

6 HERITAGE RESOURCES

6.1 Introduction

A baseline review of archaeological information for the Merritt Area Transmission Project (the Project) was conducted (Volume II, Figure 6.1). In accordance with guidelines prepared by the provincial Archaeology Branch (Ministry of Tourism, Culture and the Arts), the work conducted for this Project is intended to identify baseline archaeological resource concerns that may arise from the Project.

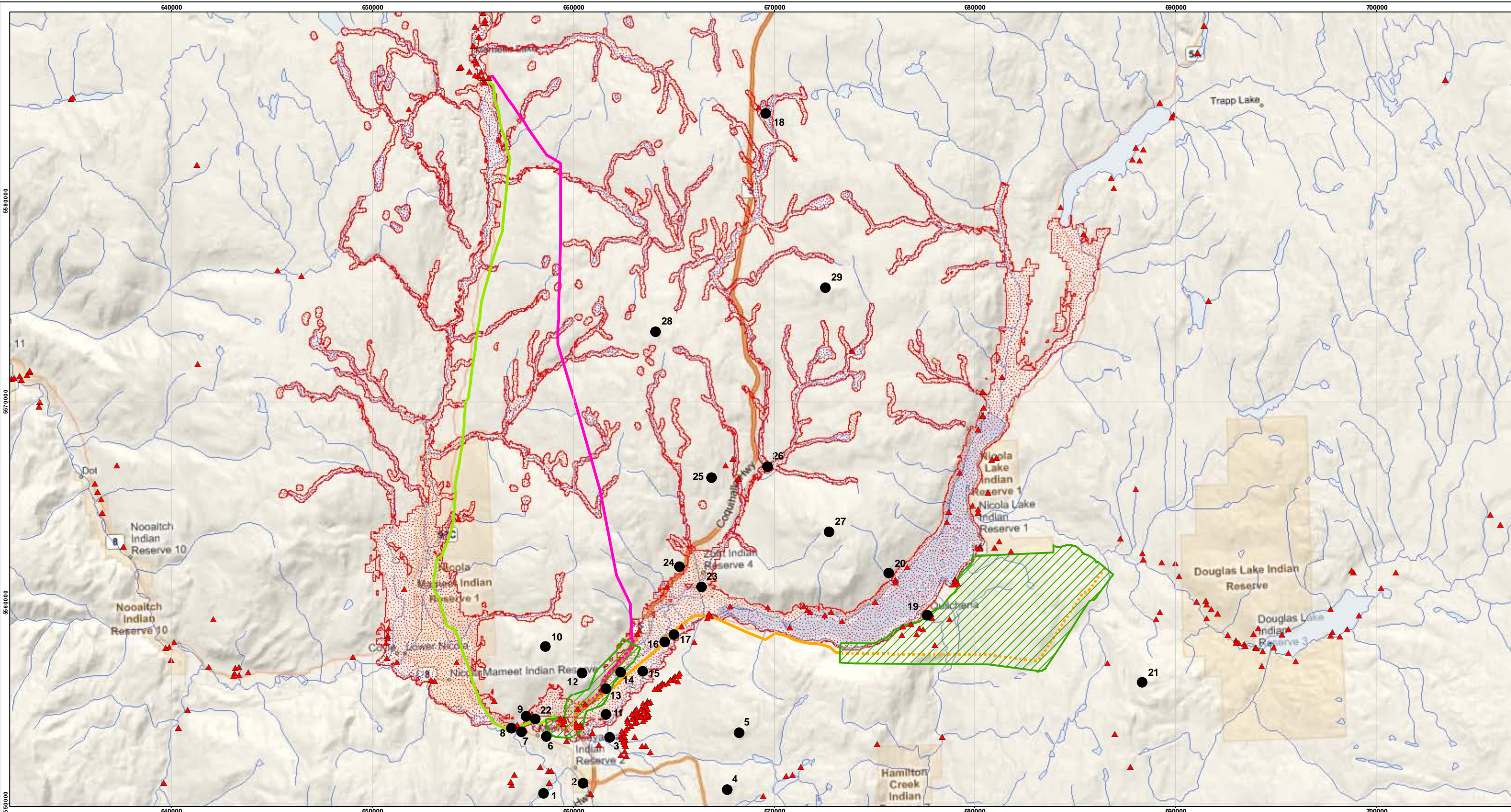
6.1.1 Principles of Heritage Resource Management

Archaeological resources in British Columbia are Valued Components by virtue of their protection under the *Heritage Conservation Act* (RSBC 1996, c.187). Section 13 of the *Heritage Conservation Act* (HCA) specifies that an individual (or corporation) must not “damage, excavate, dig in or alter, or remove any heritage object” from an archaeological site, except in accordance with a Permit issued by the Minister. The HCA confers automatic protection upon archaeological sites that pre-date 1846, or undated sites that could pre-date 1846, regardless of whether they are recorded in the Provincial Heritage Register, or whether they are located on Crown land or on private property. Post-1846 historic heritage sites can be protected by Ministerial Order or Designation by an Order-in-Council, or by municipal and regional governments under the *Local Governments Act*.

The types of archaeological resources automatically protected by Section 13 of the HCA include:

- Archaeological sites occupied or used before AD 1846;
- Aboriginal rock art with historical or archaeological value;
- Burial places with historical or archaeological value;
- Heritage ship and aircraft wrecks; and
- Sites of unknown attribution that could have been occupied prior to AD 1846.

Protected archaeological sites may not be altered or disturbed in any manner without a Permit issued under Sections 12 or 14 of the HCA. Further, heritage sites of Aboriginal origin not automatically protected by the HCA may be subject to legal interpretations of the Supreme Court of Canada decision in *Delgamuukw vs. British Columbia* (1997), regarding the fiduciary responsibilities of provincial governments for protecting First Nations' cultural heritage.

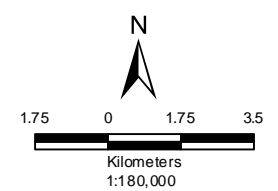


Legend

- ▲ Archaeological Site
- Traditional Places (Numbers correspond to list in Appendix A)
- ▨ Area of Route Uncertainty
- ▨ Swakum AOA Archaeological Potential Model

Proposed Transmission Line Options

- 1a (Representative route assessed within area of uncertainty)
- 1b (Representative route assessed within area of uncertainty)
- 2 (shown as dotted line)



Source
BCTC, ESRI, GeoBase®, TRIM.

	PROJECT: Merritt Area Transmission Project	
	DATE: Sept. 23, 2010	ANALYST: KG
Baseline Archaeological Overview	JOB No: VE52026	QA/QC: RPB
	GIS FILE: Figure1_arch_v3.mxd	
	PROJECTION: UTM Zone 10	DATUM: NAD83

NOTE: This map is CONFIDENTIAL and not for public distribution.

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6.2 Methodology

The baseline review described in this report conforms in part to an archaeological overview assessment as defined in the British Columbia Archaeological Impact Assessment Guidelines (Archaeology Branch 1998). According to the Guidelines, the objectives of this archaeological overview are to:

- Identify lands that have the potential to contain archaeological resources in the vicinity of the three alternatives currently proposed for the Merritt Area Transmission Project;
- Identify documented archaeological resources that potentially conflict with the Project; and
- Provide recommendations for additional studies or other measures to protect archaeological resources, as required.

Because no archaeological sites were altered during this study, a provincial Section 14 (Heritage Inspection) Permit was not required for the overview research.

6.2.1 Research Methods

The archaeological baseline research involved the following tasks:

- A desk-top review of regional ethnographic and archaeological literature for the Southern Interior Plateau region generally and the Nicola Valley area particularly;
- A search for documented archaeological data in the Provincial Heritage Register via the Remote Access to Archaeological Data (RAAD) online application;
- A preliminary review of paleoenvironmental, biophysical, and topographic information pertaining to the Nicola Valley area;
- A field reconnaissance of the three alternatives, to evaluate the landscape in terms of its integrity and archaeological resource potential;
- Identification of archaeological resource data gaps, in terms of the extent of past archaeological survey coverage within the defined Study Area;
- A preliminary evaluation of archaeological resource potential within the three proposed alternatives; and
- Preparation of a written report describing the results of the baseline assessment. The report is produced in the format outlined in the Archaeological Impact Assessment Guidelines (Archaeology Branch 1998).

6.2.2 Document Review

The review of archaeological and ethnographic sources used the Nicola Valley area as its focus for the baseline research. This area is defined as those lands drained by the Nicola River, Nicola Lake, and their tributaries, including Quilchena Creek, Clapperton Creek, and

Guichon Creek, as well as the Nicola Plateau highlands between Guichon Creek and Swakum Mountain/Coquihalla Highway 5, and the mid-elevation uplands south of Nicola Lake.

Many of the necessary documents required for this study were available in the AMEC library in Coquitlam, and were supplemented as necessary by additional reports obtained from an electronic library maintained by the Archaeology Branch. This aspect of the research sought general information on pre-Contact archaeology, traditional First Nations' land use and settlement, and historic land use patterns. The review of archaeological reports describing past research focussed on those studies that actually took place within the Project area as defined above.

As well as regional ethnographic sources (e.g., Teit 1900), traditional land use information was obtained from an ethno-geographic report (Kennedy and Bouchard 1985), an archaeological site inventory (James and Oliver 1993), and archaeological overview reports prepared by locally based First Nations' researchers (Blain et al. 2010; Sandy *et al.* 2007, 2009a, 2009b; Sandy and Shackelly 2008).

Geo-referenced location data for documented archaeological sites in the vicinity of the Project was obtained from an electronic database (the Provincial Heritage Register) maintained by the Archaeology Branch. This information, including site-distribution maps and TRIM-based orthophotos, is available via the RAAD on-line application. For the data-gap analysis, data from documented archaeological sites was confined to those "Borden units" that encompassed *each* of the proposed alternatives.

Generalized topographic information was obtained from 1:50,000-scale NTS maps and 1:20,000 TRIM maps, as well as scalable orthophotos available from Google Earth™. Biophysical information pertinent to the Nicola Valley was obtained from maps prepared by the Geological Survey of Canada (bedrock geology, surficial geology), Environment Canada (wildlife capability), and the Ministry of Forests and Range (biogeoclimatic zonation).

6.2.3 Evaluation of Archaeological Resource Potential

For the purposes of this study, **archaeological resource potential** is defined as the capability of a landscape (or portion of a landscape) to have supported the kinds of traditional activities that would have resulted in the formation and preservation of archaeological remains. Some kinds of traditional activities (e.g., medicinal plant collection) did not usually result in the creation of physical remains, and such activities cannot be considered in the context of an assessment of archaeological resource potential. The same constraint also applies to places of cultural significance (e.g., spirited places), but where TUS data is available, both kinds of information can be used as landscape attributes to assess archaeological resource potential.

As considered here, potential evaluations are not synonymous with *probability*, which is a quantifiable measure of site occurrence, but simply rate the sensitivity of lands that should be examined by archaeologists in advance of land-altering developments.

The assessment of archaeological potential is based upon a consideration of the locations of documented sites, ethnographic and historic land use information, and landscape characteristics that influence (favourably or negatively) the distribution of archaeological sites. Because archaeological site locations are often correlated with particular micro-environmental landscape attributes, the presence or absence of these variables can be used to identify lands with greater or lesser archaeological potential.

Criteria used to define polygons of moderate or high archaeological potential are separated into **macrosite** and **microsite** landscape attributes. Macrosite criteria apply to the determination of archaeological potential in a regional context, while microsite criteria refine the shape and location of individual “polygons” denoting particular classes of archaeological potential.

Microsite criteria refer to factors that refine the shape, location and degree of potential of a polygon. These criteria include site-specific landform features such as terrace/fan, promontory, saddle, open shallow water, watercourse, relict watercourse, confluence, or watercourse node. These attributes of a landscape are not usually discernable at map-scales smaller than 1:5000 or 1:10,000.

Lands are categorized as having “High”, “Moderate”, or “Low” archaeological resource potential. The varying classes of archaeological potential ratings affect the scope and level of effort recommended for future archaeological assessment studies. In general, the higher the potential class, the greater is the level of effort expected by regulatory authorities. For the present study, the potential values are defined as follows:

- **High Potential:** Lands exhibiting topographic and biophysical attributes highly supportive of past cultural activities that would have left archaeological evidence. These lands exhibit the highest archaeological sensitivity within a particular landscape;
- **Moderate Potential:** Lands exhibiting fewer attributes that would have supported traditional cultural activities, than the preceding category; and
- **Low Potential:** Lands that exhibit few characteristics supportive of traditional cultural activities. Further archaeological investigations are not normally recommended for lands categorized as having low archaeological potential.

A GIS-based model of archaeological potential was developed for the Merritt Forest District in the late 1990s, before its amalgamation into the present Cascades Forest District. This model is not displayed in the Archaeology Branch's RAAD application. In the past 4-5 years, new GIS models have been prepared for individual Landscape Units (LU) within the Cascades Forest District by Esh-kn-am Cultural Resources Management Services and its

predecessors (Blain *et al.* 2010; Sandy *et al.* 2007, 2009a, 2009b; Sandy and Shackelly 2008).

The model for the Coldwater and Spius LU (Sandy and Shackelly 2008) is displayed on the RAAD application. This model covers lands principally to the west and southwest of the town of Merritt. The fractions of the alternative 1A and alternative 1B/2 Terminus in Merritt are situated within the lands covered by this model. The output of this model is not shown on the archaeological resource maps, as its coverage had not been forwarded from the Archaeology Branch (Site Inventory Section) by the time this report was completed.

Another potential model has been developed by Esh-kn-am for the Swakum LU (Sandy *et al.* 2009b). This model covers all the lands within the Project area, from the west slope of the Guichon Creek valley south to Nicola Lake and the Nicola River. The coverage of this model was acquired from the Archaeology Branch (Site Inventory Section), and is displayed on the maps that accompany this report. It shows that a total of 12,530 ha of the LU within the Project area are modelling as exhibiting moderate or high archaeological resource potential.

6.3 Biophysic and Cultural Setting

Environmental conditions, both past and present, govern the availability of natural resources and ``live-ability`` of the natural landscape for human habitation and sustenance, and as such, are the principle factors determining land use, settlement, and the subsistence patterns of the ancient inhabitants of this region. Biophysical information for the Study Area is presented in Section 1.2 – Study Area, Section 2 – Vegetation, Section 3 – Wildlife, and Section 4 – Fisheries and Aquatics.

6.3.1 Landscape, Terrain and Geology

Please refer to Section 1.2 for a description of the landscape, terrain and geology of the Study Area.

Few of the rock types associated with the geological formations in the immediate vicinity of the Project area would have been attractive to Aboriginal people seeking raw materials for stone tool manufacture. However, fine-grained specimens of Princeton Group volcanic rocks are likely to have been useful for tool-making, and an important quarry source for these materials is documented from the Paradise Lake locality southeast of Merritt (Mallory-Greenough *et al.* 2002). Other potential lithic raw materials may have been sourced from the Nicola Group felsites and Ashcroft Formation argillites and siltstones. Furthermore, river bars throughout the Interior Plateau are critical sources of highly-valued cryptocrystalline silicate minerals (e.g., chert/chalcedony/agate/ jasper) (R.Hudson 1999).

