

APPENDIX AB

Historic and Heritage Resources Baseline Study



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Joyce Lake Direct Shipping Iron Ore Project:

Historic and Heritage Resources Baseline Study

Prepared for

Labec Century Iron Ore
(a Joint Venture owned by
Century Iron Mines Corporation
and WISCO)
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File No. 121810649

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EXECUTIVE SUMMARY

Labec Century Iron Ore (Labec Century; the Proponent), Labec Century a Joint Venture owned by Century Iron Mines Corporation and WISCO, proposes to develop an iron mine in western Labrador, approximately 20 km to the northeast of the town of Schefferville, Québec. The Joyce Lake Direct Shipping Iron Ore Project (the Project) mine will produce up to four million tonnes of product per year (Mt/yr). The ore will be transported to the existing railway owned by Tshiuetin Rail Transportation Inc., and further onto the Québec North Shore and Labrador Railway (QSN&L) for transportation to the Port of Sept-Îles.

Stassinu Stantec Limited Partnership (Stassinu Stantec) was contracted in 2012 by Labec Century to conduct a Stage 1 Historic and Heritage Resources Assessment (Stage 1 Assessment; the Study) of the the Project. The Study Area for the Historic and Heritage Resources Baseline Study corresponds to the physical extent of the Project Development Area (PDA), as configured in August 2012 and revised in 2013. The Stage 1 Assessment was focused on the anticipated zone of ground disturbance associated with construction and operation activities for the Project. The objectives of the Study were to identify and assess the nature and extent of any known or potential historic and heritage resources in or near the Study Area, and highlight any data gaps that may need to be addressed in a follow-up Stage 2 Detailed Impact Assessment.

In accordance with the Newfoundland and Labrador *Historic Resources Act* (1985), the three broad categories comprising Historic and Heritage Resources include:

- Archaeological and Cultural Resources such as the remains of campsites and objects (e.g., stone tools) pre-dating 1960, as well as Aboriginal and non-Aboriginal burial sites and other sacred places;
- Paleontological Resources (fossils); and
- Architectural Resources (such as historic buildings and other heritage properties, sites and/or landscapes).

Background research of published and unpublished data sources completed prior to the Stage 1 Assessment in 2012 confirmed that the mine site lies within a region that has been intermittently occupied by Aboriginal peoples for the past several millennia. This use by Aboriginal peoples, Europeans and Euro-Canadians has continued throughout the Historic Period and to the present day. This research indicated potential that cultural materials resulting from these occupations could be present in the Study Area. Background research also indicated that, although cultural / spiritual sites are known for western Labrador, none were documented for the Study Area.



Communication with Government of Newfoundland and Labrador geologists confirmed that, due to the age of geological deposits throughout the region, no significant fossils or fossil sites are registered or known for the area, and the likelihood of significant fossils occurring in the Study Area is low. A search of the Heritage Foundation of Newfoundland and Labrador database confirmed that no architectural resources are registered for the Study Area.

The Stage 1 Assessment also included a detailed analysis of 1:50,000-scale, NST topographic mapping to define archaeological potential within the Study Area prior to field work. The purpose of the potential mapping / modelling was to analyze and rate topographic zones as having either a Low, Moderate or Higher potential for archaeological materials. Based on the results of this research, specific locations where Project infrastructure will be situated were targeted for subsequent ground survey and/or subsurface shovel-testing. Initially, 33 zones (numbered JL-1 to JL-33) were identified. An additional Project feature / potential zone (Road Option 2, numbered JL-34) was identified at a later date as a result of new information provided by the Proponent.

A field study of the Study Area conducted in 2012 as part of the Stage 1 Assessment included a helicopter over-flight to view and photograph all 33 mapped zones and Road Option 2 in order to confirm, revise and/or update the archaeological potential ratings assigned during background research. Following this, a ground survey, involving close surface inspection and subsurface shovel testing, was completed for zones determined to have either Moderate or Higher potential. Zones considered to have Low archaeological potential following over-flight were not subject to a ground survey.

The ground survey / sub-surface testing of the Study Area involved a detailed examination of 24 individual locations and excavation of 124 shovel testpits. This work resulted in the identification of one archaeological site and six contemporary sites. Even though the archaeological site falls just outside the Study Area (as configured in September 2012), its proximity to infrastructure planned at that time warranted testing as a precautionary / due diligence measure. In accordance with the provincial *Historic Resources Act* (1985) and the guidelines for historic and heritage resources research in Newfoundland and Labrador, no additional field assessment or mitigation is required or recommended for the sites identified in 2012.

In early 2013, the PDA was revised to reflect new engineering and design parameters. In order to determine if these revisions required further historic and heritage resources assessment, the updated PDA was compared with the 2012 Study Area and areas requiring additional field study were identified.

The potential mapping process described above indicated a rating of Higher for three zones (JL-35, JL-36 and JL-37), based on their proximity to shorelines and prominent points of land that project out into waterbodies, similar to the location where the archaeological site was identified in 2012. The 2013 Stage 1 Assessment field study identified one contemporary site. No additional field assessment or mitigation is required or recommended.



The data compiled as a result of the 2012 and 2013 Stage 1 assessments will be used to describe historic and heritage resources baseline conditions in the Study Area and assess the likelihood of any Project / resource interactions in the Environmental Impact Statement (EIS). This information, including the final archaeological potential maps, is now available for use by the Proponent and the Provincial Archaeology Office (PAO) as a guide to the archaeological potential of the PDA in the event Project infrastructure requires further alterations or adjustments for geotechnical and/or environmental reasons.



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1.0 INTRODUCTION

Labec Century Iron Ore (Labec Century; the Proponent), a Joint Venture owned by Century Iron Mines Corporation (TSX: FER) and WISCO, proposes to develop an iron mine in western Labrador, approximately 20 km to the northeast of the town of Schefferville, Québec. The Joyce Lake Direct Shipping Iron Ore Project (the Project) and all physical elements of the Project are located within Labrador (Figure 1.1).

The mine will produce up to four million tonnes of product per year (Mt/yr). The ore will be transported to the existing railway owned by Tshiuetin Rail Transportation Inc., and further onto the Québec North Shore and Labrador Railway (QSN&L) for transportation to the Port of Sept-Îles.

The Project will require approval from the Government of Newfoundland and Labrador and is subject to an environmental assessment (EA) under the *Newfoundland and Labrador Environmental Protection Act* (NLEPA) and associated Environmental Assessment Regulations. Under the *Canadian Environmental Assessment Act* (CEAA 2012) the Project is a Designated Project pursuant to Section 15(a) of *Regulations Designating Physical Activities* and a federal EA is required.

In 2012, Stassinu Stantec Limited Partnership (Stassinu Stantec) was contracted by Labec Century to conduct a Stage 1 Historic and Heritage Resources Assessment (Stage 1 Assessment; the Study); the results of the Study are contained in this document. ...

1.1 Project Overview

The Project includes a mine and associated infrastructure for the production of high grade hematite iron in western Labrador, approximately 20 km to the northeast of Schefferville, as shown in Figure 1.1. The physical works for the Project that are subject to assessment are located wholly in Labrador. The mine area lies within two map-staked licences (309 claims) covering 12,665 ha in an undeveloped area adjacent to Joyce Lake on a peninsula within Attikamagen Lake. The prospect can be reached from the mainland by crossing a relatively narrow stretch of water, called Iron Arm. Currently, the prospect is accessed from Schefferville either directly by helicopter or first by ground on an existing road to Iron Arm and then by helicopter to Joyce Lake.

Extraction of the resource will be by open pit; pit construction will require dewatering Joyce Lake. The mining operation will consist of removing ore from the single open pit using drilling and blasting, a hydraulic excavator and haul trucks. In Phase I, mining equipment and supplies will be brought to the mine site by barge over Attikamagen Lake during the ice-free season and over an ice bridge in the winter. The pre-stripping of overburden at the open pit will start during the summer, with waste rock and low grade ore stockpiled outside the pit limits.



FIGURE TITLE: Project Location			
CLIENT: LABEC CENTURY IRON ORE INC.			
CHECKED BY: C. Shupe	FIGURE ID: FIGURE 1.1	PROJECT NUMBER: 121810649	FIGURE SOURCES: Basemap information from NRCan CanVec database and Newfoundland and Labrador Department of Natural Resources.





The estimated annual production of iron ore for the Project, based on current information, is detailed in Table 1.1. The current target production estimate is 4 MT/yr of ore. The first three years of operation will focus on production of Direct Shipping Ore (DSO), which has a high iron content (approximately 60 percent iron). Lower grade ore (< 60 percent iron) will be beneficiated in Phase II to bring it up to the desired commercial grade.

Table 1.1 Estimated Production (by year) of Iron Ore in Phase I and Phase II for the Joyce Lake Project

Product	Unit	Estimated Production by Year							
		2014	2015	2016	2017	2018	2019	2020	2021
Phase I Ore (DSO; 62% Fe)	tonne		1,000,000	2,500,000	2,500,000				
Phase II Ore (55% Fe)	tonne					3,000,000	4,000,000	TBD	TBD
Waste Rock	tonne	200,000	10,800,000	11,900,000	1,100,000	12,800,000	19,200,000		
Overburden	tonne	500,000	1,000,000		1,000,000	1,000,000			
Notes: TBD - To be determined.									

The physical elements of the Project include the mine site area, options for conveyance of ore across Iron Arm (ice-bridge, barge and/or conveyor), a beneficiation area, haulage road, rail loop, site roads, and an accommodations area.

Phase I construction will begin upon release from EA and after receipt of the relevant permits. For Phase I, mining activities will occur throughout the year. From April to November, standard mining activities will occur and ore will be stockpiled. During the winter season, the mining activities will include moving the stockpiled ore by truck from the mine site to the beneficiation plant using the ice bridge to cross Iron Arm.

It is currently anticipated that Phase I will include three years of production (2015 to 2017), followed by three years of Phase II production. Construction of additional infrastructure for Phase II will begin during the last half of Phase I production. The total life-of-mine is anticipated to be up to seven years, but this timeframe may be adjusted as exploration proceeds.

