Copper Fox Metals Inc.

Schaft Creek Project: Vegetation and Ecosystem Mapping Baseline 2008

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SCHAFT CREEK PROJECT:

Vegetation and Ecosystem Mapping Baseline 2008

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Prepared for:

Copper Fox Metals Inc.

Prepared by:

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Executive Summary

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This report presents the Ecosystem and Vegetation Baseline Study undertaken by RTEC Tahltan Environmental Consultants (RTEC), on behalf of Copper Fox Metals Inc. (Copper Fox) for the Schaft Creek Project. Copper Fox is a Canadian mineral exploration and development company focused on developing the Schaft Creek polymetallic (copper-gold-silver-molybdenum) deposit located in north-western British Columbia, approximately 60 km south of the village of Telegraph Creek.

Ecosystems and vegetation for the Schaft Creek Project were characterized at the regional and local scales using the Biogeoclimatic Ecosystem Classification (BEC) system and two mapping methodologies. The regional study area covers 312,548 ha and was mapped using Predictive Ecosystem Mapping (PEM). The local study area (17,018 ha) was divided into the proposed mine site area (11,353 ha) a 2-km wide road corridor (5,665 ha) along the proposed road. The proposed mine site area was mapped using Terrestrial Ecosystem Mapping (TEM), while the road corridor was mapped using PEM.

Eleven Biogeoclimatic Ecosystem Classification (BEC) units are present within the regional study area. The Alpine Tundra undifferentiated (ATun) subzone covers the largest extent of the regional study area and the Engelmann Spruce Subalpine Fir moist cold (ESSFmc) subzone covers the largest extent of the local study area; for both the proposed mine site and proposed road corridor. The regional study area is characterized predominantly by sparse / barren ecosystems, while the local study area is predominantly mesic forests. Young and mature forests are the dominant structural stages in the local study area.

Six ecosystems listed by the BC Conservation Data Centre (BC CDC) were identified in the regional study area. Approximately 1,573 ha of one blue-listed (special concern) ecosystem ranked provincially as S3 (vulnerable due to restricted range, relatively few populations, recent and widespread declines, or other factors) was predicted to occur in the regional study area by the PEM. Five BC CDC-listed blue listed wetland ecosystems were identified in the field.

Sensitive ecosystems refer to riparian, wetland, alpine and plateau ecosystems. Riparian areas account for 50,186 ha within the regional study area; 2,775 ha of the proposed mine site and 1,338 ha of the proposed road corridor. Wetland ecosystems occupy 8,451 ha of the regional study area and 948 ha of the local study area, the majority of which was mapped within the proposed mine site (601 ha). Alpine ecosystems cover 74,444 ha of the regional study area, while plateau areas cover 2,793 ha. In the local study area, alpine ecosystems occupy 1,097 ha and 30 ha of the proposed mine site and road corridor, respectively. No plateaus were identified within the local study area.

No plant species of conservation concern listed by the BC CDC or the Committee on the Status of Endangered Wildlife Canada (COSEWIC) were identified within either study area. One "nuisance weed," common horsetail (*Equisetum arvense*), was identified during field surveys. This species is not regulated by the *BC Weed Control Act* and is not considered a significant concern in any area of the province.

Plant tissue samples were collected from the study area in 2007 and 2008 to establish the baseline metal concentrations in sampled vegetation. A total of 30 plant tissue samples from five different species were collected for metals analysis. Future plant tissue metal concentrations may be compared to baseline values to assess any changes. The analysis describes the metal levels that naturally occur in vegetation growing within the study area.

Acknowledgements

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Glossary, Acronyms and Abbreviations

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Alpine	High-elevation land above the tree-line. Alpine vegetation on zonal sites is dominated by low shrubs, herbs, bryophytes and lichens. Although treeless by definition, patches of stunted (krummholz) trees may occur. Much of the alpine is covered by rock and ice rather than vegetation.
Attribute	A characteristic required for describing or specifying some entity (Dunster and Dunster 1996), which is associated with an ecosystem map unit.
BC CDC	British Columbia Conservation Data Centre - collects and disseminates information on plants, animals and ecosystems (ecological communities) at risk at the provincial level, and is tied to NatureServe, an international, non-profit organization of cooperating Conservation Data Centres and Natural Heritage Programs all using the same methodology to gather and exchange information on the threatened elements of biodiversity.
BEC	Biogeoclimatic Ecosystem Classification – a standard, hierarchical classification system for mapping terrestrial ecosystems in British Columbia.
Biogeoclimatic subzone	A level of the biogeoclimatic classification system that defines the climate of an area, as characterized by the plant association occurring on zonal sites (BC Ministry of Forests and Range 2007).
Biogeoclimatic units	A general term referring to any level of Biogeoclimatic zones, subzones, variants or phases. Biogeoclimatic units are inferred from a system of ecological classification based on a floristic hierarchy of plant associations. The recognized units are a synthesis of climate, vegetation, and soil data (Pojar, Klinka, and Meidinger 1987).
Biogeoclimatic variant	A further subdivision of biogeoclimatic subzone reflecting further differences in regional climate. Variants are described as warmer, colder, drier, wetter, or snowier than the 'typical' subzone (e.g., Engelmann Spruce – Subalpine Fir Zone - Very Cold Subzone (ESSFwv).
Biogeoclimatic zone	Geographical areas having similar patterns of energy flow, vegetation and soils as a result of a broadly homogeneous macroclimate. Biogeoclimatic zones are comprised of biogeoclimatic subzones with similar zonal climax ecosystems (BC Ministry of Forests and Range 2007).
Blue-list	A list of ecological communities, and indigenous species and subspecies of special concern in British Columbia.
Byroid	Bryophyte- and lichen-dominated communities (greater than 1/2 of total vegetation cover (B.C. MELP and B.C. MoFR. 1998).
Climax ecosystem	The final and relatively stable stage in plant succession for a given environment where the species present perpetuate themselves in the absence of disturbance (BC Ministry of Forests 1985).
COSEWIC	Committee on the Status of Endangered Wildlife in Canada - A federal committee of experts that assesses and designates the level of threat to wildlife and vegetation species in Canada.
Decile	The proportion (in tenths) of a polygon covered by a particular ecosystem unit.

DEM	Digital Elevation Model - a digital array of elevations for a number of ground positions at regularly spaced intervals.
Ecosystem (terrestrial)	A volume of earth-space that is composed of non-living parts (climate, geologic materials, groundwater, and soils) and living or biotic parts, which are all constantly in a state of motion, transformation, and development. No size or scale is inferred. For the purposes of terrestrial ecosystem mapping, an ecosystem is characterized by a 'plant community' (a volume of relatively uniform vegetation) and the 'soil polypedon' (a volume of relatively uniform soil) upon which the plant community occurs (Pojar, Klinka, and Meidinger 1987).
Forb	Non-grassy herbaceous plant.
Herb	A plant, either annual, biennial or perennial, with stems that die back to the ground at the end of the growing season. Herbaceous species include forbs, graminoids (sedge, grasses, and rushes), ferns, and fern allies (e.g., horsetails).
Invasive Plant	Any alien plant species that has the potential to pose undesirable or detrimental impacts on humans, animals or ecosystems.
Krummholz	Stunted trees near the treeline.
Land Cover	The physical and biological cover over the surface of land, including water, vegetation, bare soil, and/or artificial structures (Ellis 2007).
Local Study Area	Local Study Area - vegetation and ecosystems are discussed for this area that is 17,018 ha in size.
Mesic	Water removed somewhat slowly in relation to supply; soil may remain moist for a significant, but sometimes short period of the year. Available soil moisture reflects climatic inputs (BC Ministry of Environment Lands and Parks and BC Ministry of Forests Research Branch 1998).
Model	An idealized representation of reality developed to describe, analyze or understand the behaviour of some aspect of it a mathematical representation of the relationship under study.
Moisture regime	Indicates, on a relative scale, the available moisture for plant growth in terms of the soil's ability to hold, lose, or receive water. Described as moisture classes from Very Xeric (0) to Hydric (8) (BC Ministry of Environment Lands and Parks and BC Ministry of Forests Research Branch 1998).
Nutrient regime	Indicates the available nutrient supply for plant growth on a site, relative to the supply on all surrounding sites. Nutrient regime is based on a number of environmental and biotic factors, and is described as classes from very poor (A) to very rich (E) and saline (F) (BC Ministry of Environment Lands and Parks and BC Ministry of Forests Research Branch 1998).
Parkland	Subalpine area characterized by forest clumps interspersed with open subalpine meadows and shrub thickets. Vegetation cover may vary in the proportion of treed patches, meadows, and shrub thickets. The term parkland can also be used for lower elevation forest that are open due to restricted moisture availability, such as occurs in the Ponderosa Pine zone.
PEM	Predictive Ecosystem Mapping - a modelled approach to ecosystem mapping using various spatial datasets as input. Mapping follows provincial standards and a pre-defined classification system.

Pixel	"Picture element" - A single point in a digital image; the smallest discreet component of an image.
Polygon	Delineations that represent discrete areas on a map, bounded by a line. On an ecosystem map, polygons depicting ecosystem map units are nested within larger polygons containing the biogeoclimatic and ecoregion map units. Polygons depicting ecosystem units represent areas from less than one hectare to several hundred hectares, depending on the scale of mapping.
Red-list	List of ecological communities, and indigenous species and subspecies that are extirpated, endangered or threatened in British Columbia. Red listed species and sub-species have- or are candidates for- official Extirpated, Endangered or Threatened Status in B.C. Not all Red-listed taxa will necessarily become formally designated. Placing taxa on these lists flags them as being at risk and requiring investigation.
Regional Study Area	Regional Study Area - vegetation and ecosystems are discussed for this area that is 312,548 ha in size.
SARA	Species at Risk Act (2002) - A piece of Canadian federal legislation which is designed to meet one of Canada's key commitments under the International Convention on Biological Diversity. The goal of the Act is to protect endangered or threatened organisms and their habitats. It also manages species which are not yet threatened, but whose existence or habitat is in jeopardy.
Scale	The degree of resolution at which ecological processes, structure, and changes across space and time are observed and measured (Avers, Cleland, and McNab 1993). Common scales of terrestrial ecosystem mapping are 1:10,000 and 1:50,000.
Site series	Describes all land areas capable of producing the same late seral or climax plant community within a biogeoclimatic subzone or variant (Banner et al. 1993). Site series can usually be related to a specified range of soil moisture and nutrient regimes within a subzone or variant, but other factors, such as aspect or disturbance history may influence it as well. Site series form the basis of ecosystem units. Definition is taken directly from the TEM standards.
Structural Stage	Describes the structural characteristics, and often the age, of vegetated ecosystems (RIC 1998).
TEM	Terrestrial Ecosystem Mapping – delineation and attribution of ecosystem units based on air photo interpretation. Mapping follows provincial standards and a pre-defined classification system.
Topography	The configuration of a surface, including its relief and the position of its natural and man-made features.
TRIM	Terrain Resource Information Management – refers to the digital dataset of geographic base mapping completed for the province of BC in 1996 at a scale of 1:20,000. The dataset includes elevational data, stream networks, and so on.
Wetland	Sites dominated by hydrophytic vegetation where soils are water-saturated for a sufficient length of time such that excess water and resulting low soil oxygen levels are principal determinants of vegetation and soil development (Mackenzie and Moran 2004).

1. Introduction

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1.1 PROJECT SUMMARY

Copper Fox Metals Inc. (Copper Fox) is a Canadian mineral exploration and development company focused on developing the Schaft Creek deposit located in northwestern British Columbia, approximately 60 km south of the village of Telegraph Creek (Figure 1.1-1). The Schaft Creek deposit was discovered in 1957 and has since been investigated by prospecting, geological mapping, geophysical surveys as well as diamond and percussion drilling. The deposit is situated within the upper source regions of Schaft Creek, which drains northerly into Mess Creek and onwards into the Stikine River. The Stikine River is an international river that crosses the US/Canadian border near Wrangell, Alaska. The Schaft Creek deposit is a polymetallic (copper-gold-silver-molybdenum) deposit located in the Liard District of northwestern British Columbia (Latitude 57º 22′ 42″; Longitude 130º, 58′ 48.9″). The property is comprised of 40 mineral claims covering an area totalling approximately 20,932 ha within the Cassiar Iskut-Stikine Land and Resource Management Plan (Figure 1.1-2).

The Schaft Creek Project is located within the traditional territory of the Tahltan Nation. Copper Fox has been in discussions with the Tahltan Central Council (TCC) and the Tahltan Heritage Resources Environmental Assessment Team (THREAT) since initiating exploration activities in 2005. Copper Fox will continue to work together with the Tahltan Nation as work on the Schaft Creek Project continues.

The Schaft Creek Project entered the British Columbia Environmental Assessment (EA) process in August 2006. Although a formal federal decision has not yet been made, the Project will likely require federal approval as per the *Canadian Environmental Assessment Act*. Copper Fox has targeted the third quarter of 2010 for submission of their Schaft Creek EA Application.

The current mine plan would see ore mined from an open pit at a rate of 100,000 tonnes per day. The mine plan includes 812 million tonnes of Measured and Indicated Mineable resources providing for an estimated 23-year mine life. The Project is estimated to generate up to 2,100 jobs during the construction phase and approximately 700 permanent jobs during mine operations.

The deposit will be mined with large truck/shovel operations and typical drill and blast techniques. The ore will be crushed, milled, and filtered on site to produce separate copper and molybdenum concentrates. The Process Plant will include a typical comminution circuit (Semi-Autogenous Mill, Ball Mill, and Pebble Crusher) followed by a flotation circuit and a copper circuit with thickener, filtration and concentrate loadout and transportation. The Process Plant includes a designated molybdenum circuit with thickener, filtration, drying and bagging. A tailings thickener and water reclaim system will be used to recycle process water. The circuit will have a design capacity of 108,700 tonnes per day and a nominal capacity of 100,000 tonnes per day (36,000,000 tonnes per year). Approximately 293,000 tonnes of concentrates will be produced each year, which will be transported via truck to the port of Stewart, BC, for onward shipping to markets.

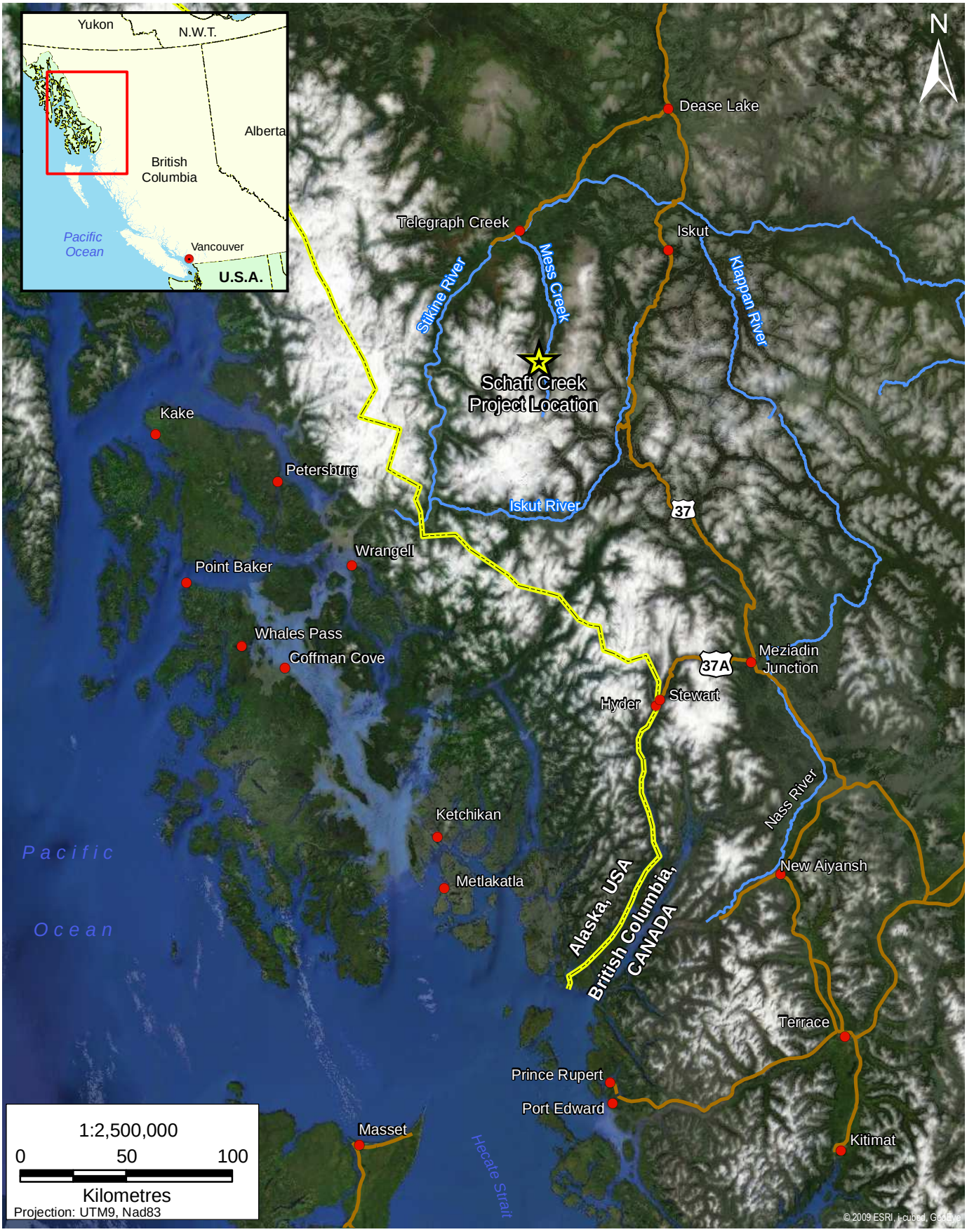
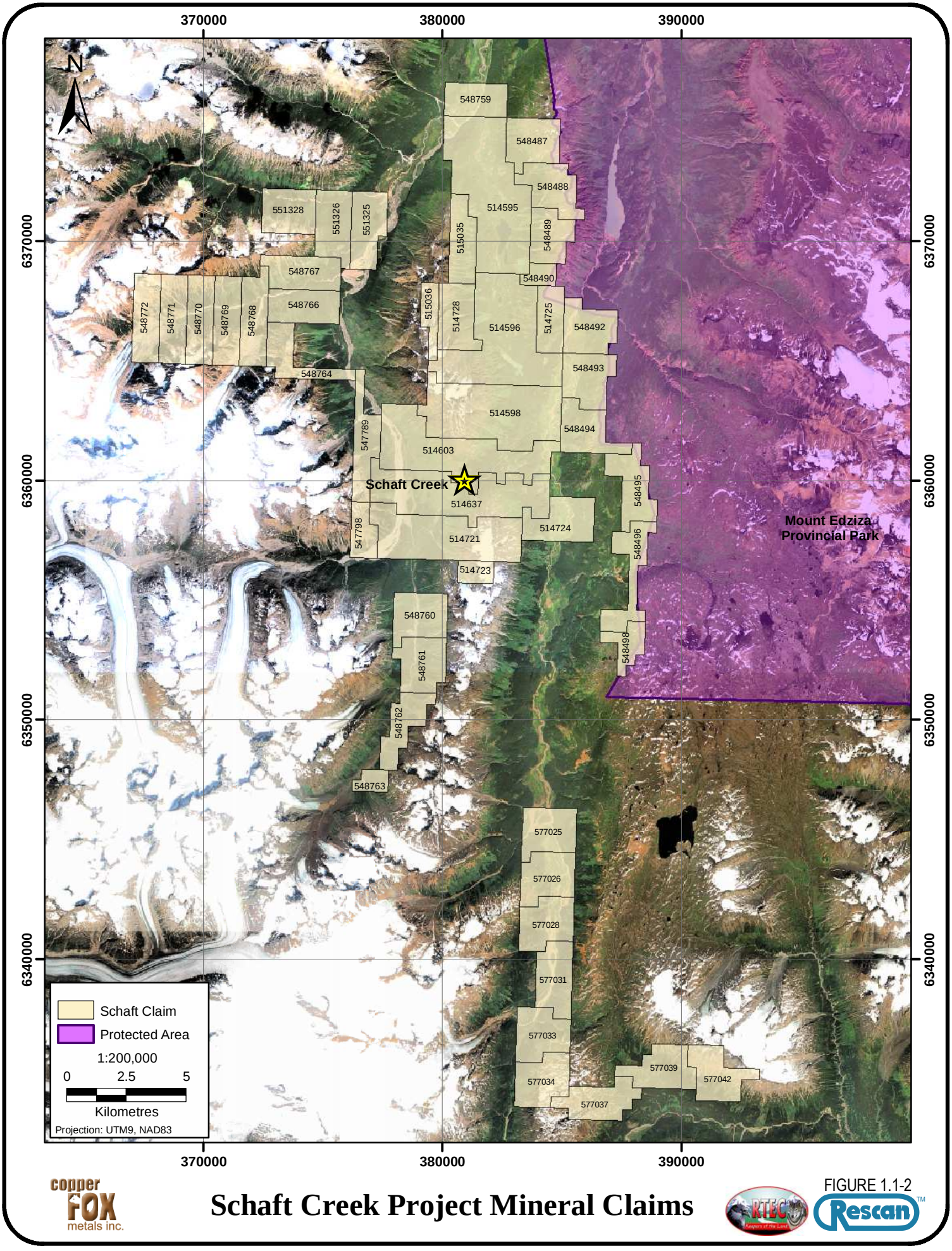


FIGURE 1.1-1

Location Map for Schaft Creek Project



Schaft Creek Project Mineral Claims

FIGURE 1.1-2

Copper Fox will construct an access road to the mine site (Schaft Creek Access Road; Schaft Road) to the 65.1 km point of the Galore Creek Access Road (Galore Road). The Schaft Road will cover a distance of 39.5 km from the Galore Road to the Schaft mine site (Figure 1.1-3). Both the Galore and Schaft roads will be gravel roads with a six-metre wide driving surface. Pullouts and radio controls will be used to manage two-way traffic on the road. The Schaft Road will be a private road used to service the Schaft Creek mine.

The Galore Road is a fully permitted multi-use road: British Columbia Ministry of Forests and Range Special Use Permit (S24637). Galore Creek Mining Corporation is constructing the Galore Road. Currently, Galore Creek Mining is only planning to construct the Galore Road to 40 km while they review the current Galore Creek Project for which the road was to service. Copper Fox will engage Galore Creek Mining with respect to the completion of the Galore Road, and if necessary, arrange to transfer the permit to Copper Fox as the Schaft Creek Project advances.

The Galore Road connects to Highway 37 near Bob Quinn Lake. The total road distance from the Schaft mine site to Highway 37 is 105 km. The majority of the 39.5 km Schaft Road is within the Mess Creek Watershed. In order to avoid geohazards along the Mess Creek valley, the Schaft Road will cross Mess Creek twice (Figure 1.1-3). Mess Creek is considered navigable per Transportation Canada criteria.

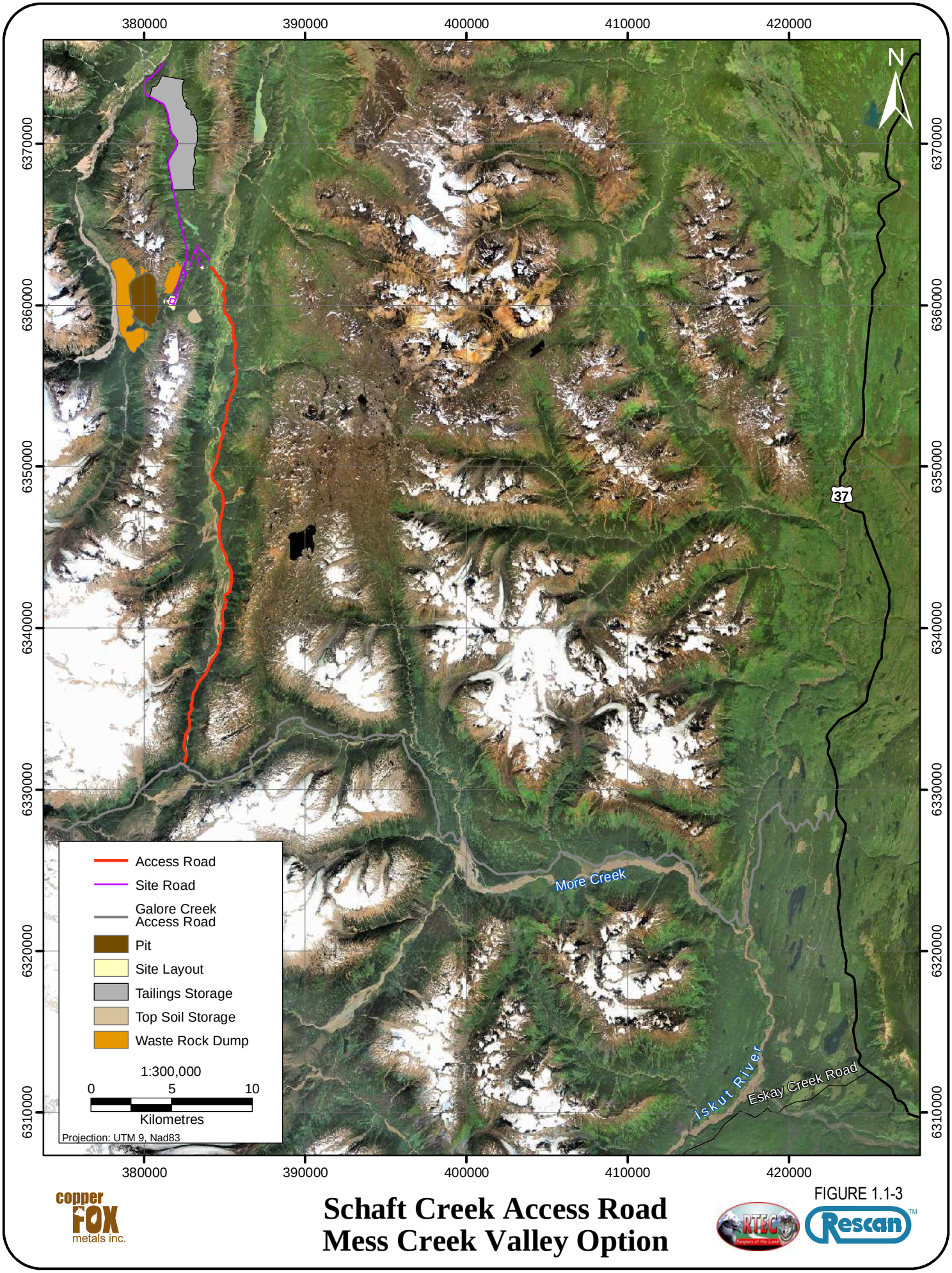
After crossing Mess Creek at the north end of the Schaft Road (32.5 km), the route rises up the side of Mount LaCasse crossing Shift Creek (10 m bridge) and Big B Creek (10 m bridge). The route terminates at Snipe Lake (39.5 km). Conventional 30-tonne trucks will be used to transport concentrate from the mine site to the Bob Quinn area along the Schaft and Galore roads. From Bob Quinn to Stewart, conventional B-train commercial truck haulage can then be used along Highway 37 and 37A. There will be 30 concentrate trucks along this route over a 24-hour period, seven days per week.

Electrical power to the mine site will be provided via a 138 kV transmission line, extending from Bob Quinn Lake to the Project along the proposed corridor for the Galore and Schaft roads. The proposed transmission line assumes that electrical power will be supplied from British Columba Transmission Corporation's (BCTC) proposed new 287 kV Northwest Transmission Line from a point near Bob Quinn Lake.

The Schaft Pit will encompass an area of 4.9 km^2 at the end of the mine life (Figure 1.1-4). The Pit will extend 330 m below the current elevation (520 masl). An ore stockpile and crusher will be located between the Pit and Schaft Creek. Crushed ore will be conveyed to the Plant site on the saddle just east of the Pit. Tailings from the Process Plant will be piped to the Skeeter Tailings Storage Facility (TSF) as slurry (55% solids).

Over the life of the mine, the Project will generate over 812 million tonnes of tailings, which will be managed in the Skeeter TSF. The TSF will not span the low relief watershed divide between Skeeter and Start watersheds. The Skeeter TSF will require three embankments to contain the tailings generated over the life of the mine (Figure 1.1-5). Based on average climatic conditions, the TSF will have a positive water balance. Discharge from the TSF will be to Skeeter Creek.

The Project will generate an estimated 1,547 million tonnes of waste rock. Waste rock dumps are proposed around the perimeter of the Schaft Pit, with the majority of the material being placed on the east side of Schaft Creek (Figure 1.1-4). The current plan assumes the waste rock will be non-acid generating and will not leach metals at or near neutral pH. The plan is subject to change as work progresses on the metal leaching and acid rock drainage program.



Schaft Creek Access Road
Mess Creek Valley Option

FIGURE 1.1-3

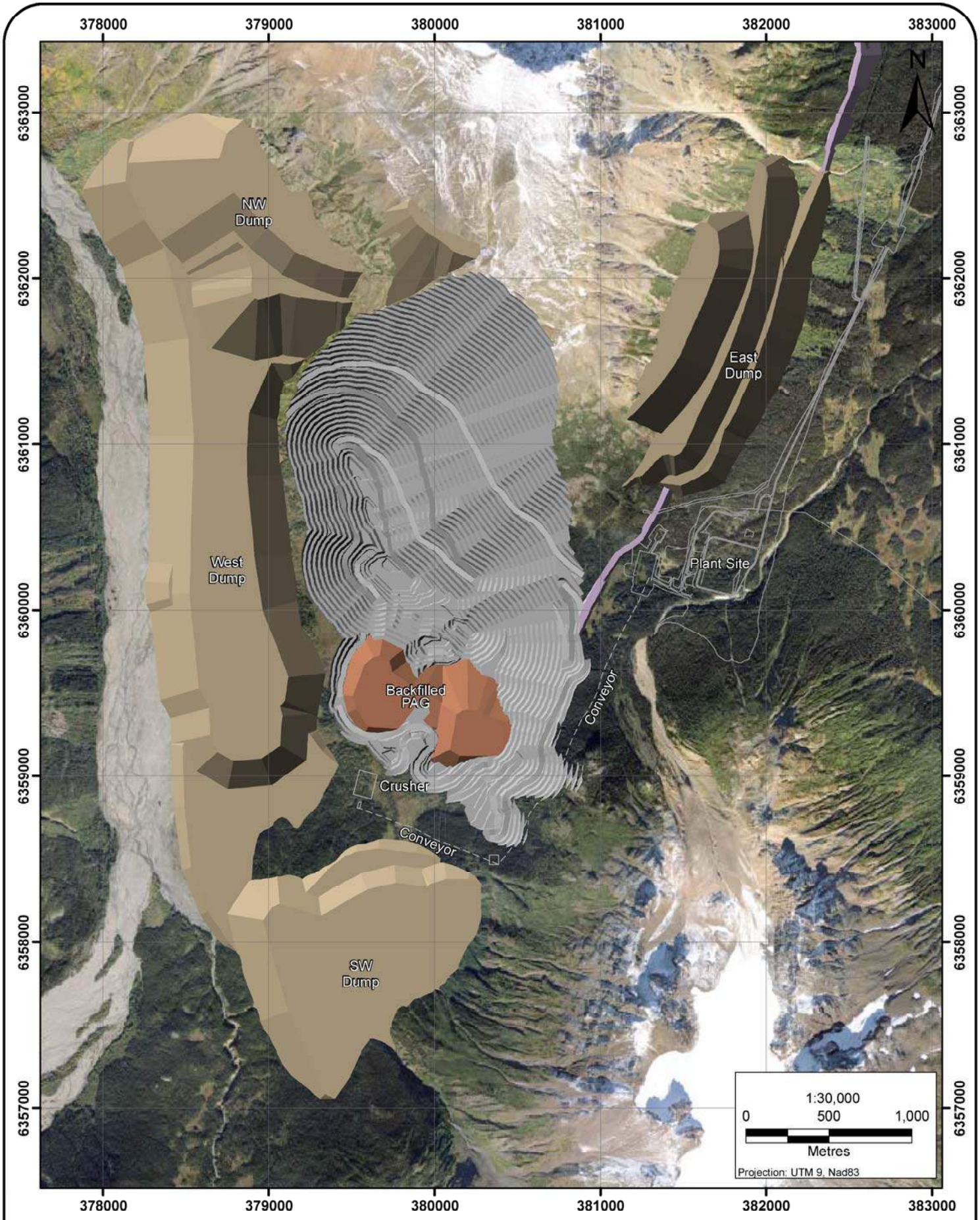
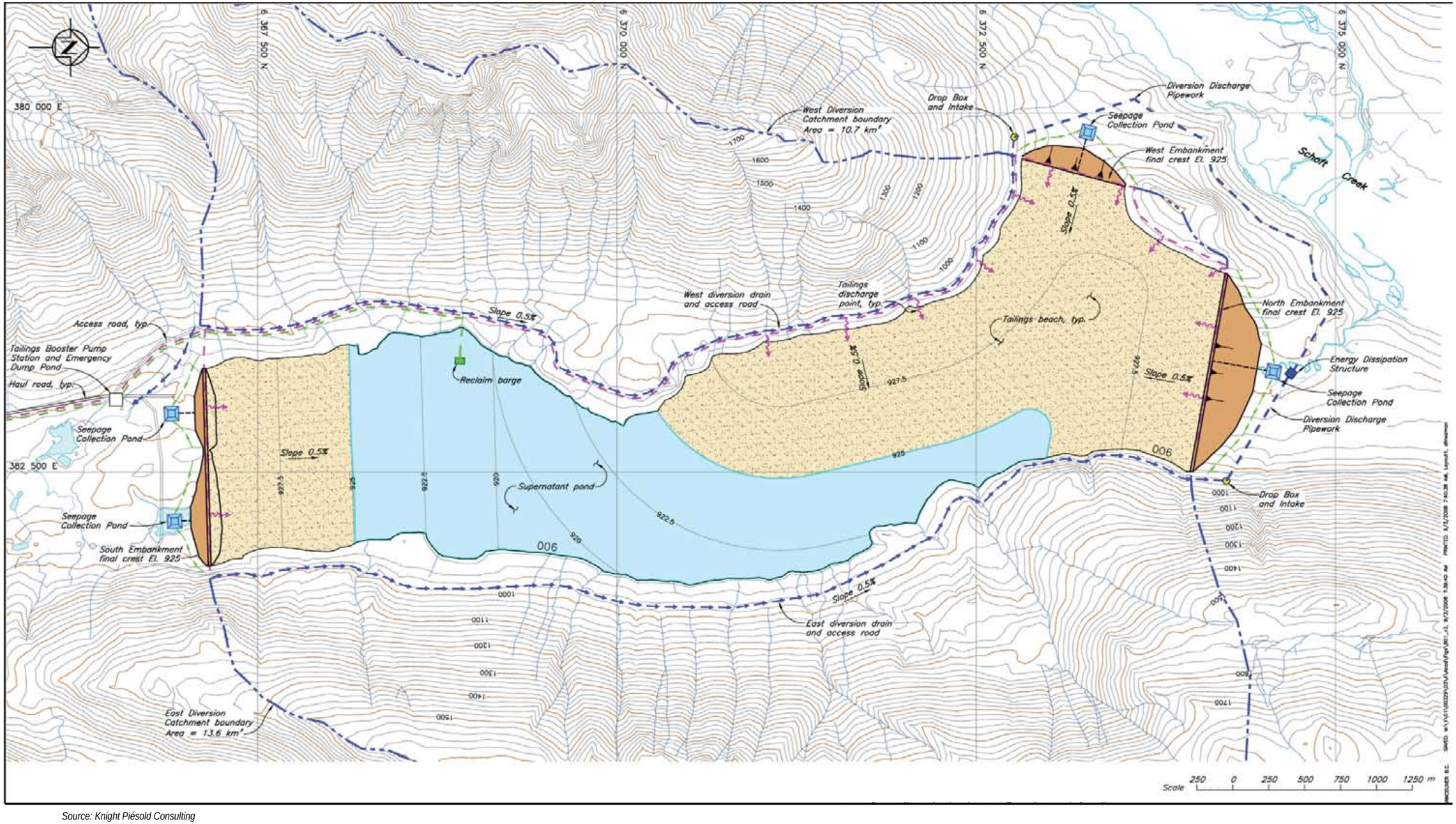


FIGURE 1.1-4

Schaft Creek Project Mine Site



Source: Knight Piésold Consulting

Note: This layout represents the tailings storage facility in the final years of operation prior to closure. Several years before the end of operations and closure, the tailings deposition pattern will be modified to relocate the supernatant pond towards the north of the facility, where a permanent spillway will be constructed in the west abutment of the North Embankment.

FIGURE 1.1-5

Schaft Creek Project - Skeeter Tailings Storage Facility

The Project will be a fly-in, fly-out operation, and a new airfield capable of handling a Boeing 737 will be constructed to the east of the Pit. The preliminary design includes a 1,600 m compacted gravel landing strip, terminal building, fuelling facilities, small maintenance facility and control and lighting systems.

A permanent camp will be constructed to support approximately 700 employees. Other facilities include a truck shop, warehouse, administration, maintenance laboratory, explosive storage, water treatment facilities, and potable water storage.

This report contains the results of two years of ecosystems and vegetation baseline studies. The report describes the current extent, location, and characteristics of terrestrial ecosystems and vegetation types in the Schaft Creek Project area (the Project) as identified through research, mapping and field inventories. Included is a discussion of plants and ecosystem (listed and sensitive) of interest as well as invasive plants. Information contained in this report also provides input to other studies, such as wildlife habitat assessments.

Mapping and field surveys were guided by provincial standards and methodologies that were developed for BC and are widely used by resource managers throughout the province. A copy of the standards and associated terminology can be obtained from the Resources Inventory Standards Committee (RISC) website (Integrated Land Management Bureau 2007).

The Project is located within the asserted traditional territory of the Tahltan First Nations and within the Cassiar Iskut-Stikine Land District and is subject to the provisions of the Cassiar Iskut-Stikine Land and Resource Management Plan.

2. Objectives

2. Objectives

The specific goals of this report are to provide a description of:

- ecosystems and plant species present in the Project study area through Terrestrial Ecosystem Mapping of the local study area and Predictive Ecosystem Mapping of the regional study area;
- the ecological communities and plants tracked by Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and the British Columbia Conservation Data Centre (BC CDC) and protected under the *Species At Risk Act* (SARA) that have the potential to occur in the Project study area;
- sensitive ecosystems identified by the Cassiar Iskut-Stikine Land and Resource Management Plan;
- invasive plants occurring in the Project area; and
- baseline metal concentrations in plant collections from the Project area.

3. Study Area

3. Study Area

The ecosystems and vegetation Project area is divided into two study areas; the regional study area and the local study area (Figure 3-1). The regional study area covers 312,548 ha and is mapped using Predictive Ecosystem Mapping (PEM). The regional study area was defined considering ecological boundaries (e.g., lowest and highest elevation zones in surrounding areas), watersheds, and likely zones of influence of the proposed Project on ecosystems and vegetation. The local study area covers 17, 0178 ha and includes the proposed mine site and associated infrastructure as well as the proposed access road to 1-km either side of the centre line. The proposed mine site area was mapped using Terrestrial Ecosystem Mapping (TEM) and the proposed road corridor was mapped with PEM.

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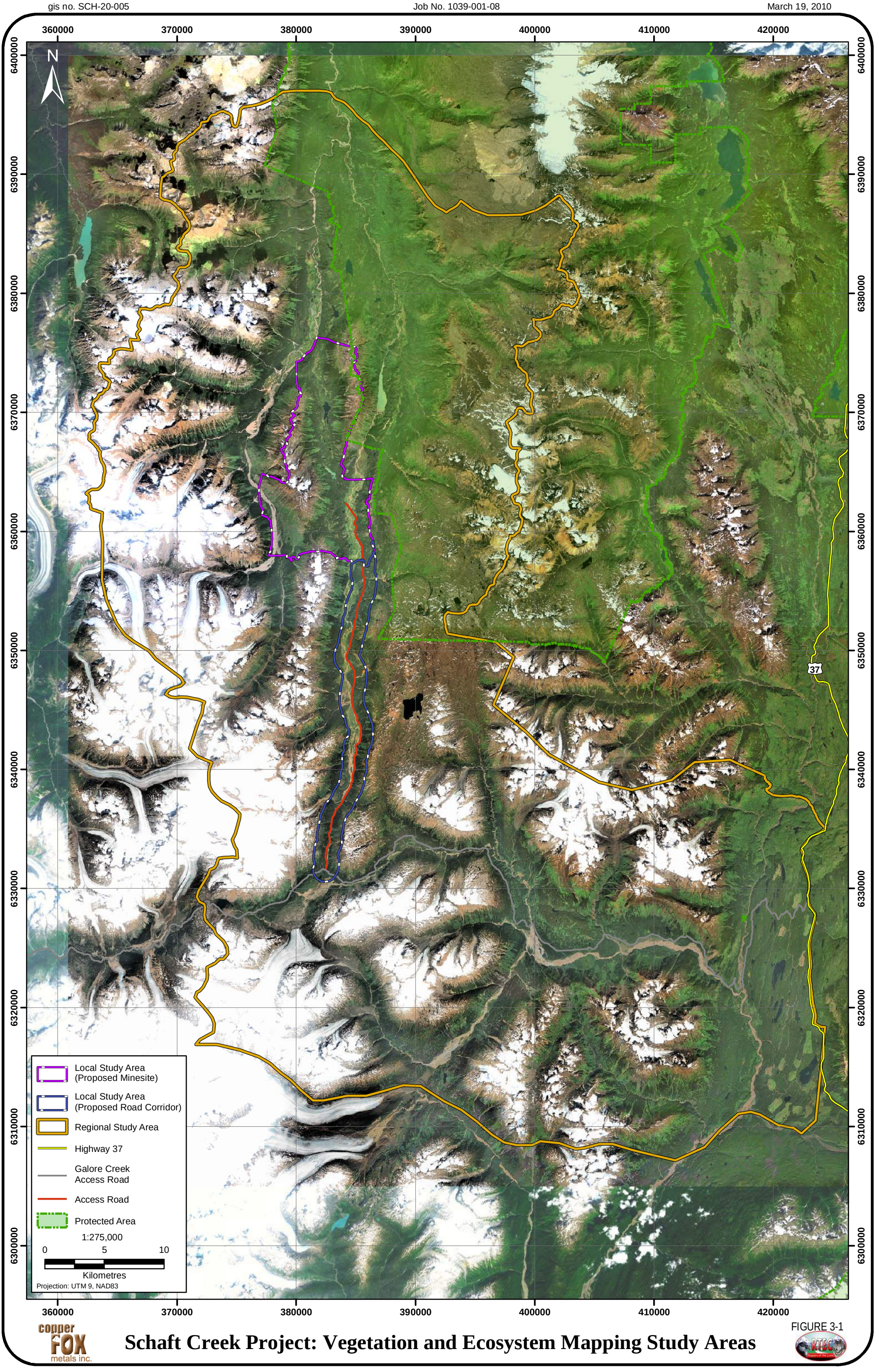


FIGURE 3-1

Schaft Creek Project: Vegetation and Ecosystem Mapping Study Areas

4. Methods

4. Methods

Vegetation and Ecosystem characterization of the study areas was conducted through TEM and PEM mapping using the Biogeoclimatic Ecosystem Classification (BEC) System. Ground-truthing was conducted to evaluate the results of the mapping, followed by edits to the mapping conducted during the winter of 2009. Field surveys for listed ecological communities (ecosystems) and plants identified by the British Columbia Conservation Data Centre and the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) as well as invasive plants were conducted in conjunction with general field surveys. Plant samples were also collected during field surveys for heavy metal analysis to establish baseline metals concentrations in the area.

4.1 BIOGEOCLIMATIC ECOSYSTEM CLASSIFICATION (BEC) SYSTEM

The Biogeoclimatic Ecosystem Classification (BEC) system was developed in the 1960s by Dr. Vladmir Krajina of the Department of Botany at the University of British Columbia and is the primary means of classifying ecosystems in British Columbia (Meidinger and Pojar 1991). The BEC system is a hierarchical classification method that uses a standardized terminology and methodology to organize and present information pertaining to the ecosystems of BC (RTEC 2007). This system is based on soils, climate and indicator plants as described by Banner et al. (1993) and Meidinger and Pojar (1991). The hierarchical classification of BEC is organised into zones, named after the dominant climax plant species. Zones are divided into subzones which reflect climate and are determined from relative precipitation and from continentality or temperature. Subzones are divided into site series, which is the smallest sub-division using this system, based on the site's potential to produce a similar stable plant community at late successional stages (Banner et al. 1993). A full description of the BEC methodology and associated terms can be found in Banner et al. (1993) and on the BC Ministry of Forests and Range (2007) internet site. A brief overview of the BEC system and its application to the Schaft Creek Project is provided in the following section.

Site series are identified by site conditions, soil conditions and vegetation communities and generally refer to forested ecosystems. Each site series is assigned a two-digit, numerical code. The site series that best reflects the subzone and is least influenced by local topography and/or soil properties is termed "zonal". The zonal site series of any subzone or variant is always coded as "01". This site series typically has intermediate soil moisture (mesic) and nutrient regimes, occurs on mid-slope positions, and has moderately deep to deep soils with unrestricted drainage (Banner et al. 1993). All other site series occurring within the same biogeoclimatic subzone or variant are measured in relation to the zonal site (e.g., wetter or drier than zonal). Unforested ecosystems remain largely undefined in the BEC system and are given a generic code of "00". All units have an associated two-letter map code as well. In this report, the site series are referred to by their two-digit numerical code, while the 00 units are referred to by their two-letter map codes.

This report characterizes both the forested site series and undefined/unforested ecosystems that occur throughout the Project area. For purposes of this report, all site series and undefined units have been referred to as "ecosystems". In an effort to simplify report summaries, ecosystems have been grouped according to their relative moisture status and vegetation type (e.g., mesic forest, wet shrub, wetland herb). These categories have been termed "general ecosystem types" and are described in Table 4.1-1. They are used to help summarize ecosystem information within the Project area.

Table 4.1-1. General Ecosystem Types and Descriptions

General Ecosystem Type	Description[1]
Avalanche Herb	Herb dominated ecosystems , as a result of avalanche activity
Avalanche Shrub	Alder dominated ecosystems, as a result of avalanche activity
Disturbed	Any area cleared of vegetation by human activities that does not fit into another category.
Drier Forest	Dry forest-dominated communities
Drier Shrub/Herb	Dry unforested (e.g., grassland/scrubland) communities
Floodplain	Forest community subject to periodic flooding.
Mesic Forest	Mesic to moist forest-dominated communities
Mesic Shrub/Herb	Mesic to moist shrub/herb-dominated communities[2]
Road	An area cleared and compacted for the purpose of transporting goods and services
Snow/Ice	An area dominated by snow or ice.
Sparse/Barren	Sparsely vegetated and/or unvegetated areas (e.g.,rock outcrops)
Treed	Stunted tree-dominated forested communities
Water	Any water body, river or stream
Wetland Shrub/Herb	Unforested wetland communities (e.g., shrub- or herb-dominated)
Wetter Forest	Very moist to wet forest-dominated communities
Wetter Shrub/Herb	Moist to wet shrub or herb dominated communities

[1] Moisture Regime is relative to the BEC unit within which the ecosystem occurs.
[2] The satellite imagery used as input for the PEM was not stereo-imagery (i.e., not 3D) and was of lower spatial resolution than the TEM aerial photographs, thus the structural differences between tall shrubs and young trees could not be discerned on the satellite imagery.

4.1.1 Vegetation Structural Stage

Structural stage describes the existing developmental stage of ecosystems present within an area. Structural stage is most commonly used to describe the structural characteristics of vegetated ecosystems and is particularly useful in the development of wildlife habitat interpretations (RIC 1998). Structural stages range from un-vegetated units to old-growth forest. A numeric code is provided for each stage, descriptions of which are provided in the Resources Inventory Committee (RIC) TEM standards (RIC 1998).

4.2 FIELD GUIDE AND REFERENCE DATA

The Field Guide to Site Identification and Interpretation for the Prince Rupert Forest Region (Banner et al. 1993) and the Field Guide to Site Identification for the North Central Portion of the Northern Interior Forest Region (DeLong 2004) was used to describe and classify reconnaissance field sites. This book was used in conjunction with biogeoclimatic maps, TRIM data and satellite imagery to classify ecosystems encountered during the 2007-2008 field surveys. Collectively, this information (along with terrain maps) provides the basis for the ecosystem mapping of the Schaft Creek Project area.

4.3 FIELD SURVEYS

Field studies were conducted during two trips in July and August in 2007, and another two trips in July and August of 2008. Field teams consisted of a plant ecologist, soil scientist, wildlife biologist and a First Nations assistant. The primary goal of the field surveys was to characterize the terrestrial ecosystems present within the local study area. Field surveys were selected to represent areas that would be most influenced by the project development and that represent the ecosystem types present within the proposed project area. All data were collected in accordance with the Field Manual for Describing Terrestrial Ecosystems (BC MoFR 1998).

General site and vegetation characteristics were assessed in plots measuring 20 m x 20 m. Site locations were selected based on representative slope positions, landform types, soil texture, soil drainage, species composition, stand structure and physiognomy according to the provincial standards (RIC 1998). At each location, the following attributes were recorded: geographic location (UTM coordinate), slope, aspect, elevation, relative slope position (e.g., crest, mid-slope, etc.), soil drainage, and ecosystem unit (e.g., BEC, ecosystem, and structural stage). Percent cover was estimated for four possible vegetation layers (tree, shrub, herb, bryoid) present in the plot. Dominant/indicator plant species were noted as was any invasive species and species and ecosystems of interest. Detailed field notes were also taken to document the area traversed in between formal survey locations. Visual surveys were also conducted that included an assessment of the ecosystem types present. The Ground Inspection Form (GIF) was used during field data collection and field data were later entered into the provincial data entry program VENUS (version 5.0). More detailed surficial material and soils information was also recorded and is discussed in the *Schaft Creek Soil Baseline* (RTEC 2008c).

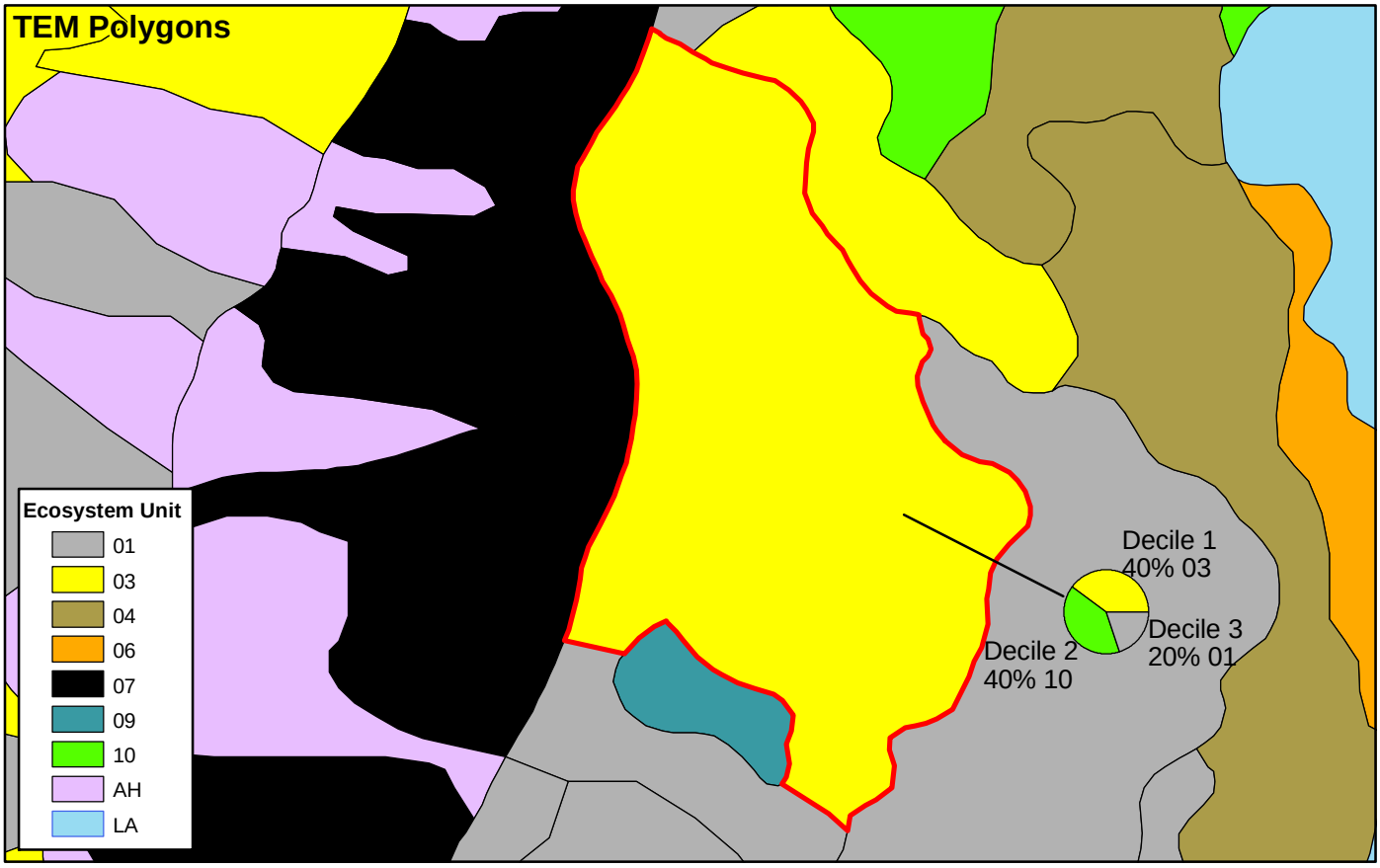
4.4 ECOSYSTEM MAPPING

Ecosystem mapping is an effective way of stratifying the landscape into meaningful ecological units according to a combination of attributes, such as climate, surficial material, soil, and vegetation (RIC 1998). Two ecosystem mapping approaches exist in BC: Predictive Ecosystem Mapping (PEM) and Terrestrial Ecosystem Mapping (TEM).

Predictive Ecosystem Mapping was developed in the early 1990's and is a model-based approach to ecosystem mapping. It makes use of available inventory and spatial data and the knowledge of ecological-landscape relationships to automate the generation of ecosystem maps using computers (RIC 1999). The end product can be either raster (pixel, or point) or polygon-based, depending on the available input data, processing methodology, and desired output. A map generated using PEM serves to provide information similar to maps produced using TEM.

The standard methodology for TEM is founded on years of ecological mapping experience that has been conducted throughout the province. The approach uses air photo interpretation to identify map units (polygons) and is a two stage process. The first stage involves the identification of permanent terrain units, which describe surficial material, while the second involves the identification of ecosystems, which are mapped within the terrain polygons. Ecosystems are comprised of site series (from BEC) and the characterization of vegetation age and structure (termed "structural stage"). Mapped polygons can represent a single ecosystem (pure polygon) or can contain up to three ecosystems (termed deciles) and represent a complex polygon.

The spatial representation of information contained within an ecosystem map depends on how the map was generated. With a raster-based PEM, ecosystems are assigned to each pixel, making spatial representation simple and straightforward; each pixel represents a pure ecosystem. However, with TEM or a polygon-based PEM, each polygon can represent either a single ecosystem (pure polygon) or can contain up to three separate ecosystems (complex polygon), which can be displayed differently depending on the desired output. A common way to display polygon-based ecosystem information is to show the dominant ecosystem. Figure 4.4-1 provides an example of how ecosystems are represented by a polygon-based and raster-based ecosystem map. Both PEM and TEM were used in the Schaft Creek Project and are described in more detail below.



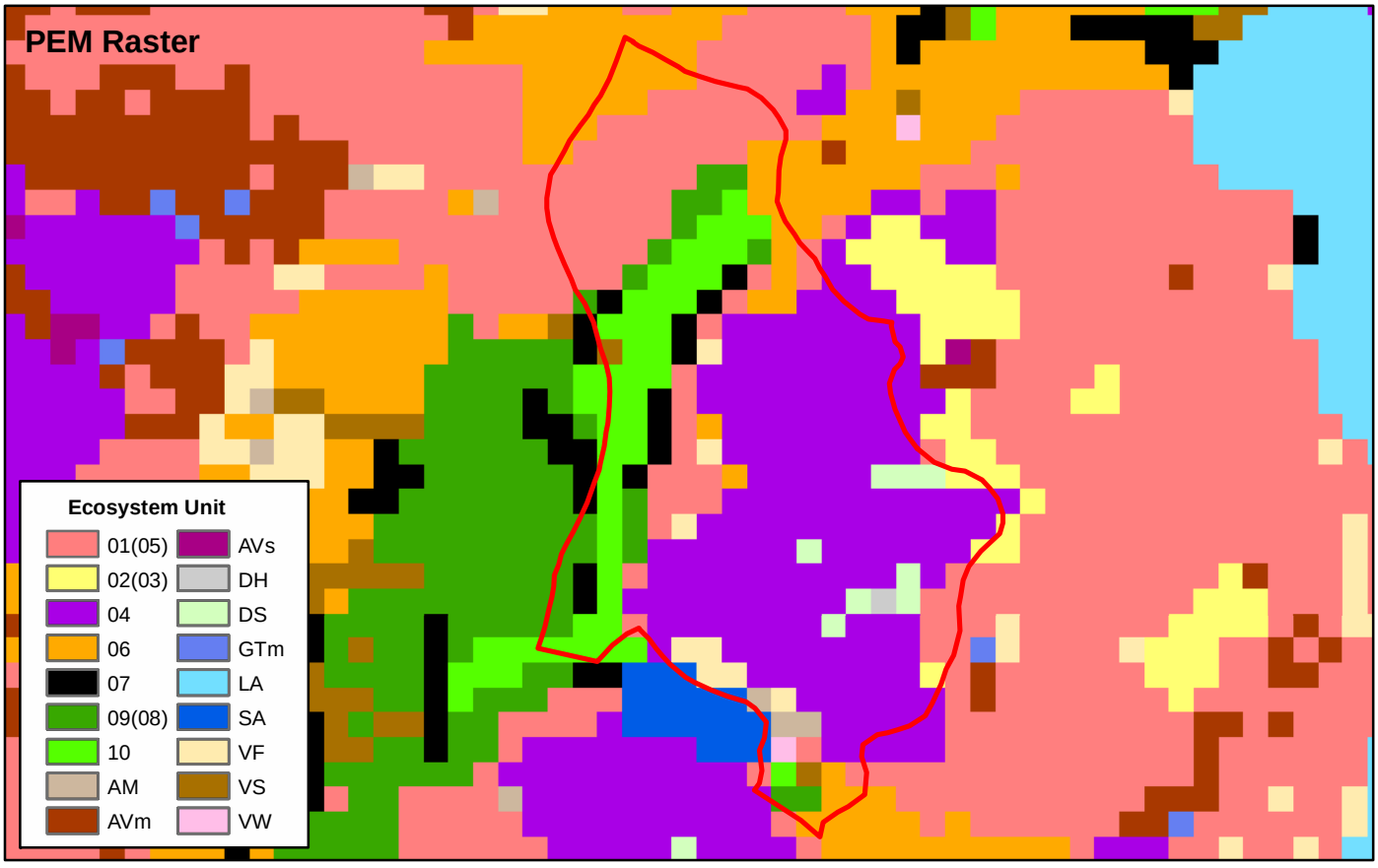


FIGURE 4.4-1

Ecosystem Representation by TEM and PEM

There are differences between the ecosystems identified by the PEM and TEM. Those identified by the PEM and not the TEM are primarily a function of the size of area mapped by PEM. The larger area provides more opportunity for different ecosystems to be mapped as different combinations of site conditions are more likely to occur. In addition, more BEC units occur within the PEM area than the TEM area, resulting in a higher number of ecosystems specific to certain BEC units.

Ecosystems identified by the TEM and not the PEM are largely due to the ability to identify more specific ecosystems. For example, different water features (e.g., rivers, lakes, reservoir, shallow open water) and non-vegetated surfaces (e.g., rock, cliff, talus, road) can be identified through air photo interpretation but are more difficult to model.

4.4.1 Schaft Creek Predictive Ecosystem Mapping

Predictive Ecosystem Mapping at a 1:20,000 scale was conducted for the regional study area. The PEM is a raster-based product with a pixel size of 25 m, which represents an area 25 m x 25 m in size on the ground. It was built using the methodology of LandMapper Environmental Solutions Inc. (LMES), who has designed a series of programs and procedures (the LandMapR toolkit and LMES Digital-Direct-to-Site-Series (LMES DSS) method, respectively) that incorporate the logic and decision making processes of the BC MOF regional field guides. The regional field guides that were used for this PEM project are: *The Field Guide to Site Identification and Interpretation for the Prince Rupert Forest Region* (Banner et al. 1993) and *A Field Guide to Site Identification and Interpretation for the North Central Portion of the Northern Interior Forest Region* (Delong 2004).

4.4.1.1 PEM Components

The LMES DSS method uses a series of input layers reflecting the ecological concepts of the regional field guides. The input layers incorporated into the Schaft Creek PEM represent the classification logic presented in the landscape profile diagrams, edatopic grids (representing soil moisture and nutrient regimes), site series flowcharts, and environment tables present in the regional field guides. The basic input layers include:

- regional climate (BEC units);
- topographic modelling (relative landform position, moisture regime, slope gradient, *etc.*);
- digital image classification; and
- exceptions mapping.

Information provided by the input layers is used with the LMES DSS method and a combination of hard (Boolean) and soft (fuzzy) logic to identify and describe map units. Boolean logic is characterized by such statements as “yes/no”, “0/1”, and “true/false”, while fuzzy logic, allows for the use of such statements as “slightly wet” or “gently sloping”, which approximates a more “human” way of thinking (Hellmann, 2001). Fuzzy logic is much more flexible and tends to relate better to real world situations than traditional Boolean logic (Crnkovic-Dodig, 2006). With fuzzy logic, systems can be defined using ordinary language. These language statements can then be expressed mathematically for subsequent processing by computers. Specifically using the LMES DSS method, an iterative trial and error approach is used to apply ecological rules that relate ranges of values of the input data layers to an assigned likelihood of occurrence for each map unit. Local ecological knowledge is used at each stage to evaluate each new set of output results (MacMillan, Moon, and Coupé (2007). Further detail on the LMES DSS method and its associated logic systems can be found in MacMillan, Moon, and Coupé (2007) and MacMillan (2005).

Regional Climate (BEC units)

The BEC subzones and variants present in the project area were reconciled to a scale of 1:20,000 in the fall of 2004 by the staff at the BC MOF Northern Interior Forest Region office in Smithers. The reconciliation included a field reconnaissance trip followed by map updates to localize the BEC unit lines based on field information. The PEM area was subdivided according to these localized BEC units.

Some of the BEC units present do not have government ecosystem classifications yet, therefore the Research Ecologist in Smithers, BC, approved for the following to be mapped:

- the Spruce Willow Birch undifferentiated (SWBun) subzone mapped using the Spruce Willow Birch moist cool (SWBmk) subzone ecosystem classifications;
- the Spruce Willow Birch undifferentiated scrub (SWBun) subzone mapped using the Spruce Willow birch moist cool (SWBmk) subzone ecosystem classifications;
- the Engelmann Spruce Subalpine Fir very wet very cold (ESSFvv) subzone mapped using the Engelmann Spruce Subalpine Fir wet very cold (ESSFwv) subzone ecosystem classifications; and
- the Engelmann Spruce Subalpine Fir very wet very cold parkland (ESSFvvp) subzone mapped using the Engelmann Spruce Subalpine Fir very wet very cold (ESSFwvp) subzone ecosystem classifications.

Topographic Modelling

Topographic modelling involves the calculation of a series of terrain derivatives using the available 25 m Terrain Resource Information Management (TRIM) Digital Elevation Model (DEM) data. Each terrain derivative represents an attempt to characterize a key concept used in the description of a site series. Key concepts commonly used to describe site series include topographic features such as relative landform position (e.g., crest versus toe slope) and slope steepness, and relative soil moisture condition (e.g., dry versus wet). When combined into a rule set, the selected terrain attributes define an "environmental setting" (MacMillan, Moon, and Coupé 2007), within which a particular, predictable, ecological unit (site series) could be expected to occur.

A more in-depth and detailed discussion of terrain derivatives can be found in MacMillan, Moon, and Coupé (2007). The terrain derivatives described below were used to generate the rule sets for the Schaft Creek PEM.

Percent Z to Stream (PctZ2Str)

Percent Z to Stream is a measure of relative landform position and is used to approximate the concepts behind such terms as crest, upper-slope, mid-slope, etc. (Plate 4.4-1). Use of this attribute in other PEM projects revealed it to be less sensitive to the absolute size and scale of the landscape under consideration, which would result in a truly relative measure of landform position (MacMillan 2005). It is generally not used to define the highest (crest) and lowest (valley) relative landform positions as a different terrain derivative produces much better results (LnQarea, described below). This terrain derivative was used to delineate ecosystems in one BEC unit (ICHwc).

Log of Upslope Area (LnQarea)

Log of Upslope Area is another measure of relative landform position and was used to model ecosystems in five BEC units (SWBun, ICHwc, ESSFwv, ESSFvv, ESSFmc). Unlike PctZ2Str, LnQarea values are absolute, not relative, and as such, LnQarea is best applied in areas having similar landforms, with slopes that are of a similar and uniform length (Plate 4.4-2).

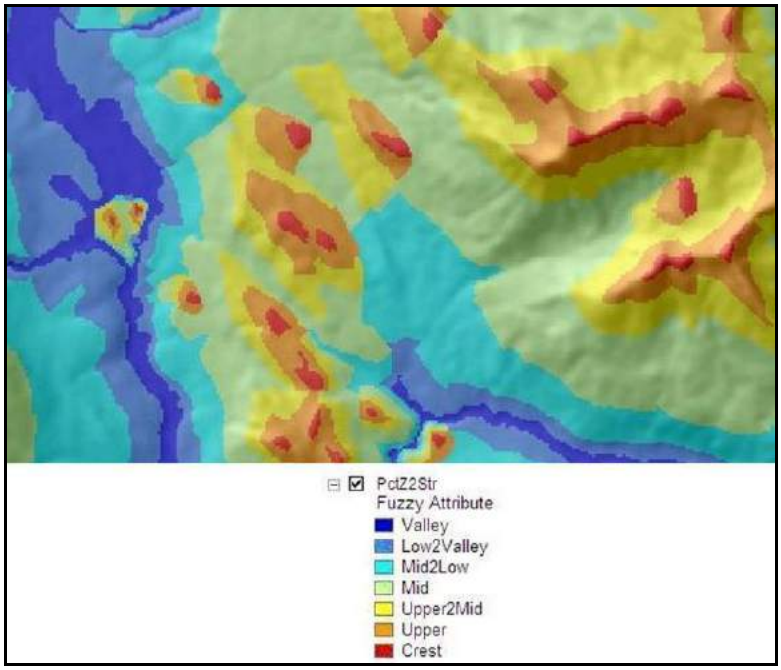


Plate 4.4-1. Example of the PctZ2Str concept.

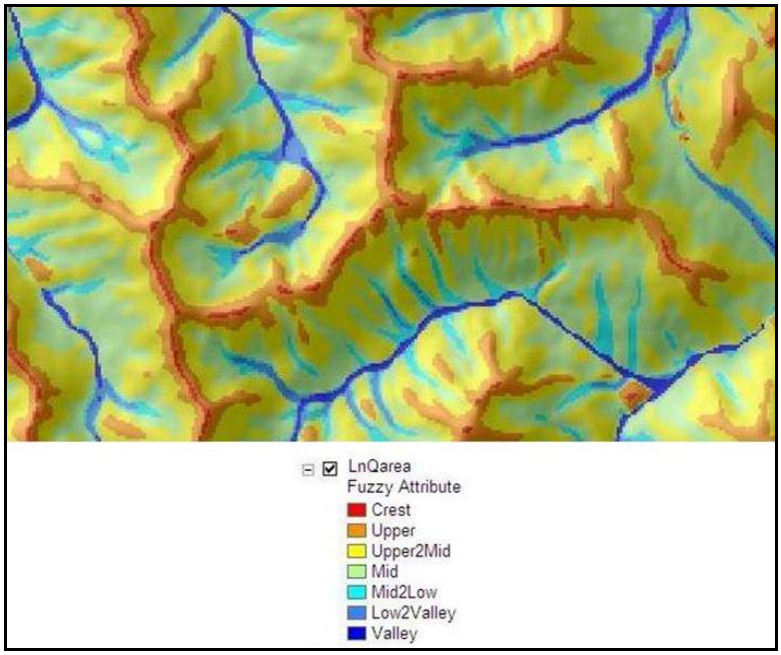


Plate 4.4-2. Example of the LnQarea concept.

Slope Gradient (Slope)

Slope Gradient measures slope steepness and is an attribute commonly used to identify certain site series. Slope gradient is an absolute value, expressed as a percentage (Plate 4.4-3). This feature was incorporated into the rule sets of all BEC units.

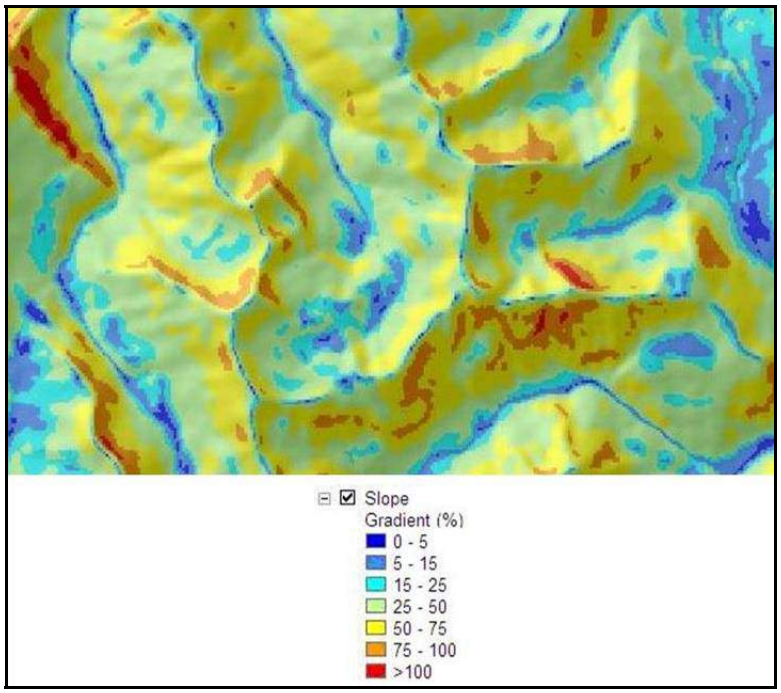


Plate 4.4-3. Example of the Slope concept.

Quinn Wetness Index (Qweti)

Quinn Wetness Index is a terrain derivative used as a measure of relative moisture condition or wetness. It approximates the concepts of terms such as xeric (very dry), mesic (average moisture), and hygric (wet), as they relate to moisture regime (Plate 4.4-4). However, Qweti is not very effective at identifying seepage conditions or wet areas resulting from high water tables (e.g., sub-surface moisture). To approximate the conceptual understanding of the distribution of moisture regime classes within a landscape, a range of wetness is defined in rule sets. The general assumption associated with Qweti is that water flows downhill and accumulates in more level down-slope landform positions. While reality may reflect more complex scenarios, this attribute is thought to be a reasonable predictor of relative moisture status. This derivative was used in rule sets of all BEC units.

Profile (Prof) and Plan (Plan) Curvature

Profile Curvature identifies local surface shape (convexity or concavity) in an effort to differentiate potentially wetter hollows and draws from drier ridges and crests (Plate 4.4-5). Profile curvature identifies local surface shapes in the down slope direction and was incorporated into all rule sets. Plan identifies local surface shape across slopes and was incorporated into a single BEC zone (BWBSdk1).

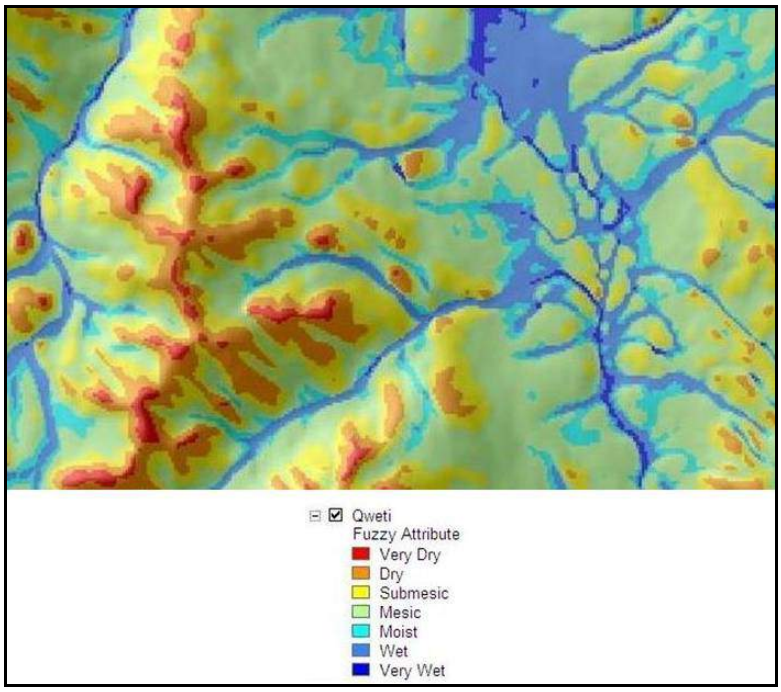


Plate 4.4-4. Example of the Qweti concept.