Low-elevation fluvial and glaciolacustrine terraces were the preferred locations for pre-Contact habitation sites in this region. Level terrain is most commonly associated with ancient habitations, but in the Nicola Valley, swales and other sheltered features may have

been selected, especially during the windy winter months. Any dry, level setting at higher elevations could have been used for transitory campsites by resource-procurement expeditions to these environments. Many low-elevation settings in the Nicola Valley have a veneer of aeolian silt and fine sand, sometimes associated with deflationary blowouts. In this region, archaeological sites are often associated with fine-textured aeolian sediments, and in blowout settings, artifacts and other cultural materials have high visibility.

6.3.2 Ancient Environments

Significant environmental changes have taken place in the Interior Plateau, including the Nicola Valley, in the 12 millennia since the end of the last glacial advance. These changes altered the local availability of food and other resources, and played a critical role in the lives of the ancient inhabitants of the region. The Quaternary geology of south-central B.C. and adjoining parts of Washington and Idaho is summarized in Baker et al. (1991), Clague (1991), and Fulton and Smith (1978). Fulton (1975) specifically describes the Quaternary geology and geomorphology of the Nicola-Vernon area. Paleoclimatic and paleoecological summaries for the region can be found in Barnosky et al. (1987), Dyke (2006), Hebda (1995), and Mathewes (1985).

6.3.2.1 Late-Glacial Events in the Nicola Valley

Paleoenvironmental research in the Southern Interior has established that the Cordilleran Ice Sheet covered all of southern British Columbia until 11,000-12,000 radiocarbon years Before Present (BP) (Clague 1991; Fulton 1975; Hebda 1982, 1995). The Fraser Glaciation represents the last advance of glacial ice in the Project area (Fulton 1975). Geologists believe that it occurred between about 25,000 and 12,000 BP, with the most severe glacial conditions beginning around 19,000 BP (Roed and Greenough 2004), and reaching its maximum southern extent near the northern Washington town of Chelan about 15,000 BP (Carrara et al. 1996).

In the Nicola Valley area, deglaciation began around 11,000 BP and was essentially complete by 9000 BP. Deglaciation proceeded more quickly in uplands southeast of Merritt (Fulton 1975), and parts of the river valley and basin in which Merritt is situated were choked by "stagnant ice" after surrounding upland areas were ice-free. Before deglaciated lands were recolonized by vegetation, fine-textured silts and sandy sediments were removed by winds and deposited in veneers and dunefields along the valley (Fulton 1975; Ryder 1981).

As down-wasting glaciers freed the uplands, stagnant ice tongues emerging from tributary valleys (in particular Guichon Creek) obstructed meltwater flow and created periglacial lakes much larger and higher than their modern counterparts (Fulton 1969, 1975). The main and tributary valleys of the Nicola River were initially filled with a lake known as Lake Hamilton, later evolving into the slightly lower, smaller Lake Merritt (Fulton 1975). As long as the Nicola/Guichon ice-dam held, the waters of Lake Hamilton and Lake Merritt drained into the Okanagan-Columbia drainage via the Salmon River (Lake Hamilton) or the Stump Lake-Napier Lake-Campbell Creek channel (Lake Merritt). When the ice-dam disappeared, Lake

Merritt quickly drained into the Thompson River valley at Spences Bridge (Fulton 1975; Ryder 1981).

At its maximum extent, Lake Merritt filled the valley of the Coldwater River to the southwest, northwest to the end of Stump Lake, and part-way up the side-valleys of the Nicola River and Quilchena Creek above Nicola Lake (Fulton 1975). At its highest stand, this lake stood at an elevation of approximately 745 m asl. As suggested above, Lake Hamilton (937 m asl) stood significantly higher than Lake Merritt, and extended over the Nicola River watershed divide into the Salmon River drainage. Today, the strandline of Lake Hamilton can be discerned as a long, horizontal line high on the south side of the valley between Merritt and Nicola Lake. Deep deposits of fine-textured, silty sediments were deposited at the bottom of Lakes Hamilton and Merritt, and were rapidly downcut by the modern rivers, creating conspicuous silt bluffs visible today along the Nicola River downstream from the outlet of the lake.

The timing of the various events that affected development of the Southern Interior glacial lakes is not well known. However, it is likely that they only existed for about 1000 years (Roed and Greenough 2004), and had largely disappeared by about 8900-9000 BP (Ryder 1981). Modern drainage patterns in the Nicola Valley were established between 8500 and 7000 BP, and most deposition of aeolian sediments had ceased by about 6000 BP (Ryder 1981). Lastly, rivers throughout the Southern Interior achieved their bedrock-controlled modern channels by about 5000 BP, creating stable waterways available for re-colonization by anadromous salmon populations.

6.3.2.2 *Paleo-Environments of the Interior Plateau*

The best recent summaries of the paleoenvironmental history of British Columbia, including the Nicola Valley, are Dyke (2006) and Hebda (1995).

As uplands within the Southern Interior began to deglaciate (between 12,000 and 11,000 BP), plant and animal populations re-established themselves from warmer habitats in Washington and Oregon, beyond the extremes of glacial ice and arctic cold. During this Early Neoglacial interval, the Interior Plateau was characterized by a treeless landscape consisting of cold-adapted, pioneering grasslands (so-called steppe tundra) in the uplands and extensive relict ice and glacial lakes in the valleys (Dyke 2006; Hebda 1995). Hardy coniferous forests dominated by lodgepole pine and spruce became established between 12,000 and 10,000 BP, and grasslands developed in the valley bottoms as they were cleared of relict ice (Dyke 2006; Hebda 1995).

At the end of this period (approximately 10,000 BP), a shift to a significantly warmer and drier climate began, signified by increases in ponderosa pine, grasses, and sage, and a corresponding decrease in lodgepole pine and spruce (Mathewes 1985). Earth scientists refer to this interval as the Hypsithermal. Between 10,000 and 7500 BP, sage grasslands became widespread throughout the southern Interior Plateau, especially at lower elevations. In especially arid settings, such as would have existed in the Nicola Valley, valley bottom

grasslands probably expanded upwards to merge with alpine grasslands (Dyke 2006; Hebda 1982). Forest vegetation in such conditions would have been restricted to stream valleys and moister, north-facing slopes at upper elevations.

The end of the Hypsithermal interval in this region coincides with a massive fall of tephra from the catastrophic eruption of Mount Mazama (now Crater Lake, Oregon) around 6900 BP. Shortly after this period (approximately 5000 to 4000 BP), the climate again shifted, gradually becoming moister and cooler (Hebda 1995; Mathewes 1985).

Between 4000 and 3500 years ago, montane grasslands receded and dryland species (e.g., sagebrush) were largely replaced by plants better adapted to mesic conditions (Hebda 1982, 1995). Expansion of ponderosa pine and Douglas-fir forests occurred throughout the uplands and eventually descended to altitudes just above modern elevations (Hebda 1982). These changes signify a return to cooler and moister conditions, and geologists refer to this period as the Mid-Neoglacial Interval, marked by pronounced advances of mountain glaciers throughout the Pacific Northwest (Dyke 2006). The cool and moist climate persisted until about 2000 BP, but mountain glaciers again began to advance between 900 and 100 BP during the last, or Late-Neoglacial Interval (the "Little Ice Age") (Roed and Greenough 2004). During this most recent Neoglacial period, grasslands became restricted to valley bottoms and south-aspect alpine settings (e.g., the alternative 1B height of land northeast of Danish Lake). Soon after this, the climate became slightly drier, and modern vegetation boundaries were established.

Historic colonization and land development have profoundly affected the modern distribution of vegetation in the Thompson and Nicola Valleys. In particular, Aboriginal communities may have deliberately modified the landscape by repeatedly burning encroaching trees to maintain the productivity of economic plants associated with grassland environments (Lepofsky and Peacock 2004). Furthermore, timber harvesting and unrestricted cattle grazing may have resulted in an increase of sagebrush at the expense of grasses and trees (Cawker 1978). Land clearing for farming has also resulted in increased populations of cottonwood, alder, willows, and non-native ornamental trees and weedy herbs throughout the region.

6.4 Cultural Setting

6.4.1 Ethnographic Background

The Merritt Area Transmission Project area is within the asserted traditional territories and/or areas of interest of several First Nations communities, represented for cultural heritage matters by the Nicola Tribal Association, the Okanagan Nation Alliance, and Esh-kn-am Cultural Resources Management Services. All of these communities are traditional speakers of the Thompson (*Nlaka'pamux*) language, part of the Interior Salish branch of the Salishan linguistic family (Wyatt 1998).

A comparative summary of traditional Plateau cultures is provided by Ray (1939). Pioneer B.C. ethnographer James Teit (1900) has published the most comprehensive description of Nlaka'pamux traditional culture. Wyatt (1998) is the most recent summary, and additional works were produced by Dawson (1892), Hill-Tout (1978), and Teit (1898, 1912). A recent ethnographic study of the Nicola Valley was conducted in 1985 by Dorothy Kennedy and Randy Bouchard (British Columbia Indian Language Project), as part of an archaeological impact assessment for the Coquihalla Highway project (Kennedy and Bouchard 1985). Their study included review of archival documents and informant interviews. The following ethnographic summary is based primarily on the results of their study. Other authorities who have published on the ethnography of this region include D.Hudson (1990).

Although presently occupied by *Nlaka'pamux*-speaking communities, prior to about AD 1850 the main resident population of much of the Nicola Valley were Athapaskan-speaking peoples of the *Stuwix* [Nicola-Similkameen] Nation (Boas 1896; Kennedy and Bouchard 1985). During this time, Salishan-speaking peoples from the neighbouring Thompson and Okanagan regions also made use of the valley, primarily for hunting large game such as wapiti, and occasional trout fishing in the larger bodies of water such as Douglas and Nicola Lake (Hill-Tout 1978; Hudson 1990; Kennedy and Bouchard 1985; Teit 1930). A combination of intermarriage and warfare led to the disappearance of the *Stuwix*, and by 1900 only the *Nlaka'pamux* and Okanagan Nations made use of the area (Kennedy and Bouchard 1985).

Traditional *Nlaka'pamux* culture can be characterized as a semi-sedentary, egalitarian lifeway. *Nlaka'pamux* communities were divided into several distinct bands, which would have been smaller than the modern bands. Each traditional band resided at a main winter village, represented by a single chief. Residence between villages was quite fluid, and families moved quite regularly in response to seasonal resources, or even on a whim. Religious beliefs included the Interior Salish guardian spirit quest, shamanism, and spiritualism.

6.4.2 Traditional Habitations

Archaeological research carried out in the Southern Interior documents the existence of a "Plateau Pithouse Tradition," that dates from approximately 4000 years ago to the post-Contact period (Kuijt and Prentiss 2004; Richards and Rousseau 1987). The "pithouse tradition" is characterized by the existence of several styles and sizes of dwellings that denote a continuity of habitation patterns. A pithouse is a semi-subterranean dwelling based on an excavated circular to oval pit. The size of these pits was variable, but they usually measured 1-2 m in depth and from about 5-16 m in width (Alexander 2000; Teit 1900). A conical roof structure, consisting of a framework of support poles and timbers, was placed over the depression. The roof was then overlain with bark strips or mats, with another layer of branches for ventilation, which in turn was covered with clay and soil. Access was provided through a smoke-hole in the centre of the roof by way of a ladder to the inside, although there are documented examples of pithouses with side-entrances (Alexander 2000).

Pithouses were widely used by the Nlaka'pamux and neighbouring peoples. Pithouse village sites are most commonly found at lower elevations near major rivers and their tributaries (Laforet and York 1981). Teit (1900) reports that the Nlaka'pamux pithouses were generally used as winter dwellings and "were within easy distance of water, and were inhabited by groups of families related to each other, who, although scattered during the hunting and fishing seasons, dwelt together during the winter."

Pithouse villages usually also include hearths, cache pits, and cooking features, correlated with the intensive use of salmon and the development of a relatively sedentary subsistence-settlement pattern. While fishing has been recorded as the dominant economic activity, there is abundant archaeological evidence for hunting and root gathering. Teit (1900) observed and recorded the range of plants traded by the Nlaka'pamux to coastal and neighbouring groups. More recent research in the Pacific Northwest has shown that plants and plant products contributed a greater proportion to the diet of "hunter-gatherer" peoples than previously recognized (Hunn 1981; Lepofsky and Peacock 2004; Turner and Hamersley-Chambers 2006). Throughout the winter, hunting and trapping continued; however, the majority of a community's sustenance was provided by the foods stored from the previous season.

In the spring, the people moved from their winter pithouse villages to seasonal camps, often at mid to high elevations, where they resided in matlodges made of woven mats placed over a framework of light poles. Other types of lodges or temporary shelters were also constructed, depending on the duration of the stay and the number of persons requiring cover.

James and Oliver (1993), Kennedy and Bouchard (1985), and Teit (1900) identify several traditional Nlaka'pamux and some Stuwix place names in the Project area. Principally based on the work of Kennedy and Bouchard (1985), the locations of these places are identified in Section 6.8 and they are shown on Figure 6.1.

6.4.3 Traditional Subsistence

Prior to the arrival of Europeans, Interior Salish economies were based on fishing, hunting, gathering, and trading. Typically, an emphasis on fishing and hunting was commonly ascribed by early ethnographers, but more recent ethnobotanical studies (e.g., Lepofsky and Peacock 2004; Turner and Hamersley-Chambers 2006; Turner et al. 1990) acknowledge the importance of traditional Nlaka'pamux knowledge of useful plants and their management.

The spring melt, first in the river valleys and then at the higher elevations, led to the first gathering of green shoots of wild roses, stinging nettles, and other plants. Other kinds of roots harvested included avalanche lilies, wild potatoes, bitterroot, nodding onion, chocolate lilies, balsamroot, tiger lilies and cow parsnip. Edible plants and roots were cooked in pit ovens and traded. In the spring, cambium was also gathered from lodgepole and ponderosa pine trees, to provide a sweet delicacy in mid- to late spring. Late spring fishing for trout in the plateau lakes (e.g., Mamit Lake, Douglas Lake) was also practiced.

The traditional summer lifestyle of the Nlaka'pamux involved the pursuit of migrating salmon along the Thompson and Nicola Rivers and their tributaries. Vast numbers of salmon were netted, wind- and sun-dried, and stored for future consumption or trade. Chisholm (1986) estimates that the dietary proportion of marine protein derived from salmon, ranged from 40% to over 60% in the diet of pre-Contact Interior peoples (*cf.* Cybulski 2006). The Nlaka'pamux primarily fished with spears, dip-nets, and hook-and-line in shallow waters, or using drift-nets in deeper waters; the technology adopted varied according to community and locality. They also fished for resident trout and coarse fish in creeks and rivers when those waters were flowing fast and cold. At the same time, other families traveled along well-defined trails to high-elevation settings to camp and gather a variety of berries and medicinal plants. Between June and September, berries were harvested as they ripened at different elevations. Berries and other kinds of plants were picked, dried, and brought back for winter consumption and trading. Different species of grouse, fur-bearing mammals, and mule deer were also hunted from high-elevation camps.

