2011 Historic and Heritage Resources Field Program

Prepared for:

Lower Churchill Hydroelectric Generation Project
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EXECUTIVE SUMMARY

The Historic and Heritage Resources Assessment completed in October, 2011 included two components. The first component was completion of a pre-construction Stage 1 Historic Resources Overview Assessment of the proposed infrastructure, including: an access road on the south side of Churchill River, between Muskrat Falls and the Trans Labrador Highway; an accommodations complex midway along the access road; two laydown areas near the western end of the access road; and camera and water-level gauge installations at Muskrat Falls. The second component consisted of follow-up archaeological fieldwork at FhCe-06 on the north side of Muskrat Falls, in accordance with Undertaking 76 submitted by Nalcor to the Joint Review Panel in early 2011.

With regard to proposed infrastructure, background research results and helicopter overflight indicated that archaeological potential was low across much of the Project Area, except for four locations:

- the approaches to the McKenzie River crossing of the proposed access road;
- the Owner’s laydown area on the west side of the mouth of McKenzie River;
- the western end of the proposed access road, near the portage trail on the south side of Muskrat Falls; and
- the proposed camera and water-level gauge installation sites.

The 2011 assessment led to the recording of three new contemporary sites, one new archaeological site and additional information on one previously-recorded archaeological site. However, the assessment did not identify any interactions between the proposed Project infrastructure and Historic and Heritage Resources.

Follow-up fieldwork at FhCe-06 included a site revisit, subsurface testing at five terrace features revealed in recently-obtained LiDAR imagery of the Muskrat Falls area, surface inspection and collection along the beach at, and subsurface testing along, nine transects across the alder zone behind FhCe-06.

The results of the 2011 assessment at FhCe-06 verified that the present-day beach, including the alder zone, is an active, unstable landform of no great antiquity offering no potential for in situ archaeological deposits. Any archaeological materials encountered here have been redeposited and reworked by erosional forces and are of uncertain provenience. It cannot be discounted that some of the lithic artifacts reported from FhCe-06 may have been deposited on a beach, but nor can it ever be verified. The simplest and most likely explanation for this assemblage is that, in whole or in part, it represents material deflated from the terrace above. This is also the only explanation that offers avenues for further research.
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1.0 INTRODUCTION

Nalcor Energy (Nalcor) is proposing to construct infrastructure associated with the Lower Churchill Hydroelectric Development (the Project) for power generation at Muskrat Falls, Labrador. Construction of the proposed works is scheduled for the winter of 2012, pending release of the Project from the environmental assessment process and acquisition of the required permits (Figure 1.1).

As part of the permitting process, in October 2011, Nalcor undertook Historic and Heritage Resources assessment of all of the proposed 2012 works as well additional field research at the registered archaeological site FhCe-06 located on the north side of Churchill River to the west of Muskrat Falls.

1.1 Historic and Heritage Resources Study Objectives

Specific objectives of the 2011 Historic and Heritage Resources study were to complete a pre-construction Stage 1 Historic Resources Overview Assessment (Stage 1 HROA) of the following proposed Project elements:

- a 15 m-wide south side access road corridor (situated within a 30 m-wide right-of-way);
- an accommodations complex;
- a contractor’s laydown area;
- an owner’s laydown area; and,
- camera and water-level gauge installation sites at Muskrat Falls, along with associated helicopter pads / landing areas and any trail / pathway needed between the two.

As shown in Figure 1.2, a large segment of the proposed access road corridor and the parcels of land selected for the accommodations complex and contractor’s laydown area are situated at relatively high elevations above the river in locations considered to be of Low potential for Historic and Heritage Resources, based on an archaeological potential mapping study of the lower Churchill River valley completed by Nalcor in 2000 (JWEL/IELP 2001a). However, the owner’s laydown area and camera and water-level gauge installation sites will be located in High potential areas or overlap with areas assigned that rating.

In addition to assessment of the proposed Project infrastructure, in 2011, Nalcor also undertook to pursue follow-up Historic and Heritage Resources research along the west beach on the north side of Muskrat Falls at the registered archaeological site FhCe-06, where evidence of stone tool manufacture was reported in 2010. This research was committed to in Undertaking 76 submitted by Nalcor to the Joint Review Panel in early 2011. Also investigated as part of this research were five terrace fragments – three situated on the west side of Muskrat Falls at various elevations above FhCe-06, and two on the south side of the knoll above the falls (Figure 1.2).
Figure 1.1 2011 Historic and Heritage Resources Study Area
Figure 1.2 Proposed Project Infrastructure and Archaeological Site FhCe-06
In accordance with provincial guidelines (Government of Newfoundland and Labrador 1992), the primary objectives of the Historic and Heritage Resources research were to: a) identify and assess the historic resources / archaeological potential or sensitivity within the proposed development areas and at the registered archaeological site FhCe-06; and b) recommend the appropriate methodology and scope for further detailed impact studies, if indicated. The study serves as the necessary basis for determining the level of any continued involvement required under the historic resources assessment process outlined in the Historic Resources Act (1985).

1.2 Study Areas

1.2.1 Proposed Access Road Corridor

Early works construction will include the south side access road to the Muskrat Falls site from the Trans Labrador Highway, approximately 35 km from Happy Valley-Goose Bay. The access road will include upgrading 5 km of the existing Caroline Brook forestry access road and constructing 17 km of new access road to Muskrat Falls along a 15 m wide cleared and grubbed corridor situated within in a 30 m-wide right-of-way. This aspect of the proposed works will require clearing of 62 hectares of timber.

1.2.2 Accommodations Complex

Additional early works construction for the Project includes development of an accommodations complex for 1,500 workers. The accommodations complex will include all necessary living facilities and require a clearing of 42 hectares.

1.2.3 Contractor’s Laydown Area

The contractor’s laydown area will require a 29 hectare clearing. The site will include a concrete batch plant and a laydown area for steel and other construction materials.

1.2.4 Owner’s Laydown Area

The Owner’s laydown area will require a 13 hectare clearing.

1.2.5 Camera and Water-level Gauge Installation Sites

Web-based cameras will be situated on the north side of Churchill River near the lower falls. One camera will look downstream in order to capture the formation, build-up and eventual melt of the Muskrat Falls ice dam. A second camera will look south towards the pool between the falls. The cameras will supplement water-level data that will be captured at a new gauge to be installed on the south side of the river between the lower and upper falls.

The scope of work includes the construction and installation of shelters to house the cameras and water-level gauge, as well as helicopter landing pads to facilitate site access. The anticipated location for the cameras is on the downstream end of the rock knoll, near the lower falls. The camera location may be accessible by foot via a hiking trail that starts at the top of the north spur. However, the path is steep and can be difficult to traverse in wet weather, and will not be accessible during the winter. To maintain year-round access to the cameras, as well
as to facilitate the movement of construction supplies to the site, a helicopter landing pad will be constructed. Potential locations for the landing pad include an existing drill site. Some tree clearing will be necessary to ensure adequate landing space and an unobstructed camera view.

The anticipated location for the water-level gauge is on the south side of the river, in a pool between Upper and Lower Muskrat Falls. It is anticipated that a new helicopter pad will need to be installed. Work will also include the supply and installation of a shelter to house the gauge instrumentation (see Figure 1.1).

1.2.6 West Beach of Muskrat Falls (Archaeological Site FhCe-06)

The beach at the west end of Muskrat Falls on the north side of Churchill River is comprised of sand, gravel, mud and cobble. It is approximately 1 km in length and ranges from 50 m to 75 m in width during the fall when the level of the river is at its lowest. While the exact measurements are not known, presumably the beach is much narrower in spring during the break-up of ice. At the upper edge of the beach there is a thick, almost imperturbable, growth of alder that extends tight to the base of the slope that, in places, rises steeply to a maximum elevation of 65 m above the river. Given that the volume of water and ice flowing downstream in spring almost certainly varies from year to year, depending on winter snowfall and temperatures throughout the valley, these factors likely contribute greatly to the overall configuration of the beach and distribution of sediments, gravel and cobbles across it.