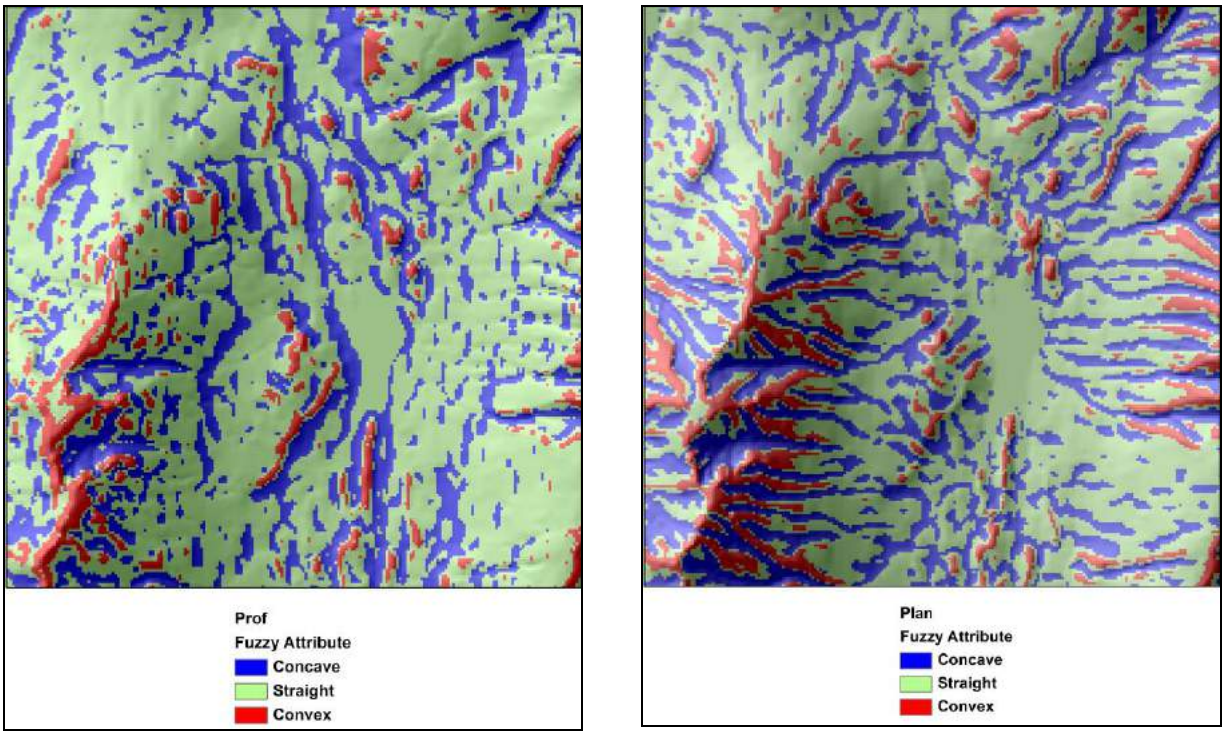


Plate 4.4-5. Examples and comparison of the Profile (left) and Plan (right) concepts.

Vertical Distance to Stream (Z2Str)

Vertical Distance to Stream is a terrain derivative that measures the absolute height above a local base level and helps distinguish high landforms from lower lying landforms (Plate 4.4-6). Z2Str was used to help limit the distribution of certain ecosystems occurring on fluvial materials or floodplains. These units were restricted to low lying areas adjacent to major rivers. This concept was applied to two BEC units (ICHwc and BWBSdk1).

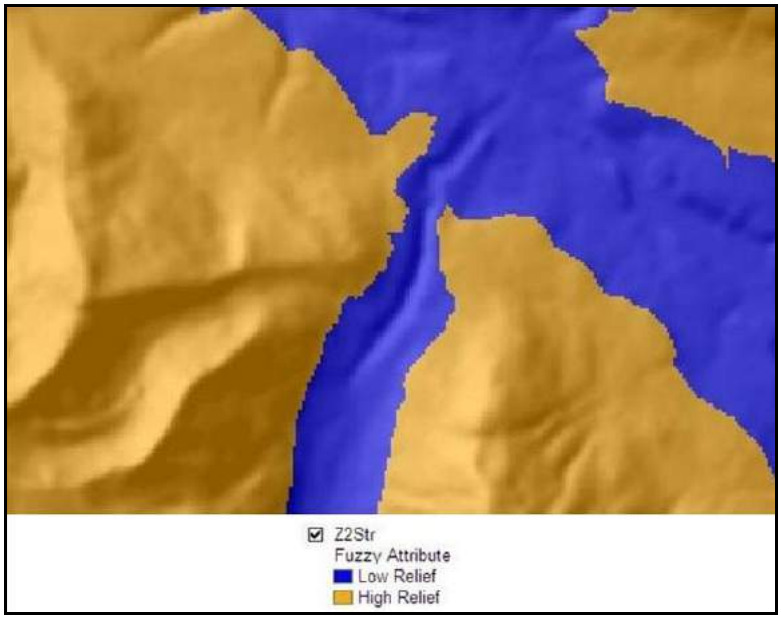


Plate 4.4-6. Example of the Z2Str concept.

Elevation (Elev)

Elevation breaks were used as a defining criterion for certain ecosystems in one BEC unit (ESSFmcp) (Plate 4.4-7). The dwarf vegetation (heather heath) ecosystem was differentiated from the herb-dominated communities based on a detected elevation break defined by the visual assessment of the satellite imagery. It had appeared that the image classification of herb above 1,400 m was browner and likely dwarf vegetation.

Aspect (New_Asp)

Warm and cool aspects were used as a defining criterion for certain ecosystems in one BEC unit (Plate 4.4-8). Aspect can have an influence on vegetation, and site series can often be predicted based on whether an area has a cool or warm aspect.

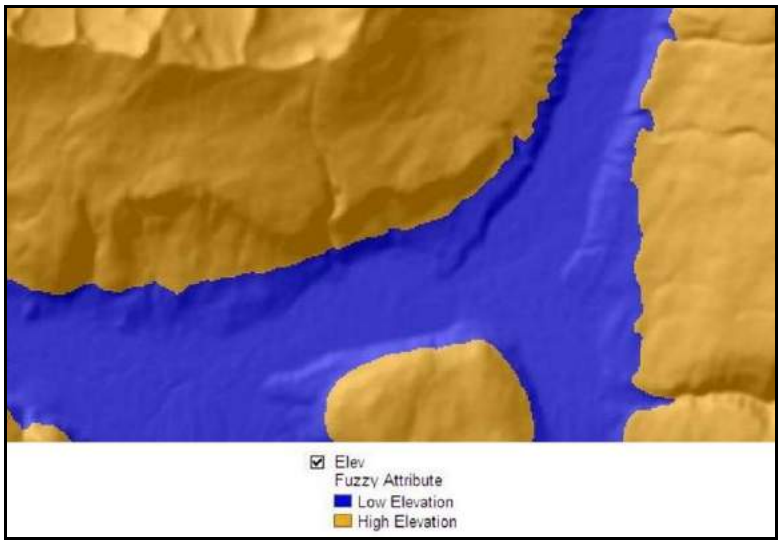


Plate 4.4-7. Example of the Elev concept.

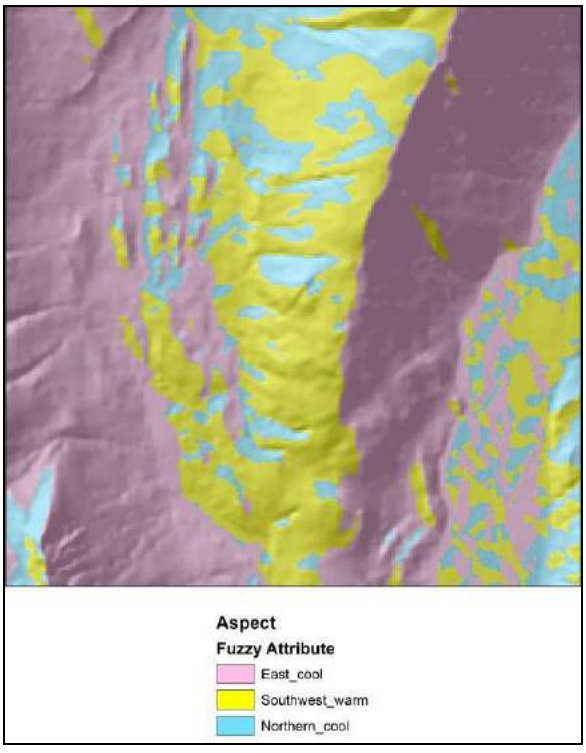


Plate 4.4-8. Examples and comparison of the Profile (left) and Plan (right) concepts.

Digital Image Classification

Indian Remote Sensing (IRS) satellite imagery flown in July and August, 1999, was obtained from PhotoSat Information Ltd. in May, 2007. It was supplied as orthorectified false colour (432) and true colour (321) images, with a 5 m pixel size. This imagery was incorporated into the LMES DSS methodology and provided broad land cover information.

Prior to the start of digital image analysis, an index known as the Normalized Difference Vegetative Index (NDVI) was calculated. The NDVI is the ratio between the measured reflectivity in the near-infrared and red bands of the electromagnetic spectrum (Anonymous 2003). It maximizes the contrast between vegetation and soils and helps distinguish between the different types of vegetation that can occur within a landscape. For example, low NDVI values represent un-vegetated surfaces while moderate to high values represent vegetated areas.

An unsupervised image classification was run using the ISODATA algorithm and software from PCI Geomatics. Input into the classification included the near-IR, red, and green bands and the NDVI calculation. Once the output classes were refined, the image was re-sampled from a 5 m pixel to a 25 m pixel so it could be incorporated into the LMES DSS programs. An attribute named Classify was generated from the 25 m re-sampled image and was used as a defining criterion in the rule sets (Plate 4.4-9). This greatly improved the ability to identify un-forested ecosystem types, as well as un-vegetated areas.

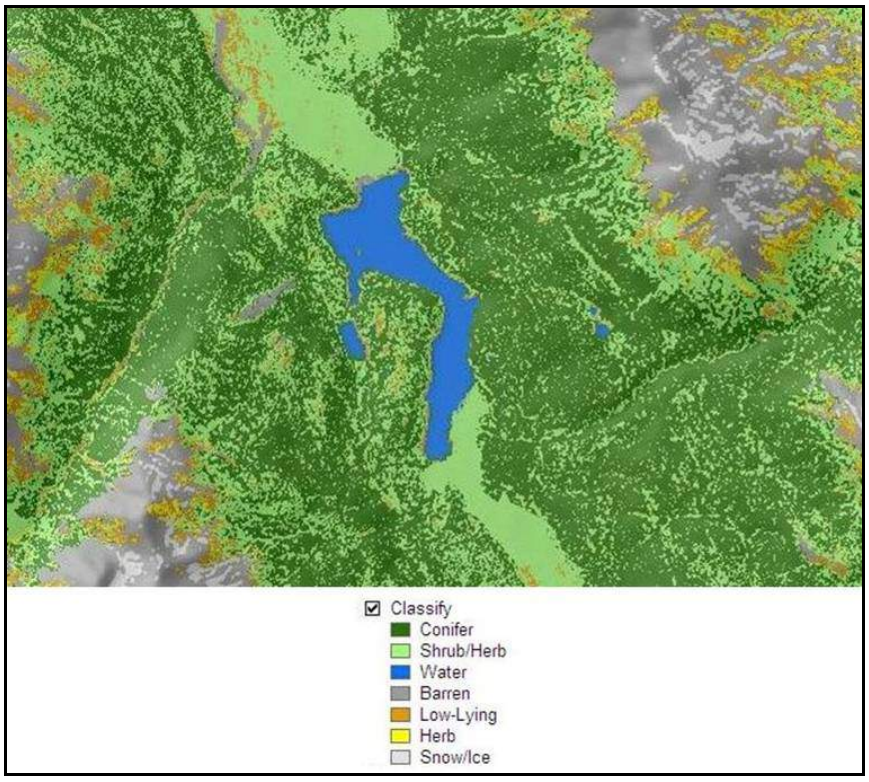


Plate 4.4-9. Example of the Classify attribute.

Exceptions Mapping

Exceptions mapping is conducted as a final PEM processing step. It is a manual overlay of particular landscape features that cannot be efficiently identified using a modeled approach. In the case of the Schaft Creek PEM, water and wetland features from the TRIM base were overlaid as exceptions.

Vegetation Structural Stage

Structural stage is a required PEM attribute (RIC 1999) and is generally modelled as a separate layer using existing inventory information. For the Schaft Creek PEM, information provided by the classified satellite image and predicted ecosystems were used. Reliable forest cover data were not available for the PEM area.

For the Schaft Creek PEM, a structural stage was assigned to each of the classes identified from the classified satellite image. The structural stages were grouped into six structural stage groups (categories) for data summaries and wildlife interpretation purposes (Table 4.4-1). Structural stages 4 and 5 are young forest, but could not be differentiated using the satellite imagery. Based on field surveys, the PEM area consisted largely of structural stages 6 and 7, with a minor component of structural stage 5. Therefore, all areas classified as "conifer" from the image classification were assumed to be structural stages 6 and 7 for the purposes of this study and the wildlife assessments. The parkland and scrub units would also consist of some structural stage 3b stands (where they are <10 m tall but mature forest).

Table 4.4-1. Schaft Creek PEM Structural Stages

PEM Structural Stage Group	Structural Stage Assigned
Sparse/Bryoid	1
Herb	2
Shrub	3, 3/2 complexes
Mature/Old Forest	6/7
N/A	N/A (e.g. Water, Snow, Ice

General assumptions were made for the structural stages of the wetlands from the TRIM base. Marshes by definition are herb so were assigned structural stage 2; swamps can be a range of structural stages but are most commonly structural stage 3, thus were assigned to the shrub group.

4.4.1.2 PEM Input Data Quality

The quality of the digital data used as input to the Schaft Creek PEM was assessed prior to their use. The projection of the data was maintained in Universal Transverse Mercator (UTM) Zone 9 (NAD83 datum) or BC Albers, if received by the BC Government. Final digital products were maintained in UTM.

TRIM and DEM Data (1:20,000)

TRIM data, including DEM information were purchased by RTEC from the BC Government. The data were merged into a seamless, digital coverage, which alleviates edge-matching and potential neatline boundary inconsistencies. This format is suitable for use by the LMES DSS programs.

The DEM data were maintained as 25 m pixels and were smoothed using a low-pass (3 x 3) filter. Filtering reduces spatial anomalies that can sometimes occur in the DEM data. Filtering improves the ability to identify useful features and results in faster processing. While some detail may be lost, the

relevant landscape features are retained. The DEM data were then used as input to the LMES DSS suite of programs.

Satellite Imagery

The IRS satellite imagery was provided to RTEC by PhotoSat Information Ltd. (PhotoSat). Products offered by PhotoSat can be geometrically corrected and projected to the specifications provided to them by the client. RTEC requested that the data be orthorectified (i.e., the imagery is geometrically corrected elevationally as well as horizontally), and projected to UTM Zone 9 (NAD83 datum). The imagery was also checked by both PhotoSat and RTEC for overall data quality (e.g., looking for dropped lines, haziness and general colour representation).

4.4.1.3 PEM Assembly and Attribute Definitions

Assembly of the PEM involved combining and analyzing the various input data layers described above into output classifications. Fuzzy logic was used to predict the majority of the units mapped. Many mapped units, particularly forested site series, have boundaries that are not obvious or distinguishable. Fuzzy logic is well suited to dealing with the ambiguities inherent in the delineation of boundaries between different ecosystems. It is particularly effective when the identification and classification of ecosystems is subjective. More detailed descriptions of the application of fuzzy logic to PEM can be found in MacMillan, Moon, and Coupé (2007) and MacMillan (2005).

The LMES DSS procedures classify primarily continuous input variables into different classes. It is therefore not possible to construct an attribute definition table that corresponds exactly to the type developed to report the attributes used as input to more traditional PEM models such as EcoGen and ELDAR (e.g., Table 6 in RIC 1999). Table 4.4-2 approximates the attribute definition table identified in the PEM Standards.

Table 4.4-2. Attribute Definitions

Attribute	Attribute Code	Attribute Type	Data Format
BEC Unit	Zone	Categorical	Number(4)
Wetlands	Wetland	Categorical (0/1)	Number(2)
Lakes and Water	Lake	Categorical (0/1)	Number(2)
Classify	Classify	Categorical	Number(2)
Relative Slope Position	PctZ2Str	Fuzzy Classes	Number(3)
Relative Slope Position	LnQarea	Fuzzy Classes	Number(3)
Slope Gradient	Slope	Fuzzy Classes	Number(3)
Relative Moisture Regime	Qweti	Fuzzy Classes	Number(3)
Down Slope Curvature	Profile	Fuzzy Classes	Number(3)
Across Slope Curvature	Plan	Fuzzy Classes	Number(3)
Position Relative to Base Level	Z2Str	Fuzzy Classes	Number(3)
Elevation	Elev	Fuzzy Classes	Number(3)
Aspect	New_Asp	Fuzzy Classes	Number(3)

The "Attribute" and "Attribute Code" columns identify the input variables used to record and store data values associated with a spatial attribute. The manually prepared input layers are primarily categorical in nature (e.g., BEC units and wetlands and lakes from TRIM) and represent the presence (1) or absence (0) of a particular group. The "Classify" attribute has also been identified as categorical, even though it is treated as continuous in some of the LMES DSS procedures. Conversely, the "Elevation" attribute is a continuous, numerical variable, but was used more categorically in the rule sets.

The attribute types described as fuzzy classes are all based on the terrain derivatives used in the LMES DSS procedures. All are numerical data with continuous distributions.

4.4.1.4 PEM Assessment and Refinement

Throughout its development, the PEM was routinely assessed and refined. A variety of data were used, and included:

- field survey information;
- TEM mapping within the proposed mine site area; and
- moderate resolution satellite imagery.

Efforts were made to map units that would assist with the identification of pertinent wildlife habitat characteristics. RTEC wildlife staff provided feedback and direction throughout map development.

Incorporation of Field Survey Information

All available plot data and field observations were incorporated into the PEM. Attribute summaries were compiled for each ecosystem identified in the field to gain an understanding as to which features (e.g., slope, relative soil moisture) would be beneficial when used as part of a rule set.

Plot data were also assessed spatially against the resulting PEM units predicted. Data were imported into ESRI ArcView 9.1 and were labelled with the site series or ecosystem identified on the ground. Plots were then visually compared to the underlying map units. Comparisons were both site-specific and general; site specific comparisons involved assessing the plot call against the particular pixel at that same location, while general comparisons looked at the overall trends displayed by a series of plot calls (e.g., a transect) and the corresponding ecosystems predicted in the area. Adjustments to the PEM were made if the mapped entities did not reasonably reflect the trends shown by the plot data.

Comparison to the TEM

The final TEM product was visually compared to the PEM outputs in ESRI ArcView 9.1. Using Geographic Information System (GIS) technology, the TEM polygons were overlayed onto the PEM and visually assessed for their similarities and differences. Assessments were conducted by assessing what compliment of pixels was being predicted within the TEM polygon linework. The decile information provided for each polygon (where applicable) helped to determine how closely the TEM and PEM were to one another. Where substantial differences were identified (e.g., the predicted units were out by several moisture or nutrient classes), the PEM was refined to better agree with the TEM where possible.

Satellite Imagery

Moderate-resolution IRS satellite imagery was used in the development of the PEM. The imagery has a pixel size of 5 m and assisted with the determination of how well un-forested and alpine units were being predicted. The imagery also served as a backdrop and provided a general context for the area when viewing the PEM to ensure the model results were logical.

4.4.2 Schaft Creek Terrestrial Ecosystem Mapping

Terrestrial Ecosystem Mapping was used to map the proposed mine site of the local study area, as specified in the Project Application Information Requirements (AIR) and the mine permit application requirements (BC Ministry of Energy and Mines 1998).

Mapping occurred in 2009 and was guided by the Standard for Terrestrial Ecosystem Mapping in British Columbia *(*RIC 1998, 2000, 2004). It was conducted using 1:20,000 scale 2006 colour air photos acquired from Eagle Mapping.

Terrain mapping was completed by BGC Engineering Inc., Vancouver, BC, in 2008 to standards set by the Resources Inventory Committee (RIC) (1996) for terrain mapping and guidelines from the Mapping and Assessing Terrain Stability Guidebook (Ministry of Forests 1999 in BGC Engineering Inc. 2008). Terrain classification followed the provincial system (Howes and Kenk 1997 in BGC Engineering Inc. 2008).

Field survey data from 2007 and 2008 were used to refine the mapping. Descriptions of the forested ecosystems potentially occurring in the study area are provided by the field guide for the Prince Rupert Forest Region (Banner et al. 1993) and the Northern Interior Forest Region (DeLong 2004).

4.4.3 Vegetation Structural Stage

The existing developmental stage of the vegetation within an area can be described using structural stage. Vegetation structural information is an important attribute commonly used to describe the habitat characteristics of vegetated ecosystems (RIC 1998). Structural stages range from unvegetated units to old-growth forest (Table 4.4-3). A numeric code is provided for each stage, the details of which are provided in the TEM standards (RIC 1998). Structural stage is a required TEM attribute (RIC 1998). Some of the structural stages have been grouped together to simplify and better match the PEM, TEM, and field data summaries.

Table 4.4-3. Ecosystem Mapping Structural Stages

Structural Stage	Structural Stage Code
Sparse/Bryoid	1
Herb	2 (2a, 2b, 2c, 2d)
Shrub	3 (3a, 3b)
Young Forest	4-5
Mature /Old Forest	6-7
N/A	N/A (e.g., Water, Snow, Ice, Road)

4.5 PLANTS AND ECOSYSTEMS OF INTEREST

Certain plants and ecosystems were given special attention because of their conservation status and/or sensitivity to development. These ecosystems were collectively called “plants and ecosystems of interest”. Two categories of plants of interest were identified in the Project area: listed plants and invasive plants. Two types of ecosystems of interest were identified in the Project area: listed and sensitive.

4.5.1 Listed Ecosystems

A search of the online databases maintained by the BC Conservation Data Centre (CDC) was conducted, and a list of rare (blue or red-listed) ecosystems potentially occurring in the Study Area was compiled (Appendix 1). Red-listed ecosystems are those that have, or are candidates for, extirpated, endangered or threatened status in BC. Blue-listed ecosystems are those of special concern (formerly vulnerable) in BC. Placing taxa on these lists flags them as being at risk and requiring investigation (BC CDC 2007). A presence/not-detected level of inventory was then used to document and map these ecological communities of special concern.

4.5.2 Sensitive Ecosystems

Sensitive ecosystems as defined by the BC Ministry of Environment Sensitive Ecosystems Inventory (SEI) are generally characterized as ecosystems that are fragile and/or rare (BC Ministry of Environment 2007a). Ecosystem fragility refers to the sensitivity of an ecosystem with respect to disturbance (McPhee et al. 2000). For this project, sensitive ecosystems refer to riparian areas, wetlands as well as alpine and plateau ecosystems as identified in the Cassiar Iskut- Stikine Land and Resource Management Plan. Listed ecosystems are addressed separately in Section 5.4.1.

4.5.2.1 Riparian Ecosystems

For this report, riparian ecosystems represent the transitional area between the watercourse (i.e. river or stream) and the upland. In general, riparian ecosystems occupy a small proportion of the landscape and contain distinctively different species and habitats that are not present elsewhere (e.g., drier upland areas) (BC MOF 1995 and Federal Geographic Data Committee 2000). They serve a number of important ecological functions, such as providing course woody debris for fish habitat and increasing bank stability to reduce erosion (Banner and MacKenzie 1998).

In many regions of British Columbia, the *Riparian Areas Regulation Act* (BC Ministry of Environment Riparian Areas Regulation website) mandates a buffer of 30 m on either side of a water body within which industrial, commercial and residential developments and activities are subject to special constraints. For forestry related activities throughout the province, the width of riparian buffers ranges from 10 m to 100 m, depending on the characteristics of the water body (BC Ministry of Forests and Range 2004). For example, streams are rated from S1 to S6 according to their size and whether or not they are fish-bearing; streams with class S1 require a buffer zone of 70 m to 100 m, while streams with a class of S6 require a 20 m buffer. For this assessment, riparian areas were defined as occurring within 40 m from streams and rivers (as delineated on the provincial TRIM data) within the study area. This value is the median riparian management zone width described in the Forest Practices Code and was chosen because stream class information and site-specific information on high water marks and tree heights are not available for all areas of the Project. This chosen width also meets the 30 m buffer width required in the Riparian Areas Regulation Act.

4.5.2.2 Wetland Ecosystems

Wetlands are dynamic, low-lying areas on the landscape that are saturated with water for a significant portion of the growing season. They include both the wet basin and surrounding transitional area between wetter areas and upland vegetation (Mackenzie and Moran 2004; Saskatchewan Watershed Authority 2002; Huel 2000). Wetlands range from small, shallow areas of water that are present for only a few weeks after snow melt, to sites that comprise large, permanent open water zones (Stewart and Kantrud 1971). Wetlands are particularly important ecosystems as they fulfill a wide range of ecological, hydrological, biochemical and habitat functions (Environment Canada 2003). They

maintain water quality and regulate water flow on the landscape (Ducks Unlimited Canada 1998; MacKenzie and Moran 2004). They also provide habitat for a wide variety of wildlife, including many economically important game species (Natural Resources Canada 2009).

Wetland ecosystems were typically classified in the field and through mapping using the Wetlands of BC classification guide (MacKenzie and Moran 2004). Wetlands mapped using TEM were based on these field observations where possible within the local study area. The wetlands mapped by PEM are TRIM wetlands; however, some of the site series mapped are classified as wetlands by MacKenzie and Moran (2004) so are treated as such in this report.

A description of the quantity, size and location of wetlands as well as the hydrological physical, chemical and biological characteristics of wetlands are also discussed in the Schaft Creek Wetland Baseline Report 2007 (RTEC 2008b).

4.5.2.3 Alpine and Plateau Areas

Alpine ecosystems are defined by a general absence of trees, although krummholz forms may exist. Alpine areas are often dominated by un-vegetated areas, such as permanent snow, ice fields, rock outcrops, and barren soil. The vegetated ecosystems are dominated by herb, dwarf shrub, grass, moss, or lichen layers. These ecosystems are a result of climate and/or soil characteristics. Vegetated ecosystems, or those with the potential to be (i.e., with soil), are considered sensitive because they typically display very little resistance or resilience to disturbance (BC MOFR 2006), taking many years to recover, if at all.

Alpine and plateau ecosystems provide important seasonal habitat for many wildlife species, providing forage, breeding areas, and escape from predators and pests. For example, grizzly bear (*Ursus arctos*) forage extensively in alpine and meadow areas in the summer and fall. Caribou (*Rangifer tarandus*) and mountain goat (*Oreamnos americanus*) both use alpine areas for winter habitat (Klinkenberg 2009).

Alpine ecosystems were identified through PEM for the regional study area and through TEM for the local study area. Polygons were delineated around plateau areas using ESRI ArcView 9.1. Visual estimation of the plateau boundaries made use of the satellite imagery and contour data from TRIM.

4.5.3 Listed Plants

Online searches were conducted to identify rare plants potentially occurring within the study area prior to the commencement of field work and again prior to completion of the 2010 baseline report. The following databases were utilized:

- the BC Conservation Data Centre (BC CDC);
- the Committee on the Status of Endangered Wildlife in Canada (COSEWIC); and
- the Species at Risk Registry (BC CDC 2010; Environment Canada 2010).

Query parameters for the BC CDC search were set to identify all red- and blue-listed plant species occurring within the study area. The resulting list of potentially occurring threatened, extirpated, or endangered plants (Appendix 2) was used in a presence/not-detected level of inventory to document any such plants within the study area during the field survey.

The habitat of listed plants is often linked to fine-scale and uncommon landscape features (ANPC 2000); therefore, efforts were made to identify unusual substrates and vegetation patterns during the preliminary air photo interpretation stage of mapping. Field surveys were scheduled during peak growing times to capture differences in plant phenology. Where listed ecological communities and plants were suspected in the field, they were documented and photographed. Site details and location were noted and voucher specimens of listed plants were collected at sites where the local population was not at risk.

4.5.4 Invasive Plants

A review of invasive plants and nuisance weeds as designated by the *British Columbia Weed Control Act* (1985) and the Northwest Invasive Plant Council (NWIPC 2009) was compiled prior to the commencement of fieldwork and compared with baseline field results.

Invasive plants or weeds generally refer to species (native or non-native) that have the ability to out-compete native species when introduced into natural settings (Haber 1997). Non-native plant invasion poses a considerable threat to natural habitats (Canadian Food Inspection Agency (CFIA) 2008). Non native plant species can influence ecosystem diversity, structure, and function through invasion and hybridization. In terms of structure, invasive plants can alter the canopy layers of a natural ecosystem and ultimately change the way in which the site is utilized by wildlife, insects, and microorganisms. Changes to nutrient cycling, hydrology, erosion and fire regimes may also occur (CFIA 2008). Typically, invasive plants aggressively establish in disturbed areas, thereby decreasing biodiversity, crop and range productivity (Polster 2005).

Field surveys for invasive plants were conducted in conjunction with general vegetation and ecosystem transects and field plots for the regional study area. A presence/not-detected level of inventory was then used to document invasive plants within the regional study area during the field survey.

4.6 BASELINE METAL CONCENTRATIONS IN PLANT TISSUES

Tracking metal concentrations in plant tissues is a standard requirement of a mine permit application and is used to guide reclamation planning and establishment of end land use objectives (BC Ministry of Energy and Mines 1998). The analysis aims to describe the metal levels that naturally occur in vegetation growing within the study area. Future plant tissue metal concentrations may be compared to baseline values to assess any changes.

Plant species commonly found in the study area and likely to be a food source for wildlife or people were selected for collection. The same plant species was collected among sample inspection sites wherever possible; however, in some cases, site variability necessitated the collection of a different species. The above-ground portion of herbaceous plants and the new growth of woody species (shrubs) were sampled. Dirt and root material was removed prior to the sample being placed into a plastic sampling bag. Plant samples were sent to ALS Environmental in Vancouver, BC for analysis.

Metal concentrations in plant tissue were summarized based on species type, tissue sampled (leaves or berries) and year collected. The leaves and stems of blueberry (*Vaccinium* spp.), common horsetail (*Equisetum arvense*), soopolallie (*Shepherdia canadensis*), Labrador tea (*Ledum groendlandicum*), and gooseberry (*Ribes lacustre*) were collected in 2007. The berries of blueberry, and soopolallie were also collected in 2007. Additional berry samples of soopolallie and blueberry were collected in 2008.

Metal concentrations with values below the detection limit were replaced with the detection limit for summary calculations. Where more than one sample per species or tissue type was collected, the mean, median and range of metal concentration were reported for each species, tissue type, and year collected. Only wet weight results (in situ) are reported here. Raw data for wet weight values are listed in Appendix 3. Raw data for dry weight values are listed in Appendix 4; corresponding metal detection limits are given in Appendix 5 and 6.

5. Results and Discussion

5. Results and Discussion

The mapping produced for the Schaft Creek Project provides ecological information at both a regional and local scale. Ecosystem discussions at the regional level are supplemented by information derived from the PEM, while those at the local level make use of both the TEM and PEM. These discussions for the regional area encompass the local study area, but the information provided for the local study area is more detailed.

The broad-scale BEC units and finer-scale general ecosystem types and specific site units are described in the following sections, as well as the finer scale structural stages, ecosystems and plants of interest, field survey summaries, and metal concentrations of plant tissues.

5.1 REGIONAL STUDY AREA

The Schaft Creek regional study area covers approximately 312,548 ha and is located within the rugged Boundary Ranges and the more subdued terrain of the Tahltan Highlands. The Iskut River lies to the south of the study area, with Mess Creek running through the middle of the region. The southwest portion of Mount Edziza Provincial Park is included in the regional study area, which is part of a volcanic complex. This area includes old lava flows, basalt plateaus, cinder fields and cinder cones. The elevation ranges between approximately 500 m to 2,200 m. The biogeoclimatic units present provide a description of the climate and general reflecting vegetation (Section 5.1.1). These BEC units get subdivided further into ecosystem units (Section 5.1.7).

5.1.1 Biogeoclimatic Units

Eleven BEC units are present in the regional study area, six of which are forested and five of which are associated with parkland/scrub and alpine environments (Table 5.1-1).

The majority of the regional landscape is dominated by the Alpine Tundra undifferentiated (ATun) subzone, which covers approximately 47% (145,893 ha) of the landscape. Of the forested BEC units, the Engelmann Spruce Subalpine Fir Moist Cold (ESSFmc) covers the largest extent (10%, or 30,973 ha).

The BEC units present generally reflect a northern interior climate of wet and cold conditions, with some influence of a coastal climate. The Prince Rupert field guide (Banner et al. 1993) provided sufficient information for some of the forested units; however, some units have not yet been classified in this region. By permission of the Regional Ecologist based out of Smithers, the SWBun and SWBuns were mapped using the SWBmk site series and used the Northern Interior Forest Region field guide (DeLong 2004) for classifications. Similarly, permission was given to map the ESSFvv and ESSFvvp using the classifications from ESSFwv and ESSFwvp, respectively.

Each BEC unit is described in the following sections. More detailed ecosystem descriptions are provided in Section 5.1.7). PEM mapping of BEC sub-zones was then summarized into General Ecosystem Types.

Table 5.1-1. BEC Units Found in the Regional Study Area

BEC Unit Name	BEC Unit	Forested	Parkland/ Scrub	Alpine	Area (ha)	Regional Study Area (%)
Engelmann Spruce Subalpine Fir Moist Cold Subzone	ESSFmc	√	-	-	30,973	10%
Engelmann Spruce Subalpine Fir Moist Cold Parkland Subzone	ESSFmcp	-	√	-	11,202	4%
Engelmann Spruce Subalpine Fir Wet Very Cold Subzone	ESSFwv	√	-	-	18,134	6%
Engelmann Spruce Subalpine Fir Wet Very Cold Parkland Subzone	ESSFwvp	-	√	-	21,674	7%
Engelmann Spruce Subalpine Fir Very Wet Very Cold Subzone	ESSFvv	√	-	-	8,660	3%
Engelmann Spruce Subalpine Fir Very Wet Very Cold Parkland Subzone	ESSFvvp	-	√	-	7,156	2%
Boreal White and Black Spruce Dry Cool Subzone – Stikine Variant	BWBSdk1	√	-	-	17,734	6%
Interior Cedar Hemlock Wet Cold Subzone	ICHwc	√	-	-	28,724	9%
Spruce Willow Birch Undifferentiated	SWBun	√	-	-	14,451	5%
Spruce Willow Birch Undifferentiated Scrub Subzone	SWBuns	-	√	-	7,949	3%
Alpine Tundra Undifferentiated	ATun	-	-	√	145,893	47%
Total					**312,548**	

5.1.2 Englemann Spruce – Subalpine Fir (ESSF) Subzones

The Englemann Spruce – Subalpine Fir (ESSF) zone is the highest elevation forested zone in BC, occurring on rugged mountainous terrain throughout BC (Meidinger and Pojar 1991, Banner et al. 1993). The climate is characterized by long cold, snowy winters and short, cool summers. Most precipitation tends to fall as snow (Meidinger and Pojar 1991) and can last six to nine months per year. At lower and middle elevations, the ESSF is represented by continuous, predominantly coniferous forest. Engelmann spruce (*Picea engelmannii*) and subalpine fir (*Abies lasiocarpa*) are the dominant tree species, with spruce being more common than subalpine fir in mature stands except at some higher elevations and wetter areas (Meidinger and Pojar 1991). Avalanche tracks are common in steep areas, and usually contain distinctive tall shrub and herbaceous species such as Sitka alder (*Alnus viridis* ssp. *sinuate*), arrow leaved groundsel (*Senecio triangularis*), Indian hellebore (*Veratrum viride*), cow parsnip (*Heracleum* spp.), lady fern (*Athyrium filix-femina*), western meadowrue (*Thalictrum occidentale*), stinging nettle (*Urtica dioica*) and sedge (*Carex* spp.) species. At higher elevations, a mosaic of stunted conifer trees, herbaceous meadows, and heath vegetation is common. Six ESSF subzones (three forested and three parkland) are present in the Schaft study area.

The ESSFmc (moist cold) subzone is characterized by dry summers and light snowpack relative to the wet subzones in the ESSF zone (Banner et al. 1993). Ecosystems are characterized by an ericaceous shrub layer and a sparse herb layer (Meidinger and Pojar 1991). It is distinguished by the presence of knight's plume (*Ptilium crista-castrensis*), bunchberry (*Cornus canadensis*), and heart-leaved arnica (*Arnica cordifolia*). The ESSFmcp is the parkland zone above the mc subzone. Compared to the parkland subzones to the west, the ESSFmcp has more subalpine forbs, grasses and sedges, and less heath vegetation (Banner et al. 1993).

The ESSFvv (very wet very cold) subzone is the wettest subzone of the ESSF zone. The ESSFwv (wet, very cold ESSF) is also quite wet, with upper mean annual precipitation levels ranging from 1100 to 2200 mm (Meidinger and Pojar 1991, Banner et al. 1993). Snow may persist in the ESSFwv for 6 to 9 months (Banner et al. 1993); mean annual precipitation is 650 to 1,100 mm. Both the ESSFwv and ESSFvv subzones commonly have a moderately dense ericaceous shrub layer and a very productive, luxuriant herbaceous layer on zonal sites (Meidinger and Pojar 1991). Common species of the ESSFwv and ESSFvv include oval-leaved blueberry (*Vaccinium ovalifolium*), oak fern (*Gymnocarpium dryopteris*), one-leaved foamflower (*Tiarella unifoliata*), rosy twistedstalk (*Streptopus roseus*) and Sitka valerian (*Valeriana sitchensis*). The ESSFwv characteristically has a "greater diversity of shrubs and herbs than other subalpine subzones" (Banner et al. 1993).

The ESSFvvp and ESSFwvp are the corresponding parkland subzones above the ESSFvv and ESSFwv zones and share many characteristics to their corresponding subalpine subzones. However, the harsher climate in the wvp subzone does not allow for the continuous growth of forest. Patches of trees are interspersed by dwarf shrubs and herb meadows (Banner et al. 1993).

5.1.3 Boreal White and Black Spruce Dry Cool (BWBSdk1) Subzone – Stikine Variant

The Boreal White and Black Spruce (BWBS) zone occurs at low to mid elevations and is one of the larger BEC zones in BC (BC MoFR 1996). The BWBS zone is characterized by a northern continental climate, with long, cold winters and short, cooler summers. The BWBS receives a low amount of precipitation and the least amount of snowfall compared to other northern BEC units. The ground is frozen for many months of the year, and discontinuous permafrost may occur on some northern slopes and in peatlands (Banner et al. 1993).

The BWBSdk1 (dry cool - Stikine Variant) covers a moderate area within the northern, mountainous portion of the Skeena - Stikine forest district. This BEC unit generally occurs at elevations ranging between 700 and 1100 m (DeLong 2004) and displays many of the unique characteristics associated with mountain climates (e.g., local rainshadow, pronounced aspect differences) (Banner et al. 1993). Climax forests are usually dominated by white spruce (*Picea glauca*) with subalpine fir (*Abies lasiocarpa*) often present as well. Forests of varying ages are present across the landscape due largely to a high forest fire frequency; seral forests dominated by lodgepole pine (*Pinus contorta)*/ trembling aspen (*Populus tremuloides*), are extensive (DeLong 2004). Black spruce (*Picea mariana*) is common on upland sites with lodgepole pine on gentle slopes with a cool aspect and in wetlands. Black cottonwood (*Populus balsamifera* ssp. *trichocarpa*) occurs along streams and rivers and is often associated with hybrid white spruce (DeLong 2004). Small patches of grassland and scrub communities occur on steep, south facing slopes above many of the major rivers such as the Stikine (Meidinger and Pojar 1991).

5.1.4 Interior Cedar Hemlock Wet Cold (ICHwc) Subzone

The ICHwc (Wet Cold) subzone ranges in elevation from 150 to 900 m and is characterized by cool, moist, summers (little to no summer drought) and winters with a moderately heavy snowpack (Banner et al. 1993). It is a transitional zone between coastal and interior climates with plant species from both climates present. Climax forests are dominated by western hemlock (*Tsuga heterophylla)* as well as subalpine fir (*Abies lasiocarpa)* and Roche spruce (*Picea x lutzii*). Moisture-loving species such as devil's club (*Oplopanax horridus*) and oak fern (*Gymnocarpium dryopteris*) are common (Ketcheson et al. 1991, Banner et al. 1993). Unlike many of the other ICH subzones, western redcedar (*Thuja plicata*) is absent from the ICHwc subzone.

5.1.5 Spruce Willow Birch Undifferentiated and Undifferentiated Scrub (SWBun and SWBuns) Subzones

The SWB is a high elevation subzone that is usually located above the BWBS zone in northern BC. It reflects an interior subalpine climate, with long, cold winters, and brief, cool summers (Banner et al. 1993; Pojar et al. 1983). The majority of its high amount of precipitation is in the form of snow.

The SWB has the harshest climate of all the forested zones and is near the limit of climatic conditions that can support forests. Forests are found at lower elevations of this zone, with trees getting shorter and more dispersed at higher elevations (MOF 1998). Upper elevations are typically shrub-dominated communities of willow (*Salix* spp.) and/or scrub birch (*Betula nana*). Mosaics of grassland, wetland, and scrub complexes commonly occur in the valley bottoms of the SWB zone (Pojar et al. 1983). Minerotrophic (richer nutrient availability) wetlands are the most common type of wetland found in the SWB zone.

Several SWB subzones and variants have been tentatively identified in BC; however, none of them have been sufficiently described and are not included in the Prince Rupert regional field guide. Permission was given by Allen Banner, the NIFR Research Ecologist, to map the SWBun and SWBuns as the Spruce Willow Birch Moist Cool (SWBmk) and Scrub (SWBmks) subzones. There is no reliable descriptions of the SWBmk subzones in this region but by mapping them to what is available from the Northern Interior Forest Region, the approximation of where the ecosystem unit lies within the edatopic grid is accomplished.

The SWBun subzone occurs above the BWBSdk1 subzone. Forests are typically dominated by white spruce and subalpine fir. Mesic, lower elevation sites are generally dominated by white spruce-willow-scrub birch communities (Pojar et. al.1983).

The climate of the SWBuns is transitional between the SWBun subzone and the ATun zone. These high elevation areas are typically dominated by deciduous shrubs (Pojar et. al. 1983). Classic SWB scrub primarily consists of willow and birch communities, with little to no conifer trees (Pojar et. al. 1983; Allen Banner personal communication).

5.1.6 Alpine Tundra Undifferentiated (ATun) Subzone

The AT zone is common throughout BC's large mountain ranges, lying above the ESSF and SWB subalpine zones. Alpine zones have the harshest climate of any other zone. The climate is cold (average annual temperature ranges from -4 to 0°C), with only a very short growing season. Most precipitation falls as snow (MoFR 2006). Summers are very short and cold but have long daylight hours. The climate is too harsh for trees to grow in most portions of the zone, although scattered areas of stunted trees do occur at the interface between the subalpine parkland of lower elevations and the true alpine of higher elevations (MoFR 2006). Alpine vegetation is dominated by dwarf shrubs, herbs, bryophytes and lichens (Pojar and Stewart 1991). Extensive areas are unvegetated (Pojar and Stewart 1991).

The AT zone has recently been further subdivided into three distinct regions: the Coast Mountain Alpine (CMA) in coastal BC, the Interior Mountain-heather Alpine (IMA) zone in the southern interior, and the Boreal Altai Fescue Alpine (BAFA) zone in the northern interior (BC Ministry of Forests and Range 2006). With respect to these updated zones, the Schaft Creek project area would be within the BAFA zone (MoFR 2006). Compared to other alpine zones in the province, the BAFA zone is relatively well vegetated (MoFR 2006).

The AT zone in the project area starts between 1,400 to 1,600 m elevation, depending on the aspect and valley characteristics (valley steepness and width).

5.1.7 Mapped Ecosystem Types

A total of 41 ecosystem units (not differentiated into BEC unit) were mapped by the PEM in the regional study area. Of these, 21 were forested and 20 were unforested (Figure 5.1-1). The full list of ecosystem units by BEC subzone/variant, including descriptions, can be found in Appendix 7. The PEM rules used to predict the ecosystems are presented in Appendix 8.

Unforested areas cover the greatest extent, although it is an over-estimate since the shrub/herb ecosystems predicted include early succession (shrub, herb) forested ecosystems. The general ecosystem type, sparse/barren, covers the greatest area (74,407 ha; 24%), followed by snow/ice (56,746 ha; 18%), and mesic forest (46,017 ha; 15%) (Figure 5.1-2) (Appendix 9). Of the mesic forest, ICHwc 01 comprises the greatest proportion (11,948 ha; 4%), followed by ESSFmc 01(05) (10,269 ha; 3%). Next to mesic forest, wetter forest predominates the forested ecosystems, with ESSFmc 06 covering the greatest extent (3,333 ha; 1%).

5.1.8 Vegetation Structural Stage

Of the five different structural stage categories, mature/old forest (99,376 ha; 32%) and sparse/bryoid (74,407 ha; 24%) account for the greatest proportion of the study area. However, the early structural stages combined account for a larger area than the mature/old portion. There is a substantial portion of not applicable structural stages (62 723 ha; 20%; Figure 5.1-3), such as water and snow. Mature/old forests are likely over-represented, while young forest is not represented, due largely to data limitations.

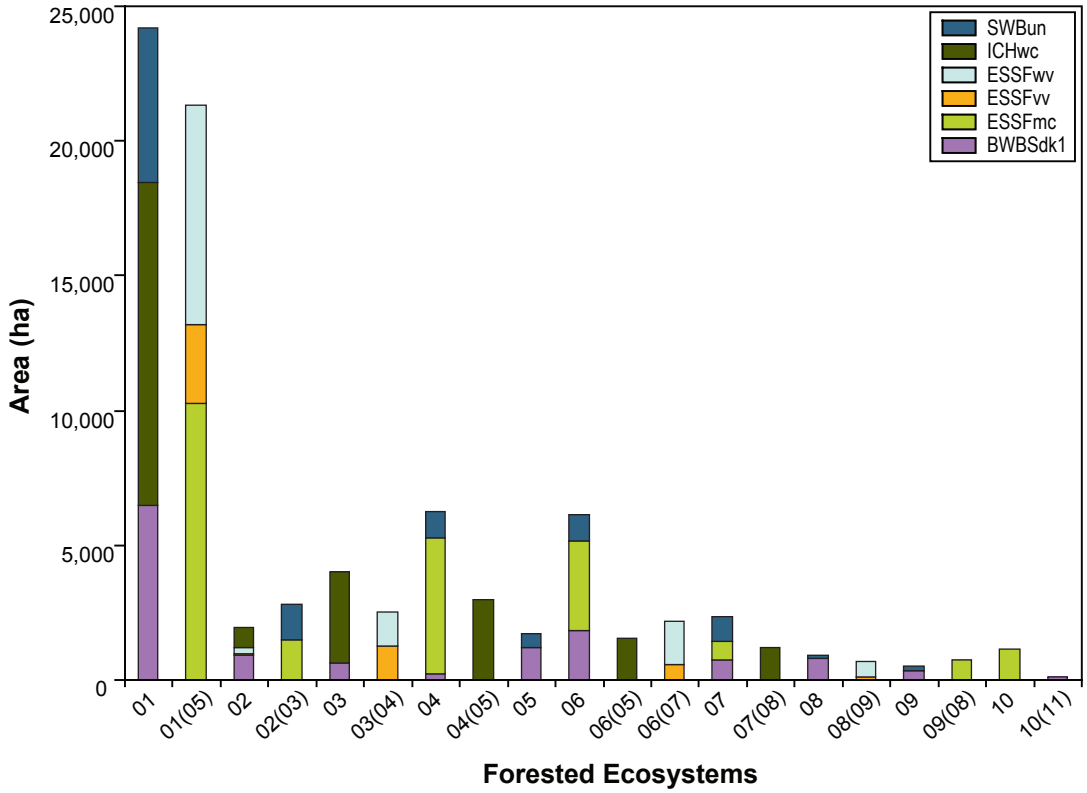
Spatially, forests are found largely along valley bottoms and undisturbed side slopes, while herb meadows, snow/ice, and barren areas dominate the landscape at the highest elevations (Figure 5.1-4). There is a substantial amount of burn in the Schaft Creek area but, due to the lack of being able to differentiate structural stages through image classification and the overall poor quality of VRI data in that area, it was not mapped as an early structural stage. Therefore, the amount of mature/old forest would spatially be slightly misrepresented for those areas. However, this would not likely change the overall dominance of mature/old forest across the landscape.

5.2 LOCAL STUDY AREA

The local study area covers 17,018 ha and represents 5% of the regional study area. The local study area includes the proposed mine site area and a 2-km wide corridor encompassing the proposed access road. The mapping produced for the local study area is summarised into two sections; the proposed mine site and the proposed road corridor. The proposed mine site was mapped using TEM and includes a small portion of the road up to km 5 (Figure 3-1). The road corridor was mapped using PEM and includes a one km buffer on each side of the road, starting from km 5 and ending where the Schaft Creek road meets the Galore Creek road. Each area is discussed separately in the following sections.

5.2.1 Terrestrial Ecosystem Mapping (TEM) – Proposed Mine Site

The proposed mine site covers 11,353 ha (67% of the local study area). Five BEC units are present within the TEM area (Table 5.2-1). The ESSFmc covers the greatest proportion, followed by the ATun and the ESSFmcp. The SWBun was mapped as the SWBmk, however, it appeared to be more similar to the BWBSdk1 variant in this area through air photo interpretation. There was a dense canopy cover, more indicative of the BWBS than the SWB. This is likely because it was in a transition area between the SWB, BWBS, and ESSF zones. Since it covers a small portion and because this similarity is due to transition between the different BEC units, the decision was made to keep it mapped as the SWBun, but using the SWBmk classifications.



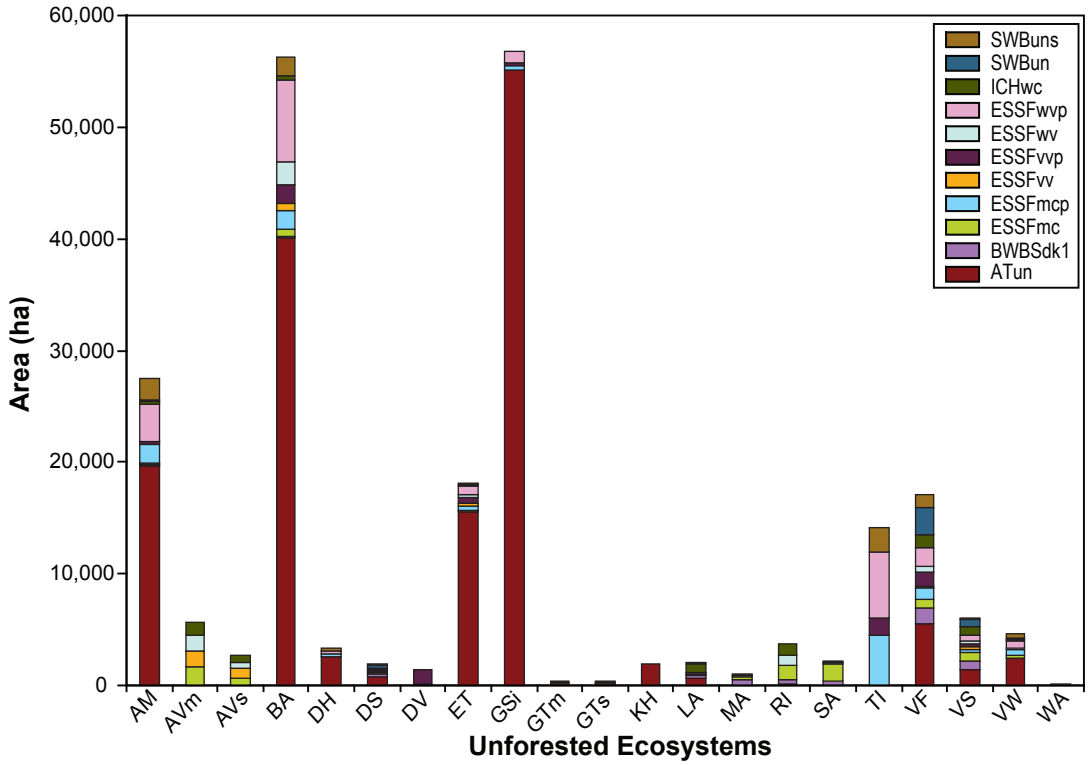


FIGURE 5.1-1

Distribution of Forested and Unforested Ecosystems in the Regional Study Area

Distribution of General Ecosystem Types in the Schaft Creek Regional Study Area

FIGURE 5.1-2

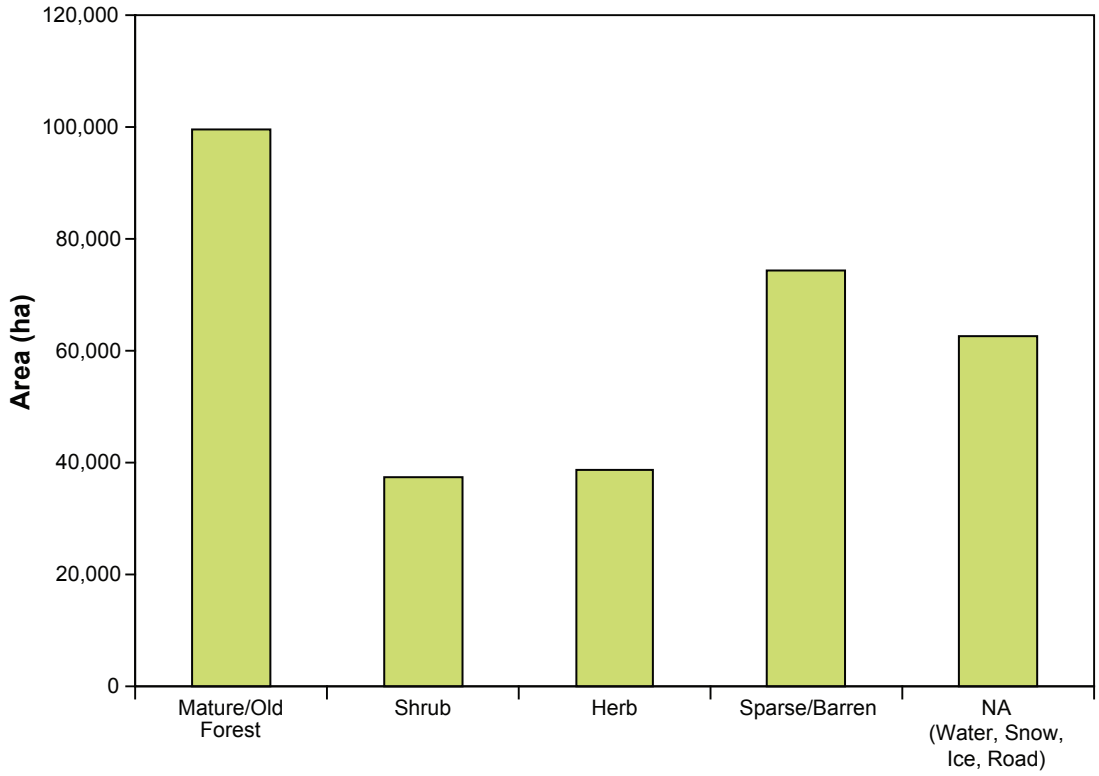


FIGURE 5.1-3

Vegetation Structural Stage in the Regional Study Area

Distribution of Structural Stages in the Schaft Creek Regional Study Area

FIGURE 5.1-4

Table 5.2-1. BEC Units Present Within the Proposed Mine Site

BEC Unit	Area (ha)	Proportion of Proposed Mine Site Area (%)
ATun	2,651	23
BWBSdk1	84	0.7
ESSFmc	7,561	67
ESSFmcp	932	8
SWBun	55	0.5
SWBuns	70	0.6
Total	**11,353**	

A total of 1,273 polygons were mapped within the proposed mine site area, of which the majority of were complexes, indicative of a more variable setting. The labeled TEM map is provided in Appendix 10 and the descriptions of the corresponding TEM map codes are provided in the TEM legend (Appendix 11).

5.2.1.1 Mapped Ecosystem Types

The proposed mine site is predominantly characterized by forested ecosystems which account for 5,725 ha (50 %; of the ecosystems present) (Figure 5.2-1). The vast majority of this is mesic forest, the greatest proportion of which is the ESSFmc 01 (Appendix 12). In general, mesic forests are the dominant ecosystem type in each BEC unit, although they are much more common in the ESSFmc, accounting for 35% of the forested ecosystems in this unit (Figure 5.2-2). Drier forests represents the second largest extent (1,801 ha; 16%) and are predominantly ESSFmc 03. The sparse/barren ecosystem type is most common of the unforested ecosystem types (1,912 ha; 17 %) and is characterised largely by rock (RO) and talus (TA) sites. Wetland ecosystems account for 602 ha (5%) and are discussed in more detail in Section 5.4.3.

5.2.1.2 Vegetation Structural Stage

The majority of the local study area is composed of young forests (3,036 ha; 27%), shrub sites (2,358 ha; 21%), and mature/ old forests (2,080 ha; 18%; Figure 5.2-3). Forests are found largely along valley bottoms and undisturbed side slopes within the proposed mine site. Shrubs are predominantly on avalanche receiving slopes, around wetlands and along river corridors at varying elevations. Barren areas dominate the landscape at the highest elevations (Figure 5.2-4)

5.2.2 Proposed Road Corridor

The 2-km proposed road corridor covers 5,665 ha (33 % of the local study area). Five of the eleven BEC units are present, of which the ESSFmc covers the majority of the area (Table 5.2-2).

Table 5.2-2. BEC Units Present Within the Proposed Road Corridor

BEC Unit	Area (ha)	Proportion of Proposed Road Corridor (%)
ATun	55	1.0
ESSFmc	4,981	87.9
ESSFmcp	358	6.3
ESSFwv	249	4.4
ESSFwvp	23	0.4
Total	**5,665**	

5.2.2.1 Mapped Ecosystem Types

Similar to the mine site, the proposed road corridor is largely characterized by forested ecosystems which account for 3,773 ha (67%) (Figure5.2-5). The most common forest system is mesic forest (1,691 ha; 30%), predominantly the ESSFmc 01(05) ecosystem unit (Appendix 13). Mesic forests are the dominant ecosystem type in each of the BEC units, although they are more common in the ESSFmc, accounting for 43% of the forested ecosystems in this BEC unit. Drier forests represent the second largest extent (1,256ha; 22%) and are predominantly ESSFmc 04. The mesic shrub/herb represent the most common of the unforested types (337 ha; 6%), and is characterised largely by ESSFmc VF sites. Wetland ecosystems account for 246 ha (4.3%) and are discussed in more detail in Section 5.4.3.

5.2.2.2 Vegetation Structural Stage

Mature forests are the dominant structural stage of the proposed road corridor, accounting for 3,089 ha (55%) (Figure 5.2-4). Mature/Old Forests and shrubs are the next most common and occupy 839 ha (14%) and 785 ha (13%), respectively. All other vegetation structural stages occupy <10% each of the proposed road corridor.

5.3 ECOSYSTEMS IDENTIFIED IN THE FIELD

A total of 279 sites within six BEC units were surveyed within the regional study area (Figures 5.3-1 and 5.3-2). The majority of the plots are located in the ESSFmc subzone (73%), followed by the ATun (11%), ESSFmcp (10%) BWBSdk1 (<1%), and SWBun (<1%) and SWBuns (<1%) subzones. Details pertaining to the field surveys, including BEC unit, site series, and UTM location, are provided in Appendix 14.

Field data represent a much finer level of ecosystem detail compared to PEM and TEM. As such, additional ecosystem units can be identified. A field ecosystem code legend has been developed that provides the names and site conditions of all ecosystem unit identified in the field (Appendix 15). Many ecosystems identified in the field are differentiated by plant species composition and are not readily identifiable through the two ecosystem mapping processes. The PEM and TEM codes are broader classes, therefore, many of them will include more than one field ecosystem (e.g., TEM ecosystem "DS" [dry shrub] may include several different dry shrub ecosystems identified in the field, such as BWBSdk1 02, BWBSdk1 03, ATun BL). Many are the same as the PEM and/or TEM, however, the entire list is provided for an easy look up if comparison to the field data is made.

Fifty four ecosystem units were identified. The majority (30%) of field plots are characterized as mesic forests, predominantly ESSFmc 01. Drier forests (predominantly the ESSFmc 03) are the next most common ecosystem type surveyed and account for 22% of the field plots. All other ecosystem units observed account for less that 5% each of the survey effort.

5.4 ECOSYSTEMS OF INTEREST

5.4.1 Listed Ecosystems

The BC Conservation Data Centre (CDC) currently tracks 14 ecological communities (ecosystems) that have the potential to occur within the Project area based on the BEC units present (Appendix 1). Five of these ecosystems are red-listed, and nine are blue-listed. Six blue listed ecosystems were identified in the regional study area (Table 5.4-1) (Figure 5.4-1). Of these listed ecosystems, one was identified from PEM mapping, five were identified during field studies, but none were identified during TEM mapping.

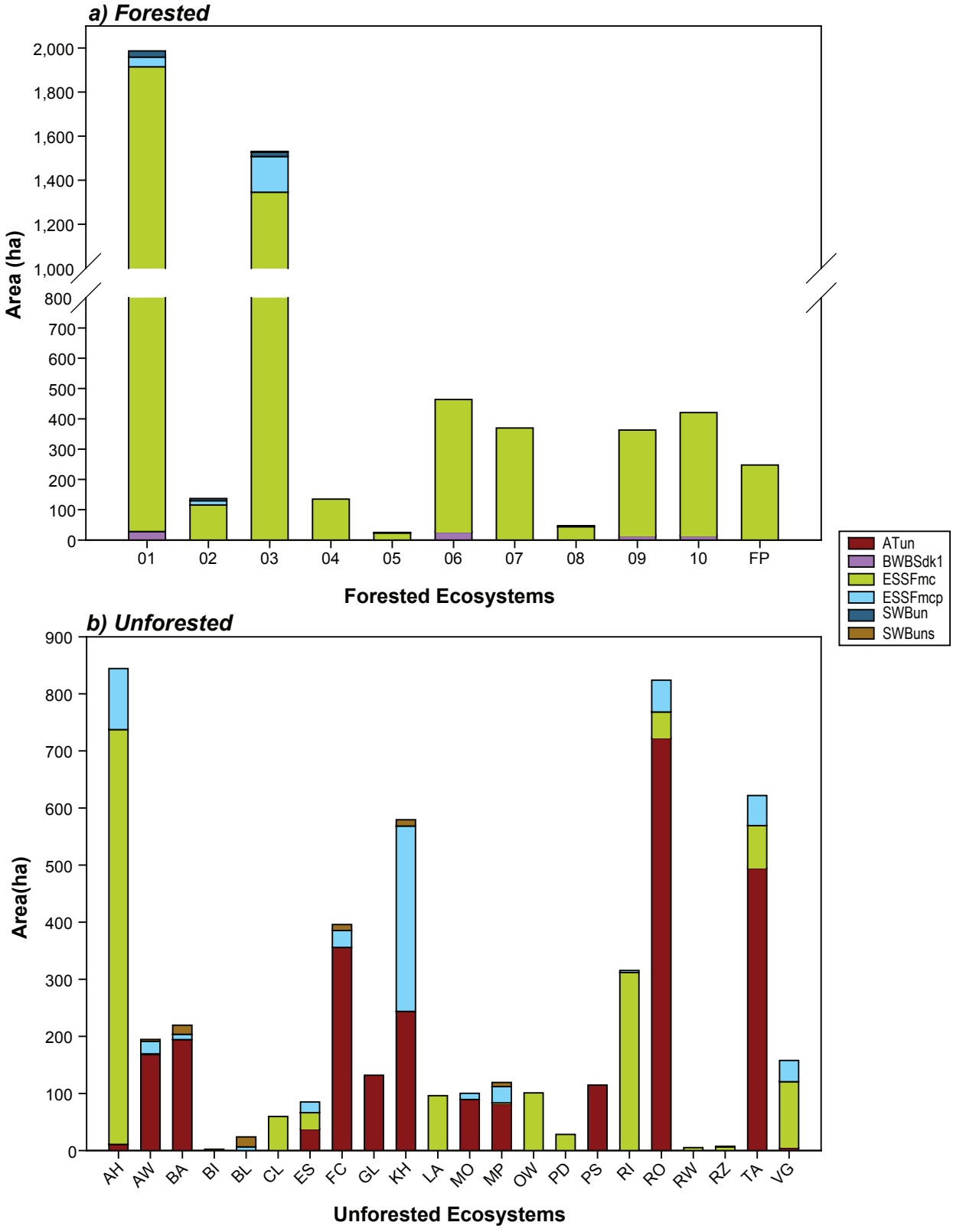


FIGURE 5.2-1

Distribution of a) Forested and b) Unforested Ecosystems in the Proposed Mine Site

370000 380000 390000

6370000 6360000 6350000 6340000 6330000

Mount Edziza Provincial Park

- Local Study Area (Proposed Minesite)
- Local Study Area (Proposed Road Corridor)
- Regional Study Area
- Galore Creek Access Road
- Access Road
- Protected Area
- Avalanche Herb
- Avalanche Shrub
- Disturbed
- Sparse/Barren
- Treed
- Drier Forest
- Mesic Forest
- Mesic Treed
- Wetter Forest
- Drier Shrub/Herb
- Mesic Shrub/Herb
- Wetter Shrub/Herb
- Wetland Shrub/Herb
- Floodplain
- Water
- Snow/Ice

1:125,000

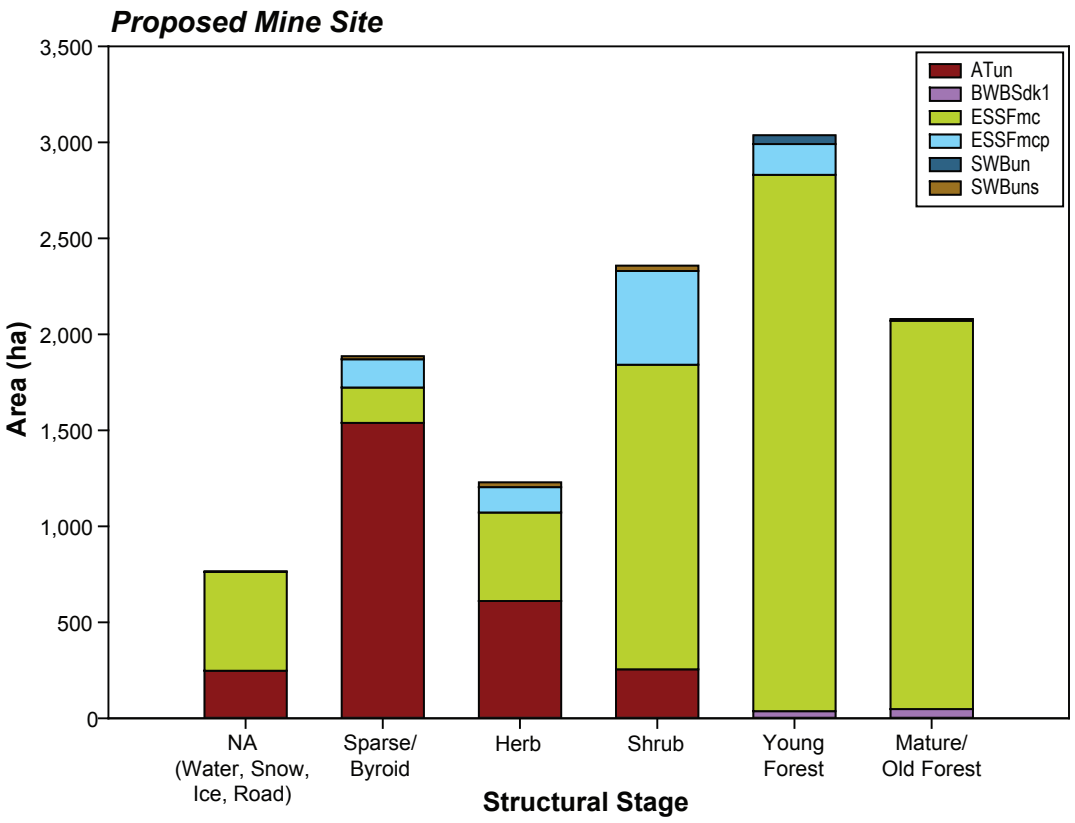
0 2.5 5

Kilometres

Projection: UTM 9, NAD83

Schaft Creek Project: Local Study Area General Ecosystem Types

FIGURE 5.2-2



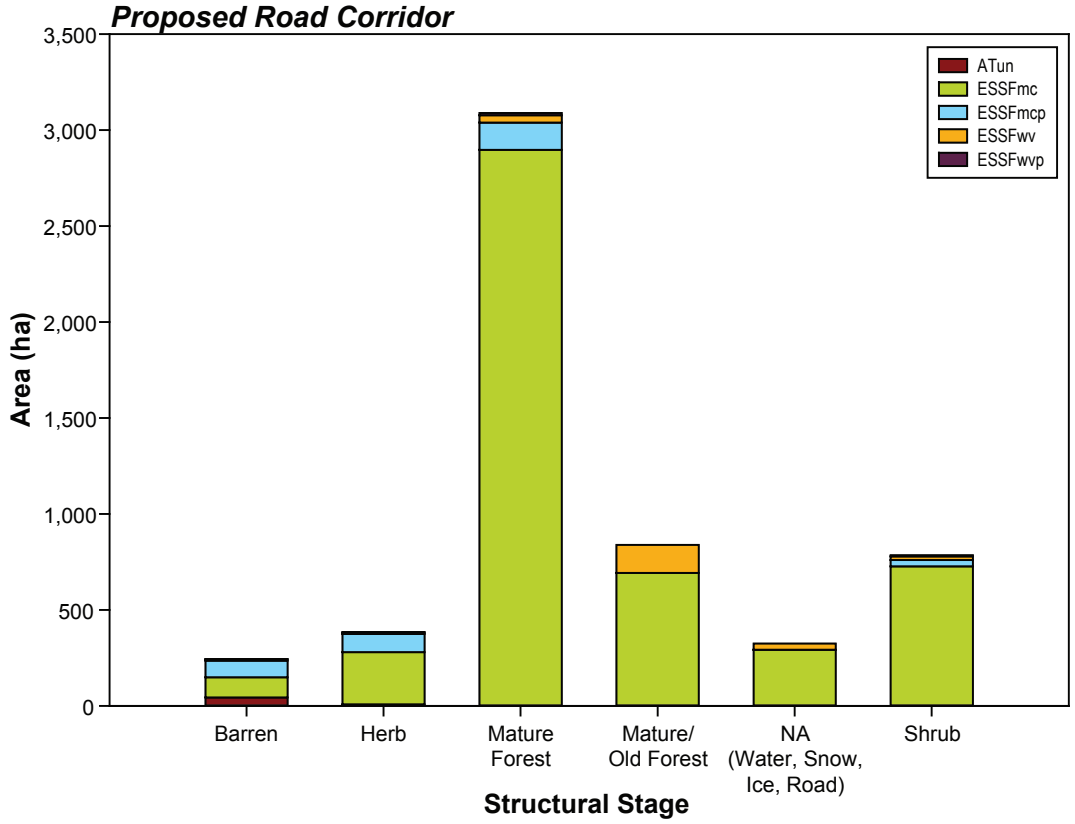


FIGURE 5.2-3

Vegetation Structural Stages in the Local Study Area

copper FOX metals inc.

Rescan™

RTEC

370000 380000 390000

6370000 6360000 6350000 6340000 6330000

Mount Edziza
Provincial Park

Local Study Area
(Proposed Minesite)

Local Study Area
(Proposed Road Corridor)

Regional Study Area

Galore Creek
Access Road

Access Road

Protected Area

N/A

Sparse/Barren

Herb

Shrub

Young Forest

Mature/Old Forest

1:125,000

0 2.5 5

Kilometres

Projection: UTM 9, NAD83

FIGURE 5.2-4

Schaft Creek Project: Local Study Area Structural Stages

copper FOX metals inc.