Beneficiation in Phase I of the Project will consist of a dry circuit with two crushing and two screening steps requiring no water addition, allowing operation in cold weather. In Phase I, the beneficiation plant will be operated year round. Only high grade ore will be processed during Phase I generating two different products: lump ore and sinter feed. During Phase I, the plant will not produce tailings.

For Phase II, a wet circuit will be added which will require the use of fresh water and may include an iron content upgrading process. For Phase II, the beneficiation plant will be operated approximately 250 days per year (during the warmer months). Processing details for Phase II



have not yet been determined and are being studied in parallel with information obtained during exploration activities.

A conveyor may be used as an alternative to the use of ice bridges to convey iron ore across Iron Arm and then overland directly to the beneficiation plant. A conveyor would allow for the year-round transport of iron ore from the mining operation to the beneficiation plant, thus extending the transportation period to include summer months and shoulder seasons when the ice bridges are not in operation. There are two conveyor options: Option 1 would span Iron Arm using the islands as support in the channel; Option 2 would be constructed to “float” on the surface of the water/ice of Iron Arm alongside the southern ice bridge. The conveyor option would reduce the haulage distance of mining trucks. This option requires that the iron ore is crushed on the peninsula near the Run of Mine (ROM) stockpile prior to loading onto the conveyor.

For both phases, the final product will be hauled by truck from the beneficiation plant to the rail yard, a distance of approximately 28 km along a new haul road. At the rail loop, the product will be loaded onto rail cars on a new 6 km rail loop that will connect to the existing Tshuetin Rail. The product will be taken south to Sept-Îles, Québec, where it will be stockpiled on Port Authority land prior to shipping to market.

Power for the Project will be provided by diesel generators using fuel stored primarily at the beneficiation plant, with smaller tanks at other locations where power is required. Other physical elements of the Project include stockpiles for overburden, waste rock and ore (pre- and post-processing), water supply systems, settling ponds with water treatment as required, domestic waste water treatment, drainage ditches, explosives storage, a hazardous materials storage and management area, access roads, an accommodation camp, and ancillary buildings (e.g., offices, workshops, warehouse/storage areas, worker facilities and mobile equipment storage).

All structures will be constructed so that they can be removed from the site and re-used elsewhere when no longer required for this Project.

1.2 Historic and Heritage Resources

Historic and heritage resources include sites, materials, geological deposits and, in certain instances, landscapes of archaeological, historic, cultural / spiritual, paleontological and architectural importance. Such resources can date to the very distant past or to the Pre-contact or Historic Periods. The Pre-contact Period refers to the time prior to the arrival of Europeans in North America circa 500 years ago. The Historic Period refers to the time following contact and the beginning of written records in the “New World”. These resources are valued for their cultural, spiritual, natural and/or scientific importance.

In the Province of Newfoundland and Labrador, such resources are protected under the *Historic Resources Act* (1985) and administered through the Provincial Archaeology Office (PAO) of the Department of Tourism, Culture and Recreation. Historic and heritage resources are important



to Aboriginal people and the public at large because they are often the only physical information on the lifeways of Aboriginal people prior to the arrival of Europeans in the “New World”. They can also help us understand the early history of a region, the interactions that took place between different cultural groups, and the connections these groups had with the surrounding environment.

The three broad categories comprising historic and heritage resources, as defined by the *Historic Resources Act* (1985), include:

- Archaeological and Cultural Resources such as the remains of campsites and objects (e.g., stone tools) pre-dating 1960, as well as First Nations and non-First Nations burial sites and other sacred places;
- Paleontological Resources (fossils); and
- Architectural Resources (such as historic buildings and other heritage properties, sites and/or landscapes).

1.2.1 Archaeological and Contemporary Site Registration

In Newfoundland and Labrador, archaeological resources (defined as physical evidence of land use pre-dating 1960) discovered during field research are recorded, inventoried and assigned numbers under the Borden System (the Canadian registry for archaeological remains) in accordance with the provincial *Historic Resources Act* (1985). Under current regulatory policy for Labrador, all material evidence of contemporary land use (defined as land use occurring after 1960) is also recorded, inventoried and assigned ethnographic numbers. Contemporary sites can include, for example, remains of campsites or tilts (*i.e.*, small, rough-constructed cabins), or other physical evidence of hunting, fishing or trapping. If distinct ‘cultural indicators’ are present, such as the manner in which a tent and/or stove was set or the type of trap used for harvesting a particular species, it is sometimes possible to determine the cultural affiliation of the find. A detailed recording of contemporary sites has value not only because such materials can serve as proxy indicators of archaeological potential, but because physical evidence of land use from post-1960, used in conjunction with written and/or oral information, can aid in forming a picture of land use patterns and activities within a region.

Though inventoried in a database for ethnographic remains compiled by the PAO, contemporary sites are not assigned numbers under the Borden System, are not classified as archaeological sites, and are not normally the subject of Stage 2 or 3 mitigation measures.

1.3 Study Team

The Study Team included a Study Manager, Study and Field Lead, Field Assistants, Data Analysts and Report Writers, and a GIS Specialist (Table 1.2). All principal Study Team members have in-depth knowledge and experience in their fields of expertise and a broad



general knowledge of the work conducted by other experts in related disciplines. Brief biographical statements for the principal Study Team members are provided below.

Table 1.2 Historic and Heritage Resources Study Team

Role	Personnel
Study Manager	Dana Feltham
Study and Field Lead	Roy Skanes
Archaeological Potential Mapping (Background Research)	Fred Schwarz
Field Assistants	Stacey Camus (2012), Glen Campbell (2013)
Data Analysis, Report Preparation and Revisions to Archaeological Potential Mapping	Roy Skanes
Senior Report Review	Fred Schwarz, Chris Blair

Dana Feltham, MLIS., works with the Environmental Management Group in St. John’s, Newfoundland and Labrador. Ms. Feltham specializes in regulatory affairs, policy development, socio-economic studies, and public consultation. Ms. Feltham has 10 years of experience in the area of multi-disciplinary research, with significant experience in regulatory/governmental affairs and policy development. Since joining Stantec in 2007, Ms. Feltham has been a member of the environmental/socio-economic assessment team for the Lower Churchill Hydro-Electric Project, the associated Labrador-Island Transmission Link, and the Hebron Project. Ms. Feltham was also EA Coordinator for the Schefferville Area Iron Ore Mine (Western Labrador) for Labrador Iron Mines Limited. Ms. Feltham is currently coordinating the preliminary environmental assessment program for the Aurora Energy Michelin Project, and has been involved in developing an environmental assessment strategy and researching current environmental assessment guidelines and regulations.

Roy Skanes, B.A., M.Phil (Archaeologist), has worked as a Consulting Archaeologist with Stantec Consulting Ltd. and its predecessor Jacques Whitford Environment Limited for the past 22 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 and other types of historic sites dating from the sixteenth to the nineteenth centuries. He has also worked extensively on Pre-contact and Historic Period sites in Labrador and on the Island of Newfoundland. Mr. Skanes holds a B.A. in Anthropology (Archaeology major/French minor) from Memorial University of Newfoundland and a Masters degree from the Department of Modern History (specialization archaeology), University of St. Andrews, Scotland. He has worked extensively in Newfoundland and Labrador, Nova Scotia, Prince Edward Island, New Brunswick, Québec, Ontario and Alberta. Over the past 22 years, he has directed and acted as Team Lead for many historic and heritage resources assessments for a broad range of development projects in Newfoundland and Labrador, including assessments and mitigation work at a number of locations in the Churchill River valley (and west and southwest Labrador) for the Lower Churchill Hydroelectric Generation Project and in western Labrador for a number of proposed mining projects. Mr. Skanes has also completed historic and heritage resources 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, and at five locations proposed for construction of short range radar sites along the central and north Labrador coast. He has also completed several historic and heritage resources assessments in the Labrador Straits region and on the Island for road and power-line projects, including the proposed transmission corridor from Muskrat Falls to Soldiers Pond on the Avalon Peninsula. He has also worked extensively with Aboriginal people carrying out field research in Labrador.

Fred Schwarz, Ph.D. (Archaeologist), holds a B.A. in Anthropology from Memorial University of Newfoundland, 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 prehistory of the Newfoundland and Labrador interior. His research interests include predictive modelling (*i.e.*, archaeological potential mapping) and field investigation of the pre-contact interior occupation of Newfoundland and Labrador, settlement patterns and the interpretation of interior adaptations and cultural 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 several historic and heritage resources assessments in the Churchill River valley from 1998 to 2000, and in 2012. 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 and Heritage 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 *Akamiaupishku* 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 completed assessments for Innu Environmental Limited Partnership (IELP), including a historic and heritage resources study of Phase III of the Trans-Labrador Highway. Since 2006 he has undertaken several projects with Minaskuat Limited Partnership (Minaskuat) and Stassinu Stantec, including archaeological potential mapping and field assessment of the LabMag Iron Ore project in western Labrador, and scientific management of historic resources research of the Lower Churchill Hydroelectric Generation Project.

Chris Blair, B.A. (Archaeologist), has over 20 years of experience in historic and heritage resource management, heritage research, and archaeological assessments, surveys and mitigation. His work includes the survey, testing and excavation of sites from both the Pre-contact and Historic periods in the Canadian Maritimes. His work has ranged from the assessment and mitigation of small-scale archaeological sites to full excavations of high profile archaeological projects including: Jemseg Crossing Archaeology Project, Old Government House National Historic Site renovation, and the Enclosure Park Archaeological Project. His experience in historic and heritage resources projects has taken him throughout the Maritimes, as well as Labrador, where he participated in the archaeological assessment of the Voisey's Bay mining project. Chris has directed and participated in the archaeological assessment, the development of mitigation and response protocols as well as archaeological monitoring for a



wide variety of construction projects, including pipelines, highways, mines, transmission lines, and wind-farms.

1.4 Organization of the Historic and Heritage Resources Baseline Study

This Historic and Heritage Resources Baseline Study describes the principal results of the research and includes references for all sources and individuals consulted. Following this introduction, the sections of the report are presented as follows:

- Section 2.0 Rationale and Objectives;
- Section 3.0 Methods;
- Section 4.0 Cultural/Historical Overview;
- Section 5.0 Results of the 2012/2013 Stage 1 historic and Heritage Resources Assessment
- Section 6.0 Summary and Closure; and
- Section 7.0 References.