1.3 2011 Historic and Heritage Resources Report

This Final Report provides a description of the study methodology (Section 2.0) and the results of background research and fieldwork completed for the Stage 1 HROA of the proposed Project infrastructure (Section 3.0). Also included in a separate section is a detailed presentation of findings related to research conducted on the north side of Churchill River to the west of Muskrat Falls in relation to the known archaeological site FhCe-06 (Section 4.0). This is followed by a summary section (Section 5.0) and a listing of references consulted over the course of the study (Section 6.0).
2.0 APPROACH AND METHODS

2.1 Introduction

The Historic and Heritage Resources research, including Stage 1 HROA of the proposed access road and associated construction areas, followed a two-stage approach. Assessment began with background research, culminating with the pre-selection of testing locations within the Study Area for field assessment. This was followed by field assessment, which involved several research activities, including helicopter overflight, walkover, visual inspection and shovel testing.

2.2 Background Research

Background research serves to identify:

- known, geo-referenced archaeological sites (e.g., sites or materials pre-dating 1960 and registered in the Provincial Archaeology Office (PAO) Archaeological Site Record Inventory or referenced in historical documents);
- proxy indicators of High archaeological potential (e.g., known ethnographic/contemporary sites post-dating 1960, which have potential to include archaeologically-significant materials or features);
- settlement patterns, as indicated by existing archaeological data as well as topographic and hydrographic information;
- attributes predicted to correlate with High archaeological potential (e.g., waterfalls and rapids, which are likely to enforce travel stops and thus lead to the formation of archaeological sites); and,
- locations in which High potential topographic attributes and landforms may once have been present (e.g., marine terraces representing former coastal locations).

The background research methodology employed in the present study closely followed that employed for the overall Project assessment and involved the review of previous archaeological research undertaken within and adjacent to the Study Areas, and of existing historic, ethnohistoric and ethnographic literature.

Because extensive background research of published and unpublished sources has already been completed in relation to the Project (IEDE/Jacques Whitford 2000; Minaskuat 2008; Stantec Consulting Ltd. (Stantec) 2010; Nalcor 2011), background research for the current Stage 1 HROA was limited to a search of the Newfoundland and Labrador Archaeological Site Record Inventory and Site Record Forms to obtain details on any archaeological sites that have been located and registered with the PAO. Also completed was a review of aerial photography and topographic mapping of the area to highlight landforms and vegetation patterns suggestive of Historic and Heritage Resources potential.

2.3 Field Study

The field study for the current Stage 1 HROA was completed over a period of six days by a two-person team consisting of Dr. Fred Schwarz and Roy Skanes of Stantec. Three and a half days were spent on the south side of
the river, assessing the proposed construction features, and the south side water-level gauge and north side camera installation sites. Two and a half days were spent investigating the registered archaeological site FhCe-06 and associated terrace edges situated at and above the west beach on the north side of Churchill River.

The general approach was the same for all subcomponents of the work. Testing locations were identified on the basis of air photo analysis, background research, archaeological potential mapping and aerial overflight, and these testing locations were investigated by means of visual inspection and subsurface testing. Sites and testing locations were recorded with hand-held GPS, and photographic records and field notes were maintained.

Field assessment began following completion of background research and receipt of an Archaeological Investigation Permit from the PAO, and involved the following elements:

- helicopter overflight;
- selection of testing locations;
- visual inspection;
- subsurface testing; and
- field recording.

2.3.1 Helicopter Overflight

Helicopter overflight represented the first stage of field assessment and was used to verify archaeological potential as derived from background research, and to highlight any testing locations not selected for ground assessment during background research.

2.3.2 Selection of Testing Locations

Within the present Study Areas, locations with High archaeological potential selected for testing following background research and helicopter overflight included marine and fluvial terrace systems, and shorelines of freshwater waterbodies and waterways. Subsequent field assessment included both visual inspection on the ground and subsurface testing.

2.3.3 Visual Inspection

Visual surface inspection was used primarily when background research indicated a testing location was likely to yield evidence of recent or historic land use with potential for surface-visible remains, or when locations amenable to subsurface testing might potentially be identifiable from the ground. It was also used when surface exposures were present in the testing location (e.g., along an eroding riverbank or an active beach). The objective was to locate deflated cultural material in exposures, along with other surface-visible remains.

2.3.4 Subsurface Testing

Subsurface testing was employed when: background research or visual reconnaissance indicated a testing location had potential for buried pre-contact cultural remains; specific historic or contemporary sites were anticipated but no surface-visible remains were evident; and in testing locations under forest cover with no surface exposures. The objective of subsurface testing was to test areas lacking surface exposures by sampling
subsurface deposits at close and regular intervals, to a depth of several centimetres below the A horizon, below which no cultural remains would be anticipated. This rarely required test excavation deeper than 30 cm below the surface; in most instances, testing required depths of no more than 20 cm below surface. Test pits were excavated by shovel and trowel.

Where possible, the excavation of test pits was systematic and intensive. Test pits were excavated along pre-selected linear features such as terrace edges and shorelines, and on level, dry terrain suitable for human settlement. In most instances, subsurface testing consisted of two parallel rows of test pits spaced at approximately 5 m intervals, according to the degree of forest cover. The number and location of all test pits, and of any historic resources encountered during the assessment, were recorded, and field notes and photographs were taken by the Project archaeologists.

2.3.5 Field Recording

Field notes recorded, among other things, the number, location and contents of test pits. Sites and testing locations were recorded with hand-held GPS units, with the objective of achieving an estimated horizontal error not exceeding 10 m. Readings to this degree of accuracy are sufficient to relocate sites and testing locations in the field, allowing them to be compiled into a database that could map site distributions as a GIS layer. Field notes were transcribed into a digital format on an ongoing basis and any sites and cultural materials recorded were catalogued on standard PAO site and artifact record forms. All archaeological and ethnographic sites, testing locations and important natural and cultural features were photographed and photo catalogues were maintained. Testing locations and the locations of archaeological and ethnographic sites were also recorded on Project mapping.

2.3.6 Contemporary Versus Archaeological Sites

Although, strictly-speaking, they are not archaeological sites and are not typically subject to mitigation under the Historic Resources Act 1985, contemporary land use features (material remains of human activity occurring after 1960) may have considerable relevance to archaeological research. Methodologically at least, no distinction was drawn during fieldwork between archaeological sites and sites of contemporary land use. Archaeological and contemporary sites were both recorded using the same methods and both reported to the PAO. Archaeological sites are assigned Borden numbers (e.g., “FhCe-01”) in accordance with the Canadian Registry for archaeological sites, and contemporary sites are designated by ethnographic codes (e.g., “13F/07 Ethno-03”). In insular Newfoundland, contemporary land use is less likely to reflect traditional patterns, and usually such sites are not recorded, but recording of contemporary sites is routine in Labrador, where there is abundant evidence for contemporary Innu and Settler land use that may reflect long-standing historic or even pre-contact land use patterns.

