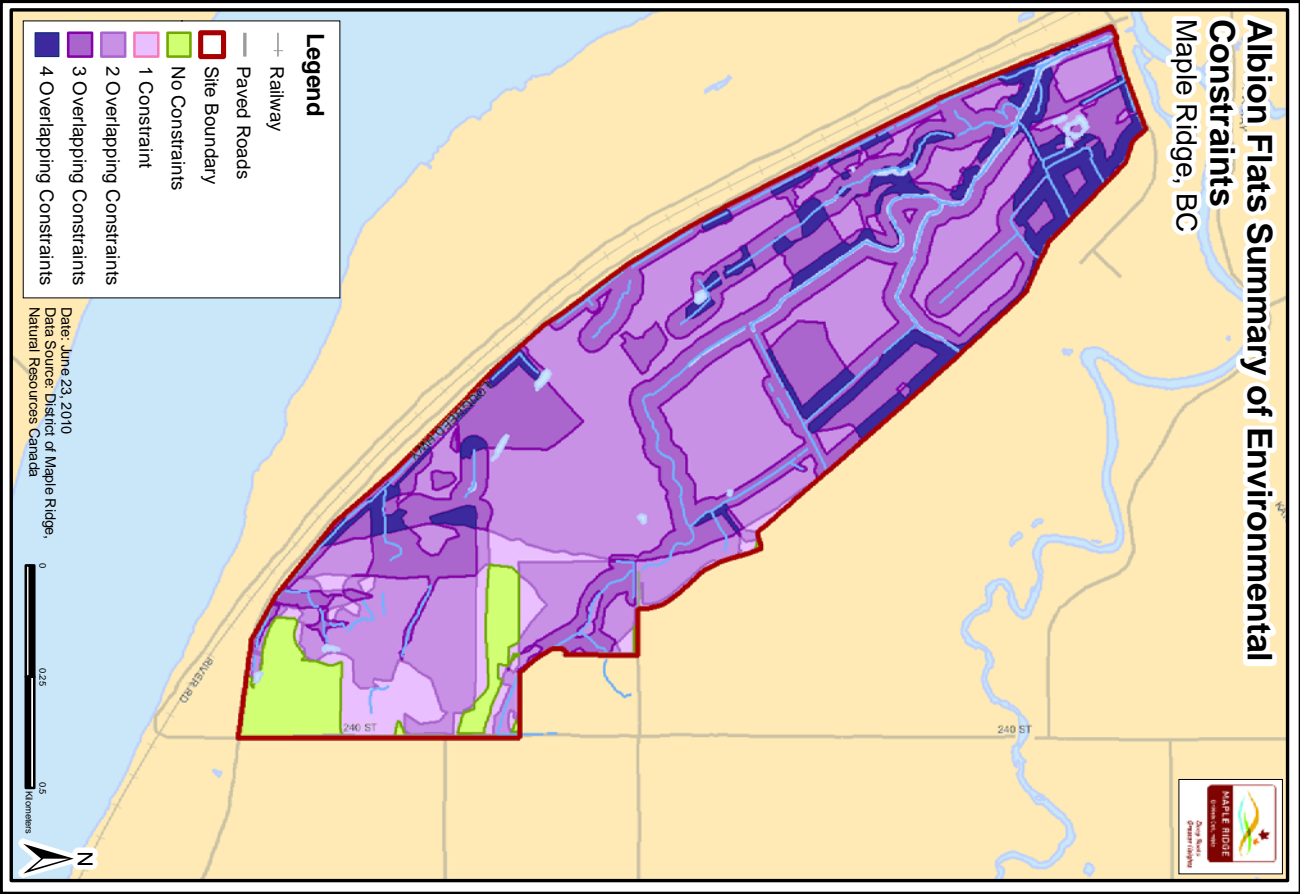
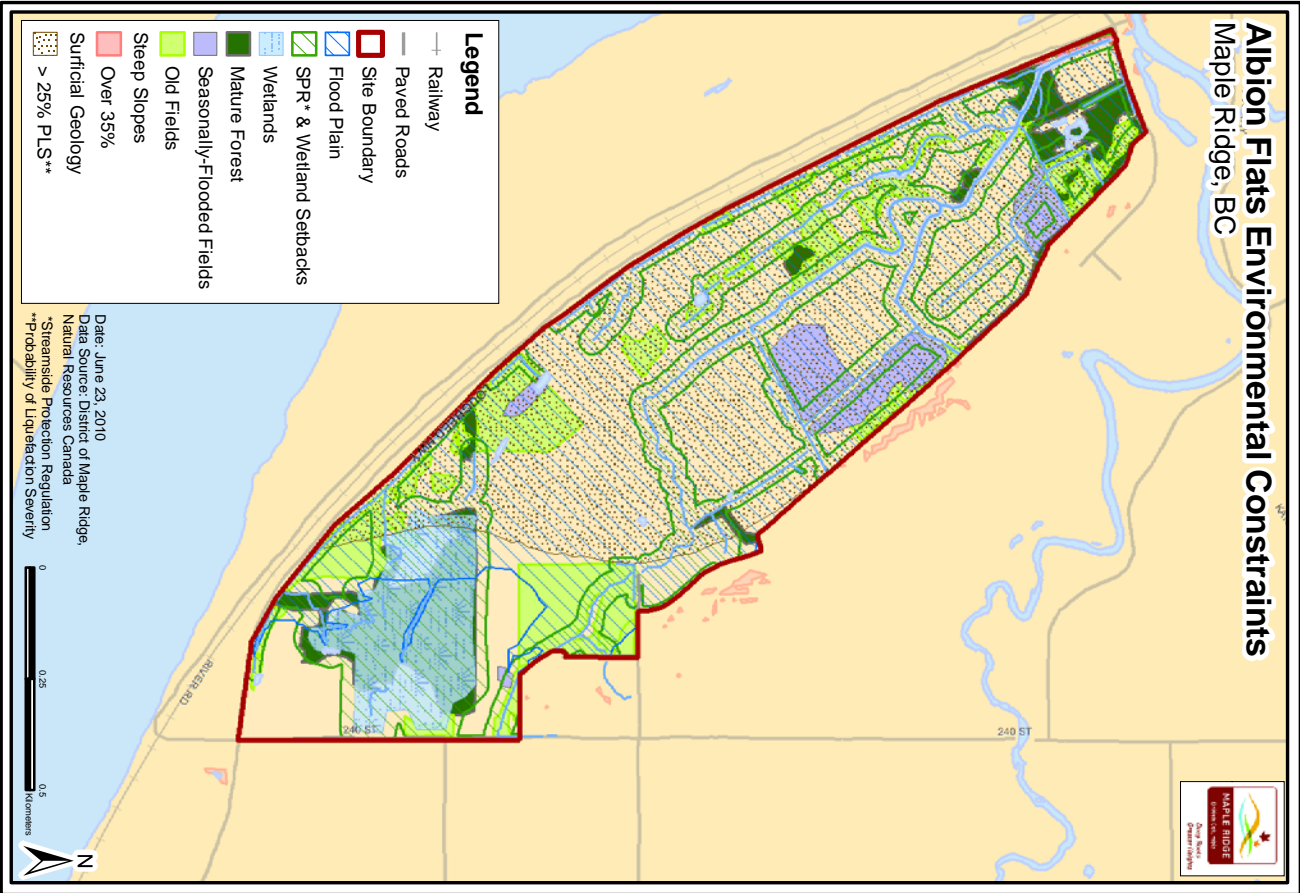
Reference	PUB4323
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Number :	
Title :	Spencer Creek Channel Cleaning Annual Post Construction Monitoring Report, Year 2 and 3
Description :	
Location :	Lower Mainland MOE office
Reference code :	Consultant Report
Year :	2004
Author :	ENVIROWEST

6 references were found.

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17. Appendix 3 - Full-Sized Summary Map



18. Appendix 4 - Watercourses