2.0 RATIONALE AND OBJECTIVES

Archaeological and historical research undertaken since the 1960s has confirmed that human presence in western Labrador and adjacent parts of Québec began at least 4,000 years ago and continued, at varying degrees of intensity, to this day. As a result, there is potential that physical evidence resulting from this land-use is present in the Joyce Lake area.

A Stage 1 Assessment of the proposed Joyce Lake mine site was conducted by Stassinu Stantec in September 2012, followed by field study of six additional locations in 2013, based on a revised Project Development Area (PDA). The objective of these studies was to identify and assess the nature and extent of any known or potential historic and heritage resources in the area and highlight any data gaps in the baseline coverage to be addressed through additional field and/or background research. The information compiled as a result of the Stage 1 Assessment is used to describe historic and heritage resources baseline conditions at the proposed mine site and assess the likelihood of any Project / resource interactions in the Environmental Impact Statement (EIS). The archaeological potential mapping completed as part of the Stage 1 Assessment will aid with ongoing planning and design in the event the PDA requires additional adjustments for geotechnical and/or environmental reasons.



3.0 METHODS

Human settlement and subsistence in the past was influenced by the physical environment, including the nature of the landscape and waterbodies, climate and availability of natural resources. Research in Newfoundland and Labrador and parts of northern Québec has demonstrated that archaeological and contemporary sites tend to be associated with specific landforms and sediment types such as river terraces, raised shoreline features, and beaches. Therefore, understanding the physiography and geology of an area as well as the range of wildlife and other natural resources present, is necessary for the identification, assessment, and interpretation of historic and heritage resources within a region (IEDE/JWEL 2000).

In accordance with the Historic Resources Impact Assessment and Management Guidelines (Government of Newfoundland and Labrador 1992), the 2012 Stage 1 Assessment of the Study Area included:

- background research (culminating with the archaeological potential mapping of the Study Area as configured in August 2012);
- submission of an Archaeological Investigation Research Permit Application to the PAO;
- field study; and
- report preparation, including a detailed presentation of the findings as well as revised and updated archaeological potential mapping of the Study Area based on field observations and data.

3.1 Description of the Project Development Area and Study Area

The **Project Development Area (PDA)** is the most basic and immediate area of the Project. The PDA is limited to the anticipated area of physical disturbance associated with the construction or operation of the Project. For this Project, the mine area lies within two map-staked licences (309 claims) covering 12,665 ha. The PDA includes the mine site area, options for conveyance across Iron Arm (ice-bridge, barge and/or conveyor), beneficiation area, haulage road, rail loop, site roads, and accommodations area.

The **Study Area** is the maximum area within which Project-related environmental effects can be predicted or measured with a reasonable degree of accuracy and confidence. The Study Area includes the PDA and any adjacent areas where Project-related environmental effects may reasonably be expected to occur.

The primary Study Area used for the Historic and Heritage Resources Baseline Study corresponds to the physical extent of the PDA as configured in August 2012 and revised in 2013, and was focused on the anticipated zone of ground disturbance associated with



construction and operation of the mine. Physical elements / infrastructure comprising the Study Area include:

- open pit;
- crusher and low grade ore stockpile area;
- overburden and waste-rock stockpile area;
- settling pond;
- ice-bridge and/or conveyor system;
- beneficiation plant;
- tailings management facility;
- haulage road and site roads;
- rail loop; and
- accommodations camp.

To provide some degree of flexibility when establishing the locations for certain Project infrastructure, such as the haulage road right-of-way (ROW) from the west side of Iron Arm south to the rail loop, a 2 km-wide corridor based on the projected centre-line of the road was included as part of the Study Area. Buffer zones were established around other Project features so that an adequate and appropriate assessment of the area could be completed, and which took into account potential adjustments to the PDA that may be required due to additional environmental and geotechnical information (Figure 3.1).

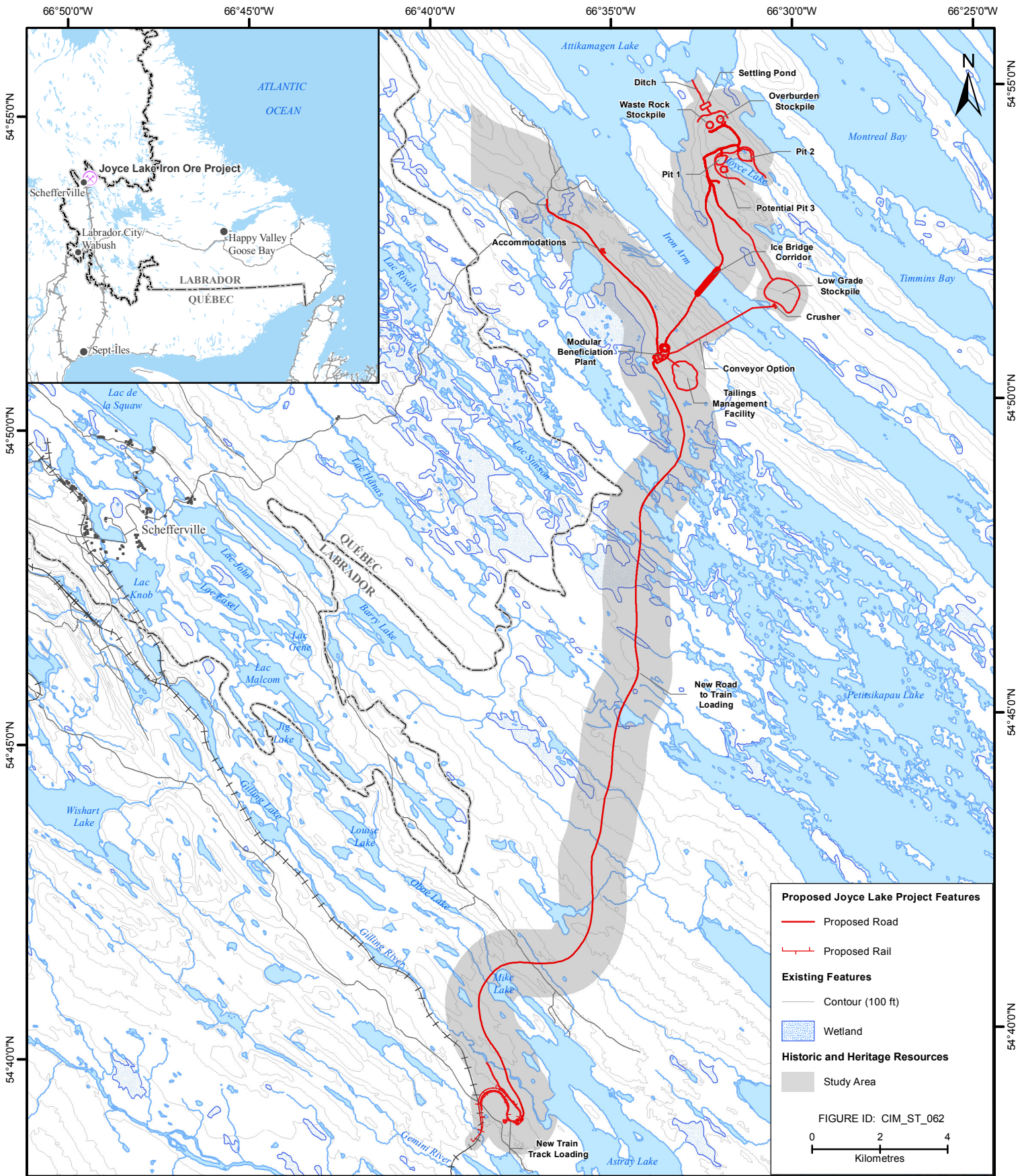


FIGURE TITLE:		Historical and Heritage Resources Study Area	
CLIENT:		LABEC CENTURY IRON ORE INC.	
CHECKED BY:	FIGURE ID:	PROJECT NUMBER:	FIGURE SOURCES:
C. Shupe	FIGURE 3.1	121810649	Project features provided by CIMA+ version 1 received 2012/08/02. Basemap information from NRCan CanVec database and Newfoundland and Labrador Department of Natural Resources.





3.2 Background Research Methods

3.2.1 Archaeological Resources

3.2.1.1 Digital Database, Literature, Map and Aerial Imagery Review

Background research for the 2012/2013 Stage 1 Assessment involved a search of the digital Archaeological Site Record Inventory at the PAO in St. John's to determine whether any archaeological or contemporary sites, or other historic and heritage resources of significance, were registered or known for the Study Area. In addition to providing site-specific information, such as archaeological site locations and the time-period and cultural group(s) represented, the PAO data provided a general picture of the area's historic and heritage resources potential.

For insight into the cultural / historical sequence of the region in which the Study Area is located, background research included a review of reports and published literature related to previous archaeological and cultural resources assessments and research projects undertaken in western Labrador and adjacent parts of Québec (e.g., Thomson 1983, 1984, 1985; Penney 1986, 1988, 2010; Denton and McCaffrey 1988; Denton 1989; McCaffrey 1989, 2004, 2006a, 2006b; Niellon 1992; JWEL 1998; Loring *et al.* 2003; Neilson 2005, 2009a, 2009b; McCaffrey *et al.* 2006; Minaskuat 2006, 2008; Brake 2007a, 2007b; Pinal 2007; Labrador Iron Mines (LIM) 2009).

Background research also included a review of relevant historic, ethnohistoric and ethnographic sources (e.g., Delanglez 1948; Mailhot 1997), as well as a thorough examination of Project and 1:50,000, NST topographic mapping, Landsat imagery and environmental sources. This allowed the Study Team to further define the historic and heritage resources potential of the Study Area. The published and unpublished sources and mapping reviewed during background research were then used to select (for subsequent field investigation) locations within the Study Area potentially predictive of past human use / settlement (see Section 3.2.1.2).