2.4 Project Personnel

Fred Schwarz, Ph.D. (Archaeologist), holds a B.A. in Anthropology from Memorial University, an M.A. in Archaeology from the University of Calgary and a Ph.D. in Archaeology from the University of Cambridge. He specializes in the archaeology and pre-history of the Newfoundland and Labrador interior. His research interests include predictive modelling and field investigation of pre-contact interior settlement in Newfoundland and Labrador, settlement patterns and the interpretation of interior adaptations and culture history in the region.
Dr. Schwarz has been directing field research projects in Newfoundland and Labrador, Nova Scotia, and Latin America for 22 years. His work in Labrador has included scientific management of the Stage 1 HROA of the Churchill River Power Project from 1998 to 2000, which included a series of three training programs for Innu researchers. In addition, he has worked on numerous projects with and for Innu organizations and companies. In 1996, he directed the Regional Context Component of the Voisey’s Bay Historic Resources Impact Assessment for the Mushuau Innu Band Council (in conjunction with the Labrador Inuit Association and Jacques Whitford). In 1997, he served as field consultant to the Innu History Commemoration Project for the Department of Canadian Heritage and directed the Archaeological Resource Inventory of Akamiuapishku Proposed National Park for Innu Nation and Parks Canada, eventually preparing the Human History Study of the proposed park in 2001. Since that time, he has also completed major assessments for IELP, including the Historic Resources Study of Phase III of the Trans Labrador Highway, as well as assessments and research in the town of Sheshatshiu for the Sheshatshiu Innu Band Council. More recently, since 2006 he has undertaken several projects with Minaskuat Limited Partnership and Stantec, including archaeological potential mapping and field assessment of the LabMag Iron Ore project in western Labrador, and scientific management of historic resources assessment of the Lower Churchill Hydroelectric Generation Project and the Labrador – Island Transmission Link. Dr. Schwarz undertook field assessment and co-authored this Report.

Roy Skanes, B.A., M.Phil (Archaeologist), has worked as a Consulting Archaeologist with Stantec Consulting Limited and its predecessor Jacques Whitford Environment Limited for the past 21 years and has been involved in archaeological and related background research since 1978. His research focus has been primarily on historical archaeology, with a large majority of his work directed toward study of habitation sites and fortifications dating to the 17th, 18th and 19th centuries. Mr. Skanes holds a B.A. in Anthropology (Archaeology major and French minor) from Memorial University of Newfoundland and a Masters degree in Modern History (specialization archaeology) from the University of St. Andrews, Scotland. He has worked extensively in Newfoundland and Labrador, Nova Scotia, Prince Edward Island, New Brunswick, Quebec, Ontario and Alberta. Over the past 20 years, he has directed and/or acted as Team Lead for many Historic and Heritage Resources assessments for a broad range of development projects on the Island and in Labrador, including assessments and excavations at Voisey’s Bay, Labrador, within the corridor of the Trans Labrador Highway from Red Bay to Cartwright and from Cartwright Junction to Goose Bay, at five locations proposed for construction of short range radar sites in central and northern Labrador, at a number of locations in the Churchill River valley and west and southwest Labrador for the proposed lower Churchill development, at in western Labrador for a number of proposed mining projects. He has also completed several Stage 1 HROA in the Labrador Straits region and on the Island for road and power-line projects, including the proposed HVdc transmission corridor from Muskrat Falls in Labrador to Soldiers Pond on the Avalon Peninsula. He has also worked extensively with Aboriginal groups carrying out field research in Labrador. Mr. Skanes held the Archaeological Investigation Permit issued by the PAO for the current project, directed the background and field research, and authored the required reporting on the work.

Amber Frickleton, Ad.Dip GIS, B.A., is a GIS Technician with the Information Management team in Stantec’s St. John’s office. Her GIS experience includes serving maps on the internet through ArcIMS and ArcServer, relational database design and management, GPS data collection and post processing and grid modeling and analysis. Complementary skills include data management and statistical analysis. Miss Frickleton’s work with Stantec has included work on a variety of projects including Aurora Energy uranium project, Labrador Iron Mine and this Project. Her work on these projects has involved a variety of tasks such as data analysis, map creation, data organization and quality control.
3.0 RESULTS: PROJECT INFRASTRUCTURE ASSESSMENT

3.1 Background Research Results

3.1.1 Cultural / Historical Sequence

Until recently, archaeology in Labrador and northern Quebec has focused on the coast, where research has established that sites are relatively rich and abundant, and the culture-historical sequence long and complex, extending back approximately 8,000 years.

The sequence begins with an initial late Palaeo-Indian / early Maritime Archaic Amerindian occupation in the Strait of Belle Isle (McGhee and Tuck 1975; Pintal 1998). The early Maritime Archaic people gradually spread north along the coast to central and then northern Labrador by 7,500 years before present (BP) (Fitzhugh 1972, 1978a).

After 4,000 BP, coastal Labrador was also populated by Arctic-adapted peoples from the north (Cox 1978), and thereafter, the Pre-contact Period in Labrador (i.e., the period prior to the arrival of Europeans in North America and contact with Aboriginal people) is characterized by Intermediate Amerindian (Nagle 1978) and Late Pre-contact Amerindian occupations - a people demonstrably ancestral to the modern-day Innu (Fitzhugh 1978b), along with Palaeo-Eskimo peoples (Pre-Dorset, Groswater, Dorset), culminating with the arrival of the Thule, ancestors of the modern Labrador Inuit, approximately 700 BP (Kaplan 1983; Fitzhugh 1994).

After approximately 500 BP, Labrador and the lower north shore of Quebec became the focus for European activities, initially whaling by Basques in the 16th century (Tuck and Grenier 1989) and fishing, sealing and fur trading by people from other European countries (Kennedy 1995).

In the mid-17th century, Innu / European contact began in earnest through the fur trade, with the establishment of the Postes du Roy and the Seigneurie de Mingan on the Quebec north shore. Though the Innu of Hamilton Inlet were clearly in contact with Europeans by this time (Zimmerly 1975; Mailhot 1997), the earliest close contact documented specifically for the Upper Lake Melville area occurred when Louis Fornel established a trading post at North West River in 1743. This post was operated by a series of Quebec-based and English merchants until 1837, when the Hudson Bay Company (HBC) acquired the North West River properties. The HBC maintained a monopoly on the fur trade in the area until 1901, when Revillon Frères Trading Company Limited established a competing post on the south side of the river, opposite the HBC post (Zimmerly 1975).

It is clear that through most of the fur trade period, the Churchill River valley was part of the hunting and trapping grounds of the Innu, and that they spent most of each year moving through it. Throughout this period, the interior remained remote and relatively unknown to Europeans. In the 17th and 18th centuries, and continuing through most of the 19th, the parties involved in the fur trade consisted primarily of European traders on the one hand, and Innu hunters and trappers on the other. However, by the closing years of the 19th century, the Settler population became increasingly involved in fur trapping for trade, and by the early 20th century had largely usurped Innu trapping grounds along the Churchill River and elsewhere (Tanner 1947, 1977; McGee 1961; Ames 1977; Burt 1980; Rich and Palliser 1980; Davis 1987; Goudie 1991; Kennedy 1995).
3.1.2 Previous Historic and Heritage Resources Assessments

Historic and Heritage Resources assessment of the lower Churchill River began in 1974, when James Tuck surveyed the Churchill River between Churchill Falls and Gull Island by canoe (Tuck 1981). Subsurface testing was conducted in areas thought to have potential for Aboriginal and historic European camps and sites, but no trace of Aboriginal occupation was identified. However, the remains of a trapper’s cabin or tilt (abandoned in 1968) and the ruins of an older structure dating to the 19th century were located along a portage at Gull Island. Further east, at the portage on the north side of Muskrat Falls, a concentration of quartzite flakes and two bifacially-flaked stone tools were identified, indicating a pre-contact Aboriginal campsite (Thurlow and Associates 1974).