RTEC Keepers of the Land

Rescan™

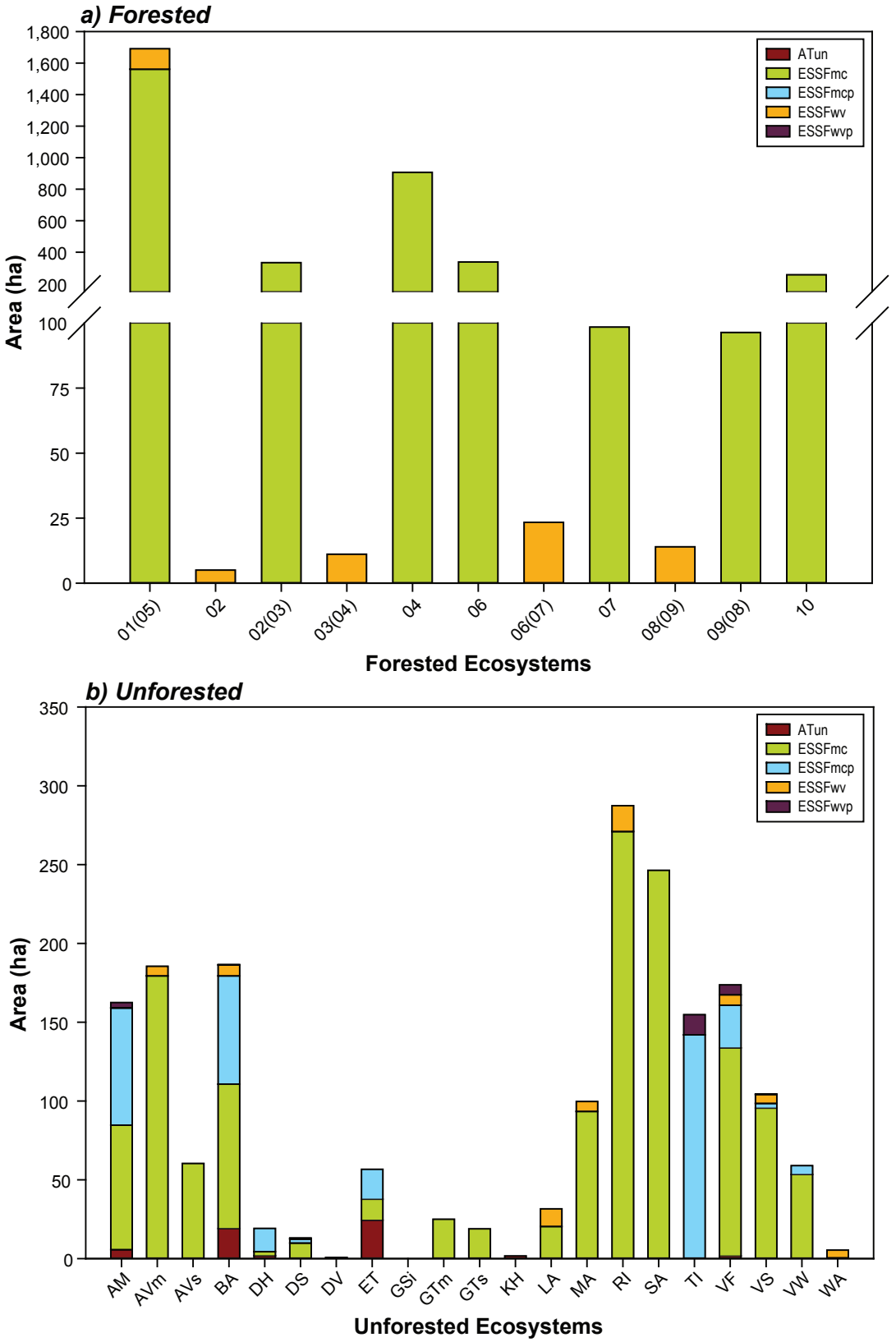
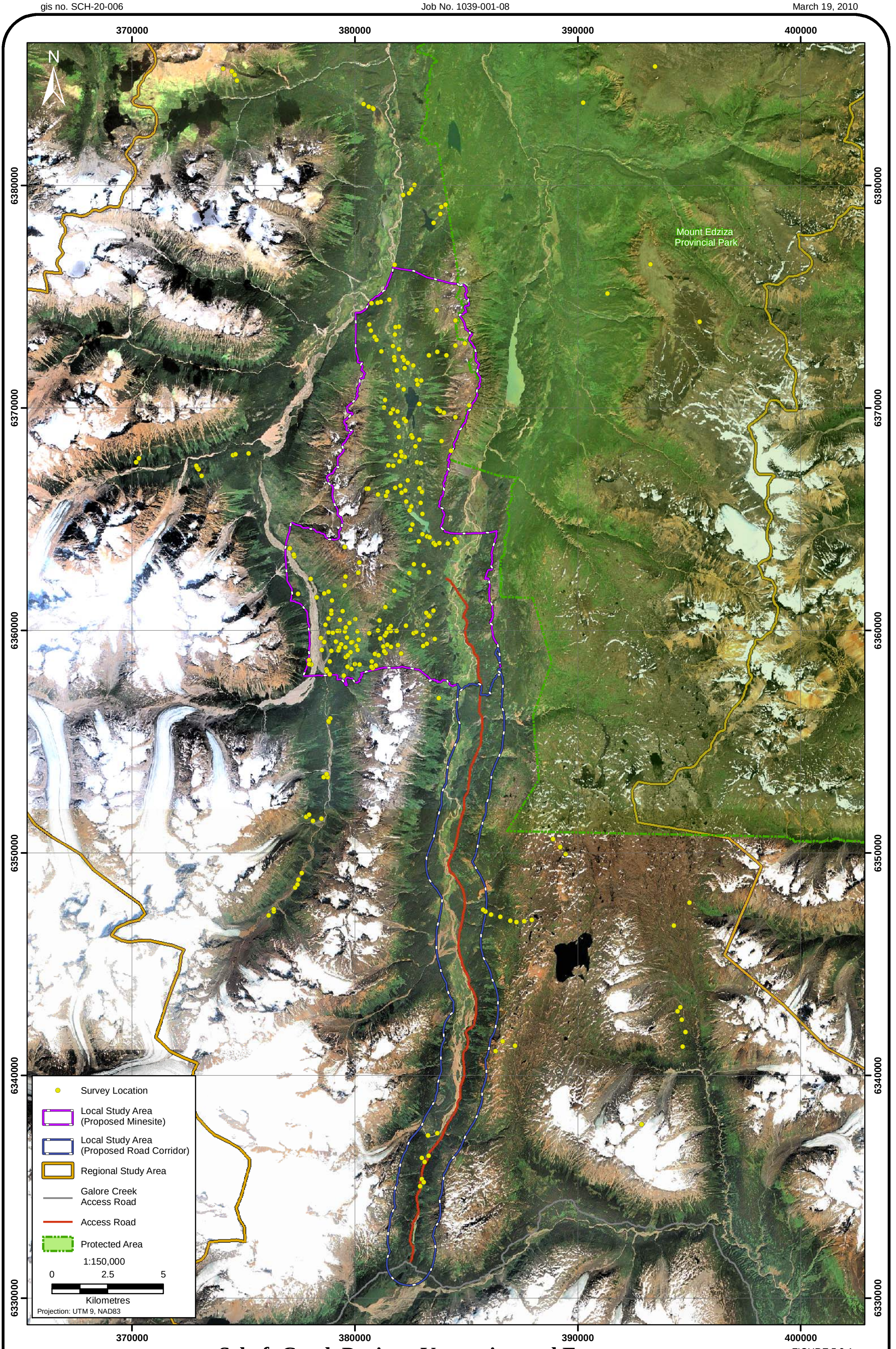


FIGURE 5.2-5

Distribution of a) Forested and b) Unforested Ecosystems along the Proposed Road Corridor



Schaft Creek Project: Vegetation and Ecosystem Mapping Field Survey Locations

FIGURE 5.3-1

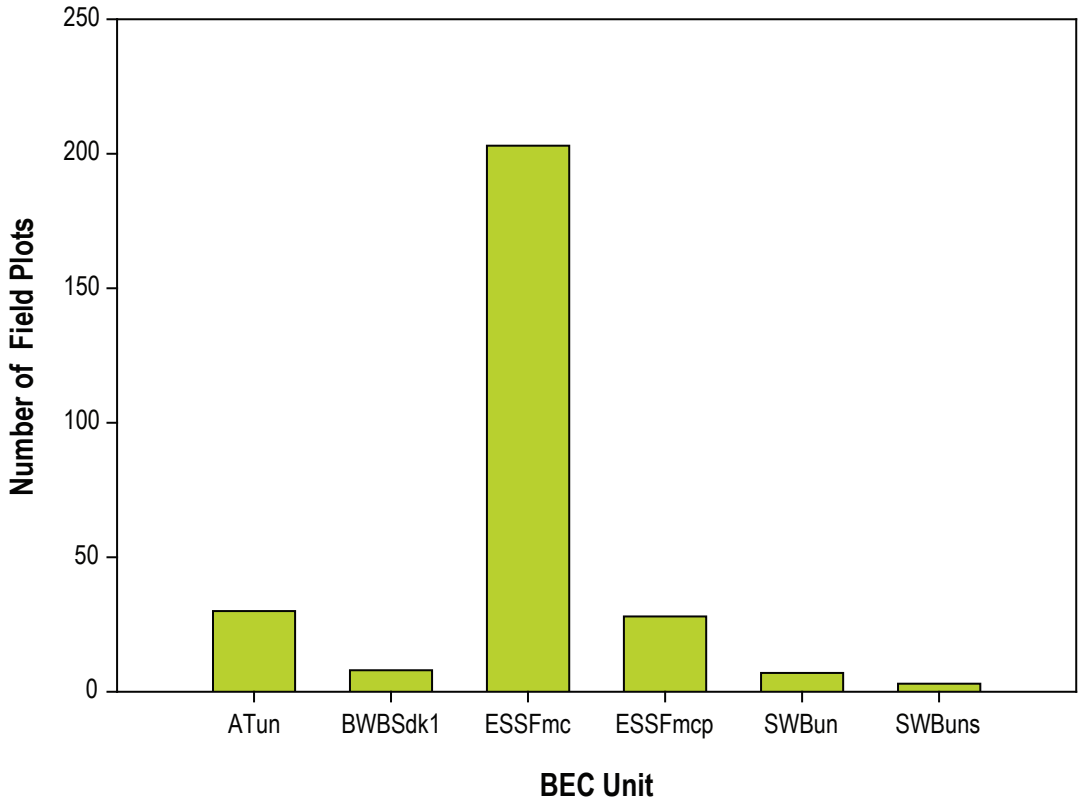


FIGURE 5.3-2

Distribution of Field Plots by BEC Unit

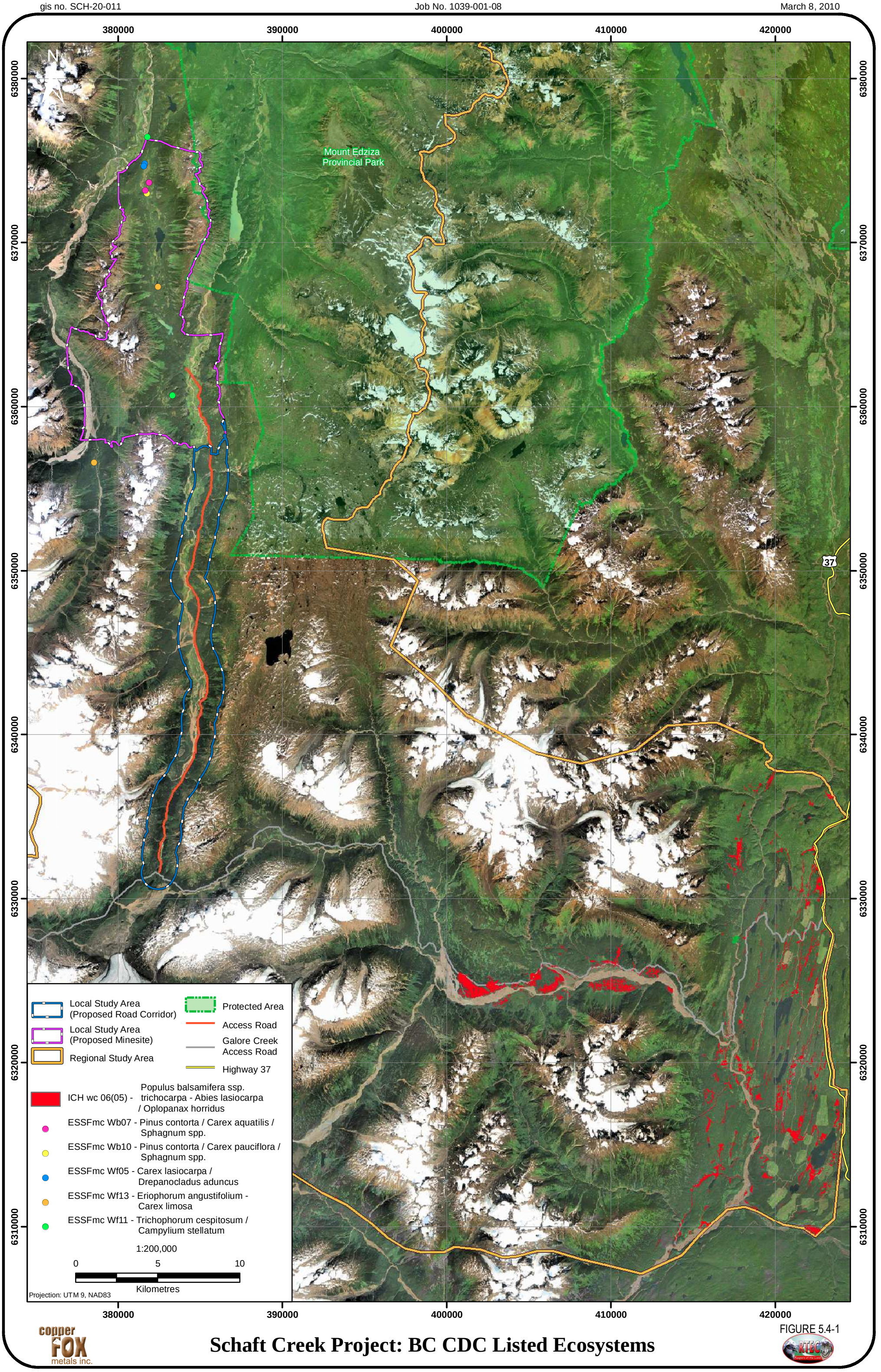


FIGURE 5.4-1

Schaft Creek Project: BC CDC Listed Ecosystems

The ecosystems that were identified in the field but were not mapped were likely too small to be pulled out as a separate entity or contain features that are not readily identifiable through air photo interpretation or the use of a model. Descriptions of each community and the area mapped, where applicable, are provided in the following Section.

Table 5.4-1. Listed Ecosystems Identified in the Field and Mapped Within the Schaft Creek Study Area

Scientific Name	English Name	BEC Unit Identified In	Site Series (ecosystem unit code)	Provincial Rank**	BC Status	Number of Plots Surveyed	Area Mapped (ha)
Populus balsamifera ssp. *trichocarpa - Abies lasiocarpa/ Oplopanax horridus*	black cottonwood - subalpine fir/ devil's club	ICHwc	06	S2S3	Blue	0	1,573
Carex lasiocarpa/ Drepanocladus aduncus	slender sedge/ common hook-moss	ESSFmc	Wf05	S3	Blue	2*	0
Trichophorum cespitosum/ Campylium stellatum	tufted clubrush/ golden star-moss	ESSFmc	Wf11	S2S3	Blue	1	0
Eriophorum angustifolium – Carex limosa	narrow-leaved cotton-grass - shore sedge	ESSFmc	Wf13	S3	Blue	2*	0
Pinus contorta/ Carex aquatilis/ Sphagnum spp.	lodgepole pine/ water sedge/peat-mosses	ESSFmc	Wb07	S3	Blue	2*	0
Pinus contorta Carex pauciflora/Sphagnum spp.	lodgepole pine/ few-flowered sedge/ peat-mosses	ESSmc	Wb10	S2S3	Blue	1*	0

*** Wetlands field survey plot (established according to the methodology described in RTEC 2008b).**
**** Provincial ranks are described in detail on the BC CDC website (BC CDC 2007)**

Populus balsamifera ssp. trichocarpa – Abies lasiocarpa / Oplopanax horridus
black cottonwood – subalpine fir/devil's club

Site Series Associate: ICHwc 06
BC Status: Red

This ecosystem was identified through PEM, covering 1,573 ha. Through the use of PEM methodology, the prediction of exclusive ICHwc 06 site series proved difficult and some of the area predicted could potentially be site series ICHwc 05. As such, the ICHwc 06(05) unit was mapped. It will be treated as the ICHwc 06 for this report and considered red-listed. The structural stage is predicted as mature/old forest but the reliability of this is low due to the satellite image classification being unable to differentiate forest structure reliably. The location of much of the ICHwc is in the vicinity of the Galore Creek Access Road, along the Iskut River. No field surveys were located in this ecosystem unit.

The ICHwc 06 occupies large areas adjacent to rivers and streams (Banner et al. 1993). It is exposed to periodic flooding and cold air drainage. Black cottonwood dominates the tree layer, along with hybrid spruce and subalpine fir. The thick shrub layer is dominated by devil's club, red-osier dogwood, mountain alder, and highbush cranberry. Horsetails dominate the well-developed herb layer. Soils are typically well-drained to imperfectly drained.

Carex lasiocarpa / Drepanocladus aduncus
slender sedge/common hook-moss

Site Series Associate: 00/Wf05
BC Status: Blue

The slender sedge/common hook-moss ecosystem was identified at two locations within the ESSFmc during the wetland baseline filed studies (RTEC 2008b). This ecosystem is blue listed in the BWBSdk1 BEC unit; however, correspondence with CDC personnel (Cadrin, pers. comm. 2010) suggests that this non-listing within the ESSFmc BEC unit is more a result of limited data on distribution at this point in time, rather than abundance in that BEC unit.

This ecosystem is typically found on peat flats adjacent to small water bodies (lakes and ponds) or basins with a continually high water-table and poor drainage. Long-term shallow surface flooding and continued surface peat saturation are common. Slender sedge and common hook moss are the dominant species, but other sedges are common as well. The shrub layer is usually sparse and can include willow species (*Salix* spp.) and scrub birch (*Betula nana*). The moss layer shows high variability in that it is typically well developed but can also be absent. Deep peat (organic) is common, but this ecosystem can also develop on thin organic veneers. Mesisols are the most common soil type, but others can occur (MacKenzie and Moran 2004).

Trichophorum cespitosum / Campylium stellatum
tufted clubrush/golden star moss

Site Series Associate: 00/Wf11
BC Status: Blue

This herbaceous fen was identified at one location during field surveys between Snipe Lake and Mess Creek in the ESSF,mc within the proposed mine site area. This ecosystem is blue listed in the BWBSdk1 BEC unit; however, correspondence with CDC personnel (Cadrin, pers. comm. 2010) suggests that this non-listing within the ESSFmc BEC unit is more a result of limited data on distribution at this point in time, rather than abundance in that BEC unit.

This nutrient poor ecosystem occurs on level and gently sloping ground water fed peatlands (Mackenzie and Moran). The soils are permanently saturated with water but rarely inundated (Mackenzie and Moran). Sites are smooth, ribbed or slightly hummocky and depressions typically contain water. (Mackenzie and Moran)

The codominant species are tufted clubrush and golden star moss. Buckbean (*Menyanthes trifoliate*) and some *Scorpdium* spp. are also common in the shallow water areas (i.e., depressions. The moss layer is composed of golden star moss and it is often associated with *Sphagnum* spp.

Eriophorum angustifolium - Carex limosa
narrow-leaved cotton-grass - shore sedge

Site Series Associate: 00/Wf13
BC Status: Blue

According to Mackenzie and Moran (2004), this wetland unit appears to be relatively common but has not been extensively sampled. This herbaceous fen wetland occurs at higher elevations in wetter depressions and on gentle slopes where standing water persists for most of the growing season.

Narrow-leaved cotton-grass and shore sedge are typically present, however other sedges are common. The often diverse moss layer is well developed. It is found on deep peat deposits.

This unit was identified at two field locations during the wetland surveys (RTEC 2008b) in the ESSFmc subzone. One is located in the southern half of the proposed mine site area and the other is just outside of the southwest border of the TEM boundary.

Pinus contorta/Carex aquatilis/Sphagnum spp.
Lodgepole pine/water sedge/peat-mosses

Site Series Associate: 00/Wb07
BC Status: Blue

This treed bog wetland was located at two locations during wetland surveys (RTEC 2008b). Both are in the ESSFmc subzone in the central portion of the proposed mine site area. This community is listed by the BC CDC in the ICHwc; however, wetland ecosystems are listed based primarily on their wetland classification and secondarily on the BEC unit within which they are located. As such, this wetland is considered blue-listed.

This ecosystem typically occurs in closed basins or in the area surrounding larger peatlands where there is some groundwater influence (MacKenzie and Moran 2004). The canopy is usually short, with lodgepole pine, hybrid spruce and subalpine fir common. Scrub birch and Labrador tea (*Ledum groenlandicum*) are usually present and abundant. Water sedge is characteristic with typical bog species growing on hummocks. A thick and continuous layer of *Sphagnum* spp. is present. Organic soils are deep peat with a strongly mounded microtopography.

***Pinus contorta/Carex pauciflora/Sphagnum* spp.**
Lodgepole pine/few-flowered sedge/peat-mosses

Site Series Associate: 00/Wb10
BC Status: Blue

This treed bog wetland was identified at a single location in the field during wetland field surveys (RTEC. 2008b). It is located in the ESSFmc in the central portion of the proposed mine site area. This ecosystem occurs as a small stand in frost-prone basins or on gradual slopes (MacKenzie and Moran 2004). Lodgepole pine is always present as a sparse canopy. The shrub layer is almost exclusively stunted conifers. *C. pauciflora* is usually the dominant herb species but other graminoids and typical bog species are often present. The moss layer is most commonly dominated by *Sphagnum angustifolium*.

5.4.1.1 Sensitive Ecosystems

Several sensitive ecosystem types were mapped and sampled within the regional and local study areas. These ecosystems are not listed by BC CDC, but are considered sensitive to disturbances from development, including road construction and mining. Sensitive ecosystems include riparian, wetland, and Alpine and Plateau ecosystems.

5.4.1.2 Riparian Ecosystems

The Schaft Creek Study area encompasses both Schaft Creek and Mess Creek drainage basins to their headwaters and beyond the height of land to More Creek. The Iskut River lies near the southern boundary of the regional study area. Riparian areas buffered along the streams and rivers within the regional study area account for 46,455 ha (Figure 5.4-2). Within the local study area, riparian areas account for 2,467 ha (proposed mine site) and 1,191 ha (proposed road corridor).

Riparian ecosystems areas were determined based on a 40m buffer width assigned to all TRIM rivers and streams classified as permanent within the study area. In many instances, the presence or absence of these rivers and streams have not been confirmed on the ground. Therefore, these results are considered approximate.

5.4.1.3 Wetland Ecosystems

Wetland ecosystems occupy 8,451 ha of the regional study area, 1,573 ha of which is already accounted for in the listed ecosystem section (Table 5.4-2, Section 5.4.1). Almost 70% of the wetlands mapped are swamps (5,850 ha). Marshes cover the next greatest extent (1,029 ha). More detailed information on the descriptions of wetlands is provided in the Schaft Creek Wetlands Baseline Studies Report 2007 (RTEC 2008b).

Wetland ecosystems occupy a total of 948 ha within the local study area. Within the proposed mine site, wetland covers 602 ha (Table 5.4-3). Four general wetland types were delineated. Apart from unclassified wetlands, fens are the most common wetland type and account for 228 ha followed by fens (48 ha) and marshes (8 ha). More detailed information on wetlands in the local study area is provided in the Schaft Creek Wetlands Baseline Studies Report 2007 (RTEC 2008b).

Approximately 346 ha of wetland was mapped with PEM within the road corridor, the majority of which was swamp (246 ha). The remaining wetland type was marsh, covering 100 ha.

Table 5.4-2. Schaft Creek Project Wetland Ecosystems in the Regional Study Area

Ecosystem Name	BEC Unit	Ecosystem Unit/ Map Code	Wetland Type	Area (ha)
TRIM Marsh	All	MA	Marsh	1,029
TRIM Swamp	All except for the ATun, ESSFvv, ESSFvvp	SA	Swamp	2,240
ICHwc 08	ICHwc	07(08)[1]	Swamp	1,179
ICHwc 06	ICHwc	06(05)[2]	Floodplain	1,573
ESSFmc 09	ESSFmc	09	Swamp	729
ESSFmc 10	ESSFmc, ESSFwv	10	Swamp	1,140
ESSFwv 09		08(09)	Swamp	562
Subtotal Swamp				5,850
Subtotal Marsh				1,029
Subtotal Floodplain				1,573
Total Sum				**8,451**

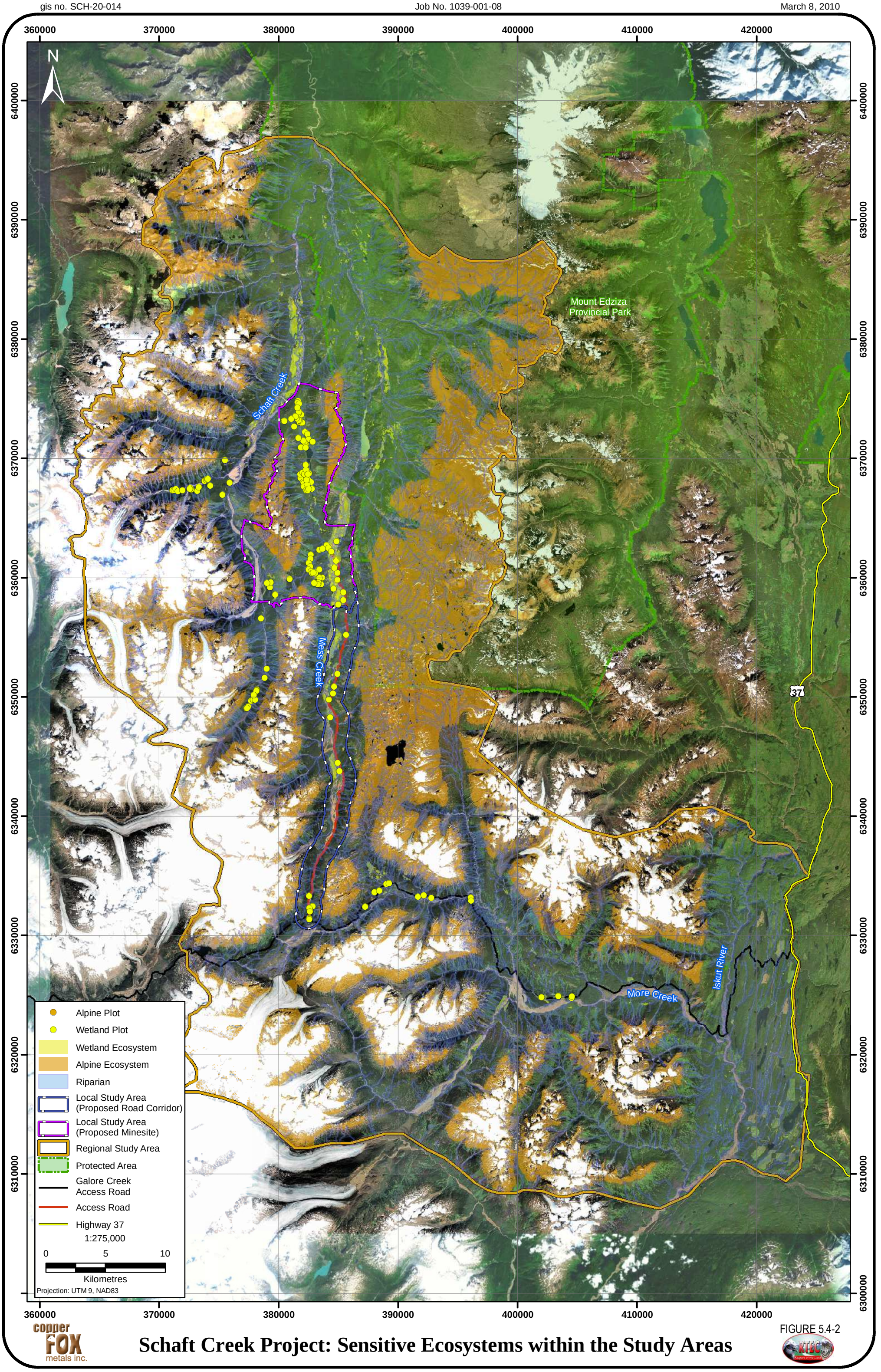


FIGURE 5.4-2

Schaft Creek Project: Sensitive Ecosystems within the Study Areas

Table 5.4-3. Schaft Creek Project Wetland Ecosystems in the Proposed Mine Site

Ecosystem Name	Ecosystem Unit/Map Code	Wetland Type	Area (ha)
Herb wetland	WE	Unclassified Wetland	316
Water sedge - beaked sedge	Wf01	Fen	13
Scrub birch – water sedge	Wf02	Fen	72
Barclay's willow - water sedge - glow moss	Wf04	Fen	42
Slender sedge - common hook-moss	Wf05	Fen	2
Scrub birch – buckbean - shore sedge	Wf07	Fen	64
Shore sedge - buckbean - hook moss	Wf08	Fen	5
Hudson's Bay clubrush - red hook-moss	Wf10	Fen	8
Narrow-leaved cotton-grass - marsh-marigold fen	Wf12	Fen	23
Beaked sedge - water sedge	Wm01	Marsh	8
Lodgepole pine - water sedge - peat moss	Wb07	Bog	1
Black spruce - water sedge - peat moss	Wb05	Bog	8
Lodgepole pine – bog rosemary - peat moss	Wb02	Bog	11
Shore sedge – buckbean - peat-moss	Wb13	Bog	29
Total Area			**601**

5.4.1.4 Alpine and Plateau Ecosystems

For the purposes of this report, alpine and plateau ecosystems with a non applicable (N/A) structural stage (e.g., river, glacier) and escape terrain (due to its steep, barren nature) were not included in the summaries because these areas are not considered terrestrial vegetated ecosystems. All other alpine and plateau units were considered sensitive; although there is likely a large over-estimate of the sparse/barren unit because the satellite image classification used in the PEM could not distinguish between specific types of barren, such as sparsely vegetated soil, rock, or rubble. These areas could also potentially contain rare plants.

Alpine ecosystems considered to be sensitive for the purposes of this report occupy 74,444 ha of the regional study area (Table 5.4-4). The sparse/barren unit comprises the greatest portion of the ATun subzone (13%). The next largest extent is covered by herbaceous meadows (6%) and mesic shrub (2%). Both these units have mesic soil moisture. These units would include a mix of dwarf shrubs and forbs and/or shrubs such as willow and scrub birch.

Table 5.4-4. Schaft Creek Project Alpine Ecosystems in the Regional Study Area

BEC Unit	Map Code	Name	General Ecosystem Type	Area (ha)	% of the Regional Study Area
ATun	DH	Dry Herb	Drier Shrub/Herb	2,519	1%
ATun	DS	Dry Shrub	Drier Shrub/Herb	821	0.3%
ATun	AM	Herbaceous Meadow	Mesic Shrub/Herb	19,649	6%
ATun	VF	Mesic Shrub	Mesic Shrub/Herb	5,574	2%
ATun	BA	Sparse/Barren	Sparse/Barren	40,118	13%
ATun	KH	Krummholtz	Treed	1,895	1%
ATun	MA	Marsh	Wetland Shrub/Herb	43	0%
ATun	VS	Wetter Shrub	Wetter Shrub/Herb	1,410	0%
ATun	VW	Wetter Herb	Wetter Shrub/Herb	2,416	1%
Total				**74,444**	**24%**

Plateau areas cover 2,793 ha of the regional study area, or 1%. Spatially, they are located in the Mount Edziza Provincial Park and along the mountains of Spectrum Range.

Alpine ecosystems occupy 1,127 ha, or 7%, of the overall local study area (Table 5.4-5). Alpine ecosystems in the TEM proposed mine site account for 19% of the local study area, while occupying <1% of the road corridor. The Fescue - lichen grassland (FC) ecosystem is the most common alpine ecosystem within the TEM mine site, occupying 356 ha. This ecosystem is characterized by a mesic soil moisture regime and low-lying shrubby vegetation. Sparse / Barren (BA) is the most dominant alpine ecosystem along the road corridor. No Plateaus were identified within the local study area.

Table 5.4-5. Schaft Creek Project Alpine and Plateau Ecosystems in the Proposed Mine Site Area

				Mine Site		Road Corridor		Area (ha) in Local Study Area	% of Local Study Area
BEC Unit	Map Code	Name	General Ecosystem Type	Area (ha)	% of Mine Site	Area (ha)	% of Road Corridor		
ATun	AM	Herbaceous meadow		-	-	6	0.05%	6	0.03%
ATun	AH	Alder Hellebore Avalanche Track	Avalanche Shrub	11	0.2%	-	-	11	0.06%
ATun	AW	Mountain-avens - Dwarf willow	Drier Shrub/Herb	168	3%	-	-	168	1.0%
ATun	BA	Sparse/Barren	Sparse / Barren	194	3%	19	0.2%	213	1.3%
ATun	BL	Scrub birch - lichen	Drier Shrub/Herb	0.4	0.01%	-	-		<0.01%
ATun	DH			-	-	2	0.02%	2	0.01%
ATun	DS			-	-	0.4	<0.01%	0.4	<0.01%
ATun	ES	Exposed Soil	Sparse / Barren	37	1%	-	-	37	0.2%
ATun	FC	Fescue - lichen grassland	Drier Shrub/herb	356	6%	-	-	356	2.1%
ATun	KH	Stunted conifer (parkland)/ Krummholz	Mesic Treed	244	4%	2	0.01%	246	1.4%
ATun	MP	Mountain Heather - Partridgefoot	Mesic Shrub/Herb	82	1%	-	-	82	0.5%
ATun	VF	mesic shrub	Mesic Shrub/Herb	-	-	2	0.01%	2	0.01%
ATun	VG	Valerian - Groundsel Avalanche Track	Avalanche Herb	4	0.1%	-	-	4	0.0%
Total				**1,097**	**19%**	**30**	**0.01%**	**1,126**	**7%**

5.5 PLANT SPECIES

5.5.1 Species Richness

A total of 358 plant species (including those identified to genus level only), belonging to 69 different families, were identified in the Project area. Forbs were the most common plant type and accounted for 149 of the 358 plant species. Shrubs and mosses are the second most dominant plant types and account for 49 and 44 species, respectively. The complete list of species and plant types located during the field surveys is summarized in Appendix 16.

5.5.2 Plants of Interest

5.5.2.1 Listed Plant Species

The BC CDC currently tracks 191 plant species within the Skeena-Stikine (Cassiar) Forest District, within the 6 BEC zones present in the Schaft Creek TEM local study area (Appendix 2). None of the BC CDC listed plant species were identified in the field. Currently, 11 species (including vascular plants, mosses, and lichens) that occur in BC are listed nationally (Appendix 1), but their known distributions are largely restricted to the southern portion of the province.

5.5.2.2 Invasive Plant Species

One "nuisance weed," (BC Ministry of Agriculture and Lands (BC MAL) common horsetail (*Equisetum arvense*), was identified in 51 plots during the field surveys. This species is native to BC and is not regulated by the *BC Weed Control Act* (Cranston et al. 2007). Although it is a dominant native plant in many riparian ecosystems, common horsetail may invade disturbed sites, such as roadsides and unvegetated embankments (MOAFF 2002). Common horsetail reproduces vegetatively and through the production of short-lived spores; it is primarily dispersed by water, spores, and vegetative fragments but can also be spread by humans, animals, and machinery. Common horsetail is widespread throughout the Province (BC Ministry of Agriculture Foods and Fisheries 2002) and is a valuable food source for grizzly bear and waterfowl (MOAFF 2002).

5.6 METAL CONCENTRATION IN PLANT TISSUES

To establish baseline metal concentrations in local vegetation a total of 28 leaf tissue plus two berry samples were collected for five species at the Project area between July and August 2007 (Figure 5.6-1, Table 5.6-1, Appendix 3, Appendix 4). Eight berry samples in total for two species were collected in July 2008 (Table 5.6-2). Leaf tissue samples were collected for common horsetail, Labrador tea, and gooseberry. Leaf tissue and berry samples were collected for soopolallie and blueberry. Metal concentrations in plant tissue were summarized based on species, year sampled and tissue type (berries or leaves). Details of metal detection limits are given in Appendix 5 and Appendix 6. Results of the lab analyses are presented as wet weight concentrations (mg/kg). Wet weight reflects *in situ* conditions and provides an approximation of the conditions under which consumers (wildlife or humans) may naturally encounter and ingest these plants. All analyzed samples were below detection limits for multiple metals; results are only discussed for those metals where >50% of analyzed samples were above the detection limit.

5.6.1 Soopolallie (*Shepherdia canadensis*)

5.6.1.1 Leaves

Three soopolallie leaf samples were collected in 2007 and analyzed for metal concentration by wet weight (Table 5.6–1). All analyzed samples had antimony, arsenic, beryllium, bismuth, cadmium, lithium, selenium, thallium, tin, uranium, and vanadium concentrations below detection limits. Two out of three analyzed samples had cobalt, lead, and sodium concentrations below detection limits. One out of three analyzed samples had a chromium concentration below the detection limit.

The leaf metal concentrations for soopolallie were more variable than other species' leaf concentrations, with the maximum metal concentration value often being three to four times the minimum metal concentration value. The exception was nickel, where tissue concentrations ranged by an order of magnitude (0.38 to 3.89 mg/kg wet weight). The mean and median metal concentration values for each metal were similar, with the exception of barium (mean: 3.52; median: 2.48 mg/kg wet weight), calcium (mean: 1391; median: 1480 mg/kg wet weight), and chromium (mean: 0.20; median 0.10 mg/kg wet weight). Soopolallie mean nickel concentrations were the highest of all species' leaf samples. Soopolallie mean calcium, mercury, molybdenum, and zinc concentrations were the lowest of all species' leaf samples.

5.6.1.2 Berries

One soopolallie berry sample was collected in 2007 and analyzed for metal concentration by wet weight (Table 5.6-1). This sample had antimony, arsenic, beryllium, bismuth, cadmium, cobalt, lead, lithium, mercury, selenium, sodium, thallium, uranium, and vanadium concentrations below detection. This sample had consistently lower metal concentration values than the soopolallie leaf tissue samples and was comparable to the four soopolallie berry samples collected in 2008.

Four soopolallie berry samples were collected in 2008 and analyzed for metal concentration by wet weight (Table 5.6-2). All analyzed samples had antimony, arsenic, beryllium, bismuth, cadmium, cobalt, lead, lithium, mercury, selenium, sodium, thallium, uranium, and vanadium concentrations below detections. Three out of four analyzed samples had tin and titanium concentrations below detection and two out of four analyzed samples had aluminum and chromium concentrations below detection.

The metal concentrations for the four soopolallie berry samples were not variable for any metals, with the exception of barium and nickel. Barium concentrations in the berry samples varied from 0.062 to 0.532 mg/kg wet weight. Nickel concentrations varied from 0.20 to 1.44 mg/kg wet weight. For all metals except barium (mean: 0.209; median: 0.121 mg/kg wet weight), the mean and median metal concentration values were similar. The berry samples had comparable mean metal concentration values to the four blueberry samples collected in 2008, with the exception of barium and manganese, where soopolallie had lower metal concentrations than blueberry. Soopolallie had higher potassium concentrations than blueberry. Soopolallie berry samples had lower metal concentrations than soopolallie leaf tissue samples for all metals.

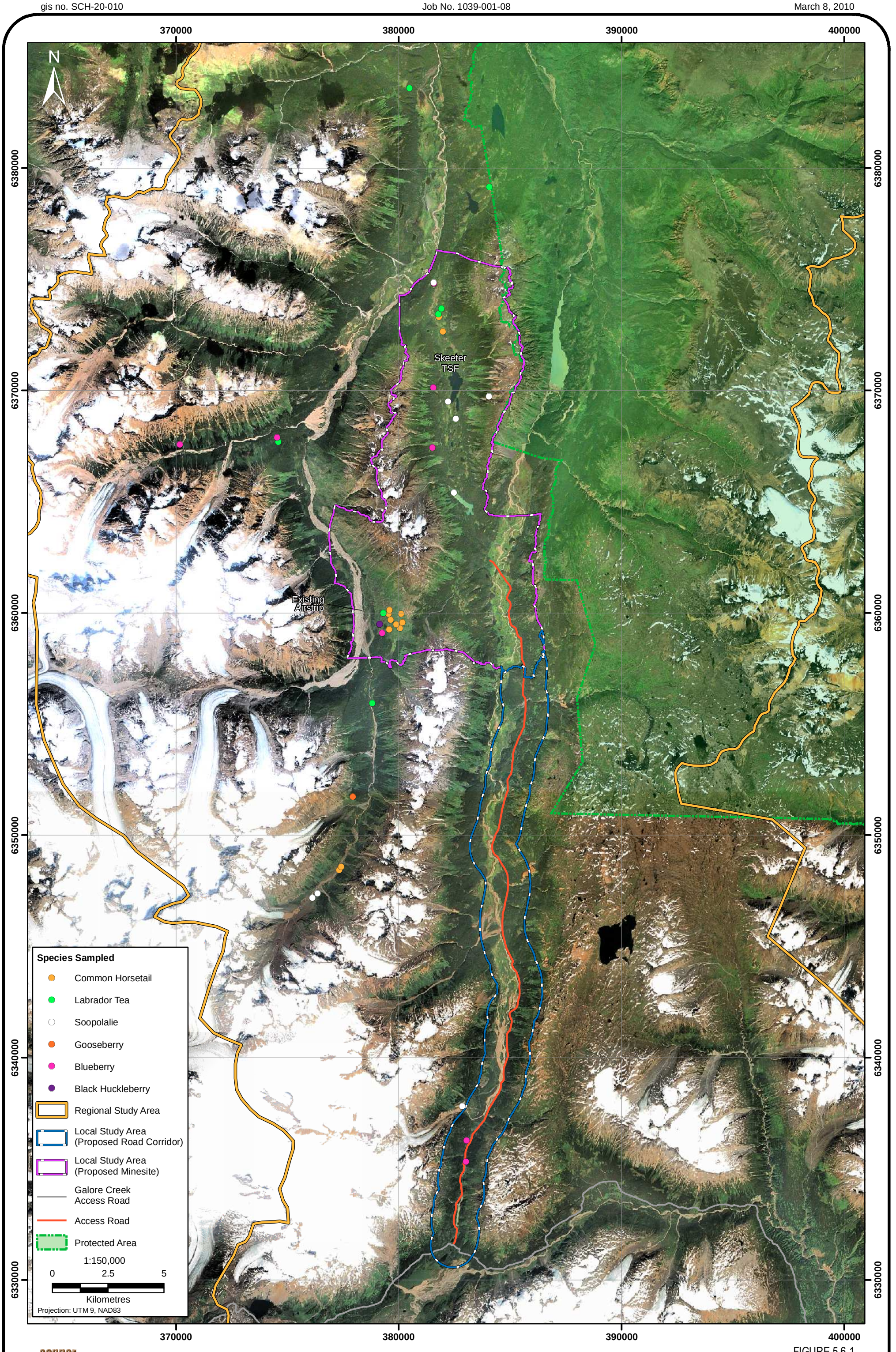


FIGURE 5.6-1

Schaft Creek Project: Plant Tissue Sampling Locations for Metal Analyses

Table 5.6-1. Schaft Project Metal Summaries, 2007

Species	*Equisetum arvense*			*Vaccinium ssp.*			*Ledum groenlandicum*			*Shepherdia canadensis*			*Ribes lacustre*	*Shepherdia canadensis*	*Vaccinium ssp.*
Tissue	leaves			leaves			leaves			leaves			leaves	berries	berries
# Samples	n=12			n=5			n=7			n=3			n=1	n=1	n=1
	MEAN	**MEDIAN**	**RANGE**	**MEAN**	**MEDIAN**	**RANGE**	**MEAN**	**MEDIAN**	**RANGE**	**MEAN**	**MEDIAN**	**RANGE**			
Physical Tests															
% Moisture	81.3	80.1	76.8 - 87.4	75.8	75.6	70.2 - 81.7	63.0	63.9	49.8 - 74.6	75.8	75.6	71.9 - 80.0	76.5	82.3	86.4
Total Metals															
Aluminum (Al)	3.5	2.8	2.0 - 9.6	93.5	96.5	55.4 - 124.0	11.0	11.9	3.4 - 23.2	7.1	7.2	4.9 - 9.2	15.7	6.0	6.2
Antimony (Sb)	**0.01**	**0.01**	**0.01 - 0.01**	**0.014**	**0.01**	**0.01 - 0.03**	**0.01**	**0.01**	**0.01 - 0.01**	**0.01**	**0.01**	**0.01 - 0.01**	**0.01**	**0.01**	**0.01**
Arsenic (As)	**0.01**	**0.01**	**0.01 - 0.01**	**0.0148**	**0.01**	**0.01 - 0.03**	**0.011**	**0.01**	**0.01 - 0.015**	**0.01**	**0.01**	**0.01 - 0.01**	**0.01**	**0.01**	**0.01**
Barium (Ba)	5.92	5.57	3.20 - 10.50	23.88	25.10	14.20 - 32.10	34.86	33.10	27.50 - 46.40	3.52	2.48	1.26 - 6.81	6.01	2.29	1.55
Beryllium (Be)	**0.1**	**0.1**	**0.1 - 0.1**	**0.14**	**0.1**	**0.1 - 0.3**	**0.1**	**0.1**	**0.1 - 0.1**	**0.1**	**0.1**	**0.1 - 0.1**	**0.1**	**0.1**	**0.1**
Bismuth (Bi)	**0.095**	**0.085**	**0.03 - 0.17**	**0.06**	**0.03**	**0.03 - 0.12**	**0.044**	**0.03**	**0.03 - 0.13**	**0.03**	**0.03**	**0.03 - 0.03**	**0.03**	**0.03**	**0.11**
Cadmium (Cd)	0.0233	0.0213	0.0059 - 0.0518	0.0146	0.0131	0.0082 - 0.0236	**0.0062**	**0.0050**	**0.0050 - 0.0100**	**0.005**	**0.005**	**0.005 - 0.005**	0.0067	**0.005**	**0.01**
Calcium (Ca)	6603	6050	3770 - 9730	1742	1570	1130 - 2590	2614	2780	2150 - 2920	1391	1480	943 - 1750	5350	629	209
Chromium (Cr)	0.20	0.20	0.13 - 0.27	**0.19**	**0.16**	**0.10 - 0.30**	**0.10**	**0.10**	**0.10 - 0.13**	0.20	0.10	0.10 - 0.39	0.13	**0.1**	**0.1**
Cobalt (Co)	0.107	0.030	0.020 - 0.364	**0.036**	**0.034**	**0.020 - 0.060**	**0.020**	**0.020**	**0.020 - 0.020**	**0.021**	**0.020**	**0.020 - 0.022**	0.022	**0.02**	**0.02**
Copper (Cu)	1.21	1.13	0.79 - 1.97	2.33	2.38	1.77 - 2.90	2.07	2.20	1.14 - 2.55	1.46	1.28	1.18 - 1.93	1.49	1.44	0.832
Iron (Fe)	8.5	7.6	6.5 - 14.4	25.5	22.3	15.9 - 41.5	19.8	20.5	10.2 - 29.3	16.7	18.0	12.7 - 19.3	29.9	7.96	2.72
Lead (Pb)	0.036	0.031	0.020 - 0.071	0.048	0.033	0.020 - 0.097	0.023	0.021	0.020 - 0.033	**0.025**	**0.020**	**0.020 - 0.035**	0.076	0.025	**0.02**
Lithium (Li)	**0.1**	**0.1**	**0.1 - 0.1**	**0.14**	**0.1**	**0.1 - 0.3**	**0.1**	**0.1**	**0.1 - 0.1**	**0.1**	**0.1**	**0.1 - 0.1**	**0.1**	**0.1**	**0.1**
Magnesium (Mg)	906	875	630 - 1290	753	732	382 - 1020	596	561	410 - 802	791	842	400 - 1130	1270	199	128
Manganese (Mn)	9.9	9.3	2.8 - 26.8	651.2	558.0	341.0 - 1200.0	204.8	230.0	59.7 - 374.0	14.7	10.5	10.1 - 23.4	13.4	5.06	11.9
Mercury (Hg)	0.0020	0.0020	0.0010 - 0.0034	0.0027	0.0027	0.0012 - 0.0043	0.0019	0.0021	0.0010 - 0.0034	0.0016	0.0016	0.0013 - 0.0019	0.0030	**0.001**	**0.001**
Molybdenum (Mo)	4.226	0.589	0.080 - 25.300	0.531	0.451	0.160 - 1.150	0.403	0.112	0.054 - 1.930	0.322	0.312	0.218 - 0.437	0.419	0.346	0.210
Nickel (Ni)	0.40	0.26	0.10 - 1.50	0.33	0.30	0.24 - 0.43	**0.12**	**0.10**	**0.10 - 0.20**	1.77	1.04	0.38 - 3.89	1.18	0.57	0.14
Phosphorus (P)	200	207	147 - 248	461	453	435 - 495	514	522	381 - 595	471	446	403 - 563	627	453	180
Potassium (K)	4953	5115	2680 - 6560	2446	2530	1840 - 3090	2121	2140	1690 - 2500	3347	3230	2100 - 4710	5860	2030	991
Selenium (Se)	**0.325**	**0.2**	**0.2 - 1.2**	**0.28**	**0.2**	**0.2 - 0.6**	**0.2**	**0.2**	**0.2 - 0.2**	**0.2**	**0.2**	**0.2 - 0.2**	**0.2**	**0.2**	**0.2**
Sodium (Na)	**29**	**20**	**20 - 68**	**20**	**20**	**20 - 21**	**20**	**20**	**20 - 20**	**24**	**20**	**20 - 31**	90	**20**	**20**
Strontium (Sr)	32.63	33.10	8.39 - 58.90	1.86	1.89	0.67 - 3.60	6.09	4.74	1.88 - 12.70	2.77	2.27	2.05 - 3.98	6.32	0.652	0.265
Thallium (Tl)	**0.075**	**0.065**	**0.01 - 0.15**	**0.032**	**0.01**	**0.01 - 0.1**	**0.026**	**0.01**	**0.01 - 0.11**	**0.01**	**0.01**	**0.01 - 0.01**	**0.01**	**0.01**	**0.09**
Tin (Sn)	**0.05**	**0.05**	**0.05 - 0.05**	**0.07**	**0.05**	**0.05 - 0.15**	**0.05**	**0.05**	**0.05 - 0.05**	**0.05**	**0.05**	**0.05 - 0.05**	**0.05**	**0.05**	**0.05**
Titanium (Ti)	0.20	0.18	0.10 - 0.40	0.81	0.81	0.30 - 1.49	0.48	0.31	0.16 - 1.02	0.37	0.31	0.21 - 0.59	0.97	0.16	**0.1**
Uranium (U)	**0.002**	**0.002**	**0.002 - 0.002**	**0.0028**	**0.002**	**0.002 - 0.006**	**0.002**	**0.002**	**0.002 - 0.0026**	**0.002**	**0.002**	**0.002 - 0.002**	**0.002**	**0.002**	**0.002**
Vanadium (V)	**0.1**	**0.1**	**0.1 - 0.1**	**0.144**	**0.1**	**0.1 - 0.3**	**0.1**	**0.1**	**0.1 - 0.1**	**0.1**	**0.1**	**0.1 - 0.1**	**0.1**	**0.1**	**0.1**
Zinc (Zn)	7.29	6.96	3.55 - 11.90	8.50	8.14	5.48 - 12.40	11.15	11.60	9.16 - 12.70	3.71	3.93	2.86 - 4.35	3.51	3.05	1.20

Note: highlighted cells indicate at least 50% of analyzed samples are below detection limits

Note: all measurements reported are in mg/kg wet weight

Table 5.6-2. Schaft Project Metal Summaries, 2008

Species	*Vaccinium ssp.*			*Shepherdia canadensis*		
Tissue	berries			berries		
# Samples	n=4			n=4		
	MEAN	**MEDIAN**	**RANGE**	**MEAN**	**MEDIAN**	**RANGE**
Physical Tests						
% Moisture	87.5	88.0	85.2 - 88.9	79.4	79.3	78.6 - 80.6
Metals						
Aluminum (Al)	**3.25**	**3.2**	**2 - 4.4**	**2.2**	**2.2**	**2 - 4.4**
Antimony (Sb)	**0.01**	**0.01**	**0.01 - 0.01**	**0.01**	**0.01**	**0.01 - 0.01**
Arsenic (As)	**0.01**	**0.01**	**0.01 - 0.02**	**0.01**	**0.01**	**0.01 - 0.02**
Barium (Ba)	1.533	1.615	0.771 - 2.13	0.209	0.121	0.062 - 0.532
Beryllium (Be)	**0.1**	**0.1**	**0.1 - 0.1**	**0.1**	**0.1**	**0.1 - 0.1**
Bismuth (Bi)	**0.03**	**0.03**	**0.03 - 0.03**	**0.03**	**0.03**	**0.03 - 0.03**
Cadmium (Cd)	**0.005**	**0.005**	**0.005 - 0.0067**	**0.005**	**0.005**	**0.005 - 0.005**
Calcium (Ca)	151.3	150.0	137 - 168	217.3	217.0	116 - 319
Chromium (Cr)	0.523	0.585	0.01 - 0.91	**0.07**	**0.055**	**0.01 - 0.16**
Cobalt (Co)	**0.02**	**0.02**	**0.02 - 0.02**	**0.02**	**0.02**	**0.02 - 0.02**
Copper (Cu)	0.588	0.647	0.28 - 0.777	0.841	0.825	0.595 - 0.931
Iron (Fe)	4.8	4.8	3.04 - 6.46	5.9	5.8	5.18 - 6.75
Lead (Pb)	**0.02**	**0.02**	**0.02 - 0.02**	**0.02**	**0.02**	**0.02 - 0.02**
Lithium (Li)	**0.1**	**0.1**	**0.1 - 0.1**	**0.1**	**0.1**	**0.1 - 0.1**
Magnesium (Mg)	97.1	97.2	85.9 - 108	108.3	105.6	84.2 - 138
Manganese (Mn)	17.3	13.7	8.3 - 33.5	2.7	2.6	2.24 - 3.32
Mercury (Hg)	**0.001**	**0.001**	**0.001 - 0.001**	**0.001**	**0.001**	**0.001 - 0.001**
Molybdenum (Mo)	0.169	0.112	0.086 - 0.365	0.221	0.207	0.076 - 0.393
Nickel (Ni)	0.36	0.385	0.1 - 0.57	0.718	0.615	0.2 - 1.44
Phosphorus (P)	179	184	117 - 229	375	366	302 - 468
Potassium (K)	968	976	860 - 1060	1803	1845	1620 - 1900
Selenium (Se)	**0.2**	**0.2**	**0.2 - 0.2**	**0.2**	**0.2**	**0.2 - 0.2**
Sodium (Na)	**20**	**20**	**20 - 20**	**20**	**20**	**20 - 20**
Strontium (Sr)	0.406	0.201	0.072 - 1.15	0.347	0.35	0.195 - 0.491
Thallium (Tl)	**0.01**	**0.01**	**0.01 - 0.01**	**0.01**	**0.01**	**0.01 - 0.01**
Tin (Sn)	0.065	0.069	0.05 - 0.073	**0.063**	**0.05**	**0.05 - 0.103**
Titanium (Ti)	**0.1**	**0.1**	**0.1 - 0.1**	**0.1125**	**0.1**	**0.1 - 0.15**
Uranium (U)	**0.002**	**0.002**	**0.002 - 0.002**	**0.002**	**0.002**	**0.002 - 0.002**
Vanadium (V)	**0.1**	**0.1**	**0.1 - 0.1**	**0.1**	**0.1**	**0.1 - 0.1**
Zinc (Zn)	1.483	1.265	1.18 - 2.22	2.218	2.22	1.57 - 2.86

Note: highlighted cells indicate at least 50% of analyzed samples are below detection limits
Note: all measurements reported are in mg/kg wet weight

5.6.2 Common horsetail (*Equisetum arvense*)

Twelve common horsetail leaf samples were collected in 2007 and analyzed for metal concentrations by wet weight (Table 5.6–1). All analyzed samples had antimony, beryllium, bismuth, cobalt, lithium, selenium, sodium, tin, and vanadium below detection. Six out of seven analyzed samples had arsenic, chromium, thallium, and uranium below detection. Five out of seven analyzed samples had cadmium and nickel concentrations below detection. Three out of seven analyzed samples had lead below the detection limit and two out of seven analyzed samples had mercury concentrations below detection.

All common horsetail metal concentrations were highly variable. For example, cobalt concentrations varied from 0.020 to 0.364 mg/kg, and strontium concentrations varied from 8.39 to 58.90 mg/kg. However, all mean and median metal concentrations were similar. For example, the mean cadmium concentration was 0.0233 mg/kg and the median concentration was 0.0213 mg/kg. , Mean common horsetail cadmium, calcium, chromium, cobalt, magnesium, potassium, and strontium concentrations were highest among all species' leaf tissue samples. In particular, mean calcium, molybdenum, and strontium concentrations were much higher in common horsetail than in any other species. Mean common horsetail aluminum, copper, iron, manganese, and phosphorous concentrations were lowest among all species. Mean manganese concentrations were much lower in common horsetail than in any other species.

5.6.3 Labrador Tea (*Ledum groenlandicum*)

Seven Labrador tea leaf samples were collected in 2007 and analyzed for metal concentrations by wet weight (Table 5.6-1). All analyzed samples had antimony, arsenic, beryllium, bismuth, lithium, thallium, tin, uranium, and vanadium concentrations below detection. Nine out of twelve analyzed samples had selenium and sodium below detection. Four out of twelve analyzed samples had cobalt and lead concentrations below detection. Three out of twelve analyzed samples had aluminum and nickel concentrations below detection and one out of twelve analyzed samples had a titanium concentration below detection.

All Labrador tea metal concentrations were moderately variable, with the maximum value typically less than double the minimum metal concentration value. Aluminum and molybdenum concentrations were the exception. Aluminum metal concentrations varied by almost an order of magnitude (3.4 to 23.2 mg/kg wet weight). Molybdenum metal concentrations varied by over an order of magnitude (0.054 to 1.930 mg/kg wet weight). All mean and median metal concentrations were similar. For example, the mean magnesium concentration was 596 mg/kg wet weight and the median concentration was 561 mg/kg wet weight. Labrador tea mean barium, phosphorous, and zinc concentrations were the highest of all species' leaf samples. Labrador tea mean lead, magnesium, and potassium concentrations were the lowest of all species' leaf samples.

5.6.4 Blueberry/Huckleberry (*Vaccinium* spp.)

5.6.4.1 Leaves

Five black huckleberry (*Vaccinium membranaceum*) leaf samples were collected in 2007 and analyzed for metal concentrations by wet weight (Table 5.6-1). All analyzed samples had antimony, beryllium, bismuth, lithium, selenium, thallium, tin, and uranium concentrations below detection. Four out of five analyzed samples had arsenic, sodium, and vanadium concentrations below detection. Three out of five analyzed samples had chromium and cobalt concentrations below detection. Two out of five analyzed samples had lead concentrations below detection and one out of five analyzed samples had cadmium and nickel concentrations below detection.

All black huckleberry metal concentrations were moderately variable with the maximum value typically less than three times the minimum metal concentration value. Molybdenum, the exception, had concentrations that varied by almost an order of magnitude (0.160 to 1.150 mg/kg wet weight). All mean and median metal concentrations were similar. For example, the mean strontium concentration was 1.86 mg/kg wet weight and the median concentration was 1.89 mg/kg wet weight. Black huckleberry mean aluminum, copper, iron, lead, manganese, mercury, and titanium concentrations were the highest of all species' leaf samples. The mean black huckleberry aluminum concentration is much higher than in any other species. Black huckleberry mean nickel and strontium concentrations were the lowest of all species' leaf samples.

5.6.4.2 Berries

One black huckleberry berry sample was collected in 2007 and analyzed for metal concentrations by wet weight (Table 5.6-1). This sample had antimony, arsenic, beryllium, bismuth, cadmium, chromium, cobalt, lead, lithium, mercury, selenium, sodium, thallium, tin, titanium, uranium, and vanadium concentrations below detection. This sample had consistently lower metal concentrations than the blueberry leaf samples and was similar to the four blueberry berry samples collected in 2008.

Four oval-leaved blueberry (*Vaccinium ovalifolium*) berry samples were collected in 2008 and analyzed for metal concentrations by wet weight (Table 5.6-2). All analyzed samples had antimony, arsenic, beryllium, bismuth, cobalt, lead, lithium, mercury, selenium, sodium, thallium, titanium, uranium, and vanadium concentrations below detection. Three out of four analyzed samples had cadmium concentrations below detection. Two out of four analyzed samples had aluminum concentrations below detection and one out of four analyzed samples had chromium, nickel, and tin concentrations below detection.

All four blueberry berry samples did not have highly variable metal concentrations. Chromium and strontium were the exception. Chromium concentrations varied from 0.01 to 0.91 mg/kg wet weight. Strontium concentrations varied from 0.072 to 1.15 mg/kg wet weight. All metals except strontium (mean: 0.406; median: 0.201 mg/kg wet weight), had similar mean and median metal concentrations. All blueberry berry metal concentrations were less than metal concentrations.

5.6.5 Gooseberry (*Ribes lacustre*)

One gooseberry leaf sample was collected in 2007 and analyzed for metal concentrations by wet weight (Table 5.6-1). Antimony, arsenic, beryllium, bismuth, lithium, selenium, thallium, tin, uranium, and vanadium concentrations were below detection. Gooseberry metal concentrations were similar to other leaf tissues.

References

References

Anonymous 2003. *General Information on Remote Sensing and Input to Digital Image Classification*. Website: http://chesapeake.towson.edu/data/dip.asp

ANPC. 2000. *ANPC Guidelines for Rare Plant Surveys in Alberta – Information Bulletin*. Alberta Native Plant Council, Edmonton.

Avers, P., D. Cleland and W. McNab. 1993. *National Hierarchical Framework of Ecological Units*. Ecomap, USDA Forest Service. Washington, DC. 20 pp.

Banner, A., W. MacKenzie, S. Haeussler, S. Thompson, J. Pojar, and R. Trowbridge. 1993. *A Field Guide to Site Identification and Interpretation for the Prince Rupert Forest Region. Land Management Handbook No. 26*. B.C. Ministry of Forests, Research Branch Victoria. http://www.for.gov.bc.ca/hfd/pubs/Docs/Lmh/Lmh26.htm

BC CDC. 2007. Province of British Columbia,, Ministry of Environment, Conservation Data Centre, Victoria. http://www.env.gov.bc.ca/cdc/ (accessed March, 2009).

BGC Engineering Inc. 2008. *Schaft Creek Project Access Route Terrain and Geohazards Mapping*. Phase 1 Draft Report prepared for Copper Fox Metals

British Columbia Ministry of Agriculture, Food and Fisheries. 2002. *A Guide to Weeds in British Columbia*. Victoria Queen's Printer Publications.

BC MOF. 1995. Biodiversity guidebook. *Forest Practices Code of British Columbia Act*. http://www.for.gov.bc.ca/tasb/legsregs/fpc/fpcguide/biodiv/biotoc.htmz (accessed February 2009).

B.C. MELP and B.C. MoFR. 1998. Field Manual for Describing Terrestrial Ecosystems. Land *Management Handbook No. 25*. B.C. Ministry of Environment, Lands, and Parks and Ministry of Forests. Victoria.

B.C. MEM. 1998. B.C. Ministry of Energy and Mines. Application Requirements for a Permit Approving the *Mine Plan and Reclamation Program Pursuant to the Mines Act* R.S.B.C. 1996, C. 293 (March 1998). http://www.em.gov.bc.ca/Subwebs/mining/Project_Approvals/permreq/default.htm

BC MOFR. 2006. The Ecology of the Alpine Zones. Brochure 83.

CFIA. 2008. Invasive Alien Plants in Canada - Technical Report. http://www.inspection.gc.ca/english/plaveg/invenv/techrpt/techrese.shtml#toc30 (accessed February 2010).

Cadrin, C. 2010. Vegetation Ecologist Ecosystems Branch. Personal Communication. March 19, 2010.

Cranston, R., D. Ralph, and B. Wikeem. 2002. Field Guide to Noxious and Other Selected Weeds of British Columbia. Fourth Edition. B.C. Ministry of Agriculture, Food and Fisheries, Food Safety and Quality Branch, and B.C. Ministry of Forests Silviculture Branch http://www.agf.gov.bc.ca/cropprot/weedguid/weedguid.htm

Crnkovic-Dodig, L. 2006. Online at Peltarion Web Site. http://blog.peltarion.com/2006/10/25/fuzzy-math-part-1-the-theory.

DeLong, C. 2004. A Field Guide to Site Identification and Interpretation for the North Central Portion of the Northern Interior Forest Region. Land Management Handbook Number 54. B.C. Ministry of Forests and Range, Victoria, B.C.

Ducks Unlimited Canada. 1998. *Values and benefits of wetland habitats*. http://www.ducks.ca/conserve/wetland_values/index.html. (accessed January 2010).

Ellis, E., R. Pontius (Eds.). 2007. *Land-use and land-cover change*. Washington, D.C.: Environmental Information Coalition, National Council for Science and the Environment, http://www.eoearth.org/article/Land-use_and_land-cover_change (accessed February 2010).

Environment Canada. 2003. Wetland Environmental Assessment Guidelines. Government of Canada. http://www.cws-scf.ec.gc.ca/publications/eval/wetl/index_e.cfm. (accessed November 2009).

Federal Geographic Data Committee. 2000. Riparian Mapping Standard. http://www.fgdc.gov/standards/projects/FGDC-standards-projects/riparian-mapping/index_html (accessed February 2010).

Haber, E. 1997. *Guide to Monitoring Exotic and Invasive Plants*. Prepared for Ecological Monitoring and Assessment Network Environment Canada by National Botanical Services, Ontario.

Hope, G.D., W.R. Mitchell, D.A. Lloyd, W.L Harper and B.M Wikeem. 1991. *Chapter 12: Montane Spruce Zone.* In Ecosystems of British Columbia, Special Report Series 6. Victoria: Ministry of Forests Research Branch, Crown Publications. Accessed January 17, 2008 at http://www.for.gov.bc.ca/hfd/pubs/Docs/Srs/Srs06/chap12.pdf.

Howes, D.E., and E. Kenk. 1997. *Terrain classification system for British Columbia*. Version 2. Victoria, B.C.

Huel, D. 2000. Managing Saskatchewan Wetlands – A Landowner's Guide. Saskatchewan Wetland Conservation Corporation, Regina, Saskatchewan. http://www.swa.ca/Publications/Documents/ManagingSaskatchewanWetlands.pdf (accessed 2 January, 2009).

Integrated Land Management Bureau. 2007. Resource Information Standards Committee. http://www.ilmb.gov.bc.ca/risc/index.html (accessed March 2010)

Klinkenberg, Brian (Editor). 2007. E-Flora BC: Electronic Atlas of the Plants of British Columbia. Lab for Advanced Spatial Analysis, Department of Geography, University of British Columbia, Vancouver. Accessed January 17, 2008 at http://www.geog.ubc.ca/~brian/florae/invasives.html.

MacKenzie, W.H. and J.R. Moran. 2004. *Wetlands of British Columbia: A guide to identification*. Res. Br., B.C. Min. For., Victoria, BC Land Management Handbook 52.

MacMillan, R.A. 2005. *Quesnel PEM Predictive Ecosystem Mapping Knowledge Base and Attribute Summary*. Unpublished Report. LandMapper Environmental Solutions Inc.

MacMillan, R.A., Moon, D.E., and Coupé. R.A. 2007. Automated predictive ecological mapping in a Forest Region of B.C., Canada, 2001–2005. *Geoderma* 140 (2007) 353–373

McPhee, M., P. Ward, J. Kirkby, L. Wolfe, N. Page, K. Dunster, N. K. Dawe and I. Nykwist. 2000. *Sensitive Ecosystems Inventory: East Vancouver Island and Gulf Islands, 1993 - 1997. Volume 2: Conservation Manual*. Technical Report Series No. 345, Canadian Wildlife Service, Pacific and Yukon Region, British Columbia, 328pp.

Meidinger, D. and J. Pojar. (eds.) 1991. Ecosystems of British Columbia. B.C. Ministry of Forests Special Report Series No. 6. Victoria.

Ministry of Forests and Range (MoFR). 2006. The Ecology of the Alpine Zones. Brochure 83. Research Branch. Victoria, BC.

B.C. Ministry of Forests and Range. 2007

Natural Resources Canada. 2009. Atlas of Canada – Wetlands. http://atlas.nrcan.gc.ca/site/english/learningresources/theme_modules/wetlands/index.html (accessed 12 November 2009)

NWIPC. 2009. 2009 Strategic Plan and Plant Profiles. http://www.nwipc.org/documents/2009 nwipcstrategicplan1.pdf (accessed Feb. 2010).

Pojar, J., R. Trowbridge, and T. Lewis. 1983. *Biogeoclimatic Zones of the Cassiar Timber Supply Area, Northwestern British Columbia*. B.C. Ministry of Forests. Prince Rupert Forest Region. Research Section. Smithers.

Polster, David F. 2005. *The Role of Invasive Plant Species Management in Mined Land Reclamation.* Prepared by Polster Environmental Services Ltd.

RTEC. 2007. *Galore Creek Project Predictive Ecosystem Mapping Methodology Report*. Prepared for NovaGold Canada Inc.

RTEC. 2008a. Schaft *Creek Project Country Foods Baseline Assessment*. Prepared for Copper Fox Inc. by RTEC Environmental Consultants Ltd.

RTEC. 2008b. *Schaft Creek Wetlands Baseline Studies Report 2007*. Report Prepared for Copper FoxMetals Inc. by RTEC Environmental Services Ltd. May 2008.

RTEC. 2008c. Schaft *Creek Soil Baseline Report*. Prepared for Copper Fox Inc. by RTEC Environmental Consultants Ltd.

RIC. 1996. *Guidelines and Standard to Terrain Mapping in British Columbia.* Province of British Columbia, Guidelines prepared by the Resource Inventory Committee Surficial Geology Task Group. 131 pp

RIC. 1998. *Standard for Terrestrial Ecosystem Mapping in British Columbia*. Province of British Columbia, Resources Inventory Committee, Victoria.

RIC. 1999. *Standard for Predictive Ecosystem Mapping. Inventory standard*. Version 1.0. Province of British Columbia Resources Inventory Committee, Victoria.

RIC. 2000. *Standard for Terrestrial Ecosystem Mapping. Digital Data Capture*. Version 1.0. Province of British Columbia Resources Inventory Committee, Victoria.

RIC. 2004. *Standard for Predictive Ecosystem Mapping. Digital Data Capture*. Version 1.0. Errata no. 1.0. Province of British Columbia Resources Inventory Committee, Victoria.

Saskatchewan Watershed Authority. 2002. Your guide to the Saskatchewan wetland policy. Saskatchewan Wetland Conservation Corporation, Regina, Saskatchewan. http://www.swa.ca/AboutUs/Documents/SaskatchewanWetlandPolicy.pdf (accessed 3 November 2009).

Trowbridge, R. and A. Banner. 2002. Field Guide Supplement to the Identification of High Elevation ESSF Woodland Subzones and Site Units of the Bulkley Timber Supply Area. Boreal Research and Development Ltd. Smithers, BC.