Sites of cultural, historic and religious importance to Aboriginal and non-Aboriginal peoples are present in western Labrador. To confirm if any such sites or objects are present in the Study Area, a literature review of relevant historic, ethnohistoric and ethnographic sources was completed (e.g., Delanglez 1948; Tremblay 1977; Tanner and Armitage 1986; Armitage 1990, 1992, 2010; Niellon 1992; Mailhot 1997; Weiler 1999; LIM 2009). A review of existing studies on various aspects of Aboriginal peoples culture and spirituality (Armitage 1992; Weiler 1999) and land use in western Labrador generally (Tanner and Armitage 1986; LIM 2009; Armitage 2010; Nalcor Energy 2010), was also undertaken as part of the background research.

3.2.1.2 Archaeological Potential Mapping

As part of the background research for the 2012//2013 Stage 1 Assessment, the relative archaeological potential of the Study Area was mapped using 1:50,000-scale, NST topographic maps. The purpose of the predictive model was to analyze and provide a preliminary rating for topographic zones as having either a Low, Moderate or Higher potential for archaeological



materials. Subsequently, specific locations where Project infrastructure will be situated could be targeted for ground survey and subsurface shovel-testing. This methodology was developed for assessment of the Lower Churchill Project in 2000 (JWEL/IELP 2001), which was refined in 2008 and again in 2010 (Stantec Consulting Ltd. 2010).

Determining the relative archaeological potential of an area involves four stages:

- defining the Zone Types based on topographic and hydrographic conditions;
- incorporation into GIS for data analysis;
- rating and mapping the relative archaeological potential for each defined Zone Type; and
- updating and revising the initial archaeological potential ratings based on field observations and/or subsurface shovel-testing results.

Stage One: Defining Zone Types

Zone mapping for the current study followed the approach used for previous development projects, with some modifications, where 12 archaeological potential Zone Types are defined (JWEL/IELP 2001; Stantec Consulting Ltd. 2010a). The Zone Types represent landforms, with distinctive topographic, vegetation and hydrographic features that are generally identifiable on Landsat imagery and, in some cases, 1:50,000-scale, NST topographic maps. The majority of Zone Types are distinguished by topographic features, principally their slope and edge characteristics, and their relation to waterbodies. The use of simple presence / absence attributes, recognizable in aerial imagery and delineated on topographic maps, is intended to reduce ambiguity and enhance consistency throughout the mapping process. Four of the 12 Zone Types defined for Labrador are present in the Study Area.

- **Zone Type 01 (Contemporary Strategic Shoreline)** consists of all shorelines of major waterways that display strategic attributes that, in certain instances, have yielded evidence of past human habitation. Major waterways are defined to include coastal areas (not applicable in western Labrador), inland lakes greater than approximately 2 km² in area, and inland rivers wide enough for both banks to be distinguished on 1:50,000-scale, NST topographic maps. Strategic attributes include prominent points of land, confluences, constrictions in waterways and locations above or below falls and rapids. The strategic significance of these attributes has been tested and verified during previous archaeological potential mapping / predictive modeling studies (JWEL/IELP 2001; Stantec Consulting 2010a).
- **Zone Type 02 (Contemporary Generic Shoreline)** consists of shorelines of major inland waterways that lack strategic attributes (such as those listed above).



- **Zone Type 09 (Upland)** consists of areas of moderate or steep slope. It effectively represents interfluvial upland, encompassing large areas of steep or moderate slope, hilltops and/or minor stream-courses lying between major waterways.
- **Zone Type 10 (Wetland)** consists of permanently, poorly-drained organic deposits (such as bogs or fens) large enough to be mapped at a 1:50,000 scale.

In most cases, review of aerial imagery for archaeological potential mapping / predictive modeling does not identify specific locations of dry, level terrain that may have been suitable for past human habitation. It merely highlights Zone Types within which such terrain, if present, has a greater or lesser potential (relative to one another within the total area under study), to contain archaeological materials. For example, a shoreline zone containing a strategic point of land may in fact lack level, habitable terrain; therefore, an area rated as having Higher potential does not necessarily indicate that the potential is uniformly “High”. Rather, it indicates that the rating relative to other mapped zones in the area under study is, to some degree, elevated. , Zones rated as having Low potential also do not confirm that there is no potential for cultural materials to be present; it simply highlights that the probability is lower than other mapped zones. Subsequent field assessment allows the potential zones to be ground-truthed and revised, if and as indicated.

Stage Two: Incorporation into GIS for Data Analysis

Maps and associated zone-type attributes were digitized and incorporated into GIS files. Final output for the archaeological potential mapping / predictive model prepared as part of the background research was in the form of geo-referenced polygons.

Stage Three: Rating and Mapping Archaeological Potential

Following identification, each zone was assigned a relative archaeological potential rating. Each zone-type was assigned a rating of Low, Moderate or Higher archaeological potential (relative to each other within the Study Area), which was based on the potential mapping criteria described previously. Archaeological potential ratings are summarized in Table 3.1..

Table 3.1 Zone Types, Descriptions and Relative Archaeological Potential Rating

Zone Type	Description	Archaeological Potential Rating
01	Contemporary Strategic Shoreline	Higher
02	Contemporary Generic Shoreline	Moderate
09	Upland	Low
10	Wetland	Low



Stage Four: Confirming / Revising Archaeological Potential

Based on fieldwork results, including the number of sites identified and observations of the topographic and hydrographic conditions within each numbered zone, assigned potential-ratings are either confirmed (i.e., the assigned potential rating of a zone remains the same) or revised (i.e., the assigned potential rating of a zone is either upgraded or downgraded to better convey the area's archaeological potential)

3.2.2 Paleontological Resources

Paleontological Resources are defined and managed pursuant to the *Historic Resources Act* (1985) and *Paleontological Resources Regulations*. Under the current regulatory framework for Newfoundland and Labrador, fieldwork is not normally required for paleontological resources. Depending on the type of material known to occur in a region, local geological deposits can be designated as significant fossil sites and afforded protection under the *Historic Resources Act* (1985). In areas where fossils might be anticipated, due to the presence of specific geological deposits (e.g., sedimentary rock), field investigation and assessment under the direction of qualified paleontologist can be requested by the PAO under Section 13 of the *Historic Resources Act* (1985) (Government of Newfoundland and Labrador 2011).

To assess the likelihood of any such materials occurring in the Study Area, geologists at the Geological Survey Division of the Newfoundland and Labrador Department of Mines and Energy were consulted for relevant information and sources.

3.2.3 Architectural Resources

Architectural Resources are not managed under provincial legislation, although there are provisions in the *Historic Resources Act* (1985) to protect buildings, properties and/or landscapes that have been designated as Provincial Historic Sites. To establish if any such resources exist within the Study Area, a search of the on-line database of the Heritage Foundation of Newfoundland and Labrador was completed (Heritage Foundation of Newfoundland and Labrador, n.d.).

3.3 Archaeological Investigation Permit

Following the completion of background research and production of the archaeological potential mapping of the Study Area, an Archaeological Investigation Permit Application was prepared and submitted to the PAO for review. Permit Number 12.38 was issued to Roy Skanes of Stassinu Stantec on September 19, 2012, which covered all field study activities conducted in the Study Area that year. All the 2013 Project-related historic and heritage resources fieldwork was completed under the Archaeological Investigation Permit 13.36, also issued to Roy Skanes of Stassinu Stantec.



3.4 Field Study

In September 2012, following the review of published and unpublished sources and the determination of archaeological potential within the Study Area, a field study was conducted. The fieldwork began with a helicopter over-flight to view and photograph all mapped zones so that the potential ratings assigned during background research could be confirmed or refined as required. In a number of locations, zones identified initially as having Higher archaeological potential were adjusted to Moderate or Low based on the topographic and hydrographic conditions and the vegetation patterns observed from the air. Instances where revisions were indicated included zones that proved to be more sloped and/or wetter than predicted from analysis of 1:50,000-scale, NST topographic maps, or had vast distributions of surface rock and/or outcrops. The helicopter over-flight was followed by a ground survey involving close surface inspection. In certain instances, this included sub-surface shovel testing of zones rated as having Moderate or Higher potential, either initially during background research or subsequent to the helicopter over-flight. Zones determined to have Low archaeological potential following helicopter over-flight were not subject to a ground assessment.

Sub-surface shovel testing was conducted when background research and/or close visual reconnaissance confirmed that a location had potential for buried pre-contact cultural materials or when specific historic and/or contemporary sites might be anticipated, but no surface-visible evidence was observed. In locations of particular interest, such as the shorelines of waterways intersected by (or running close to) Project infrastructure, shovel testpits were dug at roughly 5 m intervals or randomly along cut-lines or paths and in open woodland areas, to a depth of several centimetres below the uppermost layer of soil or sand. Generally, testing was focused on well-drained, level terrain suitable for human habitation and avoided locations with noticeable surface-water, that were sloped or had large distributions of surface-rock. Testpits were approximately 40 cm by 40 cm and excavations were rarely deeper than 40 cm below the surface. All testpits were excavated with shovel and trowel and each was back-filled once testing was completed. Due to the generally rocky surface and sub-surface material noted throughout the Study Area, screening of soils for cultural materials was not necessary.

The number and location of all testpits were recorded and fieldnotes and photographs were taken. At locations where archaeological or contemporary ethnographic materials were discovered, further shovel testing was completed to determine the physical extent of the deposit, cultural affiliation and time-period involved. In areas where ethnographic materials were identified, strategic shovel testing was conducted to help confirm if archaeological materials were present. The approach of conducting only limited testing at any site identified during the Stage 1 Assessment eliminated any unnecessary site disturbances until an appropriate mitigation strategy, if required, is developed and approved by the Proponent and PAO. Photographs were taken of all archaeological potential zones and subsurface testing locations, and all archaeological and contemporary sites and features identified. All information regarding the nature and integrity of site, including GPS coordinates, was documented on Site Record Forms and provided to the PAO, who issued site registration numbers.