In 1998, field research related to development of the Churchill River for hydroelectric purposes focused on the lower portion of the river and included assessment of various Project features as far as southwest Labrador, the Strait of Belle Isle and insular Newfoundland. The 1999 Stage 1 HROA continued this research, further investigating data and apparent data gaps arising from the 1998 results. A 2000 archaeological potential mapping project developed a systematic characterization of survey effort and archaeological potential in order to plan the work needed to complete the Stage 1 HROA.

Overall, Historic and Heritage Resources research, conducted from 1998 to 2000, led to the investigation of 984 locations. Approximately 32,400 test pits were excavated at 809 of these. The focus of research was directed toward the river valley, where testing occurred at 820 locations, with 23,601 test pits excavated at 674 of these. Testing locations were pre-selected based on aerial photograph analysis and land use data. Intensive subsurface testing was targeted at pre-selected locations. Although the Gull Island Generation Facility and Reservoir had been assessed in detail in previous studies, additional archaeological assessment was undertaken in 2006 at the Muskrat Falls Generation Facility and Reservoir (Minaskuat Inc. 2008). The additional assessment addressed data gaps in the archaeological potential mapping of the transmission line from Muskrat Falls to Gull Island and Churchill Falls.

Including all cultural components, the assessment of the Project inventoried 294 sites. The majority of these pertain to contemporary land use in the lower Churchill River valley, although 45 archaeological sites assigned Borden Numbers were also identified. This includes 26 sites with pre-contact components, six historic tilt locations, 13 historic campsites and other indeterminate historic occupations, and two historic HBC posts.

The extent of previous Historic and Heritage Resources research completed in the vicinity of the proposed Project infrastructure and the archaeological and contemporary sites recorded previously in the area are illustrated in Figure 3.1.
Figure 3.1  Previous Historic and Heritage Resources Findings and Testing Locations
3.2 2011 Historic and Heritage Resources Field Research Results

3.2.1 South Side Access Road

The majority of the proposed south side access road, which connects to a recently-constructed forest access road leading from the Trans Labrador Highway, was found to traverse sloping upland terrain of generally of Low archaeological potential, thus no subsurface testing was conducted at these locations. However, background research and the helicopter overflight suggested higher potential in the McKenzie River area, including the river crossing itself and approaches to it, as well as the section of the road corridor close to the south side portage trail around Muskrat Falls.

Where the road corridor makes its final approach to the eastern side of McKenzie River, it crosses two distinct terrace frontages, one at approximately 5 m above sea level (asl) and one at 10 m asl. Both were investigated on the ground.

Location PI2011-01 is a cobble terrace supporting a growth of young hardwoods and immediately overlooking McKenzie River. Excavation of 14 test pits revealed thin, sandy soil horizons on a cobble substrate, but no cultural material.

Location PI2011-02 is situated on a 10 m asl terrace. An additional 16 test pits excavated at irregular intervals among extremely heavy forest blow-down, revealed well-defined and deep soil horizons, but again no cultural material.

Location PI2011-03 includes the approaches of the proposed road corridor on the east side of the McKenzie River crossing, which includes a 1.2 km stretch of low and level terrain at or just below 15 m asl. Approximately half of this area is on the interior of a level, 10 m asl terrace flanking the mouth of McKenzie River. This 1.2 km segment of corridor, characterized by extremely heavy forest blow-down, was walked in its entirety. For the most part, the corridor does not intersect any terrace edge features and no locations were selected for subsurface testing. However, one contemporary site (13F/02 Ethno-02), an approximately 20 year old or less blue metal trap box mounted on a tree, was recorded along the route (Figure 3.2; Photo 3.1).
The westernmost 600 m of the proposed road corridor roughly parallels the eastern portion of the Muskrat Falls south side portage, though the corridor is generally routed to avoid interactions with the trail itself. Two locations in this area were selected for testing but no cultural material was located.

Location PI2011-05 includes this entire segment of the road corridor, which was walked, from south of the portage trailhead to the end of the proposed road. This section of the road corridor mostly tracks slope or runs along the interior of a 30 m asl terrace, but it does approach the edge of the terrace at one point, which is also the point at which it most closely approaches the portage trail. No cultural material was identified in this area.

Location PI2011-06 is the location where the road corridor grazes the terrace edge. Thirteen test pits were excavated in two rows here. No cultural material was recovered.

3.2.2 Accommodations Complex

Background research and the helicopter overflight suggested that the area selected for an accommodations camp had Low potential for historic and heritage resources. Therefore, no ground assessment was completed.

3.2.3 Contractor’s Laydown Area

Background research and the helicopter overflight suggested that the area selected for a contractor’s laydown area had Low potential for historic and heritage resources. Therefore, no ground assessment was completed.

3.2.4 Owner’s Laydown Area

The Owner’s laydown area, on the west side of the mouth of McKenzie River, is an area of High potential. This area was investigated in 1998, and two ethnographic sites (13F/02 Ethno-12, and 13F/02 Ethno-13) were recorded at the time (IED/JWEL 2000). The most important area not investigated in 1998 was a prominent, islanded, 20 m-high terrace fragment at the northern end of the proposed laydown area.

Location PI2011-04 is located on a terrace fragment, and 74 test pits were excavated in two rows along its stable southern and northeastern edges. The actively-eroding northwest edge fronting the Churchill River was not tested, though the steep-sided beach here was walked. No cultural material was encountered in test pits, but two blue-painted metal trap boxes (13F/02 Ethno-18 and 13F/02 Ethno-25) were recorded at two locations on the terrace top. These traps were of the same design and age as the one described above, which was identified at Location PI2011-03 (Figure 3.2).

3.2.5 Camera and Water-level Gauge Installations

The camera and water-level gauge installations were also deemed to require ground assessment, since they appeared to be situated immediately alongside the river.

Location PI2011-08, the proposed camera site, is located atop a bedrock outcrop, not amenable to subsurface testing. The soil ridge overlooking the camera installation site, ascending to the base of the knoll, has many surface exposures that were inspected but no cultural material of note was identified.

Location PI2011-07, the water-level gauge site, is located just above the beach, on a bedrock outcrop (Photo 3.2). No testing was undertaken and no cultural material of note was identified in any locations where surface exposures were present.
Figure 3.2  2011 Historic and Heritage Resources Findings and Testing Locations

[Map showing locations and findings related to historic and heritage resources.]
During the course of work on the south side of Churchill River in the vicinity of the proposed access road, one archaeological site (FhCe-02) was revisited and one new site (FhCe-07) was recorded (Figure 3.2).

During the revisit to FhCe-02 in 2011 – the site of a single lithic find in 1998 near the eastern end of the portage trail (IED/JWEL 2000) - one fragment of a kaolin pipebowl was collected. The location is on a loose sand and gravel ice push-ridge, on and behind the active beach.

During the course of accessing the proposed water-level gauge installation, the south side portage trail was walked, almost in its entirety. Periodically since the 1970s, stray lithic finds have been made along this trail. In October 2011 during the current assessment, thick autumn leaf litter obscured the trail and no new artifact finds were noted, though a piece of non-cortical quartzite shatter was located on the edge of a 2010 geotechnical drill site immediately alongside the trail. Although this piece was found with fragments of rock, which had likely been shattered and burried by a drill bit, the quartzite fragment may be cultural and of Pre-contact Period date. The site has been registered with the PAO as FhCe-07 (Figure 3.2).
4.0 RESEARCH RESULTS: FHCE-06 ASSESSMENT

In the fall of 2010, pre-contact lithic materials were reported from the western beach on the north side of Muskrat Falls (Nalcor 2011). The beach on which the quartzite materials were identified is comprised of sand, gravel and cobbles of various sizes and types. Above the water’s edge, the beach is covered in grasses, shrubs and a thick growth of alder trees.