July and early August was the peak berry-picking season, although other kinds of plant foods also featured in the diet of Nlaka'pamux people. Some food plants, such as balsamroot, bitterroot, and hazelnuts, were limited in availability to certain environmental settings. Others were (and are) available throughout all or most of the Nlaka'pamux homelands. By knowing and making use of the new growth at different elevations throughout the summer, fresh plant foods were available between early April and late September.

During the fall, organized hunting of mule deer, mountain goat, bighorn sheep, wapiti (and more recently, moose) occurred along the forest edges, as well as alpine and subalpine settings. These hunts used a variety of techniques, but customarily involved a communal drive with the use of long deer fences, corrals, nets, deadfalls and pitfalls. Dogs were also used when hunting and brought along when camping. The meat was dried, stored and/or traded. The hides were scraped, tanned and smoked for clothing and other purposes. The annual cycle wound up in mid-fall with the hunt for deer and other game animals in the mountains.

The traditional Nlaka'pamux tool kit was for the most part, light, small and portable. A wide variety of tools and materials are represented in the archaeological record. Fine-grained dacite was the most frequently used lithic material; however, chert, chalcedony, obsidian, sandstone, and nephrite (jade) were also used. The bow and arrow was the primary hunting weapon in late pre-Contact times (that is, just prior to contact with European societies); earlier, spears or shorter darts hurled with an atlatl (or throwing stick) were used. A diverse array of animal and plant materials including bone, antler, shell, hide, bark, root and fibre were also employed as tools.

6.4.4 The Contact Period

Compared with other regions of the Interior Plateau, the Nlaka'pamux have a long history of European contact. Simon Fraser explored the Fraser River area and first met the

Nlaka'pamux in 1808. The arrival of horses in the early 18th century allowed the Nlaka'pamux to travel farther to hunt, gather, fish, trap, and trade. Following the establishment of a trading post at Kamloops in 1812, documents describe Nlaka'pamux transactions in salmon and furs with Fort Kamloops (Wyatt 1998). The arrival of newcomers to this region resulted in several waves of epidemics that afflicted all Nlaka'pamux communities and likely hastened the demise of the Stuwix (Teit 1900). The development of new kinds of land use, such as ranching, led to a more sedentary lifestyle.

In 1858, discoveries of placer gold by Nlaka'pamux people on the Thompson River below Spences Bridge led to an influx of Euro-American prospectors intent on making their fortunes as gold miners. Most miners did not intend to stay long, but non-native settlement along the Thompson River and in the Nicola Valley commenced with land pre-emptions in the late 1860s. Indian Reserves were promised to First Nations' communities (though rarely surveyed) by the Colonial Government prior to 1885. Gradually, Anglican and Roman Catholic missionaries usurped Nlaka'pamux traditional ways.

Following completion of the Canadian Pacific Railway in 1885, many natives of the Interior Plateau became farmers, ranchers, loggers, miners, railroad workers, and casual labourers. During this period, Nlaka'pamux became renowned for their involvement in freight transport. By the first quarter of the 20th century, cabins had replaced pithouses and matlodges, manufactured cloth replaced traditional clothing materials, and store-bought food had replaced many wild plant foods. However, many continued to fish, hunt, and gather wild game and fish. To some degree, those students who were sent to residential schools learned English and Euro-Canadian vocational skills and culture (Wyatt 1998).

6.5 Archaeological Background

Archaeological sites are locations with material remains produced by human activities in the past. In British Columbia, archaeological sites are usually attributed to First Nations' settlement and land use in pre-Contact times, but places with physical evidence of more recent activities pre-dating World War 2 are recorded as historical archaeological sites. Historical sites will often have intact structural remains or "built heritage" (including residences, industrial structures, and farm outbuildings), but could also include roads and trails, single objects such as vehicles or machines, and featureless sites such as rubbish dumps.

Archaeological sites in British Columbia are recorded in the Provincial Heritage Register, maintained by the Archaeology Branch (Site Inventory Section), the provincial government agency responsible for management of archaeological resources in accordance with the *Heritage Conservation Act*.

Archaeological sites are numbered according to the Borden Site Designation Scheme (Borden 1952), which is used throughout Canada. This scheme is based on the maps of the National Topographic System and uses latitude and longitude to generally pinpoint a site's location. The four alternating upper and lower case letters (e.g., EcRe) denote a unique

“Borden unit” measuring 10’ latitude x 10’ longitude. Sites are numbered sequentially within each Borden unit based (usually) on their date of discovery (i.e., EcRe-4 near the Highland Substation is the fourth site recorded in the “EcRe” Borden unit).

6.5.1 Archaeological Site Types

Archaeological sites are defined according to the types of **archaeological remains** (i.e., artifacts and features) present, and according to the types of traditional activities suspected to have taken place at the site. A particular site can be comprised of one or more of these types of archaeological remains, and generally speaking, it is expected that larger sites will be more complex than smaller ones.

Typical archaeological remains found in the Nicola Valley area include cultural depressions (housepits, subsistence features), artifact scatters, burial places, petroforms, rock art, culturally modified trees, trails, and historic remains, each of which is described below:

- **Cultural depressions** are among the most distinctive archaeological features associated with low-elevation sites in the Nicola Valley and include: (i) housepits (remnants of semi-subterranean pithouses or matlodges); (ii) sidehill platforms (remnants of matlodges or sweat lodges); and (iii) subsistence features (for storing and preparing plant and other resources). The functional interpretation of these features is dependent upon a number of factors, including size, associated artifacts, and presence or absence of cultural materials like fire-altered rocks;
- **Housepits** are circular to sub-rectangular depressions, in this region usually between about 4 m and 15 m in diameter (or as measured along the longest axis). These features are the remains of semi-subterranean pithouses or matlodges. Housepits usually occur in small village clusters, often in association with smaller pits used for food preparation and storage, butchered animal bones, and artifacts. Housepits are typically found in environmental settings with good solar exposure, protection from winter winds, and proximity to potable water; secluded locations without some or all of these attributes were sometimes selected for defensive reasons; and
- **Subsistence features** are usually present at locations traditionally used to harvest and process traditional resources, but are commonly associated with village sites as well. Cache or storage pits are the most common type of subsistence feature, and appear as circular surface depressions between 1 m and 3 m in diameter, frequently in closely-spaced clusters and often in proximity to housepits. Cooking features are a common subsistence feature in this region; they may be small, charcoal-filled depressions, or platforms covered with carbon-stained soil, but are often larger than cache pits (Lepofsky and Peacock 2004).

Artifact scatters are clusters of artifacts (usually stone in this region), including formed tools (e.g., arrowheads, spear-points, hide-scrapers) and the waste-flakes resulting from the manufacture and maintenance of those tools (“debitage”). Artifact scatters may be found on

the surface or buried beneath the surface. Many of these sites tend to be small, represented by a low-density scatter covering a small area, or even a single, isolated find. However, some lithic scatters, especially those associated with base-camps or quarry workshops, are much larger, and can be up to several hectares in extent. Small scatters are usually dominated by one lithic raw material type, but seasonal camps could have many different types of lithic materials present.

Many artifact scatters represent transitory use of the landscape in association with the exploitation of particular resources. Recurrently occupied sites will typically include other kinds of archaeological remains, such as butchered animal bones and fire-altered rocks.

Vitreous or fine-grained “glassy” dacite is the most abundant lithic material used to make stone artifacts throughout the Interior Plateau, though nephrite (jade), steatite (soapstone), and cryptocrystalline silicates (jasper, chert, agate, chalcedony) are frequently seen. Stone tools were made to arm hunting weapons (projectile points), for butchering game animals (knives, retouched flakes), or for processing animal hides and wood-working (scrapers).

- **Burial places** are locations where First Nations’ people interred their dead. They are commonly found near winter villages, but occur generally throughout the landscape for individuals who died when away from their villages. In this region, burial places are most often found in sandy hills overlooking lakes or other waterways. However, talus slopes were characteristically used for winter interments;
- **Petroforms** are deliberate constructs of stones (e.g., walled enclosures, cairns, stone-lined pits), which could either be associated with subsistence activities like hunting blinds and berry-drying, or ceremonial activities such as puberty rituals;
- **Rock art** sites are locations where First Nations’ people painted designs (pictographs) in red ochre, often in places of particular spiritual power used for vision-questing. Pictographs sites in this region are usually found on prominent bedrock outcrops along lakes or rivers, as well as along traditional trails (Corner 1968). Petroglyphs, or pecked carvings on bedrock exposures or boulders, are found in the Fraser Canyon within Nlaka’pamux territories, but are either very rare or absent from the Thompson River and Nicola Valley areas;
- **Culturally modified trees (CMTs)** are trees which have been intentionally altered by First Nations’ people and denote ongoing, traditional use of forest resources. Although a number of tree species were traditionally used by Aboriginal people on the Interior Plateau, cambium-stripped lodgepole pine and ponderosa pine are the most common CMTs in this region (Lepofsky and Peacock 2004). A cambium-stripped or bark-stripped CMT is a tree from which a section of bark has been removed, resulting in a rectangular to lenticular bark scar (Archaeology Branch 2001). Nearly all CMTs will occur in proximity to a major watercourse or trail on well-drained, level ground or hillsides with less than 50° of slope, and in old-growth stands containing mature pine trees;

- **Trails** represent traditional routes used by Aboriginal people, either for subsistence pursuits or for long-distance trade and communication with neighbouring First Nations. Many traditional trails became historically known routes during the fur trade period, and were used later still for contemporary roads. Along the Thompson River and in the Nicola Valley, rock art sites are frequently associated with traditional trails, and CMTs are commonly found within a short distance of traditional and more recent trails; and
- **Historic remains** denote artifacts, structures, and other features usually associated with Euro-Canadian or Asian-Canadian settlement and land use. In the Project area, they are most likely to be associated with late-19th and early-20th century homesteading and ranching, coal-mining, and railways.

6.5.2 Regional Cultural Chronology

The Nicola Valley is situated within the Canadian Plateau as defined by Richards and Rousseau (1987). Chatters and Pokotylo (1998) summarize the archaeological correlates of Plateau culture throughout the Pacific Northwest. Scholarly works that synthesize the prehistory of the Interior Plateau of British Columbia include Pokotylo and Mitchell (1998), Prentiss and Kuijt (2004), Richards and Rousseau (1987), Rousseau (2004), and Stryd and Rousseau (1996). Excavations of numerous prehistoric sites throughout the Plateau have provided a fairly reliable understanding of regional prehistory, as summarized in the following text and in Table 6.1.

6.5.2.1 Early Prehistoric Period (>10,000 - 7000 BP)

The initial peopling of the Interior of B.C. probably commenced between about 11,000 and 10,000 BP (Rousseau 2008, 2004), by ancient Aboriginal people moving into the region from the Columbia Plateau and Great Basin of the United States. These migrations appear to have involved peoples belonging to five different archaeological traditions: (1) the Western Fluted Point Tradition; (2) the Intermontane Stemmed Point Tradition; (3) the Plano Tradition; (4) the Early Coast Microblade Complex; and (5) the Old Cordilleran Tradition (Stryd and Rousseau 1996).

During the Early Prehistoric period, initial cool and wet postglacial conditions were quickly replaced by hot and dry conditions (the so-called Hypsithermal or Climatic Optimum) (Hebda 1995). During this period, a subsistence pattern is inferred, characterized by a reliance on hunting and an ever-broadening foraging spectrum, with increasingly efficient exploitation of small animals and plants (Stryd and Rousseau 1996). In the Project area, the earliest manifestations of this occupation may have been associated with mid-elevation grasslands, away from inhospitable glacial lakes that filled the valley bottoms. These glacial lakes drained around 8900 BP, and their valleys would have become attractive sources of potable water during the dry Hypsithermal climatic regime. However, low-elevation settings away from rivers and lakes were very arid and some game species may have been absent. Sites of this age will almost always be found in deeply-buried contexts, often associated with aeolian sediments. The suite of game animal species available to the earliest inhabitants of

the Interior Plateau would have included mule-deer and bighorn sheep, with bison likely present at least in the early Holocene and wapiti probably more abundant than deer for most of that time.

Table 6.1: Archaeological Periods of the Southern Interior Region

Period	Dates ¹	Cultural Characteristics (selected)
Early	10,000 - 7000 BP	<ul style="list-style-type: none"> • associated with warmer/drier environmental conditions • subsistence pattern characterized by a reliance on hunting and a broad foraging spectrum with increasingly-efficient exploitation of small animals and plants • often associated with mid-elevation Holocene grassland environments • low-elevation valley settings away from rivers and lakes would have been extremely arid, and some modern game species may have been absent, though bison were present (predominantly to the SE) • no evidence for social ranking • no evidence of permanent villages or habitation structures
Middle	7000 - 3500 BP	<ul style="list-style-type: none"> • coincides with onset of cooler, moister conditions • correlated with the 6900 BP ashfall from Mt. Mazama (Westgate et al. 1970) • subsistence still based primarily on hunting game animals and gathering • plant foods, although salmon populations available in some watersheds • freshwater mussels are more important in sites of this age than at later times (Prentiss and Kuijt 2004) • Lochnore Phase represents a riverine-adapted society able to exploit stabilized salmon populations • no evidence for ranked social organization • no evidence for presence of resource storage • a few permanent houses known (e.g., South Thompson River; Columbia River) • a few burial places known, but rare
Late	3500 - 200 BP	<ul style="list-style-type: none"> • Plateau Pithouse Tradition represents a more sedentary way of life focused on: <ul style="list-style-type: none"> -resource mass-harvesting and systematic food storage • subsistence activities identical to those recorded by ethnographers • semi-subterranean pithouse in general use as winter residence

Period	Dates ¹	Cultural Characteristics (selected)
		<ul style="list-style-type: none"> • matlodges may begin to replace pithouses in latest pre-Contact times • permanent villages present, some of large size • artifacts identical or similar to those used by ethnographic communities • long-range trading networks present; acquisition of horses from Columbia Plateau (Schalk and Cleveland 1983) occurred toward the end of this period • achieved status widespread; localized evidence for ascribed status • burial places within pithouse floors (Shuswap Horizon), prominent landscape features, talus slopes (winter interments), occasionally within cairns or cists
Historic (Ethnographic) Period	About 200 years BP to present	<ul style="list-style-type: none"> • abandonment of traditional house styles and artifact types occurs quickly • adoption of European house styles and tools • subsistence activities become oriented to European cash economies

Note: 1 Following archaeological convention, dates are expressed as radiocarbon years BP (Before Present), where present equals AD 1950.