Appendix 1

Listed Ecosystems Tracked by the British Columbia Conservation Data Centre (BC CDC) and the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) in the Cassiar Iskut-Stikine Forest District

Appendix 1. Listed Ecosystems Tracked by the British Columbia Conservation Data Centre (BC CDC) and the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) in the Cassiar Iskut-Stikine Forest District

Biogeoclimatic Units	Site Series	Scientific Name	Common Name	Equivalent Ecosystem	BC List	Global Status	Prov Status	Schaft Creek Project PEM	Schaft Creek Project TEM	Schaft Creek Project Field Plot	Prov Status Review Date	Prov Status Change Date	Ecosystem Group	Endemic
ESSFmc	Wf09	*Eleocharis quinqueflora / Drepanocladus spp.*	few-flowered spike-rush / hook-mosses		Red	GNR	S2	not mapped	not mapped	not sampled	30-Jul-04	30-Jul-04	Wetland, Herbaceous	
ESSFmc	Wf13	*Eriophorum angustifolium - Carex limosa*	narrow-leaved cotton-grass - shore sedge		Blue	G3	S3	not mapped	not mapped	not sampled	14-Jul-04	14-Jul-04	Wetland, Herbaceous	Y
ESSFmc	11	*Pinus contorta / Carex pauciflora / Sphagnum spp.*	lodgepole pine / few-flowered sedge / peat-mosses	ESSFmc Wb10	Blue	G2G3	S2S3	not mapped	not mapped	not sampled	14-Jul-04	14-Jul-04	Wetland, Forest, Woodland	Y
ESSFmc	Wb10	*Pinus contorta / Carex pauciflora / Sphagnum spp.*	lodgepole pine / few-flowered sedge / peat-mosses	ESSFmc11	Blue	G2G3	S2S3	not mapped	not mapped	not sampled	14-Jul-04	14-Jul-04	Wetland, Forest, Woodland	Y
BWBSdk1	Fl01	*Alnus incana / Equisetum arvense*	mountain alder / common horsetail		Blue	G3	S3	not mapped	not mapped	not sampled	30-Jul-04	30-Jul-04	Riparian, Shrub, Wetland	
BWBSdk1	Wf05	*Carex lasiocarpa / Drepanocladus aduncus*	slender sedge / common hook-moss		Blue	G3	S3	not mapped	not mapped	not sampled	31-Oct-04	31-Jul-02	Wetland, Herbaceous	Y
BWBSdk1	Wm02	*Equisetum fluviatile - Carex utriculata*	swamp horsetail - beaked sedge		Blue	G4	S3	not mapped	not mapped	not sampled	30-Jul-04	30-Jul-04	Wetland, Herbaceous	
BWBSdk1	12	*Populus balsamifera (ssp. balsamifera, ssp. trichocarpa) - Picea spp. / Cornus stolonifera*	(balsam poplar, black cottonwood) - spruces / red-osier dogwood	BWBSdk1 Fm02	Red	GNR	S2	not mapped	not mapped	not sampled	31-Oct-04	31-Jul-02	Riparian, Forest	
BWBSdk1	Fm02	*Populus balsamifera (ssp. balsamifera, ssp. trichocarpa) - Picea spp. / Cornus stolonifera*	(balsam poplar, black cottonwood) - spruces / red-osier dogwood	BWBSdk1 12	Red	GNR	S2	not mapped	not mapped	not sampled	31-Oct-04	31-Jul-02	Riparian, Forest	
BWBSdk1	Fl03	*Salix lucida ssp. lasiandra / Cornus stolonifera / Equisetum spp.*	Pacific willow / red-osier dogwood / horsetails		Red	G2	S2	not mapped	not mapped	not sampled	14-Jul-04	14-Jul-04	Riparian, Shrub, Herbaceous	Y
BWBSdk1	Wf11	*Trichophorum cespitosum / Campylium stellatum*	tufted clubrush / golden star-moss		Blue	G2G3	S2S3	not mapped	not mapped	yes	14-Jul-04	14-Jul-04	Wetland, Herbaceous	Y
ICHwc	52	*Alnus incana / Cornus stolonifera / Athyrium filix-femina*	mountain alder / red-osier dogwood / lady fern	ICHwc Fl02		G3G4	S3	not mapped	not mapped	not sampled	30-Jul-04	30-Jul-04	Riparian, Shrub, Wetland	
ICHwc	Fl02	*Alnus incana / Cornus stolonifera / Athyrium filix-femina*	mountain alder / red-osier dogwood / lady fern	ICHwc52	Blue	G3G4	S3	not mapped	not mapped	not sampled	30-Jul-04	30-Jul-04	Riparian, Shrub, Wetland	
ICHwc	Wf51	*Carex sitchensis / Sphagnum spp.*	Sitka sedge / peat-mosses		Red	G2	S2	not mapped	not mapped	not sampled	30-Jul-04	30-Jul-04	Wetland, Herbaceous	Y
ICHwc	10	*Pinus contorta / Carex aquatilis / Sphagnum spp.*	lodgepole pine / water sedge / peat-mosses	ICHwc Wb07	Blue	G3	S3	not mapped	not mapped	not sampled	24-Apr-07	24-Apr-07	Wetland, Forest, Woodland	Y
ICHwc	Wb07	*Pinus contorta / Carex aquatilis / Sphagnum spp.*	lodgepole pine / water sedge / peat-mosses	ICHwc10	Blue	G3	S3	not mapped	not mapped	not sampled	24-Apr-07	24-Apr-07	Wetland, Forest, Woodland	Y
ICHwc	06	*Populus balsamifera ssp. trichocarpa - Abies lasiocarpa / Oplopanax horridus*	black cottonwood - subalpine fir / devil's club	ICHwc FM03	Blue	GNR	S2S3	yes	not mapped	not sampled	17-Jul-08	17-Jul-08	Riparian, Forest	
ICHwc	Fm03	*Populus balsamifera ssp. trichocarpa - Abies lasiocarpa / Oplopanax horridus*	black cottonwood - subalpine fir / devil's club	ICHwc06	Blue	GNR	S2S3	yes	not mapped	not sampled	17-Jul-08	17-Jul-08	Riparian, Forest	
ICHwc	09	*Tsuga heterophylla / Rubus chamaemorus / Sphagnum spp.*	western hemlock / cloudberry / peat-mosses	ICHwc Wb04	Red	GNR	S2	not mapped	not mapped	not sampled	14-Jul-04	14-Jul-04	Wetland, Forest	
ICHwc	Wb04	*Tsuga heterophylla / Rubus chamaemorus / Sphagnum spp.*	western hemlock / cloudberry / peat-mosses	ICHwc09	Red	GNR	S2	not mapped	not mapped	not sampled	14-Jul-04	14-Jul-04	Wetland, Forest	

Appendix 2

Listed Plants Tracked by the British Columbia Conservation Data Centre (BC CDC) and the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) in the Cassiar Iskut-Stikine Forest District

Appendix 2 Listed Plants Tracked by the British Columbia Conservation Data Centre (BC CDC) and the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) in the Cassiar Iskut-Stikine Forest District

Scientific Name	English Name	BC List	Prov Status	Global Status	COSEWIC	COSEWIC Comments	Species Level	Kingdom	Phylum	Order
Amphidium mougeotii		Blue	S2S3	G5			Species	Plantae	Bryophyta	Orthotrichales
Andreaea rupestris var. papillosa		Red	S1S3	G5TNR			Variety	Plantae	Bryophyta	Andreaeales
Andreaea rupestris var. papillosa		Red	S1S4	G5TNR			Variety	Plantae	Bryophyta	Andreaeales
Andreaea rupestris var. papillosa		Red	S1S5	G5TNR			Variety	Plantae	Bryophyta	Andreaeales
Andreaea rupestris var. papillosa		Red	S1S6	G5TNR			Variety	Plantae	Bryophyta	Andreaeales
Andreaea rupestris var. papillosa		Red	S1S7	G5TNR			Variety	Plantae	Bryophyta	Andreaeales
Aongstroemia longipes		Blue	S2S3	G3G5			Species	Plantae	Bryophyta	Dicranales
Aphragmus eschscholtzianus	Eschscholtz's little nightmare	Blue	S2S3	G3			Species	Plantae	Anthophyta	Capparales
Arabis lignifera	woody-branched rockcress	Blue	S2S3	G5			Species	Plantae	Anthophyta	Capparales
Arctophila fulva	pendantgrass	Blue	S2S3	G5			Species	Plantae	Anthophyta	Cyperales
Arenaria longipedunculata	low sandwort	Red	S1S3	G3G4Q			Species	Plantae	Anthophyta	Caryophyllales
Artemisia alaskana	Alaskan sagebrush	Blue	S2S3	G4			Species	Plantae	Anthophyta	Asterales
Artemisia furcata var. heterophylla	three-forked mugwort	Blue	S2S3	G4TNR			Variety	Plantae	Anthophyta	Asterales
Astragalus umbellatus	tundra milk-vetch	Blue	S2S3	G4			Species	Plantae	Anthophyta	Fabales
Bistorta plumosa	meadow bistort	Red	S1S3	G5T5			Species	Plantae	Anthophyta	Polygonales
Brachythecium groenlandicum		Blue	S2S3	G3G5			Species	Plantae	Bryophyta	Hypnales
Brachythecium trachypodium		Red	S1S3	GU			Species	Plantae	Bryophyta	Hypnales
Bryobrittonia longipes		Blue	S2S3	G3			Species	Plantae	Bryophyta	Pottiales
Bryoerythrophyllum ferruginascens		Red	S1S3	G3G4			Species	Plantae	Bryophyta	Pottiales
Bryum arcticum		Red	S1S3	G5?			Species	Plantae	Bryophyta	Bryales
Bryum muehlenbeckii		Blue	S2S3	G4G5			Species	Plantae	Bryophyta	Bryales
Calliergon richardsonii		Blue	S2S3	G4			Species	Plantae	Bryophyta	Hypnales
Callitriche heterophylla ssp. heterophylla	two-edged water-starwort	Blue	S2S3	G5T5			Subspecies	Plantae	Anthophyta	Callitrichales
Caltha palustris var. palustris	yellow marsh-marigold	Blue	S2S3	G5T5			Variety	Plantae	Anthophyta	Ranunculales
Campylopus flexuosus		Blue	S2S3	G5?			Species	Plantae	Bryophyta	Dicranales
Carex bicolor	two-coloured sedge	Blue	S2S3	G5			Species	Plantae	Anthophyta	Cyperales
Carex incurviformis var. incurviformis	curved-spiked sedge	Blue	S2S3	G4G5T4T5			Variety	Plantae	Anthophyta	Cyperales
Carex krausei	Krause's sedge	Blue	S2S3	G4			Species	Plantae	Anthophyta	Cyperales
Carex lenticularis var. dolia	Enander's sedge	Blue	S2S3	G5T3			Variety	Plantae	Anthophyta	Cyperales
Carex membranacea	fragile sedge	Blue	S2S3	G5			Species	Plantae	Anthophyta	Cyperales
Carex misandra	short-leaved sedge	Blue	S2S3	G5			Species	Plantae	Anthophyta	Cyperales
Carex rupestris ssp. rupestris	curly sedge	Blue	S2S3	G5T5?			Subspecies	Plantae	Anthophyta	Cyperales
Carex tenera	tender sedge	Blue	S2S3	G5			Species	Plantae	Anthophyta	Cyperales
Castilleja hyperborea	northern paintbrush	Blue	S2S3	G3G5			Species	Plantae	Anthophyta	Scrophulariales
Chamaerhodos erecta ssp. nuttallii	American chamaerhodos	Blue	S2S3	G5T4T5			Subspecies	Plantae	Anthophyta	Rosales
Chrysosplenium wrightii	Wright's golden-saxifrage	Red	S1S3	G5?			Species	Plantae	Anthophyta	Rosales
Cicuta virosa	European water-hemlock	Blue	S2S3	G4G5			Species	Plantae	Anthophyta	Apiales
Cinclidium arcticum		Red	S1S3	G4G5			Species	Plantae	Bryophyta	Bryales
Cnestrum alpestre		Blue	S2S3	G3G5			Species	Plantae	Bryophyta	Dicranales
Cnestrum schisti		Red	S1S3	G3G5			Species	Plantae	Bryophyta	Dicranales
Cnidium cnidiifolium	northern hemlock-parsley	Red	S1	G5			Species	Plantae	Anthophyta	Apiales
Cornus suecica	dwarf bog bunchberry	Red	S1S3	G5			Species	Plantae	Anthophyta	Cornales
Cynodontium tenellum		Blue	S2S3	G3G5Q			Species	Plantae	Bryophyta	Dicranales
Cyrtomnium hymenophylloides		Blue	S2S3	G5?			Species	Plantae	Bryophyta	Bryales
Cyrtomnium hymenophyllum		Blue	S2S3	G3G5			Species	Plantae	Bryophyta	Bryales
Descurainia sophioides	northern tansy mustard	Red	S1S3	G5			Species	Plantae	Anthophyta	Capparales
Desmatodon leucostoma		Red	S1S3	G2G4			Species	Plantae	Bryophyta	Pottiales
Desmatodon systylius		Red	S1S3	G4G5			Species	Plantae	Bryophyta	Pottiales
Diapensia lapponica ssp. obovata	diapensia	Blue	S2S3	G5T5			Subspecies	Plantae	Anthophyta	Diapensiales
Dicranella cerviculata		Blue	S2S3	G5?			Species	Plantae	Bryophyta	Dicranales
Dicranodontium subporodictyon		Blue	S2S3	G3			Species	Plantae	Bryophyta	Dicranales
Dicranum angustum		Red	S1S3	G5?			Species	Plantae	Bryophyta	Dicranales
Dicranum fragilifolium		Blue	S2S3	G4G5			Species	Plantae	Bryophyta	Dicranales
Dicranum spadiceum		Blue	S2S3	G5?			Species	Plantae	Bryophyta	Dicranales
Didymodon asperifolius		Red	S1S3	G3G5			Species	Plantae	Bryophyta	Pottiales
Didymodon johansenii		Red	S1S3	G5?			Species	Plantae	Bryophyta	Pottiales
Douglasia alaskana	Alaskan fairy-candelabra	Red	S2?	G3			Species	Plantae	Anthophyta	Primulales
Douglasia gormanii	Gorman's douglasia	Red	S1S3	G4			Species	Plantae	Anthophyta	Primulales
Draba cinerea	gray-leaved draba	Blue	S2S3	G5			Species	Plantae	Anthophyta	Capparales
Draba corymbosa	Baffin Bay draba	Blue	S2S3	G4G5			Species	Plantae	Anthophyta	Capparales
Draba fladnizensis	Austrian draba	Blue	S2S3	G4			Species	Plantae	Anthophyta	Capparales
Draba glabella var. glabella	smooth draba	Blue	S2S3	G4G5T4			Variety	Plantae	Anthophyta	Capparales
Draba lactea	milky draba	Blue	S2S3	G4			Species	Plantae	Anthophyta	Capparales
Draba lonchocarpa var. thompsonii	lance-fruited draba	Blue	S2S3	G5T3T4			Variety	Plantae	Anthophyta	Capparales
Draba palanderiana	Palander's draba	Red	S1S3	G4G5			Species	Plantae	Anthophyta	Capparales
Draba porsildii	Porsild's draba	Blue	S2S3	G3G4			Species	Plantae	Anthophyta	Capparales
Draba ruaxes	coast mountain draba	Blue	S2S3	G4			Species	Plantae	Anthophyta	Capparales
Draba stenopetala	star-flowered draba	Red	S1	G3G4			Species	Plantae	Anthophyta	Capparales
Draba ventosa	Wind River draba	Blue	S2S3	G3			Species	Plantae	Anthophyta	Capparales
Drepanocladus crassicostatus		Blue	S2S3	G3G5			Species	Plantae	Bryophyta	Hypnales
Drepanocladus lapponicus		Red	S1S3	GU			Species	Plantae	Bryophyta	Hypnales
Drepanocladus trichophyllus		Red	S1S3	GU			Species	Plantae	Bryophyta	Hypnales
Drepanocladus tundrae		Red	S1S3	GU			Species	Plantae	Bryophyta	Hypnales
Encalypta alpina		Blue	S2S3	G5?			Species	Plantae	Bryophyta	Pottiales
Encalypta brevicolla		Blue	S2S3	G4			Species	Plantae	Bryophyta	Pottiales
Encalypta brevipes		Blue	S2S3	G3			Species	Plantae	Bryophyta	Pottiales
Epilobium davuricum	northern swamp willowherb	Red	S1S3	G5			Species	Plantae	Anthophyta	Myrtales
Epilobium halleanum	Hall's willowherb	Blue	S2S3	G5			Species	Plantae	Anthophyta	Myrtales
Epilobium hornemannii ssp. behringianum	Hornemann's willowherb	Blue	S2S3	G5T4			Subspecies	Plantae	Anthophyta	Myrtales
Epilobium leptocarpum	small-fruited willowherb	Blue	S2S3	G5			Species	Plantae	Anthophyta	Myrtales

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Scientific Name	English Name	BC List	Prov Status	Global Status	COSEWIC	COSEWIC Comments	Species Level	Kingdom	Phylum	Order
Erigeron uniflorus ssp. eriocephalus	northern daisy	Blue	S2S3	G5T4			Subspecies	Plantae	Anthophyta	Asterales
Erysimum pallasii	Pallas' wallflower	Red	S1S3	G4			Species	Plantae	Anthophyta	Capparales
Eutrema edwardsii	Edwards wallflower	Blue	S2S3	G4			Species	Plantae	Anthophyta	Capparales
Festuca minutiflora	little fescue	Blue	S2S3	G5			Species	Plantae	Anthophyta	Cyperales
Gentianella tenella ssp. tenella	slender gentian	Red	S1S3	G4G5T4			Subspecies	Plantae	Anthophyta	Gentianales
Geum rossii var. rossii	Ross' avens	Blue	S2S3	G5T5			Variety	Plantae	Anthophyta	Rosales
Glyceria pulchella	slender mannagrass	Blue	S2S3	G5			Species	Plantae	Anthophyta	Cyperales
Grimmia affinis		Blue	S2S3	G4G5			Species	Plantae	Bryophyta	Grimmiales
Gymnocarpium jessoense ssp. parvulum	Nahanni oak fern	Blue	S3	G5T4			Subspecies	Plantae	Filicinophyta	Filicales
Hygrohypnum alpestre		Red	S1S3	G3G5			Species	Plantae	Bryophyta	Hypnales
Hygrohypnum duriusculum		Blue	S2S3	G3G5			Species	Plantae	Bryophyta	Hypnales
Hygrohypnum polare		Red	S1S3	G5?			Species	Plantae	Bryophyta	Hypnales
Hygrohypnum styriacum		Blue	S2S3	GU			Species	Plantae	Bryophyta	Hypnales
Hypnum holmenii		Red	S1S3	GNR			Species	Plantae	Bryophyta	Hypnales
Hypnum plicatulum		Blue	S2S3	G5			Species	Plantae	Bryophyta	Hypnales
Hypnum pratense		Blue	S2S3	G5			Species	Plantae	Bryophyta	Hypnales
Juncus albescens	whitish rush	Blue	S2S3	G5			Species	Plantae	Anthophyta	Juncales
Juncus arcticus ssp. alaskanus	arctic rush	Blue	S2S3	G5T4T5			Subspecies	Plantae	Anthophyta	Juncales
Koenigia islandica	Iceland koenigia	Blue	S2S3	G4			Species	Plantae	Anthophyta	Polygonales
Lescuraea saxicola		Red	S1S3	G4G5			Species	Plantae	Bryophyta	Hypnales
Loeskypnum badium		Blue	S2S3	G4G5			Species	Plantae	Bryophyta	Hypnales
Lomatogonium rotatum	marsh felwort	Blue	S2S3	G5			Species	Plantae	Anthophyta	Gentianales
Lupinus kuschei	Yukon lupine	Blue	S2S3	G3G4			Species	Plantae	Anthophyta	Fabales
Luzula confusa	northern wood-rush	Blue	S2S3	G5			Species	Plantae	Anthophyta	Juncales
Luzula groenlandica	Greenland wood-rush	Blue	S2S3	G4			Species	Plantae	Anthophyta	Juncales
Luzula kjellmaniana	Kjellman's wood-rush	Blue	S2S3	GNR			Species	Plantae	Anthophyta	Juncales
Luzula nivalis	arctic wood-rush	Blue	S2S3	G5			Species	Plantae	Anthophyta	Juncales
Minuartia elegans	northern sandwort	Blue	S2S3	G4G5			Species	Plantae	Anthophyta	Caryophyllales
Minuartia macrocarpa	large-fruited sandwort	Red	S1S3	G4			Species	Plantae	Anthophyta	Caryophyllales
Minuartia stricta	rock sandwort	Blue	S2S3	G5			Species	Plantae	Anthophyta	Caryophyllales
Mnium arizonicum		Red	S1S3	G5?			Species	Plantae	Bryophyta	Bryales
Montia bostockii	Bostock's montia	Red	S1S3	G3			Species	Plantae	Anthophyta	Caryophyllales
Myurella sibirica		Red	S1S3	G4?			Species	Plantae	Bryophyta	Hypnales
Nephroma occultum	Cryptic Paw	Blue	S2S3	G4	SC (Apr 2006)		Species	Plantae	Ascomycota	Peltigerales
Oreas martiana		Red	S1S3	G5?			Species	Plantae	Bryophyta	Dicranales
Orthothecium strictum		Blue	S2S3	G5?			Species	Plantae	Bryophyta	Hypnales
Orthotrichum alpestre		Blue	S2S3	G4G5			Species	Plantae	Bryophyta	Orthotrichales
Orthotrichum pylaisii		Red	S1S3	G4G5			Species	Plantae	Bryophyta	Orthotrichales
Oxytropis campestris var. davisii	Davis' locoweed	Blue	S3	G5T3			Variety	Plantae	Anthophyta	Fabales
Oxytropis campestris var. jordalii	Jordal's locoweed	Blue	S2S3	G5T4			Variety	Plantae	Anthophyta	Fabales
Oxytropis maydelliana	Maydell's locoweed	Blue	S2S3	G5			Species	Plantae	Anthophyta	Fabales
Oxytropis scammaniana	Scamman's locoweed	Blue	S2S3	G3G4			Species	Plantae	Anthophyta	Fabales
Papaver alboroseum	pale poppy	Blue	S2S3	G3G4			Species	Plantae	Anthophyta	Papaverales
Parrya nudicaulis	northern parrya	Red	SH	G5			Species	Plantae	Anthophyta	Capparales
Pedicularis parviflora ssp. parviflora	small-flowered lousewort	Blue	S3	G4T4			Subspecies	Plantae	Anthophyta	Scrophulariales
Pedicularis verticillata	whorled lousewort	Blue	S2S3	G4			Species	Plantae	Anthophyta	Scrophulariales
Penstemon gormanii	Gorman's penstemon	Blue	S2S3	G4			Species	Plantae	Anthophyta	Scrophulariales
Phippsia algida	frigid phippsia	Blue	S3?	G5			Species	Plantae	Anthophyta	Cyperales
Pinguicula villosa	hairy butterwort	Blue	S2S3	G4			Species	Plantae	Anthophyta	Scrophulariales
Plagiomnium ciliare		Red	S1S3	G5			Species	Plantae	Bryophyta	Bryales
Plantago eriopoda	alkali plantain	Blue	S3	G5			Species	Plantae	Anthophyta	Plantaginales
Poa abbreviata ssp. pattersonii	abbreviated bluegrass	Blue	S2S3	G5T5			Subspecies	Plantae	Anthophyta	Cyperales
Poa pseudoabbreviata	polar bluegrass	Blue	S2S3	G4			Species	Plantae	Anthophyta	Cyperales
Pohlia atropurpurea		Blue	S2S3	G4G5			Species	Plantae	Bryophyta	Bryales
Pohlia elongata		Blue	S2S3	G4G5			Species	Plantae	Bryophyta	Bryales
Pohlia obtusifolia		Blue	S2S3	G2G4			Species	Plantae	Bryophyta	Bryales
Pohlia sphagnicola		Blue	S2S3	G2G3			Species	Plantae	Bryophyta	Bryales
Polemonium boreale	northern Jacob's-ladder	Blue	S2S3	G5			Species	Plantae	Anthophyta	Solanales
Polemonium occidentale ssp. occidentale	western Jacob's-ladder	Blue	S2S3	G5?T5?			Subspecies	Plantae	Anthophyta	Solanales
Polystichum kruckebergii	Kruckeberg's holly fern	Blue	S2S3	G4			Species	Plantae	Filicinophyta	Filicales
Polytrichum longisetum		Blue	S2S3	G5			Species	Plantae	Bryophyta	Polytrichales
Potamogeton perfoliatus	perfoliate pondweed	Blue	S2S3	G5			Species	Plantae	Anthophyta	Najadales
Potentilla biflora	two-flowered cinquefoil	Blue	S2S3	G4G5			Species	Plantae	Anthophyta	Rosales
Potentilla elegans	elegant cinquefoil	Red	S1S3	G4			Species	Plantae	Anthophyta	Rosales
Potentilla nivea var. pentaphylla	five-leaved cinquefoil	Blue	S2S3	G5T4			Variety	Plantae	Anthophyta	Rosales
Primula cuneifolia ssp. saxifragifolia	wedge-leaf primrose	Blue	S2S3	G5TNR			Subspecies	Plantae	Anthophyta	Primulales
Pseudobryum cinclidioides		Red	S1S3	G5			Species	Plantae	Bryophyta	Bryales
Psilopilum cavifolium		Red	S1S3	GU			Species	Plantae	Bryophyta	Polytrichales
Racomitrium panschii		Red	S1S3	GU			Species	Plantae	Bryophyta	Grimmiales
Racomitrium pygmaeum		Red	S1S3	GU			Species	Plantae	Bryophyta	Grimmiales
Ranunculus pedatifidus ssp. affinis	birdfoot buttercup	Blue	S2S3	G5T5			Subspecies	Plantae	Anthophyta	Ranunculales
Ranunculus sulphureus	sulphur buttercup	Blue	S2S3	G5			Species	Plantae	Anthophyta	Ranunculales
Rhizomnium gracile		Blue	S2S3	G4G5			Species	Plantae	Bryophyta	Bryales
Rhizomnium punctatum		Red	S1S3	G5			Species	Plantae	Bryophyta	Bryales
Rhynchostegium serrulatum		Red	S1S3	G5			Species	Plantae	Bryophyta	Hypnales
Rumex arcticus	arctic dock	Blue	S3	G5			Species	Plantae	Anthophyta	Polygonales
Sagina nivalis	snow pearlwort	Blue	S2S3	G5			Species	Plantae	Anthophyta	Caryophyllales
Salix petiolaris	meadow willow	Blue	S2S3	G5			Species	Plantae	Anthophyta	Salicales
Salix raupii	Raup's willow	Red	S1	G2			Species	Plantae	Anthophyta	Salicales
Salix setchelliana	Setchell's willow	Blue	S3	G4			Species	Plantae	Anthophyta	Salicales

Appendix 2 Listed Plants Tracked by the British Columbia Conservation Data Centre (BC CDC) and the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) in the Cassiar Iskut-Stikine Forest District

Scientific Name	English Name	BC List	Prov Status	Global Status	COSEWIC	COSEWIC Comments	Species Level	Kingdom	Phylum	Order
Saussurea angustifolia var. angustifolia	northern sawwort	Red	SH	G5TNR			Variety	Plantae	Anthophyta	Asterales
Saxifraga hieraciifolia var. hieraciifolia	hawkweed-leaved saxifrage	Red	S1S3	G4TNR			Variety	Plantae	Anthophyta	Rosales
Saxifraga hirculus ssp. hirculus	yellow marsh saxifrage	Red	S1S3	G5TNR			Subspecies	Plantae	Anthophyta	Rosales
Saxifraga nelsoniana ssp. carlottae	dotted saxifrage	Blue	S3	G5T3?			Subspecies	Plantae	Anthophyta	Rosales
Saxifraga razshivinii	large-petalled saxifrage	Red	S1S3	G4G5			Species	Plantae	Anthophyta	Rosales
Saxifraga serpyllifolia	thyme-leaved saxifrage	Blue	S2S3	G5			Species	Plantae	Anthophyta	Rosales
Schistidium agassizii		Blue	S2S3	G3G5			Species	Plantae	Bryophyta	Grimmiales
Schistidium boreale		Blue	S2S3	GNR			Species	Plantae	Bryophyta	Grimmiales
Schistidium dupretii		Blue	S2S3	GNRQ			Species	Plantae	Bryophyta	Grimmiales
Schistidium frigidum		Blue	S2S3	GNR			Species	Plantae	Bryophyta	Grimmiales
Schistidium pulvinatum		Red	S1S3	G5			Species	Plantae	Bryophyta	Grimmiales
Scorpidium turgescens		Blue	S2S3	G3G5			Species	Plantae	Bryophyta	Hypnales
Senecio atropurpureus	purple-haired groundsel	Blue	S2S3	G5			Species	Plantae	Anthophyta	Asterales
Senecio congestus	marsh fleabane	Red	S1S3	G5			Species	Plantae	Anthophyta	Asterales
Senecio fuscatus	northern groundsel	Blue	S2S3	G4			Species	Plantae	Anthophyta	Asterales
Senecio ogotorukensis	Ogotoruk Creek butterweed	Red	S1S3	G3G5			Species	Plantae	Anthophyta	Asterales
Senecio sheldonensis	Mount Sheldon butterweed	Blue	S2S3	G3			Species	Plantae	Anthophyta	Asterales
Senecio yukonensis	Yukon groundsel	Blue	S2S3	G4G5Q			Species	Plantae	Anthophyta	Asterales
Silene drummondii var. drummondii	Drummond's campion	Blue	S3	G5T5			Variety	Plantae	Anthophyta	Caryophyllales
Silene involucrata ssp. involucrata	arctic campion	Blue	S2S3	G5T5			Subspecies	Plantae	Anthophyta	Caryophyllales
Silene taimyrensis	Taimyr campion	Blue	S2S3	G4?			Species	Plantae	Anthophyta	Caryophyllales
Sphagnum balticum		Blue	S2S3	G2G4			Species	Plantae	Bryophyta	Sphagnales
Splachnum luteum		Blue	S2S3	G3			Species	Plantae	Bryophyta	Funariales
Stuckenia vaginata	sheathing pondweed	Blue	S2S3	G5			Species	Plantae	Anthophyta	Najadales
Tayloria froelichiana		Red	S1S3	G3G5			Species	Plantae	Bryophyta	Funariales
Tayloria lingulata		Blue	S2S3	G3G5			Species	Plantae	Bryophyta	Funariales
Tetraplodon angustatus		Blue	S2S3	G4			Species	Plantae	Bryophyta	Funariales
Tetraplodon pallidus		Red	S1S3	GU			Species	Plantae	Bryophyta	Funariales
Timmia megapolitana		Blue	S2S3	G5			Species	Plantae	Bryophyta	Bryales
Timmia norvegica		Blue	S2S3	G4?			Species	Plantae	Bryophyta	Bryales
Tofieldia coccinea	northern false asphodel	Blue	S2S3	G5			Species	Plantae	Anthophyta	Liliales
Tortella inclinata		Blue	S2S3	G4G5			Species	Plantae	Bryophyta	Pottiales
Trichophorum pumilum	dwarf clubrush	Blue	S2S3	G5			Species	Plantae	Anthophyta	Cyperales
Ulota curvifolia		Red	S1S3	G3G5			Species	Plantae	Bryophyta	Orthotrichales
Woodsia alpina	alpine cliff fern	Blue	S2S3	G4			Species	Plantae	Filicinophyta	Filicales

Appendix 3

Schaft Creek Metal Analysis Wet Weight Raw Values

Appendix 3. Schaft Creek Project Metal Analysis Wet Weight Raw Values

Results of Analysis												Physical Tests																															
ALS Sample ID	Matrix	Date Sampled	Sample ID	UTM Zone	Easting	Northing	Elevation	*Genus*	*Species*	Common Name	% Moisture	Total Metals	Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Bismuth (Bi)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Lithium (Li)	Magnesium (Mg)	Manganese (Mn)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Phosphorus (P)	Potassium (K)	Selenium (Se)	Sodium (Na)	Strontium (Sr)	Thallium (Tl)	Tin (Sn)	Titanium (Ti)	Uranium (U)	Vanadium (V)	Zinc (Zn)
												Units	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
L551584-1	Leaves	28-AUG-07	PIT 1- EQUIARV	9U	380113	6359959	1036	*Equisetum*	*arvense*	common horsetail	82.6		2.8	**0.01**	**0.01**	3.57	**0.1**	**0.03**	0.0518	6790	0.18	0.021	1.81	7.34	**0.02**	**0.1**	694	5.20	0.0025	9.76	**0.1**	147	5400	0.24	**20**	38.8	**0.01**	**0.05**	0.18	**0.002**	**0.1**	3.55
L551584-2	Leaves	28-AUG-07	PIT 2- EQUIARV	9U	380173	6359578	1008	*Equisetum*	*arvense*	common horsetail	80.3		**2**	**0.01**	**0.01**	4.44	**0.1**	**0.04**	0.0202	8020	0.19	0.038	1.07	6.49	**0.02**	**0.1**	711	16.2	0.0016	25.3	0.17	212	4680	0.66	**20**	26.5	**0.02**	**0.05**	0.17	**0.002**	**0.1**	8.40
L551584-3	Leaves	28-AUG-07	PIT 3- EQUIARV	9U	380069	6359316	972	*Equisetum*	*arvense*	common horsetail	83.9		2.0	**0.01**	**0.01**	5.86	**0.1**	**0.05**	0.0223	5100	0.20	**0.02**	1.08	7.57	**0.02**	**0.1**	637	4.97	0.0026	9.16	0.12	158	6560	**0.2**	**20**	39.9	**0.03**	**0.05**	0.17	**0.002**	**0.1**	7.22
L551584-9	Leaves	29-AUG-07	PIT 4- EQUIARV	9U	379585	6359259	904	*Equisetum*	*arvense*	common horsetail	76.8		4.7	**0.01**	**0.01**	8.42	**0.1**	**0.06**	0.0127	9320	0.26	0.248	0.836	11.6	0.063	**0.1**	1010	9.15	0.0014	0.676	0.63	202	2680	**0.2**	**20**	26.6	**0.04**	**0.05**	0.40	**0.002**	**0.1**	6.77
L551584-6	Leaves	29-AUG-07	PIT 5- EQUIARV	9U	379893	6359489	940	*Equisetum*	*arvense*	common horsetail	79.2		4.1	**0.01**	**0.01**	10.5	**0.1**	**0.07**	0.0102	8860	0.21	0.364	0.849	7.64	0.044	**0.1**	733	9.39	0.0012	0.502	0.27	245	5250	**0.2**	68	41.7	**0.05**	**0.05**	0.21	**0.002**	**0.1**	9.98
L551584-8	Leaves	29-AUG-07	PIT 6- EQUIARV	9U	379641	6359692	900	*Equisetum*	*arvense*	common horsetail	79.8		2.8	**0.01**	**0.01**	5.12	**0.1**	**0.08**	0.0120	6190	0.19	0.020	1.41	9.03	0.047	**0.1**	820	8.23	0.0010	3.51	0.31	178	4830	**0.2**	35	42.3	**0.06**	**0.05**	0.24	**0.002**	**0.1**	10.8
L551584-7	Leaves	29-AUG-07	PIT 7- EQUIARV	9U	379554	6359965	901	*Equisetum*	*arvense*	common horsetail	85.4		9.6	**0.01**	**0.01**	7.51	**0.1**	**0.09**	0.0479	5790	0.27	0.329	1.97	8.85	0.071	**0.1**	1200	11.2	0.0016	0.803	1.50	241	3790	**0.2**	65	57.0	**0.07**	**0.05**	0.30	**0.002**	**0.1**	11.9
L551584-4	Leaves	29-AUG-07	PIT 8- EQUIARV	9U	379594	6360138	911	*Equisetum*	*arvense*	common horsetail	79.3		4.6	**0.01**	**0.01**	6.12	**0.1**	**0.1**	0.0102	9730	0.21	0.123	0.792	14.4	0.027	**0.1**	630	26.8	0.0019	0.363	**0.1**	155	5050	**0.2**	**20**	58.9	**0.08**	**0.05**	0.26	**0.002**	**0.1**	7.14
L551584-12	Leaves	30-AUG-07	TAIL A2- EQUIARV	9U	381810	6373315	819	*Equisetum*	*arvense*	common horsetail	79.0		2.9	**0.01**	**0.01**	3.20	**0.1**	**0.14**	0.0059	4590	0.21	0.057	1.18	7.36	0.039	**0.1**	1290	9.49	0.0034	0.142	0.94	215	4810	**0.2**	**20**	9.27	**0.12**	**0.05**	0.11	**0.002**	**0.1**	6.03
L551584-13	Leaves	30-AUG-07	TAIL B1- EQUIARV	9U	381988	6372666	824	*Equisetum*	*arvense*	common horsetail	87.4		2.1	**0.01**	**0.01**	5.12	**0.1**	**0.15**	0.0347	3770	0.13	**0.02**	1.18	7.53	0.033	**0.1**	929	2.78	0.0023	0.209	**0.1**	240	5730	**0.2**	**20**	27.4	**0.13**	**0.05**	0.13	**0.002**	**0.1**	5.28
L551584-14	Leaves	30-AUG-07	TAIL B2- EQUIARV	9U	377327	6348446	1099	*Equisetum*	*arvense*	common horsetail	84.1		**2**	**0.01**	**0.01**	5.84	**0.1**	**0.16**	0.0227	5160	0.16	**0.02**	1.04	6.86	0.029	**0.1**	1190	5.36	0.0020	0.080	0.24	248	5480	**0.2**	**20**	8.39	**0.14**	**0.05**	0.11	**0.002**	**0.1**	6.49
L551584-15	Leaves	30-AUG-07	TAIL A3- EQUIARV	9U	377425	6348593	1097	*Equisetum*	*arvense*	common horsetail	77.2		**2**	**0.01**	**0.01**	5.30	**0.1**	**0.17**	0.0285	5910	0.16	**0.02**	1.31	6.80	**0.02**	**0.1**	1030	9.79	0.0024	0.203	0.28	160	5180	1.20	**20**	14.8	**0.15**	**0.05**	**0.1**	**0.002**	**0.1**	3.94
L551584-5	Berries	29-AUG-07	PIT 9- VACCMEM (BERRIES)	9U	379151	6359502	890	*Vaccinium*	*membranaceum*	black huckleberry	86.4		6.2	**0.01**	**0.01**	1.55	**0.1**	**0.11**	**0.01**	209	**0.1**	**0.02**	0.832	2.72	**0.02**	**0.1**	128	11.9	**0.001**	0.210	0.14	180	991	**0.2**	**20**	0.265	**0.09**	**0.05**	**0.1**	**0.002**	**0.1**	1.20
L551584-10	Leaves	29-AUG-07	PIT 9- VACCMEN (TISSUE)	9U	379151	6359502	890	*Vaccinium*	*membranaceum*	black huckleberry	70.2		113	**0.01**	**0.01**	32.1	**0.1**	**0.12**	0.0131	2590	0.27	0.034	2.38	27.5	0.097	**0.1**	923	558	0.0027	0.501	0.39	480	1840	**0.2**	**20**	2.17	**0.1**	**0.05**	0.97	**0.002**	**0.1**	10.9
L539647-7	Leaves	30-JUL-07	VACCMEM1	9U	381519	6367434	986	*Vaccinium*	*membranaceum*	black huckleberry	73.3		55.4	**0.01**	**0.01**	25.1	**0.1**	**0.03**	0.0236	2030	**0.1**	**0.02**	2.90	15.9	0.031	**0.1**	1020	523	0.0018	1.15	0.27	442	2530	**0.2**	**20**	1.89	**0.01**	**0.05**	0.30	**0.002**	**0.1**	8.14
L539647-8	Leaves	29-JUL-07	VACCMEM2	9U	370188	6367568	954	*Vaccinium*	*membranaceum*	black huckleberry	81.7		78.8	**0.01**	**0.01**	14.2	**0.1**	**0.03**	0.013	1130	**0.1**	**0.02**	2.55	20.2	**0.02**	**0.1**	382	634	0.0012	0.394	0.24	495	2090	**0.2**	21	0.670	**0.01**	**0.05**	0.81	**0.002**	**0.1**	12.4
L539647-9	Leaves	29-JUL-07	VACCMEM3	9U	374540	6367882	887	*Vaccinium*	*membranaceum*	black huckleberry	75.6		124	**0.03**	**0.03**	25.5	**0.3**	**0.09**	**0.015**	1570	**0.3**	**0.06**	1.77	22.3	**0.06**	**0.3**	707	1200	0.0033	0.160	**0.3**	453	2680	**0.6**	**20**	3.60	**0.03**	**0.15**	0.48	**0.006**	**0.3**	5.48
L539647-10	Leaves	31-JUL-07	VACCMEM4	9U	379264	6359097	882	*Vaccinium*	*membranaceum*	black huckleberry	78.2		96.5	**0.01**	0.014	22.5	**0.1**	**0.03**	0.0082	1390	0.16	0.045	2.05	41.5	0.033	**0.1**	732	341	0.0043	0.451	0.43	435	3090	**0.2**	**20**	0.991	**0.01**	**0.05**	1.49	**0.002**	0.12	5.58
L551584-11	Leaves	30-AUG-07	TAIL A1-LEDUGRV	9U	381787	6373451	820	*Ledum*	*groenlandicum*	Labrador tea	49.8		3.4	**0.01**	**0.01**	28.9	**0.1**	**0.13**	**0.01**	2920	**0.1**	**0.02**	1.67	13.1	0.033	**0.1**	750	109	0.0011	0.172	**0.1**	458	1690	**0.2**	**20**	4.74	**0.11**	**0.05**	0.16	**0.002**	**0.1**	11.6
L539647-1	Leaves	29-JUL-07	LEDUGRD1	9U	374587	6367698	898	*Ledum*	*groenlandicum*	Labrador Tea	68.5		11.9	**0.01**	**0.01**	46.4	**0.1**	**0.03**	0.0076	2500	**0.1**	**0.02**	2.30	25.6	0.021	**0.1**	410	318	**0.001**	0.434	**0.1**	522	2350	**0.2**	**20**	6.03	**0.01**	**0.05**	0.63	0.0026	**0.1**	9.16
L539647-2	Leaves	28-JUL-07	LEDUGRD2	9U	378824	6355952	988	*Ledum*	*groenlandicum*	Labrador Tea	58.7		12.6	**0.01**	0.015	45.2	**0.1**	**0.03**	**0.005**	2780	**0.1**	**0.02**	2.55	20.5	0.021	**0.1**	547	238	**0.001**	0.060	**0.1**	506	2140	**0.2**	**20**	9.79	**0.01**	**0.05**	0.73	**0.002**	**0.1**	12.7
L539647-3	Leaves	30-JUL-07	LEDUGRD3	9U	381927	6373695	821	*Ledum*	*groenlandicum*	Labrador Tea	59.4		5.8	**0.01**	**0.01**	27.5	**0.1**	**0.03**	0.0059	2880	**0.1**	**0.02**	1.14	25.4	**0.02**	**0.1**	802	230	0.0022	1.93	**0.1**	381	1890	**0.2**	**20**	3.62	**0.01**	**0.05**	0.27	**0.002**	**0.1**	12.5
L539647-4	Leaves	31-JUL-07	LEDUGRD4	9U	384067	6379156	948	*Ledum*	*groenlandicum*	Labrador Tea	66.1		5.0	**0.01**	**0.01**	33.1	**0.1**	**0.03**	**0.005**	2270	**0.1**	**0.02**	2.54	10.2	**0.02**	**0.1**	532	105	0.0022	0.054	**0.1**	595	2500	**0.2**	**20**	3.88	**0.01**	**0.05**	0.22	**0.002**	**0.1**	12.5
L539647-5	Leaves	26-JUL-07	LEDUGRD5	9U	380499	6383601	834	*Ledum*	*groenlandicum*	Labrador Tea	74.6		23.2	**0.01**	**0.01**	34.3	**0.1**	**0.03**	**0.005**	2150	**0.1**	**0.02**	2.11	14.7	**0.02**	**0.1**	570	374	0.0034	0.062	0.17	586	2140	**0.2**	**20**	1.88	0.024	**0.05**	0.31	**0.002**	**0.1**	9.57
L539647-6	Leaves	25-JUL-07	LEDUGRD6	9U	379310	6359994	874	*Ledum*	*groenlandicum*	Labrador Tea	63.9		14.9	**0.01**	**0.01**	28.6	**0.1**	**0.03**	**0.005**	2800	0.13	**0.02**	2.20	29.3	0.027	**0.1**	561	59.7	0.0021	0.112	0.20	550	2140	**0.2**	**20**	12.7	**0.01**	**0.05**	1.02	**0.002**	**0.1**	10.0
L539647-11	Leaves	02-AUG-07	SHEPCAN1	9U	382863	6337808	891	*Shepherdia*	*canadensis*	Soopolalie (soapberry)	71.9		7.2	**0.01**	**0.01**	6.81	**0.1**	**0.03**	**0.005**	1750	**0.1**	**0.02**	1.93	19.3	**0.02**	**0.1**	842	23.4	0.0013	0.437	1.04	563	3230	**0.2**	**20**	3.98	**0.01**	**0.05**	0.31	**0.002**	**0.1**	4.35
L539647-12	Leaves	30-JUL-07	SHEPCAN2	9U	382206	6369509	855	*Shepherdia*	*canadensis*	Soopolalie (soapberry)	75.6		4.9	**0.01**	**0.01**	1.26	**0.1**	**0.03**	**0.005**	943	0.39	0.022	1.18	12.7	**0.02**	**0.1**	1130	10.5	0.0019	0.312	3.89	446	4710	**0.2**	**20**	2.05	**0.01**	**0.05**	0.21	**0.002**	**0.1**	3.93
L539647-14	Leaves	28-JUL-07	SHEPCAN4	9U	376131	6347202	1141	*Shepherdia*	*canadensis*	Soopolalie (soapberry)	80.0		9.2	**0.01**	**0.01**	2.48	**0.1**	**0.03**	**0.005**	1480	0.10	**0.02**	1.28	18.0	0.035	**0.1**	400	10.1	0.0016	0.218	0.38	403	2100	**0.2**	31	2.27	**0.01**	**0.05**	0.59	**0.002**	**0.1**	2.86
L539647-13	Berries	28-JUL-07	SHEPCAN3	9U	376354	6347391	1151	*Shepherdia*	*canadensis*	Soopolalie (soapberry)	82.3		6.0	**0.01**	**0.01**	2.29	**0.1**	**0.03**	**0.005**	629	**0.1**	**0.02**	1.44	7.96	0.025	**0.1**	199	5.06	**0.001**	0.346	0.57	453	2030	**0.2**	**20**	0.652	**0.01**	**0.05**	0.16	**0.002**	**0.1**	3.05
L539647-15	Leaves	28-JUL-07	RIBELAC1	9U	377945	6351741	1180	*Ribes*	*lacustre*	Gooseberry	76.5		15.7	**0.01**	**0.01**	6.01	**0.1**	**0.03**	0.0067	5350	0.13	0.022	1.49	29.9	0.076	**0.1**	1270	13.4	0.0030	0.419	1.18	627	5860	**0.2**	90	6.32	**0.01**	**0.05**	0.97	**0.002**	**0.1**	3.51
L676276-3	Berries	17-AUG-08	3-VAC OVAL	9U	6374832	381587	807	*Vaccinium*	*ovalifolium*	oval-leaved blueberry	85.2		**2**	**0.01**	**0.01**	2.13	**0.1**	**0.03**	0.0067	161	0.38	**0.02**	0.28	3.7	**0.02**	**0.1**	108	13.5	**0.001**	0.365	0.31	117	932	**0.2**	**20**	1.15	**0.01**	0.071	**0.1**	**0.002**	**0.1**	2.22
L676276-5	Berries	18-AUG-08	5-VAC OVAL	9U	6370135	381561	989	*Vaccinium*	*ovalifolium*	oval-leaved blueberry	88.9		**2**	**0.01**	**0.01**	0.771	**0.1**	**0.03**	**0.005**	168	0.91	**0.02**	0.777	6.46	**0.02**	**0.1**	85.9	8.3	**0.001**	0.086	0.57	165	860	**0.2**	**20**	0.085	**0.01**	**0.05**	**0.1**	**0.002**	**0.1**	1.18
L676276-7	Berries	20-AUG-08	8-VAC OVAL	9U	6335318	383019	907	*Vaccinium*	*ovalifolium*	oval-leaved blueberry	88.8		4.6	**0.01**	**0.01**	1.42	**0.1**	**0.03**	**0.005**	139	**0.01**	**0.02**	0.617	3.04	**0.02**	**0.1**	94.8	13.8	**0.001**	0.135	**0.1**	229	1060	**0.2**	**20**	0.316	**0.01**	0.066	**0.1**	**0.002**	**0.1**	1.27
L676276-8	Berries	20-AUG-08	9-VAC OVAL	9U	6336268	383049	895	*Vaccinium*	*ovalifolium*	oval-leaved blueberry	87.1		4.4	**0.01**	**0.01**	1.81	**0.1**	**0.03**	**0.005**	137	0.79	**0.02**	0.676	5.82	**0.02**	**0.1**	99.5	33.5	**0.001**	0.088	0.46	203	1020	**0.2**	**20**	0.072	**0.01**	0.073	**0.1**	**0.002**	**0.1**	1.26
L676276-9	Berries	21-AUG-08	10-SHEP CANA	9U	6369743	384057	1360	*Shepherdia*	*canadensis*	Soopolalie (soapberry)	79.8		2.4	**0.01**	**0.01**	0.062	**0.1**	**0.03**	**0.005**	319	**0.01**	**0.02**	0.931	6.75	**0.02**	**0.1**	138	2.24	**0.001**	0.393	0.87	468	1900	**0.2**	**20**	0.228	**0.01**	**0.05**	0.15	**0.002**	**0.1**	2.86
L676276-10	Berries	26-AUG-08	11-SHEP CANA	9U	6365407	382471	850	*Shepherdia*	*canadensis*	Soopolalie (soapberry)	78.6		2.4	**0.01**	**0.01**	0.16	**0.1**	**0.03**	**0.005**	171	**0.01**	**0.02**	0.718	5.18	**0.02**	**0.1**	84.2	2.6	**0.001**	0.076	0.36	347	1620	**0.2**	**20**	0.195	**0.01**	0.103	**0.1**	**0.002**	**0.1**	1.65
L676276-4	Berries	17-AUG-08	4-SHEP CANA	9U	6374874	381572	814	*Shepherdia*	*canadensis*	Soopolalie (soapberry)	80.6		**2**	**0.01**	**0.01**	0.532	**0.1**	**0.03**	**0.005**	116	0.1	**0.02**	1.12	5.73	**0.02**	**0.1**	99.1	3.32	**0.001**	0.277	1.44	302	1800	**0.2**	**20**	0.491	**0.01**	**0.05**	**0.1**	**0.002**	**0.1**	1.57
L676276-6	Berries	19-AUG-08	7-SHEP CANA	9U	6368739	382564	836	*Shepherdia*	*canadensis*	Soopolalie (soapberry)	78.7		**2**	**0.01**	**0.01**	0.081	**0.1**	**0.03**	**0.005**	263	0.16	**0.02**	0.595	5.83	**0.02**	**0.1**	112	2.5	**0.001**	0.137	0.2	384	1890	**0.2**	**20**	0.472	**0.01**	**0.05**	**0.1**	**0.002**	**0.1**	2.79

Appendix 4

Schaft Creek Project Metal Analysis Dry Weight Values

Appendix 4. Schaft Creek Project Metal Analysis Dry Weight Values

Results of Analysis

ALS Sample ID	Matrix	Date Sampled	Sample ID	UTM Zone	Easting	Northing	Elevation	Species Code	*Genus*	*Species*	Common Name	Total Metals	Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Bismuth (Bi)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Lithium (Li)	Magnesium (Mg)	Manganese (Mn)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Phosphorus (P)	Potassium (K)	Selenium (Se)	Sodium (Na)	Strontium (Sr)	Thallium (Tl)	Tin (Sn)	Titanium (Ti)	Uranium (U)	Vanadium (V)	Zinc (Zn)
												Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
L551584-1	Leaves	28-AUG-07	PIT 1- EQUIARV	9U	380113	6359959	1036	EQUIARV	*Equisetum*	*arvense*	common horsetail		16.0	**0.05**	**0.05**	20.5	**0.3**	**0.3**	0.298	39000	1.02	0.12	10.4	42.2	**0.1**	**0.5**	3990	29.9	0.0145	56.0	0.50	844	31000	1.4	**100**	223	**0.03**	**0.2**	1.04	**0.01**	**0.5**	20.4
L551584-2	Leaves	28-AUG-07	PIT 2- EQUIARV	9U	380173	6359578	1008	EQUIARV	*Equisetum*	*arvense*	common horsetail		**5**	**0.05**	**0.05**	22.5	**0.3**	**0.3**	0.102	40700	0.94	0.19	5.44	32.9	**0.1**	**0.5**	3610	82.3	0.0083	128	0.86	1080	23800	3.3	**100**	134	**0.03**	**0.2**	0.84	**0.01**	**0.5**	42.6
L551584-3	Leaves	28-AUG-07	PIT 3- EQUIARV	9U	380069	6359316	972	EQUIARV	*Equisetum*	*arvense*	common horsetail		13.0	**0.05**	**0.05**	36.5	**0.3**	**0.3**	0.139	31700	1.24	**0.1**	6.72	47.1	0.11	**0.5**	3960	30.9	0.0162	57.0	0.73	985	40800	**1**	**100**	248	**0.03**	**0.2**	1.06	**0.01**	**0.5**	44.9
L551584-9	Leaves	29-AUG-07	PIT 4- EQUIARV	9U	379585	6359259	904	EQUIARV	*Equisetum*	*arvense*	common horsetail		20.0	**0.05**	**0.05**	36.3	**0.3**	**0.3**	0.055	40200	1.13	1.07	3.61	50.0	0.27	**0.5**	4340	39.5	0.0059	2.91	2.73	870	11600	**1**	**100**	115	**0.03**	**0.2**	1.72	**0.01**	**0.5**	29.2
L551584-6	Leaves	29-AUG-07	PIT 5- EQUIARV	9U	379893	6359489	940	EQUIARV	*Equisetum*	*arvense*	common horsetail		20.0	**0.05**	**0.05**	50.4	**0.3**	**0.3**	0.049	42700	1.01	1.75	4.09	36.8	0.21	**0.5**	3530	45.2	0.0056	2.42	1.29	1180	25300	**1**	330	201	**0.03**	**0.2**	1.02	**0.01**	**0.5**	48.1
L551584-8	Leaves	29-AUG-07	PIT 6- EQUIARV	9U	379641	6359692	900	EQUIARV	*Equisetum*	*arvense*	common horsetail		14.0	**0.05**	**0.05**	25.4	**0.3**	**0.3**	0.060	30700	0.96	**0.1**	6.97	44.8	0.23	**0.5**	4070	40.8	0.0052	17.4	1.55	881	23900	**1**	170	210	**0.03**	**0.2**	1.19	**0.01**	**0.5**	53.5
L551584-7	Leaves	29-AUG-07	PIT 7- EQUIARV	9U	379554	6359965	901	EQUIARV	*Equisetum*	*arvense*	common horsetail		66	**0.1**	**0.1**	51.6	**0.6**	**0.6**	0.329	39800	1.9	2.26	13.6	60.8	0.49	**1**	8270	77.2	0.0109	5.52	10.3	1660	26000	**2**	450	391	**0.06**	**0.4**	2.08	**0.02**	**1**	81.8
L551584-4	Leaves	29-AUG-07	PIT 8- EQUIARV	9U	379594	6360138	911	EQUIARV	*Equisetum*	*arvense*	common horsetail		22.0	**0.05**	**0.05**	29.6	**0.3**	**0.3**	0.049	47000	1.03	0.60	3.83	69.6	0.13	**0.5**	3040	129	0.0092	1.75	**0.5**	750	24400	**1**	**100**	284	**0.03**	**0.2**	1.25	**0.01**	**0.5**	34.5
L551584-12	Leaves	30-AUG-07	TAIL A2- EQUIARV	9U	381810	6373315	819	EQUIARV	*Equisetum*	*arvense*	common horsetail		14.0	**0.05**	**0.05**	15.2	**0.3**	**0.3**	**0.03**	21800	0.98	0.27	5.59	35.0	0.18	**0.5**	6160	45.1	0.0162	0.676	4.48	1020	22900	**1**	**100**	44.1	**0.03**	**0.2**	0.51	**0.01**	**0.5**	28.7
L551584-13	Leaves	30-AUG-07	TAIL B1- EQUIARV	9U	381988	6372666	824	EQUIARV	*Equisetum*	*arvense*	common horsetail		**20**	**0.1**	**0.1**	40.7	**0.6**	**0.6**	0.276	30000	1.0	**0.2**	9.38	59.8	0.26	**1**	7380	22.1	0.0187	1.66	**1**	1910	45500	**2**	120	218	**0.06**	**0.4**	1.05	**0.02**	**1**	42.0
L551584-14	Leaves	30-AUG-07	TAIL B2- EQUIARV	9U	377327	6348446	1099	EQUIARV	*Equisetum*	*arvense*	common horsetail		**10**	**0.05**	**0.05**	36.8	**0.3**	**0.3**	0.143	32600	1.03	**0.1**	6.57	43.3	0.18	**0.5**	7510	33.8	0.0128	0.503	1.48	1570	34600	**1**	**100**	52.9	**0.03**	**0.2**	0.68	**0.01**	**0.5**	41.0
L551584-15	Leaves	30-AUG-07	TAIL A3- EQUIARV	9U	377425	6348593	1097	EQUIARV	*Equisetum*	*arvense*	common horsetail		**10**	**0.05**	**0.05**	23.2	**0.3**	**0.3**	0.125	25900	0.72	**0.1**	5.74	29.8	**0.1**	**0.5**	4530	42.9	0.0072	0.891	1.21	701	22700	5.3	**100**	64.9	**0.03**	**0.2**	**0.5**	**0.01**	**0.5**	17.3
L551584-5	Berries	29-AUG-07	PIT 9- VACCMEM (BERRIES)	9U	379151	6359502	890	VACCMEM	*Vaccinium*	*membranaceum*	black huckleberry		46	**0.1**	**0.1**	11.4	**0.6**	**0.6**	**0.06**	1540	**1**	**0.2**	6.12	20.0	**0.2**	**1**	940	87.9	**0.01**	1.55	1.1	1320	7290	**2**	**100**	1.95	**0.06**	**0.4**	**0.5**	**0.02**	**1**	8.9
L551584-10	Leaves	29-AUG-07	PIT 9- VACCMEN (TISSUE)	9U	379151	6359502	890	VACCMEM	*Vaccinium*	*membranaceum*	black huckleberry		380	**0.05**	**0.05**	108	**0.3**	**0.3**	0.044	8690	0.91	0.11	8.01	92.3	0.33	**0.5**	3100	1870	0.0092	1.68	1.33	1610	6180	**1**	**100**	7.31	**0.03**	**0.2**	3.25	**0.01**	**0.5**	36.5
L551584-11	Leaves	30-AUG-07	TAIL A1-LEDUGRV	9U	381787	6373451	820	LEDUGRO	*Ledum*	*groenlandicum*	Labrador tea		**10**	**0.05**	**0.05**	57.6	**0.3**	**0.3**	**0.03**	5820	**0.5**	**0.1**	3.34	26.1	**0.1**	**0.5**	1490	217	**0.01**	0.344	**0.5**	914	3370	**1**	**100**	9.45	**0.03**	**0.2**	**0.5**	**0.01**	**0.5**	23.1
L539647-1	Leaves	29-JUL-07	LEDUGRD1	9U	374587	6367698	898	LEDUGRO	*Ledum*	*groenlandicum*	Labrador Tea		38.0	**0.05**	**0.05**	148	**0.3**	**0.3**	**0.03**	7940	**0.5**	**0.1**	7.31	81.3	**0.1**	**0.5**	1300	1010	**0.005**	1.38	**0.5**	1660	7470	**1**	**100**	19.2	**0.03**	**0.2**	2.00	**0.01**	**0.5**	29.1
L539647-2	Leaves	28-JUL-07	LEDUGRD2	9U	378824	6355952	988	LEDUGRO	*Ledum*	*groenlandicum*	Labrador Tea		31.0	**0.05**	**0.05**	110	**0.3**	**0.3**	**0.03**	6730	**0.5**	**0.1**	6.17	49.7	**0.1**	**0.5**	1330	575	**0.005**	0.146	**0.5**	1230	5180	**1**	**100**	23.7	**0.03**	**0.2**	1.76	**0.01**	**0.5**	30.9
L539647-3	Leaves	30-JUL-07	LEDUGRD3	9U	381927	6373695	821	LEDUGRO	*Ledum*	*groenlandicum*	Labrador Tea		14.0	**0.05**	**0.05**	67.9	**0.3**	**0.3**	**0.03**	7090	**0.5**	**0.1**	2.82	62.7	**0.1**	**0.5**	1980	567	0.0054	4.76	**0.5**	940	4660	**1**	**100**	8.93	**0.03**	**0.2**	0.65	**0.01**	**0.5**	30.9
L539647-4	Leaves	31-JUL-07	LEDUGRD4	9U	384067	6379156	948	LEDUGRO	*Ledum*	*groenlandicum*	Labrador Tea		15.0	**0.05**	**0.05**	97.7	**0.3**	**0.3**	**0.03**	6680	**0.5**	**0.1**	7.48	30.0	**0.1**	**0.5**	1570	308	0.0064	0.160	**0.5**	1750	7360	**1**	**100**	11.4	**0.03**	**0.2**	0.64	**0.01**	**0.5**	36.9
L539647-5	Leaves	26-JUL-07	LEDUGRD5	9U	380499	6383601	834	LEDUGRO	*Ledum*	*groenlandicum*	Labrador Tea		91.0	**0.05**	**0.05**	135	**0.3**	**0.3**	**0.03**	8480	**0.5**	**0.1**	8.31	58.1	**0.1**	**0.5**	2240	1470	0.0134	0.243	0.66	2310	8420	**1**	**100**	7.41	0.096	**0.2**	1.23	**0.01**	**0.5**	37.7
L539647-6	Leaves	25-JUL-07	LEDUGRD6	9U	379310	6359994	874	LEDUGRO	*Ledum*	*groenlandicum*	Labrador Tea		41.0	**0.05**	**0.05**	79.3	**0.3**	**0.3**	**0.03**	7740	**0.5**	**0.1**	6.08	81.1	**0.1**	**0.5**	1550	165	0.0058	0.311	0.57	1520	5920	**1**	**100**	35.3	**0.03**	**0.2**	2.83	**0.01**	**0.5**	27.8
L539647-7	Leaves	30-JUL-07	VACCMEM1	9U	381519	6367434	986	VACCMEM	*Vaccinium*	*membranaceum*	Blueberry		207	**0.05**	**0.05**	94.0	**0.3**	**0.3**	0.088	7580	**0.5**	**0.1**	10.8	59.6	0.11	**0.5**	3810	1950	0.0068	4.29	1.01	1650	9480	**1**	**100**	7.05	**0.03**	**0.2**	1.12	**0.01**	**0.5**	30.5
L539647-8	Leaves	29-JUL-07	VACCMEM2	9U	370188	6367568	954	VACCMEM	*Vaccinium*	*membranaceum*	Blueberry		431	**0.05**	**0.05**	77.8	**0.3**	**0.3**	0.072	6150	**0.5**	**0.1**	13.9	111	0.20	**0.5**	2090	3460	0.0067	2.16	1.3	2710	11400	**1**	110	3.67	**0.03**	**0.2**	4.44	**0.01**	**0.5**	67.9
L539647-9	Leaves	29-JUL-07	VACCMEM3	9U	374540	6367882	887	VACCMEM	*Vaccinium*	*membranaceum*	Blueberry		508	**0.15**	**0.15**	104	**0.9**	**0.9**	**0.09**	6410	**1.5**	**0.3**	7.24	91.1	**0.3**	**1.5**	2890	4920	0.0134	0.66	**1.5**	1850	11000	**3**	**100**	14.7	**0.09**	**0.6**	1.97	**0.03**	**1.5**	22.4
L539647-10	Leaves	31-JUL-07	VACCMEM4	9U	379264	6359097	882	VACCMEM	*Vaccinium*	*membranaceum*	Blueberry		443	**0.05**	0.065	103	**0.3**	**0.3**	0.037	6380	0.75	0.21	9.40	191	0.15	**0.5**	3360	1560	0.0197	2.07	1.97	1990	14200	**1**	**100**	4.55	**0.03**	**0.2**	6.81	**0.01**	0.53	25.6
L539647-11	Leaves	02-AUG-07	SHEPCAN1	9U	382863	6337808	891	SHEPCAN	*Shepherdia*	*canadensis*	Soopolalie (soapberry)		26.0	**0.05**	**0.05**	24.2	**0.3**	**0.3**	**0.03**	6220	**0.5**	**0.1**	6.86	68.5	**0.1**	**0.5**	2990	83.1	**0.005**	1.55	3.69	2000	11500	**1**	**100**	14.2	**0.03**	**0.2**	1.11	**0.01**	**0.5**	15.5
L539647-12	Leaves	30-JUL-07	SHEPCAN2	9U	382206	6369509	855	SHEPCAN	*Shepherdia*	*canadensis*	Soopolalie (soapberry)		20.0	**0.05**	**0.05**	5.16	**0.3**	**0.3**	**0.03**	3860	1.59	**0.1**	4.84	52.0	**0.1**	**0.5**	4610	43.1	0.0079	1.28	15.9	1820	19300	**1**	**100**	8.38	**0.03**	**0.2**	0.88	**0.01**	**0.5**	16.1
L539647-13	Berries	28-JUL-07	SHEPCAN3	9U	376354	6347391	1151	SHEPCAN	*Shepherdia*	*canadensis*	Soopolalie (soapberry)		34.0	**0.05**	**0.05**	12.9	**0.3**	**0.3**	**0.03**	3560	0.51	**0.1**	8.15	45.0	0.14	**0.5**	1120	28.6	**0.005**	1.96	3.21	2560	11500	**1**	**100**	3.69	**0.03**	**0.2**	0.91	**0.01**	**0.5**	17.2
L539647-14	Leaves	28-JUL-07	SHEPCAN4	9U	376131	6347202	1141	SHEPCAN	*Shepherdia*	*canadensis*	Soopolalie (soapberry)		46.0	**0.05**	**0.05**	12.4	**0.3**	**0.3**	**0.03**	7380	0.52	**0.1**	6.42	89.8	0.18	**0.5**	2000	50.6	0.0079	1.09	1.90	2020	10500	**1**	150	11.3	**0.03**	**0.2**	2.93	**0.01**	**0.5**	14.3
L539647-15	Leaves	28-JUL-07	RIBELAC1	9U	377945	6351741	1180	RIBELAC	*Ribes*	*lacustre*	Gooseberry		67.0	**0.05**	**0.05**	25.6	**0.3**	**0.3**	**0.03**	22800	0.55	**0.1**	6.33	127	0.32	**0.5**	5390	57.0	0.0495	1.78	5.02	2670	24900	**1**	380	26.9	**0.03**	**0.2**	4.15	**0.01**	**0.5**	14.9

Appendix 5

Schaft Creek Project Wet Weight Metal Detection Limits

Appendix 5. Schaft Creek Project Wet Weight Metal Detection Limits

DETECTION LIMITS

Sample ID		LEDUGRD1	LEDUGRD2	LEDUGRD3	LEDUGRD4	LEDUGRD5	LEDUGRD6	VACCMEM1	VACCMEM2	VACCMEM3	VACCMEM4	TAIL A1-LEDUGRV	SHEPCAN2	SHEPCAN3	SHEPCAN4	RIBELAC1
Date Sampled		29-JUL-07	28-JUL-07	30-JUL-07	31-JUL-07	26-JUL-07	25-JUL-07	30-JUL-07	29-JUL-07	29-JUL-07	31-JUL-07	02-AUG-07	30-JUL-07	28-JUL-07	28-JUL-07	28-JUL-07
ALS Sample ID		L539647-1	L539647-2	L539647-3	L539647-4	L539647-5	L539647-6	L539647-7	L539647-8	L539647-9	L539647-10	L539647-11	L539647-12	L539647-13	L539647-14	L539647-15
Physical Tests	**UNITS**															
% Moisture	%	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Total Metals																
Aluminum (Al)	mg/kg wwt	2	2	2	2	2	2	2	4	6	2	2	2	2	2	2
Antimony (Sb)	mg/kg wwt	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.03	0.01	0.01	0.01	0.01	0.01	0.01
Arsenic (As)	mg/kg wwt	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.03	0.01	0.01	0.01	0.01	0.01	0.01
Barium (Ba)	mg/kg wwt	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.03	0.01	0.01	0.01	0.01	0.01	0.01
Beryllium (Be)	mg/kg wwt	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.1	0.1	0.1	0.1	0.1	0.1
Bismuth (Bi)	mg/kg wwt	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.06	0.09	0.03	0.03	0.03	0.03	0.03	0.03
Cadmium (Cd)	mg/kg wwt	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.01	0.015	0.005	0.005	0.005	0.005	0.005	0.005
Calcium (Ca)	mg/kg wwt	2	2	2	2	2	2	2	4	6	2	2	2	2	2	2
Chromium (Cr)	mg/kg wwt	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.1	0.1	0.1	0.1	0.1	0.1
Cobalt (Co)	mg/kg wwt	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.04	0.06	0.02	0.02	0.02	0.02	0.02	0.02
Copper (Cu)	mg/kg wwt	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.03	0.01	0.01	0.01	0.01	0.01	0.01
Iron (Fe)	mg/kg wwt	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Lead (Pb)	mg/kg wwt	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.04	0.06	0.02	0.02	0.02	0.02	0.02	0.02
Lithium (Li)	mg/kg wwt	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.1	0.1	0.1	0.1	0.1	0.1
Magnesium (Mg)	mg/kg wwt	1	1	1	1	1	1	1	2	3	1	1	1	1	1	1
Manganese (Mn)	mg/kg wwt	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.03	0.01	0.01	0.01	0.01	0.01	0.01
Mercury (Hg)	mg/kg wwt	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Molybdenum (Mo)	mg/kg wwt	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.03	0.01	0.01	0.01	0.01	0.01	0.01
Nickel (Ni)	mg/kg wwt	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.1	0.1	0.1	0.1	0.1	0.1
Phosphorus (P)	mg/kg wwt	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Potassium (K)	mg/kg wwt	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
Selenium (Se)	mg/kg wwt	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.4	0.6	0.2	0.2	0.2	0.2	0.2	0.2
Sodium (Na)	mg/kg wwt	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
Strontium (Sr)	mg/kg wwt	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.03	0.01	0.01	0.01	0.01	0.01	0.01
Thallium (Tl)	mg/kg wwt	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.03	0.01	0.01	0.01	0.01	0.01	0.01
Tin (Sn)	mg/kg wwt	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.15	0.05	0.05	0.05	0.05	0.05	0.05
Titanium (Ti)	mg/kg wwt	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Uranium (U)	mg/kg wwt	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.004	0.006	0.002	0.002	0.002	0.002	0.002	0.002
Vanadium (V)	mg/kg wwt	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.1	0.1	0.1	0.1	0.1	0.1
Zinc (Zn)	mg/kg wwt	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.1	0.1	0.1	0.1	0.1	0.1

Appendix 5. Schaft Creek Project Wet Weight Metal Detection Limits

DETECTION LIMITS

Sample ID		PIT 1-EQUIARV	PIT 2-EQUIARV	PIT 3-EQUIARV	PIT 8-EQUIARV	PIT 9- VACCMEM (BERRIES)	PIT 5-EQUIARV	PIT 7-EQUIARV	PIT 6-EQUIARV	PIT 4-EQUIARV	PIT 9- VACCMEN (TISSUE)	TAIL A1-LEDUGRV
Date Sampled		28-AUG-07	28-AUG-07	28-AUG-07	29-AUG-07	29-AUG-07	29-AUG-07	29-AUG-07	29-AUG-07	29-AUG-07	29-AUG-07	30-AUG-07
ALS Sample ID		L551584-1	L551584-2	L551584-3	L551584-4	L551584-5	L551584-6	L551584-7	L551584-8	L551584-9	L551584-10	L551584-11
Physical Tests	**UNITS**											
% Moisture	%	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Total Metals												
Aluminum (Al)	mg/kg wwt	2	2	2	2	2	2	2	2	2	2	2
Antimony (Sb)	mg/kg wwt	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Arsenic (As)	mg/kg wwt	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Barium (Ba)	mg/kg wwt	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Beryllium (Be)	mg/kg wwt	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Bismuth (Bi)	mg/kg wwt	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Cadmium (Cd)	mg/kg wwt	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Calcium (Ca)	mg/kg wwt	2	2	2	2	2	2	2	2	2	2	2
Chromium (Cr)	mg/kg wwt	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Cobalt (Co)	mg/kg wwt	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Copper (Cu)	mg/kg wwt	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Iron (Fe)	mg/kg wwt	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Lead (Pb)	mg/kg wwt	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Lithium (Li)	mg/kg wwt	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Magnesium (Mg)	mg/kg wwt	1	1	1	1	1	1	1	1	1	1	1
Manganese (Mn)	mg/kg wwt	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Mercury (Hg)	mg/kg wwt	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Molybdenum (Mo)	mg/kg wwt	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Nickel (Ni)	mg/kg wwt	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Phosphorus (P)	mg/kg wwt	5	5	5	5	5	5	5	5	5	5	5
Potassium (K)	mg/kg wwt	20	20	20	20	20	20	20	20	20	20	20
Selenium (Se)	mg/kg wwt	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Sodium (Na)	mg/kg wwt	20	20	20	20	20	20	20	20	20	20	20
Strontium (Sr)	mg/kg wwt	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Thallium (Tl)	mg/kg wwt	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Tin (Sn)	mg/kg wwt	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Titanium (Ti)	mg/kg wwt	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Uranium (U)	mg/kg wwt	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
Vanadium (V)	mg/kg wwt	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Zinc (Zn)	mg/kg wwt	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

Appendix 5. Schaft Creek Project Wet Weight Metal Detection Limits

DETECTION LIMITS

Sample ID		TAIL A2-EQUIARV	TAIL B1-EQUIARV	TAIL B2-EQUIARV	TAIL A3-EQUIARV	3-VAC OVAL	4-SHERP CANA	5-VAC OVAL	7-SHEP CANA	8-VAC OVAL	9-VAC OVAL	10-SHEP CANA	11-SHEP CANA
Date Sampled		30-AUG-07	30-AUG-07	30-AUG-07	30-AUG-07	17-AUG-08	17-AUG-08	18-AUG-08	19-AUG-08	20-AUG-08	20-AUG-08	21-AUG-08	26-AUG-08
ALS Sample ID		L551584-12	L551584-13	L551584-14	L551584-15	L676276-3	L676276-4	L676276-5	L676276-6	L676276-7	L676276-8	L676276-9	L676276-10
Physical Tests	**UNITS**												
% Moisture	%	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Total Metals													
Aluminum (Al)	mg/kg wwt	2	2	2	2	2	2	2	2	2	2	2	2
Antimony (Sb)	mg/kg wwt	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Arsenic (As)	mg/kg wwt	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Barium (Ba)	mg/kg wwt	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Beryllium (Be)	mg/kg wwt	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Bismuth (Bi)	mg/kg wwt	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Cadmium (Cd)	mg/kg wwt	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Calcium (Ca)	mg/kg wwt	2	2	2	2	2	2	2	2	2	2	2	2
Chromium (Cr)	mg/kg wwt	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Cobalt (Co)	mg/kg wwt	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Copper (Cu)	mg/kg wwt	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Iron (Fe)	mg/kg wwt	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Lead (Pb)	mg/kg wwt	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Lithium (Li)	mg/kg wwt	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Magnesium (Mg)	mg/kg wwt	1	1	1	1	1	1	1	1	1	1	1	1
Manganese (Mn)	mg/kg wwt	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Mercury (Hg)	mg/kg wwt	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Molybdenum (Mo)	mg/kg wwt	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Nickel (Ni)	mg/kg wwt	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Phosphorus (P)	mg/kg wwt	5	5	5	5	5	5	5	5	5	5	5	5
Potassium (K)	mg/kg wwt	20	20	20	20	20	20	20	20	20	20	20	20
Selenium (Se)	mg/kg wwt	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Sodium (Na)	mg/kg wwt	20	20	20	20	20	20	20	20	20	20	20	20
Strontium (Sr)	mg/kg wwt	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Thallium (Tl)	mg/kg wwt	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Tin (Sn)	mg/kg wwt	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Titanium (Ti)	mg/kg wwt	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Uranium (U)	mg/kg wwt	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
Vanadium (V)	mg/kg wwt	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Zinc (Zn)	mg/kg wwt	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