Lithic material was reported along approximately 1 km of the beach, bounded by the waterline to the west and the base of the terrace some 25 m to the east. From the break-of-slope at the base of the terrace, the topography rises steeply to an elevation of approximately 49 m above the Churchill River at the upstream end of Muskrat Falls.

The individuals who initially discovered and reported these finds believe the material is in a primary, in situ context on the beach. The results of Nalcor’s assessment suggested it was more likely to be a secondary deposit deflated from a site on the terrace above, related to the known site FhCe-01. Field assessment in 2011 was aimed at collecting more data that might contribute to resolving this question.

4.1 Background Research Results

These are not the first archaeological materials to be discovered at Muskrat Falls; pre-contact lithic material was reported from both the north and south sides of the falls since the mid-1970s. It is necessary to review the history of work at the site in some detail.

4.1.1 Initial Work

Archaeological research in the Muskrat Falls area was first undertaken in the mid-1970s. During that initial work (Fitzhugh 1977; Tuck 1981), an Intermediate-Period site dating to between circa 3,500 and 2,000 years ago was identified and registered as FhCe-01. Pre-contact materials were also encountered on the south side of the falls (Thurlow and Associates 1974; Tuck 1981).

The pre-contact site on the north side of the falls (FhCe-01) was located on a narrow, flat-topped terrace fragment at approximately 65 m asl, overlooking the river along a steep but relatively short portage trail that led up and around the falls. The terrace fragment upon which the site is situated has experienced significant slope failures on both the upstream and downstream sides, some apparently occurring within the last 40 years, but the identified lithic concentration midway between the upstream and downstream edges was not seriously affected. As the lithic component at FhCe-01 was relatively small, it was excavated by Dr. James Tuck in 1979. Although no radiocarbon dates or diagnostic artifacts were recorded, the assemblage of quartzite flakes suggested an Intermediate Amerindian cultural affiliation (Tuck 1981).

4.1.2 Further Assessment in the 1990s

As the only previously-known pre-contact site in the Churchill River valley prior to the 1990s, and one that was situated in a strategic location, the Muskrat Falls area was considered an important zone for archaeological testing during the 1998 Historic and Heritage Resources field research program (IDE/Jacques Whitford 2000). Investigation that year on the north side of the river focused on determining: a) what (if anything) remained of
It was determined during the 1998 fieldwork that the north side of Muskrat Falls had seen some ground disturbance in the recent past thought to be associated with engineering studies and recreational activities. The area excavated by Tuck was still evident as a level, sandy exposure approximately 9 m in diameter, with occasional quartzite flakes scattered on the surface.

One hundred and eighty-eight test pits were excavated at 5 m intervals in transects leading east, west and south of FhCe-01 and along the western edge of the terrace overlooking FhCe-06. The rationale for testing those areas was that FhCe-01 was situated in a location that has probably been considered strategic since the development of the falls during the post-Archaic period, and therefore, evidence of later pre-contact components and additional Intermediate-Period material culture could be present. On the basis of the initial find, any other sites would likely be oriented toward the upstream side of the terrace, or perhaps sheltered in woods and hummocks behind the terrace-edge. As well, there was a possibility that not all of FhCe-01 had been excavated.

The results of the 1998 testing proved negative, suggesting that the FhCe-01 did not extend greatly beyond what was exposed by Tuck in 1979. The possibility of additional contemporary or later pre-contact components elsewhere along this extensive terrace could not be discounted, though it seemed likely that the extensive slope failures along the eastern and western margins of the terrace had already deflated any loci that may once have been located along the edge of the terrace. Investigation of the western beach (i.e., the current Study Area) in 1998 also revealed no deflated lithic materials of apparent cultural origin and the terrace slope east of the beach appeared uniformly steep and generally unsuited to human habitation.

4.1.3 Discovery of Lithic Material on the Beach in 2010

In October 2010, a scatter of fractured quartzite cobbles and possible chipping debris (i.e., flakes) from stone tool manufacture was reported to the PAO from the beach situated at the west end of Muskrat Falls on the north side of Churchill River, Labrador. Along with cobbles and flakes, Mr. Anthony Jenkinson of Sheshatshiu reported finding the base of a finished artifact, along with cores and fragments of bifacially-flaked stone tools situated along the active beach-zone. The similarity of the reported lithic raw materials and their proximity to the registered Intermediate-Period archaeological site FhCe-01 excavated by Dr. James Tuck in the 1970s (Tuck 1981), suggested that the scatter was of a similar age and cultural affiliation. The beach at Muskrat Falls along which the finds were made was registered with the PAO as a new site, separate from FhCe-01, and designated FhCe-06.

Following the initial report of these discoveries, Nalcor conducted a preliminary historic resources assessment in November, 2010, in order to assess the nature and extent of the materials and collect any artifacts that could be lost due to fluctuating water levels and/or ice scouring in the 2011 spring melt.

In accordance with guidelines drafted by PAO, the 2010 archaeological survey of the beach at Muskrat Falls included visual inspection along the beach, GPS recording of individual lithic artifact locations and collection of all diagnostic artifacts along with a sample of quartzite fragments for further analysis. The work was undertaken over a two-day period with the assistance of Anthony Jenkinson and Guy Playfair of Innu Nation.
The resulting collection includes a small number of pieces that are of cultural origin, including a possible biface fragment, a possible biface preform and several flake-like lithics of various sizes. These appeared comparable to those recovered during excavation of FhCe-01 in the 1970s.

However, the bulk of the material collected consists of split and fractured quartzite cobbles. None of these latter pieces are demonstrably cultural, and comparable examples of this material are naturally present on beaches all along the lower Churchill River. In fact, since many of the non-quartzite cobbles observed on the beach, including mudstone and other materials unsuitable for stone tool manufacture, show similar evidence of spalling and fracturing, it is likely that much of the fractured quartzite has resulted from natural processes. Nevertheless, since a small number of pieces are cultural, it can be assumed that some (indeterminate) percentage of the split cobbles may also be associated with stone tool manufacture.

The distribution of the lithic material recovered in 2010 (Figure 4.1) did not reveal any substantial clustering. Rather, the scatter extends in a linear fashion along the beach, centred at the toe of the medium-sized slope failure west and southwest of FhCe-01.

4.1.4 Interpretation of the FhCe-06 Lithic Materials

The preliminary assessment of this material was that it was not an in situ archaeological deposit, but rather, was more likely a secondary deposit of cultural material on the present beach, deflated from the known and documented pre-contact occupation area on the terrace top (i.e., FhCe-01 or related loci). It was proposed that the beach material, re-worked by ongoing wave and ice action, has since formed an assemblage with assorted quartzite cobbles and split cobbles that occur naturally on this and other beaches along the Churchill River. Thus, testing the beach for in situ lithics and associated features dating to the Intermediate Period would likely be futile.

This interpretation was based on the following:

- there is a known archaeological site on the 65 m asl terrace overlooking the present beach, a terrace which has been subject to erosion and undercutting, as evidenced by the several slope failures;
- in fact, the lithic scatter designated FhCe-06 is distributed at the foot of a medium-sized slope-failure east of FhCe-01;
- although some of the material at FhCe-06 is cultural, quartzite cobbles, including split cobbles, are naturally present on the beaches of the lower Churchill River;
- the present beach is active, and therefore no materials of any great antiquity are in situ, but rather have likely been reworked repeatedly, exposed, concealed and shifted horizontally and vertically by erosional processes and wave and ice action; and
- geomorphological evidence (Jacques Whitford 2000; N. Catto, pers. comm.) indicates that in fact, the present beach does not lie at the same elevation (or even likely the same horizontal location) as the ancient beach at the beginning of the Intermediate Period circa 3,000 BP.
Figure 4.1  Distribution of Lithic Material Recovered in 2010
A report on the 2010 investigations was submitted to PAO and to the Joint Review Panel in April, 2011, at which time Nalcor also undertook to pursue further Historic and Heritage Resources research at FhCe-06.