3.5 Data Analysis

Physical evidence of land use identified during the field study and all associated field data (such as photographs and field notes), was analyzed and compared with the results of other historic and heritage resources assessments and research projects carried out in the region. This included a review of a number of published and unpublished reports and manuscripts that describe a range of pre-contact and historic sites identified in western Labrador and parts of adjacent Québec, as well as identified and recorded archaeological and ethnographic materials and collections (Thomson 1983, 1984, 1985; Penney 1986, 1988, 2010; Denton and McCaffrey 1988; Denton 1989; McCaffrey 1989, 2004, 2006a, 2006b; Neilson 1992; JWEL 1997; Loring *et al.* 2003; Neilson 2005, 2009a, 2009b; McCaffrey *et al.* 2006; Minaskuat 2006, 2008; Brake 2007a, 2007b; Pintal 2007; Labrador Iron Mines (LIM) 2009).

3.6 Reporting

This Report has been prepared in accordance with the Historic Resources Impact Assessment and Management Guidelines (Government of Newfoundland and Labrador 1992), and includes a discussion of the methods and techniques used, figures showing the extent of the Study Area and locations assessed, a summary of all results and the provenience of all sites observed and recorded. Also included are figures showing the final archaeological potential mapping of the Study Area as defined from background research and map analysis, as well as field observations and findings of the 2012 and 2013 field studies. The archaeological potential mapping is now available for use by the Proponent and the Regulator in the event that the PDA needs to be expanded or adjusted, or if pre-construction or exploration works are scheduled for specific areas.

3.7 Quality Assurance / Quality Control (QA/QC) Procedures

Quality control procedures for the Historic and Heritage Resources Baseline Study are described below.

- All work was completed under Archaeological Investigation Permits issued by the PAO, and in accordance with the Historic Resources Impact Assessment and Management Guidelines described in the provincial *Historic Resources Act* (1985).
- Archaeological potential mapping followed a predictive modelling strategy approved by the PAO; this was revised based on field observations and sub-surface testing results.
- Fieldwork was completed by a qualified archaeologist approved by the PAO as a permit holder.
- Reporting was peer-reviewed by a senior archaeologist.
- Reporting was subjected to senior review by Stassinu Stantec.
- Data compiled during the study has been filed digitally by Stassinu Stantec.



4.0 CULTURAL/HISTORICAL OVERVIEW

4.1 Archaeological and Cultural Resources

Archaeological sites have been identified throughout Newfoundland and Labrador. While the majority of finds have been made along the coast, many sites are present in the near-coastal and interior portions of the Province, including western Labrador. Figure 4.1 illustrates the different cultural traditions that are known to have occupied Labrador and parts of Québec over the past 8,000 years. Those known to have occupied the Study Area and surrounding region are highlighted.

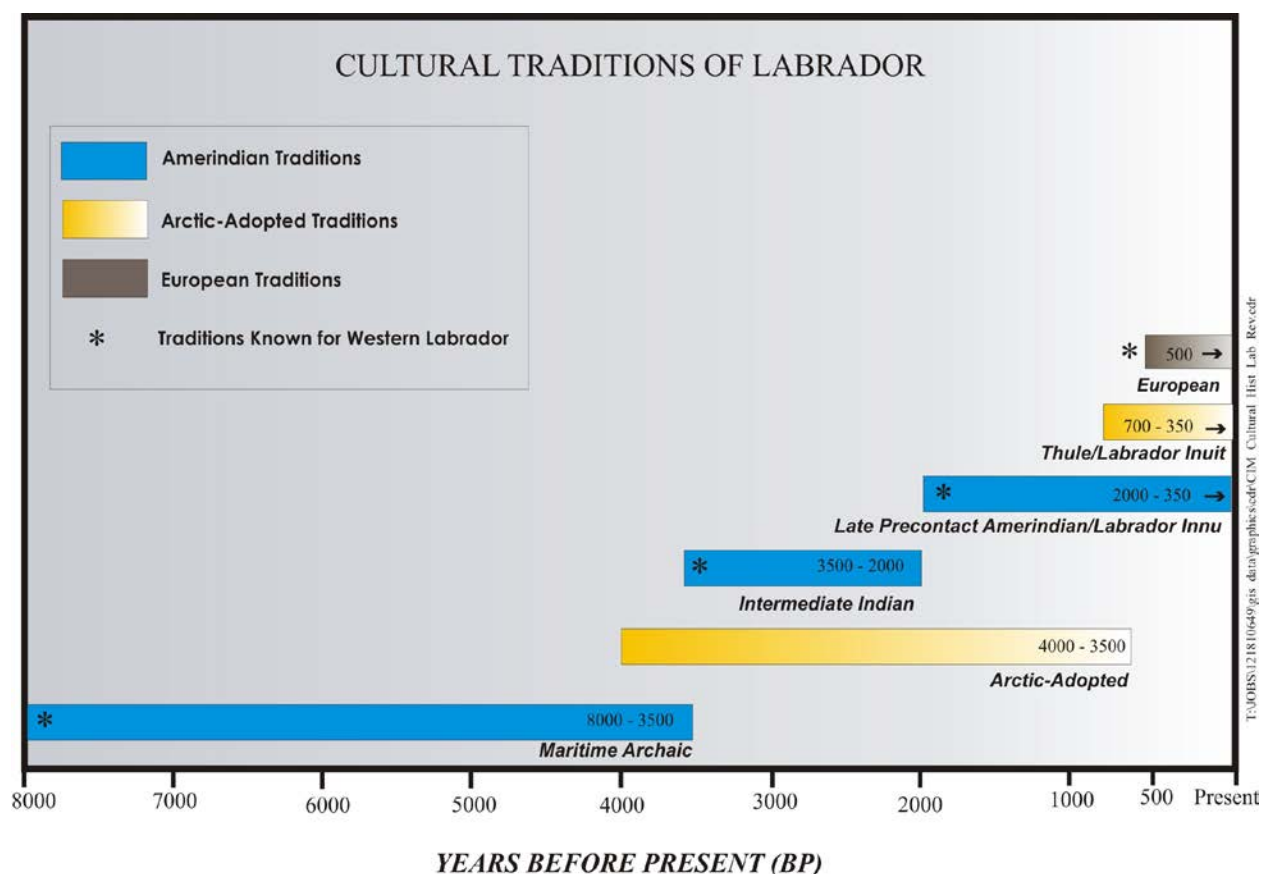


Figure 4.1 Cultural Traditions of Labrador

The Maritime Archaic Indian Tradition is the name that defines the time, and people who arrived in southern Labrador via the Maritimes and Lower North Shore of Québec approximately 8,000 years ago in the wake of retreating glaciers (McGhee and Tuck 1975; Pintal 1998; Schwarz 2010). The descendants of these first inhabitants gradually moved north along the coast and eventually reached northern Labrador prior to 6,500 years ago (Fitzhugh 1978a). While there is little evidence of a Maritime Archaic Indian occupation in south-central Labrador, several



archaeological sites attributable to this group have been identified to the north and in the near-coastal interior (Loring 2001). In western Labrador, evidence of a Maritime Archaic Indian occupation is limited to a number of stone artifacts found on the Lake Plateau (in an area now encompassed by the Smallwood Reservoir) and near Wabush (MacLeod 1967, 1968; Thomson 1984). The most recent dates for this cultural tradition obtained from archaeological sites in coastal Labrador fall approximately 3,500 years ago. Dates for the material found in western Labrador have not been determined.

The next period in Labrador prehistory is referred to as the Intermediate Period, dating to between 3,500 and 2,000 years ago (Fitzhugh 1972; Nagle 1978). Typically, Intermediate-Period sites are small and contain few diagnostic artifacts. While sites attributed to this culture have been found on the coast of Labrador, along with those of the contemporary Arctic-adapted, Palaeo-Eskimos (circa 4,000 to 600 years ago) (Cox 1978), it should be noted that the majority of finds in the interior appear to be associated with the Intermediate Period (Schwarz 2007).

The Intermediate Period of occupation in Labrador appears to have been focused on an interior-oriented lifestyle of hunting caribou and small game and fishing, similar to that recorded for the Innu during the Historic Period. In northern Québec, this period of occupation is not clearly understood (McCaffrey 2006a), but it appears to have been less intensive than the occupation of central Labrador. One archaeological site related to the Intermediate Period was found close to a chert outcrop near Schefferville, Québec, which is to the north of the current Study Area (Denton and McCaffrey 1988).

The Intermediate Period in Labrador is followed by the Late Pre-contact Period, dating from approximately 2,000 years ago to the time of Aboriginal contact with Europeans (circa 1500 to 1700 AD). Archaeological sites dating to this period frequently contain structures interpreted as the remains of communal dwellings analogous to the shaputuan of the historic Innu (Loring 1985). Research has revealed a pattern of marine and terrestrial resource exploitation (Fitzhugh 1978b; Loring 1992), with a much larger emphasis on maritime resources than during the previous period. In the central Labrador interior, archaeological sites dating to the Late Pre-contact Period are far less common than those of the Intermediate Period. This differs from northern Québec, where there are many Late Pre-contact Period sites dating to shortly after 2,000 years ago. These sites are known to contain evidence of far-ranging exchange or trade, pottery production and large, shaputuan-type dwellings containing a number of hearths (McCaffrey 2006b). People associated with Late Pre-contact Period sites in the region are ancestral to the historic and contemporary Québec-Labrador Innu and Naskapi.

The Thule, ancestors of the Labrador Inuit, migrated south from the Arctic to the north coast of Labrador circa 1,300 AD (Kaplan 1983; Fitzhugh 1994). After approximately 1500 AD, Labrador and the Lower North Shore of Québec became a focus of European activities. Basque whaling efforts along the coast in the sixteenth century intensified (Tuck and Grenier 1989), as did fishing, sealing and fur trading by people from other European countries (McAleese 1991; Kennedy 1995). In the interior, European activity was more limited. However, trader and explorer Louis Jolliet visited the Ashuanipi area around 1695, providing the earliest written



reference to the importance of Ashuanipi Lake as a major Innu gathering place (Delanglez 1948).

Aboriginal archaeological sites dating from the mid-seventeenth to the mid-nineteenth centuries have rarely been identified in interior Labrador and northern Québec, which may be a result of the limited number of field studies completed there. However, other, as yet, unexplained reasons may be at play. As a result, the understanding of settlement patterns dating to this time is based largely on ethnohistoric literature and fur trade accounts, including the records of the Hudson Bay Company from interior trading posts in the region (McCaffrey 1988). In the latter half of the nineteenth century, when the fur trade in Labrador was at its peak, Innu mobility was gradually reduced; although even at that time, long-distance travel by Innu across the Labrador Peninsula and as far south as the Lower North Shore of Québec continued to take place (Mailhot 1997; Tremblay 1977).