Dated sites earlier than about 7000 BP are rare in the Southern Interior of B.C., but examples are known from: (1) a campsite (dated 7530 BP) buried by the Drynoch Slide south of Spences Bridge (Rousseau 2004); (2) a human skeleton (dated 8240 BP) from Gore Creek west of Chase (Cybulski et al. 1981); (3) another encampment (dated 8400 BP) at the Landels Site on Oregon Jack Creek near Ashcroft (Rousseau *et al.* 1991a); and (4) a third campsite (dated 7400 BP), at Stirling Creek in the Similkameen River valley southeast of Hedley (Copp 2006).

6.5.2.2 Middle Prehistoric Period (7000-3500 BP)

The Middle Prehistoric period in the Southern Interior generally coincides with the end of the Hypsithermal and onset of cooler, moister conditions. The beginning of the Middle Prehistoric period is conveniently correlated with the 6800 BP ashfall from the catastrophic eruption of Mt. Mazama (now Crater Lake in Oregon), which blanketed the entire Pacific Northwest (Westgate et al. 1970). Middle Prehistoric subsistence was still based primarily on hunting game animals and gathering plant foods, although robust salmon populations were available to First Nations' fishers in some watersheds, and freshwater mussels are more important constituents in some sites of this age than they are at later times (Prentiss and Kuijt 2004).

At the beginning of this period, the distinctive ungulate-hunting Nesikep Tradition culture emerged (Rousseau 2008, 2004; Stryd and Rousseau 1996). Once thought to be restricted to the Fraser-Thompson drainage (Stryd and Rousseau 1996), characteristic Nesikep Tradition artifacts have now been encountered in the Similkameen Valley and Central Interior Plateau as well (Copp 2006; Magne and Matson 2008). Its origins doubtless lie in the mix of early regional traditions, but appears to have affinities to archaeological remains from the Columbia Plateau of Washington and Idaho (e.g., Andrefsky 2004; Salo 1985). Where sites of this age have been identified, they are usually configured to the higher terraces of existing rivers (e.g., Arcas Associates 1985a), as well as higher-elevation settings like the Highland Valley and Hihium Lake (Arcas Associates 1983, 1986; Gehr 1976). The latter part of the Nesikep Tradition is called the Lehman Phase (Arcas Associates 1985a; Rousseau 2004; Rousseau and Richards 1988; Stryd and Rousseau 1996), approximately dated from 6000/5000 to 4400 BP. Lehman Phase sites are typically configured to higher landforms in modern river valleys, and to existing watercourses and lakes in mid-elevation and upland settings (Prentiss and Kuijt 2004; Stryd and Rousseau 1996).

A new archaeological culture, called the Lochnore Phase, appears in the Fraser - Thompson drainage about 5500 BP and persists until 4000/3500 BP (Prentiss and Kuijt 2004; Stryd and Rousseau 1996). The appearance of this tradition is correlated with the development of riverine-adapted societies that were able to intensively exploit salmon populations that stabilized with the onset of the post-Hypsithermal climatic and hydrological regime. The Lehman Phase people of the Nesikep Tradition and the Lochnore Phase people seem to have co-existed and may have maintained separate cultural identities for at least several hundred years. By ca. 4400 BP, the fishing-oriented, Lochnore Phase people had absorbed (perhaps both culturally and genetically) the indigenous, hunting-oriented, Lehman Phase people, bringing an end to the Nesikep Tradition (Rousseau 2004; Stryd and Rousseau 1996).

Dated Lehman or Lochnore Phase sites are known from the Highland Valley (Arcas Associates 1983, 1986), Rattlesnake Hill (Arcas Associates 1985a), Oregon Jack Creek (Rousseau and Richards 1988; Rousseau *et al.* 1991), Savona (Bussey 1995), Monte Creek (I.R. Wilson Consultants 1992; Wilson 1991), Adams Lake (Bailey *et al.* 1993), and on Shuswap Lake (Rousseau *et al.* 1991b). A recent archaeological assessment on the Chutter Ranch between Merritt and Nicola Lake has revealed the presence of Lehman and Lochnore-aged components in the Project area (Antiquus Archaeological Consultants 2008a). Additional, undated sites of this attribution are known from the Thompson River valley between Savona and Spences Bridge, from Hihium Lake, the Fraser Canyon at Stein River (Antiquus Archaeological Consultants 1995), the Similkameen River valley (Copp 2006), and the Northern Cascade Mountains of Washington (Mierendorf *et al.* 1998).

6.5.2.3 Late Prehistoric Period (3500-200 BP)

The end of the Lochnore Phase (and the Middle Prehistoric period) and establishment of the succeeding Plateau Pithouse Tradition (Late Prehistoric period) occurred about 3500 BP

(Prentiss and Kuijt 2004; Richards and Rousseau 1987; Rousseau 2004). The Plateau Pithouse Tradition represents a more sedentary way of life focused on intensive salmon harvesting and storage, supplemented as required by other resources, and on use of the semi-subterranean pithouse as a winter residence (Kuijt and Prentiss 2004).

The Late Prehistoric period on the Canadian Plateau has been divided into three successive cultural horizons, each with its own artifact styles, technological attributes, and settlement characteristics (Richards and Rousseau 1987; Rousseau 2004, 2008; *cf.*, Pokotylo and Mitchell 1998). The three horizons are the Shuswap Horizon (3500 to 2400 BP), Plateau Horizon (2400 to 1200 BP), and Kamloops Horizon (1200 to 200 BP). All three horizons of the Late Prehistoric period, as well as early historic remains, are commonly represented in cultural materials recovered from archaeological excavations throughout the Thompson Plateau (e.g., Antiquus Archaeological Consultants 1999; Richards and Rousseau 1987; Sanger 1970; Wyatt 1972).

6.6 Baseline Assessment Results

6.6.1 Archaeological Research in the Nicola Valley

A detailed, systematic inventory of archaeological sites has never been carried out in the Nicola Valley, though several intensive site-surveys of small landscape units have been conducted in this area. The earliest reports of archaeological sites in the Nicola Valley were made by pioneer geologist George Mercer Dawson (Geological Survey of Canada), who collected several artifacts during a mapping expedition in 1888. Further investigations took place about ten years later, when Harlan Ingersoll Smith (American Museum of Natural History) observed and tested several archaeological sites in the Nicola Valley and Kamloops areas between 1897 and 1899 (Smith 1900).

The first archaeological studies in modern times began when David Wyatt (Brown University) carried out a site inventory and excavation program between 1968 and 1970 (Wyatt 1970, 1972). This work was followed by a several impact assessments for linear transmission line, pipeline, and highway developments between Kamloops, Merritt, and Vernon during the 1970s and 1980s. Among the most detailed of these were archaeological assessments for BC Hydro transmission lines (e.g., Warner 1980, 1981; Weber and Seymour 1977) and for the Coquihalla Highway Project (Arcas Associates 1985b, 1987). In 1991, Malcolm James and Lindsay Oliver (Simon Fraser University) conducted a research-oriented archaeological and ethnographic site survey in the vicinity of Nicola and Pennask Lakes on behalf of the Upper Nicola Indian Band (James and Oliver 1993). In 2007, Mike Rousseau and others (Antiquus Archaeological Consultants 2008a) carried out a systematic inventory of archaeological resources on the Chutter Ranch, resulting in the identification and recording of 89 sites. Most recently, Clinton Coates (Golder Associates 2008) and Ewan Anderson (Arcas Consulting Archeologists 2009) inspected proposed development properties within 500 m of the Merritt Substation, identifying and recording a total of four new sites.

6.6.2 Archaeological Resources in Proximity to the Proposed Alternatives

Archaeological site records downloaded from the RAAD application recovered information on documented sites within the area encompassed by the Merritt Area Transmission Project (Figure 6.1). Broken down according to their *relative* proximity to the various alternatives, there are 42 sites near the alternative 1A, 64 sites near alternative 1B, and 59 sites near alternative 2. The total number of sites shown on Figure 6.1 (n=156) is slightly less than the apparent total of 165, because many sites are common to all three alternatives, particularly in the lands around the Merritt Substation terminus. Collectively, these sites provide critical information about the types of environments in which as-yet undocumented archaeological sites within should be expected to occur. Basic information about these sites is summarized in Section 6.8.

Nineteen documented archaeological sites are recorded within arbitrary 500 m-wide corridors centered on each of the proposed alternatives. In addition, two new sites were discovered during the archaeological field reconnaissance and another was found during the fishery surveys (Rachel Keeler, pers. comm., August 2010). Information about all of these sites is summarized in Table 6.2. Eleven of the sites are obviously configured to the Nicola River or other water sources, seven are not close to water, and four more sites have an unclear relationship to water. There is an even split between sites recorded from low-lying, valley bottom settings and those at middle and higher elevations. The distinction is important, because most sections of the alternatives will be built in areas of middle and higher elevation.

Table 6.2: Archaeological Sites within the Merritt Area Transmission Alternatives

Site	Site Type	Recorder(s)	Environmental Correlates	Comments
EaRd-12	Cultural depression	Wyatt: 1969	N side of Nicola River, downstream from lake outlet	Cluster of >30 small depressions, suspected to be storage pits
EaRd-19	Artifact scatter	Hoy/Mohs: 1973 Schulting: 1991	S side of Nicola River, downstream from lake outlet; knolls	Low density artifact scatter with a Kamloops point; at traditional fishing camp and meeting place
EaRd-20	Petroform	James/Schulting: 1991	S side Nicola River; talus slope	3 rock features on a talus slope; suspected to be burial places
EaRd-26	Artifact scatter; Petroform (possible)	French/Mitchell: 2006	Montane ridge W of Quilchena Creek	Low density artifact scatter; rock alignments present, thought to be of modern origin

Site	Site Type	Recorder(s)	Environmental Correlates	Comments
EaRe-2	Burial place; Cultural depression	Wyatt: 1969	N side of Merritt, fluvial terrace	Reported pithouse village and associated burial place; disturbed by present-day Merritt Cemetery
EaRe-11	Artifact scatter	Carlson/Magne: 1981 Coates: 2008 Brolly/Howe/Joe/Michel/Sterling: 2010	N side of Nicola River; lacustrine terrace	Moderate-density artifact scatter on terrace above and N of river
EaRe-12	Artifact scatter	Brolly/Calancie: 1983 Howe/Lawhead: 1984	N side of Nicola River; fan	Low-density artifact scatter including a biface fragment
EaRe-14	Artifact scatter	Howe/Lawhead: 1984	N side of Nicola River; lacustrine terrace	Low-density artifact scatter
EaRe-15	Artifact scatter	Howe/Lawhead: 1984	N side of Nicola River; lacustrine terrace	High-density artifact scatter with graver and utilized flakes
EaRe-16	Artifact scatter	Howe/Lawhead: 1984	N of Nicola River; alluvial fan	Moderate-density artifact scatter including graver, drills, retouched and utilized flakes, projectile point
EaRe-17	Artifact scatter	Howe/Lawhead: 1984	N of Nicola River; bench on alluvial fan	Low density artifact scatter with utilized flake, retouched flake
EaRe-18	Artifact scatter	Howe/Lawhead: 1984	N of Nicola River; bench on alluvial fan	Low density artifact scatter with a retouched flake and elk tooth
EaRe-21	Burial place	Brolly/Joe: 1990	N side of Nicola River; lacustrine terrace	A fenced historic cemetery on the Nicola Ranch
EaRe-121	Artifact scatter	Anderson/Bob/Brolly/Eustache/Gilbert/Ruskin/Suchelle/Taylor: 2008	N side of Nicola River; lacustrine terrace	Low density artifact scatter with 2 retouched flakes
EbRc-TedTomCMT	CMT	Keeler/Tom: 2010	High-elevation setting; beside stream	A single cambium-stripped pine tree

Site	Site Type	Recorder(s)	Environmental Correlates	Comments
EbRe-WPT488	CMT	Brolly/Howe/Joe/Michel/Sterling: 2010	High-elevation setting; between small wetland and subalpine meadows	Small cluster of cambium-stripped pine trees
EbRf-2	Cultural depression; Artifact scatter	Bernick/Eldridge: 1978, 1979	IR#1A; low hill on R bank of Morgan Creek tributary stream	Single small depression surrounded by rocks; scraper found on the later visit
EcRe-4	Artifact scatter	Carlson/Magne: 1981 Hewer: 1996 Dewing/Joe/Markey/Suchell: 2002 Keeler/Walker: 2010	E of Guichon Creek; fluvial terrace at Highland Substation	Medium-high density artifact scatter with numerous tools
EcRe-16	Artifact scatter	Dewing/Joe/Markey/Suchell: 2002	E of Guichon Creek; fluvial terrace N of Highland Substation	Medium density artifact scatter with debitage and faunal remains
EcRe-17	Artifact scatter	Dewing/Joe/Markey/Suchell: 2002 Eng/Hewit/Hodges/LeBeau/Sagabbaria/Taylor: 2008	W of Guichon Creek; fluvial terrace W of Highland Substation	Medium density artifact scatter; Shuswap Horizon point found
EcRe-27	Artifact scatter	Burk/Clark/Dick/Eng/Eustache/Hodges/LeBeau/Sagabbaria/Taylor: 2009	W of Guichon Creek; fluvial terrace W of Highland Substation	Low density artifact scatter; stemmed projectile point found
EcRe-WPT477	Artifact scatter	Brolly/Howe/Joe/Michel/Sterling: 2010	N side of Rey Creek; high fluvial terrace	Isolated flake

Archaeological sites in the vicinity of the proposed alternatives are dominated by artifact scatters (n=16), sometimes in association with other kinds of archaeological remains (n=3). One undocumented artefact scatter was discovered during the field reconnaissance for this study. Two reported burial places are recorded, and another site is suspected to be a burial place. Cultural depressions are associated with three sites, but two of those have not been visited in over 40 years. Petroforms or possible petroform features are reported from two sites, one of them suspected to be a burial place as mentioned previously. Lastly, two undocumented CMT sites were observed during the field studies for this Project in 2010.

6.6.3 Archaeological Field Reconnaissance

A field reconnaissance of proposed Merritt Area Transmission alternatives took place between 31 August and 2 September 2010. The crew for the reconnaissance was comprised of George Howe and Richard Brolly (AMEC), Paul Joe (Shackan Indian Band), Brian Michel (Nicola Tribal Association), and Bob Sterling (Lower Nicola Indian Band). The primary rationale for the reconnaissance was to obtain a visual impression of the landscape traversed by the alternatives, and evaluate the archaeological resource potential of different environmental settings. Some of the landscape features observed during an in-office review of orthophotos were visited in the field, and their relative integrity and potential influence on archaeological site distribution evaluated. The track of the field reconnaissance is shown on the archaeological resource maps that accompany this report.

The reconnaissance took the form of a “windshield survey” along drivable roads and tracks that provided access to the various alternatives. Significant lengths of the alternative 1A and alternative 2 alternatives were readily visible from highways (97C, 5A) or country roads, but alternative 1B is more remote and could only be viewed from a relatively few points where existing logging roads crossed the route. Some other lands more distant from the alternatives were visited, primarily to gain a more contextual impression of the landscape.