The conclusions of this report were questioned in a separate submission to the Joint Review Panel (Nielsen 2011), which argued that FhCe-06 was more likely to be a primary archaeological deposit at the foot of the portage trails descending from the terrace, deposited in situ by elderly and young people manufacturing stone tools on the beach while waiting for others to portage gear. In support of this hypothesis it was argued that:

- lithic material cannot have been deflated from FhCe-01 because the excavated locus at the latter site is at least 100 m from the edge of the terrace above;
- the feet of the slope failures do not reach the active beach, and therefore erosion from the terrace above cannot account for the presence of cultural material on the beach; and
- while conceding that the geomorphological evidence may preclude use of this beach at 3,000 BP, the lithic material at FhCe-06 (and for that matter, FhCe-01) may be more recent, dating to the later Intermediate, Late Pre-contact, or even Historic Periods.

In a separate recommendation to PAO\(^1\), this same individual had previously recommended extensive testing of the alder zone between the beach and the foot of the terrace to recover subsurface in situ lithics at FhCe-06 that might substantiate this interpretation.

### 4.2 2011 Historic and Heritage Resources Field Research Results

In Undertaking 76 of the Joint Review Panel Hearings, Nalcor committed to completing the fieldwork necessary to update the interim report in the 2011 field season (Nalcor Energy 2011) and providing a final report to the PAO.

As noted above, the Consultant believed that the lithic material at FhCe-06 is a secondary deposit deflated from a site on the terrace above, most likely the known site FhCe-01 or an adjacent deposit, but this had yet to be established. In an effort to collect more data that might resolve this question, subsurface testing in 2011 was undertaken in the vicinity of the beach itself, with the focus of the assessment directed toward the upper edge of the beach at the base of the main terrace. In addition, recent LiDAR imagery has identified several small terrace shelves, two of which overlook the FhCe-06 find-spots. Testing was conducted at these locations and elsewhere along the various cut-lines that traverse the slope to determine whether there are in situ archaeological deposits on these shelves that may be contributing lithic material to the beach below. In addition, surface inspection was undertaken along the active beach.

Assessment in the vicinity of FhCe-01 (Figure 4.2) therefore involved four components: a revisit to FhCe-01; subsurface testing of the terraces identified in LiDAR imagery; surface inspection along the active beach; and subsurface testing within the alder zone behind the beach.

\(^1\) This information is based on email correspondence between Mr. Jenkinson, Mr. Neilson and the PAO. Summaries of that correspondence were provided to Stantec Consulting Ltd. by the PAO for background information purposes and for use in the Archaeological Research Permit Application and subsequent field survey.
Figure 4.2  
Assessment in the Vicinity of FhCe-01
4.2.1 Muskrat Falls (FhCe-01)

The FhCe-01 site at Muskrat Falls (Tuck 1981) was briefly revisited, primarily to verify the GPS coordinates for the site, originally collected 13 years ago (IED/JWEL 2000). A single tiny flake of quartzite was noted on the exposed sandy surface. A new reading taken in 2011 appears to plot the site correctly.

In addition, a series of readings were logged to more precisely trace the route of the north side portage trail as it descends from the top of the terrace down to the western beach (see Figure 4.2). This appears to be the principal trail in use today, particularly as a boat launch; an old boat lies upended in woods at the bottom of the trail, and another boat has been left on the beach below. There are other trails following cut-lines leading down from the top of the terrace to the western beach. The boat launch trail is likely the most historically-significant, since it follows the gentlest route down. However, its antiquity cannot be established, and it is likely that ancient portage trails on both the eastern and western sides have shifted periodically over time as banks have failed and old routes have been destroyed.

4.2.2 Terrace Testing

Recently-obtained LiDAR imagery of the Muskrat Falls Area revealed the presence of five narrow terrace features that had not previously been investigated, and that have the potential to yield historic resources (Figure 4.2). Three of these are associated with the western beach, and have potential to yield insights into the source deposit of the lithic material observed at FhCe-06.

Testing location MBW2011-01 appears to be a stranded former island near the northern end of the west beach, some distance from any of the reported lithic finds along the beach. Twenty-eight test pits excavated at irregular intervals among the trees on the small, level terrace surrounding this site yielded no cultural material. Soil development horizons were weak or entirely lacking.

Testing location MBW2011-02 is the higher of two terrace fragments set in the wooded slopes overlooking FhCe-06. Forty-six test pits were excavated in two rows along the approximately 100 m of terrace frontage. These revealed approximately 10 cm of silty sand beneath the duff, overlying a friable, pebbly B horizon. Although this is an attractive terrace eminently suitable for settlement, no cultural material was encountered.

Testing location MBW2011-03 is the lower, smaller, but equally attractive west-facing terrace overlooking FhCe-06. Twenty-six test pits excavated in two rows along the terrace edge revealed similar soils to those of Area 2, and again, no cultural material was encountered.

Testing location MBW2011-04 is the lower of two south-facing terraces overlooking the upper falls. Forty-one test pits excavated in two rows revealed a silty A Horizon, generally 5 to 6 cm thick, grading to a silty or loose, pebbly, B Horizon. No cultural material was found.

Testing location MBW2011-05 is a small, extremely high terrace fragment situated at approximately 100 m asl, approximately two-thirds of the way up the side of the knoll at Muskrat Falls. On climbing to this location, it was found to be a narrow, poorly-drained depression. No subsurface testing was undertaken.

As a result of this work, one ethnographic site was recorded: Muskrat West Camp (13F/07 Ethno 11).
Muskrat West Camp (13F/07 Ethno 11)

A small contemporary camp is set atop the small “islanded” terrace in testing location MBW2011-01, in the shelter of large, mature, spruce and birch trees. Cultural remains associated with the site, which appears to date primarily within the last 10 years, include three stove support pegs, several lengths of relatively slender stove pipe, a variety of food and drink tins, a broken milk glass mug, a salt meat bucket and shreds of garbage bag plastic.

4.2.3 Beach Assessment

Testing location MBW2011-06 (the western beach at FhCe-06) was walked repeatedly. The objectives were, first, to determine whether there was cultural material present that had not previously been collected, and second, to determine whether in situ features, such as stone hearths, could be identified. At some point during the summer or fall (2011), someone else had already done this, marking pieces of quartzite with flagging tape and/or sticks driven into the beach. Many appeared to be cortical fragments and shatter not obviously modified by human agency; however, some do appear to be cultural. These, along with other pieces observed along the beach, were collected (Figure 4.2).

Muskrat Falls Beach (FhCe-06)

The 2011 beach collection is not large, numbering 10 pieces in all. Seven of these are quartzite flakes, one is of quartz, and one is a shard of historic wine bottle glass. The tenth piece is a flake of red Saunders chert. Unlike the quartzite, which can be ambiguous, this flake can only have been introduced by human agency. No pieces of this material had previously been recovered from FhCe-01, and the raw material suggests a Brinex Complex or other early-middle Intermediate Period cultural affiliation (Fitzhugh 1972).

Surface inspection revealed no cobble concentrations that might plausibly represent in situ archaeological features along the active beach. Although the distribution of cobbles shows clear patterning, this is strongly linear in form and parallel to the axis of the beach. Not surprisingly, cobbles thus appear to be distributed along strandlines, reflecting sorting by wave and ice action.