The twentieth century saw many changes for the Innu and non-Innu inhabitants of western and central Labrador. Notable changes included the emergence of the Euro-Canadian communities of Happy Valley-Goose Bay, Labrador City, Wabush and Churchill Falls, and the development of road, air travel and communication networks. The 1960s also saw the implementation of government policies encouraging the Innu to become increasingly sedentary and participate in local wage economies (Armitage 1990). Further policy shifts included development of the Churchill River for hydroelectric purposes, which resulted in the flooding of vast tracts of land and creation of the Smallwood Reservoir in 1971. Prior to that hydroelectric development, the region had been a major hunting and gathering area for the Innu of Labrador-Ungava and the Lower North Shore of Québec (Loring *et al.* 2003). While the Sheshatshiu Innu continue to occupy most of the pre-settlement area, inter-band mobility is currently much diminished and it is now Innu from the Lower North Shore of Québec and Schefferville who are the primary users of the region (Armitage 1990; see also Tanner and Armitage 1986).

4.1.1 Previous Archaeological Research in Western Labrador and Northeast Québec

Archaeological research in Labrador-Ungava has focused primarily on the Labrador coast to the east and southeast of the Study Area, the Québec interior to the west and north, and the North Shore of the St. Lawrence River to the south. In contrast, relatively little research has been conducted in northwest Labrador generally and in the vicinity of the Study Area specifically.

To date, archaeological research conducted in the interior of northwestern Labrador and adjacent parts of Québec has focused on six broad regions. Two of these, the Ashuanipi Region and the corridor of Highway 500 between Labrador City / Wabush and Churchill Falls, are relatively distant from the Study Area. Nevertheless, the findings from these two regions are relevant to the current study and they are discussed below. Closer to the Study Area, archaeological research has been conducted in the Menihek Region to the south and the Smallwood Reservoir Region of the Lake Plateau to the southeast. To the west of the Study Area, the Caniapiscau / Laforge Region in the interior of northern Québec has seen a considerable archaeological research effort. The Schefferville Region, in which the current

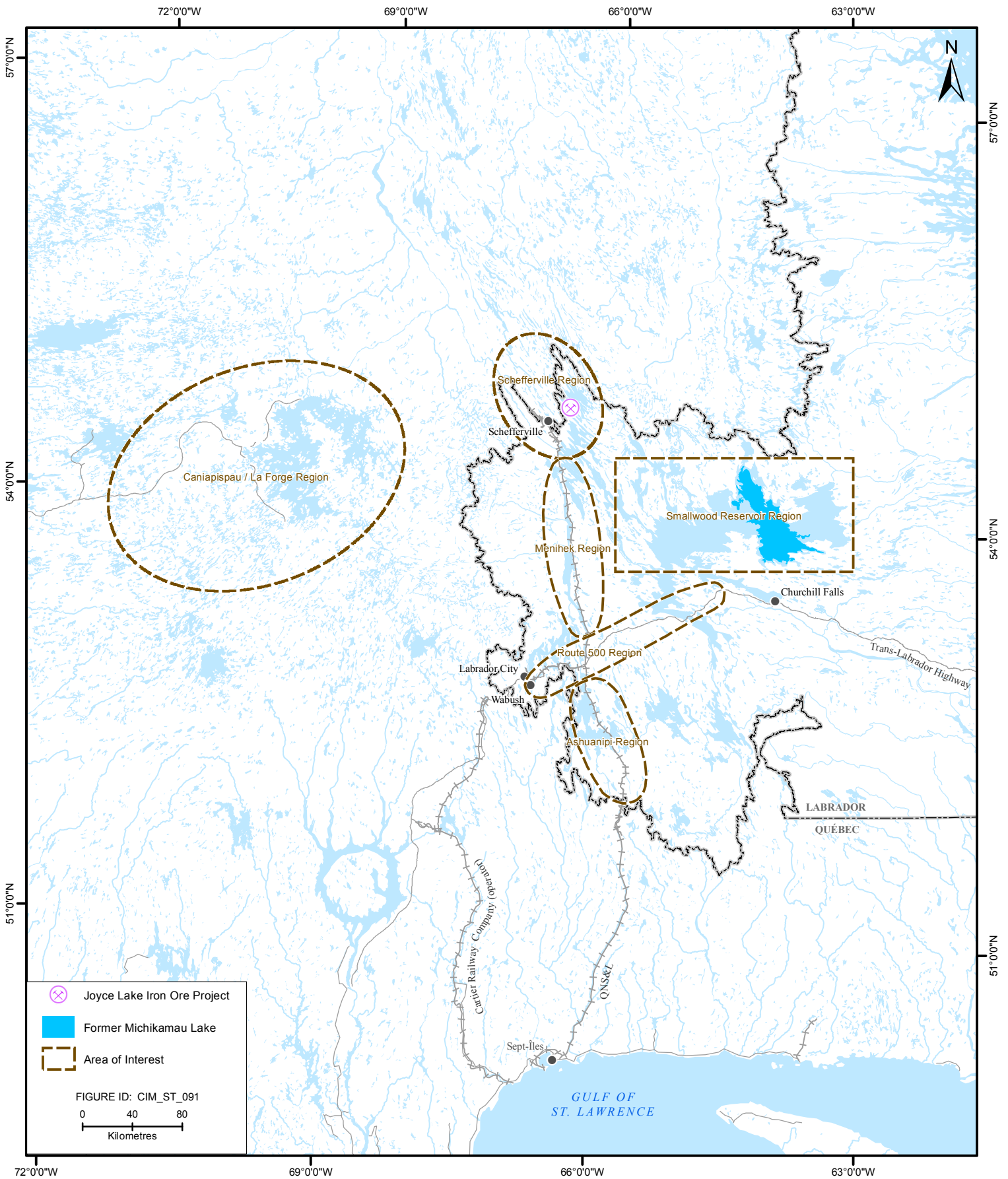


Study Area is situated, has also seen considerable research efforts (Figure 4.2). Findings from each of these regions are presented below.

4.1.1.1 Ashuanipi Region

A number of research projects conducted in the Ashuanipi Region have led to the discovery of numerous Pre-contact Period and contemporary sites on Ashuanipi Lake (Niellon 1992; Neilson 2005, 2009a), one of which, the Ferguson Bay 1 site, has been excavated (Brake 2007a; 2007b). In 2006, Minaskuat Limited Partnership was retained by LabMag GP Inc. to undertake a Stage 1 Assessment of a proposed development in western Labrador near Schefferville. In addition to evidence of contemporary land use, the assessment of the slurry pipeline corridor led to the discovery of 13 Pre-contact Period archaeological sites along the Ashuanipi drainage (Figure 4.2), from Wightman Lake north to the eastern shore of Menihék Lake (Minaskuat 2008).

Regionally, the principle axis of travel during the Historic Period appears to have followed the Ashuanipi drainage, and archaeological evidence from the Ashuanipi suggests that this was the case in the Pre-contact Period as well. There is also some indication that secondary historic travel routes lead from the Ashuanipi to the west and southwest toward Rivière aux Pékans and beyond to the Saint-Marguerite or Manicouagan (Minaskuat 2008).



Joycelake Iron Ore Project
 Former Michikamau Lake
 Area of Interest

FIGURE ID: CIM_ST_091
 0 40 80
 Kilometres



FIGURE TITLE:			
Previous Archaeological Research Regions			
CLIENT:			
LABEC CENTURY IRON ORE INC.			
CHECKED BY:	FIGURE ID:	PROJECT NUMBER:	FIGURE SOURCES:
C. Shupe	FIGURE 4.2	121810649	Project features provided by CIMA+ version 4, retrieved 2012/09/28. Base map information from NRCAN, CanVec database and Newfoundland and Labrador Department of Natural Resources.





4.1.1.2 Highway 500 Region (Labrador City / Wabush to Churchill Falls)

Sections of the Highway 500 extension between Labrador City, Wabush and Churchill Falls were assessed for historic and heritage resources in the 1980s (Thomson 1983, 1984, 1985; Penney 1986) (Figure 4.2). This work identified a number of contemporary Aboriginal campsites dating to the recent past (within the last 25 years). At Moosehead Lake, on top of a partially deflated esker beside the existing Québec North Shore and Labrador Railway, approximately 15 km northeast of the town of Wabush, a site comprised of two tent locations and one cobble hearth was identified. It was reported that the site had been disturbed by railway construction or maintenance (Thomson 1983).

The same study identified another contemporary Aboriginal site, designated as DeMille River 1, on the bank of a river between DeMille Lake and the Southwest Arm of Shabagomo Lake, approximately 20 km northeast of Wabush. The site consisted of at least five tent rings and eight hearths, and was thought to be approximately 25 years old (Thomson 1983).

A third contemporary site (DeMille Lake 1) was identified at the head of a small cove on the east side of a south-pointing peninsula on the north shoreline of DeMille Lake, approximately 100 m south of the railway line and 25 km northeast of Wabush. The age of the site was estimated to be 25 years old or less based on materials found at the site (Thomson 1983). Findings during that study did not include any Pre-contact remains or sites, but a Maritime Archaic Indian ground and polished stone adze from a private collection in Wabush was recorded (Thomson 1984). The artifact was reported to have been located in the vicinity of Heath Lake to the west of Wabush Lake, in an area later impacted by open pit mining. The single artifact (a section of a Maritime Archaic Indian ground slate celt) is thought to have been used for woodworking. The artifact was viewed by archaeologist James Wright during a survey of the region in the 1960s. The location of the artifact is currently unknown and it is thought that any site it may have been associated with has been destroyed (Hull, S., pers. comm. 2011).