Pedestrian traverses were made to inspect particular landforms that could not be easily seen from the roads. During the traverses, crew-members examined exposures of surface sediments to see if archaeological remains (e.g., lithic artifacts, bone fragments, fire-altered rocks) were present. Observations were recorded about the nature of the exposed sediments and vegetation cover, as well as impressions about the integrity of the landscape in general. Discussions about what sorts of traditional land use might have taken place at some of the inspected locations.

Two undocumented archaeological sites were observed during the field reconnaissance. They are: (1) a cluster of cambium-stripped lodgepole pine trees on the alternative 1B (shown on the accompanying maps as EbRe-WPT488); and (2) a single unmodified dacite flake at the edge of a terrace overlooking Rey Creek on alternative 1A (EcRe-WPT477). A third site (EbRc-TedTomCMT) comprised of a single cambium-stripped lodgepole pine tree, it was discovered by Rachel Keeler (AMEC) and Ted Tom (NTA) during a fisheries survey along alternative 1B (R.Keeler, pers. comm., August 2010). The only other direct observations of archaeological remains were made within the recorded boundary of site EaRe-11, in the town of Merritt just east of the Substation.

The presence of the aforementioned CMTs signify that there is as-yet unrecorded evidence for traditional Aboriginal forest utilization in high-elevation settings like those traversed by alternative 1A. The isolated flake at the alternative 1A Rey Creek crossing represents a rare example of a pre-Contact site being found on a landform well-elevated above the valley floor, comparable to EbRf-2 further south on alternative 1A and EaRd-26 along the alternative 2 near Quilchena Creek.

6.6.4 Archaeological Data Gap Analysis

6.6.4.1 Archaeological Resource Inventory - Level of Effort

Archaeological site data downloaded from RAAD signify locations where archaeologists have encountered sites during field studies. However, a particular archaeological field-survey typically covers a significantly larger area than that encompassed by a single site, and information about lands where no sites have been found is just as significant for the research carried out for this Project.

Currently, the Archaeology Branch requires that all archaeological reports submitted in fulfillment of Permit conditions include shapefiles showing the extent of field-survey coverage for the Project described. This requirement is a recent initiative, and many older reports do not have such information in an accessible format. Where discernable in Project reports, field-survey data was digitized from the original maps or even written descriptions to create shapefiles of individual survey locations and uploaded to the Project maps used for this study. This exercise provides a measure of confidence that the documented presence of archaeological sites does or does not reflect the actual distribution of those resources within the landscape of the defined Study Area.

A total of 156 archaeological sites are documented from the defined Study Area, and basic information about these sites is summarized in Section 6.8 of this report. Their locations and provincial registration numbers are shown on the accompanying archaeological resource maps. Table 6.2 provides additional details about the 22 sites situated within arbitrary 500 m-wide corridors centered on each alternative.

The baseline research determined that there have been a total of 43 archaeological studies conducted within the Study Area. These include studies identified via site inventory records, the Archaeology Branch electronic library, or from a review of archaeological permits issued from 1960 to 2010. Those studies for which sites have been registered or for which reports have been submitted are listed in Section 6.8. These studies have covered a minimum area of 22,453 ha within the Study Area (total of Study Area as shown on Figure 6.1 = 295,024 ha). Shapefiles showing the locations of the previous archaeological studies in the Study Area are displayed on the archaeological resource maps. Variable standards of mapping in the past mean that not all previous studies can be shown or plotted to scale, and the approximated total area of 22,453 ha of inspected Project locations represents a *minimum* value for this statistic. This is equivalent to 7.6% of the Study Area a reasonable ratio of inspected versus uninspected lands in this province.

Aside from atypical, research-driven projects like those conducted by Wyatt (1972) or James and Oliver (1993), most of the archaeological studies in the Nicola Valley area have been impact assessments conducted for proposed development projects, ranging from localized residential-commercial-institutional developments (e.g., Antiquus Archaeological Consultants 2008a; Arcas Consulting Archeologists 2009; Golder Associates 2008), to pipelines (e.g., Bernick 1978), transmission-line corridors (e.g., Antiquus Archaeological

Consultants 2008b; Roberts and Brolly 1976; Warner 1980, 1981), highway and other transportation developments (Arcas Associates 1985b; Golder Associates 1996), and various infrastructure projects (e.g., Golder Associates 2010; Markey 2002).

Although extensive areas of the Nicola Valley have been covered by intensive, systematic archaeological research studies (e.g., Antiquus Archaeological Consultants 2008a; Arcas Associates 1985b), a significant percentage of the land base remains essentially unexamined for archaeological resources. In particular, there is a notable paucity of documented archaeological sites south of Mamit Lake in the Guichon Creek valley generally and on Nicola Mameet IR#1 particularly. Similarly, the Meander Hills locality east of Nicola Lake appears to have received only a cursory search for its archaeological resources.

Together with the documented site records, the record of lands covered by previous archaeological studies highlight gaps in our understanding of archaeological resource density and distribution in this area. While numerous archaeological studies have been completed within the Nicola Valley, the frequency of sites identified by some recent projects (e.g., Antiquus Archaeological Consultants 2008a; Markey 2002) signifies that many additional sites remain to be discovered.

6.6.5 Potential Archaeological Resources

Using a variety of information sources, this baseline review evaluated the archaeological resource potential of three proposed alternatives (1A, 1B, 2) for the Merritt Area Transmission Project. Based upon the baseline data, the kinds of archaeological remains that potentially could be present within the corridor for each alternative are identified in Table 6.3. The table indicates the types of sites that could occur, but is not intended to predict the probability of their occurrence.

Table 6.3: Potential Archaeological Remains in Proximity to the Merritt Area Transmission Alternatives

Site Type	Alternative			
	1A	1B	1B/2 Terminus	2
Cultural depression - habitation features	Y	Ψ	?	Y
Cultural depression - subsistence features	Y	?	Y	Y
Artifact scatter - transitory camp/base camp	Y	Y	Y	Y
Burial place - pre-Contact/historic	Y	Ψ	Y	Y
Petroform	?	?	?	Y
Rock art	Ψ	?	Ψ	?
Forest utilization site (CMT)	?	Y	Ψ	?
Trail - traditional/historic	Y	Y	?	Y
Historic site	Y	Ψ	Y	Y

Note:

Y - denotes that trait already documented or likely to be present, at least under pristine environmental conditions

Ψ - trait unlikely to be present, even with high landscape integrity

? - potential for trait to occur is uncertain, and may be contingent upon landscape integrity

In summary, alternative 2 has the greatest overall potential for the most kinds of archaeological remains to be present, closely followed by alternative 1A. The alternative 1B/2 Terminus should have a diversity of archaeological remains comparable to the preceding routes, but its setting has also been most profoundly affected by historic and contemporary land use. Lastly, alternative 1B is rated as having the lowest diversity of potential archaeological remains, not least because much of the proposed route has already been cleared, but primarily because it traverses a resource-deficient, forested upland environment for most of its length.

6.7 Study Limitations

Lands along each of the proposed alternatives for the Merritt Area Transmission Project will exhibit high or moderate potential for archaeological resources. The precise extent and potential rating for those lands will require a follow-up study, ideally when a preferred alternative has been selected.

The baseline review of archaeological concerns arising from the Project faced the following limitations in regards to a determination of archaeological resource potential in the Project Study Area:

1. A GIS-based model of archaeological potential for the Coldwater and Spius LU only covers a small fraction of the alternatives within a few kilometres of the Merritt

Substation. This coverage was not received from the Archaeology Branch (Site Inventory Section) before completion of this report.

2. No GIS-based archaeological potential model comparable to those for the Coldwater-Spius and Swakum LU has been developed for the lands traversed by the alternative 2 south and east of Nicola Lake.

6.7.1 Remaining Information Gaps

The baseline overview determined that, while several archaeological studies have taken place in the Project area, a significant percentage of the land base remains essentially unexamined for archaeological resources. The Guichon Creek valley and the Meander Hills locality stand out in this regard, and middle- and high-elevation environments in general have not been extensively inspected in comparison to valley bottom settings (*cf.*, Antiquus 2008a; Arcas 1985b).

The majority of the information used in this baseline assessment is based on the expertise of archaeological professionals who have worked extensively in the Nicola Valley. The outcome of their research, as well as the observations made during the field reconnaissance, indicate that lands with moderate and high archaeological resource are present within the Project area. Archaeological potential ratings are relative measures of archaeological resources that may occur within a landscape, and are highly contingent upon adequate data. Where data gaps are recognized, identification of lands where sites may be located is a critical requirement prior to the commencement of field studies for an archaeological impact assessment.

6.8 Data Tables

Table 6.4: Traditional Place Names within Proximity to Proposed Development

# ¹	Traditional Name	Translation	Comments	References
1	<i>nsi'sqet</i>	'little split or divide' 'little gully'	Traditional name for Godey Creek, denoting a village situated in the approximate location of Joeyaska IR#2, a short distance SE of Merritt and E of Coldwater River.	Teit 1900 Kennedy & Bouchard 1985: 82
2	<i>nsLa'tko or ntsaLa'tko</i>	'cold water'	Teit identified this place as a village, but Kennedy and Bouchard point out that it is just the traditional name for Coldwater River.	Teit 1900 Kennedy & Bouchard 1985: 82

# ¹	Traditional Name	Translation	Comments	References
3	<i>spayúl</i>	'Mexican person'	One of the elders interviewed by Kennedy and Bouchard identified a flat E of Merritt and S of Nicola River as having been settled by Spanish-speaking people around the turn of the century.	Kennedy & Bouchard 1985: 84
4	<i>ski7káytn</i>	'up on top'	Kennedy and Bouchard identify this place as the traditional name for Hamilton Hill, E of Joeyaska IR#2.	Kennedy & Bouchard 1985: 84
5	<i>skakamálhk</i>	'Douglas-fir sugar'	Traditional name for Sugarloaf Mountain E of Merritt, where a sugary substance was collected from trees.	Kennedy & Bouchard 1985: 84
6	<i>sií'stekns a sni'kiêp nk'iyapáhxw</i>	'underground house of Coyote' 'Coyote dwelling'	Name given to a distinctive low mound formerly situated near Kenguard School in Merritt; very near reported location of EaRe-5, where Mohs and Hoy (1973) were told that burials had been discovered.	Teit 1900 Kennedy & Bouchard 1985: 84-85
7	<i>skwillélk'uu</i>	no translation given	Situated in Merritt, and denotes a spring that never froze through the winter; said to be of particular importance to Stuwix people, and the name may be of Athapaskan origin.	Kennedy & Bouchard 1985: 86
8	<i>s7uyu7súps</i>	'joined together at tail end'	According to Kennedy and Bouchard this is the traditional name of the confluence of the Coldwater and Nicola Rivers in Merritt.	Kennedy & Bouchard 1985: 86
9	<i>tezze'la</i>	no translation given	Kennedy and Bouchard report this was the name of a Stuwix village on the N side of the Nicola River near the present-day Merritt Cemetery.	Kennedy & Bouchard 1985: 85

# ¹	Traditional Name	Translation	Comments	References
10	<i>nts'eskekáktkwu</i>	'chickadee water'	Traditional name of the montane ridge N of Merritt, characterized by a chain of small lakes; apparently a particularly good setting for hunting deer.	Kennedy & Bouchard 1985: 86
11	<i>kw%'%w</i>	no translation given	Traditional Stuwix name for a place on the N side of the Nicola River NW of Merritt; its position on Figure 1 is provisional, though location near the present-day airport is fairly accurate.	Kennedy & Bouchard 1985: 87
12	<i>skenáya</i>	meaning not known	Kennedy and Bouchard were told that this is the name of a low mountain peak N of the airport, known as a good place for hunting deer as well as picking saskatoon berries.	Kennedy & Bouchard 1985: 87
13	<i>npsxewálh</i>	'one trail through water'	This place was an ephemeral pond at the base of <i>skenáya</i> , on the N side of the Coquihalla Hwy #5 E of Merritt.	Kennedy & Bouchard 1985: 87
14	<i>pi7aykwstsút</i>	'one tree standing by itself'	Denotes an extensive flat bisected by Hwy #5 approximately 1 km E of the Merritt airport; a traditional trail that ran from Lower Nicola to Quilchena on Nicola Lake formerly crossed this flat.	Kennedy & Bouchard 1985: 87
15	<i>k^ok^osuhu'áwts</i>	no translation given	According to Kennedy and Bouchard, denotes a low grassy hill on the N side of the Nicola River between Merritt and Nicola; it may be another Stuwix place.	Kennedy & Bouchard 1985: 87
16	<i>nkwemxewáwlh</i>	'trail over knoll'	Denotes a small hill about 2 km W of Nicola, apparently crossed by the same trail referenced for <i>pi7aykwstsút</i> .	Kennedy & Bouchard 1985: 87

# ¹	Traditional Name	Translation	Comments	References
17	<i>stl'kwí7</i>	'cut bank'	Traditional place name for the point where a traditional trail descended to the Nicola River, a short distance below the outlet of Nicola Lake.	Kennedy & Bouchard 1985: 88
18	<i>N7iyatsín s7iswelh</i>	Where there are loons that sing well	Surrey Lake, well-known for large trout.	Kennedy & Bouchard 1985: 94 James & Oliver 1991
²	<i>Nterqminst tiltx</i>	Where the enemy dances (on the Nicola River)	On the Nicola River. Originally recorded as "currently Morten", but unable to identify specific location.	James & Oliver 1991: 133
19	<i>Nlqilmelax</i>	Wide patch of brush	Quilchena, on the southeast corner of Nicola Lake. Name may be of Okanagan origin.	James & Oliver 1991: 133
²	<i>Sux lqaqlus</i>	No translation	Bull Pasture; unable to locate. Name may be of Athapaskan origin.	James & Oliver 1991: 133
²	<i>pen£ at</i>	Beaver Ranch	Nicola Lake, specific location unknown. Name may be Athapaskan in origin.	James & Oliver 1991: 133
²	<i>Siwqen</i>	Diversion of waters	Willow Ranch (location unknown). Name Thompson/Shuswap in origin.	James & Oliver 1991: 133
20	<i>Stqemalst</i>	A person's name	Monck Park Mountain.	James & Oliver 1991: 133
21	<i>Cennou</i>	No translation	Hamilton Mountain; name is Athapaskan in origin.	James & Oliver 1991: 133
²	<i>Sel la xa xalx</i>	Mountain goat's house	Wilson Field; specific location unknown. Name may be Thompson in origin.	James & Oliver 1991: 133
22	<i>Nk'iyapálhwx</i>	No translation given	Merritt (as known by Thompson people living in the Nicola Valley).	Kennedy & Bouchard 1985
23	<i>zuxwt</i>	Drifting down	IR no 4 along Clapperton creek (anglicized from "Zhot").	Kennedy & Bouchard 1985: 88