Appendix 6

Schaft Creek Project Dry Weight Metal Detection Limits

Appendix 6. Schaft Creek Project Dry Weight Metal Detection Limits

DETECTION LIMITS

Sample ID		LEDUGRD1	LEDUGRD2	LEDUGRD3	LEDUGRD4	LEDUGRD5	LEDUGRD6	VACCMEM1	VACCMEM2	VACCMEM3	VACCMEM4	TAIL A1-LEDUGRV	SHEPCAN2	SHEPCAN3	SHEPCAN4
Date Sampled		29-JUL-07	28-JUL-07	30-JUL-07	31-JUL-07	26-JUL-07	25-JUL-07	30-JUL-07	29-JUL-07	29-JUL-07	31-JUL-07	02-AUG-07	30-JUL-07	28-JUL-07	28-JUL-07
ALS Sample ID		L539647-1	L539647-2	L539647-3	L539647-4	L539647-5	L539647-6	L539647-7	L539647-8	L539647-9	L539647-10	L539647-11	L539647-12	L539647-13	L539647-14
Physical Tests															
Total Metals	**UNITS**														
Aluminum (Al)	mg/kg	10	10	10	10	10	10	10	20	30	10	10	10	10	10
Antimony (Sb)	mg/kg	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.15	0.05	0.05	0.05	0.05	0.05
Arsenic (As)	mg/kg	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.15	0.05	0.05	0.05	0.05	0.05
Barium (Ba)	mg/kg	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.15	0.05	0.05	0.05	0.05	0.05
Beryllium (Be)	mg/kg	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.6	0.9	0.3	0.3	0.3	0.3	0.3
Bismuth (Bi)	mg/kg	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.6	0.9	0.3	0.3	0.3	0.3	0.3
Cadmium (Cd)	mg/kg	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.06	0.09	0.03	0.03	0.03	0.03	0.03
Calcium (Ca)	mg/kg	10	10	10	10	10	10	10	20	30	10	10	10	10	10
Chromium (Cr)	mg/kg	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1	1.5	0.5	0.5	0.5	0.5	0.5
Cobalt (Co)	mg/kg	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.1	0.1	0.1	0.1	0.1
Copper (Cu)	mg/kg	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.15	0.05	0.05	0.05	0.05	0.05
Iron (Fe)	mg/kg	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Lead (Pb)	mg/kg	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.1	0.1	0.1	0.1	0.1
Lithium (Li)	mg/kg	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1	1.5	0.5	0.5	0.5	0.5	0.5
Magnesium (Mg)	mg/kg	3	3	3	3	3	3	3	6	9	3	3	3	3	3
Manganese (Mn)	mg/kg	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.15	0.05	0.05	0.05	0.05	0.05
Mercury (Hg)	mg/kg	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Molybdenum (Mo)	mg/kg	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.15	0.05	0.05	0.05	0.05	0.05
Nickel (Ni)	mg/kg	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1	1.5	0.5	0.5	0.5	0.5	0.5
Phosphorus (P)	mg/kg	20	20	20	20	20	20	20	20	20	20	20	20	20	20
Potassium (K)	mg/kg	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Selenium (Se)	mg/kg	1	1	1	1	1	1	1	2	3	1	1	1	1	1
Sodium (Na)	mg/kg	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Strontium (Sr)	mg/kg	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.15	0.05	0.05	0.05	0.05	0.05
Thallium (Tl)	mg/kg	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.06	0.09	0.03	0.03	0.03	0.03	0.03
Tin (Sn)	mg/kg	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.4	0.6	0.2	0.2	0.2	0.2	0.2
Titanium (Ti)	mg/kg	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Uranium (U)	mg/kg	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.03	0.01	0.01	0.01	0.01	0.01
Vanadium (V)	mg/kg	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1	1.5	0.5	0.5	0.5	0.5	0.5
Zinc (Zn)	mg/kg	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1	1.5	0.5	0.5	0.5	0.5	0.5

Appendix 6. Schaft Creek Project Dry Weight Metal Detection Limits

DETECTION LIMITS

Sample ID		RIBELAC1	PIT 1-EQUIARV	PIT 2-EQUIARV	PIT 3-EQUIARV	PIT 8-EQUIARV	PIT 9-VACCMEM (BERRIES)	PIT 5-EQUIARV	PIT 7-EQUIARV	PIT 6- EQUIARV	PIT 4-EQUIARV	PIT 9-VACCMEN (TISSUE)	TAIL A1-LEDUGRV	TAIL A2-EQUIARV	TAIL B1-EQUIARV	TAIL B2-EQUIARV	TAIL A3-EQUIARV
Date Sampled		28-JUL-07	28-AUG-07	28-AUG-07	28-AUG-07	29-AUG-07	29-AUG-07	29-AUG-07	29-AUG-07	29-AUG-07	29-AUG-07	29-AUG-07	30-AUG-07	30-AUG-07	30-AUG-07	30-AUG-07	30-AUG-07
ID		L539647-15	L551584-1	L551584-2	L551584-3	L551584-4	L551584-5	L551584-6	L551584-7	L551584-8	L551584-9	L551584-10	L551584-11	L551584-12	L551584-13	L551584-14	L551584-15
Physical Tests																	
Total Metals	**UNITS**																
Aluminum (Al)	mg/kg	10	10	10	10	10	20	10	20	10	10	10	10	10	20	10	10
Antimony (Sb)	mg/kg	0.05	0.05	0.05	0.05	0.05	0.1	0.05	0.1	0.05	0.05	0.05	0.05	0.05	0.1	0.05	0.05
Arsenic (As)	mg/kg	0.05	0.05	0.05	0.05	0.05	0.1	0.05	0.1	0.05	0.05	0.05	0.05	0.05	0.1	0.05	0.05
Barium (Ba)	mg/kg	0.05	0.05	0.05	0.05	0.05	0.1	0.05	0.1	0.05	0.05	0.05	0.05	0.05	0.1	0.05	0.05
Beryllium (Be)	mg/kg	0.3	0.3	0.3	0.3	0.3	0.6	0.3	0.6	0.3	0.3	0.3	0.3	0.3	0.6	0.3	0.3
Bismuth (Bi)	mg/kg	0.3	0.3	0.3	0.3	0.3	0.6	0.3	0.6	0.3	0.3	0.3	0.3	0.3	0.6	0.3	0.3
Cadmium (Cd)	mg/kg	0.03	0.03	0.03	0.03	0.03	0.06	0.03	0.06	0.03	0.03	0.03	0.03	0.03	0.06	0.03	0.03
Calcium (Ca)	mg/kg	10	10	10	10	10	20	10	20	10	10	10	10	10	20	10	10
Chromium (Cr)	mg/kg	0.5	0.5	0.5	0.5	0.5	1	0.5	1	0.5	0.5	0.5	0.5	0.5	1	0.5	0.5
Cobalt (Co)	mg/kg	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1
Copper (Cu)	mg/kg	0.05	0.05	0.05	0.05	0.05	0.1	0.05	0.1	0.05	0.05	0.05	0.05	0.05	0.1	0.05	0.05
Iron (Fe)	mg/kg	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Lead (Pb)	mg/kg	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1
Lithium (Li)	mg/kg	0.5	0.5	0.5	0.5	0.5	1	0.5	1	0.5	0.5	0.5	0.5	0.5	1	0.5	0.5
Magnesium (Mg)	mg/kg	3	3	3	3	3	6	3	6	3	3	3	3	3	6	3	3
Manganese (Mn)	mg/kg	0.05	0.05	0.05	0.05	0.05	0.1	0.05	0.1	0.05	0.05	0.05	0.05	0.05	0.1	0.05	0.05
Mercury (Hg)	mg/kg	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Molybdenum (Mo)	mg/kg	0.05	0.05	0.05	0.05	0.05	0.1	0.05	0.1	0.05	0.05	0.05	0.05	0.05	0.1	0.05	0.05
Nickel (Ni)	mg/kg	0.5	0.5	0.5	0.5	0.5	1	0.5	1	0.5	0.5	0.5	0.5	0.5	1	0.5	0.5
Phosphorus (P)	mg/kg	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
Potassium (K)	mg/kg	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Selenium (Se)	mg/kg	1	1	1	1	1	2	1	2	1	1	1	1	1	2	1	1
Sodium (Na)	mg/kg	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Strontium (Sr)	mg/kg	0.05	0.05	0.05	0.05	0.05	0.1	0.05	0.1	0.05	0.05	0.05	0.05	0.05	0.1	0.05	0.05
Thallium (Tl)	mg/kg	0.03	0.03	0.03	0.03	0.03	0.06	0.03	0.06	0.03	0.03	0.03	0.03	0.03	0.06	0.03	0.03
Tin (Sn)	mg/kg	0.2	0.2	0.2	0.2	0.2	0.4	0.2	0.4	0.2	0.2	0.2	0.2	0.2	0.4	0.2	0.2
Titanium (Ti)	mg/kg	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Uranium (U)	mg/kg	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01
Vanadium (V)	mg/kg	0.5	0.5	0.5	0.5	0.5	1	0.5	1	0.5	0.5	0.5	0.5	0.5	1	0.5	0.5
Zinc (Zn)	mg/kg	0.5	0.5	0.5	0.5	0.5	1	0.5	1	0.5	0.5	0.5	0.5	0.5	1	0.5	0.5

Appendix 7

Schaft Creek Project PEM Legend for Mapped Ecosystems

Appendix 7. Schaft Creek Project PEM Legend for Mapped Ecosystems

BEC Unit	Site Series	Map Code	Ecosystem Unit	Name	Description	General Ecosystem Type	Structural Stage	Structural Stage Class	Typical SMR	PEM Value
ATun	00	AM	AM	herbaceous meadow	includes forested herb structural stages	Mesic Shrub/Herb	2	Herb	mesic (submesic-subhygric)	3016
ATun	00	AM	AM	herbaceous meadow	includes forested herb structural stages	Mesic Shrub/Herb	2	Herb	mesic (submesic-subhygric)	3012
ATun	00	BA	BA	sparse/barren	Land devoid of vegetation due to extreme climatic or edaphic conditions.	Sparse/Barren	1	Sparse / Bryoid	N/A	3007
ATun	00	BA	BA	sparse/barren	Land devoid of vegetation due to extreme climatic or edaphic conditions.	Sparse/Barren	1	Sparse / Bryoid	N/A	3010
ATun	00	DH	DH	dry herb	includes forested herb structural stages	Drier Shrub/Herb	2	Herb	xeric - subxeric	3011
ATun	00	DH	DH	dry herb	includes forested herb structural stages	Drier Shrub/Herb	2	Herb	xeric - subxeric	3015
ATun	00	DS	DS	dry shrub	includes forested shrub structural stages	Drier Shrub/Herb	3	Shrub	xeric - subxeric	3001
ATun	00	ET	ET	escape terrain	Barren or sparsely vegetated ground with a slope gradient greater than 70% (35 degrees)	Sparse/Barren	1	Sparse / Bryoid	N/A	3009
ATun	00	ET	ET	escape terrain	Barren or sparsely vegetated ground with a slope gradient greater than 70% (35 degrees)	Sparse/Barren	1	Sparse / Bryoid	N/A	3006
ATun	00	GSi	GSi	glacier/snow/ice	Combined glacier and permanent snow/ice (source: satellite classification)	Snow/Ice	N/A	N/A	N/A	3005
ATun	00	KH	KH	krummholtz	dwarfed conifers growing at high elevations; trees are short in stature and in poor form	Treed	3	Shrub	all range/undistinguished	3004
ATun	00	KH	KH	krummholtz	dwarfed conifers growing at high elevations; trees are short in stature and in poor form	Treed	3	Shrub	range/undistinguished	3008
ATun	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	13016
ATun	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	13017
ATun	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	13003
ATun	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	13008
ATun	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	13007
ATun	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	13005
ATun	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	13004
ATun	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	13010
ATun	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	13001
ATun	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	13011
ATun	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	13014

Appendix 7. Schaft Creek Project PEM Legend for Mapped Ecosystems

BEC Unit	Site Series	Map Code	Ecosystem Unit	Name	Description	General Ecosystem Type	Structural Stage	Structural Stage Class	Typical SMR	PEM Value
ATun	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	13012
ATun	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	13013
ATun	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	13015
ATun	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	13002
ATun	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	23008
ATun	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	23017
ATun	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	23003
ATun	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	23005
ATun	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	23007
ATun	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	23010
ATun	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	23012
ATun	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	23013
ATun	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	23016
ATun	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	23002
ATun	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	43017
ATun	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	43016
ATun	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	43013
ATun	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	43012
ATun	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	43002
ATun	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	43003
ATun	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	43005
ATun	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	43007
ATun	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	43008
ATun	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	43010
ATun	00	VF	VF	mesic shrub	includes forested shrub structural stages	Mesic Shrub/Herb	3	Shrub	mesic	3002

Appendix 7. Schaft Creek Project PEM Legend for Mapped Ecosystems

BEC Unit	Site Series	Map Code	Ecosystem Unit	Name	Description	General Ecosystem Type	Structural Stage	Structural Stage Class	Typical SMR	PEM Value
ATun	00	VS	VS	wetter shrub	may include wetland (moisture range: moist to wet)	Wetter Shrub/Herb	3	Shrub	subhygric to hydric	3003
ATun	00	VW	VW	wetter herb	includes forested herb structural stages	Wetter Shrub/Herb	2	Herb	subhygric to hydric	3013
ATun	00	VW	VW	wetter herb	includes forested herb structural stages	Wetter Shrub/Herb	2	Herb	subhygric to hydric	3017
ATun	00	WA	WA	water	any waterbody identified in the satellite classification that was not identified by TRIM	Water	N/A	N/A	N/A	3014
BWBSdk1	01	SM	01	Sw - Knight's plume - Step moss	gentle slope; deep, coarse - textured soils	Mesic Forest	6/7	Mature/Old Forest	mesic	4013
BWBSdk1	01	SM	01	Sw - Knight's plume - Step moss	gentle slope; deep, coarse - textured soils	Mesic Forest	6/7	Mature/Old Forest	mesic	4012
BWBSdk1	01	SM	01	Sw - Knight's plume - Step moss	gentle slope; deep, coarse - textured soils	Mesic Forest	6/7	Mature/Old Forest	mesic	4014
BWBSdk1	01	SM	01	Sw - Knight's plume - Step moss	gentle slope; deep, coarse - textured soils	Mesic Forest	6/7	Mature/Old Forest	mesic	4011
BWBSdk1	02	LL	02	Pl - Lingonberry - Feathermoss	gentle slope; deep, coarse - textured soils	Drier Forest	6/7	Mature/Old Forest	xeric	4022
BWBSdk1	02	LL	02	Pl - Lingonberry - Feathermoss	gentle slope; deep, coarse - textured soils	Drier Forest	6/7	Mature/Old Forest	xeric	4021
BWBSdk1	03	SW	03	Sw - Wildrye - Toad-flax	significant slope; warm aspect deep, medium - textured soil	Drier Forest	6/7	Mature/Old Forest	subxeric	4033
BWBSdk1	03	SW	03	Sw - Wildrye - Toad-flax	significant slope; warm aspect deep, medium - textured soil	Drier Forest	6/7	Mature/Old Forest	subxeric	4032
BWBSdk1	03	SW	03	Sw - Wildrye - Toad-flax	significant slope; warm aspect deep, medium - textured soil	Drier Forest	6/7	Mature/Old Forest	subxeric	4031
BWBSdk1	04	BL	04	Sb - Lingonberry - Knight's plume	gentle slope to level sites; deep, medium- textured soils, subject to cold air ponding	Drier Forest	6/7	Mature/Old Forest	subxeric - submesic	4041
BWBSdk1	05	SS	05	SwPl - Soopolallie - Twinflower	gentle slope; deep, coarse - textured soils, richer soil nutrient regime	Drier Forest	6/7	Mature/Old Forest	submesic	4051
BWBSdk1	06	SR	06	Sw - Scouring-rush - Step moss	gentle, lower slope receiving sites; deep, medium - textured soil	Wetter Forest	6/7	Mature/Old Forest	subhygric	4061
BWBSdk1	06	SR	06	Sw - Scouring-rush - Step moss	gentle, lower slope receiving sites; deep, medium - textured soil	Wetter Forest	6/7	Mature/Old Forest	subhygric	4062
BWBSdk1	06	SR	06	Sw - Scouring-rush - Step moss	gentle, lower slope receiving sites; deep, medium - textured soil	Wetter Forest	6/7	Mature/Old Forest	subhygric	4063
BWBSdk1	07	BC	07	Sb - Lingonberry - Coltsfoot	gentle slope, deep, medium-textured soil, cool sites	Wetter Forest	6/7	Mature/Old Forest	subhygric	4071
BWBSdk1	08	SC	08	Sw - Currant - Horsetail	level to toe slopes; deep, medium- textured soils, imperfectly to poorly drained soils	Wetter Forest	6/7	Mature/Old Forest	subhygric - hygric	4081
BWBSdk1	08	SC	08	Sw - Currant - Horsetail	level to toe slopes; deep, medium- textured soils, imperfectly to poorly drained soils	Wetter Forest	6/7	Mature/Old Forest	subhygric - hygric	4082
BWBSdk1	09	BH	09	Sb - Horsetail - Sphagnum (Wb09 - Sb - Common Horsetail - Peat Moss)	organic wetland, poor soil drainage	Wetter Forest	6/7	Mature/Old Forest	hygric	4091
BWBSdk1	09	BH	09	Sb - Horsetail - Sphagnum (Wb09 - Sb - Common Horsetail - Peat Moss)	organic wetland, poor soil drainage	Wetter Forest	6/7	Mature/Old Forest	hygric	4092
BWBSdk1	10(11)	BS(SG)	10(11)	Sb - Labrador tea - Sphagnum (Wb03 - Sb - Lingonberry - Peat-Moss)	Incl. (11) Sw - Willow - Glow moss; organic bog forest (BC Wetland Classification)/swamp forests, deep medium-textured soils	Wetter Forest	6/7	Mature/Old Forest	subhydric	4001

Appendix 7. Schaft Creek Project PEM Legend for Mapped Ecosystems

BEC Unit	Site Series	Map Code	Ecosystem Unit	Name	Description	General Ecosystem Type	Structural Stage	Structural Stage Class	Typical SMR	PEM Value
BWBSdk1	00	AM	AM	herbaceous meadow	includes forested herb structural stages	Mesic Shrub/Herb	2	Herb	mesic (submesic-subhygric)	4995
BWBSdk1	00	BA	BA	sparse/barren	Land devoid of vegetation due to extreme climatic or edaphic conditions.	Sparse/Barren	1	Sparse / Bryoid	N/A	4997
BWBSdk1	00	DH	DH	dry herb	includes forested herb structural stages and site series 81, found on south-facing slopes of frequently burned sites	Drier Shrub/Herb	2	Herb	xeric - subxeric	4996
BWBSdk1	00	DS	DS	dry shrub	includes forested shrub structural stages and site series 81, found on south-facing slopes of frequently burned sites	Drier Shrub/Herb	3	Shrub	xeric - subxeric	4991
BWBSdk1	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	14082
BWBSdk1	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	14071
BWBSdk1	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	14995
BWBSdk1	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	14994
BWBSdk1	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	14993
BWBSdk1	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	14992
BWBSdk1	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	14091
BWBSdk1	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	14081
BWBSdk1	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	14063
BWBSdk1	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	14062
BWBSdk1	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	14092
BWBSdk1	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	14998
BWBSdk1	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	14997
BWBSdk1	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	14041
BWBSdk1	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	14031

Appendix 7. Schaft Creek Project PEM Legend for Mapped Ecosystems

BEC Unit	Site Series	Map Code	Ecosystem Unit	Name	Description	General Ecosystem Type	Structural Stage	Structural Stage Class	Typical SMR	PEM Value
BWBSdk1	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	14013
BWBSdk1	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	14021
BWBSdk1	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	14012
BWBSdk1	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	14014
BWBSdk1	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	14051
BWBSdk1	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	14001
BWBSdk1	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	14061
BWBSdk1	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	24092
BWBSdk1	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	24998
BWBSdk1	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	24992
BWBSdk1	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	24995
BWBSdk1	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	24993
BWBSdk1	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	24001
BWBSdk1	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	24061
BWBSdk1	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	24012
BWBSdk1	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	24033
BWBSdk1	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	24091
BWBSdk1	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	24071
BWBSdk1	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	24063
BWBSdk1	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	24062
BWBSdk1	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	24051
BWBSdk1	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	24031
BWBSdk1	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	24021

Appendix 7. Schaft Creek Project PEM Legend for Mapped Ecosystems

BEC Unit	Site Series	Map Code	Ecosystem Unit	Name	Description	General Ecosystem Type	Structural Stage	Structural Stage Class	Typical SMR	PEM Value
BWBSdk1	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	24081
BWBSdk1	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	24013
BWBSdk1	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	24997
BWBSdk1	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	24014
BWBSdk1	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	24082
BWBSdk1	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	24041
BWBSdk1	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	24994
BWBSdk1	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	24032
BWBSdk1	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	44998
BWBSdk1	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	44051
BWBSdk1	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	44041
BWBSdk1	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	44031
BWBSdk1	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	44014
BWBSdk1	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	44013
BWBSdk1	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	44081
BWBSdk1	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	44001
BWBSdk1	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	44082
BWBSdk1	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	44012
BWBSdk1	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	44062
BWBSdk1	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	44992
BWBSdk1	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	44091
BWBSdk1	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	44071
BWBSdk1	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	44993
BWBSdk1	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	44994
BWBSdk1	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	44995
BWBSdk1	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	44996
BWBSdk1	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	44997

Appendix 7. Schaft Creek Project PEM Legend for Mapped Ecosystems

BEC Unit	Site Series	Map Code	Ecosystem Unit	Name	Description	General Ecosystem Type	Structural Stage	Structural Stage Class	Typical SMR	PEM Value
BWBSdk1	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	44063
BWBSdk1	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	44061
BWBSdk1	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	34071
BWBSdk1	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	34001
BWBSdk1	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	34041
BWBSdk1	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	34012
BWBSdk1	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	34021
BWBSdk1	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	34051
BWBSdk1	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	34996
BWBSdk1	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	34062
BWBSdk1	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	34082
BWBSdk1	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	34995
BWBSdk1	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	34994
BWBSdk1	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	34993
BWBSdk1	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	34992
BWBSdk1	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	34991
BWBSdk1	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	34092
BWBSdk1	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	34091
BWBSdk1	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	34081
BWBSdk1	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	34997
BWBSdk1	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	34063
BWBSdk1	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	34061
BWBSdk1	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	34031
BWBSdk1	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	34014
BWBSdk1	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	34013
BWBSdk1	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	34998
BWBSdk1	00	VF	VF	mesic shrub	includes forested shrub structural stages	Mesic Shrub/Herb	3	Shrub	mesic	4998
BWBSdk1	00	VF	VF	mesic shrub	includes forested shrub structural stages	Mesic Shrub/Herb	3	Shrub	mesic	4992
BWBSdk1	00	VS	VS	wetter shrub	may include wetland (moisture range: moist to wet)	Wetter Shrub/Herb	3	Shrub	subhygric to hydric	4993
BWBSdk1	00	VW	VW	wetter herb	includes forested herb structural stages	Wetter Shrub/Herb	2	Herb	subhygric to hydric	4994
ESSFmc	04	HH	04	Bl - Huckleberry - Heron's-bill	gentle slope; crest position; deep, medium - textured soil	Drier Forest	6/7	Mature/Old Forest	submesic	6542
ESSFmc	04	HH	04	Bl - Huckleberry - Heron's-bill	gentle slope; crest position; deep, medium - textured soil	Drier Forest	6/7	Mature/Old Forest	submesic	6541
ESSFmc	06	FO	06	Bl - Oak fern - Heron's-bill	gentle lower slope, receiving sites; deep, medium - textured soil	Wetter Forest	6/7	Mature/Old Forest	subhygric	6563
ESSFmc	06	FO	06	Bl - Oak fern - Heron's-bill	gentle lower slope, receiving sites; deep, medium - textured soil	Wetter Forest	6/7	Mature/Old Forest	subhygric	6562
ESSFmc	06	FO	06	Bl - Oak fern - Heron's-bill	gentle lower slope, receiving sites; deep, medium - textured soil	Wetter Forest	6/7	Mature/Old Forest	subhygric	6561
ESSFmc	07	FD	07	Bl - Devil's club - Lady fern	gentle lower slope, receiving sites; deep medium - textured soil	Wetter Forest	6/7	Mature/Old Forest	subhygric	6571
ESSFmc	10	FH	10	Bl - Horsetail - Leafy moss (Ws08 - Bl - Sitka valerian - Common horsetail)	gentle slopes to level, toe of seepage slopes; moisture receiving, deep, medium - textured soils; nutrient rich, poorly drained	Wetter Forest	6/7	Mature/Old Forest	subhydric	6591
ESSFmc	01(05)	FB(FT)	01(05)	Bl - Huckleberry - Leafy liverwort	Incl. (05) Bl - Huckleberry - Thimbleberry; gentle slope; deep medium -textured soils/gentle slope; deep, medium- textured soil, nutrient rich soil	Mesic Forest	6/7	Mature/Old Forest	mesic	6511

Appendix 7. Schaft Creek Project PEM Legend for Mapped Ecosystems

BEC Unit	Site Series	Map Code	Ecosystem Unit	Name	Description	General Ecosystem Type	Structural Stage	Structural Stage Class	Typical SMR	PEM Value
ESSFmc	01(05)	FB(FT)	01(05)	Bl - Huckleberry - Leafy liverwort	Incl. (05) Bl - Huckleberry - Thimbleberry; gentle slope; deep medium -textured soils/gentle slope; deep, medium- textured soil, nutrient rich soil	Mesic Forest	6/7	Mature/Old Forest	mesic	6512
ESSFmc	02(03)	LC(FC)	02(03)	BlPl - Juniper - Cladonia	Incl. (03) Bl - Huckleberry - Crowberry; gentle slope; shallow soil, crest position	Drier Forest	6/7	Mature/Old Forest	xeric	6531
ESSFmc	02(03)	LC(FC)	02(03)	BlPl - Juniper - Cladonia	Incl. (03) Bl - Huckleberry - Crowberry; gentle slope; shallow soil, crest position	Drier Forest	6/7	Mature/Old Forest	xeric	6532
ESSFmc	09(08)	HG(FV)	09(08)	Bl - Horsetail - Glow moss (Ws08 - Bl - Sitka valerian - Common horsetail)	Incl. (08) Bl - Valerian - Sickle moss; gentle slope; deep, medium - textured soils, high elevation/gentle lower slope to level; deep, medium - textured soil, poorly drained	Wetter Forest	6/7	Mature/Old Forest	hygric	6581
ESSFmc	00	AM	AM	herbaceous meadow	includes forested herb structural stages	Mesic Shrub/Herb	2	Herb	mesic (submesic-subhygric)	9011
ESSFmc	00	AVm	AVm	moderate avalanche shrub	includes forested shrub structural stages	Avalanche Shrub	3	Shrub	subhygric to hygric (submesic)	9003
ESSFmc	00	AVs	AVs	steep avalanche shrub	includes forested shrub structural stages	Avalanche Shrub	3	Shrub	subhygric to hygric (submesic)	9004
ESSFmc	00	BA	BA	sparse/barren	Land devoid of vegetation due to extreme climatic or edaphic conditions.	Sparse/Barren	1	Sparse / Bryoid	N/A	9002
ESSFmc	00	DH	DH	dry herb	includes forested herb structural stages	Drier Shrub/Herb	2	Herb	xeric - subxeric	9010
ESSFmc	00	DS	DS	dry shrub	includes forested shrub structural stages	Drier Shrub/Herb	3	Shrub	xeric - subxeric	9005
ESSFmc	00	ET	ET	escape terrain	Barren or sparsely vegetated ground with a slope gradient greater than 70% (35 degrees)	Sparse/Barren	1	Sparse / Bryoid	N/A	9001
ESSFmc	00	GTm	GTm	moderate avalanche herb	includes forested herb structural stages	Avalanche Herb	2	Herb	subhygric to hygric (submesic)	9008
ESSFmc	00	GTs	GTs	steep avalanche herb	includes forested herb structural stages	Avalanche Herb	2	Herb	subhygric to hygric (submesic)	9009
ESSFmc	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	16591
ESSFmc	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	19003
ESSFmc	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	19011
ESSFmc	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	19002
ESSFmc	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	19012
ESSFmc	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	16512
ESSFmc	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	16581
ESSFmc	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	19007
ESSFmc	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	16561

Appendix 7. Schaft Creek Project PEM Legend for Mapped Ecosystems

BEC Unit	Site Series	Map Code	Ecosystem Unit	Name	Description	General Ecosystem Type	Structural Stage	Structural Stage Class	Typical SMR	PEM Value
ESSFmc	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	19008
ESSFmc	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	16571
ESSFmc	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	19006
ESSFmc	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	19000
ESSFmc	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	16541
ESSFmc	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	16511
ESSFmc	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	16563
ESSFmc	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	19005
ESSFmc	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	16562
ESSFmc	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	26591
ESSFmc	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	26561
ESSFmc	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	26581
ESSFmc	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	26571
ESSFmc	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	26541
ESSFmc	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	26511
ESSFmc	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	29012
ESSFmc	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	26562
ESSFmc	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	29000
ESSFmc	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	29011
ESSFmc	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	29002
ESSFmc	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	29006
ESSFmc	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	29010

Appendix 7. Schaft Creek Project PEM Legend for Mapped Ecosystems

BEC Unit	Site Series	Map Code	Ecosystem Unit	Name	Description	General Ecosystem Type	Structural Stage	Structural Stage Class	Typical SMR	PEM Value
ESSFmc	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	26512
ESSFmc	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	29005
ESSFmc	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	29007
ESSFmc	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	49011
ESSFmc	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	49005
ESSFmc	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	49010
ESSFmc	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	49012
ESSFmc	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	49008
ESSFmc	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	49006
ESSFmc	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	49003
ESSFmc	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	49002
ESSFmc	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	49007
ESSFmc	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	49000
ESSFmc	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	46591
ESSFmc	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	46563
ESSFmc	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	46581
ESSFmc	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	46571
ESSFmc	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	46562
ESSFmc	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	46561
ESSFmc	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	46541
ESSFmc	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	46512
ESSFmc	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	46511
ESSFmc	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	39012
ESSFmc	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	39007
ESSFmc	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	39011
ESSFmc	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	39010
ESSFmc	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	36591
ESSFmc	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	36581
ESSFmc	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	36571
ESSFmc	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	36563
ESSFmc	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	36562
ESSFmc	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	36561

Appendix 7. Schaft Creek Project PEM Legend for Mapped Ecosystems

BEC Unit	Site Series	Map Code	Ecosystem Unit	Name	Description	General Ecosystem Type	Structural Stage	Structural Stage Class	Typical SMR	PEM Value
ESSFmc	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	39002
ESSFmc	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	39006
ESSFmc	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	39005
ESSFmc	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	39003
ESSFmc	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	39000
ESSFmc	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	39008
ESSFmc	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	36541
ESSFmc	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	36511
ESSFmc	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	36512
ESSFmc	00	VF	VF	mesic shrub	includes forested shrub structural stages	Mesic Shrub/Herb	3	Shrub	mesic	9006
ESSFmc	00	VS	VS	wetter shrub	may include wetland (moisture range: moist to wet)	Wetter Shrub/Herb	3	Shrub	subhygric to hydric	9007
ESSFmc	00	VW	VW	wetter herb	includes forested herb structural stages	Wetter Shrub/Herb	2	Herb	subhygric to hydric	9012
ESSFmc	00	WA	WA	water	any waterbody identified in the satellite classification that was not identified by TRIM	Water	N/A	N/A	N/A	9000
ESSFmcp	00	AM	AM	herbaceous meadow	includes forested herb structural stages	Mesic Shrub/Herb	2	Herb	mesic (submesic-subhygric)	6012
ESSFmcp	00	BA	BA	sparse/barren	Land devoid of vegetation due to extreme climatic or edaphic conditions.	Sparse/Barren	1	Sparse / Bryoid	N/A	6007
ESSFmcp	00	DH	DH	dry herb	includes forested herb structural stages	Drier Shrub/Herb	2	Herb	xeric - subxeric	6011
ESSFmcp	00	DS	DS	dry shrub	includes forested shrub structural stages	Drier Shrub/Herb	3	Shrub	xeric - subxeric	6001
ESSFmcp	00	DV	DV	dwarf vegetation	generic heather heath/dwarf shrub communities	Mesic Shrub/Herb	2d	Herb	all range/undistinguished	6014
ESSFmcp	00	ET	ET	escape terrain	Barren or sparsely vegetated ground with a slope gradient greater than 70% (35 degrees)	Sparse/Barren	1	Sparse / Bryoid	N/A	6006
ESSFmcp	00	GSi	GSi	glacier/snow/ice	Combined glacier and permanent snow/ice (source: satellite classification)	Snow/Ice	N/A	N/A	N/A	6005
ESSFmcp	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	16013
ESSFmcp	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	16012
ESSFmcp	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	16003
ESSFmcp	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	16007
ESSFmcp	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	16005
ESSFmcp	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	16002
ESSFmcp	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	16009
ESSFmcp	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	16010
ESSFmcp	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	16008

Appendix 7. Schaft Creek Project PEM Legend for Mapped Ecosystems

BEC Unit	Site Series	Map Code	Ecosystem Unit	Name	Description	General Ecosystem Type	Structural Stage	Structural Stage Class	Typical SMR	PEM Value
ESSFmcp	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	26003
ESSFmcp	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	26012
ESSFmcp	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	26009
ESSFmcp	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	26008
ESSFmcp	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	26013
ESSFmcp	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	46002
ESSFmcp	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	46008
ESSFmcp	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	46007
ESSFmcp	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	46003
ESSFmcp	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	46009
ESSFmcp	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	46013
ESSFmcp	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	46012
ESSFmcp	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	36009
ESSFmcp	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	36002
ESSFmcp	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	36003
ESSFmcp	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	36012
ESSFmcp	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	36013
ESSFmcp	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	36008
ESSFmcp	00	TI	TI	conifer/tree island	Conifer patches occurring at higher elevations occurring on all ranges of moisture/nutrient regimes; discontinuous forest cover; typical of parkland BEC Units	Treed	6/7 (3)	Mature/Old Forest	all range/undistinguished	6009
ESSFmcp	00	TI	TI	conifer/tree island	Conifer patches occurring at higher elevations occurring on all ranges of moisture/nutrient regimes; discontinuous forest cover; typical of parkland BEC Units	Treed	6/7 (3)	Mature/Old Forest	all range/undistinguished	6008
ESSFmcp	00	TI	TI	conifer/tree island	Conifer patches occurring at higher elevations occurring on all ranges of moisture/nutrient regimes; discontinuous forest cover; typical of parkland BEC Units	Treed	6/7 (3)	Mature/Old Forest	all range/undistinguished	6004
ESSFmcp	00	VF	VF	mesic shrub	includes forested shrub structural stages	Mesic Shrub/Herb	3	Shrub	mesic	6002
ESSFmcp	00	VS	VS	wetter shrub	may include wetland (moisture range: moist to wet)	Wetter Shrub/Herb	3	Shrub	subhygric to hydric	6003
ESSFmcp	00	VW	VW	wetter herb	includes forested herb structural stages	Wetter Shrub/Herb	2	Herb	subhygric to hydric	6013
ESSFmcp	00	WA	WA	water	any waterbody identified in the satellite classification that was not identified by TRIM	Water	N/A	N/A	N/A	6010
ESSFvv	02	FB	02	Bl - Huckleberry - Mountain liverwort	gentle slope, upper and crests; medium textured shallow soil over bedrock	Drier Forest	6/7	Mature/Old Forest	very xeric - subxeric	8521
ESSFvv	01(05)	FA(FO)	01(05)	BlHm - Azalea	Incl. (05) Bl - Oak fern - Heron's-bill; gentle slope; deep, medium - textured soil/gentle slope; lower slope receiving position; deep, medium - textured soil; seepage	Mesic Forest	6/7	Mature/Old Forest	mesic-subhygric	8511
ESSFvv	01(05)	FA(FO)	01(05)	BlHm - Azalea	Incl. (05) Bl - Oak fern - Heron's-bill; gentle slope; deep, medium - textured soil/gentle slope; lower slope receiving position; deep, medium - textured soil; seepage	Mesic Forest	6/7	Mature/Old Forest	mesic-subhygric	8512

Appendix 7. Schaft Creek Project PEM Legend for Mapped Ecosystems

BEC Unit	Site Series	Map Code	Ecosystem Unit	Name	Description	General Ecosystem Type	Structural Stage	Structural Stage Class	Typical SMR	PEM Value
ESSFvv	01(05)	FA(FO)	01(05)	BlHm - Azalea	Incl. (05) Bl - Oak fern - Heron's-bill; gentle slope; deep, medium - textured soil/gentle slope; lower slope receiving position; deep, medium - textured soil; seepage	Mesic Forest	6/7	Mature/Old Forest	mesic-subhygric	8513
ESSFvv	03(04)	FF(MH)	03(04)	BlHm - Feathermoss	Incl. (04) BlHm - Heron's-bill; gentle slope; crest position; deep, medium- textured soils/medium textured shallow soils	Drier Forest	6/7	Mature/Old Forest	subxeric-submesic	8531
ESSFvv	03(04)	FF(MH)	03(04)	BlHm - Feathermoss	Incl. (04) BlHm - Heron's-bill; gentle slope; crest position; deep, medium- textured soils/medium textured shallow soils	Drier Forest	6/7	Mature/Old Forest	subxeric-submesic	8532
ESSFvv	06(07)	FD(FV)	06(07)	Bl - Devil's club - Lady fern	Incl. (07) Bl - Valerian - Sickle moss; gentle lower slope, receiving position; deep, medium- textured soil; seepage/lower to toe slopes; high elevation meadow forests; deep medium - textured soils	Wetter Forest	6/7	Mature/Old Forest	subhygric - hygric	8564
ESSFvv	06(07)	FD(FV)	06(07)	Bl - Devil's club - Lady fern	Incl. (07) Bl - Valerian - Sickle moss; gentle lower slope, receiving position; deep, medium- textured soil; seepage/lower to toe slopes; high elevation meadow forests; deep medium - textured soils	Wetter Forest	6/7	Mature/Old Forest	subhygric - hygric	8561
ESSFvv	06(07)	FD(FV)	06(07)	Bl - Devil's club - Lady fern	Incl. (07) Bl - Valerian - Sickle moss; gentle lower slope, receiving position; deep, medium- textured soil; seepage/lower to toe slopes; high elevation meadow forests; deep medium - textured soils	Wetter Forest	6/7	Mature/Old Forest	subhygric - hygric	8562
ESSFvv	08(09)	FH(FL)	08(09)	Bl - Horsetail - Glow moss	Incl. (09) Bl - Lady fern - Horsetail (Ws08 - Bl - Sitka valerian - Common horsetail); lower slope to depression; deep medium- textured soils, poorly drained/toe slope to depressional ; poorly drained, deep, medium - textured soils	Wetter Forest	6/7	Mature/Old Forest	hygric-subhydric	8582
ESSFvv	08(09)	FH(FL)	08(09)	Bl - Horsetail - Glow moss	Incl. (09) Bl - Lady fern - Horsetail (Ws08 - Bl - Sitka valerian - Common horsetail); lower slope to depression; deep medium- textured soils, poorly drained/toe slope to depressional ; poorly drained, deep, medium - textured soils	Wetter Forest	6/7	Mature/Old Forest	hygric-subhydric	8581
ESSFvv	00	AM	AM	herbaceous meadow	includes forested herb structural stages	Mesic Shrub/Herb	2	Herb	mesic (submesic-subhygric)	8808
ESSFvv	00	AVm	AVm	moderate avalanche shrub	includes forested shrub structural stages	Avalanche Shrub	3	Shrub	subhygric to hygric (submesic)	8800
ESSFvv	00	AVs	AVs	steep avalanche shrub	includes forested shrub structural stages	Avalanche Shrub	3	Shrub	subhygric to hygric (submesic)	8801
ESSFvv	00	BA	BA	sparse/barren	Land devoid of vegetation due to extreme climatic or edaphic conditions.	Sparse/Barren	1	Sparse / Bryoid	N/A	8813
ESSFvv	00	BA	BA	sparse/barren	Land devoid of vegetation due to extreme climatic or edaphic conditions.	Sparse/Barren	1	Sparse / Bryoid	N/A	8811
ESSFvv	00	DH	DH	dry herb	includes forested herb structural stages	Drier Shrub/Herb	2	Herb	xeric - subxeric	8807
ESSFvv	00	DS	DS	dry shrub	includes forested shrub structural stages	Drier Shrub/Herb	3	Shrub	xeric - subxeric	8802
ESSFvv	00	ET	ET	escape terrain	Barren or sparsely vegetated ground with a slope gradient greater than 70% (35 degrees)	Sparse/Barren	1	Sparse / Bryoid	N/A	8812
ESSFvv	00	ET	ET	escape terrain	Barren or sparsely vegetated ground with a slope gradient greater than 70% (35 degrees)	Sparse/Barren	1	Sparse / Bryoid	N/A	8810
ESSFvv	00	GSi	GSi	glacier/snow/ice	Combined glacier and permanent snow/ice (source: satellite classification)	Snow/Ice	N/A	N/A	N/A	8815
ESSFvv	00	GTm	GTm	moderate avalanche herb	includes forested herb structural stages	Avalanche Herb	2	Herb	subhygric to hygric (submesic)	8805
ESSFvv	00	GTs	GTs	steep avalanche herb	includes forested herb structural stages	Avalanche Herb	2	Herb	subhygric to hygric (submesic)	8806
ESSFvv	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	18814
ESSFvv	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	18511
ESSFvv	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	18815

Appendix 7. Schaft Creek Project PEM Legend for Mapped Ecosystems

BEC Unit	Site Series	Map Code	Ecosystem Unit	Name	Description	General Ecosystem Type	Structural Stage	Structural Stage Class	Typical SMR	PEM Value
ESSFvv	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	18813
ESSFvv	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	18562
ESSFvv	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	18561
ESSFvv	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	18809
ESSFvv	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	18811
ESSFvv	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	18803
ESSFvv	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	28562
ESSFvv	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	28582
ESSFvv	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	28803
ESSFvv	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	28804
ESSFvv	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	28511
ESSFvv	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	48813
ESSFvv	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	48582
ESSFvv	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	48803
ESSFvv	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	48811
ESSFvv	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	48804
ESSFvv	00	VF	VF	mesic shrub	includes forested shrub structural stages	Mesic Shrub/Herb	3	Shrub	mesic	8803
ESSFvv	00	VS	VS	wetter shrub	may include wetland (moisture range: moist to wet)	Wetter Shrub/Herb	3	Shrub	subhygric to hydric	8804
ESSFvv	00	VW	VW	wetter herb	includes forested herb structural stages	Wetter Shrub/Herb	2	Herb	subhygric to hydric	8809
ESSFvv	00	WA	WA	water	any waterbody identified in the satellite classification that was not identified by TRIM	Water	N/A	N/A	N/A	8814
ESSFvvp	00	AM	AM	herbaceous meadow	includes forested herb structural stages	Mesic Shrub/Herb	2	Herb	mesic (submesic-subhygric)	8013
ESSFvvp	00	BA	BA	sparse/barren	Land devoid of vegetation due to extreme climatic or edaphic conditions.	Sparse/Barren	1	Sparse / Bryoid	N/A	8010
ESSFvvp	00	BA	BA	sparse/barren	Land devoid of vegetation due to extreme climatic or edaphic conditions.	Sparse/Barren	1	Sparse / Bryoid	N/A	8008
ESSFvvp	00	DH	DH	dry herb	includes forested herb structural stages	Drier Shrub/Herb	2	Herb	xeric - subxeric	8012
ESSFvvp	00	DS	DS	dry shrub	includes forested shrub structural stages	Drier Shrub/Herb	3	Shrub	xeric - subxeric	8002
ESSFvvp	00	DV	DV	dwarf vegetation	generic heather heath/dwarf shrub communities	Mesic Shrub/Herb	2d	Herb	all range/undistinguished	8006

Appendix 7. Schaft Creek Project PEM Legend for Mapped Ecosystems

BEC Unit	Site Series	Map Code	Ecosystem Unit	Name	Description	General Ecosystem Type	Structural Stage	Structural Stage Class	Typical SMR	PEM Value
ESSFvvp	00	ET	ET	escape terrain	Barren or sparsely vegetated ground with a slope gradient greater than 70% (35 degrees)	Sparse/Barren	1	Sparse / Bryoid	N/A	8007
ESSFvvp	00	ET	ET	escape terrain	Barren or sparsely vegetated ground with a slope gradient greater than 70% (35 degrees)	Sparse/Barren	1	Sparse / Bryoid	N/A	8009
ESSFvvp	00	GSi	GSi	glacier/snow/ice	Combined glacier and permanent snow/ice (source: satellite classification)	Snow/Ice	N/A	N/A	N/A	8005
ESSFvvp	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	18004
ESSFvvp	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	18008
ESSFvvp	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	18014
ESSFvvp	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	18005
ESSFvvp	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	18001
ESSFvvp	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	18006
ESSFvvp	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	28008
ESSFvvp	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	28006
ESSFvvp	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	28001
ESSFvvp	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	48008
ESSFvvp	00	TI	TI	conifer/tree island	Conifer patches occurring at higher elevations occurring on all ranges of moisture/nutrient regimes; discontinuous forest cover; typical of parkland BEC Units	Treed	6/7 (3)	Mature/Old Forest	all range/undistinguished	8001
ESSFvvp	00	VF	VF	mesic shrub	includes forested shrub structural stages	Mesic Shrub/Herb	3	Shrub	mesic	8003
ESSFvvp	00	VS	VS	wetter shrub	may include wetland (moisture range: moist to wet)	Wetter Shrub/Herb	3	Shrub	subhygric to hydric	8004
ESSFvvp	00	VW	VW	wetter herb	includes forested herb structural stages	Wetter Shrub/Herb	2	Herb	subhygric to hydric	8014
ESSFwv	02	LC	02	BlPl - Cladonia	gentle slope; crest position; medium textured shallow soil	Drier Forest	6/7	Mature/Old Forest	very xeric - xeric	7021
ESSFwv	01(05)	FA(FO)	01(05)	BlHm - Azalea	Incl. (05) Bl - Oak fern - Heron's-bill; gentle slope; deep, medium - textured soil/gentle slope; lower slope receiving position; deep, medium - textured soil; seepage	Mesic Forest	6/7	Mature/Old Forest	mesic-subhygric	7013
ESSFwv	01(05)	FA(FO)	01(05)	BlHm - Azalea	Incl. (05) Bl - Oak fern - Heron's-bill; gentle slope; deep, medium - textured soil/gentle slope; lower slope receiving position; deep, medium - textured soil; seepage	Mesic Forest	6/7	Mature/Old Forest	mesic-subhygric	7012
ESSFwv	01(05)	FA(FO)	01(05)	BlHm - Azalea	Incl. (05) Bl - Oak fern - Heron's-bill; gentle slope; deep, medium - textured soil/gentle slope; lower slope receiving position; deep, medium - textured soil; seepage	Mesic Forest	6/7	Mature/Old Forest	mesic-subhygric	7011
ESSFwv	03(04)	FF(MH)	03(04)	BlHm - Feathermoss	Incl. (04) BlHm - Heron's-bill; gentle slope; crest position; deep, medium- textured soils/medium textured shallow soils	Drier Forest	6/7	Mature/Old Forest	subxeric-submesic	7031
ESSFwv	03(04)	FF(MH)	03(04)	BlHm - Feathermoss	Incl. (04) BlHm - Heron's-bill; gentle slope; crest position; deep, medium- textured soils/medium textured shallow soils	Drier Forest	6/7	Mature/Old Forest	subxeric-submesic	7032

Appendix 7. Schaft Creek Project PEM Legend for Mapped Ecosystems

BEC Unit	Site Series	Map Code	Ecosystem Unit	Name	Description	General Ecosystem Type	Structural Stage	Structural Stage Class	Typical SMR	PEM Value
ESSFwv	06(07)	FD(FV)	06(07)	Bl - Devil's club - Lady fern	Incl. (07) Bl - Valerian - Sickle moss; gentle lower slope, receiving position; deep, medium- textured soil; seepage/lower to toe slopes; high elevation meadow forests; deep medium - textured soils	Wetter Forest	6/7	Mature/Old Forest	subhygric - hygric	7061
ESSFwv	06(07)	FD(FV)	06(07)	Bl - Devil's club - Lady fern	Incl. (07) Bl - Valerian - Sickle moss; gentle lower slope, receiving position; deep, medium- textured soil; seepage/lower to toe slopes; high elevation meadow forests; deep medium - textured soils	Wetter Forest	6/7	Mature/Old Forest	subhygric - hygric	7062
ESSFwv	06(07)	FD(FV)	06(07)	Bl - Devil's club - Lady fern	Incl. (07) Bl - Valerian - Sickle moss; gentle lower slope, receiving position; deep, medium- textured soil; seepage/lower to toe slopes; high elevation meadow forests; deep medium - textured soils	Wetter Forest	6/7	Mature/Old Forest	subhygric - hygric	7063
ESSFwv	06(07)	FD(FV)	06(07)	Bl - Devil's club - Lady fern	Incl. (07) Bl - Valerian - Sickle moss; gentle lower slope, receiving position; deep, medium- textured soil; seepage/lower to toe slopes; high elevation meadow forests; deep medium - textured soils	Wetter Forest	6/7	Mature/Old Forest	subhygric - hygric	7064
ESSFwv	08(09)	FH(FL)	08(09)	Bl - Horsetail - Glow moss	Incl. (09) Bl - Lady fern - Horsetail (Ws08 - Bl - Sitka valerian - Common horsetail); lower slope to depression; deep medium- textured soils, poorly drained/toe slope to depressional ; poorly drained, deep, medium - textured soils	Wetter Forest	6/7	Mature/Old Forest	hygric-subhydric	7081
ESSFwv	08(09)	FH(FL)	08(09)	Bl - Horsetail - Glow moss	Incl. (09) Bl - Lady fern - Horsetail (Ws08 - Bl - Sitka valerian - Common horsetail); lower slope to depression; deep medium- textured soils, poorly drained/toe slope to depressional ; poorly drained, deep, medium - textured soils	Wetter Forest	6/7	Mature/Old Forest	hygric-subhydric	7082
ESSFwv	00	AM	AM	herbaceous meadow	includes forested herb structural stages	Mesic Shrub/Herb	2	Herb	mesic (submesic-subhygric)	7813
ESSFwv	00	AVm	AVm	moderate avalanche shrub	includes forested shrub structural stages	Avalanche Shrub	3	Shrub	subhygric to hygric (submesic)	7810
ESSFwv	00	AVm	AVm	moderate avalanche shrub	includes forested shrub structural stages	Avalanche Shrub	3	Shrub	subhygric to hygric (submesic)	7805
ESSFwv	00	AVs	AVs	steep avalanche shrub	includes forested shrub structural stages	Avalanche Shrub	3	Shrub	subhygric to hygric (submesic)	7811
ESSFwv	00	AVs	AVs	steep avalanche shrub	includes forested shrub structural stages	Avalanche Shrub	3	Shrub	subhygric to hygric (submesic)	7806
ESSFwv	00	BA	BA	sparse/barren	Land devoid of vegetation due to extreme climatic or edaphic conditions.	Sparse/Barren	1	Sparse / Bryoid	N/A	7801
ESSFwv	00	BA	BA	sparse/barren	Land devoid of vegetation due to extreme climatic or edaphic conditions.	Sparse/Barren	1	Sparse / Bryoid	N/A	7803
ESSFwv	00	DH	DH	dry herb	includes forested herb structural stages	Drier Shrub/Herb	2	Herb	xeric - subxeric	7812
ESSFwv	00	DS	DS	dry shrub	includes forested shrub structural stages	Drier Shrub/Herb	3	Shrub	xeric - subxeric	7807
ESSFwv	00	ET	ET	escape terrain	Barren or sparsely vegetated ground with a slope gradient greater than 70% (35 degrees)	Sparse/Barren	1	Sparse / Bryoid	N/A	7800
ESSFwv	00	ET	ET	escape terrain	Barren or sparsely vegetated ground with a slope gradient greater than 70% (35 degrees)	Sparse/Barren	1	Sparse / Bryoid	N/A	7802
ESSFwv	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	17805
ESSFwv	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	17011
ESSFwv	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	17808
ESSFwv	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	17809
ESSFwv	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	17801

Appendix 7. Schaft Creek Project PEM Legend for Mapped Ecosystems

BEC Unit	Site Series	Map Code	Ecosystem Unit	Name	Description	General Ecosystem Type	Structural Stage	Structural Stage Class	Typical SMR	PEM Value
ESSFwv	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	17081
ESSFwv	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	17804
ESSFwv	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	17803
ESSFwv	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	17082
ESSFwv	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	17062
ESSFwv	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	17061
ESSFwv	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	27803
ESSFwv	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	27808
ESSFwv	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	27810
ESSFwv	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	27813
ESSFwv	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	27082
ESSFwv	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	27081
ESSFwv	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	27801
ESSFwv	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	27814
ESSFwv	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	27809
ESSFwv	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	27805
ESSFwv	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	27064
ESSFwv	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	27063
ESSFwv	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	27062
ESSFwv	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	27061
ESSFwv	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	27021
ESSFwv	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	27011
ESSFwv	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	27012
ESSFwv	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	47813

Appendix 7. Schaft Creek Project PEM Legend for Mapped Ecosystems

BEC Unit	Site Series	Map Code	Ecosystem Unit	Name	Description	General Ecosystem Type	Structural Stage	Structural Stage Class	Typical SMR	PEM Value
ESSFwv	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	47810
ESSFwv	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	47082
ESSFwv	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	47800
ESSFwv	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	47031
ESSFwv	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	47809
ESSFwv	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	47801
ESSFwv	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	47062
ESSFwv	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	47063
ESSFwv	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	47064
ESSFwv	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	47061
ESSFwv	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	47808
ESSFwv	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	47807
ESSFwv	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	47021
ESSFwv	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	47814
ESSFwv	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	47012
ESSFwv	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	47803
ESSFwv	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	47804
ESSFwv	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	47805
ESSFwv	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	47806
ESSFwv	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	47802
ESSFwv	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	47011
ESSFwv	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	47013
ESSFwv	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	47081
ESSFwv	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	37801
ESSFwv	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	37803
ESSFwv	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	37062
ESSFwv	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	37064
ESSFwv	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	37061
ESSFwv	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	37021
ESSFwv	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	37011
ESSFwv	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	37082

Appendix 7. Schaft Creek Project PEM Legend for Mapped Ecosystems

BEC Unit	Site Series	Map Code	Ecosystem Unit	Name	Description	General Ecosystem Type	Structural Stage	Structural Stage Class	Typical SMR	PEM Value
ESSFwv	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	37081
ESSFwv	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	37809
ESSFwv	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	37805
ESSFwv	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	37808
ESSFwv	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	37813
ESSFwv	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	37814
ESSFwv	00	VF	VF	mesic shrub	includes forested shrub structural stages	Mesic Shrub/Herb	3	Shrub	mesic	7808
ESSFwv	00	VS	VS	wetter shrub	may include wetland (moisture range: moist to wet)	Wetter Shrub/Herb	3	Shrub	subhygric to hydric	7814
ESSFwv	00	VS	VS	wetter shrub	may include wetland (moisture range: moist to wet)	Wetter Shrub/Herb	3	Shrub	subhygric to hydric	7809
ESSFwv	00	WA	WA	water	any waterbody identified in the satellite classification that was not identified by TRIM	Water	N/A	N/A	N/A	7804
ESSFwvp	00	AM	AM	herbaceous meadow	includes forested herb structural stages	Mesic Shrub/Herb	2	Herb	mesic (submesic-subhygric)	7511
ESSFwvp	00	AM	AM	herbaceous meadow	includes forested herb structural stages	Mesic Shrub/Herb	2	Herb	mesic (submesic-subhygric)	7514
ESSFwvp	00	BA	BA	sparse/barren	Land devoid of vegetation due to extreme climatic or edaphic conditions.	Sparse/Barren	1	Sparse / Bryoid	N/A	7508
ESSFwvp	00	DH	DH	dry herb	includes forested herb structural stages	Drier Shrub/Herb	2	Herb	xeric - subxeric	7510
ESSFwvp	00	DH	DH	dry herb	includes forested herb structural stages	Drier Shrub/Herb	2	Herb	xeric - subxeric	7513
ESSFwvp	00	DS	DS	dry shrub	includes forested shrub structural stages	Drier Shrub/Herb	3	Shrub	xeric - subxeric	7503
ESSFwvp	00	ET	ET	escape terrain	Barren or sparsely vegetated ground with a slope gradient greater than 70% (35 degrees)	Sparse/Barren	1	Sparse / Bryoid	N/A	7507
ESSFwvp	00	GSi	GSi	glacier/snow/ice	Combined glacier and permanent snow/ice (source: satellite classification)	Snow/Ice	N/A	N/A	N/A	7506
ESSFwvp	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	17508
ESSFwvp	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	17509
ESSFwvp	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	17506
ESSFwvp	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	17514
ESSFwvp	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	17501
ESSFwvp	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	17502
ESSFwvp	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	17504
ESSFwvp	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	17505
ESSFwvp	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	17515
ESSFwvp	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	27515

Appendix 7. Schaft Creek Project PEM Legend for Mapped Ecosystems

BEC Unit	Site Series	Map Code	Ecosystem Unit	Name	Description	General Ecosystem Type	Structural Stage	Structural Stage Class	Typical SMR	PEM Value
ESSFwvp	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	27501
ESSFwvp	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	27514
ESSFwvp	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	27512
ESSFwvp	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	27511
ESSFwvp	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	27505
ESSFwvp	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	27504
ESSFwvp	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	47508
ESSFwvp	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	37501
ESSFwvp	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	37504
ESSFwvp	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	37514
ESSFwvp	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	37505
ESSFwvp	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	37512
ESSFwvp	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	37515
ESSFwvp	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	37511
ESSFwvp	00	TI	TI	conifer/tree island	Conifer patches occurring at higher elevations occurring on all ranges of moisture/nutrient regimes; discontinuous forest cover; typical of parkland BEC Units	Treed	6/7 (3)	Mature/Old Forest	all range/undistinguished	7501
ESSFwvp	00	TI	TI	conifer/tree island	Conifer patches occurring at higher elevations occurring on all ranges of moisture/nutrient regimes; discontinuous forest cover; typical of parkland BEC Units	Treed	6/7 (3)	Mature/Old Forest	all range/undistinguished	7502
ESSFwvp	00	VF	VF	mesic shrub	includes forested shrub structural stages	Mesic Shrub/Herb	3	Shrub	mesic	7504
ESSFwvp	00	VS	VS	wetter shrub	may include wetland (moisture range: moist to wet)	Wetter Shrub/Herb	3	Shrub	subhygric to hydric	7505
ESSFwvp	00	VW	VW	wetter herb	includes forested herb structural stages	Wetter Shrub/Herb	2	Herb	subhygric to hydric	7512
ESSFwvp	00	VW	VW	wetter herb	includes forested herb structural stages	Wetter Shrub/Herb	2	Herb	subhygric to hydric	7515
ESSFwvp	00	WA	WA	water	any waterbody identified in the satellite classification that was not identified by TRIM	Water	N/A	N/A	N/A	7509
ICHwc	01	HO	01	HwBl - Oak fern	gentle slope; deep, medium - textured soil	Mesic Forest	6/7	Mature/Old Forest	mesic	5011
ICHwc	01	HO	01	HwBl - Oak fern	gentle slope; deep, medium - textured soil	Mesic Forest	6/7	Mature/Old Forest	mesic	5012
ICHwc	01	HO	01	HwBl - Oak fern	gentle slope; deep, medium - textured soil	Mesic Forest	6/7	Mature/Old Forest	mesic	5013
ICHwc	02	LC	02	HwPl - Feathermoss - Cladonia	gentle slope; deep coarse - textured soils	Drier Forest	6/7	Mature/Old Forest	xeric - subxeric	5021
ICHwc	03	HM	03	Hw - Step moss	gentle slope; deep medium - textured soils	Drier Forest	6/7	Mature/Old Forest	submesic - subxeric	5031
ICHwc	04(05)	HD(SD)	04(05)	HwBl - Devil's club	Incl. (05) Sx - Devil's club; gentle, lower slope, receiving postion; deep, medium - textured soils; richer nutrient regime/lower to toe slope postion; receiving, seepage; deep, medium - textured soils	Wetter Forest	6/7	Mature/Old Forest	mesic - subhygric	5041
ICHwc	06(05)	CD (SD)	06(05)	ActSx - Dogwood (Sx - Devil's club)	active floodplains; deep, coarse - textured soils (lower to toe slope postion; receiving, seepage; deep, medium - textured soils)	Wetter Forest	6/7	Mature/Old Forest	subhygric	5061

Appendix 7. Schaft Creek Project PEM Legend for Mapped Ecosystems

BEC Unit	Site Series	Map Code	Ecosystem Unit	Name	Description	General Ecosystem Type	Structural Stage	Structural Stage Class	Typical SMR	PEM Value
ICHwc	07(08)	HS(SH)	07(08)	HwSx - Blueberry - Sphagnum	Incl. (08) Sx - Horsetail (Ws07 - Sxw - Common horsetail - Leafy moss); level to depression; deep medium - textured mineral soil; cold air drainage, bog forest/toe slope to depression, deep, medium - textured soils; poorly drained	Wetter Forest	6/7	Mature/Old Forest	hygric - subhydric	5072
ICHwc	07(08)	HS(SH)	07(08)	HwSx - Blueberry - Sphagnum	Incl. (08) Sx - Horsetail (Ws07 - Sxw - Common horsetail - Leafy moss); level to depression; deep medium - textured mineral soil; cold air drainage, bog forest/toe slope to depression, deep, medium - textured soils; poorly drained	Wetter Forest	6/7	Mature/Old Forest	hygric - subhydric	5071
ICHwc	00	AM	AM	herbaceous meadow	includes forested herb structural stages	Mesic Shrub/Herb	2	Herb	mesic (submesic-subhygric)	5813
ICHwc	00	AM	AM	herbaceous meadow	includes forested herb structural stages	Mesic Shrub/Herb	2	Herb	mesic (submesic-subhygric)	5808
ICHwc	00	AVm	AVm	moderate avalanche shrub	includes forested shrub structural stages	Avalanche Shrub	3	Shrub	subhygric to hygric (submesic)	5800
ICHwc	00	AVs	AVs	steep avalanche shrub	includes forested shrub structural stages	Avalanche Shrub	3	Shrub	subhygric to hygric (submesic)	5801
ICHwc	00	BA	BA	sparse/barren	Land devoid of vegetation due to extreme climatic or edaphic conditions.	Sparse/Barren	1	Sparse / Bryoid	N/A	5815
ICHwc	00	DH	DH	dry herb	includes forested herb structural stages	Drier Shrub/Herb	2	Herb	xeric - subxeric	5807
ICHwc	00	DH	DH	dry herb	includes forested herb structural stages	Drier Shrub/Herb	2	Herb	xeric - subxeric	5812
ICHwc	00	DS	DS	dry shrub	includes forested shrub structural stages	Drier Shrub/Herb	3	Shrub	xeric - subxeric	5802
ICHwc	00	GTm	GTm	moderate avalanche herb	includes forested herb structural stages	Avalanche Herb	2	Herb	subhygric to hygric (submesic)	5810
ICHwc	00	GTm	GTm	moderate avalanche herb	includes forested herb structural stages	Avalanche Herb	2	Herb	subhygric to hygric (submesic)	5805
ICHwc	00	GTs	GTs	steep avalanche herb	includes forested herb structural stages	Avalanche Herb	2	Herb	subhygric to hygric (submesic)	5811
ICHwc	00	GTs	GTs	steep avalanche herb	includes forested herb structural stages	Avalanche Herb	2	Herb	subhygric to hygric (submesic)	5806
ICHwc	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	15800
ICHwc	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	15815
ICHwc	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	15021
ICHwc	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	15012
ICHwc	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	15013
ICHwc	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	15011
ICHwc	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	15071
ICHwc	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	15041

Appendix 7. Schaft Creek Project PEM Legend for Mapped Ecosystems

BEC Unit	Site Series	Map Code	Ecosystem Unit	Name	Description	General Ecosystem Type	Structural Stage	Structural Stage Class	Typical SMR	PEM Value
ICHwc	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	15061
ICHwc	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	15031
ICHwc	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	15814
ICHwc	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	15813
ICHwc	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	15804
ICHwc	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	15816
ICHwc	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	15803
ICHwc	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	15072
ICHwc	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	25813
ICHwc	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	25041
ICHwc	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	25011
ICHwc	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	25012
ICHwc	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	25072
ICHwc	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	25061
ICHwc	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	25071
ICHwc	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	25814
ICHwc	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	25803
ICHwc	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	25804
ICHwc	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	25808
ICHwc	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	25809
ICHwc	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	25815
ICHwc	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	25013
ICHwc	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	25031

Appendix 7. Schaft Creek Project PEM Legend for Mapped Ecosystems

BEC Unit	Site Series	Map Code	Ecosystem Unit	Name	Description	General Ecosystem Type	Structural Stage	Structural Stage Class	Typical SMR	PEM Value
ICHwc	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	45808
ICHwc	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	45815
ICHwc	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	45814
ICHwc	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	45813
ICHwc	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	45800
ICHwc	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	45804
ICHwc	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	45011
ICHwc	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	45810
ICHwc	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	45809
ICHwc	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	45805
ICHwc	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	45803
ICHwc	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	45071
ICHwc	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	45012
ICHwc	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	45041
ICHwc	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	45031
ICHwc	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	45061
ICHwc	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	45811
ICHwc	00	RI	RI	river	TRIM river; A watercourse formed when water flows between continuous, definable banks.	Water	N/A	N/A	N/A	45013
ICHwc	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	35813
ICHwc	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	35013
ICHwc	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	35072
ICHwc	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	35803
ICHwc	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	35031
ICHwc	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	35041
ICHwc	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	35061
ICHwc	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	35012
ICHwc	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	35814
ICHwc	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	35800
ICHwc	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	35011
ICHwc	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	35804
ICHwc	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	35808
ICHwc	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	35071
ICHwc	00	VF	VF	mesic shrub	includes forested shrub structural stages	Mesic Shrub/Herb	3	Shrub	mesic	5803
ICHwc	00	VS	VS	wetter shrub	may include wetland (moisture range: moist to wet)	Wetter Shrub/Herb	3	Shrub	subhygric to hydric	5804

Appendix 7. Schaft Creek Project PEM Legend for Mapped Ecosystems

BEC Unit	Site Series	Map Code	Ecosystem Unit	Name	Description	General Ecosystem Type	Structural Stage	Structural Stage Class	Typical SMR	PEM Value
ICHwc	00	VW	VW	wetter herb	includes forested herb structural stages	Wetter Shrub/Herb	2	Herb	subhygric to hydric	5809
ICHwc	00	VW	VW	wetter herb	includes forested herb structural stages	Wetter Shrub/Herb	2	Herb	subhygric to hydric	5814
ICHwc	00	WA	WA	water	any waterbody identified in the satellite classification that was not identified by TRIM	Water	N/A	N/A	N/A	5816
SWBun	01	SB	01	Sw - Grey-leaved willow - Scrub birch	gentle slope; deep, medium-textured soils	Mesic Forest	6/7	Mature/Old Forest	mesic	2013
SWBun	01	SB	01	Sw - Grey-leaved willow - Scrub birch	gentle slope; deep, medium-textured soils	Mesic Forest	6/7	Mature/Old Forest	mesic	2012
SWBun	01	SB	01	Sw - Grey-leaved willow - Scrub birch	gentle slope; deep, medium-textured soils	Mesic Forest	6/7	Mature/Old Forest	mesic	2011
SWBun	04	SW	04	Sw - Arctic lupine - Step moss	gentle slope, deep medium-textured soils	Drier Forest	6/7	Mature/Old Forest	submesic - mesic	2041
SWBun	04	SW	04	Sw - Arctic lupine - Step moss	gentle slope, deep medium-textured soils	Drier Forest	6/7	Mature/Old Forest	submesic - mesic	2042
SWBun	05	SL	05	Sw - Willow - Crowberry	significant slope, cool aspect; deep medium-textured soils	Mesic Forest	6/7	Mature/Old Forest	submesic - subhygric	2051
SWBun	06	SS	06	Sw - Willow - Step moss	gentle slope; deep medium-textured soils	Wetter Forest	6/7	Mature/Old Forest	subhygric	2062
SWBun	06	SS	06	Sw - Willow - Step moss	gentle slope; deep medium-textured soils	Wetter Forest	6/7	Mature/Old Forest	subhygric	2061
SWBun	07	SC	07	Sw - Scrub birch - Bluejoint	significant slope, cool aspect; deep medium-textured soils	Wetter Forest	6/7	Mature/Old Forest	subhygric	2071
SWBun	08	SH	08	Sw - Shrubby cinquefoil - Horsetail	gentle slope, deep, coarse-textured soils	Wetter Forest	6/7	Mature/Old Forest	hygric - subhygric	2082
SWBun	08	SH	08	Sw - Shrubby cinquefoil - Horsetail	gentle slope, deep, coarse-textured soils	Wetter Forest	6/7	Mature/Old Forest	hygric - subhygric	2081
SWBun	09	XW	09	Sw - Forested Wetland	no description nor mapcode in government mapcode list; Land Management Handbook #54 describes it as Sb-horsetail-sphagnum on lower to toe, level or depression; gentle, cool aspect if sloping; generally found on organic or lacustrine parent material	Wetter Forest	6/7	Mature/Old Forest	hygric–subhydric	2091
SWBun	02(03)	PL(SK)	02(03)	Sw - Scrub birch - Cladina	Incl. (03) Sw - Juniper - Wildrye; significant slope, warm aspect, shallow soils over bedrock/significant slope, warm aspects; deep, medium-textured soils	Drier Forest	6/7	Mature/Old Forest	xeric - subxeric	2021
SWBun	02(03)	PL(SK)	02(03)	Sw - Scrub birch - Cladina	Incl. (03) Sw - Juniper - Wildrye; significant slope, warm aspect, shallow soils over bedrock/significant slope, warm aspects; deep, medium-textured soils	Drier Forest	6/7	Mature/Old Forest	xeric - subxeric	2022
SWBun	00	AM	AM	herbaceous meadow	includes forested herb structural stages	Mesic Shrub/Herb	2	Herb	mesic (submesic-subhygric)	2904
SWBun	00	BA	BA	sparse/barren	Land devoid of vegetation due to extreme climatic or edaphic conditions.	Sparse/Barren	1	Sparse / Bryoid	N/A	2906
SWBun	00	DH	DH	dry herb	includes forested herb structural stages	Drier Shrub/Herb	2	Herb	xeric - subxeric	2903
SWBun	00	DS	DS	dry shrub	includes forested shrub structural stages	Drier Shrub/Herb	3	Shrub	xeric - subxeric	2900
SWBun	00	ET	ET	escape terrain	Barren or sparsely vegetated ground with a slope gradient greater than 70% (35 degrees)	Sparse/Barren	1	Sparse / Bryoid	N/A	2908
SWBun	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	12012
SWBun	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	12061
SWBun	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	12062

Appendix 7. Schaft Creek Project PEM Legend for Mapped Ecosystems

BEC Unit	Site Series	Map Code	Ecosystem Unit	Name	Description	General Ecosystem Type	Structural Stage	Structural Stage Class	Typical SMR	PEM Value
SWBun	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	12071
SWBun	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	12081
SWBun	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	12082
SWBun	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	12091
SWBun	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	12042
SWBun	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	12041
SWBun	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	12907
SWBun	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	12906
SWBun	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	12905
SWBun	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	12904
SWBun	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	12902
SWBun	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	12013
SWBun	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	12901
SWBun	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	22013
SWBun	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	22042
SWBun	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	22081
SWBun	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	22082
SWBun	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	22091
SWBun	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	22012
SWBun	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	22061

Appendix 7. Schaft Creek Project PEM Legend for Mapped Ecosystems

BEC Unit	Site Series	Map Code	Ecosystem Unit	Name	Description	General Ecosystem Type	Structural Stage	Structural Stage Class	Typical SMR	PEM Value
SWBun	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	22905
SWBun	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	22902
SWBun	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	22901
SWBun	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	22904
SWBun	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	22906
SWBun	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	22907
SWBun	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	22011
SWBun	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	22021
SWBun	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	22062
SWBun	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	32012
SWBun	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	32905
SWBun	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	32013
SWBun	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	32091
SWBun	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	32902
SWBun	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	32904
SWBun	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	32021
SWBun	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	32901
SWBun	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	32082
SWBun	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	32081
SWBun	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	32062
SWBun	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	32061
SWBun	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	32051
SWBun	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	32042
SWBun	00	VF	VF	mesic shrub	includes forested shrub structural stages	Mesic Shrub/Herb	3	Shrub	mesic	2901
SWBun	00	VS	VS	wetter shrub	may include wetland (moisture range: moist to wet)	Wetter Shrub/Herb	3	Shrub	subhygric to hydric	2902
SWBun	00	VW	VW	wetter herb	includes forested herb structural stages	Wetter Shrub/Herb	2	Herb	subhygric to hydric	2905
SWBun	00	WA	WA	water	any waterbody identified in the satellite classification that was not identified by TRIM	Water	N/A	N/A	N/A	2907
SWBuns	00	AM	AM	herbaceous meadow	includes forested herb structural stages	Mesic Shrub/Herb	2	Herb	mesic (submesic-subhygric)	2513
SWBuns	00	AM	AM	herbaceous meadow	includes forested herb structural stages	Mesic Shrub/Herb	2	Herb	mesic (submesic-subhygric)	2505
SWBuns	00	BA	BA	sparse/barren	Land devoid of vegetation due to extreme climatic or edaphic conditions.	Sparse/Barren	1	Sparse / Bryoid	N/A	2510
SWBuns	00	BA	BA	sparse/barren	Land devoid of vegetation due to extreme climatic or edaphic conditions.	Sparse/Barren	1	Sparse / Bryoid	N/A	2509
SWBuns	00	DH	DH	dry herb	includes forested herb structural stages	Drier Shrub/Herb	2	Herb	xeric - subxeric	2504
SWBuns	00	DH	DH	dry herb	includes forested herb structural stages	Drier Shrub/Herb	2	Herb	xeric - subxeric	2512
SWBuns	00	DS	DS	dry shrub	includes forested shrub structural stages	Drier Shrub/Herb	3	Shrub	xeric - subxeric	2501
SWBuns	00	ET	ET	escape terrain	Barren or sparsely vegetated ground with a slope gradient greater than 70% (35 degrees)	Sparse/Barren	1	Sparse / Bryoid	N/A	2511
SWBuns	00	ET	ET	escape terrain	Barren or sparsely vegetated ground with a slope gradient greater than 70% (35 degrees)	Sparse/Barren	1	Sparse / Bryoid	N/A	2508
SWBuns	00	GSi	GSi	glacier/snow/ice	Combined glacier and permanent snow/ice (source: satellite classification)	Snow/Ice	N/A	N/A	N/A	2507