4.2.4 Alder Zone Testing

The sand and cobble beach on the west side of the northern shore at Muskrat Falls is backed by a 20 to 30 m-wide alder zone, which extends to the break-of-slope. The dense tangle of vegetation makes access for testing difficult, but nine parallel cut-lines at 50 m intervals extend from the beach behind FhCe-06, through the alder zone and continuing up the steep forested slopes behind. These cut-lines, some of which are now used as trails leading down to the beach from the terrace above, also serve as relatively accessible transects across the alder zone, and subsurface testing was undertaken along these cut-lines as a means of at least sampling this landform (Photo 4.1). The nine transects are numbered testing locations MBW2011-07 to MBW2011-15. In all, 49 test pits were excavated along these transects. These revealed that the deposits consist of loose grey-tan sand mottled with lenses of iron sand and blue-grey clay with occasional pebbles and cobbles, atop a deep layer of basal marine clay. There is no evidence for the formation of soil development horizons in any testpit, and in one unit close to the break-of-slope, plywood was found at 25 cm below surface. This alder zone is not a stable, long-lived landform. No materials of historic and heritage resources significance were identified in any testing location.
Photo 4.1  West Beach at Muskrat Falls Showing Cut-Lines Used for Testing the Alder Zone

Muskrat West Cabin (13F / 07 Ethno 10)

During the course of testing, photographs and a GPS reading were taken at the cabin that sits hidden in woods behind the alder zone at the foot of the Muskrat Falls knoll. This cabin is log-built in traditional style but set on concrete blocks and likely dates to the 1970s; it appears to be still in relatively recent use (Photo 4.2). No materials of historic and heritage resources significance were identified at this location.

Photo 4.2  Muskrat West Cabin (13F/07 Ethno 10)
### 4.3 Summary

Terrace testing did not yield any evidence for a new possible source deposit for the material recovered from the beach. The northern ends of the two terraces overlooking the FhCe-06 scatter (MBW2011-02 and MBW2011-03) both terminate at a steep-sided gully on the flanks of a slope failure, so it cannot be known if there were additional loci further north on these terraces that are now deflated and destroyed by erosion.

Surface inspection and collection along the beach recovered a small number of pieces (10 in all) which are either clearly, or likely, cultural. These are not distributed in any patterns that suggest in situ archaeologically-significant features. Seven of the pieces collected are quartzite, like the previously-recovered material from FhCe-06 and FhCe-01, and another is quartz. The two remaining pieces do add something different to the understanding of the assemblage. One is a shard of dark green bottle glass, which appears to be of 19th-century manufacture. The other is a flake of red Saunders chert.

Testing in the alder zone yielded no cultural lithic material. The 49 test pits excavated only represent a small sample of this zone, but are sufficient to establish that even the alder-choked portion of the beach is presently unstable, reworked, and is not in itself a landform of any great antiquity.

### 4.4 Discussion

Previous contrasting interpretations of the lithic material recovered from FhCe-06 centre on contrasting interpretations of other more specific questions, including:

- the nature and cultural depositional process of the cultural materials recovered from FhCe-06;
- the date of deposition of the cultural materials recovered from FhCe-06;
- the distance between FhCe-06 and any potential terrace-top source deposit at FhCe-01; and
- the dynamics of the post-depositional erosional and geomorphological processes acting on both the terrace at FhCe-01 and the beach at FhCe-06.

While the results of the 2011 assessment do not fully resolve all of these questions, they do add some suggestive new data. These points are addressed in the following sections.

#### 4.4.1 Deposition

First, it is apparent from the outset that both proposed depositional processes are plausible. It is already established that cultural materials have been deposited in situ on the top of the northside terrace at Muskrat Falls, as evidence by FhCe-01. Since large, workable cobbles of quartzites used for stone tool manufacture in the Pre-contact Period are naturally present on the beaches of the lower Churchill River, it is also plausible that quartzite knapping, especially primary reduction, might have occurred on beaches along much of the lower reaches of the Churchill River, including near Muskrat Falls. The proposition that particular age-cohorts (elders or youth) were responsible for deposition is, of course, untestable but plausible.

Actual evidence for primary reduction of quartzite cobbles at FhCe-06 is more ambiguous, and the new data recovered in 2011 do not clearly indicate whether this did, or did not, occur. Split cobbles without evidence for further working are present on the beach, but include both quartzite and non-workable lithic materials, indicating that as on other beaches along the Churchill River, these result in whole or in part from natural
processes. The small sample of clearly-cultural lithics consists primarily of smaller flakes and artifacts that do not in themselves indicate whether they are in primary or secondary context.

4.4.2 Dating

The second issue concerns the dating of these materials. In the North West River type sequence for central Labrador (Fitzhugh 1972), quartzite-chert-quartz and quartzite-dominated lithic assemblages are in most cases assigned to the Intermediate Period, circa 3,500 to 2,000 BP. In this sequence, the Intermediate Period appears to be both preceded and followed by periods in which the pre-contact inhabitants of the region made almost exclusive use of Ramah chert for chipped stone tool manufacture.

The working hypothesis throughout the Lower Churchill Hydroelectric Generation Project assessment has been that quartzite and quartzite-dominated assemblages date to this same period in the local type sequence. However, it is true that in other more distant parts of Labrador-Ungava, including the Lower Côte-Nord (Pintal 1998) and the Caniapiscau region (e.g., Denton 1989), later pre-contact peoples used substantial quantities of local quartz and quartzites. As has been argued previously (JWEL/IELP 2001b), the actual dating of the quartzite-dominated assemblages identified during historic resources assessment along the Churchill River will only be resolved by further excavation.

Materials recovered at FhCe-06 in 2011 add some complexity to the dating issue. The flake of Saunders chert is important in part because, unlike the quartzites, it is an exotic material not naturally present on beaches in the lower Churchill valley. It is important as well because it is a material only known to have been worked by pre-contact peoples in the early-middle portion of the Intermediate Period. It therefore must pertain to an occupation of relatively early date. Finally, it is important because no Saunders chert whatsoever was recovered from the excavated locus at FhCe-01. Since it is recognized that the western beach at Muskrat Falls did not exist in its present form or location in the Early-Middle Intermediate Period, this piece likely pertains to an Early-Middle Intermediate Period component at higher elevation on the terrace. Yet, it does not appear to derive from the same assemblage as that at FhCe-01.

The sherd of wine bottle glass is similarly distinct from any material previously recovered, either from FhCe-06, or from FhCe-01. It suggests, not surprisingly, that there is potential for historic occupation in the area, in addition to the evidence already recovered for pre-contact and contemporary occupations associated with the Muskrat Falls portage.

4.4.3 Distance

A third issue concerns the distance between the terraceteop site at FhCe-01 and the beach assemblage designated FhCe-06. It has been proposed that the excavated component at FhCe-01 cannot contribute deflated lithic material to the beach below, since FhCe-01 does not actually extend to the edge of the western terrace. While this is true, the distance issue can be misleading. Any material eroded from the terrace to the beach below would have to derive from additional loci once situated closer to the edge of the terrace. These loci might partially survive to the present day, or they may have been wholly undermined and destroyed by the extensive slope failures which have demonstrably occurred along the edge of the terrace.

Clearly, it is not possible to identify site loci, which may no longer exist, though it is possible to identify the extensive erosional processes acting on this terrace (Figure 4.2). However, it is possible to identify partially-
eroded loci if any *in situ* deposits survive. In 2011, intensive testing of terraces identified in LiDAR imagery yielded negative results. Nevertheless, as noted in the Environmental Impact Statement for the Lower Churchill Project, there is potential for yet undiscovered loci associated with FhCe-01 to be identified during the mitigation process.

### 4.4.4 Dynamics

It is axiomatic that post-glacial isostatic rebound, fluvial downcutting and lateral wandering of river channels have been progressively changing the river front landforms available for settlement throughout the human history of the Churchill valley (JWEL 2000). Ever since Muskrat Falls first emerged as a rapids *circa* 3,000 years ago (N. Catto, pers. comm), the beaches at the east and west ends have likely been used as landing and departure places by Aboriginal and non-Aboriginal people portaging around the falls during travel up and down the river.