# ¹	Traditional Name	Translation	Comments	References
24	<i>K'awsíkn skayt</i>	Middle ridge on top	The flat area between Shuta Creek and Clapperton creek, on the upper end of Zoht IR no. 4.	Kennedy & Bouchard 1985: 92
25	<i>nlhekkinnátkwu</i>	Bushy-on-top water	A distinctively bushy area west of Shuta Creek on the south side of the hill from which Rorison Creek drains.	Kennedy & Bouchard 1985: 92
26	<i>Sxats'éts'en</i>	Pertaining to gooseberries	Zoht I.R. no 5. Gooseberries, wild raspberries, and blueberries grow along the creek there.	Kennedy & Bouchard 1985: 92
27	<i>Stetétwen</i>	Little patch of Indian potatoes	While it is unknown if people gathered western spring beauty on this mountain, it is well-known as an exceptionally good hunting area.	Kennedy & Bouchard 1985: 92
28	<i>Swákem</i>	a man from Shulus	Swakum Mountain.	Kennedy & Bouchard 1985: 94
29	<i>Sp'agwus</i>	Burned face	Mount Mabel, an area known for exceptional deer and moose hunting.	Kennedy & Bouchard 1985: 94

Note: ¹Numbers are keyed to positions shown on Figure 6.1. ²Locations are too vague to map

Table 6.5: Previously Recorded Sites within Alternative 1A Locality

Site #	Environmental Setting	Type	Visited
EaRe-1	Hilltop	Cache pit Housepit	1969
EaRe-2	Side of hill near Merritt cemetery	Cemetery Housepit	1969
EaRe-3	Elevated, gently rolling terrain	Housepit	1969
EaRe-5	Nicola River floodplain	Burial	1973
EaRe-7	Bank of Godey Creek	Artifact scatter	1977
EaRe-8	Small knoll near ephemeral creek	Artifact scatter	1978
EaRe-9	Terrace above Nicola River	Artifact scatter	1981 1979
EaRe-11	Gently rolling terrain with S aspect	Artifact scatter	2009 2008 1981

Site #	Environmental Setting	Type	Visited
EaRe-12	Edge of dry arroyo	Artifact scatter	1984 1983
EaRe-13	Crest of small knoll	Artifact scatter	1984
EaRe-14	Near bottom of gully	Artifact scatter	1984
EaRe-15	Along narrow gully	Artifact scatter	1984
EaRe-16	Small flat bench	Artifact scatter	1984
EaRe-17	Nicola River valley at toe of Skakum Ridge	Artifact scatter	1984
EaRe-18	Gently rolling terrain along mid-elevation terrace	Artifact scatter	1984
EaRe-19	Near intermittent creek, gently-undulating terrain on mid-elevation terrace	Artifact scatter	1984
EaRe-20	Narrow ridge	Artifact scatter	1984
EaRe-24	Sandy ridge/dune above backchannel of Coldwater River	Hearth Artifact scatter FAR Faunal	1996
EaRe-25	Low terrace above Coldwater River at base of Coldwater Hill	Artifact scatter	1996
EaRe-26	Low terrace above Coldwater River at base of Coldwater Hill	Artifact scatter	1996
EaRe-29	Broad flat landform overlooking Coldwater River valley	Artifact scatter	1996
EaRe-30	On steep hillside	Artifact scatter	1996
EaRe-31	High flat terrace	Artifact scatter, human burial	2001
EaRe-121	Terrace associated with Nicola River floodplain	Artifact scatter	2008
EaRe-122	Terrace associated with Nicola River floodplain	Artifact scatter	2008
EaRe-123	Terrace associated with Nicola River floodplain	Artifact scatter	2008
EaRe-126	Nicola River floodplain	Artifact scatter	2010
EaRf-1	Above Nicola River north bank	Housepit	1969
EaRf-2	Mid-elevation bench amidst gentle to moderate S-aspect slope on Promontory Hills	Artifact scatter	1969
EaRf-5	High ridge above gravel quarry	Petroform	1978 1975
EaRf-6	Talus slope	Artifact scatter Burials	1991 1976
EbRf-1	Ridge E of Stumbles Creek	Housepit, Cache pit	1995 1969

Site #	Environmental Setting	Type	Visited
EbRf-2	Hill above Morgan Creek	Cache pit	1979
			1978
EcRe-1	East side of Mamit Lake	Artifact scatter Cache pit	1996
			1973
EcRe-4	Disturbed terrace beside wetland N of Mamit Lake	Artifact scatter	2002
			1996
			1981
EcRe-15	Esker on W side of Guichon Creek	Artifact scatter	2002
EcRe-16	E side of Guichon Creek	Artifact scatter	2002
EcRe-17	Bench above Guichon Creek	Artifact scatter	2002
EcRe-18	Bench above Guichon Creek	Artifact scatter	2002
EcRe-19	Esker E of Guichon Creek	Artifact scatter	2002
EcRe-20	Bench W of Guichon Creek	Artifact scatter	2002
EcRe-25	SE-trending esker above wetland N of Mamit Lake	Artifact scatter Hearth	2009 2008
EcRe-26	Small knoll	Cache pit	2008
EcRe-27	Small terrace	Artifact scatter	2009
EcRe-28	Bench situated amidst SE-aspect terrain	Artifact scatter	2009
			2008

Table 6.6: Previously Recorded Sites within Alternative 1B Locality

Site #	Environmental Setting	Type	Visited
EaRe-1	Hilltop	Cache pit, Housepit	1969
EaRe-2	Side of hill near Merritt cemetery	Cemetery Housepit	1969
EaRe-3	Elevated, gently rolling terrain	Housepit	1969
EaRe-5	Nicola River floodplain	Burial	1973
EaRe-7	Bank of Godey Creek	Artifact scatter	1977
EaRe-8	Small knoll near ephemeral creek	Artifact scatter	1978
EaRe-9	Terrace above Nicola River	Artifact scatter	1981
			1979
EaRe-11	Gently rolling terrain with S aspect	Artifact scatter	2009
			2008
			1981
EaRe-12	Edge of dry arroyo	Artifact scatter	1984
			1983
EaRe-13	Crest of small knoll	Artifact scatter	1984
			1983
EaRe-14	Near bottom of gully	Artifact scatter	1984
EaRe-15	Along narrow gully	Artifact scatter	1984
EaRe-16	Small flat bench	Artifact scatter	1984

Site #	Environmental Setting	Type	Visited
EaRe-17	Nicola River valley, at toe of Skakum Ridge	Artifact scatter	1984
EaRe-18	Gently rolling terrain along mid-elevation terrace	Artifact scatter	1984
EaRe-19	Near intermittent creek, on gently-rolling terrain along mid-elevation terrace	Artifact scatter	1984
EaRe-20	Narrow ridge	Artifact scatter	1984
EaRe-21	Edge of talus slope	Burial	1991
EaRe-22	Low terrace above Nicola Lake	Artifact scatter	2001
EaRe-24	Sandy ridge/dune above backchannel of Coldwater River	Hearth Artifact scatter FAR Faunal	1996
EaRe-25	Low terrace above Coldwater River at base of Coldwater Hill	Artifact scatter	1996
EaRe-26	Low terrace above Coldwater River at base of Coldwater Hill	Artifact scatter	1996
EaRe-29	Broad flat landform, overlooking Coldwater River valley	Artifact scatter	1996
EaRe-30	On steep hillside	Artifact scatter	1996
EaRe-31	High flat terrace	Artifact scatter Burial	2001
EaRe-32	Terrace edge	Artifact scatter	2007
EaRe-34	Terrace edge	Artifact scatter	2007
EaRe-35	Terrace edge	Artifact scatter	2007
EaRe-36	Terrace edge	Artifact scatter	2007
EaRe-37	Terrace edge	Artifact scatter	2007
EaRe-38	Terrace edge	Artifact scatter	2007
EaRe-39	Terrace edge	Artifact scatter	2007
EaRe-40	Terrace edge	Artifact scatter	2007
EaRe-41	Terrace edge	Artifact scatter	2007
EaRe-42	Terrace edge	Artifact scatter	2007
EaRe-43	Terrace edge	Artifact scatter	2007
EaRe-44	Terrace edge	Artifact scatter	2007
EaRe-45	Terrace edge	Artifact scatter	2007
EaRe-46	Terrace edge	Artifact scatter	2007
EaRe-48	Terrace edge	Artifact scatter	2007
EaRe-49	Terrace edge	Artifact scatter	2007
EaRe-50	Terrace edge	Artifact scatter	2007
EaRe-51	Terrace edge	Artifact scatter	2007
EaRe-52	Terrace edge	Artifact scatter	2007
EaRe-62	Terrace	Hearth	2007
EaRe-63	Terrace	Petroform, cairn	2007

Site #	Environmental Setting	Type	Visited
EaRe-64	Terrace	Petroform, cairn	2007
EaRe-65	Terrace	Petroform, cairn	2007
EaRe-67	Terrace edge	CMT	2007
EaRe-68	Terrace edge	CMT	2007
EaRe-69	Terrace edge	CMT	2007
EaRe-70	Terrace edge	Artifact scatter	2007
EaRe-71	Terrace edge	Artifact scatter	2007
EaRe-72	Terrace edge	Artifact scatter	2007
EaRe-73	Terrace edge	Artifact scatter	2007
EaRe-74	Terrace edge	Artifact scatter	2007
EaRe-75	Ridge	Artifact scatter	2007
EaRe-76	Ridge	CMT Artifact scatter	2007
EaRe-77	Ridge	Artifact scatter	2007
EaRe-78	Ridge	Artifact scatter	2007
EaRe-79	Ridge	CMT Artifact scatter	2007
EaRe-80	Ridge	Artifact scatter	2007
EaRe-84	Large, relatively level terrace	Artifact scatter	2007
EaRe-95	Terrace edge	Petroform	2007
EaRe-96	Terrace edge	Petroform	2007
EaRe-97	Terrace edge	Petroform	2007
EaRe-98	Terrace edge	Petroform	2007
EaRe-99	Terrace edge	Petroform	2007
EaRe-100	Terrace edge	Petroform	2007
EaRe-101	Terrace edge	Petroform	2007
EaRe-102	Terrace edge	Petroform	2007
EaRe-103	Terrace edge	Petroform	2007
EaRe-104	Terrace edge	Petroform	2007
EaRe-105	Terrace edge	Petroform	2007
EaRe-107	Terrace edge	Petroform	2007
EaRe-108	Terrace edge	Petroform	2007
EaRe-109	Plateau	Petroform	2007
EaRe-113	Ridge	Petroform	2007
EaRe-114	Ridge	Petroform	2007
EaRe-117	Plateau	Petroform Pictograph	2007
EaRe-121	Terrace associated with Nicola River floodplain	Artifact scatter	2008
EaRe-122	Terrace associated with Nicola River floodplain	Artifact scatter	2008
EaRe-123	Terrace associated with Nicola River floodplain	Artifact scatter	2008

Site #	Environmental Setting	Type	Visited
EcRe-1	E side of Mamit Lake	Artifact scatter	1996
		Cache pit	1973
EcRe-4	Disturbed terrace by with wetland N of Mamit Lake	Artifact scatter	2002
			1996
			1981
EcRe-15	Esker on W side of Guichon Creek	Artifact scatter	2002
EcRe-16	E side of Guichon Creek	Artifact scatter	2002
EcRe-17	Bench along Guichon Creek	Artifact scatter	2009
			2008
EcRe-18	Bench above Guichon Creek	Artifact scatter	2002
EcRe-19	Esker E of Guichon Creek	Artifact scatter	2002
EcRe-20	Bench W of Guichon Creek	Artifact scatter	2002
EcRe-25	SE-trending esker above wetland N of Mamit Lake	Artifact scatter	2009
		Hearth (dated 1060± 50 BP)	2008
EcRe-27	Small terrace	Artifact scatter	2009

Table 6.7: Previously Recorded Sites within Alternative 2 Locality

Site #	Environmental Setting	Type	Visited
EaRc-5	Hilltop	Petroform, cairn	1991
EaRc-6	SW-facing talus exposure	Cache pit/roasting pit	1991
		Burial, talus	
EaRc-9	Pronounced knoll	Artifact scatter	2001
EaRd-1	N shore of Nicola Lake, SW of Monck Park	Artifact scatter	1969
		Housepit	
EaRd-2	Elevated above marshy area N of Nicola Lake	Arteface scatter	1969
		Housepit	
EaRd-10	E side of the most prominent point at the W end of Nicola Lake	Artifact scatter	1991
			1973
EaRd-11	Prominent rock bluff on Armstrong Point, Nicola Lake	Pictograph	2002
			1973
EaRd-12	Elevated above outlet of lower Nicola River at W end of Nicola Lake	Cache pits	1969
EaRd-13	Steep talus slope on N shore Nicola Lake, near Monck Park	Artifact scatter	1991
		Petroform, hunting blind	1973
EaRd-14	Small ridge between Quilchena Creek and slough NE of creek	Artifact scatter	1988
		Cultural depression, sweat lodge	1978
		Burial	
EaRd-18	Lower reach of talus slope near W end of Nicola Lake	Burial, talus	1991
EaRd-19	Low knolls near W end of Nicola Lake, near the Nicola River dam	Artifact scatter	1991
		Subsistence feature, fishing	1973

Site #	Environmental Setting	Type	Visited
EaRd-20	Edge of talus slope, E of Nicola River dam	Burial, talus	1991
EaRd-21	High talus slope on N side of Nicola Lake	Burial, talus	1991
EaRd-22	Low terrace, 500 m inland (E) of the lakeshore at Quilchena	Artifact scatter	2001
EaRd-23	Terrace 300 m inland (E) of Nicola Lake at Quilchena	Artifact scatter	2001
EaRd-24	Low r terrace approximately 500 m inland (E) of Nicola Lake at Quilchena	Artifact scatter	2001
EaRd-25	Small terrace by unnamed, ephemeral creek	Artifact scatter	2006
EaRd-26	Medium-sized ridge overlooking Quilchena Ranch	Artifact scatter	2006
EaRd-27	Medium-sized ridge overlooking Quilchena Ranch	Artifact scatter Petroform/Earthwork, hunting blind	2006
EaRd-28	Medium-sized ridge overlooking Quilchena Ranch	Artifact scatter	2006
EaRd-29	Medium-sized ridge overlooking Quilchena Ranch	Artifact scatter	2006
EaRd-30	Medium-sized ridge overlooking Quilchena Ranch	Artifact scatter	2006
EaRd-31	50 m N of Nicola Lake, between two ephemeral streams	Artifact scatter	2008
EaRe-3	Elevated, gently rolling terrain	Housepit	1969
EaRe-5	Nicola River floodplain	Burial	1973
EaRe-7	Bank of Godey Creek	Artifact scatter	1977
EaRe-8	Small knoll near ephemeral creek	Artifact scatter	1978
EaRe-9	Terrace above Nicola River	Artifact scatter	1981 1979
EaRe-10	Terraces on either side of Godey Creek	Artifact scatter	1984 1980
EaRe-11	Situated amidst gently rolling terrain with south aspect	Artifact scatter	2009 2008 1981
EaRe-12	Edge of dry arroyo	Artifact scatter	1984 1983
EaRe-13	Crest of small knoll	Artifact scatter	1984 1983
EaRe-14	Near bottom of gully	Artifact scatter	1984
EaRe-15	Along narrow gully	Artifact scatter	1984
EaRe-16	Small flat bench	Artifact scatter	1984