Appendix 7. Schaft Creek Project PEM Legend for Mapped Ecosystems

BEC Unit	Site Series	Map Code	Ecosystem Unit	Name	Description	General Ecosystem Type	Structural Stage	Structural Stage Class	Typical SMR	PEM Value
SWBuns	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	12509
SWBuns	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	12502
SWBuns	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	12500
SWBuns	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	12506
SWBuns	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	12507
SWBuns	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	12510
SWBuns	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	12513
SWBuns	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	12514
SWBuns	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	12515
SWBuns	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	12503
SWBuns	00	LA	LA	lake	TRIM lake; A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	Water	N/A	N/A	N/A	12516
SWBuns	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	22500
SWBuns	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	22505
SWBuns	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	22515
SWBuns	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	22503
SWBuns	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	22506
SWBuns	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	22510
SWBuns	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	22513
SWBuns	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	22514
SWBuns	00	MA	MA	marsh	TRIM marsh; semi-permanently to seasonally flooded mineral wetland dominated by emergent vegetation	Wetland Shrub/Herb	2	Herb	wet to very wet	22502
SWBuns	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	32514
SWBuns	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	32510
SWBuns	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	32506

Appendix 7. Schaft Creek Project PEM Legend for Mapped Ecosystems

BEC Unit	Site Series	Map Code	Ecosystem Unit	Name	Description	General Ecosystem Type	Structural Stage	Structural Stage Class	Typical SMR	PEM Value
SWBuns	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	32503
SWBuns	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	32500
SWBuns	00	SA	SA	swamp	TRIM swamp (generic)	Wetland Shrub/Herb	3	Shrub	wet to very wet	32502
SWBuns	00	TI	TI	conifer/tree island	Conifer patches occurring at higher elevations occurring on all ranges of moisture/nutrient regimes; discontinuous forest cover; typical of parkland BEC Units	Treed	6/7 (3)	Mature/Old Forest	all range/undistinguished	2515
SWBuns	00	TI	TI	conifer/tree island	Conifer patches occurring at higher elevations occurring on all ranges of moisture/nutrient regimes; discontinuous forest cover; typical of parkland BEC Units	Treed	6/7 (3)	Mature/Old Forest	all range/undistinguished	2500
SWBuns	00	VF	VF	mesic shrub	includes forested shrub structural stages	Mesic Shrub/Herb	3	Shrub	mesic	2502
SWBuns	00	VS	VS	wetter shrub	may include wetland (moisture range: moist to wet)	Wetter Shrub/Herb	3	Shrub	subhygric to hydric	2503
SWBuns	00	VW	VW	wetter herb	includes forested herb structural stages	Wetter Shrub/Herb	2	Herb	subhygric to hydric	2506
SWBuns	00	VW	VW	wetter herb	includes forested herb structural stages	Wetter Shrub/Herb	2	Herb	subhygric to hydric	2514
Sum										-

Appendix 8

Schaft Creek Project PEM Rule Sets

Appendix 8a. Rules for Ecological Units in ATun (Zone3000) - Version 5

ARULE3000

SORTORDER	FILE_IN	ATTR_IN	CLASS_OUT	MODEL_NO	B	B_LOW	B_HI	B1	B2	D
1	formfile	QWETI	Dry	5	6.00	6.00	6.00	0.00	6.10	0.10
2	formfile	QWETI	Mesic	1	7.50	7.50	7.50	6.00	9.00	1.50
3	formfile	QWETI	Wet	4	8.50	8.50	8.50	7.50	28.00	1.00
4	formfile	PROF	Prof_cv	5	-8.00	-8.00	-8.00	-86.00	-7.00	1.00
5	formfile	PROF	Prof_st	1	1.75	1.75	1.75	-5.50	9.00	7.25
6	formfile	PROF	Prof_cx	4	14.00	14.00	14.00	13.00	89.28	1.00
7	formfile	SLOPE	Steep	4	40.00	40.00	40.00	35.00	100.00	5.00
8	formfile	NEW_ASP	NE_Aspect	1	90.00	90.00	90.00	0.00	180.00	45.00
9	formfile	NEW_ASP	SW_Aspect	1	270.00	270.00	270.00	180.00	360.00	45.00
10	geofile	Classify	St_Con	1	43.00	43.00	43.00	42.99	43.01	0.01
11	geofile	Classify	Forest	1	44.00	44.00	44.00	43.99	44.01	0.01
12	geofile	Classify	Shrub	1	47.00	47.00	47.00	46.99	47.01	0.01
13	geofile	Classify	Herb	1	48.00	48.00	48.00	47.99	48.01	0.01
14	geofile	Classify	Sparse	1	49.00	49.00	49.00	48.99	49.01	0.01
15	geofile	Classify	LowLying	1	46.00	46.00	46.00	45.99	46.01	0.01
16	geofile	Classify	Dark_Low	1	45.00	45.00	45.00	44.99	45.01	0.01
17	geofile	Classify	Snow_Ice	1	50.00	50.00	50.00	49.99	50.01	0.01
18	geofile	Classify	Water	1	51.00	51.00	51.00	40.99	51.01	0.01
19	relzfile	PCTZ2ST	Upper	4	60.00	60.00	60.00	59.00	100.00	1.00
20	relzfile	PCTZ2ST	Middle	1	32.50	32.50	32.50	5.00	60.00	27.50
21	relzfile	PCTZ2ST	Lower	5	5.00	5.00	5.00	0.00	5.50	0.50
22	formfile	SLOPE	SlopeLT70	5	70.00	70.00	70.00	0.00	70.50	0.50
23	formfile	SLOPE	SlopeGT70	4	71.00	71.00	71.00	70.00	100.00	1.00

Appendix 8a. Rules for Ecological Units in ATun (Zone3000) - Version 5

CRULE3000

F_NAME	FUZATTR	ATTRWT	FACET_NO	F_CODE	Predicting
FH3001	Shrub	80	1	3001	dry shrub
FH3001	Dry	20	1	3001	dry shrub
FH3001	Prof_cx	20	1	3001	dry shrub
FH3002	Shrub	80	2	3002	mesic shrub
FH3002	Mesic	20	2	3002	mesic shrub
FH3003	Shrub	80	3	3003	moist 2 wet shrub
FH3003	Wet	20	3	3003	moist 2 wet shrub
FH3003	Prof_cv	10	3	3003	moist 2 wet shrub
FH3004	St_Con	20	4	3004	Krummholtz
FH3005	Snow_Ice	90	5	3005	Snow_Ice
FH3006	Sparse	80	6	3006	escape
FH3006	SlopeGT70	20	6	3006	escape
FH3007	Sparse	80	7	3007	barren/sparse
FH3007	SlopeLT70	20	7	3007	barren/sparse
FH3008	Forest	20	8	3008	Krummholtz
FH3009	Dark_Low	80	9	3009	escape
FH3009	SlopeGT70	20	9	3009	escape
FH3010	Dark_Low	80	10	3010	barren/sparse
FH3010	SlopeLT70	20	10	3010	barren/sparse
FH3011	Herb	80	11	3011	Dry herb
FH3011	Dry	20	11	3011	Dry herb
FH3011	Prof_cx	20	11	3011	Dry herb
FH3012	Herb	80	12	3012	mesic herb
FH3012	Mesic	20	12	3012	mesic herb
FH3013	Herb	80	13	3013	moist 2 wet herb
FH3013	Wet	20	13	3013	moist 2 wet herb
FH3013	Prof_cv	10	13	3013	moist 2 wet herb
FH3014	Water	90	14	3014	Water
FH3015	LowLying	80	15	3015	Dry herb
FH3015	Dry	20	15	3015	Dry herb
FH3015	Prof_cx	20	15	3015	Dry herb
FH3016	LowLying	80	16	3016	mesic herb
FH3016	Mesic	20	16	3016	mesic herb
FH3017	LowLying	80	17	3017	moist 2 wet herb
FH3017	Wet	20	17	3017	moist 2 wet herb
FH3017	Prof_cv	20	17	3017	moist 2 wet herb

Appendix 8b. Rules for Ecological Units in BWBSdk1 (Zone 4000) - Version 12

ARULE4000

SORTORDER	FILE_IN	ATTR_IN	CLASS_OUT	MODEL_NO	B	B_LOW	B_HI	B1	B2	D
1	formfile	QWETI	Vdry	5	5.20	5.20	5.20	0.00	5.30	0.10
2	formfile	QWETI	V2Mdry	5	6.20	6.20	6.20	0.00	6.30	0.10
3	formfile	QWETI	ModDry	1	5.70	5.70	5.70	5.20	6.20	0.50
4	formfile	QWETI	SlDry	1	7.00	7.00	7.00	6.20	7.80	0.80
5	formfile	QWETI	M2SlDry	1	6.50	6.50	6.50	5.20	7.80	1.30
6	formfile	QWETI	Fresh	1	8.60	8.60	8.60	7.80	9.40	0.80
7	formfile	QWETI	Mdry2fresh	1	7.30	7.30	7.30	5.20	9.40	2.10
8	formfile	QWETI	Fresh2Moist	1	8.90	8.90	8.90	7.80	10.00	1.10
9	formfile	QWETI	Moist2Vmoist	1	11.30	11.30	11.30	9.40	13.20	1.90
10	formfile	QWETI	Moist2wet	4	10.50	10.50	10.50	9.50	28.03	1.00
11	formfile	QWETI	Wet	4	13.20	13.20	13.20	12.20	28.03	1.00
12	formfile	SLOPE	Steep	4	40.00	40.00	40.00	35.00	100.00	5.00
13	formfile	NEW_ASP	NE_Aspect	1	90.00	90.00	90.00	0.00	180.00	45.00
14	formfile	NEW_ASP	Warm_Aspect	1	217.50	217.50	217.50	160.00	275.00	57.50
15	formfile	NEW_ASP	SW_Aspect	1	270.00	270.00	270.00	180.00	360.00	45.00
16	formfile	SLOPE	SlopeLT2	5	2.00	2.00	2.00	0.00	2.50	0.50
17	formfile	SLOPE	SlopeGT2	4	3.00	3.00	3.00	2.00	200.00	1.00
18	formfile	SLOPE	SlopeLT5	5	5.00	5.00	5.00	0.00	5.50	0.50
19	formfile	SLOPE	SlopeGT5	4	6.00	6.00	6.00	5.00	200.00	1.00
20	formfile	SLOPE	SlopeLT15	5	15.00	15.00	15.00	0.00	15.50	0.50
21	formfile	SLOPE	SlopeGT15	4	16.00	16.00	16.00	15.00	200.00	1.00
22	formfile	SLOPE	SlopeLT70	5	70.00	70.00	70.00	0.00	70.50	0.50
23	formfile	SLOPE	SlopeGT70	4	71.00	71.00	71.00	70.00	200.00	1.00
24	geofile	Classify	Forest	1	44.00	44.00	44.00	0.10	0.10	0.01
25	geofile	Classify	Shrub	1	47.00	6.00	6.00	5.90	6.10	0.01
26	geofile	Classify	Sparse	1	49.00	1.00	1.00	0.90	1.10	0.01
27	geofile	Classify	LowLying	1	46.00	4.00	4.00	3.90	4.10	0.01
28	geofile	Classify	Water	1	51.00	5.00	5.00	4.90	5.10	0.01
29	geofile	Classify	Herb	1	48.00	7.00	7.00	6.90	7.10	0.01
30	relzfile	PCTZ2ST	Up2Crest	4	80.00	80.00	80.00	79.00	100.00	1.00
31	relzfile	PCTZ2ST	Up2Low	1	45.00	45.00	45.00	10.00	80.00	35.00
32	relzfile	PCTZ2ST	Up2Mid	1	55.00	55.00	55.00	30.00	80.00	25.00
33	relzfile	PCTZ2ST	Mid	1	30.00	30.00	30.00	10.00	50.00	20.00
34	relzfile	PCTZ2ST	Low2Valley	1	8.00	8.00	8.00	1.00	15.00	7.00
35	relzfile	PCTZ2ST	Up2Valley	1	35.25	35.25	35.25	0.50	70.00	34.75
36	relzfile	PCTZ2ST	Valley	5	1.00	1.00	1.00	0.00	1.50	0.50
37	formfile	PROF	Prof_cx	4	11.00	11.00	11.00	10.00	88.00	1.00
38	relzfile	Z2St	Fluvial	5	60.00	60.00	60.00	0.00	60.50	0.50
39	relzfile	Z2St	NonFluvial	4	61.00	61.00	61.00	60.00	2232.00	1.00
40	formfile	PLAN	Plan_cv	5	-1.00	-1.00	-1.00	0.00	-88.00	1.00

Appendix 8b. Rules for Ecological Units in BWBSdk1 (Zone 4000) - Version 12

CRULE4000

F_NAME	FUZATTR	ATTRWT	FACET_NO	F_CODE	Predicting
FH4021	M2SlDry	30	1	4021	02
FH4021	Prof_cx	20	1	4021	02
FH4021	Forest	30	1	4021	02
FH4022	Fluvial	30	2	4022	02
FH4022	SlopeLT2	20	2	4022	02
FH4022	Vdry	30	2	4022	02
FH4022	Forest	30	2	4022	02
FH4031	Fluvial	30	3	4031	03
FH4031	Up2Crest	30	3	4031	03
FH4031	Warm_Aspect	30	3	4031	03
FH4031	M2SlDry	30	3	4031	03
FH4031	Forest	30	3	4031	03
FH4032	Up2Crest	30	4	4032	03
FH4032	Warm_Aspect	30	4	4032	03
FH4032	Vdry	30	4	4032	03
FH4032	Forest	30	4	4032	03
FH4011	Up2Valley	30	5	4011	01
FH4011	NE_Aspect	30	5	4011	01
FH4011	Vdry	30	5	4011	01
FH4011	Forest	30	5	4011	01
FH4012	Up2Valley	30	6	4012	01
FH4012	SlopeLT70	20	6	4012	01
FH4012	SlDry	30	6	4012	01
FH4012	Forest	30	6	4012	01
FH4012	NE_Aspect	30	6	4012	01
FH4033	Up2Mid	30	7	4033	03
FH4033	M2SlDry	30	7	4033	03
FH4033	SlopeGT70	20	7	4033	03
FH4033	Warm_Aspect	30	7	4033	03
FH4033	Forest	30	7	4033	03
FH4051	Fluvial	30	8	4051	05
FH4051	Mid	30	8	4051	05
FH4051	SlDry	30	8	4051	05
FH4051	SlopeGT5	20	8	4051	05
FH4051	SlopeLT15	20	8	4051	05
FH4051	Warm_Aspect	30	8	4051	05
FH4051	Forest	30	8	4051	05
FH4013	Fluvial	30	9	4013	01
FH4013	Up2Valley	30	9	4013	01
FH4013	Fresh	30	9	4013	01
FH4013	Forest	30	9	4013	01
FH4041	Fluvial	30	10	4041	04
FH4041	Up2Crest	30	10	4041	04
FH4041	SlopeLT5	30	10	4041	04
FH4041	M2SlDry	30	10	4041	04
FH4041	NE_Aspect	30	10	4041	04
FH4041	Forest	30	10	4041	04

CRULE4000

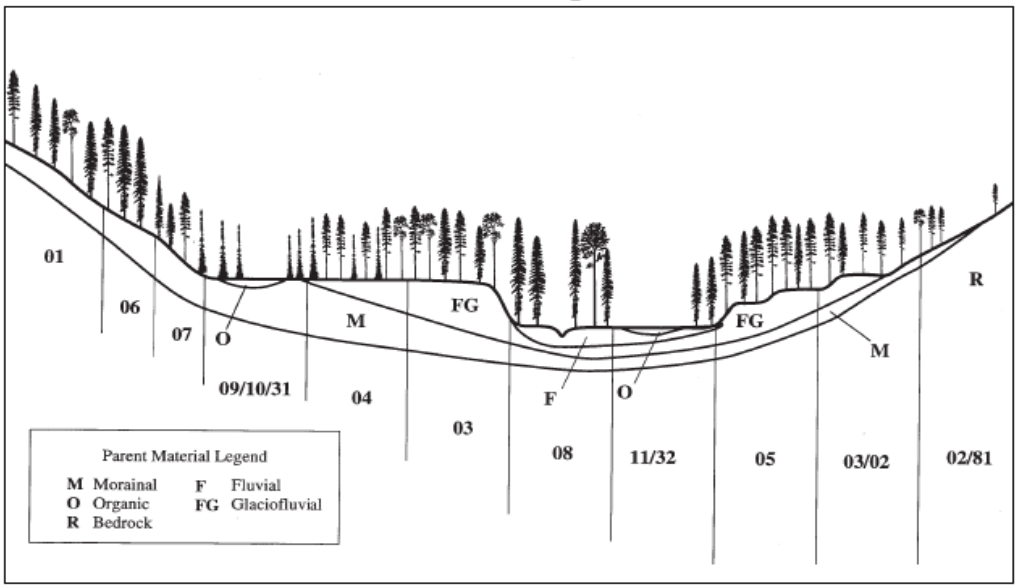
F_NAME	FUZATTR	ATTRWT	FACET_NO	F_CODE	Predicting
FH4061	Moist2Vmoist	30	11	4061	06
FH4061	Plan_cv	20	11	4061	06
FH4061	Forest	30	11	4061	06
FH4014	Fresh	30	12	4014	01
FH4014	SlopeGT15	20	12	4014	01
FH4014	Forest	30	12	4014	01
FH4062	Low2Valley	30	13	4062	06
FH4062	Fresh2Moist	30	13	4062	06
FH4062	SlopeLT5	20	13	4062	06
FH4062	Forest	30	13	4062	06
FH4071	Low2Valley	30	14	4071	07
FH4071	Moist2Vmoist	30	14	4071	07
FH4071	NE_Aspect	30	14	4071	07
FH4071	SlopeGT5	20	14	4071	07
FH4071	SlopeLT15	20	14	4071	07
FH4071	Forest	30	14	4071	07
FH4081	Fluvial	30	15	4081	08
FH4081	Low2Valley	30	15	4081	08
FH4081	Moist2Vmoist	30	15	4081	08
FH4081	SlopeLT5	20	15	4081	08
FH4081	Forest	30	15	4081	08
FH4082	Fluvial	30	16	4082	08
FH4082	Low2Valley	30	16	4082	08
FH4082	SlopeLT5	30	16	4082	08
FH4082	Plan_cv	20	16	4082	08
FH4082	Wet	30	16	4082	08
FH4082	Forest	30	16	4082	08
FH4091	Valley	30	17	4091	09
FH4091	Moist2Vmoist	30	17	4091	09
FH4091	Plan_cv	20	17	4091	09
FH4091	SlopeLT2	20	17	4091	09
FH4091	Forest	30	17	4091	09
FH4001	Valley	30	18	4001	10/11
FH4001	SlopeLT2	30	18	4001	10/11
FH4001	Plan_cv	20	18	4001	10/11
FH4001	Wet	30	18	4001	10/11
FH4001	Forest	30	18	4001	10/11
FH4063	Low2Valley	30	19	4063	06
FH4063	SlopeGT5	30	19	4063	06
FH4063	Plan_cv	20	19	4063	06
FH4063	Wet	30	19	4063	06
FH4063	Forest	30	19	4063	06
FH4092	NonFluvial	30	20	4092	09
FH4092	Low2Valley	30	20	4092	09
FH4092	SlopeGT2	20	20	4092	09
FH4092	SlopeLT5	30	20	4092	09
FH4092	Plan_cv	20	20	4092	09
FH4092	Wet	30	20	4092	09
FH4092	Forest	30	20	4092	09

CRULE4000

F_NAME	FUZATTR	ATTRWT	FACET_NO	F_CODE	Predicting
FH4991	Shrub	80	21	4991	Dry shrub
FH4991	ModDry	30	21	4991	Dry shrub
FH4992	Shrub	80	22	4992	Mesic Shrub
FH4992	Fresh	30	22	4992	Mesic Shrub
FH4993	Shrub	80	23	4993	Moist to Wet Shrub
FH4993	Moist2wet	30	23	4993	Moist to Wet Shrub
FH4994	Herb	90	24	4994	Moist to Wet Herb
FH4994	Moist2wet	20	24	4994	Moist to Wet Herb
FH4995	Herb	90	25	4995	Mesic Herb
FH4995	Fresh	20	25	4995	Mesic Herb
FH4996	Herb	90	26	4996	Dry herb
FH4996	ModDry	30	26	4996	Dry herb
FH4997	Sparse	80	27	4997	barren/sparse
FH4997	SlopeLT70	20	27	4997	barren/sparse
FH4998	Shrub	80	28	4998	Mesic Shrub
FH4998	SlDry	30	28	4998	Mesic Shrub

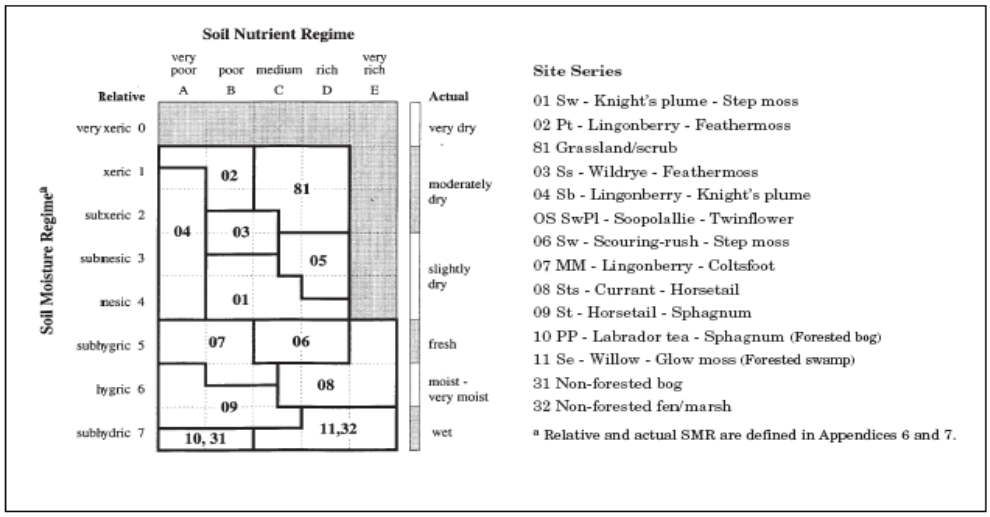
Appendix 8b. Rules for Ecological Units in BWBSdk1 (Zone 4000) - Version 12

BWBSdk1 Landscape Profile[a]



[a] Tree symbols are defined in Appendix 3.

BWBSdk1 Edatopic Grid



Site Series

01 Sw - Knight's plume - Step moss
02 Pt - Lingonberry - Feathermoss
81 Grassland/scrub
03 Ss - Wildrye - Feathermoss
04 Sb - Lingonberry - Knight's plume
OS SwPl - Soopolallie - Twinflower
06 Sw - Scouring-rush - Step moss
07 MM - Lingonberry - Coltsfoot
08 Sts - Currant - Horsetail
09 St - Horsetail - Sphagnum
10 PP - Labrador tea - Sphagnum (Forested bog)
11 Se - Willow - Glow moss (Forested swamp)
31 Non-forested bog
32 Non-forested fen/marsh

[a] Relative and actual SMR are defined in Appendices 6 and 7.

Appendix 8c. Rules for Ecological Units in ESSFmc (Zone 6500) - Version 21

ARULE6500										
SORTORDER	**FILE_IN**	**ATTR_IN**	**CLASS_OUT**	**MODEL_NO**	**B**	**B_LOW**	**B_HI**	**B1**	**B2**	**D**
1	formfile	LNQAREA	LnC2UM	5	8.00	8.00	8.00	0.00	8.10	0.10
2	formfile	LNQAREA	LnUM2L	1	9.40	9.40	9.40	8.40	10.40	1.00
3	formfile	LNQAREA	LnML2T	1	10.70	10.70	10.70	10.00	11.40	0.70
4	formfile	LNQAREA	LnL2T	1	11.60	11.60	11.60	10.70	12.50	0.90
5	formfile	LNQAREA	LnV	4	12.50	12.50	12.50	12.40	18.86	1.00
6	formfile	LNQAREA	LnUM2T	1	10.40	10.40	10.40	9.40	11.40	1.00
7	formfile	QWETI	Dry	5	6.00	6.00	6.00	0.00	6.10	0.10
8	formfile	QWETI	Mes2SlW	1	7.50	7.50	7.50	6.00	9.00	1.50
9	formfile	QWETI	Wet	1	10.00	10.00	10.00	9.00	11.00	1.00
10	formfile	QWETI	Moist2Wet	4	10.00	10.00	10.00	9.00	28.00	1.00
11	formfile	QWETI	VWet	4	12.00	12.00	12.00	11.00	28.00	1.00
12	formfile	PROF	Prof_cv	5	-5.50	-5.50	-5.50	-86.00	-4.50	1.00
13	formfile	PROF	Prof_cx	4	9.00	9.00	9.00	8.00	89.28	1.00
14	formfile	SLOPE	Steep	4	40.00	40.00	40.00	35.00	100.00	5.00
15	formfile	NEW_ASP	NE_Aspect	1	90.00	90.00	90.00	0.00	180.00	45.00
16	formfile	NEW_ASP	SW_Aspect	1	270.00	270.00	270.00	180.00	360.00	45.00
17	formfile	SLOPE	SlopeLT15	5	15.00	15.00	15.00	0.00	15.50	0.50
18	formfile	SLOPE	SlopeGT15	4	16.00	16.00	16.00	15.00	100.00	1.00
19	formfile	SLOPE	SlopeLT20	5	20.00	20.00	20.00	0.00	20.50	0.50
20	formfile	SLOPE	SlopeGT20	4	21.00	21.00	21.00	20.00	100.00	1.00
21	formfile	SLOPE	SlopeLT30	5	30.00	30.00	30.00	0.00	30.50	0.50
22	formfile	SLOPE	SlopeGT30	4	31.00	31.00	31.00	30.00	100.00	1.00
23	formfile	SLOPE	SlopeLT50	5	50.00	50.00	50.00	0.00	50.50	0.50
24	formfile	SLOPE	SlopeGT50	4	51.00	51.00	51.00	50.00	100.00	1.00
25	formfile	SLOPE	SlopeLT70	5	70.00	70.00	70.00	0.00	70.50	0.50
26	formfile	SLOPE	SlopeGT70	4	71.00	71.00	71.00	70.00	100.00	1.00
27	geofile	Classify	St_Con	1	43.00	43.00	43.00	42.99	43.01	0.01
28	geofile	Classify	Forest	1	44.00	44.00	44.00	43.99	44.01	0.01
29	geofile	Classify	Shrub	1	47.00	47.00	47.00	46.99	47.01	0.01
30	geofile	Classify	Herb	1	48.00	48.00	48.00	47.99	48.01	0.01
31	geofile	Classify	Sparse	1	49.00	49.00	49.00	48.99	49.01	0.01
32	geofile	Classify	LowLying	1	46.00	46.00	46.00	45.99	46.01	0.01
33	geofile	Classify	Water	1	51.00	5.00	5.00	4.90	5.10	0.01
34	relzfile	PCTZ2ST	Upper	4	60.00	60.00	60.00	59.00	100.00	1.00
35	relzfile	PCTZ2ST	Middle	1	32.50	32.50	32.50	5.00	60.00	27.50
36	relzfile	PCTZ2ST	Lower	5	5.00	5.00	5.00	0.00	5.50	0.50
37	formfile	SLOPE	SlopeLT5	5	5.00	5.00	5.00	0.00	5.50	0.50
38	formfile	SLOPE	SlopeGT5	4	6.00	6.00	6.00	5.00	100.00	1.00
39	formfile	SLOPE	SlopeLT60	5	60.00	60.00	60.00	0.00	60.50	0.50
40	formfile	SLOPE	SlopeGT60	4	61.00	61.00	61.00	60.00	277.00	1.00

Appendix 8c. Rules for Ecological Units in ESSFmc (Zone 6500) - Version 21

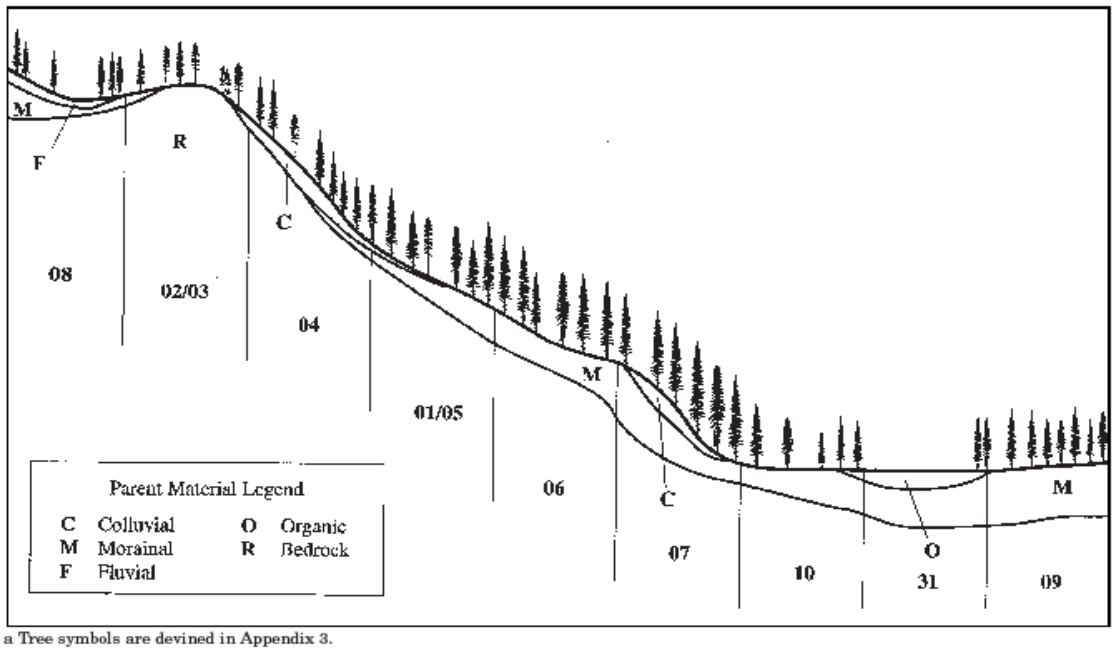
CRULE6500

F_NAME	FUZATTR	ATTRWT	FACET_NO	F_CODE	Predicting
FH6531	Dry	30	1	6531	02/03
FH6531	Prof_cx	20	1	6531	02/03
FH6531	Forest	30	1	6531	02/03
FH6532	LnC2UM	30	2	6532	02/03
FH6532	SlopeGT50	20	2	6532	02/03
FH6532	SW_Aspect	30	2	6532	02/03
FH6532	Forest	30	2	6532	02/03
FH6541	LnC2UM	30	3	6541	04
FH6541	SlopeLT50	20	3	6541	04
FH6541	Forest	30	3	6541	04
FH6511	LnUM2L	30	4	6511	01/05
FH6511	SlopeLT50	20	4	6511	01/05
FH6511	Forest	30	4	6511	01/05
FH6512	LnUM2T	30	5	6512	01/05
FH6512	SlopeGT30	30	5	6512	01/05
FH6512	SlopeLT50	30	5	6512	01/05
FH6512	Forest	30	5	6512	01/05
FH6542	LnML2T	30	6	6542	04
FH6542	SlopeGT50	30	6	6542	04
FH6542	Forest	30	6	6542	04
FH6561	LnML2T	30	7	6561	06
FH6561	SlopeLT30	20	7	6561	06
FH6561	SlopeGT15	20	7	6561	06
FH6561	Forest	30	7	6561	06
FH6571	Wet	30	8	6571	07
FH6571	SlopeLT30	20	8	6571	07
FH6571	Prof_cv	15	8	6571	07
FH6571	Forest	30	8	6571	07
FH6581	Wet	30	9	6581	08/09
FH6581	SlopeLT15	20	9	6581	08/09
FH6581	Forest	30	9	6581	08/09
FH6562	LnL2T	30	10	6562	06
FH6562	SlopeGT15	20	10	6562	06
FH6562	Forest	30	10	6562	06
FH6591	VWet	30	11	6591	10
FH6591	SlopeLT15	20	11	6591	10
FH6591	Forest	30	11	6591	10
FH6563	LnV	30	12	6563	06
FH6563	SlopeGT15	20	12	6563	06
FH6563	Forest	30	12	6563	06
FH9000	Water	80	13	9000	Water
FH9001	Sparse	80	14	9001	escape
FH9001	SlopeGT70	20	14	9001	escape

CRULE6500

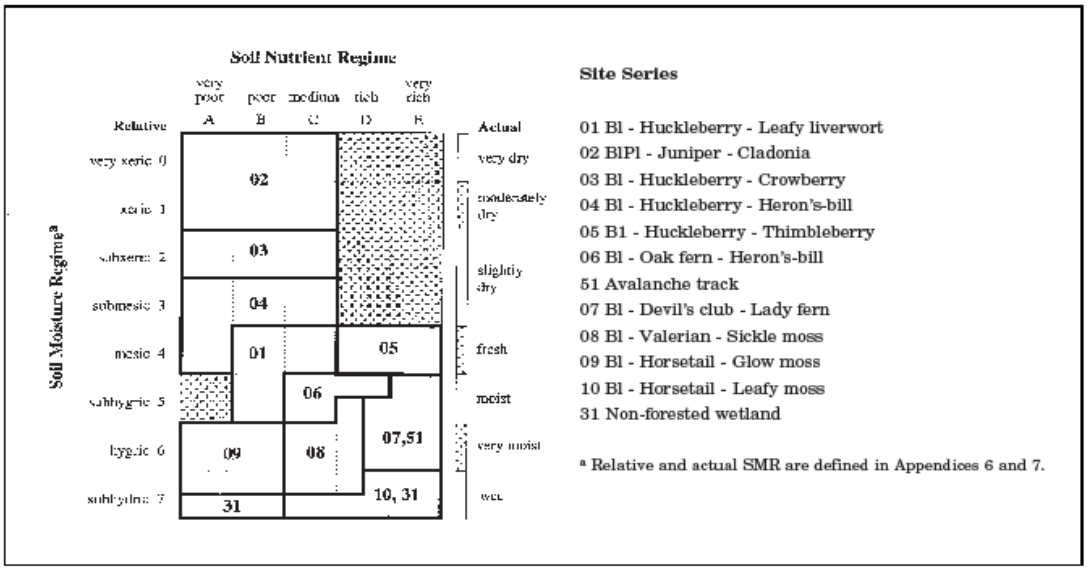
F_NAME	FUZATTR	ATTRWT	FACET_NO	F_CODE	Predicting
FH9002	Sparse	80	15	9002	barren/sparse
FH9002	SlopeLT70	20	15	9002	barren/sparse
FH9003	Shrub	80	16	9003	moderate 51 shrub
FH9003	SlopeGT30	30	16	9003	moderate 51 shrub
FH9003	SlopeLT60	30	16	9003	moderate 51 shrub
FH9004	Shrub	80	17	9004	steep 51 shrub
FH9004	SlopeGT60	30	17	9004	steep 51 shrub
FH9005	Shrub	80	18	9005	dry shrub
FH9005	Dry	20	18	9005	dry shrub
FH9005	SlopeLT30	30	18	9005	dry shrub
FH9006	Shrub	80	19	9006	mesic shrub
FH9006	Mes2SlW	20	19	9006	mesic shrub
FH9006	SlopeLT30	30	19	9006	mesic shrub
FH9007	Shrub	80	20	9007	Moist2Wet shrub
FH9007	Wet	20	20	9007	Moist2Wet shrub
FH9007	SlopeLT30	30	20	9007	Moist2Wet shrub
FH9008	Herb	80	21	9008	moderate 51 herb
FH9008	SlopeGT30	30	21	9008	moderate 51 herb
FH9008	SlopeLT60	30	21	9008	moderate 51 herb
FH9009	Herb	80	22	9009	steep 51 herb
FH9009	SlopeGT60	30	22	9009	steep 51 herb
FH9010	Herb	80	23	9010	dry herb
FH9010	Dry	20	23	9010	dry herb
FH9010	SlopeLT30	30	23	9010	dry herb
FH9011	Herb	80	24	9011	mesic herb
FH9011	Mes2SlW	20	24	9011	mesic herb
FH9011	SlopeLT30	30	24	9011	mesic herb
FH9012	Herb	80	25	9012	Moist2Wet herb
FH9012	Wet	20	25	9012	Moist2Wet herb
FH9012	SlopeLT30	30	25	9012	Moist2Wet herb

ESSFmc Landscape Profile[a]



a Tree symbols are devined in Appendix 3.

ESSFmc Edatopic Grid



Appendix 8d. Rules for Ecological Units in ESSFmcp (Zone 6000) - Version 6

ARULE6000										
SORTORDER	**FILE_IN**	**ATTR_IN**	**CLASS_OUT**	**MODEL_NO**	**B**	**B_LOW**	**B_HI**	**B1**	**B2**	**D**
1	formfile	QWETI	Dry	5	6.00	6.00	6.00	0.16	6.10	0.10
2	formfile	QWETI	Mesic	1	7.50	7.50	7.50	6.00	9.00	1.50
3	formfile	QWETI	Wet	4	8.00	8.00	8.00	7.00	28.00	1.00
4	formfile	PROF	Prof_cv	5	-8.00	-8.00	-8.00	-86.00	-7.00	1.00
5	formfile	PROF	Prof_st	1	1.75	1.75	1.75	-5.50	9.00	7.25
6	formfile	PROF	Prof_cx	4	14.00	14.00	14.00	13.00	89.28	1.00
7	formfile	SLOPE	Steep	4	40.00	40.00	40.00	35.00	100.00	5.00
8	formfile	NEW_ASP	NE_Aspect	1	90.00	90.00	90.00	0.00	180.00	45.00
9	formfile	NEW_ASP	SW_Aspect	1	270.00	270.00	270.00	180.00	360.00	45.00
10	geofile	Classify	St_Con	1	43.00	43.00	43.00	42.99	43.01	0.01
11	geofile	Classify	Forest	1	44.00	44.00	44.00	43.99	44.01	0.01
12	geofile	Classify	Shrub	1	47.00	47.00	47.00	46.99	47.01	0.01
13	geofile	Classify	Herb	1	48.00	48.00	48.00	47.99	48.01	0.01
14	geofile	Classify	Sparse	1	49.00	49.00	49.00	48.99	49.01	0.01
15	geofile	Classify	LowLying	1	46.00	46.00	46.00	45.99	46.01	0.01
16	geofile	Classify	Dark_Low	1	45.00	45.00	45.00	44.99	45.01	0.01
17	geofile	Classify	Snow_Ice	1	50.00	50.00	50.00	49.99	50.01	0.01
18	geofile	Classify	Water	1	51.00	51.00	51.00	40.99	51.01	0.01
19	relzfile	PCTZ2ST	Upper	4	60.00	60.00	60.00	59.00	100.00	1.00
20	relzfile	PCTZ2ST	Middle	1	32.50	32.50	32.50	5.00	60.00	27.50
21	relzfile	PCTZ2ST	Lower	5	5.00	5.00	5.00	0.00	5.50	0.50
22	formfile	SLOPE	SlopeLT70	5	70.00	70.00	70.00	0.00	70.50	0.50
23	formfile	SLOPE	SlopeGT70	4	71.00	71.00	71.00	70.00	100.00	1.00
24	geofile	Elev	LT1400	5	1400.00	1400.00	1400.00	0.00	1400.50	0.50
25	geofile	Elev	GT1400	4	1401.00	1401.00	1401.00	1400.00	2715.00	1.00

Appendix 8d. Rules for Ecological Units in ESSFmcp (Zone 6000) - Version 6

CRULE6000

F_NAME	FUZATTR	ATTRWT	FACET_NO	F_CODE	Predicting
FH6001	Shrub	80	1	6001	dry shrub
FH6001	Dry	20	1	6001	dry shrub
FH6001	Prof_cx	20	1	6001	dry shrub
FH6002	Shrub	80	2	6002	mesic shrub
FH6002	Mesic	20	2	6002	mesic shrub
FH6003	Shrub	80	3	6003	moist 2 wet shrub
FH6003	Wet	20	3	6003	moist 2 wet shrub
FH6003	Prof_cv	10	3	6003	moist 2 wet shrub
FH6004	St_Con	90	4	6004	Conifer/tree island
FH6005	Snow_Ice	90	5	6005	Snow_Ice
FH6006	Sparse	80	6	6006	escape
FH6006	SlopeGT70	20	6	6006	escape
FH6007	Sparse	80	7	6007	barren/sparse
FH6007	SlopeLT70	20	7	6007	barren/sparse
FH6008	Forest	90	8	6008	Conifer/tree island
FH6009	Dark_Low	90	9	6009	Conifer/tree island
FH6010	Water	90	10	6010	Water
FH6011	LowLying	80	11	6011	Dry herb
FH6011	Dry	20	11	6011	Dry herb
FH6011	Prof_cx	20	11	6011	Dry herb
FH6011	LT1400	30	11	6011	Dry herb
FH6012	LowLying	80	12	6012	mesic herb
FH6012	Mesic	20	12	6012	mesic herb
FH6012	LT1400	30	12	6012	mesic herb
FH6013	LowLying	80	13	6013	moist 2 wet herb
FH6013	Wet	20	13	6013	moist 2 wet herb
FH6013	Prof_cv	20	13	6013	moist 2 wet herb
FH6013	LT1400	30	13	6013	moist 2 wet herb
FH6014	LowLying	80	14	6014	Dwarf vegetation (incl HH)
FH6014	GT1400	30	14	6014	Dwarf vegetation (incl HH)

Appendix 8e. Rules for Ecological Units in ESSFwv (Zone 7000) - Version 10

ARULE7000

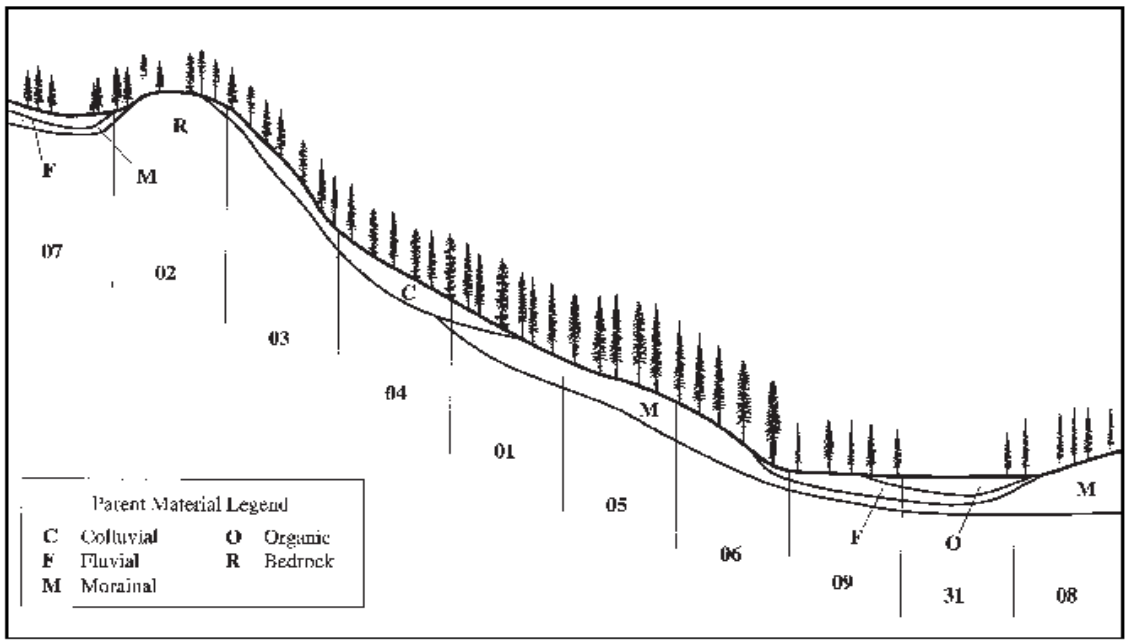
SORTORDER	FILE_IN	ATTR_IN	CLASS_OUT	MODEL_NO	B	B_LOW	B_HI	B1	B2	D
1	formfile	LNQAREA	LnCrest	5	7.10	7.10	7.10	0.00	7.20	0.10
2	formfile	LNQAREA	LnC2UM	1	7.75	7.75	7.75	7.10	8.40	0.65
3	formfile	LNQAREA	LnUM2L	1	9.40	9.40	9.40	8.40	10.40	1.00
4	formfile	LNQAREA	LnML2T	1	10.70	10.70	10.70	10.00	11.40	0.70
5	formfile	LNQAREA	LnL2T	1	11.60	11.60	11.60	10.70	12.50	0.90
6	formfile	LNQAREA	LnV	4	12.50	12.50	12.50	12.40	18.86	1.00
7	formfile	LNQAREA	LnUM2T	1	10.40	10.40	10.40	9.40	11.40	1.00
8	formfile	QWETI	Dry	5	5.60	5.60	5.60	0.00	5.70	0.10
9	formfile	QWETI	Mes2SlW	1	7.50	7.50	7.50	6.00	9.00	1.50
10	formfile	QWETI	Wet	1	10.00	10.00	10.00	9.00	11.00	1.00
11	formfile	QWETI	Moist2Wet	4	10.00	10.00	10.00	9.00	28.00	1.00
12	formfile	QWETI	VWet	4	12.00	12.00	12.00	11.00	28.00	1.00
13	formfile	PROF	Prof_cv	5	-5.50	-5.50	-5.50	-86.00	-4.50	1.00
14	formfile	PROF	Prof_cx	4	9.00	9.00	9.00	8.00	89.28	1.00
15	formfile	SLOPE	Steep	4	40.00	40.00	40.00	35.00	100.00	5.00
16	formfile	NEW_ASP	NE_Aspect	1	90.00	90.00	90.00	0.00	180.00	45.00
17	formfile	NEW_ASP	SW_Aspect	1	270.00	270.00	270.00	180.00	360.00	45.00
18	formfile	SLOPE	SlopeLT15	5	15.00	15.00	15.00	0.00	15.50	0.50
19	formfile	SLOPE	SlopeGT15	4	16.00	16.00	16.00	15.00	100.00	1.00
20	formfile	SLOPE	SlopeLT60	5	60.00	60.00	60.00	0.00	60.50	0.50
21	formfile	SLOPE	SlopeGT60	4	61.00	61.00	61.00	60.00	277.00	1.00
22	formfile	SLOPE	SlopeLT30	5	30.00	30.00	30.00	0.00	30.50	0.50
23	formfile	SLOPE	SlopeGT30	4	31.00	31.00	31.00	30.00	100.00	1.00
24	formfile	SLOPE	SlopeLT50	5	50.00	50.00	50.00	0.00	50.50	0.50
25	formfile	SLOPE	SlopeGT50	4	51.00	51.00	51.00	50.00	100.00	1.00
26	formfile	SLOPE	SlopeLT70	5	70.00	70.00	70.00	0.00	70.50	0.50
27	formfile	SLOPE	SlopeGT70	4	71.00	71.00	71.00	70.00	100.00	1.00
28	geofile	Classify	St_Con	1	43.00	43.00	43.00	42.99	43.01	0.01
29	geofile	Classify	Forest	1	44.00	44.00	44.00	43.99	44.01	0.01
30	geofile	Classify	Shrub	1	47.00	47.00	47.00	46.99	47.01	0.01
31	geofile	Classify	Herb	1	48.00	48.00	48.00	47.99	48.01	0.01
32	geofile	Classify	Sparse	1	49.00	49.00	49.00	48.99	49.01	0.01
33	geofile	Classify	LowLying	1	46.00	46.00	46.00	45.99	46.01	0.01
34	geofile	Classify	Water	1	51.00	5.00	5.00	4.90	5.10	0.01
35	relzfile	PCTZ2ST	Upper	4	60.00	60.00	60.00	59.00	100.00	1.00
36	relzfile	PCTZ2ST	Middle	1	32.50	32.50	32.50	5.00	60.00	27.50
37	relzfile	PCTZ2ST	Lower	5	5.00	5.00	5.00	0.00	5.50	0.50
38	formfile	SLOPE	SlopeLT5	5	5.00	5.00	5.00	0.00	5.50	0.50
39	formfile	SLOPE	SlopeGT5	4	6.00	6.00	6.00	5.00	100.00	1.00

Appendix 8e. Rules for Ecological Units in ESSFwv (Zone 7000) - Version 10

CRULE7000

F_NAME	FUZATTR	ATTRWT	FACET_NO	F_CODE	Predicting
FH7021	LnCrest	30	1	7021	02
FH7021	Dry	30	1	7021	02
FH7021	Forest	30	1	7021	02
FH7031	LnC2UM	30	2	7031	03/04
FH7031	Dry	30	2	7031	03/04
FH7031	Forest	30	2	7031	03/04
FH7011	LnUM2L	30	3	7011	01/05
FH7011	SlopeLT50	20	3	7011	01/05
FH7011	Forest	30	3	7011	01/05
FH7012	LnUM2T	30	4	7012	01/05
FH7012	SlopeGT30	20	4	7012	01/05
FH7012	SlopeLT50	20	4	7012	01/05
FH7012	Forest	30	4	7012	01/05
FH7032	LnUM2L	30	5	7032	03/04
FH7032	Dry	30	5	7032	03/04
FH7032	Forest	30	5	7032	03/04
FH7013	LnML2T	30	6	7013	01/05
FH7013	SlopeGT50	20	6	7013	01/05
FH7013	Forest	30	6	7013	01/05
FH7061	LnML2T	30	7	7061	06/07
FH7061	SlopeLT30	20	7	7061	06/07
FH7061	SlopeGT15	20	7	7061	06/07
FH7061	Forest	30	7	7061	06/07
FH7062	Wet	30	8	7062	06/07
FH7062	SlopeLT30	20	8	7062	06/07
FH7062	Prof_cv	15	8	7062	06/07
FH7062	Forest	30	8	7062	06/07
FH7081	Wet	30	9	7081	08/09
FH7081	SlopeLT15	20	9	7081	08/09
FH7081	Forest	30	9	7081	08/09
FH7063	LnL2T	30	10	7063	06/07
FH7063	SlopeGT15	20	10	7063	06/07
FH7063	Forest	30	10	7063	06/07
FH7082	VWet	30	11	7082	08/09
FH7082	SlopeLT15	20	11	7082	08/09
FH7082	Forest	30	11	7082	08/09
FH7064	LnV	30	12	7064	06/07
FH7064	SlopeGT15	20	12	7064	06/07
FH7064	Forest	30	12	7064	06/07
FH7800	LowLying	80	16	7800	escape
FH7800	SlopeGT70	20	16	7800	escape
FH7801	LowLying	80	17	7801	barren/sparse
FH7801	SlopeLT70	20	17	7801	barren/sparse

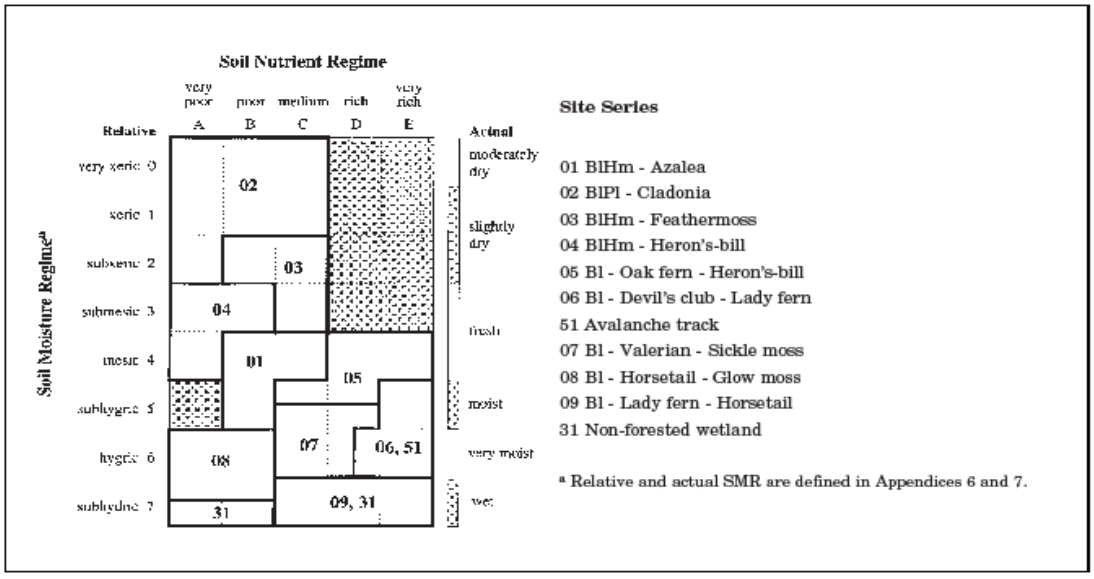
ESSFwv Landscape Profile[a]



[a] Tree symbols are defined in Appendix 3.

Click here to continue to page 5-101

ESSFwv Edatopic Grid



Site Series

01 BlHm - Azalea
02 BlPl - Cladonia
03 BlHm - Feathermoss
04 BlHm - Heron's-bill
05 Bl - Oak fern - Heron's-bill
06 Bl - Devil's club - Lady fern
51 Avalanche track
07 Bl - Valerian - Sickle moss
08 Bl - Horsetail - Glow moss
09 Bl - Lady fern - Horsetail
31 Non-forested wetland

[a] Relative and actual SMR are defined in Appendices 6 and 7.

Appendix 8f. Rules for Ecological Units in ESSFwvp (Zone 7500) - Version 4

ARULE7500										
SORTORDER	**FILE_IN**	**ATTR_IN**	**CLASS_OUT**	**MODEL_NO**	**B**	**B_LOW**	**B_HI**	**B1**	**B2**	**D**
1	formfile	QWETI	Dry	5	6.00	6.00	6.00	0.16	6.10	0.10
2	formfile	QWETI	Mesic	1	7.50	7.50	7.50	6.00	9.00	1.50
3	formfile	QWETI	Wet	4	8.00	8.00	8.00	7.00	28.00	1.00
4	formfile	PROF	Prof_cv	5	-8.00	-8.00	-8.00	-86.00	-7.00	1.00
5	formfile	PROF	Prof_st	1	1.75	1.75	1.75	-5.50	9.00	7.25
6	formfile	PROF	Prof_cx	4	14.00	14.00	14.00	13.00	89.28	1.00
7	formfile	SLOPE	Steep	4	40.00	40.00	40.00	35.00	100.00	5.00
8	formfile	NEW_ASP	NE_Aspect	1	90.00	90.00	90.00	0.00	180.00	45.00
9	formfile	NEW_ASP	SW_Aspect	1	270.00	270.00	270.00	180.00	360.00	45.00
10	geofile	Classify	St_Con	1	43.00	43.00	43.00	42.99	43.01	0.01
11	geofile	Classify	Forest	1	44.00	44.00	44.00	43.99	44.01	0.01
12	geofile	Classify	Shrub	1	47.00	47.00	47.00	46.99	47.01	0.01
13	geofile	Classify	Herb	1	48.00	48.00	48.00	47.99	48.01	0.01
14	geofile	Classify	Sparse	1	49.00	49.00	49.00	48.99	49.01	0.01
15	geofile	Classify	LowLying	1	46.00	46.00	46.00	45.99	46.01	0.01
16	geofile	Classify	Dark_Low	1	45.00	45.00	45.00	44.99	45.01	0.01
17	geofile	Classify	Snow_Ice	1	50.00	50.00	50.00	49.99	50.01	0.01
18	geofile	Classify	Water	1	51.00	51.00	51.00	40.99	51.01	0.01
19	relzfile	PCTZ2ST	Upper	4	60.00	60.00	60.00	59.00	100.00	1.00
20	relzfile	PCTZ2ST	Middle	1	32.50	32.50	32.50	5.00	60.00	27.50
21	relzfile	PCTZ2ST	Lower	5	5.00	5.00	5.00	0.00	5.50	0.50
22	formfile	SLOPE	SlopeLT70	5	70.00	70.00	70.00	0.00	70.50	0.50
23	formfile	SLOPE	SlopeGT70	4	71.00	71.00	71.00	70.00	100.00	1.00

Appendix 8f. Rules for Ecological Units in ESSFwvp (Zone 7500) - Version 4

CRULE7500

F_NAME	FUZATTR	ATTRWT	FACET_NO	F_CODE	Predicting
FH7501	Forest	90	1	7501	Conifer/tree island
FH7502	Dark_Low	90	2	7502	Conifer/tree island
FH7503	Shrub	80	3	7503	dry shrub
FH7503	Dry	20	3	7503	dry shrub
FH7503	Prof_cx	20	3	7503	dry shrub
FH7504	Shrub	80	4	7504	mesic shrub
FH7504	Mesic	20	4	7504	mesic shrub
FH7505	Shrub	80	5	7505	moist 2 wet shrub
FH7505	Wet	20	5	7505	moist 2 wet shrub
FH7505	Prof_cv	10	5	7505	moist 2 wet shrub
FH7506	Snow_Ice	90	6	7506	Snow_Ice
FH7507	Sparse	80	7	7507	escape
FH7507	SlopeGT70	20	7	7507	escape
FH7508	Sparse	80	8	7508	barren/sparse
FH7508	SlopeLT70	20	8	7508	barren/sparse
FH7509	Water	90	9	7509	Water
FH7510	Herb	80	10	7510	Dry herb
FH7510	Dry	20	10	7510	Dry herb
FH7510	Prof_cx	20	10	7510	Dry herb
FH7511	Herb	80	11	7511	mesic herb
FH7511	Mesic	20	11	7511	mesic herb
FH7512	Herb	80	12	7512	moist 2 wet herb
FH7512	Wet	20	12	7512	moist 2 wet herb
FH7512	Prof_cv	20	12	7512	moist 2 wet herb
FH7513	LowLying	80	13	7513	Dry herb
FH7513	Dry	20	13	7513	Dry herb
FH7513	Prof_cx	20	13	7513	Dry herb
FH7514	LowLying	80	14	7514	mesic herb
FH7514	Mesic	20	14	7514	mesic herb
FH7515	LowLying	80	15	7515	moist 2 wet herb
FH7515	Wet	20	15	7515	moist 2 wet herb
FH7515	Prof_cv	20	15	7515	moist 2 wet herb

Appendix 8g. Rules for Ecological Units in ESSFvv (Zone 8500) - Version 6

ARULE8500

SORTORDER	FILE_IN	ATTR_IN	CLASS_OUT	MODEL_NO	B	B_LOW	B_HI	B1	B2	D
1	formfile	LNQAREA	LnCrest	5	7.10	7.10	7.10	0.00	7.20	0.10
2	formfile	LNQAREA	LnC2UM	1	7.75	7.75	7.75	7.10	8.40	0.65
3	formfile	LNQAREA	LnUM2L	1	9.40	9.40	9.40	8.40	10.40	1.00
4	formfile	LNQAREA	LnM2L	1	9.70	9.70	9.70	9.00	10.40	0.70
5	formfile	LNQAREA	LnML2T	1	10.70	10.70	10.70	10.00	11.40	0.70
6	formfile	LNQAREA	LnL2T	1	11.60	11.60	11.60	10.70	12.50	0.90
7	formfile	LNQAREA	LnV	4	11.00	11.00	11.00	10.00	18.86	1.00
8	formfile	LNQAREA	LnUM2T	1	10.40	10.40	10.40	9.40	11.40	1.00
9	formfile	QWETI	Dry	5	6.00	6.00	6.00	0.00	6.10	0.10
10	formfile	QWETI	Mes2SlW	1	7.50	7.50	7.50	6.00	9.00	1.50
11	formfile	QWETI	Wet	1	10.00	10.00	10.00	9.00	11.00	1.00
12	formfile	QWETI	Moist2Wet	4	10.00	10.00	10.00	9.00	28.00	1.00
13	formfile	QWETI	VWet	4	12.00	12.00	12.00	11.00	28.00	1.00
14	formfile	PROF	Prof_cv	5	-5.50	-5.50	-5.50	-86.00	-4.50	1.00
15	formfile	PROF	Prof_cx	4	9.00	9.00	9.00	8.00	89.28	1.00
16	formfile	SLOPE	Steep	4	40.00	40.00	40.00	35.00	100.00	5.00
17	formfile	NEW_ASP	NE_Aspect	1	90.00	90.00	90.00	0.00	180.00	45.00
18	formfile	NEW_ASP	SW_Aspect	1	270.00	270.00	270.00	180.00	360.00	45.00
19	formfile	SLOPE	SlopeLT15	5	15.00	15.00	15.00	0.00	15.50	0.50
20	formfile	SLOPE	SlopeGT15	4	16.00	16.00	16.00	15.00	100.00	1.00
21	formfile	SLOPE	SlopeLT60	5	60.00	60.00	60.00	0.00	60.50	0.50
22	formfile	SLOPE	SlopeGT60	4	61.00	61.00	61.00	60.00	277.00	1.00
23	formfile	SLOPE	SlopeLT30	5	30.00	30.00	30.00	0.00	30.50	0.50
24	formfile	SLOPE	SlopeGT30	4	31.00	31.00	31.00	30.00	100.00	1.00
25	formfile	SLOPE	SlopeLT50	5	50.00	50.00	50.00	0.00	50.50	0.50
26	formfile	SLOPE	SlopeGT50	4	51.00	51.00	51.00	50.00	100.00	1.00
27	formfile	SLOPE	SlopeLT70	5	70.00	70.00	70.00	0.00	70.50	0.50
28	formfile	SLOPE	SlopeGT70	4	71.00	71.00	71.00	70.00	100.00	1.00
29	formfile	SLOPE	SlopeLT10	5	10.00	10.00	10.00	0.00	10.50	0.50
30	formfile	SLOPE	SlopeGT10	4	11.00	11.00	11.00	10.00	277.00	1.00
31	geofile	Classify	St_Con	1	43.00	43.00	43.00	42.99	43.01	0.01
32	geofile	Classify	Forest	1	44.00	44.00	44.00	43.99	44.01	0.01
33	geofile	Classify	Shrub	1	47.00	47.00	47.00	46.99	47.01	0.01
34	geofile	Classify	Herb	1	48.00	48.00	48.00	47.99	48.01	0.01
35	geofile	Classify	Sparse	1	49.00	49.00	49.00	48.99	49.01	0.01
36	geofile	Classify	LowLying	1	46.00	46.00	46.00	45.99	46.01	0.01
37	geofile	Classify	Water	1	51.00	5.00	5.00	4.90	5.10	0.01
38	geofile	Classify	Snow_Ice	1	50.00	50.00	50.00	49.99	50.01	0.01

Appendix 8g. Rules for Ecological Units in ESSFvv (Zone 8500) - Version 6

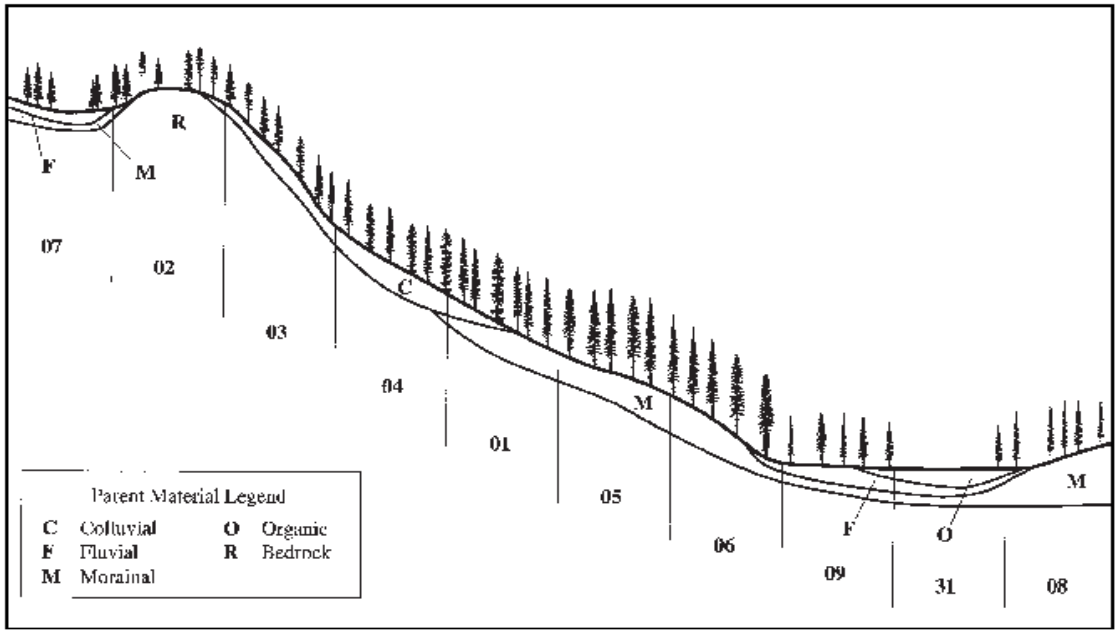
CRULE8500

F_NAME	FUZATTR	ATTRWT	FACET_NO	F_CODE	Predicting
FH8521	LnCrest	30	1	8521	02
FH8521	Dry	30	1	8521	02
FH8521	Forest	30	1	8521	02
FH8531	LnC2UM	30	2	8531	03/04
FH8531	Dry	30	2	8531	03/04
FH8531	Forest	30	2	8531	03/04
FH8511	LnUM2L	30	3	8511	01/05
FH8511	SlopeLT50	20	3	8511	01/05
FH8511	Forest	30	3	8511	01/05
FH8512	LnUM2T	30	4	8512	01/05
FH8512	SlopeGT30	30	4	8512	01/05
FH8512	SlopeLT50	30	4	8512	01/05
FH8512	Forest	30	4	8512	01/05
FH8513	LnUM2L	30	5	8513	01/05
FH8513	Dry	30	5	8513	01/05
FH8513	Forest	30	5	8513	01/05
FH8532	LnML2T	30	6	8532	03/04
FH8532	SlopeGT50	30	6	8532	03/04
FH8532	Forest	30	6	8532	03/04
FH8561	LnML2T	30	7	8561	06/07
FH8561	SlopeLT30	20	7	8561	06/07
FH8561	SlopeGT15	20	7	8561	06/07
FH8561	Forest	30	7	8561	06/07
FH8562	Wet	30	8	8562	06/07
FH8562	SlopeLT30	20	8	8562	06/07
FH8562	Prof_cv	15	8	8562	06/07
FH8562	Forest	30	8	8562	06/07
FH8581	Wet	30	9	8581	08/09
FH8581	SlopeLT15	20	9	8581	08/09
FH8581	Forest	30	9	8581	08/09
FH8563	LnL2T	30	10	8563	06/07
FH8563	SlopeGT15	20	10	8563	06/07
FH8563	Forest	30	10	8563	06/07
FH8582	VWet	30	11	8582	08/09
FH8582	SlopeLT15	20	11	8582	08/09
FH8582	Forest	30	11	8582	08/09
FH8564	LnV	30	12	8564	06/07
FH8564	SlopeGT15	20	12	8564	06/07
FH8564	Forest	30	12	8564	06/07
FH8800	Shrub	80	13	8800	moderate 51 shrub
FH8800	SlopeGT30	30	13	8800	moderate 51 shrub
FH8800	SlopeLT60	30	13	8800	moderate 51 shrub
FH8801	Shrub	80	14	8801	steep 51 shrub
FH8801	SlopeGT60	30	14	8801	steep 51 shrub

CRULE8500

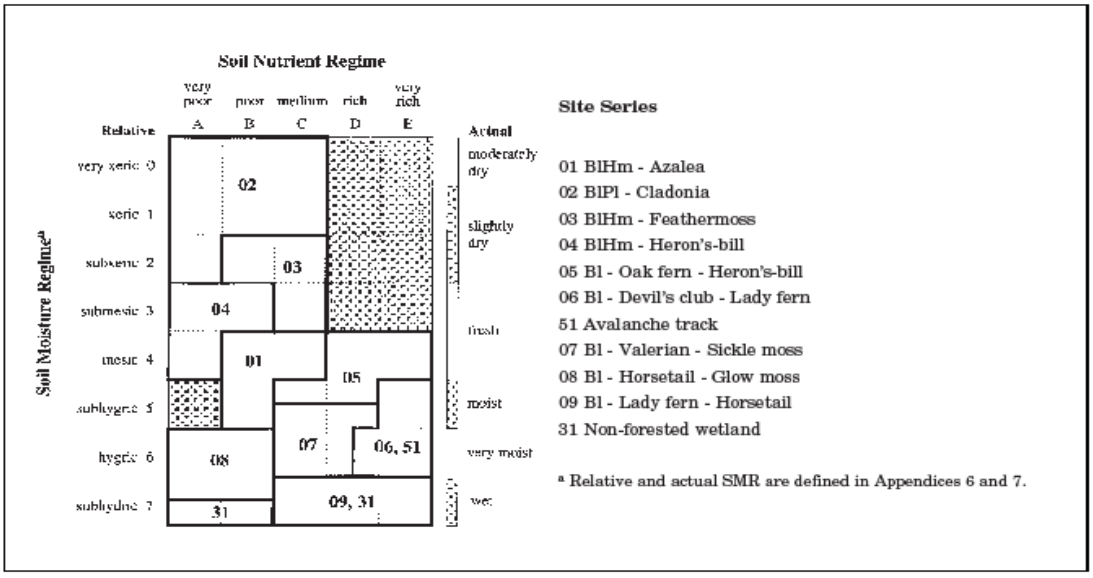
F_NAME	FUZATTR	ATTRWT	FACET_NO	F_CODE	Predicting
FH8802	Shrub	80	15	8802	Dry Shrub
FH8802	Dry	20	15	8802	Dry Shrub
FH8802	Prof_cx	20	15	8802	Dry Shrub
FH8802	SlopeLT30	30	15	8802	Dry Shrub
FH8803	Shrub	80	16	8803	Mesic Shrub
FH8803	Mes2SlW	30	16	8803	Mesic Shrub
FH8803	SlopeLT30	30	16	8803	Mesic Shrub
FH8804	Shrub	80	17	8804	Moist to Wet Shrub
FH8804	Wet	30	17	8804	Moist to Wet Shrub
FH8804	SlopeLT30	30	17	8804	Moist to Wet Shrub
FH8805	Herb	80	18	8805	moderate 51 herb
FH8805	SlopeGT30	30	18	8805	moderate 51 herb
FH8805	SlopeLT60	30	18	8805	moderate 51 herb
FH8806	Herb	80	19	8806	steep 51 herb
FH8806	SlopeGT60	30	19	8806	steep 51 herb
FH8807	Herb	80	20	8807	Dry Herb
FH8807	Dry	20	20	8807	Dry Herb
FH8807	Prof_cx	20	20	8807	Dry Herb
FH8807	SlopeLT30	30	20	8807	Dry Herb
FH8808	Herb	80	21	8808	Mesic Herb
FH8808	Mes2SlW	30	21	8808	Mesic Herb
FH8808	SlopeLT30	30	21	8808	Mesic Herb
FH8809	Herb	80	22	8809	Moist to Wet Herb
FH8809	Wet	30	22	8809	Moist to Wet Herb
FH8809	SlopeLT30	30	22	8809	Moist to Wet Herb
FH8810	LowLying	80	23	8810	escape
FH8810	SlopeGT70	20	23	8810	escape
FH8811	LowLying	80	24	8811	barren/sparse
FH8811	SlopeLT70	20	24	8811	barren/sparse
FH8812	Sparse	80	25	8812	escape
FH8812	SlopeGT70	20	25	8812	escape
FH8813	Sparse	80	26	8813	barren/sparse
FH8813	SlopeLT70	20	26	8813	barren/sparse
FH8814	Water	80	27	8814	Water
FH8815	Snow_Ice	90	28	8815	snow/ice

ESSFwv Landscape Profile[a]



[a] Tree symbols are defined in Appendix 3.