4.1.1.3 Menihek Region

An archaeological survey carried out in the 1980s identified a number of Pre-contact Period archaeological sites on the west side of Menihek Lake, particularly near the mouth of McPhayden River (McCaffrey 1989) (Figure 4.2). During that study, McCaffrey surveyed the shorelines of three lakes in the region for lithic sources and identified five sites on Menihek Lake, with raw materials of the Wishart chert formation. Although no datable organic material was recovered from any of the sites, it was noted that several of the lithic artifacts located as surface finds exhibited similarities to certain cultural and chronological periods known for the region. While not confirmed, it was thought that some of the materials may relate to the late Maritime Archaic Indian Period, while other artifacts recovered by McCaffrey were thought to be similar to materials found along the Labrador coast and dating to the Intermediate Indian Period. If this is correct, these sites could date to between circa 3,500 and 2,000 years ago (McCaffrey 1989).



4.1.1.4 Smallwood Reservoir Region of the Lake Plateau

The Lake Plateau Region to the northeast of the Study Area received little archaeological attention prior to the creation of Smallwood Reservoir in 1971 (Figure 4.2). However, the territory around the former Michikamau Lake (now part of Smallwood Reservoir) was surveyed for archaeological materials in the 1960s prior to flooding (MacLeod 1967, 1968). A total of eight sites were identified during that research project, five of which contained Pre-contact Period components. MacLeod (1967) also noted a number of relatively large historic Innu campsites in his study area, including one he described as "...one of the last preserved major meeting places for the Naskapi from the north and Montagnais from farther south...". The sites recorded by MacLeod in the 1960s were subsequently submerged as a result of flooding for Smallwood Reservoir. In 1995, an archaeological survey undertaken along portions of the Smallwood Reservoir during a period of unusually low water levels indicated that, despite erosion from fluctuating water levels and ice scouring, deflated archaeological deposits could still be identified (Loring *et al.* 2003).

4.1.1.5 Caniapiscau / Laforge Region

The Caniapiscau / Laforge region received considerable archaeological attention in the 1970s and 1980s due to hydroelectric development of Rivière La Grande (Figure 4.2). Archaeological work in this region began with a series of canoe-based surveys during the summers of 1972 and 1976 and grew in scale and duration over the following two decades. Hundreds of Pre-contact, Contact, and Historic Period sites were identified, and a number of these were fully excavated. Reports and publications based on this research document Pre-contact occupation in the far interior of the eastern Subarctic and indicate that this history dates back at least 4,000 years. A number of regional syntheses have been produced (Denton 1989; McCaffrey 2006a, 2006b) and over 100 sites have been radiocarbon dated.

4.1.1.6 Schefferville Region

In 1984, archaeological surveys in the Schefferville region to the southwest of the Study Area located evidence of Pre-contact use of local chert outcrops (Denton and McCaffrey 1988) (Figure 4.2). Other surveys and excavations were also conducted in the area north of Schefferville and in western Labrador. A number of potential habitation locations were investigated, along with Fort Nascopie, a nineteenth century Hudson Bay Company post on Petitsikapau Lake (McCaffrey 1989).

More recently, in 2003, sections of a proposed mine site at Howells River to the north of the Study Area were inventoried as part of a pre-feasibility historic and heritage resources study. It was determined that the region is dominated by low-lying shorelines and rocky terrain that is usually considered to have Low potential for archaeological resources. The survey did not yield any evidence of Pre-contact or Early Historic Period occupations, but ample evidence of recent Innu land use dating to the last 50 years was recorded. It was determined that the recorded sites appear to be associated with improved access from Schefferville, specifically along roads constructed to support mining exploration activities. Other archaeological surveys near

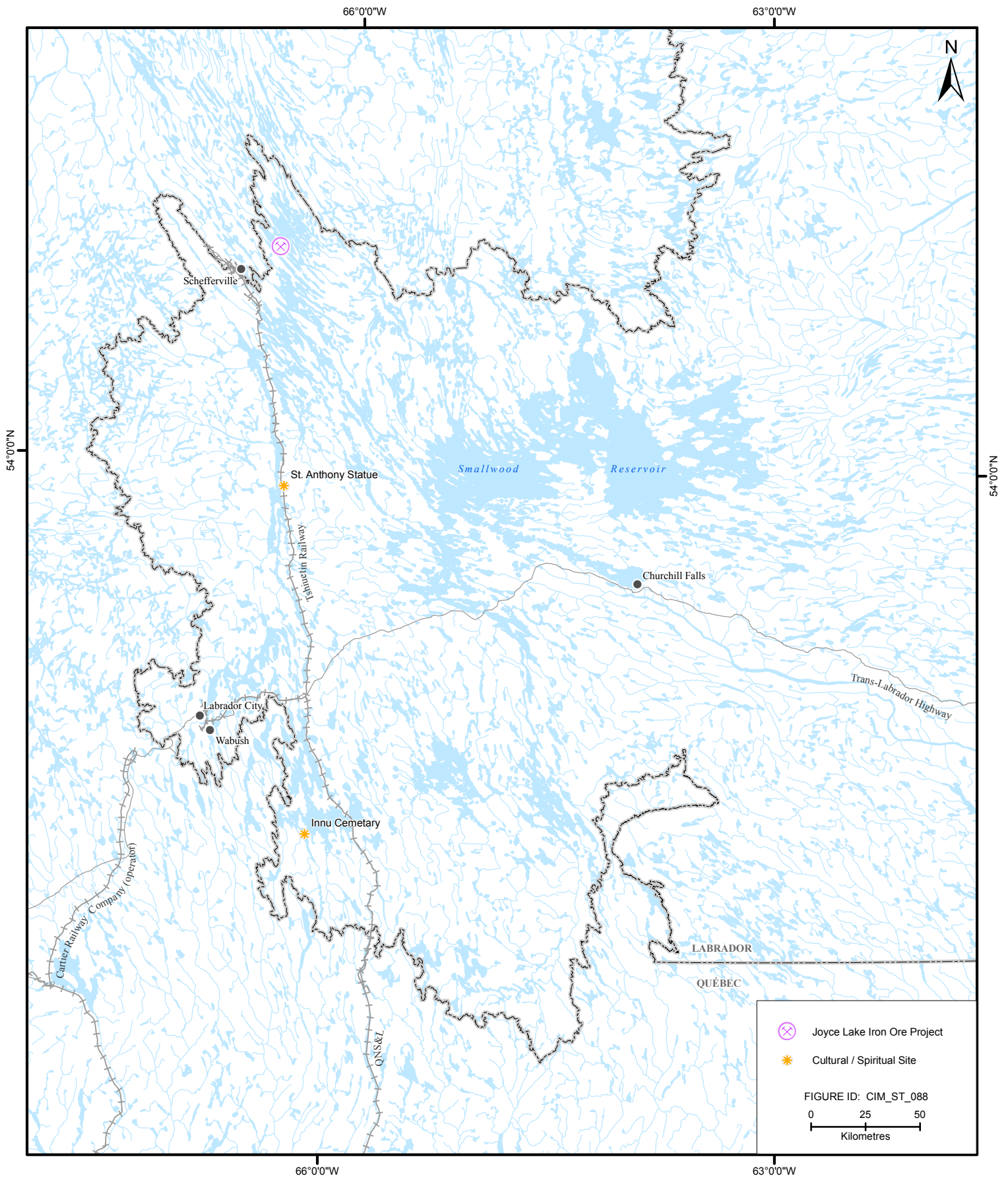


geological formations revealed no evidence of Pre-contact use; but high-quality chert outcrops in the area related to the formations identified in the 1980s were recorded and sampled (McCaffrey 2004).

Subsequently, in June 2006, a second historic resources assessment was carried out in the Howells River area for the proposed mine site. The 2006 assessment, a continuation of the work initiated in 2003, resulted in the identification of 37 additional sites of ethnographic interest, a majority of these are thought to be Innu fall and winter camps dating from the last 50 years. The 2006 historic and heritage resources research brought the total number of registered contemporary sites in the area to 56. Despite the two research projects completed in the area, no sites or materials dating to the Pre-contact or Historic periods were recorded (McCaffrey 2004; Minaskuat 2006).

4.1.2 Cultural / Spiritual Sites

A review of existing studies on Aboriginal culture, spirituality (Armitage 1992; Weiler 1999) and land use (Armitage 2010; Tanner and Armitage 1986; LIM 2009; Nalcor Energy 2010) in western Labrador identified two sites of cultural / spiritual importance along the Ashuanipi drainage system. These include a traditional Innu gathering site on Menihek Lake, approximately 105 km south of the Study Area, marked by a statue of St. Anthony erected in 1970 (Minaskuat 2008), and a large Innu burial site on Ashuanipi Lake, approximately 255 km south of the Study Area, visited by Père Babel in 1868 (Tremblay 1977; Tanner and Armitage 1986). However, no evidence of cultural / spiritual sites was identified within the Study Area (Figure 4.3). No additional specific information on cultural / spiritual resources in western Labrador was identified through research of the PAO data sources.





 Joyce Lake Iron Ore Project
 Cultural / Spiritual Site

FIGURE ID: CIM_ST_088
 0 25 50
 Kilometres



FIGURE TITLE:				Cultural/Spiritual Sites			
CLIENT:				LABEC CENTURY IRON ORE INC.			
CHECKED BY:	FIGURE ID:	PROJECT NUMBER:	FIGURE SOURCES:				
C. Shupe	FIGURE 4.3	121810649	Basemap information from NRCan CanVec database and Newfoundland and Labrador Department of Natural Resources.				





4.2 Paleontological Resources

There are no known fossils or fossil sites in the Study Area currently protected under the Newfoundland and Labrador Paleontological Resources Regulations, and a review of sources did not locate any information on fossils of concern. However, stromatolites have been reported for the region and, in the 1960s, insect fossils, fossilized wood and shark teeth were reported from geological deposits near Schefferville. These materials were found in rubble-ore at the top of the Ruth and Redmond mine pits, which were being mined by the Iron Ore Company of Canada (IOC). No fossils have been recorded in any of the pits currently being developed. Reports from the 1970s do not mention fossils or Cretaceous (135 to 65 million years old) weathering that is associated with the Cretaceous-aged insect and plant fossils recovered from the Redmond iron ore deposit of the Knob Lake District of western Labrador.