Site #	Environmental Setting	Type	Visited
EaRe-17	Nicola River valley, at toe of Skakum Ridge	Artifact scatter	1984
EaRe-18	Gently rolling terrain along mid-elevation terrace	Artifact scatter	1984
EaRe-19	Near intermittent creek, on gently-rolling terrain along mid-elevation terrace	Artifact scatter	1984
EaRe-20	Narrow ridge	Artifact scatter	1984
EaRe-21	Edge of talus slope	Burial, talus	1990
EaRe-22	Low terrace above Nicola Lake	Artifact scatter	1990
EaRe-23	Terrace on alluvial fan above Coldwater River, approximately 100 m N of an ephemeral creek	Artifact scatter	1996
EaRe-24	Sandy ridge/dune above backchannel of Coldwater River	Hearth Artifact scatter	1996
EaRe-25	Low terrace above Coldwater River at base of Coldwater Hill	Artifact scatter	1996
EaRe-26	Low terrace above Coldwater River at base of Coldwater Hill	Artifact scatter	1996
EaRe-30	On steep hillside	Artifact scatter	1996
EaRe-32	Terrace edge	Artifact scatter	2007
EaRe-33	Terrace edge	Artifact scatter	2007
EaRe-34	Terrace edge	Artifact scatter	2007
EaRe-35	Terrace edge	Artifact scatter	2007
EaRe-36	Terrace edge	Artifact scatter	2007
EaRe-37	Terrace edge	Artifact scatter	2007
EaRe-38	Terrace edge	Artifact scatter	2007
EaRe-39	Terrace edge	Artifact scatter	2007
EaRe-40	Terrace edge	Artifact scatter	2007
EaRe-41	Terrace edge	Artifact scatter	2007
EaRe-42	Terrace edge	Artifact scatter	2007
EaRe-43	Terrace edge	Artifact scatter	2007
EaRe-44	Terrace edge	Artifact scatter	2007
EaRe-45	Terrace edge	Artifact scatter	2007
EaRe-46	Terrace edge	Artifact scatter	2007
EaRe-47	Terrace edge	Artifact scatter	2007
EaRe-48	Terrace edge	Artifact scatter	2007
EaRe-49	Terrace edge	Artifact scatter	2007
EaRe-50	Terrace edge	Artifact scatter	2007
EaRe-51	Terrace edge	Artifact scatter	2007
EaRe-52	Terrace edge	Artifact scatter	2007
EaRe-62	Terrace	Hearth	2007
EaRe-63	Terrace	Petroform, cairn	2007
EaRe-64	Terrace	Petroform, cairn	2007

Site #	Environmental Setting	Type	Visited
EaRe-65	Terrace	Petroform, cairn	2007
EaRe-66	Terrace	Petroform, cairn	2007
EaRe-67	Terrace edge	CMT	2007
EaRe-68	Terrace edge	CMT	2007
EaRe-69	Terrace edge	CMT	2007
EaRe-70	Terrace edge	Artifact scatter	2007
EaRe-71	Terrace edge	Artifact scatter	2007
EaRe-72	Terrace edge	Artifact scatter	2007
EaRe-73	Terrace edge	Artifact scatter	2007
EaRe-74	Terrace edge	Artifact scatter	2007
EaRe-75	Ridge	Artifact scatter	2007
EaRe-76	Ridge	CMT Artifact scatter	2007
EaRe-77	Ridge	Artifact scatter	2007
EaRe-78	Ridge	Artifact scatter	2007
EaRe-79	Ridge	CMT Artifact scatter	2007
EaRe-80	Ridge	Artifact scatter	2007
EaRe-81	Ridge	Artifact scatter	2007
EaRe-84	Large, relatively flat terrace	Artifact scatter	2007
EaRe-95	Terrace edge	Petroform	2007
EaRe-96	Terrace edge	Petroform	2007
EaRe-97	Terrace edge	Petroform	2007
EaRe-98	Terrace edge	Petroform	2007
EaRe-99	Terrace edge	Petroform	2007
EaRe-100	Terrace edge	Petroform	2007
EaRe-101	Terrace edge	Petroform	2007
EaRe-102	Terrace edge	Petroform	2007
EaRe-103	Terrace edge	Petroform	2007
EaRe-104	Terrace edge	Petroform	2007
EaRe-105	Terrace edge	Petroform	2007
EaRe-107	Terrace edge	Petroform	2007
EaRe-108	Terrace edge	Petroform	2007
EaRe-109	Plateau	Petroform	2007
EaRe-113	Terrace edge	Petroform	2007
EaRe-114	Broad flat ridge	Petroform	2007
EaRe-117	Plateau	Pictograph, petroform	2007
EaRe-121	Terrace associated with Nicola River floodplain	Artifact scatter	2008
EaRe-122	Terrace associated with Nicola River floodplain	Artifact scatter	2008
EaRe-123	Terrace associated with Nicola River floodplain	Artifact scatter	2008

Site #	Environmental Setting	Type	Visited
EaRe-126	Nicola River floodplain	Artifact scatter	2010
EbRc-1	NW shore of Nicola Lake, on a terrace	Housepit Artifact Scatter	1997 1991 1976 1972 1970 1969 1959
EbRc-5	Flat area above Nicola River	Housepit Artifact scatter	1969
EbRc-6	Slough, W of Nicola Lake	Cultural depressions	1991 1969
EbRc-7	Toe of slope, W of Nicola Lake	Cache pits/roasting pits Housepits	1969
EbRc-14	Talus slope E of Lauder Creek, on NW side of a valley with an ephemeral creek	Burial, talus Petroform, possible hunting blinds	1991
EbRc-15	Hillside talus E of Lauder Creek, S exposure facing Nicola River	Burials, talus	1991
EbRc-16	Upper talus slope on terrace above N side of Nicola River, E of Lauder Creek	Burials, talus	1991
EbRc-22	Talus exposure at N end of Nicola Lake on Nicola Lake IR#1	Burials, talus	1991 1900
EbRc-23	Two knolls and intervening flat at the N end of Nicola Lake on Nicola Lake IR#1	Artifact scatter	1991
EbRc-24	Talus on hills E of Nicola Lake	Burial, talus Artifact scatter	1991
EbRc-25	Alluvial fan below talus slope S of Nicola Lake on Nicola Lake IR#1	Artifact scatter	1991
EbRc-26	Talus exposure in Meander Hills	Burial, talus.	1991
EbRc-32	On top of a large flat knoll, 275 m inland from Nicola Lake near Quilchena	Artifact scatter	2001
EbRc-33	Low terrace bordering a small bay on the E shore of Nicola Lake, N of "Guichon Slough"	Artifact scatter Historic refuse	2005 2001
EbRc-34	N end of a terrace bordering a small bay on the E shore of Nicola Lake, N of "Guichon Slough"	Housepit Cache pit Historic surface refuse	2005 2001
EbRc-35	S slope of a gravel terrace, 200 m inland from the E shore of Nicola Lake	Artifact scatter	2001
EbRd-1	Broad flat bench, 3 m above W side of Nicola Lake	Housepit	1957

Site #	Environmental Setting	Type	Visited
EbRd-5	Level terrace, N side of Nicola Lake, 300 m NE of Monck Park	Housepits	1997
		Cultural Depression	1991
		Artifact scatter	1969
EbRd-6	Cliff overlooking Nicola Lake W of Quilchena	Pictograph	1922
			1900

SECOND DRAFT

Table 6.8: Alternative 1A Archaeological Research Studies

Year	Investigator(s)	Affiliation	Project Title	Sites Recorded (Visited)	Developments	Permit #	Source*
1969-1972	Wyatt	Brown University	Archaeological Survey Nicola Valley, British Columbia The Indian History of Nicola Valley (PhD Dissertation)	EaRd-1,2,12 EaRe-1,2,3 EaRf-2 EbRc-1,2,5,6,7 EbRd-1,3,4,5 EbRf-1	Research project	1969-20 1970-15 1972-27	MTCA
1973	Mohs/Hoy	Archaeological Sites Advisory Board (ASAB)	B. C. Hydro Archaeological Survey	EaRd-6,7,19 EaRe-5 EcRe-1	Transmission line	1973-28	MTCA
1976	Kenny/Robertson	ASAB	An Archaeological Resource Inventory in the Thompson/Okanagan Region of British Columbia	EaRf-5	Various developments	1976-6	MTCA
1976	Weber/Seymour	ASAB	Archaeological Survey Along Two Proposed Hydro Transmission Line Routes in the South-Central Interior of B.C. 1976	EcRe-2	Transmission line	1976-7	MTCA
1977	Carfantan/Wales/Emery/Yarmola	ASAB	An Archaeological Resource Inventory in the Thompson-Okanagan Region of British Columbia	EaRe-7 EaRf-7	Various developments within region; salvage excavation	1977-19	MTCA
1978	Bernick/Eldridge	University of Victoria	Westcoast Transmission Pipeline Loop Survey 1978	EaRf-1,(5), 6),8, , 2, EbRf-(1),2	Pipeline	1978-19	MTCA
1978	Wilson/McFee/Warner/Head/Maag	Aresco (consultants)	Archaeological Survey of B.C. Hydro Transmission Lines in the Kootenays and the Central Interior Plateau	EaRe-8, 9	Transmission line	1978-20	MTCA
1979-1980	Warner/Anderson/Hanson/Friesen	Aresco	Heritage Resource Inventory and Impact Assessment of the Proposed Kelly Lake-Nicola and Nicola-Merritt-Highland Transmission Lines in South Central British Columbia	EaRe-8, 9 EcRe-3 EbRc-10	Transmission line	1979-35 1979-37	MTCA BCH
1981	Warner/Magne/Carlson/Wilson	Aresco	Heritage Resources Impact Assessment Nicola-Merritt 230 kV Transmission Line	EaRe-8, 9,11 EcRe-4	Transmission line	1981-7 1978-20	MTCA BCH
1983	Brolly/Calancie	Heritage Conservation Branch	Report of the 1983 Heritage Conservation Branch Highways Survey	EaRe-(8),(9),12,13	Merritt Bypass right-of-way	1983-16	MTCA
1984-1985	Lawhead/Howe	Arcas Associates	Coquihalla Highway Project: Merritt to Surrey Lake. Detailed Heritage Resource Inventory and Impact Assessment	EaRe-10,12,13,14,15,16, 17,18,19,20 EbRe-1	Coquihalla Highway right-of-way	1984-37	MTCA AMEC
1991	Warner	I.R. Wilson Consultants	Lower Nicola Subdivision Heritage Resource Inventory and Preliminary Impact Assessment	EaRf-6	Industrial Development	1991-7	MTCA
1995	Sykes	Independent consultant	Letter Report, Re: [Impact Assessment of] District Lot 1741, Lot A, Plan KAP 53517	EaRf-1 EbRf-1	Residential Development	n/a	MTCA
1996	Brolly/Feddema	Arcas Consulting Archeologists (consultants)	Subdivision of D.L. 581, Coldwater River Valley Southwest of Merritt, B.C. Archaeological Impact Assessment	EaRe-23	Residential development	1996-44	MTCA AMEC
1996	Bailey/August	Golder Associates (consultants)	AIA Part of District Lot 166 and Part of the North Half of Section 4, Township 91, K.D.Y.D. Merritt, B.C.	EaRe-24 to 30	Residential development	1996-118	MTCA
1996	Bailey/Bob	Golder Associates	Controlled Subsurface Testing at Archaeological Site EaRe-26, Merritt, B.C.	EaRe-26	Road construction	1996-216	MTCA

Year	Investigator(s)	Affiliation	Project Title	Sites Recorded (Visited)	Developments	Permit #	Source*
1996	Dahlstrom/Hewer	I.R. Wilson Consultants	Archaeological Impact Assessment of a Small Residential Subdivision Located within a Portion of DL 3376 K.D.Y.D, Merritt, B.C.	EcRe-1,2,4	Residential development	1996-246	MTCA
2001-2002	Hewer/Sterling	I.R. Wilson Consultants	Archaeological Investigations, Juniper Drive, Merritt, B.C. (Found Human Remains File 2001 3B)	EaRe-31	Recovery of found human remains	2001-314	MTCA
2002	Markey	Nicola Tribal Association	Archaeological Impact Assessment of the Highland Valley Copper Basal Aquifer Dewatering Project	EbRe-1 EcRe-4,7 to 24	Mining infrastructure development	2002-172	MTCA
2007	Christenson/Campbell	Golder Associates	Archaeological Impact Assessment of 2451 Springbank Ave. Church Development	EaRe-11	Church development	2007-422	MTCA
2008-2010	Rousseau/Burk/Sagabarría/Eng/Chang/Hidgins/Hewitt/ Lambert/Lebeau/Taylor/Wells/Abbott/ Antoine/Blain/Bob/Clark/Clark/Dick/Drynoch/Eustache/ Fountain/ Garcia/Joe/Justice/McDougall/ Koester/Oppenheim/ Spinks/Sterling/ Watson	Antiquus Archaeological Consultants	An Archaeological Impact Assessment for the Kwoiek Creek Hydroelectric Project's 80-km Transmission Line Corridor from Kanaka Bar to Mamit Lake	EcRe-(4),(17),25,27,28	Transmission Line	2008-403	MTCA
2008-2009	Brolly/Taylor/Anderson/Bob/Clark/Eustache/Gilbert/Ruskin/Suchelle	Arcas Consulting Archeologists	AIA of proposed River Wind at Coyote Bluffs Residential Development	EaRe-121,122,123	Residential development	2008-275	MTCA AMEC
2008	Sandy/Watson/Blain/Shackelly/Jim/Bob/Clarke/Eustache/Gilbert	Esh-Kn-Am CRM Services	AOA of Swakum Landscape Unit	EcRe-26	Planning Study	n/a	MOFR
2009	Twohig/Moore/Kennedy/Mike/Shackelly/Abbott/Clark	Terra Archaeology (consultants)	Site Alteration Permit 2009: Alteration to Site for Church of Jesus Christ of Latter Day Saints, Merritt Chapel	EaRe-(11)	Church construction	2009-193	MTCA
2010	Sandy/Blain	Esh-Kn-Am CRM Services	City of Merritt, Kengard Production Well Site	EaRe-126	Post-impact assessment of well development	Non-permit	Unknown
2010	Abbott/Blain/Christenson/Fountain/Hunsbedt/Markey/Paquin/Pitman/Shackelly/Turner	Golder Associates	AIA for the Mamit Lake Dam	EcRe-29	Dam development	2010-186	MTCA

Note: * Reports on file at the sources indicated: AMEC = Archaeology & Cultural Heritage Resources office, Coquitlam; BCH = BC Hydro; MOFR = Ministry of Forests & Range (Cascades Forest District); MTCA = Ministry of Tourism, Culture and the Arts. (Archaeology Branch)