ESSFwv Edatopic Grid



Appendix 8h. Rules for Ecological Units in ESSFvvp (Zone 8000) - Version 3

ARULE8000										
SORTORDER	**FILE_IN**	**ATTR_IN**	**CLASS_OUT**	**MODEL_NO**	**B**	**B_LOW**	**B_HI**	**B1**	**B2**	**D**
1	formfile	QWETI	Dry	5	6.00	6.00	6.00	0.16	6.10	0.10
2	formfile	QWETI	Mesic	1	7.50	7.50	7.50	6.00	9.00	1.50
3	formfile	QWETI	Wet	4	8.00	8.00	8.00	7.00	28.00	1.00
4	formfile	PROF	Prof_cv	5	-8.00	-8.00	-8.00	-86.00	-7.00	1.00
5	formfile	PROF	Prof_st	1	1.75	1.75	1.75	-5.50	9.00	7.25
6	formfile	PROF	Prof_cx	4	14.00	14.00	14.00	13.00	89.28	1.00
7	formfile	SLOPE	Steep	4	40.00	40.00	40.00	35.00	100.00	5.00
8	formfile	NEW_ASP	NE_Aspect	1	90.00	90.00	90.00	0.00	180.00	45.00
9	formfile	NEW_ASP	SW_Aspect	1	270.00	270.00	270.00	180.00	360.00	45.00
10	geofile	Classify	St_Con	1	43.00	43.00	43.00	42.99	43.01	0.01
11	geofile	Classify	Forest	1	44.00	44.00	44.00	43.99	44.01	0.01
12	geofile	Classify	Shrub	1	47.00	47.00	47.00	46.99	47.01	0.01
13	geofile	Classify	Herb	1	48.00	48.00	48.00	47.99	48.01	0.01
14	geofile	Classify	Sparse	1	49.00	49.00	49.00	48.99	49.01	0.01
15	geofile	Classify	LowLying	1	46.00	46.00	46.00	45.99	46.01	0.01
16	geofile	Classify	Dark_Low	1	45.00	45.00	45.00	44.99	45.01	0.01
17	geofile	Classify	Snow_Ice	1	50.00	50.00	50.00	49.99	50.01	0.01
18	geofile	Classify	Water	1	51.00	51.00	51.00	40.99	51.01	0.01
19	relzfile	PCTZ2ST	Upper	4	60.00	60.00	60.00	59.00	100.00	1.00
20	relzfile	PCTZ2ST	Middle	1	32.50	32.50	32.50	5.00	60.00	27.50
21	relzfile	PCTZ2ST	Lower	5	5.00	5.00	5.00	0.00	5.50	0.50
22	formfile	SLOPE	SlopeLT70	5	70.00	70.00	70.00	0.00	70.50	0.50
23	formfile	SLOPE	SlopeGT70	4	71.00	71.00	71.00	70.00	100.00	1.00

Appendix 8h. Rules for Ecological Units in ESSFvvp (Zone 8000) - Version 3

CRULE8000					
F_NAME	**FUZATTR**	**ATTRWT**	**FACET_NO**	**F_CODE**	**Predicting**
FH8001	Forest	90	1	8001	Conifer/tree island
FH8002	Shrub	80	2	8002	dry shrub
FH8002	Dry	20	2	8002	dry shrub
FH8002	Prof_cx	20	2	8002	dry shrub
FH8003	Shrub	80	3	8003	mesic shrub
FH8003	Mesic	20	3	8003	mesic shrub
FH8004	Shrub	80	4	8004	moist 2 wet shrub
FH8004	Wet	20	4	8004	moist 2 wet shrub
FH8004	Prof_cv	10	4	8004	moist 2 wet shrub
FH8005	Snow_Ice	90	5	8005	Snow_Ice
FH8006	LowLying	80	6	8006	Heather heath st st 2
FH8007	Sparse	80	7	8007	escape
FH8007	SlopeGT70	20	7	8007	escape
FH8008	Sparse	80	8	8008	barren/sparse
FH8008	SlopeLT70	20	8	8008	barren/sparse
FH8009	Dark_Low	80	9	8009	escape
FH8009	SlopeGT70	20	9	8009	escape
FH8010	Dark_Low	80	10	8010	barren/sparse
FH8010	SlopeLT70	20	10	8010	barren/sparse
FH8011	Water	90	11	8011	Water
FH8012	Herb	80	12	8012	Dry herb
FH8012	Dry	20	12	8012	Dry herb
FH8012	Prof_cx	20	12	8012	Dry herb
FH8013	Herb	80	13	8013	mesic herb
FH8013	Mesic	20	13	8013	mesic herb
FH8014	Herb	80	14	8014	moist 2 wet herb
FH8014	Wet	20	14	8014	moist 2 wet herb
FH8014	Prof_cv	20	14	8014	moist 2 wet herb

Appendix 8i. Rules for Ecological Units in ICHwc(Zone 5000) - Version 7

ARULE5000

SORTORDER	FILE_IN	ATTR_IN	CLASS_OUT	MODEL_NO	B	B_LOW	B_HI	B1	B2	D
1	formfile	LNQAREA	LnCrest	5	6.80	6.80	6.80	0.00	6.90	0.10
2	formfile	LNQAREA	LnM2L	1	8.60	8.60	8.60	7.20	10.00	1.40
3	formfile	LNQAREA	LnL2V	4	10.00	10.00	10.00	9.00	17.80	1.00
4	formfile	QWETI	Dry	5	5.80	5.80	5.80	0.00	5.90	0.1
5	formfile	QWETI	Fresh	1	6.40	6.40	6.40	5.80	7.00	0.60
6	formfile	QWETI	ShrubMesic	1	7.15	7.15	7.15	5.80	8.50	1.35
7	formfile	QWETI	ShrubWet	4	9.50	9.50	9.50	8.50	27.00	1.00
8	formfile	QWETI	Moist	1	8.50	8.50	8.50	7.00	10.00	1.50
9	formfile	QWETI	Fresh2Moist	1	7.50	7.50	7.50	**5.00**	**10.00**	2.50
10	formfile	QWETI	Vmoist2Wet	1	18.50	18.50	18.50	10.00	27.00	8.50
11	formfile	QWETI	Vmoist	1	13.00	13.00	13.00	10.00	16.00	3.00
12	formfile	QWETI	Wet	4	16.00	16.00	16.00	15.00	27.00	1.00
13	relzfile	PCTZ2ST	Up2Crest	4	80.00	80.00	80.00	79.00	100.00	1.00
14	relzfile	PCTZ2ST	Up2Mid	1	70.00	70.00	70.00	69.00	100.00	15.50
15	relzfile	PCTZ2ST	Low2Valley	1	5.50	5.50	5.50	1.00	10.00	4.50
16	relzfile	PCTZ2ST	Valley	5	1.00	1.00	1.00	0.00	1.50	0.50
17	formfile	SLOPE	Steep	4	40.00	40.00	40.00	35.00	100.00	5.00
18	formfile	NEW_ASP	NE_Aspect	1	90.00	90.00	90.00	0.00	180.00	45.00
19	formfile	NEW_ASP	SW_Aspect	1	270.00	270.00	270.00	180.00	360.00	45.00
20	geofile	Classify	Forest	1	44.00	44.00	44.00	0.10	0.10	0.01
21	geofile	Classify	Shrub	1	47.00	6.00	6.00	5.90	6.10	0.01
22	geofile	Classify	Sparse	1	49.00	1.00	1.00	0.90	1.10	0.01
23	geofile	Classify	LowLying	1	46.00	4.00	4.00	3.90	4.10	0.01
24	geofile	Classify	Water	1	51.00	5.00	5.00	4.90	5.10	0.01
25	geofile	Classify	Herb	1	48.00	7.00	7.00	6.90	7.10	0.01
26	formfile	SLOPE	SlopeLT30	5	30.00	30.00	30.00	0.00	30.50	0.50
27	formfile	SLOPE	SlopeGT30	4	31.00	31.00	31.00	30.00	277.00	1.00
28	formfile	SLOPE	SlopeLT5	5	5.00	5.00	5.00	0.00	5.50	0.50
29	formfile	SLOPE	SlopeGT5	4	6.00	6.00	6.00	5.00	277.00	1.00
30	formfile	SLOPE	SlopeLT10	5	10.00	10.00	10.00	0.00	10.50	0.50
31	formfile	SLOPE	SlopeGT10	4	11.00	11.00	11.00	10.00	277.00	1.00
32	formfile	SLOPE	SlopeLT70	5	70.00	70.00	70.00	0.00	70.50	0.50
33	formfile	SLOPE	SlopeGT70	4	71.00	71.00	71.00	70.00	277.00	1.00
34	formfile	SLOPE	SlopeLT60	5	60.00	60.00	60.00	0.00	60.50	0.50
35	formfile	SLOPE	SlopeGT60	4	61.00	61.00	61.00	60.00	277.00	1.00
36	formfile	PROF	Prof_cv	5	-7.00	-7.00	-7.00	0.00	-75.88	1.00
37	formfile	PROF	Prof_cx	4	15.00	15.00	15.00	14.00	78.34	1.00
38	relzfile	Z2St	Floodplain	5	16.00	16.00	16.00	0.00	16.50	0.50
39	relzfile	Z2St	NoFlood	4	16.00	16.00	16.00	15.00	1391.00	1.00

Appendix 8i. Rules for Ecological Units in ICHwc(Zone 5000) - Version 7

CRULE5000

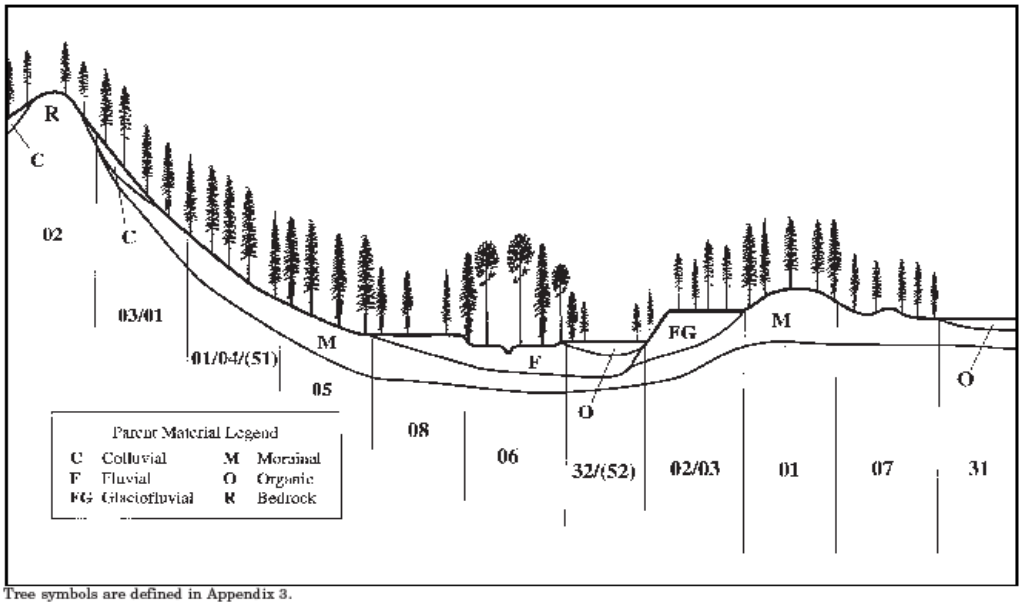
F_NAME	FUZATTR	ATTRWT	FACET_NO	F_CODE	Predicting
FH5021	Dry	20	1	5021	02
FH5021	Forest	30	1	5021	02
FH5021	LnCrest	30	1	5021	02
FH5031	Dry	20	2	5031	03
FH5031	Forest	30	2	5031	03
FH5031	LnM2L	30	2	5031	03
FH5011	Fresh	20	3	5011	01
FH5011	Forest	30	3	5011	01
FH5012	SlopeGT30	20	4	5012	01
FH5012	Fresh2Moist	30	4	5012	01
FH5012	Forest	30	4	5012	01
FH5013	Low2Valley	30	5	5013	01
FH5013	Fresh2Moist	20	5	5013	01
FH5013	Forest	30	5	5013	01
FH5041	Low2Valley	30	6	5041	04/05
FH5041	Moist	30	6	5041	04/05
FH5041	SlopeLT30	20	6	5041	04/05
FH5041	Forest	30	6	5041	04/05
FH5071	NoFlood	30	7	5071	07/08
FH5071	Floodplain	30	7	5071	07/08
FH5071	Vmoist2Wet	20	7	5071	07/08
FH5071	Forest	30	7	5071	07/08
FH5061	Floodplain	30	8	5061	06 (05)
FH5061	Vmoist2Wet	20	8	5061	06 (05)
FH5061	Forest	30	8	5061	06 (05)
FH5061	SlopeLT5	30	8	5061	06 (05)
FH5072	Vmoist2Wet	20	9	5072	07/08
FH5072	SlopeLT5	30	9	5072	07/08
FH5072	Forest	30	9	5072	07/08
FH5800	Shrub	80	10	5800	moderate 51 shrub
FH5800	SlopeGT30	30	10	5800	moderate 51 shrub
FH5800	SlopeLT60	30	10	5800	moderate 51 shrub
FH5801	Shrub	80	11	5801	steep 51 shrub
FH5801	SlopeGT60	30	11	5801	steep 51 shrub
FH5802	Shrub	80	12	5802	dry shrub
FH5802	Dry	20	12	5802	dry shrub
FH5802	Prof_cx	20	12	5802	dry shrub
FH5802	SlopeLT30	20	12	5802	dry shrub
FH5803	Shrub	80	13	5803	mesic shrub
FH5803	ShrubMesic	20	13	5803	mesic shrub
FH5803	SlopeLT30	20	13	5803	mesic shrub
FH5804	Shrub	80	14	5804	Moist2Wet shrub
FH5804	ShrubWet	20	14	5804	Moist2Wet shrub
FH5804	SlopeLT30	20	14	5804	Moist2Wet shrub

CRULE5000

F_NAME	FUZATTR	ATTRWT	FACET_NO	F_CODE	Predicting
FH5805	Herb	80	15	5805	moderate 51 herb
FH5805	SlopeGT30	30	15	5805	moderate 51 herb
FH5805	SlopeLT60	30	15	5805	moderate 51 herb
FH5806	Herb	80	16	5806	steep 51 herb
FH5806	SlopeGT60	30	16	5806	steep 51 herb
FH5807	Herb	80	17	5807	dry herb
FH5807	Dry	20	17	5807	dry herb
FH5807	Prof_cx	20	17	5807	dry shrub
FH5807	SlopeLT30	20	17	5807	dry shrub
FH5808	Herb	80	18	5808	mesic herb
FH5808	ShrubMesic	20	18	5808	mesic herb
FH5808	SlopeLT30	20	18	5808	mesic herb
FH5809	Herb	80	19	5809	Moist2Wet herb
FH5809	ShrubWet	20	19	5809	Moist2Wet herb
FH5809	SlopeLT30	20	19	5809	Moist2Wet herb
FH5810	LowLying	80	20	5810	moderate 51 herb
FH5810	SlopeGT30	30	20	5810	moderate 51 herb
FH5810	SlopeLT60	30	20	5810	moderate 51 herb
FH5811	LowLying	80	21	5811	steep 51 herb
FH5811	SlopeGT60	30	21	5811	steep 51 herb
FH5812	LowLying	80	22	5812	dry herb
FH5812	Dry	20	22	5812	dry herb
FH5812	Prof_cx	20	22	5812	dry shrub
FH5812	SlopeLT30	20	22	5812	dry shrub
FH5813	LowLying	80	23	5813	mesic herb
FH5813	ShrubMesic	20	23	5813	mesic herb
FH5813	SlopeLT30	20	23	5813	mesic herb
FH5814	LowLying	80	24	5814	Moist2Wet herb
FH5814	ShrubWet	20	24	5814	Moist2Wet herb
FH5814	SlopeLT30	20	24	5814	Moist2Wet herb
FH5815	Sparse	80	25	5815	sparse
FH5816	Water	80	26	5816	Water

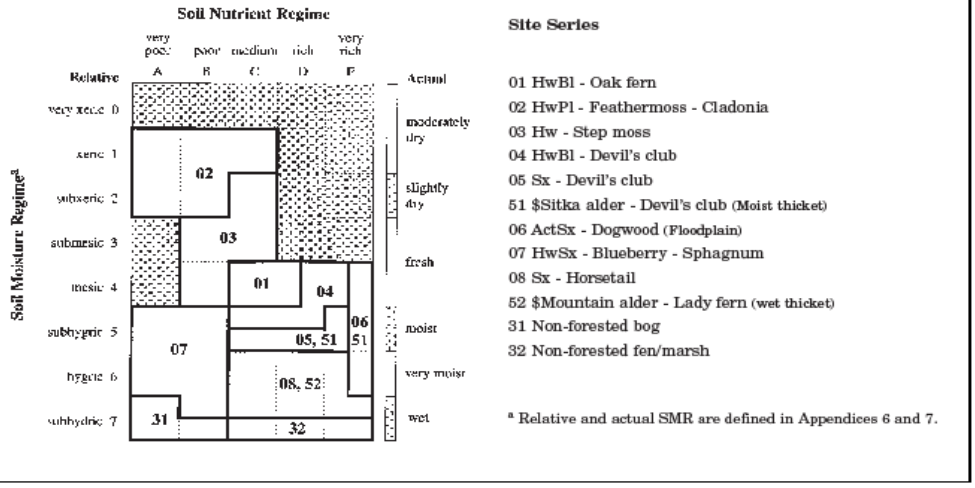
Appendix 8i. Rules for Ecological Units in ICHwc(Zone 5000) - Version 7

ICHwc Landscape Profile[a]



[a] Tree symbols are defined in Appendix 3.

ICHwc Edatopic Grid



Appendix 8j. Rules for Ecological Units in SWBun (Zone 2000) - Version 35

ARULE2000

SORTORDER	FILE_IN	ATTR_IN	CLASS_OUT	MODEL_NO	B	B_LOW	B_HI	B1	B2	D
1	formfile	QWETI	Xeric	5	5.80	5.80	5.80	0.16	5.70	0.10
2	formfile	QWETI	Submesic	1	6.15	6.15	6.15	5.80	6.50	0.35
3	formfile	QWETI	Mesic	1	7.95	7.95	7.95	6.50	9.40	1.45
4	formfile	QWETI	Moist	1	9.90	9.90	9.90	8.40	11.40	1.50
5	formfile	QWETI	Mesic2Moist	1	8.80	8.80	8.80	7.20	10.40	1.60
6	formfile	QWETI	Wet	4	11.40	11.40	11.40	10.40	28.03	1.00
7	formfile	QWETI	Moist2Wet	4	9.40	9.40	9.40	8.40	28.03	1.00
8	formfile	SLOPE	Steep	4	40.00	40.00	40.00	35.00	100.00	5.00
9	formfile	NEW_ASP	NE_Aspect	1	90.00	90.00	90.00	0.00	180.00	45.00
10	formfile	NEW_ASP	Warm_Aspect	1	217.50	217.50	217.50	160.00	275.00	57.50
11	formfile	NEW_ASP	SW_Aspect	1	270.00	270.00	270.00	180.00	360.00	45.00
12	formfile	SLOPE	SlopeLT30	5	30.00	30.00	30.00	0.00	30.50	0.50
13	formfile	SLOPE	SlopeGT30	4	31.00	31.00	31.00	30.00	200.00	1.00
14	formfile	SLOPE	SlopeLT5	5	5.00	5.00	5.00	0.00	5.50	0.50
15	formfile	SLOPE	SlopeGT5	4	6.00	6.00	6.00	5.00	200.00	1.00
16	formfile	SLOPE	SlopeLT10	5	10.00	10.00	10.00	0.00	10.50	0.50
17	formfile	SLOPE	SlopeGT10	4	11.00	11.00	11.00	10.00	200.00	1.00
18	formfile	SLOPE	SlopeLT70	5	70.00	70.00	70.00	0.00	70.50	0.50
19	formfile	SLOPE	SlopeGT70	4	71.00	71.00	71.00	70.00	200.00	1.00
20	formfile	SLOPE	SlopeLT20	5	20.00	20.00	20.00	0.00	20.50	0.50
21	formfile	SLOPE	SlopeGT20	4	21.00	21.00	21.00	20.00	200.00	1.00
22	formfile	SLOPE	SlopeLT60	5	60.00	60.00	60.00	0.00	60.50	0.50
23	formfile	SLOPE	SlopeGT60	4	61.00	61.00	61.00	60.00	277.00	1.00
24	geofile	Classify	Forest	1	44.00	44.00	44.00	0.10	0.10	0.01
25	geofile	Classify	Shrub	1	47.00	6.00	6.00	5.90	6.10	0.01
26	geofile	Classify	Sparse	1	49.00	1.00	1.00	0.90	1.10	0.01
27	geofile	Classify	LowLying	1	46.00	4.00	4.00	3.90	4.10	0.01
28	geofile	Classify	Water	1	51.00	5.00	5.00	4.90	5.10	0.01
29	geofile	Classify	Herb	1	48.00	7.00	7.00	6.90	7.10	0.01
30	formfile	PROF	Prof_cx	4	14.00	14.00	14.00	13.00	89.28	1.00
31	formfile	PROF	Prof_cv	5	-5.50	-5.50	-5.50	-88.99	-4.50	1.00
32	formfile	LNQAREA	LnCrest	5	7.10	7.10	7.10	0.00	7.20	0.10
33	formfile	LNQAREA	LnUpper	1	7.70	7.70	7.70	7.20	8.20	0.50
34	formfile	LNQAREA	LnMid	1	9.50	9.50	9.50	9.00	10.00	0.50
35	formfile	LNQAREA	LnLow	1	11.00	11.00	11.00	10.00	12.00	1.00
36	formfile	LNQAREA	LnValley	4	12.00	12.00	12.00	11.00	18.86	1.00
37	formfile	SLOPE	SlopeLT50	5	50.00	50.00	50.00	0.00	50.50	0.50
38	formfile	SLOPE	SlopeGT50	4	51.00	51.00	51.00	50.00	200.00	1.00
39	formfile	SLOPE	SlopeGT50	4	51.00	51.00	51.00	50.00	200.00	1.00

Appendix 8j. Rules for Ecological Units in SWBun (Zone 2000) - Version 35

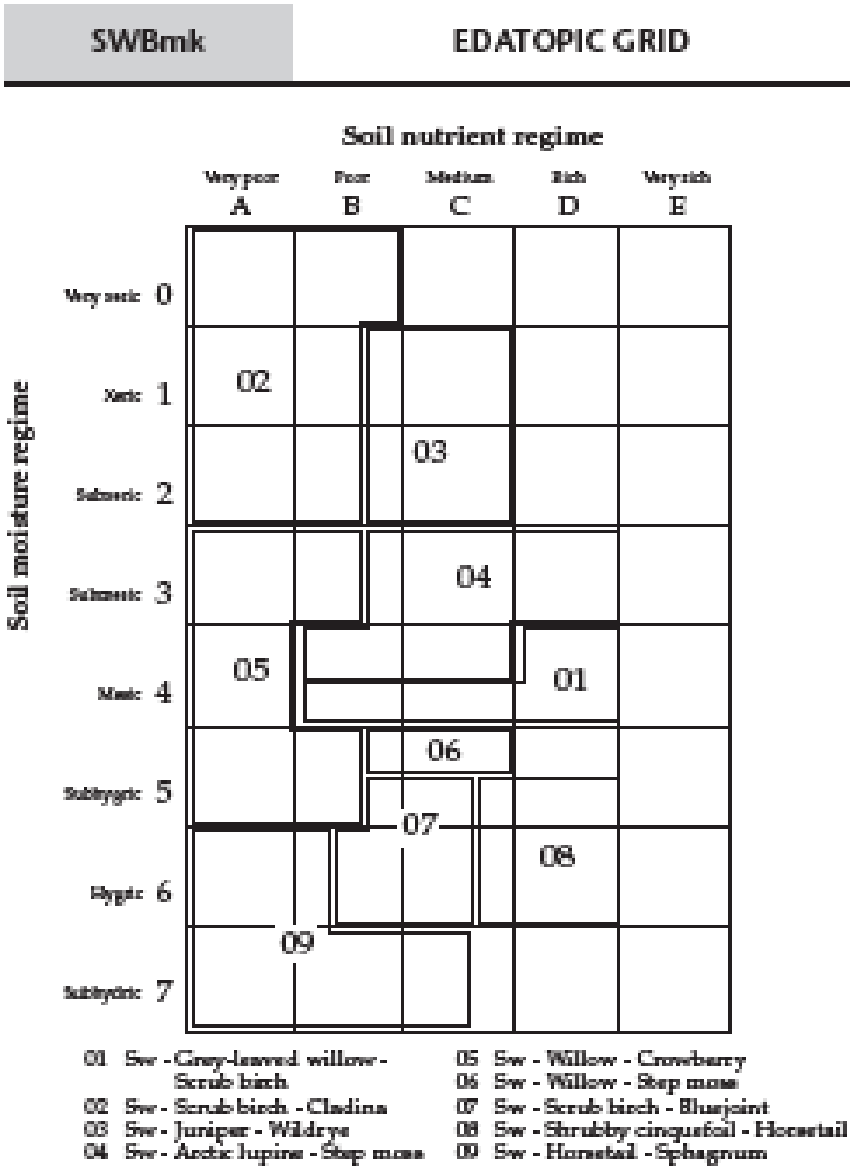
CRULE2000

F_NAME	FUZATTR	ATTRWT	FACET_NO	F_CODE	Predicting
FH2021	Xeric	30	1	2021	02
FH2021	Prof_cx	20	1	2021	02
FH2021	Forest	30	1	2021	02
FH2022	Submesic	30	2	2022	02/03
FH2022	SW_Aspect	20	2	2022	02/03
FH2022	Forest	30	2	2022	02/03
FH2022	SlopeGT50	20	2	2022	02/03
FH2041	LnUpper	30	3	2041	04
FH2041	SW_Aspect	20	3	2041	04
FH2041	Forest	30	3	2041	04
FH2011	LnMid	30	4	2011	01
FH2011	SW_Aspect	20	4	2011	01
FH2011	Forest	30	4	2011	01
FH2051	Submesic	30	5	2051	05
FH2051	NE_Aspect	20	5	2051	05
FH2051	Forest	30	5	2051	05
FH2012	Mesic	30	6	2012	01
FH2012	Forest	30	6	2012	01
FH2061	Moist	30	7	2061	06
FH2061	SlopeGT5	20	7	2061	06
FH2061	SlopeLT20	20	7	2061	06
FH2061	Forest	30	7	2061	06
FH2061	SW_Aspect	20	7	2061	06
FH2081	Moist	30	8	2081	08
FH2081	SlopeLT5	20	8	2081	08
FH2081	Forest	30	8	2081	08
FH2091	Moist2Wet	30	9	2091	09
FH2091	Forest	30	9	2091	09
FH2091	NE_Aspect	30	9	2091	09
FH2091	SlopeLT10	20	9	2091	09
FH2082	Moist2Wet	30	10	2082	08
FH2082	Forest	30	10	2082	08
FH2082	SW_Aspect	30	10	2082	08
FH2082	SlopeLT10	20	10	2082	08
FH2062	Moist2Wet	30	11	2062	06
FH2062	Forest	30	11	2062	06
FH2062	SlopeGT10	20	11	2062	06
FH2062	SlopeLT20	20	11	2062	06
FH2071	Moist2Wet	30	12	2071	'07
FH2071	Forest	30	12	2071	'07
FH2071	SlopeGT20	20	12	2071	'07
FH2013	Mesic	30	13	2013	01
FH2013	SlopeGT5	20	13	2013	01
FH2013	SlopeLT20	20	13	2013	01
FH2013	Forest	30	13	2013	01
FH2013	NE_Aspect	20	13	2013	01

CRULE2000

F_NAME	FUZATTR	ATTRWT	FACET_NO	F_CODE	Predicting
FH2042	Submesic	30	14	2042	04
FH2042	Forest	30	14	2042	04
FH2042	SlopeGT5	20	14	2042	04
FH2042	SlopeLT20	20	14	2042	04
FH2900	Shrub	80	15	2900	Dry Shrub
FH2900	Xeric	30	15	2900	Dry Shrub
FH2900	Prof_cx	30	15	2900	Dry Shrub
FH2901	Shrub	80	16	2901	Mesic Shrub
FH2901	Mesic	30	16	2901	Mesic Shrub
FH2902	Shrub	80	17	2902	Moist to Wet Shrub
FH2902	Moist2Wet	30	17	2902	Moist to Wet Shrub
FH2903	Herb	80	18	2903	Dry Herb
FH2903	Xeric	30	18	2903	Dry Herb
FH2903	Prof_cx	30	18	2903	Dry Herb
FH2904	Herb	80	19	2904	Mesic Herb
FH2904	Mesic	30	19	2904	Mesic Herb
FH2905	Herb	80	20	2905	Moist to Wet Herb
FH2905	Moist2Wet	30	20	2905	Moist to Wet Herb
FH2906	Sparse	80	21	2906	barren/sparse
FH2906	SlopeLT70	30	21	2906	barren/sparse
FH2907	Water	80	22	2907	Water
FH2908	Sparse	80	23	2908	Escape
FH2908	SlopeGT70	30	23	2908	Escape

Appendix 8j. Rules for Ecological Units in SWBun (Zone 2000) - Version 35



Appendix 8k. Rules for Ecological Units in SWBuns (Zone 2500) - Version 9

ARULE2500

SORTORDER	FILE_IN	ATTR_IN	CLASS_OUT	MODEL_NO	B	B_LOW	B_HI	B1	B2	D
1	formfile	QWETI	Dry	5	6.00	6.00	6.00	0.00	6.10	0.10
2	formfile	QWETI	Mes2SlW	1	7.50	7.50	7.50	6.00	9.00	1.50
3	formfile	QWETI	Wet	4	8.00	8.00	8.00	7.00	28.00	1.00
4	formfile	PROF	Prof_cv	5	-8.00	-8.00	-8.00	-86.00	-7.00	1.00
5	formfile	PROF	Prof_st	1	1.75	1.75	1.75	-5.50	9.00	7.25
6	formfile	PROF	Prof_cx	4	14.00	14.00	14.00	13.00	89.28	1.00
7	formfile	SLOPE	Steep	4	40.00	40.00	40.00	35.00	100.00	5.00
8	formfile	NEW_ASP	NE_Aspect	1	90.00	90.00	90.00	0.00	180.00	45.00
9	formfile	NEW_ASP	SW_Aspect	1	270.00	270.00	270.00	180.00	360.00	45.00
10	geofile	Classify	St_Con	1	43.00	43.00	43.00	42.99	43.01	0.01
11	geofile	Classify	Forest	1	44.00	44.00	44.00	43.99	44.01	0.01
12	geofile	Classify	Shrub	1	47.00	47.00	47.00	46.99	47.01	0.01
13	geofile	Classify	Herb	1	48.00	48.00	48.00	47.99	48.01	0.01
14	geofile	Classify	Sparse	1	49.00	49.00	49.00	48.99	49.01	0.01
15	geofile	Classify	LowLying	1	46.00	46.00	46.00	45.99	46.01	0.01
16	geofile	Classify	Dark_Low	1	45.00	45.00	45.00	44.99	45.01	0.01
17	geofile	Classify	Snow_Ice	1	50.00	50.00	50.00	49.99	50.01	0.01
18	geofile	Classify	Water	1	51.00	51.00	51.00	40.99	51.01	0.01
19	relzfile	PCTZ2ST	Upper	4	60.00	60.00	60.00	59.00	100.00	1.00
20	relzfile	PCTZ2ST	Middle	1	32.50	32.50	32.50	5.00	60.00	27.50
21	relzfile	PCTZ2ST	Lower	5	5.00	5.00	5.00	0.00	5.50	0.50
22	formfile	SLOPE	SlopeLT70	5	70.00	70.00	70.00	0.00	70.50	0.50
23	formfile	SLOPE	SlopeGT70	4	71.00	71.00	71.00	70.00	100.00	1.00

Appendix 8k. Rules for Ecological Units in SWBuns (Zone 2500) - Version 9

CRULE2500

F_NAME	FUZATTR	ATTRWT	FACET_NO	F_CODE	Predicting
FH2500	Forest	90	1	2500	Conifer/tree island
FH2501	Shrub	80	2	2501	dry shrub
FH2501	Dry	20	2	2501	dry shrub
FH2501	Prof_cx	20	2	2501	dry shrub
FH2502	Shrub	80	3	2502	mesic shrub
FH2502	Mes2SlW	20	3	2502	mesic shrub
FH2503	Shrub	80	4	2503	moist 2 wet shrub
FH2503	Wet	20	4	2503	moist 2 wet shrub
FH2503	Prof_cv	20	4	2503	moist 2 wet shrub
FH2504	Herb	80	5	2504	Dry herb
FH2504	Dry	20	5	2504	Dry herb
FH2504	Prof_cx	20	5	2504	Dry herb
FH2505	Herb	80	6	2505	mesic herb
FH2505	Mes2SlW	20	6	2505	mesic herb
FH2506	Herb	80	7	2506	moist 2 wet herb
FH2506	Wet	20	7	2506	moist 2 wet herb
FH2506	Prof_cv	20	7	2506	moist 2 wet herb
FH2507	Snow_Ice	90	8	2507	Snow_Ice
FH2508	Sparse	80	9	2508	escape
FH2508	SlopeGT70	20	9	2508	escape
FH2509	Sparse	80	10	2509	barren/sparse
FH2509	SlopeLT70	20	10	2509	barren/sparse
FH2510	Dark_Low	90	11	2510	barren/sparse
FH2510	SlopeLT70	20	11	2510	barren/sparse
FH2511	Dark_Low	90	12	2511	escape
FH2511	SlopeGT70	20	12	2511	escape
FH2512	LowLying	80	13	2512	Dry herb
FH2512	Dry	20	13	2512	Dry herb
FH2512	Prof_cx	20	13	2512	Dry herb
FH2513	LowLying	80	14	2513	mesic herb
FH2513	Mes2SlW	20	14	2513	mesic herb
FH2514	LowLying	80	15	2514	moist 2 wet herb
FH2514	Wet	20	15	2514	moist 2 wet herb
FH2514	Prof_cv	20	15	2514	moist 2 wet herb
FH2515	St_Con	90	16	2515	Conifer/tree island
FH2516	Water	90	17	2516	Water

Appendix 9

Schaft Creek Project Area (ha) Summary of PEM Ecosystems within the Regional Study Area

Appendix 9. Schaft Creek Project Area (ha) Summary of PEM Ecosystems within the Regional Study Area

Biogeoclimatic Unit	Ecosystem Unit	General Ecosystem Type	Area (hectares)
ATun	AM	Mesic Shrub/Herb	19,649
ATun	BA	Sparse/Barren	40,118
ATun	DH	Drier Shrub/Herb	2,519
ATun	DS	Drier Shrub/Herb	821
ATun	ET	Sparse/Barren	15,532
ATun	GSi	Snow/Ice	55,179
ATun	KH	Treed	1,895
ATun	LA	Water	604
ATun	MA	Wetland Shrub/Herb	43
ATun	RI	Water	98
ATun	VF	Mesic Shrub/Herb	5,574
ATun	VS	Wetter Shrub/Herb	1,410
ATun	VW	Wetter Shrub/Herb	2,416
ATun	WA	Water	37
ATun Sum			**145,893**
BWBSdk1	01	Mesic Forest	6,507
BWBSdk1	02	Drier Forest	936
BWBSdk1	03	Drier Forest	612
BWBSdk1	04	Drier Forest	243
BWBSdk1	05	Drier Forest	1,190
BWBSdk1	06	Wetter Forest	1,826
BWBSdk1	07	Wetter Forest	763
BWBSdk1	08	Wetter Forest	814
BWBSdk1	09	Wetter Forest	364
BWBSdk1	10(11)	Wetter Forest	107
BWBSdk1	AM	Mesic Shrub/Herb	76
BWBSdk1	BA	Sparse/Barren	104
BWBSdk1	DH	Drier Shrub/Herb	26
BWBSdk1	DS	Drier Shrub/Herb	249
BWBSdk1	LA	Water	271
BWBSdk1	MA	Wetland Shrub/Herb	508
BWBSdk1	RI	Water	389
BWBSdk1	SA	Wetland Shrub/Herb	443
BWBSdk1	VF	Mesic Shrub/Herb	1,398
BWBSdk1	VS	Wetter Shrub/Herb	825
BWBSdk1	VW	Wetter Shrub/Herb	85
BWBSdk1 Sum			**17,734**
ESSFmc	01(05)	Mesic Forest	10,269
ESSFmc	02(03)	Drier Forest	1,493
ESSFmc	04	Drier Forest	5,040
ESSFmc	06	Wetter Forest	3,333
ESSFmc	07	Wetter Forest	692
ESSFmc	09(08)	Wetter Forest	729
ESSFmc	10	Wetter Forest	1,140
ESSFmc	AM	Mesic Shrub/Herb	169
ESSFmc	AVm	Avalanche Shrub	1,729
ESSFmc	AVs	Avalanche Shrub	606
ESSFmc	BA	Sparse/Barren	606
ESSFmc	DH	Drier Shrub/Herb	9
ESSFmc	DS	Drier Shrub/Herb	60
ESSFmc	ET	Sparse/Barren	111
ESSFmc	GTm	Avalanche Herb	155
ESSFmc	GTs	Avalanche Herb	152
ESSFmc	LA	Water	180

Appendix 9. Schaft Creek Project Area (ha) Summary of PEM Ecosystems within the Regional Study Area

Biogeoclimatic Unit	Ecosystem Unit	General Ecosystem Type	Area (hectares)
ESSFmc	MA	Wetland Shrub/Herb	250
ESSFmc	RI	Water	1,253
ESSFmc	SA	Wetland Shrub/Herb	1,442
ESSFmc	VF	Mesic Shrub/Herb	681
ESSFmc	VS	Wetter Shrub/Herb	695
ESSFmc	VW	Wetter Shrub/Herb	158
ESSFmc	WA	Water	21
ESSFmc Sum			**30,973**
ESSFmcp	AM	Mesic Shrub/Herb	1,663
ESSFmcp	BA	Sparse/Barren	1,715
ESSFmcp	DH	Drier Shrub/Herb	240
ESSFmcp	DS	Drier Shrub/Herb	106
ESSFmcp	DV	Mesic Shrub/Herb	178
ESSFmcp	ET	Sparse/Barren	481
ESSFmcp	GSi	Snow/Ice	351
ESSFmcp	LA	Water	23
ESSFmcp	MA	Wetland Shrub/Herb	2
ESSFmcp	RI	Water	11
ESSFmcp	SA	Wetland Shrub/Herb	4
ESSFmcp	TI	Treed	4,501
ESSFmcp	VF	Mesic Shrub/Herb	1,051
ESSFmcp	VS	Wetter Shrub/Herb	293
ESSFmcp	VW	Wetter Shrub/Herb	579
ESSFmcp	WA	Water	2
ESSFmcp Sum			**11,202**
ESSFvv	01(05)	Mesic Forest	2,907
ESSFvv	02	Drier Forest	56
ESSFvv	03(04)	Drier Forest	1,267
ESSFvv	06(07)	Wetter Forest	579
ESSFvv	08(09)	Wetter Forest	127
ESSFvv	AM	Mesic Shrub/Herb	6
ESSFvv	AVm	Avalanche Shrub	1,363
ESSFvv	AVs	Avalanche Shrub	928
ESSFvv	BA	Sparse/Barren	595
ESSFvv	DH	Drier Shrub/Herb	0
ESSFvv	DS	Drier Shrub/Herb	9
ESSFvv	ET	Sparse/Barren	175
ESSFvv	GSi	Snow/Ice	1
ESSFvv	GTm	Avalanche Herb	114
ESSFvv	GTs	Avalanche Herb	73
ESSFvv	LA	Water	1
ESSFvv	MA	Wetland Shrub/Herb	3
ESSFvv	RI	Water	2
ESSFvv	VF	Mesic Shrub/Herb	225
ESSFvv	VS	Wetter Shrub/Herb	218
ESSFvv	VW	Wetter Shrub/Herb	11
ESSFvv	WA	Water	0
ESSFvv Sum			**8,660**
ESSFvvp	AM	Mesic Shrub/Herb	257
ESSFvvp	BA	Sparse/Barren	1,708
ESSFvvp	DH	Drier Shrub/Herb	19
ESSFvvp	DS	Drier Shrub/Herb	145
ESSFvvp	DV	Mesic Shrub/Herb	1,179
ESSFvvp	ET	Sparse/Barren	469

Appendix 9. Schaft Creek Project Area (ha) Summary of PEM Ecosystems within the Regional Study Area

Biogeoclimatic Unit	Ecosystem Unit	General Ecosystem Type	Area (hectares)
ESSFvvp	GSi	Snow/Ice	223
ESSFvvp	LA	Water	5
ESSFvvp	MA	Wetland Shrub/Herb	1
ESSFvvp	RI	Water	0
ESSFvvp	TI	Treed	1,602
ESSFvvp	VF	Mesic Shrub/Herb	1,249
ESSFvvp	VS	Wetter Shrub/Herb	258
ESSFvvp	VW	Wetter Shrub/Herb	41
ESSFvvp Sum			**7,156**
ESSFwv	01(05)	Mesic Forest	8,146
ESSFwv	02	Drier Forest	205
ESSFwv	03(04)	Drier Forest	1,245
ESSFwv	06(07)	Wetter Forest	1,626
ESSFwv	08(09)	Wetter Forest	562
ESSFwv	AM	Mesic Shrub/Herb	6
ESSFwv	AVm	Avalanche Shrub	1,382
ESSFwv	AVs	Avalanche Shrub	583
ESSFwv	BA	Sparse/Barren	2,112
ESSFwv	DH	Drier Shrub/Herb	0
ESSFwv	DS	Drier Shrub/Herb	15
ESSFwv	ET	Sparse/Barren	260
ESSFwv	LA	Water	53
ESSFwv	MA	Wetland Shrub/Herb	85
ESSFwv	RI	Water	960
ESSFwv	SA	Wetland Shrub/Herb	91
ESSFwv	VF	Mesic Shrub/Herb	447
ESSFwv	VS	Wetter Shrub/Herb	345
ESSFwv	WA	Water	9
ESSFwv Sum			**18,134**
ESSFwvp	AM	Mesic Shrub/Herb	3,326
ESSFwvp	BA	Sparse/Barren	7,244
ESSFwvp	DH	Drier Shrub/Herb	225
ESSFwvp	DS	Drier Shrub/Herb	100
ESSFwvp	ET	Sparse/Barren	885
ESSFwvp	GSi	Snow/Ice	981
ESSFwvp	LA	Water	82
ESSFwvp	MA	Wetland Shrub/Herb	13
ESSFwvp	RI	Water	0
ESSFwvp	SA	Wetland Shrub/Herb	70
ESSFwvp	TI	Treed	5,867
ESSFwvp	VF	Mesic Shrub/Herb	1,681
ESSFwvp	VS	Wetter Shrub/Herb	494
ESSFwvp	VW	Wetter Shrub/Herb	690
ESSFwvp	WA	Water	17
ESSFwvp Sum			**21,674**
ICHwc	01	Mesic Forest	11,948
ICHwc	02	Drier Forest	776
ICHwc	03	Drier Forest	3,418
ICHwc	04(05)	Wetter Forest	2,969
ICHwc	06(05)	Wetter Forest	1,573
ICHwc	07(08)	Wetter Forest	1,179
ICHwc	AM	Mesic Shrub/Herb	253
ICHwc	AVm	Avalanche Shrub	1,197
ICHwc	AVs	Avalanche Shrub	555

Appendix 9. Schaft Creek Project Area (ha) Summary of PEM Ecosystems within the Regional Study Area

Biogeoclimatic Unit	Ecosystem Unit	General Ecosystem Type	Area (hectares)
ICHwc	BA	Sparse/Barren	403
ICHwc	DH	Drier Shrub/Herb	17
ICHwc	DS	Drier Shrub/Herb	61
ICHwc	GTm	Avalanche Herb	124
ICHwc	GTs	Avalanche Herb	98
ICHwc	LA	Water	743
ICHwc	MA	Wetland Shrub/Herb	80
ICHwc	RI	Water	1,061
ICHwc	SA	Wetland Shrub/Herb	160
ICHwc	VF	Mesic Shrub/Herb	1,187
ICHwc	VS	Wetter Shrub/Herb	719
ICHwc	VW	Wetter Shrub/Herb	185
ICHwc	WA	Water	18
ICHwc Sum			**28,724**
SWBun	01	Mesic Forest	5,724
SWBun	02(03)	Drier Forest	1,303
SWBun	04	Drier Forest	971
SWBun	05	Mesic Forest	517
SWBun	06	Wetter Forest	973
SWBun	07	Wetter Forest	875
SWBun	08	Wetter Forest	117
SWBun	09	Wetter Forest	164
SWBun	AM	Mesic Shrub/Herb	154
SWBun	BA	Sparse/Barren	33
SWBun	DH	Drier Shrub/Herb	33
SWBun	DS	Drier Shrub/Herb	196
SWBun	ET	Sparse/Barren	34
SWBun	LA	Water	123
SWBun	MA	Wetland Shrub/Herb	37
SWBun	SA	Wetland Shrub/Herb	28
SWBun	VF	Mesic Shrub/Herb	2,497
SWBun	VS	Wetter Shrub/Herb	610
SWBun	VW	Wetter Shrub/Herb	56
SWBun	WA	Water	8
SWBun Sum			**14,451**
SWBuns	AM	Mesic Shrub/Herb	1,898
SWBuns	BA	Sparse/Barren	1,649
SWBuns	DH	Drier Shrub/Herb	243
SWBuns	DS	Drier Shrub/Herb	138
SWBuns	ET	Sparse/Barren	174
SWBuns	GSi	Snow/Ice	11
SWBuns	LA	Water	8
SWBuns	MA	Wetland Shrub/Herb	8
SWBuns	SA	Wetland Shrub/Herb	2
SWBuns	TI	Treed	2,122
SWBuns	VF	Mesic Shrub/Herb	1,128
SWBuns	VS	Wetter Shrub/Herb	201
SWBuns	VW	Wetter Shrub/Herb	368
SWBuns Sum			**7,949**
Grand Total			**312,548**

Appendix 10

Schaft Creek Project Terrestrial Ecosystem Map

Schaft Creek Project Vegetation Terrestrial Ecosystem Map

TEM Plot
Labeled with Plot Number

BEC Zone

Galore Creek Access Road

Site Road

Access Road

Pit

Site Layout

Tailings Storage

Top Soil Storage

Waste Rock Dump

Polygon Number
Decile 1 (40%) - 5AHcb
Decile 2 (30%) - 3033A
Decile 3 (30%) - 2V023A
Structural Stage Modifier
Decile Ecosystem Unit
Structural Stage

Disturbed
Sparse/Barren
Drier Forest
Mesic Forest
Treed
Wetter Forest
Drier Shrub/Herb
Mesic Shrub/Herb
Avalanche Herb
Avalanche Shrub
Wetland Shrub/Herb
Floodplain
Water
Snow/Ice

1:10,000

0 500 1,000

Meters

Date: February 25, 2020
GIS Figure Number: SCH-20-0036
Projection: UTM83, NAD83

Prepared by
FOX
GEOMATICS

Hickman Creek

Storm Creek

Moss Creek

AT1 un

AT2 un

ESSFmcp

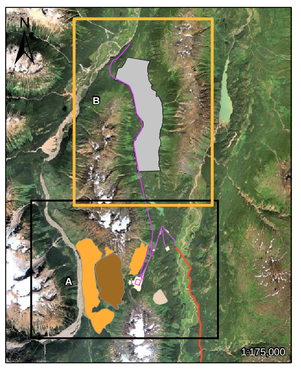
ESSFmc

ESSFmcp

ESSFmcp

N

Schaft Creek Project Vegetation Terrestrial Ecosystem Map



- Disturbed
- Sparse/Barren
- Drier Forest
- Mesic Forest
- Treed
- Wetter Forest
- Drier Shrub/Herb
- Mesic Shrub/Herb
- Avalanche Herb
- Avalanche Shrub
- Wetland Shrub/Herb
- Floodplain
- Water
- Snow/Ice

- BEC Zone
- Galore Creek Access Road
- Site Road
- Access Road
- Pit
- Site Layout
- Tailings Storage
- Top Soil Storage
- Waste Rock Dump

Polygon Number → 1158
Decile 1 (40%) - 5AH3b
Decile 2 (30%) - 3033a
Decile 3 (30%) - 2VG2a
Structural Stage Modifier
Decile
Ecosystem Unit
Structural Stage

1:10,000

0 500 1,000

Metres

Date: February 25, 2010
GIS Figure Number: SCH-20-009b
Projection: UTM9, NAD83

copper FOX METALS

Schaft Creek
Moss Creek
SWB un
SWB uns
BWBSdk 1
ESSFmcp
ESSFmc
AT un
Tail A1
Tail A2
Tail A3

Appendix 11

Schaft Creek Project TEM Legend for Mapped Ecosystems

Appendix 11. TEM Legend for Mapped Ecosystems

BEC Unit	Site Series	Site Series Symbol	Ecosystem Unit	General Ecosystem Type	Structural Stage	Ecosystem Name	Description / Assumed Situation	Typical Structural Stages Mapped	Typical SMR
ATun	00	MO	MO	Sparse/Barren	Sparse/Bryoid	Morraine	An unvegetated landform consisting of unstratified glacial drift that is usually till and taking a variety of shapes, ranging from plains to mounds and ridges that are initial forms independent of underlying bedrock or older materials.	1	N/A
ATun	00	AH	AH	Avalanche Shrub	Shrub	Alder Hellebore Avalanche Track	significant slope; coarse textured soils	3a, 3b	subhygric-hygric
ATun	00	VG	VG	Avalanche Herb	Herb	Valerian - Groundsel Avalanche Track	significant slope; deep, medium textured soils; herb-dominated	2a	submesic-subhygric
ATun	00	TA	TA	Sparse/Barren	Sparse/Bryoid	Talus	Angular rock fragments of any size accumulated at the foot of steep rock slopes as a result of successive rock falls. It is a type of colluvium.	1	N/A
ATun	00	RO	RO	Sparse/Barren	Sparse/Bryoid	Rock Outcrop	A gentle to steep, bedrock escarpment or outcropping, with little soil development and sparse vegetative cover.	1	N/A
ATun	00	RI	RI	Water	N/A	River	TRIM river; A watercourse formed when water flows between continuous, definable banks.	N/A	N/A
ATun	00	MP	MP	Mesic Shrub/Herb	Herb	Mountain Heather - Partridgefoot	shallow colluvium and exposed rock.	2d	subxeric – mesic
ATun	00	KH	KH	Mesic Treed	Shrub	Stunted conifer (parkland)/Krummholz	dwarfed conifers growing at high elevations; trees are short in stature and in poor form	3a, 3b	submesic-mesic
ATun	00	GL	GL	Snow/Ice	N/A	Glacier	A mass of perennial snow and ice with definite lateral limits. It typically flows in a particular direction.	N/A	N/A
ATun	00	FC	FC	Drier Shrub/herb	Herb	Fescue - lichen grassland	gentle to steep upper slopes and crest postions, shallow to medium depth, medium textured soils, various herbs and well-developed moss layer.	2b	subxeric – mesic
ATun	00	ES	ES	Sparse/Barren	Sparse/Bryoid	Exposed Soil	Any area of exposed soil that is not included in any of the other definitions. It includes areas of recent disturbance, such as mud slides, debris torrents, avalanches, and human-made disturbances (e.g., pipeline rights-of-way) where vegetation cover is l	1	N/A
ATun	00	BL	BL	Drier Shrub/Herb	Shrub	Scrub birch - lichen	gentle slopes; shallow, coarse-textured soils, crest or upper slopes.	3a	xeric - subxeric
ATun	00	BA	BA	Sparse/Barren	Sparse/Bryoid	Barren	Land devoid of vegetation due to extreme climatic or edaphic conditions.	1	N/A
ATun	00	AW	AW	Drier Shrub/Herb	Herb	Mountain-avens - Dwarf willow	Wind swept slopes; gentle to steep upper slopes, or crest position, shallow, coarse-textured well drained soils; vegetation dominated by low willows, dwarf blueberry, Dryas spp., or other dwarf shrubs.	2d	subxeric – mesic
ATun	00	PS	PS	Snow/Ice	N/A	Permanent Snow	Snow or ice that is not part of a glacier but is found during summer months on the landscape.	N/A	N/A
BWBSdk1	09	BH	09	Wetter Forest	Young Forest	Sb - Horsetail - Sphagnum (Wb09 - Sb - Common Horsetail - Peat Moss)	organic wetland, poor soil drainage	4,5,6,7	hygric
BWBSdk1	06	SR	06	Wetter Forest	Young Forest	Sw - Scouring-rush - Step moss	gentle, lower slope receiving sites; deep, medium - textured soil	4,5,6,7	subhygric
BWBSdk1	10	BS	10	Wetter Forest	Young Forest	Sb - Labrador tea - Sphagnum (Wb03 - Sb - Lingonberry - Peat-Moss)	organic bog forest (BC Wetland Classification)	4,5,6,7	subhydric
BWBSdk1	01	SM	01	Mesic Forest	Mature/Old Forest	Sw - Knight's plume - Step moss	gentle slope; deep, coarse - textured soils	4,5,6,7	mesic

Appendix 11. TEM Legend for Mapped Ecosystems

BEC Unit	Site Series	Site Series Symbol	Ecosystem Unit	General Ecosystem Type	Structural Stage	Ecosystem Name	Description / Assumed Situation	Typical Structural Stages Mapped	Typical SMR
BWBSdk1	02	LL	02	Drier Forest	Young Forest	Pl - Lingonberry - Feathermoss	gentle slope; deep, coarse - textured soils	4,5,6,7	xeric
BWBSdk1	06	SR	06	Wetter Forest	Mature/Old Forest	Sw - Scouring-rush - Step moss	gentle, lower slope receiving sites; deep, medium - textured soil	4,5,6,7	subhygric
ESSFmc	08	FV	08	Wetter Forest	Shrub	Bl - Valerian - Sickle moss	gentle slope; deep, medium - textured soils, high elevation	3a,3b,4,5,6,7	hygric
ESSFmc	08	FV	08	Wetter Forest	Mature/Old Forest	Bl - Valerian - Sickle moss	gentle slope; deep, medium - textured soils, high elevation	3a,3b,4,5,6,7	hygric
ESSFmc	08	FV	08	Wetter Forest	Young Forest	Bl - Valerian - Sickle moss	gentle slope; deep, medium - textured soils, high elevation	3a,3b,4,5,6,7	hygric
ESSFmc	09	HG	09	Wetter Forest	Mature/Old Forest	Bl - Horsetail - Glow moss (Ws08 - Bl - Sitka valerian - Common horsetail)	gentle lower slope to level; deep, medium - textured soil, poorly drained	3a,3b,4,5,6,7	hygric
ESSFmc	09	HG	09	Wetter Forest	Young Forest	Bl - Horsetail - Glow moss (Ws08 - Bl - Sitka valerian - Common horsetail)	gentle lower slope to level; deep, medium - textured soil, poorly drained	3a,3b,4,5,6,7	hygric
ESSFmc	10	FH	10	Wetter Forest	Young Forest	Bl - Horsetail - Leafy moss (Ws08 - Bl - Sitka valerian - Common horsetail)	gentle slopes to level, toe of seepage slopes; moisture receiving, deep, medium - textured soils; nutrient rich, poorly drained	3a,3b,4,5,6,7	subhydric
ESSFmc	10	FH	10	Wetter Forest	Mature/Old Forest	Bl - Horsetail - Leafy moss (Ws08 - Bl - Sitka valerian - Common horsetail)	gentle slopes to level, toe of seepage slopes; moisture receiving, deep, medium - textured soils; nutrient rich, poorly drained	3a,3b,4,5,6,7	subhydric
ESSFmc	10	FH	10	Wetter Forest	Shrub	Bl - Horsetail - Leafy moss (Ws08 - Bl - Sitka valerian - Common horsetail)	gentle slopes to level, toe of seepage slopes; moisture receiving, deep, medium - textured soils; nutrient rich, poorly drained	3a,3b,4,5,6,7	subhydric
ESSFmc	00	FP	FP	Floodplain	Mature/Old Forest	Floodplain - shrubby to mature/old forest	Generic floodplain identified in BEC units that do not have them defined	3a,3b,5,6,7	subhygric - hygric
ESSFmc	00	AW	AW	Drier Shrub/Herb	Herb	Mountain-avens - Dwarf willow	Wind swept slopes; gentle to steep upper slopes, or crest position, shallow, coarse-textured well drained soils; vegetation dominated by low willows, dwarf blueberry, Dryas spp., or other dwarf shrubs.	2d	subxeric – mesic
ESSFmc	00	BI	BI	Sparse/Barren	Sparse/Bryoid	Barren	Land devoid of vegetation due to extreme climatic or edaphic conditions.	1	N/A
ESSFmc	00	CL	CL	Sparse/Barren	Sparse/Bryoid	Cliff	A steep, vertical or overhanging rock face.	1	N/A
ESSFmc	00	ES	ES	Sparse/Barren	Sparse/Bryoid	Exposed Soil	Any area of exposed soil that is not included in any of the other definitions. It includes areas of recent disturbance, such as mud slides, debris torrents, avalanches, and human-made disturbances (e.g., pipeline rights-of-way) where vegetation cover is l	1	N/A
ESSFmc	00	FP	FP	Floodplain	Shrub	Floodplain - shrubby to mature/old forest	Generic floodplain identified in BEC units that do not have them defined	3a,3b,5,6,7	subhygric - hygric
ESSFmc	00	FP	FP	Floodplain	Herb	Floodplain - shrubby to mature/old forest	Generic floodplain identified in BEC units that do not have them defined	3a,3b,5,6,7	subhygric - hygric
ESSFmc	00	FP	FP	Floodplain	Young Forest	Floodplain - shrubby to mature/old forest	Generic floodplain identified in BEC units that do not have them defined	3a,3b,5,6,7	subhygric - hygric
ESSFmc	07	FD	07	Wetter Forest	Mature/Old Forest	Bl - Devil's club - Lady fern	gentle lower slope, receiving sites; deep medium - textured soil	3a,3b,4,5,6,7	subhygric
ESSFmc	03	FC	03	Drier Forest	Young Forest	Bl - Huckleberry - Crowberry	gentle slope; shallow soil; crest position	3a,3b,4,5,6,7	xeric
ESSFmc	00	AH	AH	Avalanche Shrub	Shrub	Alder Hellebore Avalanche Track	significant slope; coarse textured soils	3a,3b (rare 5)	subhygric-hygric

Appendix 11. TEM Legend for Mapped Ecosystems

BEC Unit	Site Series	Site Series Symbol	Ecosystem Unit	General Ecosystem Type	Structural Stage	Ecosystem Name	Description / Assumed Situation	Typical Structural Stages Mapped	Typical SMR
ESSFmc	04	HH	04	Drier Forest	Mature/Old Forest	Bl - Huckleberry - Heron's-bill	gentle slope; crest position; deep, medium - textured soil	3a,3b,4,5,6,7	submesic
ESSFmc	01	FB	01	Mesic Forest	Shrub	Bl - Huckleberry - Leafy liverwort	gentle slope; deep medium -textured soils	3a,3b,4,5,6,7	mesic
ESSFmc	01	FB	01	Mesic Forest	Mature/Old Forest	Bl - Huckleberry - Leafy liverwort	gentle slope; deep medium -textured soils	3a,3b,4,5,6,7	mesic
ESSFmc	01	FB	01	Mesic Forest	Young Forest	Bl - Huckleberry - Leafy liverwort	gentle slope; deep medium -textured soils	3a,3b,4,5,6,7	mesic
ESSFmc	02	LC	02	Drier Forest	Shrub	BlPl - Juniper - Cladonia	gentle slope; shallow soil, crest position	3a,3b,4,5,6,7	xeric
ESSFmc	02	LC	02	Drier Forest	Young Forest	BlPl - Juniper - Cladonia	gentle slope; shallow soil, crest position	3a,3b,4,5,6,7	xeric
ESSFmc	03	FC	03	Drier Forest	Mature/Old Forest	Bl - Huckleberry - Crowberry	gentle slope; shallow soil; crest position	3a,3b,4,5,6,7	xeric
ESSFmc	03	FC	03	Drier Forest	Shrub	Bl - Huckleberry - Crowberry	gentle slope; shallow soil; crest position	3a,3b,4,5,6,7	xeric
ESSFmc	04	HH	04	Drier Forest	Young Forest	Bl - Huckleberry - Heron's-bill	gentle slope; crest position; deep, medium - textured soil	3a,3b,4,5,6,7	submesic
ESSFmc	03	FC	03	Mesic Forest	Shrub	Bl - Huckleberry - Crowberry	gentle slope; shallow soil; crest position	3a,3b,4,5,6,7	xeric
ESSFmc	07	FD	07	Wetter Forest	Young Forest	Bl - Devil's club - Lady fern	gentle lower slope, receiving sites; deep medium - textured soil	3a,3b,4,5,6,7	subhygric
ESSFmc	04	HH	04	Drier Forest	Shrub	Bl - Huckleberry - Heron's-bill	gentle slope; crest position; deep, medium - textured soil	3a,3b,4,5,6,7	submesic
ESSFmc	05	FT	05	Mesic Forest	Young Forest	Bl - Huckleberry - Thimbleberry	gentle slope; deep, medium- textured soil, nutrient rich soil	3a,3b,4,5,6,7	mesic
ESSFmc	05	FT	05	Mesic Forest	Mature/Old Forest	Bl - Huckleberry - Thimbleberry	gentle slope; deep, medium- textured soil, nutrient rich soil	3a,3b,4,5,6,7	mesic
ESSFmc	06	FO	06	Wetter Forest	Young Forest	Bl - Oak fern - Heron's-bill	gentle lower slope, receiving sites; deep, medium - textured soil	3a,3b,4,5,6,7	subhygric
ESSFmc	06	FO	06	Wetter Forest	Mature/Old Forest	Bl - Oak fern - Heron's-bill	gentle lower slope, receiving sites; deep, medium - textured soil	3a,3b,4,5,6,7	subhygric
ESSFmc	06	FO	06	Wetter Forest	Shrub	Bl - Oak fern - Heron's-bill	gentle lower slope, receiving sites; deep, medium - textured soil	3a,3b,4,5,6,7	subhygric
ESSFmc	07	FD	07	Wetter Forest	Shrub	Bl - Devil's club - Lady fern	gentle lower slope, receiving sites; deep medium - textured soil	3a,3b,4,5,6,7	subhygric
ESSFmc	00	OW	OW	Water	N/A	Shallow Open Water	A wetland composed of permanent shallow open water and lacking extensive emergent plant cover. The water is less than 2 m deep.	N/A	N/A
ESSFmc	00	Wf02	Wf02	Wetland Shrub/Herb	Shrub	Scrub birch – Water sedge	MacKenzie and Moran (2004) Wf02 fen	3a, 3b	hygric-hydric
ESSFmc	00	LA	LA	Water	N/A	Lake	A naturally occurring static body of water, greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark	N/A	N/A
ESSFmc	00	MP	MP	Mesic Shrub/Herb	Herb	Mountain Heather - Partridgefoot	shallow colluvium and exposed rock.	2d	subxeric – mesic
ESSFmc	00	Wm01	Wm01	Wetland Shrub/Herb	Herb	Beaked sedge – Water sedge	MacKenzie and Moran (2004) Wm01 marsh	2b	hygric-hydric
ESSFmc	00	Wf12	Wf12	Wetland Shrub/Herb	Herb	Narrow-leaved cotton-grass – Marsh-marigold	MacKenzie and Moran (2004) Wf01 fen	2b	hygric-hydric
ESSFmc	00	Wf10	Wf10	Wetland Shrub/Herb	Herb	Hudson Bay clubrush – Red hook-moss	MacKenzie and Moran (2004) Wf10 fen	2b	hygric-hydric
ESSFmc	00	Wf08	Wf08	Wetland Shrub/Herb	Herb	Shore sedge – Buckbean – Hook-moss	MacKenzie and Moran (2004) Wf08 fen	2b	hygric-hydric

Appendix 11. TEM Legend for Mapped Ecosystems

BEC Unit	Site Series	Site Series Symbol	Ecosystem Unit	General Ecosystem Type	Structural Stage	Ecosystem Name	Description / Assumed Situation	Typical Structural Stages Mapped	Typical SMR
ESSFmc	00	Wf07	Wf07	Wetland Shrub/Herb	Shrub	Scrub birch – Buckbean – Shore sedge	MacKenzie and Moran (2004) Wf07 fen	2b,3a, 3b	hygric-hydric
ESSFmc	00	Wf04	Wf04	Wetland Shrub/Herb	Shrub	Barclay's willow – Water sedge – Glow moss	MacKenzie and Moran (2004) Wf04 fen	3a, 3b	hygric-hydric
ESSFmc	00	Wf01	Wf01	Wetland Shrub/Herb	Herb	Water sedge – Beaked sedge	MacKenzie and Moran (2004) Wf01 fen	2b	hygric-hydric
ESSFmc	00	WE	WE	Wetland Shrub/Herb	Herb	Shrub/Herb Wetland	Generic wetland if classification not known	2b,3a,3b	subhygric-hydric
ESSFmc	00	WE	WE	Wetland Shrub/Herb	Shrub	Shrub/Herb Wetland	Generic wetland if classification not known	2b,3a,3b	subhygric-hydric
ESSFmc	00	Wb13	Wb13	Wetland Shrub/Herb	Herb	Shore sedge – Buckbean – Peat-moss	MacKenzie and Moran (2004) Wb13 bog	2b	subhygric-hydric
ESSFmc	00	TA	TA	Sparse/Barren	Sparse/Bryoid	Talus	Angular rock fragments of any size accumulated at the foot of steep rock slopes as a result of successive rock falls. It is a type of colluvium.	1	N/A
ESSFmc	00	RW	RW	Disturbed	N/A	Rural	Any area in which residences and other human developments are scattered and intermingled with forest, range, farm land, and native vegetation or cultivated crops. (Forested areas and cultivated fields should be mapped as separate units.)1	N/A	N/A
ESSFmc	00	Wf05	Wf05	Wetland Shrub/Herb	Herb	Slender sedge – Common hook-moss	MacKenzie and Moran (2004) Wf05 fen	2b	hygric-hydric
ESSFmc	00	Wb07	Wb07	Wetter Forest	Young Forest	Lodgepole pine – Water sedge – Peat-moss	MacKenzie and Moran (2004) Wb07 bog	5	subhygric-hydric
ESSFmc	00	RO	RO	Sparse/Barren	Sparse/Bryoid	Rock Outcrop	A gentle to steep, bedrock escarpment or outcropping, with little soil development and sparse vegetative cover.	1	N/A
ESSFmc	00	PD	PD	Water	N/A	Pond	A small body of water greater than 2 m deep, but not large enough to be classified as a lake (e.g., less than 50 ha).	N/A	N/A
ESSFmc	00	Sc03	Sc03	Wetter Shrub/Herb	Shrub	Barclays willow - Arrow-leaved groundsel	MacKenzie and Moran (2004) Sc03	3a	subhygric-hygric
ESSFmc	00	RI	RI	Water	N/A	River	A watercourse formed when water flows between continuous, definable banks.	N/A	N/A
ESSFmc	00	VG	VG	Avalanche Herb	Herb	Valerian - Groundsel Avalanche Track	significant slope; deep, medium textured soils; herb-dominated	2a	submesic-subhygric
ESSFmc	00	Wb02	Wb02	Wetter Forest	Young Forest	Lodgepole pine – Bog rosemary – Peat-moss	MacKenzie and Moran (2004) Wb02 bog	3a,3b,5	subhygric-hydric
ESSFmc	00	Wb05	Wb05	Wetter Forest	Herb	Black spruce – Water sedge – Peat-moss	MacKenzie and Moran (2004) Wb05 bog	3a,3b,5	subhygric-hydric
ESSFmc	00	Wb05	Wb05	Wetter Forest	Young Forest	Black spruce – Water sedge – Peat-moss	MacKenzie and Moran (2004) Wb05 bog	3a,3b,5	subhygric-hydric
ESSFmc	00	RZ	RZ	Road	N/A	Road Surface	An area cleared and compacted for the purpose of transporting goods and services by vehicles.	N/A	N/A
ESSFmcp	00	KH	KH	Mesic Treed	Shrub	Stunted conifer (parkland)/Krummholz	dwarfed conifers growing at high elevations; trees are short in stature and in poor form	3a, 3b	submesic-mesic
ESSFmcp	00	FC	FC	Drier Shrub/herb	Herb	Fescue - lichen grassland	gentle to steep upper slopes and crest postions, shallow to medium depth, medium textured soils, various herbs and well-developed moss layer.	2b	subxeric – mesic
ESSFmcp	00	MO	MO	Sparse/Barren	Sparse/Bryoid	Morraine	An unvegetated landform consisting of unstratified glacial drift that is usually till and taking a variety of shapes, ranging from plains to mounds and ridges that are initial forms independent of underlying bedrock or older materials.	1	N/A

Appendix 11. TEM Legend for Mapped Ecosystems

BEC Unit	Site Series	Site Series Symbol	Ecosystem Unit	General Ecosystem Type	Structural Stage	Ecosystem Name	Description / Assumed Situation	Typical Structural Stages Mapped	Typical SMR
ESSFmcp	00	MP	MP	Mesic Shrub/Herb	Herb	Mountain Heather - Partridgefoot	shallow colluvium and exposed rock.	2d	subxeric – mesic
ESSFmcp	00	RI	RI	Water	N/A	River	A watercourse formed when water flows between continuous, definable banks.	N/A	N/A
ESSFmcp	00	RO	RO	Sparse/Barren	Sparse/Bryoid	Rock Outcrop	A gentle to steep, bedrock escarpment or outcropping, with little soil development and sparse vegetative cover.	1	N/A
ESSFmcp	00	RZ	RZ	Road	N/A	Road Surface	An area cleared and compacted for the purpose of transporting goods and services by vehicles.	N/A	N/A
ESSFmcp	00	VG	VG	Avalanche Herb	Herb	Valerian - Groundsel Avalanche Track	significant slope; deep, medium textured soils; herb-dominated	2a	submesic-subhygric
ESSFmcp	00	ES	ES	Sparse/Barren	Sparse/Bryoid	Exposed Soil	Any area of exposed soil that is not included in any of the other definitions. It includes areas of recent disturbance, such as mud slides, debris torrents, avalanches, and human-made disturbances (e.g., pipeline rights-of-way) where vegetation cover is l	1	N/A
ESSFmcp	03	FC	03	Drier Forest	Shrub	Bl - Huckleberry - Crowberry	gentle slope; shallow soil; crest position	3a,3b,4,5,6,7	xeric
ESSFmcp	00	TA	TA	Sparse/Barren	Sparse/Bryoid	Talus	Angular rock fragments of any size accumulated at the foot of steep rock slopes as a result of successive rock falls. It is a type of colluvium.	1	N/A
ESSFmcp	01	FB	01	Mesic Forest	Young Forest	Bl - Huckleberry - Leafy liverwort	gentle slope; deep medium -textured soils	3a,3b,4,5,6,7	mesic
ESSFmcp	00	BA	BA	Sparse/Barren	Sparse/Bryoid	Barren	Land devoid of vegetation due to extreme climatic or edaphic conditions.	1	N/A
ESSFmcp	00	AW	AW	Drier Shrub/Herb	Herb	Mountain-avens - Dwarf willow	Wind swept slopes; gentle to steep upper slopes, or crest position, shallow, coarse-textured well drained soils; vegetation dominated by low willows, dwarf blueberry, Dryas spp., or other dwarf shrubs.	2d	subxeric – mesic
ESSFmcp	00	AH	AH	Avalanche Shrub	Shrub	Alder Hellebore Avalanche Track	significant slope; coarse textured soils	3a,3b (rare 5)	subhygric-hygric
ESSFmcp	08	FV	08	Wetter Forest	Young Forest	Bl - Valerian - Sickle moss	gentle slope; deep, medium - textured soils, high elevation	3a,3b,4,5,6,7	hygric
ESSFmcp	05	FT	05	Mesic Forest	Young Forest	Bl - Huckleberry - Thimbleberry	gentle slope; deep, medium- textured soil, nutrient rich soil	3a,3b,4,5,6,7	mesic
ESSFmcp	03	FC	03	Drier Forest	Herb	Bl - Huckleberry - Crowberry	gentle slope; shallow soil; crest position	3a,3b,4,5,6,7	xeric
ESSFmcp	02	LC	02	Drier Forest	Shrub	BlPl - Juniper - Cladonia	gentle slope; shallow soil, crest position	3a,3b,4,5,6,7	xeric
ESSFmcp	02	LC	02	Drier Forest	Young Forest	BlPl - Juniper - Cladonia	gentle slope; shallow soil, crest position	3a,3b,4,5,6,7	xeric
ESSFmcp	01	FB	01	Mesic Forest	Shrub	Bl - Huckleberry - Leafy liverwort	gentle slope; deep medium -textured soils	3a,3b,4,5,6,7	mesic
ESSFmcp	00	BL	BL	Drier Shrub/Herb	Shrub	Scrub birch - lichen	gentle slopes; shallow, coarse-textured soils, crest or upper slopes.	3a	xeric - subxeric
ESSFmcp	03	FC	03	Drier Forest	Young Forest	Bl - Huckleberry - Crowberry	gentle slope; shallow soil; crest position	3a,3b,4,5,6,7	xeric
SWBun	03	SK	03	Drier Forest	Young Forest	Sw – Juniper – Wildrye	SWBmk 03: significant slope, warm aspects; deep, medium-textured soils	5,6	xeric - subxeric
SWBun	02	PL	02	Drier Forest	Young Forest	Sw – Scrub birch – Cladina	SWBmk 02: significant slope, warm aspect, shallow soils over bedrock	5,6	xeric - subxeric
SWBun	01	SB	01	Mesic Forest	Young Forest	Sw – Grey-leaved willow – Scrub birch	SWBmk 01: gentle slope; deep, medium-textured soils	5,6	mesic

Appendix 11. TEM Legend for Mapped Ecosystems

BEC Unit	Site Series	Site Series Symbol	Ecosystem Unit	General Ecosystem Type	Structural Stage	Ecosystem Name	Description / Assumed Situation	Typical Structural Stages Mapped	Typical SMR
SWBun	01	SB	01	Mesic Forest	Mature/Old Forest	Sw – Grey-leaved willow – Scrub birch	SWBmk 01: gentle slope; deep, medium-textured soils	5,6	mesic
SWBuns	03	SK	03	Drier Forest	Herb	Sw – Juniper – Wildrye	SWBmk 03: significant slope, warm aspects; deep, medium-textured soils	5,6	xeric - subxeric
SWBuns	00	AW	AW	Drier Shrub/Herb	Herb	Mountain-avens - Dwarf willow	Wind swept slopes; gentle to steep upper slopes, or crest position, shallow, coarse-textured well drained soils; vegetation dominated by low willows, dwarf blueberry, Dryas spp., or other dwarf shrubs.	2d	subxeric – mesic
SWBuns	00	BA	BA	Sparse/Barren	Sparse/Bryoid	Barren	Land devoid of vegetation due to extreme climatic or edaphic conditions.	1	N/A
SWBuns	00	BL	BL	Drier Shrub/Herb	Shrub	Scrub birch - lichen	gentle slopes; shallow, coarse-textured soils, crest or upper slopes.	3a	xeric - subxeric
SWBuns	00	FC	FC	Drier Shrub/herb	Herb	Fescue - lichen grassland	gentle to steep upper slopes and crest postions, shallow to medium depth, medium textured soils, various herbs and well-developed moss layer.	2b	subxeric – mesic
SWBuns	00	KH	KH	Mesic Treed	Shrub	Stunted conifer (parkland)/Krummholz	dwarfed conifers growing at high elevations; trees are short in stature and in poor form	3a, 3b	submesic-mesic
SWBuns	00	MP	MP	Mesic Shrub/Herb	Herb	Mountain Heather - Partridgefoot	shallow colluvium and exposed rock.	2d	subxeric – mesic

Appendix 12

Schaft Creek Project Area (ha) Summary of TEM Ecosystems within the Proposed Mine Site of the Local Study Area

Appendix 12. Schaft Creek Project Area (ha) Summary of TEM Ecosystems within the Proposed Mine Site of the Local Study Area