However, the location, elevation and configuration of these beaches cannot have remained stable through this period down to the present day. Nor have the adjacent higher terraces remained stable. The extensive slope failures evident on both the eastern and western faces of the north side of Muskrat Falls testify to the effects of riverine erosion that has occurred along these beaches and reached to the base of the terraces, acting on the interface between the basal marine clays and the sands above. As a result of these slope failures, the former edges of the high terraces have slumped, depositing sediment and probably archaeological materials as well, onto the beaches below.

Archaeological assessment activity in 2011 included a program of subsurface testing within the alder zone between the base of the terrace and the top of the western beach. The objective was to determine whether this is a stable landform with potential to yield *in situ* archaeological remains. The results indicate that the sediments in this zone consist of a mixture of sand and marine clay, almost certainly (like the beach as a whole) representing sediments slumped from the terrace behind. Soil development horizons have not yet formed, and in one instance, a piece of modern plywood was found at depth during testing. Therefore, this is not an ancient landform. Like the beach as a whole, these sediments continue to be worked and reworked, and have no potential for *in situ* archaeological remains.

### 4.4.5 Summary

On the basis of archaeological assessment conducted in 2011, along with work conducted in previous years, it can be verified that:

- some of the lithic pieces collected on the beach at FhCe-06 are of cultural origin;
- there are or have been *in situ* archaeological remains (FhCe-01) on the top of the principal terrace on the north side of Muskrat Falls;
- the scatter of lithics on the beach designated FhCe-06 is centred on a major slope failure scar west of FhCe-01, which will have introduced considerable sediment onto the beach below; and,
- the present beach at FhCe-06, including the alder zone, is relatively modern feature, an unstable landform with no potential to yield *in situ* remains.
The simplest interpretation of the lithic scatter at FhCe-06 is still that it has been introduced onto the beach as a result of slope failure and slumping of sediment from the terrace above, where in situ archaeological remains have been identified.

The possibility that some of the lithic material recovered from the beach at FhCe-06 may have been deposited directly at a beach cannot be discounted. This is why archaeological materials recovered from active beaches are always problematic; they have no verifiable primary context. The lithic material observed at FhCe-06 could conceivably derive from deposition of artifacts on a beach, from erosion from the terrace above, or from a combination of the two. It is even possible that some material observed on this (or any) active beach may have been transported from a considerable distance upstream.

Thus, except where beaches represent ancient landforms that have become inundated and then re-exposed (e.g., Loring et al. 2003), it is rarely possible to reconstruct any meaningful archaeological context for archaeological materials found on active beaches, or even to verify their source. Consequently, such finds are generally important only to the extent that they may indicate the presence of in situ remains on adjacent stable terrain.

In this case, it is already known that there are, or have been, in situ remains on the adjacent terrace. Thus far, assessment has yet to reveal any additional loci other than the excavated area at FhCe-01. How much has been lost through slope failures cannot be known. Additional loci that may survive on the terrace top will continue to be tested during the mitigation process, as outlined in the EIS.
5.0 SUMMARY

The Stage 1 HROA in October 2011 included two components:

- completion of a pre-construction Stage 1 HROA of the proposed infrastructure, including a proposed access road on the south side of Churchill River, between Muskrat Falls and the Trans Labrador Highway, an accommodations complex midway along the proposed access road, two proposed laydown areas near the western end of the proposed access road and camera and water-level gauge installations at Muskrat Falls; and
- follow-up archaeological fieldwork at FhCe-06 on the north side of Muskrat Falls, in accordance with Undertaking 76 submitted by Nalcor to the Joint Review Panel in early 2011.

5.1 Project Infrastructure Assessment

Background research results and helicopter overflight indicated that archaeological potential was low across much of the Project Area, except for four locations.

The approaches to the McKenzie River crossing of the proposed access road were walked, and subsurface testing was undertaken at two locations, with negative results. One contemporary trapping site was recorded.

The Owner’s laydown area on the west side of the mouth of McKenzie River includes a prominent terrace at its northern end. Subsurface testing was undertaken along the stable southern and eastern edges of this terrace, with negative results. Two contemporary trapping sites were recorded. An additional two contemporary sites had been recorded in this area in 1998.

The western end of the proposed access road, near the portage trail on the south side of Muskrat Falls was walked, and subsurface testing was undertaken at one location, where the proposed road corridor tracks the edge of a 30 m terrace. The results were negative.

The proposed camera and water-level gauge installation sites were investigated and found not to warrant subsurface testing. However, during the course of accessing the water-level gauge site, an historic artifact was found on the beach at a previously-recorded find spot, while a quartzite flake was collected from a site alongside the portage trail. These finds highlight the requirement for further work in the Muskrat Falls area in the future.

The 2011 Stage 1 HROA in 2011 did not identify any interactions between the early works component of construction and significant historic resources. Moreover, most of the proposed early works, including the access road corridor east of the McKenzie River crossing, the accommodations complex, the water gauge and camera installations and the contractor's laydown area, lie within areas with Low potential for historic resources. Nevertheless, sensitive areas are found along the road corridor from the McKenzie River crossing west to Muskrat Falls. Normally, higher-potential areas such as this would be subjected either to Stage 2 HRIA following cutting of the centerline of the road corridor, or to archaeological monitoring during the initial stages of ground disturbance (i.e., grubbing). However, securing an Archaeological Investigation Permit from the PAO, either for Stage 2 assessment or for monitoring, would typically require that ground conditions be suitable for historic resources assessment (i.e., the absence of snow-cover and/or ground frost). While early works construction could therefore proceed in winter in the above-mentioned Low potential areas, it would be
prudent if construction in High potential areas west of the McKenzie River crossing be scheduled for when ground conditions are such that Stage 2 assessment or monitoring of the work can be conducted.

5.2 Muskrat Falls North (FhCe-06)

Assessment in the vicinity of FhCe-06 involved four components. First, a revisit to FhCe-01 was undertaken to verify the GPS coordinates for the site, and also to obtain coordinates for the route of the north side portage trail.

Second, subsurface testing was undertaken at five narrow terrace features revealed in recently-obtained LiDAR imagery of the Muskrat Falls area. Three of these terraces are associated with the west beach and had potential to yield insights into the source deposit of the lithic material observed on the beach at FhCe-06. Subsurface testing results were negative, though a contemporary campsite was recorded on one of these landforms.

Third, the beach at FhCe-06 was surface-inspected, and a small number of artifacts collected. Surface inspection revealed no cobble concentrations along the active beach that might plausibly represent in situ archaeological features.

Fourth, subsurface testing was undertaken along nine transects across the alder zone behind FhCe-06. Testing revealed deposits of loose grey-tan sand mottled with lenses of iron sand and blue-grey clay with occasional pebbles and cobbles but lacking soil development horizons, indicating that this alder zone is not a stable, long-lived landform. During the course of testing, a contemporary cabin was recorded at the foot of the Muskrat Falls knoll.

The results of the 2011 assessment at FhCe-06 verify that the present-day beach, including the alder zone, is an active, unstable landform of no great antiquity offering no potential for in situ archaeological deposits. Any archaeological materials encountered here have been redeposited and reworked by erosional forces and are of uncertain provenience. It cannot be discounted that some of the lithic artifacts reported from FhCe-06 may have been deposited on a beach, but nor can it ever be verified. The simplest and most likely explanation for this assemblage is that, in whole or in part, it represents material deflated from the terrace above. It is only on the stable terraces that we can hope to find in situ archaeological deposits with meaningful context.
6.0 REFERENCES

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