Table 6.9: Alternative 1B Archaeological Research Studies

Year	Investigator	Affiliation	Project Title	Sites Recorded (Visited)	Developments	Permit #	Source*
1973	Mohs/Hoy	Archaeological Sites Advisory Board (ASAB)	B. C. Hydro Archaeological Survey	EaRe-5 EaRd-6,7,19 EcRe-1	Transmission line.	1973-28	MTCA
1976	Weber/Seymour	ASAB	Archaeological Survey Along Two Proposed Hydro Transmission Line Routes in the South-Central Interior of B.C.	EcRe-2	Transmission line.	1976-7	MTCA
1978	McFee/Wilson/Warner/Head/Maag	Aresco (consultants)	Archaeological Survey of B.C. Hydro Transmission Lines in the Kootenays and the Central Interior Plateau	EaRe-8,9	Transmission line.	1978-20	MTCA BCH
1980	Rousseau/Richards	Heritage Conservation Branch	Thompson-Okanagan-Kootenay Impact Assessment Final Report	EaRe-10	Highway developments.	1980-8	MTCA
1979-1980	Warner/Anderson/Hanson/Friesen	Aresco	Heritage Resource Inventory and Impact Assessment of the Proposed Kelly Lake-Nicola and Nicola-Merritt-Highland Transmission Lines in South Central British Columbia	EaRe-8,9 EbRc-10 EcRe-3	Transmission line.	1979-35 1979-37	MTCA BCH

Year	Investigator	Affiliation	Project Title	Sites Recorded (Visited)	Developments	Permit #	Source*
1981	Warner/Magne/Carlson/Wilson	Aresco	Heritage Resources Impact Assessment Nicola-Merritt 230 kV Transmission Line	EaRe-8, 9,11 EcRe-4	Transmission line.	1981-7 1978-20	MTCA BCH
1983	Brolly/Calancie	Heritage Conservation Branch	Report of the 1983 Heritage Conservation Branch Highways Survey	EaRe-(8),(9),12,13	Merritt Bypass right-of-way.	1983-16	MTCA
1984-1985	Lawhead/Howe	Arcas Associates (consultants)	Coquihalla Highway Project: Merritt to Surrey Lake: Detailed Heritage Resource Inventory and Impact Assessment	EaRe-10,12,13,14,15,16,17,18,19,20 EbRe-1	Coquihalla Highway right-of-way.	1984-37	MTCA AMEC
1996	Brolly/Feddema	Arcas Consulting Archeologists	Subdivision of D.L. 581, Coldwater River Valley Southwest of Merritt, B.C. Archaeological Impact Assessment	EaRe-23	Residential development.	1996-044	MTCA AMEC
1996	Bailey/August	Golder Associates (consultants)	AIA Part of District Lot 166 and Part of the North Half of Section 4, Township 91, K.D.Y.D. Merritt, B.C.	EaRe-24 to 30	Residential development.	1996-118	MTCA
1996	Bailey/Bob	Golder Associates	Controlled Subsurface Testing at Archaeological Site EaRe-26, Merritt, B.C.	EaRe-26	Road construction.	1996-216	MTCA
1996	Dahlstrom/Hewer	I.R. Wilson Consultants	Archaeological Impact Assessment of a Small Residential Subdivision Located within a Portion of DL 3376 K.D.Y.D, Merritt, B.C.	EcRe-1,2 4	Residential development.	1996-246	MTCA
2001-2002	Hewer/Sterling	I.R. Wilson Consultants	Archaeological Investigations, Juniper Drive, Merritt, B.C. (Found Human Remains File 2001 3B)	EaRe-31	Recovery of found human remains.	2001-314	MTCA
2002	Markey	Nicola Tribal Association	Archaeological Impact Assessment of the Highland Valley Copper Basal Aquifer Dewatering Project	EbRe-1 EcRe-4,7 to 24	Mining infrastructure development.	2002-172	MTCA
2007	Christenson/Campbell	Golder Associates	Archaeological Impact Assessment of 2451 Springbank Avenue Church Development	EaRe-11	Church development.	2007-422	MTCA
2007-2008	Rousseau/ Hewitt/Knighton/Taylor/Fisher/Burk/Peters/Ritchie/ Wejsignhe/Sagabarría/Wells/Taylor Short/Lindley/Lindley/Lindley/ Sterling/Edwards/John/Clark/Shackelly	Antiquus Archaeological Consultants	An Archaeological Impact Assessment for Proposed Residential Development Impact Zone on the Chutter Ranch, Merritt, B.C.	EaRe-32 to EaRe-120	Residential subdivision, gravel quarry, and recreational development.	2007-215	MTCA
2008-2010	Rousseau/Burk/Sagabarría/Eng/Chang/Hidgins/ Hewitt/Lambert/ Lebeau/Taylor/ Wells/Abbott/Antoine/Blain/Bob/Clark/Clark/Dick/ Drynoch/ Eustache/ Fountain/ Garcia/Joe/Justice/McDougall/ Koester/Oppenheim/ Spinks/Sterling/Watson	Antiquus Archaeological Consultants	An Archaeological Impact Assessment for the Kwoiek Creek Hydroelectric Project's 80-km Transmission Line Corridor from Kanaka Bar to Mamit Lake	EcRe-(4),(17),25,27,28	Transmission line.	2008-403	MTCA
2008-2009	Brolly/Taylor/Anderson/Bob/Clark/Eustache/Gilbert/Ruskin/Suchell	Arcas Consulting Archeologists	AIA of proposed River Wind at Coyote Bluffs Residential Development	EaRe-121,122,123	Residential development.	2008-275	MTCA AMEC
2008	Sandy/Watson/Blain/Shackelly/Jim/ Bob/Clarke/ Eustache/Gilbert	Esh-Kn-Am CRM Services	AOA of Swakum Landscape Unit	EaRd-31	Planning study.	Non-permit	MOFR
2009	Twohig/Moore/Kennedy/Mike/Shackely/Abbott/Clark	Terra Archaeology (consultants)	Alteration to Site for Church of Jesus Christ of Latter Day Saints, Merritt Chapel	(EaRe-11)	Church construction.	2009-193	MTCA
2010	Sandy/Blain	Esh-Kn-Am CRM Services	City of Merritt Kengard Production Well Site	EaRe-126	Post-impact assessment of well construction project.	Non-permit	Unknown

Table 6.10: Alternative 1B Archaeological Research Studies

Year	Investigator	Affiliation	Project Title	Sites Recorded (Visited)	Developments	Permit #	Source*
1969-1972	Wyatt	Brown University	Archaeological Survey Nicola Valley, British Columbia The Indian History of the Nicola Valley (PhD Dissertation)	EaRd-1,2,12 EaRe-1,2,3 EaRf-2 EbRc-1,2,5,6,7 EbRd-1,3,4,5 EbRf-1	Research project	1969-20 1970-15 1972-27	MTCA
1971	Archer	British Columbia Provincial Museum	The Monck Park Site, EkRd-3 Summary Report	EbRd-3	Research project	1971-33	MTCA
1973	Mohs/Hoy	Archaeological Sites Advisory Board (ASAB)	B.C. Hydro Archaeological Survey	EaRe-5 EaRd-6,7,19 EcRe-1	Transmission line	1973-28	MTCA
1973	Robinson/St. Pierre	ASAB	Department of Highways Archaeological Survey	EaRd-11	Highway rights-of-way	1973-28	MTCA
1975	Roberts/Brolly	ASAB	Archaeological Impact Assessment along the Proposed Nicola-Cranbrook 500 kV Hydro/Electric Transmission Line	EaRc-2,3,4 EaRe-(11)	Transmission line	1976-7	MTCA
1975-1976	Roberts/Wilton	ASAB	Archaeological Reconnaissance of the Proposed Nicola-Selkirk-Cranbrook B.C. Hydro Transmission Line.	EaRc-4	Transmission line	1976-7	MTCA
1976	Weber/Seymour	ASAB	Archaeological Survey Along Two Proposed Hydro Transmission Line Routes in the South-Central Interior of B.C.	EcRe-2	Transmission line	1976-7	MTCA
1977	Carfantan/Wales/Emery/Yarmola	ASAB	An Archaeological Resource Inventory in the Thompson-Okanagan Region of British Columbia	EaRe-7 EaRf-7	Various development projects	1977-19	MTCA
1978	Wilson/McFee/Warner/Head/Maag	Aresco (consultants)	Archaeological Survey of B.C. Hydro Transmission Lines in the Kootenays and the Central Interior Plateau	EaRe-8,9	Transmission line	1978-20	MTCA BCH
1980	Rousseau/Richards	Heritage Conservation Branch	Thompson-Okanagan-Kootenay Impact Assessment Final Report	EaRe-10	Various highway developments	1980-8	MTCA
1979-1980	Warner/Anderson/Hanson/Friesen	Aresco	Heritage Resource Inventory and Impact Assessment of the Proposed Kelly Lake-Nicola and Nicola-Merritt-Highland Transmission Lines in South Central British Columbia	EaRe-8,9 EbRc-10 EcRe-3	Transmission line	1979-35, 1979-37	MTCA BCH
1981	Warner/Magne/Carlson/Wilson	Aresco	Heritage Resources Impact Assessment Nicola-Merritt 230 kV Transmission Line	EaRe-8,9,11 EcRe-4	Transmission line	1981-7, 1978-20	MTCA BCH
1983	Brolly/Calancie	Heritage Conservation Branch	Report of the 1983 Heritage Conservation Branch Highways Survey	EaRe-(8),(9),12,13	Merritt Bypass right-of-way	1983-16	MTCA
1984	Lawhead/Howe	Arcas Associates (consultants)	Coquihalla Highway Project: Merritt to Surrey Lake: Detailed Heritage Resource Inventory and Impact Assessment	EaRe-10, 12 to 20 EbRe-1	Coquihalla Highway right-of-way	1984-37	MTCA AMEC
1987	Skinner/Thacker	Heritage Conservation Branch	The Quilchena Hotel Burial Site (EaRd 14), Nicola Lake, B.C.	EaRd-14	Recovery of found human remains	1987-2F	MTCA
1990	Brolly/Joe	Arcas Consulting Archaeologists	Lower Nicola Indian Band Graveyard Protection, Archaeological Site Inventory	EaRe-21,22	Recording non-registered historic cemeteries	Non-permit	MTCA AMEC
1993	James/Oliver	Arrow Archaeology (consultants)	Sphahomin Archaeological Inventory Project: Phase One	EaRc-5,6, EbRc-6, 7,14 to17,20,22 to 26,29, 30 EaRd-10,13,18,19,20	Research project	1991-12	MTCA

Year	Investigator	Affiliation	Project Title	Sites Recorded (Visited)	Developments	Permit #	Source*
1996	Brolly/Feddema	Arcas Consulting Archeologists	Subdivision of D.L. 581, Coldwater River Valley Southwest of Merritt, B.C. Archaeological Impact Assessment	EaRe-23	Residential development	1996-044	MTCA AMEC
1996	Bailey/August	Golder Associates	AIA Part of District Lot 166 and Part of the North Half of Section 4, Township 91, K.D.Y.D. Merritt, B.C.	EaRe-24 to 30	Residential development	1996-118	MTCA
1996	Bailey/Bob	Golder Associates (consultants)	Controlled Subsurface Testing at Archaeological Site EaRe-26, Merritt, B.C.	EaRe-26	Residential development	1996-216	MTCA
1997	Brolly/Pratt/Chillihitzia/Mike	Arcas Consulting Archeologists	Nicola Lake Estates Development, Archaeological Impact Assessment	EbRc-1,2 EbRd-5	Residential development	1996-206	MTCA AMEC
2000-2001	Kowal/Ball/Moore	Altamira Consulting	Archaeological Impact Assessment, Cottage Lot Development	EbRc-31	Recreational development	2000-207	MTCA
2001	Simonsen/Somogyi	Bastion Group Heritage Consultants	Results of an Archaeological Impact Assessment Project at Quilchena Ranch, B.C.	EaRc-9,22,23,24 EaRd-22 EbRc-32,33,34	Recreational development	2001-184	MTCA
2001-2002	Hewer/Sterling	I.R. Wilson Consultants	Archaeological Investigations, Juniper Drive, Merritt, B.C. (Found Human Remains File 2001 3B)	EaRe-31	Recovery of found human remains	2001-314	MTCA
2005	Simonsen/French	Madrone Environmental Services (consultants).	Report on the Results of Archaeological Excavations at Quilchena-on-the-Lake	EbRc-(33),(34)	Recreational development	2004-229	MTCA
2006	Mitchell	Madrone Environmental Services	AIA of Sagebrush Golf and Sporting Club, Quilchena Ranch	EaRd-25 to 30	Recreational development	2006-191	MTCA
2007-2008	Rousseau/ Hewitt/Knighton/Taylor/ Fisher/Burk/ Peters/Ritchie/ Wejjsignhe/Sagabarría/Wells/Taylor Short/Lindley/Lindley/Lindley/ Sterling/ Edwards/John/Clark/Shackelly	Antiquus Archaeological Consultants	An Archaeological Impact Assessment for Proposed Residential Development Impact Zone on the Chutter Ranch, Merritt, B.C.	EaRe-32 to EaRe-120	Residential subdivision, gravel quarry expansion, recreational development	2007-215	MTCA
2007	Christenson/Campbell	Golder Associates Ltd	Archaeological Impact Assessment of 2451 Springbank Avenue Church Development	EaRe-11	Church development	2007-422	MTCA
2008-2009	Brolly/Taylor/Anderson/Bob/Clark/ Eustache/Gilbert/ Ruskin/Suchell	Arcas Consulting Archeologists	AIA of proposed River Wind at Coyote Bluffs Residential Development	EaRe-121,122,123	Residential development	2008-275	MTCA AMEC
2008	Sandy/Watson/Blain/Shackelly/Jim/ Bob/Clarke/ Eustache/Gilbert	Esh-Kn-Am CRM Services	AOA of Swakum Landscape Unit	EaRd-31	Planning study	Non-permit	MOFR
2008	Franck/Behr/Hjermstad/Candler/ Kalman/Sandy/ Johnstone/Dodd	Golder Associates	Heritage Overview Assessment, Interior to Lower Mainland (ILM) Transmission Project Nicola to Meridian New 500 kV and the 5L41 Upgrade Transmission Line Alternatives	n/a	Transmission line	Non-permit	BCH
2009	Twohig/Moore/Kennedy/Mike/ Shackelly/Abbott/Clark	Terra Archaeology (consultants)	Alteration to Site for Church of Jesus Christ of Latter Day Saints, Merritt Chapel	EaRe-(11)	Monitoring church construction	2009-193	MTCA

6.9 Mapping

Due to the confidential information presented in the Archaeological Overview Assessment figures, they are included in a separate document. Please contact BC Hydro to obtain a copy.

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6.10.2 Personal Communications

Keeler, R. AMEC Earth & Environmental. August 2010.

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