Biogeoclimatic Unit	Ecosystem Unit	General Ecosystem Type	Area (hectares)
ATun	AH	Avalanche Shrub	11
ATun	AW	Drier Shrub/Herb	168
ATun	BA	Sparse/Barren	194
ATun	BL	Drier Shrub/Herb	0
ATun	ES	Sparse/Barren	37
ATun	FC	Drier Shrub/herb	356
ATun	GL	Snow/Ice	132
ATun	KH	Mesic Treed	244
ATun	MO	Sparse/Barren	89
ATun	MP	Mesic Shrub/Herb	82
ATun	PS	Snow/Ice	114
ATun	RI	Water	2
ATun	RO	Sparse/Barren	723
ATun	TA	Sparse/Barren	495
ATun	VG	Avalanche Herb	4
ATun Sum			**2,651**
BWBSdk1	01	Mesic Forest	28
BWBSdk1	02	Drier Forest	2
BWBSdk1	06	Wetter Forest	26
BWBSdk1	09	Wetter Forest	14
BWBSdk1	10	Wetter Forest	14
BWBSdk1 Sum			**84**
ESSFmc	01	Mesic Forest	1,886
ESSFmc	02	Drier Forest	114
ESSFmc	03	Drier Forest	1,345
ESSFmc	04	Drier Forest	135
ESSFmc	05	Mesic Forest	23
ESSFmc	06	Wetter Forest	437
ESSFmc	07	Wetter Forest	370
ESSFmc	08	Wetter Forest	44
ESSFmc	09	Wetter Forest	349
ESSFmc	10	Wetter Forest	406
ESSFmc	AH	Avalanche Shrub	727
ESSFmc	AW	Drier Shrub/Herb	1
ESSFmc	BI	Sparse/Barren	2
ESSFmc	CL	Sparse/Barren	59
ESSFmc	ES	Sparse/Barren	29
ESSFmc	FP	Floodplain	247
ESSFmc	LA	Water	96
ESSFmc	MP	Mesic Shrub/Herb	2
ESSFmc	OW	Water	101
ESSFmc	PD	Water	28
ESSFmc	RI	Water	310
ESSFmc	RO	Sparse/Barren	46
ESSFmc	RW	Disturbed	5
ESSFmc	RZ	Road	6
ESSFmc	Sc03	Wetter Shrub/Herb	1
ESSFmc	TA	Sparse/Barren	74
ESSFmc	VG	Avalanche Herb	116
ESSFmc	Wb02	Wetter Forest	11

Appendix 12. Schaft Creek Project Area (ha) Summary of TEM Ecosystems within the Proposed Mine Site of the Local Study Area

Biogeoclimatic Unit	Ecosystem Unit	General Ecosystem Type	Area (hectares)
ESSFmc	Wb05	Wetter Forest	8
ESSFmc	Wb07	Wetter Forest	1
ESSFmc	Wb13	Wetland Shrub/Herb	29
ESSFmc	WE	Wetland Shrub/Herb	316
ESSFmc	Wf01	Wetland Shrub/Herb	13
ESSFmc	Wf02	Wetland Shrub/Herb	72
ESSFmc	Wf04	Wetland Shrub/Herb	42
ESSFmc	Wf05	Wetland Shrub/Herb	2
ESSFmc	Wf07	Wetland Shrub/Herb	64
ESSFmc	Wf08	Wetland Shrub/Herb	5
ESSFmc	Wf10	Wetland Shrub/Herb	8
ESSFmc	Wf12	Wetland Shrub/Herb	23
ESSFmc	Wm01	Wetland Shrub/Herb	8
ESSFmc Sum			**7561**
ESSFmcp	01	Mesic Forest	44
ESSFmcp	02	Drier Forest	14
ESSFmcp	03	Drier Forest	162
ESSFmcp	05	Mesic Forest	2
ESSFmcp	08	Wetter Forest	3
ESSFmcp	AH	Avalanche Shrub	107
ESSFmcp	AW	Drier Shrub/Herb	22
ESSFmcp	BA	Sparse/Barren	9
ESSFmcp	BL	Drier Shrub/Herb	6
ESSFmcp	ES	Sparse/Barren	19
ESSFmcp	FC	Drier Shrub/Herb	29
ESSFmcp	KH	Mesic Treed	325
ESSFmcp	MO	Sparse/Barren	11
ESSFmcp	MP	Mesic Shrub/Herb	29
ESSFmcp	RI	Water	4
ESSFmcp	RO	Sparse/Barren	56
ESSFmcp	RZ	Road	1
ESSFmcp	TA	Sparse/Barren	53
ESSFmcp	VG	Avalanche Herb	37
ESSFmcp Sum			**932**
SWBun	01	Mesic Forest	28
SWBun	02	Drier Forest	7
SWBun	03	Drier Forest	20
SWBun Sum			**55**
SWBuns	03	Drier Forest	4
SWBuns	AW	Drier Shrub/Herb	4
SWBuns	BA	Sparse/Barren	16
SWBuns	BL	Drier Shrub/Herb	17
SWBuns	FC	Drier Shrub/Herb	11
SWBuns	KH	Mesic Treed	11
SWBuns	MP	Mesic Shrub/Herb	7
SWBuns Sum			**70**
Grand Total			**11,353**

Appendix 13

Schaft Creek Project Area (ha) Summary of PEM Ecosystems within the Road Corridor of the Local Study Area

Appendix 13. Schaft Creek Project Area (ha) Summaries of PEM Ecosystems within the Local Study Area

Biogeoclimatic Unit	Ecosystem Unit	General Ecosystem Type	Area (hectares)
ATun	AM	Mesic shrub/herb	16,969
ATun	BA	Sparse/Barren	33,862
ATun	DH	Dry shrub/herb	2,024
ATun	DS	Dry shrub/herb	821
ATun	ET	Sparse/Barren	14,954
ATun	GSi	Snow/Ice	55,179
ATun	KH	Mesic treed	1,774
ATun	VF	Mesic shrub/herb	5,574
ATun Sum			**131,157**
ESSFmc	04	Drier Forest	5,040
ESSFmc	06	Wetter Forest	3,333
ESSFmc	07	Wetter Forest	692
ESSFmc	10	Wetter Forest	1,140
ESSFmc	01(05)	Mesic Forest	10,269
ESSFmc	02(03)	Drier Forest	1,493
ESSFmc	09(08)	Wetter Forest	729
ESSFmc	AM	Mesic shrub/herb	169
ESSFmc	AVm	Avalanche shrub	1,729
ESSFmc	AVs	Avalanche shrub	606
ESSFmc	BA	Sparse/Barren	606
ESSFmc	DH	Dry shrub/herb	9
ESSFmc	DS	Dry shrub/herb	60
ESSFmc	ET	Sparse/Barren	111
ESSFmc	GTm	Avalanche herb	155
ESSFmc	GTs	Avalanche herb	152
ESSFmc	LA	Water	179
ESSFmc	MA	Wetland Herb	250
ESSFmc	RI	Water	1,253
ESSFmc	SA	Wetland shrub/herb	1,442
ESSFmc	VF	Mesic shrub/herb	681
ESSFmc	VS	Wetter shrub/herb	695
ESSFmc	VW	Wetter shrub/herb	158
ESSFmc	WA	Water	21
ESSFmc Sum			**30,971**
ESSFmcp	AM	Mesic shrub/herb	1,663
ESSFmcp	BA	Sparse/Barren	1,715
ESSFmcp	DH	Dry shrub/herb	240
ESSFmcp	DS	Dry shrub/herb	106
ESSFmcp	DV	Mesic shrub/herb	178
ESSFmcp	ET	Sparse/Barren	481
ESSFmcp	GSi	Snow/Ice	351
ESSFmcp	TI	Treed	4,501
ESSFmcp	VF	Mesic shrub/herb	1,051
ESSFmcp	VS	Wetter shrub/herb	293
ESSFmcp	VW	Wetter shrub/herb	579
ESSFmcp Sum			**11,159**
ESSFwv	02	Drier Forest	205
ESSFwv	01(05)	Mesic Forest	8,146
ESSFwv	03(04)	Drier Forest	1,245
ESSFwv	06(07)	Wetter Forest	1,626
ESSFwv	08(09)	Wetter Forest	562

Appendix 13. Schaft Creek Project Area (ha) Summaries of PEM Ecosystems within the Local Study Area

Biogeoclimatic Unit	Ecosystem Unit	General Ecosystem Type	Area (hectares)
ESSFwv	AM	Mesic shrub/herb	6
ESSFwv	AVm	Avalanche shrub	1,382
ESSFwv	BA	Sparse/Barren	2,112
ESSFwv	DS	Dry shrub/herb	15
ESSFwv	LA	Water	47
ESSFwv	MA	Wetland Herb	80
ESSFwv	RI	Water	945
ESSFwv	VF	Mesic shrub/herb	447
ESSFwv	VS	Wetter shrub/herb	340
ESSFwv	WA	Water	9
ESSFwv Sum			**17,169**
ESSFwvp	AM	Mesic shrub/herb	3,326
ESSFwvp	BA	Sparse/Barren	7,244
ESSFwvp	DH	Dry shrub/herb	5
ESSFwvp	DS	Dry shrub/herb	100
ESSFwvp	TI	Treed	5,391
ESSFwvp	VF	Mesic shrub/herb	1,681
ESSFwvp	VS	Wetter shrub/herb	494
ESSFwvp	VW	Wetter shrub/herb	637
ESSFwvp			**18,877**
Grand Total			**209,333**

Appendix 14

Schaft Creek Project Field Survey Data

Appendix 14. Schaft Creek Project Field Survey Data

BEC	Zone	SubZone	SiteSeries	SiteSeriesSymbol	Label	Name	Description	StrucStgeSampId	GenEcoType	Typical SMR
ATun	AT	un	00	HH	HH	Heather Heath	Low-lying, heather-dominated, high elevation unit	2d	Mesic Shrub/Herb	submesic-mesic
ATun	AT	un	00	AF	AF	Fescue - mountain-avens	gentle slopes; medium textured shallow soils, dry tundra types, sparsely vegetated; species typically altai fescue (Festuca altaica), mountain avens (Dryas integrifolia), Saxifraga sp., and lichen, or heather dominated	2	Drier Shrub/Herb	xeric-submesic
ATun	AT	un	00	WG	WG	Willow-birch-grass	Mesic moisture/poor to rich nutrients on a range of slope gradient and position; willow, scrub birch and grass (fescue lichen) community	3a	Mesic Shrub/Herb	mesic
ATun	AT	un	00	TA	TA	Talus	Angular rock fragments of any size accumulated at the foot of steep rock slopes as a result of successive rock falls. It is a type of colluvium.	1	Sparse/Barren	N/A
ATun	AT	un	00	SA	SA	soapberry-avens	dry/poor site of Shepcan and Drydrum on moraine	3a	Drier Shrub/Herb	xeric - submesic
ATun	AT	un	00	KH	KH	Stunted conifer (parkland)/Krummholz	Stunted conifer (primarily subalpine fir (Abies lasicarpa)) patches occurring at higher elevations (predominantly in ATun); shallow soils and typically dry to mesic moisture regime, but includes all moisture classes	3b	Treed	submesic-mesic
ATun	AT	un	00	ES	ES	Exposed Soil	Any area of exposed soil that is not included in any of the other definitions. It includes areas of recent disturbance, such as mud slides, debris torrents, avalanches, and human-made disturbances (e.g., pipeline rights-of-way) where vegetation cover is l	1	Sparse/Barren	N/A
ATun	AT	un	00	DW	DW	Dwarf willow sedge	Dwarf willow (primarily Salix reticulata) and black apline sedge (Carex nigricans) community occurring on moist to wet, mesic to rich sites	2, 2d	Wetter Shrub/Herb	subhygric-hygric
ATun	AT	un	00	BL	BL	Scrub birch - lichen	(well) rapid to very rapidly drained shallow,coarse-textured soils; crests, upper slopes/knolls; species composition consists primarily of scrub birch (Betula nana), altai fescue (Festuca altaica), and lichen sp.	3a	Drier Shrub/Herb	xeric - subxeric
ATun	AT	un	00	BA	BA	Barren	Land devoid of vegetation due to extreme climatic or edaphic conditions.	1	Sparse/Barren	N/A
ATun	AT	un	00	AW	AW	Mountain-avens - Dwarf willow	Wind swept slopes; xeric sites, gentle to steep upper slopes, or crest position, shallow, coarse-textured well drained soils; altai fescue, mountain avens, and dwarf willow (and/or other dwarf shrubs) typcially present	2, 2a, 2d	Drier Shrub/Herb	subxeric – mesic
ATun	AT	un	00	AM	AM	Herbaceous meadow	Circum-mesic herb-dominated meadow unit; species composition variable composition variable; typically wetter than mesic	2, 2a	Mesic Shrub/Herb	mesic (submesic-subhygric)
ATun	AT	un	00	LE	LE	Lava Bed	An area where molten rock has flowed from a volcano or fissure and cooled to form solidified rock.	1	Sparse/Barren	
BWBSdk1	BWBS	dk1	03	SW	03	Sw - Wildrye - Toad-flax	significant slope; warm aspect deep, medium - textured soil	6	Drier Forest	subxeric
BWBSdk1	BWBS	dk1	02	LL	02	Pl - Lingonberry - Feathermoss	gentle slope; deep, coarse - textured soils	5	Drier Forest	xeric
BWBSdk1	BWBS	dk1	05	SS	05	SwPl - Soopolallie - Twinflower	gentle slope; deep, coarse - textured soils, richer soil nutrient regime	6	Drier Forest	submesic
BWBSdk1	BWBS	dk1	00	Wf11	Wf11	Tufted clubrush - star moss	MacKenzie and Moran (2004) Wf11 (varied sedge species)	2	Wetland Shrub/Herb	wet-very wet
BWBSdk1	BWBS	dk1	00	Wm01	Wm01	Beaked sedge – Water sedge	MacKenzie and Moran (2004) Wm01 (varied sedge species)	2	Wetland Shrub/Herb	wet-very wet
BWBSdk1	BWBS	dk1	01	SM	01	Sw - Knight's plume - Step moss	gentle slope; deep, coarse - textured soils	6	Mesic Forest	mesic
ESSFmc	ESSF	mc	00	Wf02	Wf02	Scrub birch – Water sedge	MacKenzie and Moran (2004) Wf02 (varied sedge species)	3a	Wetland Shrub/Herb	wet-very wet
ESSFmc	ESSF	mc	02	LC	02	BlPl - Juniper - Cladonia	gentle slope; shallow soil, crest position	5	Drier Forest	xeric
ESSFmc	ESSF	mc	01a	FB	01a	Bl - Huckleberry - Leafy liverwort	gentle slope; deep medium -textured soils	6,7	Mesic Forest	mesic
ESSFmc	ESSF	mc	01	FB	01	Bl - Huckleberry - Leafy liverwort	gentle slope; deep medium -textured soils	2,3b,4,5,6,7	Mesic Forest	mesic
ESSFmc	ESSF	mc	00	WT	WT	Willow Thicket	Higher elevation shrub unit, generally willow dominated	3b	Wetter Shrub/Herb	subhygric - hygric
ESSFmc	ESSF	mc	00	WH	WH	Wetland Herb	herb-dominated wetland (usually sedges); primarily on organic soil types	2	Wetland Shrub/Herb	wet-very wet
ESSFmc	ESSF	mc	00	Wf11	Wf11	Tufted clubrush - star moss	MacKenzie and Moran (2004) Wf11 (varied sedge species)	2a	Wetland Shrub/Herb	wet-very wet
ESSFmc	ESSF	mc	00	AT	AT	Alder thicket	non avalanche, shrub-dominated unit, largely alder dominated; includes shrub-talus unit (plot 39)	3b, 3	Mesic Shrub/Herb	xeric-subhygric
ESSFmc	ESSF	mc	00	Wf04	Wf04	Barclay's willow – Water sedge –	MacKenzie and Moran (2004) Wf04 (varied sedge species)	3,3b	Wetland Shrub/Herb	wet-very wet
ESSFmc	ESSF	mc	00	Wf01	Wf01	Wf01 Water sedge – Beaked sedge	MacKenzie and Moran (2004) Wf01 (varied sedge species)	2	Wetland Shrub/Herb	wet-very wet
ESSFmc	ESSF	mc	00	ShF	ShF	Spruce-horsetail floodplain	productive floodplain unit	6	Floodplain	subhygric - hygric
ESSFmc	ESSF	mc	00	OB	OB	Organic open bog	shrub dominated organic bog (tree canopy cover less than 10%)	2	Wetland Shrub/Herb	wet-very wet
ESSFmc	ESSF	mc	00	MC	MC	Meltwater outwash	Meltwater outwash	1	Sparse/Barren	N/A
ESSFmc	ESSF	mc	00	FP	FP	Floodplain - shrubby to mature/old forest	Generic floodplain unit undescribed for this BEC subzone; tyically cottonwood / mountain aven communities of various structural stages	3a,3b,4,5,2	Floodplain	subhygric - hygric
ESSFmc	ESSF	mc	03	FC	03	Bl - Huckleberry - Crowberry	gentle slope; shallow soil; crest position	3b,4,5,6,7	Drier Forest	xeric
ESSFmc	ESSF	mc	04	HH	04	Bl - Huckleberry - Heron's-bill	gentle slope; crest position; deep, medium - textured soil	3b,4,5,6,7	Drier Forest	submesic
ESSFmc	ESSF	mc	00	Wf08	Wf08	Shore sedge – Buckbean – Hook-moss	MacKenzie and Moran (2004) Wf08 (varied sedge species)	2	Wetland Shrub/Herb	wet-very wet
ESSFmc	ESSF	mc	00	WF	WF	Fen	not enough information to classify further	2	Wetland Shrub/Herb	wet-very wet
ESSFmc	ESSF	mc	00	GT	GT	Graminoid / forb avalanche track	generic herbaceous avalanche track; predominantly forb dominated		Avalanche Herb	subhygric-hygric

Appendix 14. Schaft Creek Project Field Survey Data

BEC	Zone	SubZone	SiteSeries	SiteSeriesSymbol	Label	Name	Description	StrucStgeSampId	GenEcoType	Typical SMR
ESSFmc	ESSF	mc	00	BB	BB	Scrub birch bog	does not match with McKenzie and Moran (2004) classification; Betula nana dominant, with Ledum groenlandicum, Viburnum edule, Carex aquatilis, and Equisetum arvense high cover; organic soil (peraquic)	3	Wetland Shrub/Herb	wet-very wet
ESSFmc	ESSF	mc	00	WW	WW	Mineral Shrub Wetland	not enough information to classify further	3a	Wetland Shrub/Herb	wet-very wet
ESSFmc	ESSF	mc	00	WM	WM	Mineral Herb Wetland	not enough information to classify further	2b	Wetland Shrub/Herb	wet-very wet
ESSFmc	ESSF	mc	00	WO	WO	Organic Shrub Wetland	not enough information to classify further	3b	Wetland Shrub/Herb	wet-very wet
ESSFmc	ESSF	mc	00	WB	WB	Bog shrub	not enough information to classify further	3b	Wetland Shrub/Herb	wet-very wet
ESSFmc	ESSF	mc	00	Wf07	Wf07	sedge	McKenzie and Moran (2004) Wf07 based on little information - closest match	3a	Wetland Shrub/Herb	wet-very wet
ESSFmc	ESSF	mc	10	FH	10	Bl - Horsetail - Leafy moss (Ws08 - Bl - Sitka valerian - Common horsetail)	gentle slopes to level, toe of seepage slopes; moisture receiving, deep, medium - textured soils; nutrient rich, poorly drained	4,6,7	Wetter Forest	subhydric
ESSFmc	ESSF	mc	09	HG	09	Bl - Horsetail - Glow moss (Ws08 - Bl - Sitka valerian - Common horsetail)	gentle lower slope to level; deep, medium - textured soil, poorly drained	3b,5	Wetter Forest	hygric
ESSFmc	ESSF	mc	08	FV	08	Bl - Valerian - Sickle moss	gentle slope; deep, medium - textured soils, high elevation	5,7	Wetter Forest	hygric
ESSFmc	ESSF	mc	07	FD	07	Bl - Devil's club - Lady fern	gentle lower slope, receiving sites; deep medium - textured soil	5,6,7	Wetter Forest	subhygric
ESSFmc	ESSF	mc	06	FO	06	Bl - Oak fern - Heron's-bill	gentle lower slope, receiving sites; deep, medium - textured soil	3b,4,5,6,7	Wetter Forest	subhygric
ESSFmc	ESSF	mc	05	FT	05	Bl - Huckleberry - Thimbleberry	gentle slope; deep, medium- textured soil, nutrient rich soil	6	Mesic Forest	mesic
ESSFmc	ESSF	mc	00	Wb13	Wb13	Shore sedge - buckbean - peat moss	McKenzie and Moran (2004) Wb13	3	Wetland Shrub/Herb	wet-very wet
ESSFmcp	ESSF	mcp	00	HH	HH	Heather Heath	Low-lying, heather-dominated, high elevation unit	2	Mesic Shrub/Herb	submesic-mesic
ESSFmcp	ESSF	mcp	00	SC	SC	Shrub-carr	not enough information to classify further	2	Wetter Shrub/Herb	hygric
ESSFmcp	ESSF	mcp	00	w03	w03	woodland 03	mid to upper slope positions, rapid drainage, poor nutrients, woodland unit 03 site series from Supplement	4,3a,3b	Treed	subxeric-submesic
ESSFmcp	ESSF	mcp	00	w02	w02	woodland 02	upper to crest positions, rapid to very rapid drainage, woodland unit 02 site series from Supplement	3b	Treed	xeric-subxeric
ESSFmcp	ESSF	mcp	00	HS	HS	Heather-sedge meadow	Subhygric, mesic to rich soil; midslope, gentle slope gradient; heathers dominant with sedge and forb species present	2	Wetter Shrub/Herb	subhygric
ESSFmcp	ESSF	mcp	00	WT	WT	Willow Thicket	Higher elevation shrub unit, generally willow dominated	3	Wetter Shrub/Herb	subhygric - hygric
ESSFmcp	ESSF	mcp	00	FP	FP	Floodplain	Generic floodplain unit undescribed for this BEC subzone; tyically cottonwood / mountain aven (Populus balsamifera / Dryas sp.) communities of various structural stages	3a, 3b	Floodplain	subhygric - hygric
ESSFmcp	ESSF	mcp	00	AM	AM	Herbaceous meadow	Circum-mesic herb-dominated meadow unit; species composition variable	2	Mesic Shrub/Herb	submesic-subhygric
ESSFmcp	ESSF	mcp	00	01b	01b	Woodland zonal - submesic phase	middle-upper (crest) slope positions; rapidly to moderately well drained soils; herb layer typically sparse	3	Treed	submesic
ESSFmcp	ESSF	mcp	00	01a	01a	Woodland zonal - mesic phase	middle (upper,crest) slope positions; well to moderately well drained soils; herb layer moderately well developed	4, 5, 3b, 3a	Treed	mesic
ESSFmcp	ESSF	mcp	00	011	011	Woodland zonal - tall shrub/krummholz	middle (upper,crest) slope positions; well to moderately well drained soils; Subalpine fir in <10 m tall; herb layer moderately well developed	3b	Treed	mesic
ESSFmcp	ESSF	mcp	00	KH	KH	Stunted conifer (parkland)/Krummholz	Stunted conifer (primarily subalpine fir (Abies lasicarpa)) patches occurring at higher elevations (predominantly in ATun); shallow soils and typically dry to mesic moisture regime, but includes all moisture classes	3,3a	Treed	submesic-mesic
SWBun	SWB	un	04	SK	04	Sw - Arctic lupine - Step moss	SWBmk 04: gentle slope, deep medium-textured soils	7	Drier Forest	submesic - mesic
SWBun	SWB	un	02	PL	02	Sw - Scrub birch - Cladina	SWBmk 02: significant slope, warm aspect, shallow soils over bedrock	5	Drier Forest	xeric - subxeric
SWBun	SWB	un	01	SB	01	Sw - Grey-leaved willow - Scrub birch	SWBmk 01:gentle slope; deep, medium-textured soils	6	Mesic Forest	mesic
SWBun	SWB	un	00	Wf04	Wf04	Wf04 Barclay's willow – Water sedge – Glow moss	MacKenzie and Moran (2004) Wf04 fen	3b	Wetland Shrub/Herb	hygric-hydric
SWBun	SWB	un	00	SM	SM	shore sedge-brown moss fen	dominant species: shore sedge, brown moss fen	3	Wetland Shrub/Herb	wet-very wet
SWBun	SWB	un	00	Wf02	Wf02	Scrub birch – Water sedge	MacKenzie and Moran (2004) Wf02 (varied sedge species)	3a	Wetland Shrub/Herb	wet-very wet
SWBuns	SWB	uns	00	WG	WG	Willow-birch-grass	Mesic moisture/poor to rich nutrients on a range of slope gradient and position; willow, scrub birch and grass (fescue lichen) community	3a	Mesic Shrub/Herb	mesic
SWBuns	SWB	uns	00	KH	KH	Stunted conifer (parkland)/Krummholz	Stunted conifer (primarily subalpine fir (Abies lasicarpa)) patches occurring at higher elevations (predominantly in ATun); shallow soils and typically dry to mesic moisture regime, but includes all moisture classes	3a	Treed	submesic-mesic
SWBuns	SWB	uns	00	AV	AV	Shrub avalanche track	generic shrub dominated avalanche track; Predominantly Alnus viridis and lush herbaceous layer including Heracleum maximum	3a	Avalanche Shrub	subhygric-hygric

Appendix 15

Schaft Creek Project Legend for Ecosystems Identified in the Field

Appendix 15. Schaft Creek Project Legend for Ecosystems Identified in the Field

BEC Unit	Site Series	Site Series Symbol	Ecosystem Unit	Ecosystem Name	Description	Structural Stage Surveyed	General Ecosystem Type	Typical SMR
ATun	00	HH	HH	Heather Heath	Low-lying, heather-dominated, high elevation unit	2d	Mesic Shrub/Herb	submesic-mesic
ATun	00	AF	AF	Fescue - mountain-avens	gentle slopes; medium textured shallow soils, dry tundra types, sparsely vegetated; species typically altai fescue (Festuca altaica), mountain avens (Dryas integrifolia), Saxifraga sp., and lichen, or heather dominated	2	Drier Shrub/Herb	xeric-submesic
ATun	00	WG	WG	Willow-birch-grass	Mesic moisture/poor to rich nutrients on a range of slope gradient and position; willow, scrub birch and grass (fescue lichen) community	3a	Mesic Shrub/Herb	mesic
ATun	00	TA	TA	Talus	Angular rock fragments of any size accumulated at the foot of steep rock slopes as a result of successive rock falls. It is a type of colluvium.	1	Sparse/Barren	N/A
ATun	00	SA	SA	soapberry-avens	dry/poor site of Shepcan and Drydrum on moraine	3a	Drier Shrub/Herb	xeric - submesic
ATun	00	KH	KH	Stunted conifer (parkland)/Krummholz	Stunted conifer (primarily subalpine fir (Abies lasicarpa)) patches occurring at higher elevations (predominantly in ATun); shallow soils and typically dry to mesic moisture regime, but includes all moisture classes	3b	Treed	submesic-mesic
ATun	00	ES	ES	Exposed Soil	Any area of exposed soil that is not included in any of the other definitions. It includes areas of recent disturbance, such as mud slides, debris torrents, avalanches, and human-made disturbances (e.g., pipeline rights-of-way) where vegetation cover is l	1	Sparse/Barren	N/A
ATun	00	DW	DW	Dwarf willow sedge	Dwarf willow (primarily Salix reticulata) and black apline sedge (Carex nigricans) community occurring on moist to wet, mesic to rich sites	2, 2d	Wetter Shrub/Herb	subhygric-hygric
ATun	00	BL	BL	Scrub birch - lichen	(well) rapid to very rapidly drained shallow,coarse-textured soils; crests, upper slopes/knolls; species composition consists primarily of scrub birch (Betula nana), altai fescue (Festuca altaica), and lichen sp.	3a	Drier Shrub/Herb	xeric - subxeric
ATun	00	BA	BA	Barren	Land devoid of vegetation due to extreme climatic or edaphic conditions.	1	Sparse/Barren	N/A
ATun	00	AW	AW	Mountain-avens - Dwarf willow	Wind swept slopes; xeric sites, gentle to steep upper slopes, or crest position, shallow, coarse-textured well drained soils; altai fescue, mountain avens, and dwarf willow (and/or other dwarf shrubs) typcially present	2, 2a, 2d	Drier Shrub/Herb	subxeric – mesic
ATun	00	AM	AM	Herbaceous meadow	Circum-mesic herb-dominated meadow unit; species composition variable composition variable; typically wetter than mesic	2, 2a	Mesic Shrub/Herb	mesic (submesic-subhygric)
ATun	00	LE	LE	Lava Bed	An area where molten rock has flowed from a volcano or fissure and cooled to form solidified rock.	1	Sparse/Barren	
BWBSdk1	03	SW	03	Sw - Wildrye - Toad-flax	significant slope; warm aspect deep, medium - textured soil	6	Drier Forest	subxeric
BWBSdk1	02	LL	02	Pl - Lingonberry - Feathermoss	gentle slope; deep, coarse - textured soils	5	Drier Forest	xeric
BWBSdk1	05	SS	05	SwPl - Soopolallie - Twinflower	gentle slope; deep, coarse - textured soils, richer soil nutrient regime	6	Drier Forest	submesic
BWBSdk1	00	Wf11	Wf11	Tufted clubrush - star moss	MacKenzie and Moran (2004) Wf11 (varied sedge species)	2	Wetland Shrub/Herb	wet-very wet
BWBSdk1	00	Wm01	Wm01	Beaked sedge – Water sedge	MacKenzie and Moran (2004) Wm01 (varied sedge species)	2	Wetland Shrub/Herb	wet-very wet
BWBSdk1	01	SM	01	Sw - Knight's plume - Step moss	gentle slope; deep, coarse - textured soils	6	Mesic Forest	mesic
ESSFmc	00	Wf02	Wf02	Scrub birch – Water sedge	MacKenzie and Moran (2004) Wf02 (varied sedge species)	3a	Wetland Shrub/Herb	wet-very wet
ESSFmc	02	LC	02	BlPl - Juniper - Cladonia	gentle slope; shallow soil, crest position	5	Drier Forest	xeric

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BEC Unit	Site Series	Site Series Symbol	Ecosystem Unit	Ecosystem Name	Description	Structural Stage Surveyed	General Ecosystem Type	Typical SMR
ESSFmc	01a	FB	01a	Bl - Huckleberry - Leafy liverwort	gentle slope; deep medium -textured soils	6,7	Mesic Forest	mesic
ESSFmc	01	FB	01	Bl - Huckleberry - Leafy liverwort	gentle slope; deep medium -textured soils	2,3b,4,5,6,7	Mesic Forest	mesic
ESSFmc	00	WT	WT	Willow Thicket	Higher elevation shrub unit, generally willow dominated	3b	Wetter Shrub/Herb	subhygric - hygric
ESSFmc	00	WH	WH	Wetland Herb	herb-dominated wetland (usually sedges); primarily on organic soil types	2	Wetland Shrub/Herb	wet-very wet
ESSFmc	00	Wf11	Wf11	Tufted clubrush - star moss	MacKenzie and Moran (2004) Wf11 (varied sedge species)	2a	Wetland Shrub/Herb	wet-very wet
ESSFmc	00	AT	AT	Alder thicket	non avalanche, shrub-dominated unit, largely alder dominated; includes shrub-talus unit (plot 39)	3b, 3	Mesic Shrub/Herb	xeric-subhygric
ESSFmc	00	Wf04	Wf04	Barclay's willow – Water sedge – Glow moss	MacKenzie and Moran (2004) Wf04 (varied sedge species)	3,3b	Wetland Shrub/Herb	wet-very wet
ESSFmc	00	Wf01	Wf01	Wf01 Water sedge – Beaked sedge	MacKenzie and Moran (2004) Wf01 (varied sedge species)	2	Wetland Shrub/Herb	wet-very wet
ESSFmc	00	ShF	ShF	Spruce-horsetail floodplain	productive floodplain unit	6	Floodplain	subhygric - hygric
ESSFmc	00	OB	OB	Organic open bog	shrub dominated organic bog (tree canopy cover less than 10%)	2	Wetland Shrub/Herb	wet-very wet
ESSFmc	00	MC	MC	Meltwater outwash	Meltwater outwash	1	Sparse/Barren	N/A
ESSFmc	00	FP	FP	Floodplain - shrubby to mature/old forest	Generic floodplain unit undescribed for this BEC subzone; tyically cottonwood / mountain aven communities of various structural stages	3a,3b,4,5,2	Floodplain	subhygric - hygric
ESSFmc	03	FC	03	Bl - Huckleberry - Crowberry	gentle slope; shallow soil; crest position	3b,4,5,6,7	Drier Forest	xeric
ESSFmc	04	HH	04	Bl - Huckleberry - Heron's-bill	gentle slope; crest position; deep, medium - textured soil	3b,4,5,6,7	Drier Forest	submesic
ESSFmc	00	Wf08	Wf08	Shore sedge – Buckbean – Hook-moss	MacKenzie and Moran (2004) Wf08 (varied sedge species)	2	Wetland Shrub/Herb	wet-very wet
ESSFmc	00	WF	WF	Fen	not enough information to classify further	2	Wetland Shrub/Herb	wet-very wet
ESSFmc	00	GT	GT	Graminoid / forb avalanche track	generic herbaceous avalanche track; predominantly forb dominated		Avalanche Herb	subhygric-hygric
ESSFmc	00	BB	BB	Scrub birch bog	does not match with McKenzie and Moran (2004) classification; Betula nana dominant, with Ledum groenlandicum, Viburnum edule, Carex aquatilis, and Equisetum arvense high cover; organic soil (peraquic)	3	Wetland Shrub/Herb	wet-very wet
ESSFmc	00	WW	WW	Mineral Shrub Wetland	not enough information to classify further	3a	Wetland Shrub/Herb	wet-very wet
ESSFmc	00	WM	WM	Mineral Herb Wetland	not enough information to classify further	2b	Wetland Shrub/Herb	wet-very wet
ESSFmc	00	WO	WO	Organic Shrub Wetland	not enough information to classify further	3b	Wetland Shrub/Herb	wet-very wet
ESSFmc	00	WB	WB	Bog shrub	not enough information to classify further	3b	Wetland Shrub/Herb	wet-very wet

Appendix 15. Schaft Creek Project Legend for Ecosystems Identified in the Field

BEC Unit	Site Series	Site Series Symbol	Ecosystem Unit	Ecosystem Name	Description	Structural Stage Surveyed	General Ecosystem Type	Typical SMR
ESSFmc	00	Wf07	Wf07	Scrub birch - buckbean - shore sedge	McKenzie and Moran (2004) Wf07 based on little information - closest match	3a	Wetland Shrub/Herb	wet-very wet
ESSFmc	10	FH	10	Bl - Horsetail - Leafy moss (Ws08 - Bl - Sitka valerian - Common horsetail)	gentle slopes to level, toe of seepage slopes; moisture receiving, deep, medium - textured soils; nutrient rich, poorly drained	4,6,7	Wetter Forest	subhydric
ESSFmc	09	HG	09	Bl - Horsetail - Glow moss (Ws08 - Bl - Sitka valerian - Common horsetail)	gentle lower slope to level; deep, medium - textured soil, poorly drained	3b,5	Wetter Forest	hygric
ESSFmc	08	FV	08	Bl - Valerian - Sickle moss	gentle slope; deep, medium - textured soils, high elevation	5,7	Wetter Forest	hygric
ESSFmc	07	FD	07	Bl - Devil's club - Lady fern	gentle lower slope, receiving sites; deep medium - textured soil	5,6,7	Wetter Forest	subhygric
ESSFmc	06	FO	06	Bl - Oak fern - Heron's-bill	gentle lower slope, receiving sites; deep, medium - textured soil	3b,4,5,6,7	Wetter Forest	subhygric
ESSFmc	05	FT	05	Bl - Huckleberry - Thimbleberry	gentle slope; deep, medium- textured soil, nutrient rich soil	6	Mesic Forest	mesic
ESSFmc	00	Wb13	Wb13	Shore sedge - buckbean - peat moss	McKenzie and Moran (2004) Wb13	3	Wetland Shrub/Herb	wet-very wet
ESSFmcp	00	HH	HH	Heather Heath	Low-lying, heather-dominated, high elevation unit	2	Mesic Shrub/Herb	submesic-mesic
ESSFmcp	00	SC	SC	Shrub-carr	not enough information to classify further	2	Wetter Shrub/Herb	hygric
ESSFmcp	00	w03	w03	woodland 03	mid to upper slope positions, rapid drainage, poor nutrients, woodland unit 03 site series from Supplement	4,3a,3b	Treed	subxeric-submesic
ESSFmcp	00	w02	w02	woodland 02	upper to crest positions, rapid to very rapid drainage, woodland unit 02 site series from Supplement	3b	Treed	xeric-subxeric
ESSFmcp	00	HS	HS	Heather-sedge meadow	Subhygric, mesic to rich soil; midslope, gentle slope gradient; heathers dominant with sedge and forb species present	2	Wetter Shrub/Herb	subhygric
ESSFmcp	00	WT	WT	Willow Thicket	Higher elevation shrub unit, generally willow dominated	3	Wetter Shrub/Herb	subhygric - hygric
ESSFmcp	00	FP	FP	Floodplain	Generic floodplain unit undescribed for this BEC subzone; tyically cottonwood / mountain aven (Populus balsamifera / Dryas sp.) communities of various structural stages	3a, 3b	Floodplain	subhygric - hygric
ESSFmcp	00	AM	AM	Herbaceous meadow	Circum-mesic herb-dominated meadow unit; species composition variable	2	Mesic Shrub/Herb	submesic-subhygric
ESSFmcp	00	01b	01b	Woodland zonal - submesic phase	middle-upper (crest) slope positions; rapidly to moderately well drained soils; herb layer typically sparse	3	Treed	submesic
ESSFmcp	00	01a	01a	Woodland zonal - mesic phase	middle (upper,crest) slope positions; well to moderately well drained soils; herb layer moderately well developed	4, 5, 3b, 3a	Treed	mesic
ESSFmcp	00	011	011	Woodland zonal - tall shrub/krummholz	middle (upper,crest) slope positions; well to moderately well drained soils; Subalpine fir in <10 m tall; herb layer moderately well developed	3b	Treed	mesic
ESSFmcp	00	KH	KH	Stunted conifer (parkland)/Krummholz	Stunted conifer (primarily subalpine fir (Abies lasicarpa)) patches occurring at higher elevations (predominantly in ATun); shallow soils and typically dry to mesic moisture regime, but includes all moisture classes	3,3a	Treed	submesic-mesic
SWBun	04	SK	04	Sw - Arctic lupine - Step moss	SWBmk 04: gentle slope, deep medium-textured soils	7	Drier Forest	submesic - mesic
SWBun	02	PL	02	Sw - Scrub birch - Cladina	SWBmk 02: significant slope, warm aspect, shallow soils over bedrock	5	Drier Forest	xeric - subxeric

Appendix 15. Schaft Creek Project Legend for Ecosystems Identified in the Field

BEC Unit	Site Series	Site Series Symbol	Ecosystem Unit	Ecosystem Name	Description	Structural Stage Surveyed	General Ecosystem Type	Typical SMR
SWBun	01	SB	01	Sw - Grey-leaved willow - Scrub birch	SWBmk 01:gentle slope; deep, medium-textured soils	6	Mesic Forest	mesic
SWBun	00	Wf04	Wf04	Wf04 Barclay's willow – Water sedge – Glow moss	MacKenzie and Moran (2004) Wf04 fen	3b	Wetland Shrub/Herb	hygric-hydric
SWBun	00	SM	SM	shore sedge-brown moss fen	dominant species: shore sedge, brown moss fen	3	Wetland Shrub/Herb	wet-very wet
SWBun	00	Wf02	Wf02	Scrub birch – Water sedge	MacKenzie and Moran (2004) Wf02 (varied sedge species)	3a	Wetland Shrub/Herb	wet-very wet
SWBuns	00	WG	WG	Willow-birch-grass	Mesic moisture/poor to rich nutrients on a range of slope gradient and position; willow, scrub birch and grass (fescue lichen) community	3a	Mesic Shrub/Herb	mesic
SWBuns	00	KH	KH	Stunted conifer (parkland)/Krummholz	Stunted conifer (primarily subalpine fir (Abies lasicarpa)) patches occurring at higher elevations (predominantly in ATun); shallow soils and typically dry to mesic moisture regime, but includes all moisture classes	3a	Treed	submesic-mesic
SWBuns	00	AV	AV	Shrub avalanche track	generic shrub dominated avalanche track; Predominantly Alnus viridis and lush herbaceous layer including Heracleum maximum	3a	Avalanche Shrub	subhygric-hygric

Appendix 16

Schaft Creek Project Plant Species

Appendix 16. Schaft Creek Project Plant Species

Scientific Name	Common Name	Species Code	Family Code	Lifeform Code	Count	Tree Tally	Shrub Tally	Fern / Fern Ally Tally	Forb Tally	Graminoid Tally	Dwarf Shrub Tally	Bryophyte Tally
Alnus incana	mountain alder	ALNUINC	BETULAC	2	1	1						
Betula papyrifera	paper birch	BETUPAP	BETULAC	2	1	1						
Abies amabilis	amabilis fir	ABIEAMA	PINACEA	1	2	1						
Abies lasiocarpa	subalpine fir	ABIELAS	PINACEA	1	431	1						
Picea sp.	spruce	PICEA	PINACEA	1	24	1						
Picea sp. x Picea sp.	spruce hybrid	PICEAX	PINACEA	1	17	1						
Picea engelmannii x glauca	hybrid white spruce	PICEENE	PINACEA	1	6	1						
Picea engelmannii	Engelmann spruce	PICEENG	PINACEA	1	8	1						
Picea glauca x mariana	white x black spruce hybrid	PICEGLM	PINACEA	1	1	1						
Picea mariana	black spruce	PICEMAR	PINACEA	1	10	1						
Picea x lutzii	Roche spruce	PICEXLU	PINACEA	1	46	1						
Pinus contorta	lodgepole pine	PINUCON	PINACEA	1	63	1						
Pinus sp.	pine	PINUS	PINACEA	1	3	1						
Populus balsamifera	balsam poplar	POPUBAL	SALICAC	2	19	1						
Populus balsamifera ssp. trichocarpa	black cottonwood	POPUBAL2	SALICAC	2	9	1						
Populus sp.	poplar	POPULUS	SALICAC	2	1	1						
Populus tremuloides	trembling aspen	POPUTRE	SALICAC	2	13	1						
Salix lucida ssp. lasiandra	Pacific willow	SALILUC2	SALICAC	2	1	1						
Salix sitchensis	Sitka willow	SALISIT	SALICAC	2	13	1						
Linnaea borealis	twinflower	LINNBOR	CAPRIFO	12	29						1	
Empetrum nigrum	crowberry	EMPENIG	EMPETRA	12	61						1	
Arctostaphylos alpina	alpine bearberry	ARCTALP	ERICACE	12	1						1	
Arctostaphylos alpina var. rubra	alpine bearberry	ARCTALP2	ERICACE	12	1						1	
Arctostaphylos uva-ursi	kinnikinnick	ARCTUVA	ERICACE	12	16						1	
Cassiope mertensiana	white mountain-heather	CASSMER	ERICACE	12	12						1	
Cassiope tetragona	four-angled mountain-heather	CASSTET	ERICACE	12	2						1	
Oxycoccus oxycoccos	bog cranberry	OXYCOXY	ERICACE	12	1						1	
Phyllodoce empetriformis	pink mountain-heather	PHYLEMP	ERICACE	12	18						1	
Vaccinium caespitosum	dwarf blueberry	VACCCAE	ERICACE	12	5						1	
Vaccinium vitis-idaea		VACCVIT	ERICACE	12	4						1	
Dryas drummondii	yellow mountain-avens	DRYADRU	ROSACEA	12	7						1	
Dryas integrifolia	entire-leaved mountain-avens	DRYAINT	ROSACEA	12	8						1	
Luetkea pectinata	partridge-foot	LUETPEC	ROSACEA	12	5						1	
Sibbaldia procumbens	sibbaldia	SIBAPRO	ROSACEA		1						1	
Salix arctica	arctic willow	SALIARC	SALICAC	12	5						1	
Salix polaris	polar willow	SALIPOL	SALICAC	12	1						1	
Salix reticulata	net-veined willow	SALIRET	SALICAC	12	17						1	
Salix stolonifera	creeping willow	SALISTO	SALICAC	12	5						1	
Salix reticulata	net-veined willow	SALIVET	SALICAC		1						1	
Pteridium aquilinum	bracken fern	PTERAQU	DENNSTA	5	3			1				
Athyrium filix-femina	lady fern	ATHYFIL	DRYOPTR	5	7			1				
Dryopteris expansa	spiny wood fern	DRYOEXP	DRYOPTR	5	16			1				
Dryopteris fragrans	fragrant wood fern	DRYOFRA	DRYOPTR	5	1			1				
Gymnocarpium dryopteris	oak fern	GYMNDRY	DRYOPTR	5	25			1				
Equisetum arvense	common horsetail	EQUIARV	EQUISEA	5	51			1				
Equisetum fluviatile	swamp horsetail	EQUIFLU	EQUISEA	5	1			1				
Equisetum hyemale	scouring-rush	EQUIHYE	EQUISEA	5	2			1				
Equisetum pratense	meadow horsetail	EQUIPRA	EQUISEA	5	2			1				

Appendix 16. Schaft Creek Project Plant Species

Scientific Name	Common Name	Species Code	Family Code	Lifeform Code	Count	Tree Tally	Shrub Tally	Fern / Fern Ally Tally	Forb Tally	Graminoid Tally	Dwarf Shrub Tally	Bryophyte Tally
Equisetum scirpoides	dwarf scouring-rush	EQUISCI	EQUISEA	5	3			1				
Equisetum sp.	horsetail	EQUISET	EQUISEA	5	10			1				
Equisetum sylvaticum	wood horsetail	EQUISYL	EQUISEA	5	2			1				
Equisetum variegatum	northern scouring-rush	EQUIVAR	EQUISEA	5	6			1				
Diphasiastrum alpinum	alpine club-moss	DIPHALP	LYCOPOA	5	2			1				
Diphasiastrum complanatum	ground-cedar	DIPHCOM	LYCOPOA	5	2			1				
Lycopodium annotinum	stiff club-moss	LYCOANN	LYCOPOA	5	19			1				
Lycopodium clavatum	running club-moss	LYCOCLA	LYCOPOA	5	8			1				
Lycopodium sp.	clubmoss	LYCOPOI	LYCOPOA	5	47			1				
Heracleum sp.	cow-parsnip	HERACLE	APIACEA	7	4				1			
Heracleum maximum	cow-parsnip	HERAMAX	APIACEA	7	7				1			
Osmorhiza berteroi	mountain sweet-cicely	OSMOBER	APIACEA	7	12				1			
Osmorhiza purpurea	purple sweet-cicely	OSMOPUR	APIACEA	7	1				1			
Osmorhiza purpurea	purple sweet-cicely	OZMOPUR	APIACEA		1				1			
Achillea millefolium	yarrow	ACHIMIL	ASTERAC	7	14				1			
Agoseris aurantiaca	orange agoseris	AGOSAUR	ASTERAC	7	1				1			
Antennaria alpina	alpine pussytoes	ANTEALP	ASTERAC	7	1				1			
Antennaria microphylla	white pussytoes	ANTEMIC	ASTERAC	7	1				1			
Antennaria neglecta	field pussytoes	ANTENEG	ASTERAC	7	4				1			
Antennaria sp.	pussytoes	ANTENNA	ASTERAC	7	2				1			
Antennaria racemosa	racemose pussytoes	ANTERAC	ASTERAC	7	1				1			
Arnica angustifolia	alpine arnica	ARNIANG	ASTERAC	7	2				1			
Arnica sp.	arnica	ARNICA	ASTERAC	7	10				1			
Arnica cordifolia	heart-leaved arnica	ARNICOR	ASTERAC	7	62				1			
Arnica latifolia	mountain arnica	ARNILAT	ASTERAC	7	7				1			
Artemisia dracunculus	tarragon	ARTEDRA	ASTERAC	7	1				1			
Artemisia norvegica	mountain sagewort	ARTENOR	ASTERAC	7	14				1			
Aster conspicuus	showy aster	ASTECON	ASTERAC	7	1				1			
Erigeron humilis	arctic-alpine daisy	ERIGHUM	ASTERAC	7	4				1			
Hieracium sp.	hawkweed	HIERACI	ASTERAC	7	3				1			
Hieracium albiflorum	white hawkweed	HIERALI	ASTERAC	7	3				1			
Hieracium scouleri var. albertinum	western hawkweed	HIERSCO2	ASTERAC	7	1				1			
Petasites frigidus	sweet coltsfoot	PETAFRI	ASTERAC	7	6				1			
Petasites frigidus var. palmatus	palmate coltsfoot	PETAFRI3	ASTERAC	7	1				1			
Senecio lugens	black-tipped groundsel	SENELUG	ASTERAC	7	3				1			
Senecio triangularis	arrow-leaved groundsel	SENETRI	ASTERAC	7	10				1			
Solidago multiradiata	northern goldenrod	SOLIMUL	ASTERAC	7	1				1			
Taraxacum ceratophorum	horned dandelion	TARACER	ASTERAC	7	3				1			
Taraxacum sp.		TARAXAC	ASTERAC	7	2				1			
Mertensia paniculata	tall bluebells	MERTPAN	BORAGIN	7	12				1			
Myosotis asiatica	mountain forget-me-not	MYOSASI	BORAGIN	7	6				1			
Myosotis sp.		MYOSOTI	BORAGIN	7	1				1			
Arabis drummondii	Drummond's rockcress	ARABDRU	BRASSIA	7	3				1			
Draba sp.		DRABA	BRASSIA	7	1				1			
Campanula lasiocarpa	mountain harebell	CAMPLAS	CAMPANL	7	6				1			
Arenaria sp.	sandwort	ARENARI	CARYOPH	7	1				1			
Cerastium arvense	field chickweed	CERAARV	CARYOPH	7	4				1			
Silene acaulis	moss campion	SILEACA	CARYOPH	7	10				1			

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Scientific Name	Common Name	Species Code	Family Code	Lifeform Code	Count	Tree Tally	Shrub Tally	Fern / Fern Ally Tally	Forb Tally	Graminoid Tally	Dwarf Shrub Tally	Bryophyte Tally
Cornus canadensis	bunchberry	CORNCAN	CORNACE	7	117				1			
Sedum integrifolium	roseroot	SEDUINT	CRASSUA	7	6				1			
Sedum lanceolatum	lance-leaved stonecrop	SEDULAN	CRASSUA	7	1				1			
Sedum sp.		SEDUM	CRASSUA	7	2				1			
Astragalus alpinus	alpine milk-vetch	ASTRALP	FABACEA	7	5				1			
Lupinus arcticus	arctic lupine	LUPIARC	FABACEA	7	51				1			
Lupinus argenteus	silvery lupine	LUPIARG	FABACEA	7	2				1			
Lupinus sp.	lupine	LUPINUS	FABACEA	7	1				1			
Lupinus polyphyllus	large-leaved lupine	LUPIPOY	FABACEA	7	1				1			
Oxytropis campestris	field locoweed	OXYTCAM	FABACEA	7	2				1			
Oxytropis nigrescens	blackish locoweed	OXYTNIG	FABACEA	7	2				1			
Oxytropis sp.		OXYTROP	FABACEA	7	1				1			
Vicia americana	American vetch	VICIAME	FABACEA	7	1				1			
Gentianella amarella	northern gentian	GENTAMA	GENTIAA	7	2				1			
Gentiana glauca	glaucous gentian	GENTGLA	GENTIAA	7	2				1			
Gentianella sp.		GENTIAE	GENTIAA	7	1				1			
Geranium erianthum	northern geranium	GERAERI	GERANIA	7	5				1			
Triglochin maritima	seaside arrow-grass	TRIGMAR	JUNCAGI	7	2				1			
Pinguicula vulgaris	common butterwort	PINGVUL	LENTIBU	7	1				1			
Utricularia sp.		UTRICUL	LENTIBU	7	2				1			
Maianthemum canadense	wild lily-of-the-valley	MAIACAN	LILIACE	7	1				1			
Streptopus amplexifolius	clasping twistedstalk	STREAMP	LILIACE	7	27				1			
Streptopus lanceolatus var. curvipes	rosy twistedstalk	STRELAN1	LILIACE	7	29				1			
Streptopus sp.	twistedstalk	STREPTO	LILIACE	7	4				1			
Tofieldia sp.		TOFIELD	LILIACE	7	1				1			
Veratrum viride	Indian hellebore	VERAVIR	LILIACE	7	13				1			
Menyanthes trifoliata	buckbean	MENYTRI	MENYANH	7	4				1			
Epilobium anagallidifolium	alpine willowherb	EPILANA	ONAGRAC	7	6				1			
Epilobium angustifolium	fireweed	EPILANG	ONAGRAC	7	83				1			
Epilobium latifolium	broad-leaved willowherb	EPILLAT	ONAGRAC	7	3				1			
Epilobium sp.	willowherb	EPILOBI	ONAGRAC	7	1				1			
Corallorhiza trifida	yellow coralroot	CORATRI	ORCHIDA	8	1				1			
Listera borealis	northern twayblade	LISTBOR	ORCHIDA	7	1				1			
Listera convallarioides	broad-leaved twayblade	LISTCON	ORCHIDA	7	3				1			
Listera cordata	heart-leaved twayblade	LISTCOR	ORCHIDA	7	14				1			
Listera sp.	twayblade	LISTERA	ORCHIDA	7	1				1			
Platanthera dilatata	fragrant white rein orchid	PLATDIL	ORCHIDA	7	11				1			
Parnassia fimbriata	fringed grass-of-Parnassus	PARNFIM	PARNASI	7	1				1			
Parnassia palustris	northern grass-of-Parnassus	PARNPAL	PARNASI	7	1				1			
Polemonium sp.		POLEMON	POLEMOI	7	1				1			
Polemonium pulcherrimum	showy Jacob's-ladder	POLEPUL	POLEMOI	7	1				1			
Oxyria digyna	mountain sorrel	OXYRDIG	POLYGOA	7	2				1			
Polygonum viviparum	alpine bistort	POLYVIV	POLYGOA	7	4				1			
Rumex acetosa	green sorrel	RUMEACO	POLYGOA	7	1				1			
Rumex sp.		RUMEX	POLYGOA	7	1				1			
Claytonia sibirica	Siberian miner's-lettuce	CLAYSIB	PORTULC	7	1				1			
Trientalis europaea	northern starflower	TRIEEUR	PRIMULC	7	1				1			
Moneses uniflora	single delight	MONEUNI	PYROLAC	7	6				1			

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Orthilia sp.		ORTHILI	PYROLAC	7	2				1			
Orthilia secunda	one-sided wintergreen	ORTHSEC	PYROLAC	7	106				1			
Pyrola asarifolia	pink wintergreen	PYROASA	PYROLAC	7	13				1			
Pyrola chlorantha	green wintergreen	PYROCHL	PYROLAC	7	4				1			
Pyrola grandiflora	arctic wintergreen	PYROGRA	PYROLAC	7	1				1			
Pyrola sp.	wintergreen	PYROLA	PYROLAC	7	15				1			
Aconitum delphiniifolium	mountain monkshood	ACONDEL	RANUNCL	7	8				1			
Actaea rubra	baneberry	ACTARUB	RANUNCL	7	20				1			
Anemone multifida	cut-leaved anemone	ANEMMUL	RANUNCL	7	5				1			
Anemone narcissiflora	narcissus anemone	ANEMNAR	RANUNCL	7	5				1			
Anemone sp.	anemone	ANEMONE	RANUNCL	7	3				1			
Aquilegia formosa	Sitka columbine	AQUIFOR	RANUNCL	7	3				1			
Caltha sp.	marsh-marigold	CALTHA	RANUNCL	7	1				1			
Caltha leptosepala	white mountain marsh-marigold	CALTLEP	RANUNCL	7	4				1			
Caltha leptosepala var. leptosepala	white mountain marsh-marigold	CALTLEP2	RANUNCL	7	1				1			
Myosurus apetalus	bristly mousetail	MYOSAPE	RANUNCL	7	1				1			
Ranunculus eschscholtzii	subalpine buttercup	RANUESC	RANUNCL	7	8				1			
Ranunculus sp.	buttercup	RANUNCU	RANUNCL	7	3				1			
Thalictrum occidentale	western meadowrue	THALOCC	RANUNCL	7	2				1			
Trollius albiflorus	globeflower	TROLALB	RANUNCL	7	1				1			
Aruncus dioicus	goatsbeard	ARUNDIO	ROSACEA	7	1				1			
Comarum palustre	marsh cinquefoil	COMAPAU	ROSACEA	7	2				1			
Fragaria virginiana	wild strawberry	FRAGVIR	ROSACEA	7	4				1			
Potentilla diversifolia	diverse-leaved cinquefoil	POTEDIV	ROSACEA	7	5				1			
Potentilla glandulosa	sticky cinquefoil	POTEGLA	ROSACEA	7	1				1			
Potentilla paradoxa	bushy cinquefoil	POTEPAR	ROSACEA	7	1				1			
Potentilla uniflora	one-flowered cinquefoil	POTEUNI	ROSACEA	7	1				1			
Rubus arcticus	nagoonberry	RUBUARC	ROSACEA	7	7				1			
Rubus pedatus	five-leaved bramble	RUBUPED	ROSACEA	7	58				1			
Rubus pubescens	dwarf red raspberry	RUBUPUB	ROSACEA	7	1				1			
Sanguisorba canadensis	Sitka burnet	SANGCAN	ROSACEA	7	12				1			
Galium boreale	northern bedstraw	GALIBOR	RUBIACE	7	7				1			
Galium trifidum	small bedstraw	GALITRD	RUBIACE	7	12				1			
Galium triflorum	sweet-scented bedstraw	GALITRF	RUBIACE	7	3				1			
Galium sp.	bedstraw	GALIUM	RUBIACE	7	1				1			
Geocaulon lividum	false toad-flax	GEOCLIV	SANTALA	7	47				1			
Heuchera glabra	smooth alumroot	HEUCGLA	SAXIFRG	7	1				1			
Leptarrhena pyrolifolia	leatherleaf saxifrage	LEPTPYR	SAXIFRG	7	3				1			
Mitella nuda	common mitrewort	MITENUD	SAXIFRG	7	2				1			
Mitella pentandra	five-stamened mitrewort	MITEPEN	SAXIFRG	7	1				1			
Saxifraga bronchialis		SAXIBRO	SAXIFRG	7	1				1			
Saxifraga flagellaris	stoloniferous saxifrage	SAXIFLA	SAXIFRG	7	1				1			
Saxifraga sp.	saxifrage	SAXIFRA	SAXIFRG	7	5				1			
Saxifraga lyallii	red-stemmed saxifrage	SAXILYA	SAXIFRG	7	2				1			
Saxifraga tricuspidata	three-toothed saxifrage	SAXITRI	SAXIFRG	7	12				1			
Tiarella sp.		TIARELL	SAXIFRG	7	1				1			
Tiarella trifoliata	three-leaved foamflower	TIARTRI	SAXIFRG	7	28				1			
Tiarella trifoliata var. unifoliata	one-leaved foamflower	TIARTRI2	SAXIFRG	7	10				1			

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Castilleja sp.	paintbrush	CASTILL	SCROPHL	7	2				1			
Castilleja miniata	scarlet paintbrush	CASTMIN	SCROPHL	7	3				1			
Castilleja parviflora	small-flowered paintbrush	CASTPAR	SCROPHL	7	1				1			
Castilleja unalaschcensis	Unalaska paintbrush	CASTUNA	SCROPHL	7	11				1			
Pedicularis sp.	lousewort	PEDICUL	SCROPHL	7	2				1			
Pedicularis labradorica	Labrador lousewort	PEDILAB	SCROPHL	7	4				1			
Pedicularis lanata	woolly lousewort	PEDILAN	SCROPHL	7	1				1			
Penstemon procerus	small-flowered penstemon	PENSPRO	SCROPHL	7	1				1			
Urtica dioica	stinging nettle	URTIDIO	URTICAC	7	1				1			
Valeriana sitchensis	Sitka valerian	VALESIT	VALERIC	7	20				1			
Viola sp.	violet	VIOLA	VIOLACE	7	17				1			
Viola adunca	early blue violet	VIOLADU	VIOLACE	7	1				1			
Viola lanceolata	lance-leaved violet	VIOLLAC	VIOLACE	7	3				1			
Viola renifolia	kidney-leaved violet	VIOLREN	VIOLACE	7	1				1			
Carex aquatilis	water sedge	CAREAQU	CYPERAC	6	10					1		
Carex arcta	northern clustered sedge	CAREARC	CYPERAC	6	1					1		
Carex leptalea	bristle-stalked sedge	CARELET	CYPERAC	6	1					1		
Carex limosa	shore sedge	CARELIM	CYPERAC	6	3					1		
Carex nigricans	black alpine sedge	CARENIG	CYPERAC	6	12					1		
Carex rossii	Ross' sedge	CARE ROS	CYPERAC	6	1					1		
Carex saxatilis	russet sedge	CARESAX	CYPERAC	6	8					1		
Carex utriculata	beaked sedge	CAREUTR	CYPERAC	6	3					1		
Carex sp.	sedge	CAREX	CYPERAC	6	22					1		
Eriophorum angustifolium	narrow-leaved cotton-grass	ERIOANG	CYPERAC	6	5					1		
Trichophorum cespitosum	tufted clubrush	TRICCES	CYPERAC	6	4					1		
Juncus sp.	rush	JUNCUS	JUNCACE	6	5					1		
Luzula sp.	wood-rush	LUZULA	JUNCACE	6	1					1		
Luzula parviflora	small-flowered wood-rush	LUZUPAR	JUNCACE	6	1					1		
Agrostis sp.	bentgrass	AGROSTI	POACEAE	6	1					1		
Arctagrostis latifolia	polargrass	ARCTLAT	POACEAE	6	1					1		
Calamagrostis canadensis	bluejoint reedgrass	CALACAN	POACEAE	6	11					1		
Elymus trachycaulus	slender wheatgrass	ELYMTRA	POACEAE	6	1					1		
Elymus sp.	wildrye	ELYMUS	POACEAE	6	5					1		
Festuca altaica	Altai fescue	FESTALT	POACEAE	6	19					1		
Festuca brachyphylla	alpine fescue	FESTBRA	POACEAE	6	1					1		
Festuca sp.	fescue	FESTUCA	POACEAE	6	1					1		
Poa sp.	bluegrass	POA	POACEAE	6	6					1		
Unknown Crustose Lichen		CRUSTOSE			3							1
Unknown Foliose Lichen		FOLIOSE			1							1
Unknown Liverwort		LIVRWORT			1							1
Cetraria ciliaris	fringed ruffle	CETRCIL	NOTUSED	11	3							1
Cetraria cucullata	furled paperdoll	CETRCUC	NOTUSED	11	5							1
Cetraria nivalis	ragged paperdoll	CETRNIV	NOTUSED	11	2							1
Cladonia borealis	boreal pixie-cup	CLADBOE	NOTUSED	11	8							1
Cladonia carneola	crowned pixie-cup	CLADCAN	NOTUSED	11	1							1
Cladonia cenotea	miner's funnel	CLADCEN	NOTUSED	11	1							1
Cladonia coniocraea	lesser powderhorn	CLADCON	NOTUSED	11	1							1
Cladonia cornuta		CLADCOR	NOTUSED	11	2							1

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Cladonia ecmocyna		CLADECM	NOTUSED	11	14							1
Cladonia homosekikaica	homoseckikaicpixie-cup	CLADHOM	NOTUSED	11	7							1
Cladina sp.	reindeer lichens	CLADINA	NOTUSED	11	8							1
Cladina mitis	lesser green reindeer	CLADMIT	NOTUSED	11	23							1
Cladonia novochlorophaea	sekikaic pixie-cup	CLADNOV	NOTUSED	11	2							1
Cladonia sp.	clad lichens	CLADONA	NOTUSED		1							1
Cladonia sp.	clad lichens	CLADONI	NOTUSED	11	28							1
Cladonia pyxidata	pebbled pixie-cup	CLADPYX	NOTUSED	11	34							1
Cladina rangiferina	grey reindeer	CLADRAN	NOTUSED	11	23							1
Cladonia rei	sordid powderhorn	CLADREI	NOTUSED	11	1							1
Cladina rangiferina	grey reindeer	CLADROW	NOTUSED		1							1
Cladonia squamosa	dragon funnel	CLADSQU	NOTUSED	11	1							1
Dactylina arctica		DACTARC	NOTUSED	11	3							1
Nephroma arcticum	green light	NEPHARC	NOTUSED	11	6							1
Parmeliopsis ambigua	green starburst	PARMAMB	NOTUSED	11	1							1
Peltigera aphthosa	freckle pelt	PELTAPH	NOTUSED	11	61							1
Peltigera canina	dog pelt	PELTCAN	NOTUSED	11	3							1
Peltigera sp.	pelt lichens	PELTIGE	NOTUSED	11	6							1
Pseudephebe pubescens	fine rockwool	PSEUPUB	NOTUSED	11	1							1
Rhizocarpon sp.		RHIZOCA	NOTUSED	11	2							1
Solorina crocea	chocolate chip	SOLOCRO	NOTUSED	11	1							1
Stereocaulon depressum	creeping foam	STERDEP	NOTUSED	11	1							1
Stereocaulon sp.	foam lichens	STEREOC	NOTUSED	11	9							1
Thamnolia vermicularis	the whiteworm	THAMVER	NOTUSED	11	2							1
Campylium stellatum	golden star-moss	CAMPSTE	AMBLYSE	9	1							1
Aulacomnium sp.	groove-moss	AULACOM	AULACON	9	1							1
Aulacomnium palustre	glow moss	AULAPAL	AULACON	9	12							1
Brachythecium calcareum		BRACCAL	BRACHYH	9	2							1
Brachythecium sp.	ragged-moss	BRACHYT	BRACHYH	9	9							1
Tomentypnum nitens	golden fuzzy fen moss	TOMENIT	BRACHYH	9	1							1
Dicranum sp.	heron's-bill moss	DICRANU	DICRANA	9	74							1
Dicranum fuscescens	curly heron's-bill moss	DICRFUS	DICRANA	9	30							1
Dicranella palustris	marsh forklet-moss	DICRPAL	DICRANA	9	4							1
Dicranum scoparium	broom-moss	DICRSCO	DICRANA	9	2							1
Oncophorus virens	green spur-moss	ONCOVIR	DICRANA	9	1							1
Racomitrium sp.	rock-moss	RACOMIT	GRIMMIC	9	1							1
Hylocomiastrum sp.		HYLOCOA	HYLOCOI	9	4							1
Hylocomium sp.	wood-moss	HYLOCOM	HYLOCOI	9	2							1
Hylocomium splendens	step moss	HYLOSPL	HYLOCOI	9	29							1
Pleurozium schreberi	red-stemmed feathermoss	PLEUSCH	HYLOCOI	9	129							1
Ptilium crista-castrensis	knight's plume	PTILCRI	HYPNACE	9	43							1
Barbilophozia hyperborea		BARBHYP	JUNGERA	10	4							1
Barbilophozia sp.		BARBILO	JUNGERA	10	49							1
Barbilophozia lycopodioides	common leafy liverwort	BARBLYC	JUNGERA	10	41							1
Barbilophozia quadriloba		BARBQUA	JUNGERA	10	1							1
Mnium sp.	leafy moss	MNIUM	MNIACEA	9	7							1
Plagiomnium drummondii	Drummond's leafy moss	PLAGDRU	MNIACEA	9	1							1
Plagiomnium insigne	coastal leafy moss	PLAGINS	MNIACEA	9	2							1

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Plagiomnium sp.	leafy moss	PLAGIOM	MNIACEA	9	2							1
Plagiomnium medium	common leafy moss	PLAGMED	MNIACEA	9	5							1
Rhizomnium glabrescens	large leafy moss	RHIZGLB	MNIACEA	9	10							1
Rhizomnium magnifolium	large-leaf leafy moss	RHIZMAG	MNIACEA	9	2							1
Plagiothecium undulatum	flat-moss	PLAGUND	PLAGIOE	9	1							1
Plagiochila sp.		PLAGIOH	PLAGIOI	10	1							1
Plagiochila porelloides	cedar-shake liverwort	PLAGPOR	PLAGIOI	10	1							1
Polytrichastrum alpinum	stiff-leaved haircap moss	POLYALI	POLYTRC	9	5							1
Polytrichum commune	common haircap moss	POLYCOM	POLYTRC	9	1							1
Polytrichum juniperinum	juniper haircap moss	POLYJUN	POLYTRC	9	5							1
Polytrichum piliferum	awned haircap moss	POLYPIL	POLYTRC	9	1							1
Polytrichum sphaerothecium		POLYSPH	POLYTRC	9	3							1
Polytrichum sp.	haircap moss	POLYTRI	POLYTRC	9	19							1
Tortula ruralis	sidewalk moss	TORTRUA	POTTIAC	9	1							1
Heterocladium procurrens	tangle moss	HETEPRO	PTERIGN	9	1							1
Ptilidium ciliare	northern naugahyde liverwort	PTILCIL	PTILIDA	10	8							1
Ptilidium sp.		PTILIDI	PTILIDA	10	1							1
Rhytidiaceae		RHYTIDA	RHYTIDA	9	1							1
Sphagnum sp.	peat-moss	SPHAGNU	SPHAGNA	9	14							1
Timmia sp.	timmia	TIMMIA	TIMMIAC	9	1							1
Acer sp.	maple	ACER	ACERACE	0	1		1					
Acer glabrum	Douglas maple	ACERGLA	ACERACE	4	1		1					
Oplopanax horridus	devil's club	OPLOHOR	ARALIAC	4	23		1					
Alnus viridis	alder	ALNUVIR	BETULAC	4	32		1					
Alnus viridis ssp. sinuata	Sitka alder	ALNUVIR2	BETULAC	4	25		1					
Alnus viridis ssp. crispa	green alder	ALNUVIR5	BETULAC	4	9		1					
Betula sp.	birch	BETULA	BETULAC	0	1		1					
Betula nana	scrub birch	BETUNAN	BETULAC	4	23		1					
Lonicera involucrata	black twinberry	LONIINV	CAPRIFO	4	1		1					
Sambucus racemosa		SAMBRAC	CAPRIFO	4	9		1					
Viburnum edule	highbush-cranberry	VIBUEDU	CAPRIFO	4	17		1					
Juniperus communis	common juniper	JUNICOM	CUPRESS	3	19		1					
Shepherdia canadensis	soopolallie	SHEPCAN	ELAEAGA	4	40		1					
Ledum glandulosum	trapper's tea	LEDUGLA	ERICACE	3	1		1					
Ledum groenlandicum	Labrador tea	LEDUGRO	ERICACE	3	18		1					
Ledum sp.		LEDUM	ERICACE	3	1		1					
Menziesia ferruginea	false azalea	MENZFER	ERICACE	4	7		1					
Vaccinium sp.	blueberry, huckleberry	VACCINI	ERICACE	0	1		1					
Vaccinium membranaceum	black huckleberry	VACCMEM	ERICACE	4	123		1					
Vaccinium myrtilloides	velvet-leaved blueberry	VACCMYL	ERICACE	4	1		1					
Vaccinium ovalifolium	oval-leaved blueberry	VACCOVL	ERICACE	4	31		1					
Vaccinium uliginosum	bog blueberry	VACCULI	ERICACE	4	2		1					
Ribes acerifolium	maple-leaved currant	RIBEACE	GROSSUL	4	2		1					
Ribes glandulosum	skunk currant	RIBEGLA	GROSSUL	4	8		1					
Ribes lacustre	black gooseberry	RIBELAC	GROSSUL	4	41		1					
Ribes laxiflorum	trailing black currant	RIBELAX	GROSSUL	4	9		1					
Ribes lobbii	gummy gooseberry	RIBELOB	GROSSUL	4	1		1					
Ribes sp.	currant or gooseberry	RIBES	GROSSUL	4	8		1					

Appendix 16. Schaft Creek Project Plant Species

Scientific Name	Common Name	Species Code	Family Code	Lifeform Code	Count	Tree Tally	Shrub Tally	Fern / Fern Ally Tally	Forb Tally	Graminoid Tally	Dwarf Shrub Tally	Bryophyte Tally
Ribes triste	red swamp currant	RIBETRI	GROSSUL	4	2		1					
Amelanchier alnifolia	saskatoon	AMELALN	ROSACEA	4	1		1					
Amelanchier sp.		AMELANC	ROSACEA	4	4		1					
Pentaphylloides floribunda	shrubby cinquefoil	PENTFLO	ROSACEA	4	1		1					
Potentilla sp.		POTENTI	ROSACEA	0	7		1					
Rosa acicularis	prickly rose	ROSAACI	ROSACEA	4	2		1					
Rubus idaeus	red raspberry	RUBUIDA	ROSACEA	4	15		1					
Rubus parviflorus	thimbleberry	RUBUPAR	ROSACEA	4	2		1					
Rubus sp.		RUBUS	ROSACEA	0	3		1					
Rubus spectabilis	salmonberry	RUBUSPE	ROSACEA	4	2		1					
Sorbus scopulina	western mountain-ash	SORBSCO	ROSACEA	4	22		1					
Sorbus sitchensis	Sitka mountain-ash	SORBSIT	ROSACEA	4	39		1					
Sorbus sp.	mountain ash	SORBUS	ROSACEA	0	1		1					
Spiraea betulifolia	birch-leaved spirea	SPIRBET	ROSACEA	4	3		1					
Salix alaxensis	Alaska willow	SALIALA	SALICAC	4	1		1					
Salix barclayi	Barclay's willow	SALIBAC	SALICAC	4	10		1					
Salix glauca	grey-leaved willow	SALIGLA	SALICAC	4	1		1					
Salix glauca var. villosa	grey-leaved willow	SALIGLA2	SALICAC	4	1		1					
Salix pedicellaris	bog willow	SALIPED	SALICAC	4	2		1					
Salix sessilifolia	soft-leaved willow	SALISES	SALICAC	4	2		1					
Salix sp.	willow	SALIX	SALICAC	0	93		1					
Sum						**19**	**49**	**18**	**149**	**23**	**20**	**79**