Available sources mention only Archean rocks (= Paleoproterozoic = 2390 to 1640 million years old). More specifically, the rocks associated with the iron deposits in the western Labrador region are roughly 2,100 to 1,800 million years old (= Middle Paleoproterozoic); thus it is concluded that there is little chance of any fossils being present in the Study Area (Dickson, Dr. L., pers. comm. 2012). While there are some Cretaceous plants and insects known from the Schefferville area, these are not thought to be widespread (Boyce, D., pers. comm. 2012). During the 2012 field programme, it was determined that it is unlikely that similar fossils would be present in the Study Area due to the degree of metamorphism, with the rocks heated to over 500 degrees C and recrystallized (Colniffe, J., pers. comm. 2012). The geological material seems to lack the high grade rubble ore needed for the preservation of fossils.

4.3 Architectural Resources

A search of the on-line database of the Heritage Foundation of Newfoundland and Labrador did not identify any Architectural Resources within the Study Area (Heritage Foundation of Newfoundland and Labrador on-line website, n.d.).



5.0 RESULTS OF THE 2012/2013 STAGE 1 HISTORIC AND HERITAGE RESOURCES ASSESSMENT

5.1 2012 Stage 1 Historic and Heritage Resources Assessment

5.1.1 Archaeological Potential Mapping

The relative archaeological potential of the Study Area (as configured in August 2012) was mapped in its entirety as part of the background research for the Stage 1 Assessment prior to commencement of the field study. This process identified 33 zones, which were defined as having either Low, Moderate or Higher archaeological potential, with 14 zones assigned a rating of Low, eight a rating of Moderate, and 11 a rating of Higher. The vast majority of terrain in the Study Area was defined as having Low archaeological potential, as it is either sloped, has excessive surface-water, or has poorly defined and rocky shorelines that are generally unsuited for landing and deploying small craft and other aspects of human occupation, such as establishing campsites. Only a relatively limited area was considered to have Moderate or Higher archaeological potential. Figure 5.1 shows the distribution of archaeological potential zones within the Study Area as delineated in early August 2012.

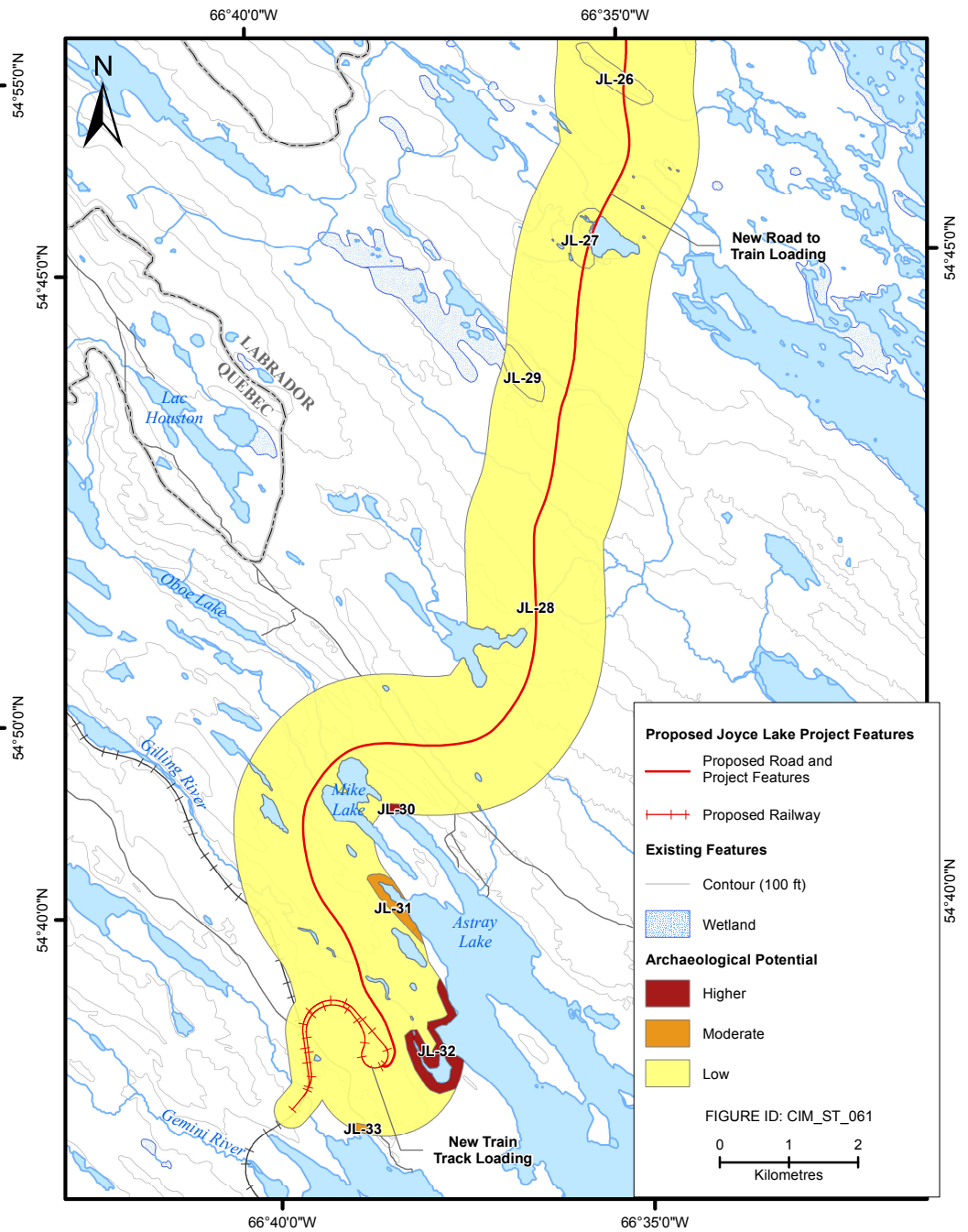
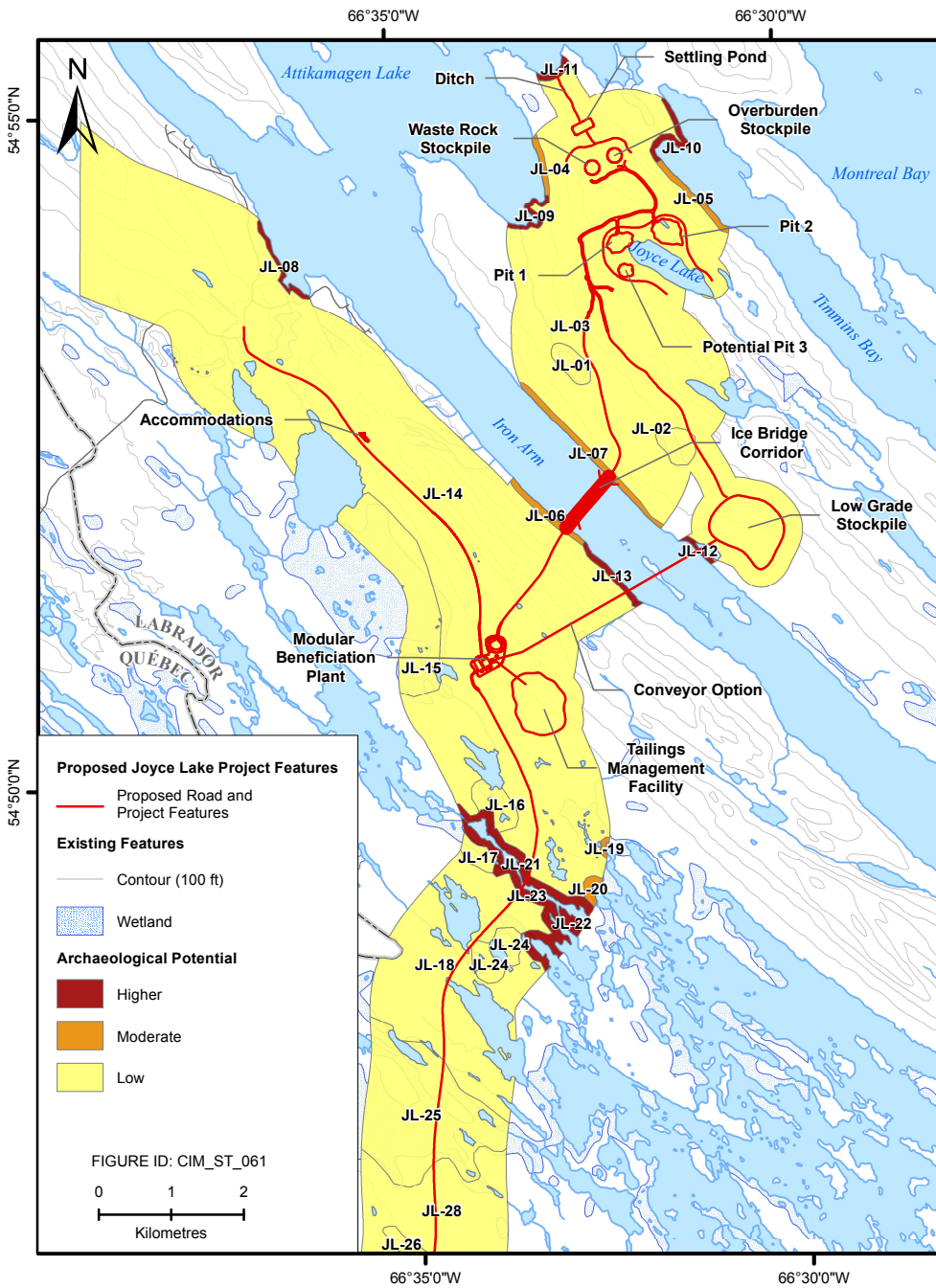


FIGURE TITLE: Archaeological Potential Mapping of Study Area			
CLIENT: LABEC CENTURY IRON ORE INC.			
CHECKED BY: C. Shupe	FIGURE ID: FIGURE 5.1	PROJECT NUMBER: 121810649	FIGURE SOURCES: Project features provided by CIMA+ version 1 received 2012/08/02. Basemap information from NRCan CanVec database and Newfoundland and Labrador Department of Natural Resources.





5.1.2 Field Study

5.1.2.1 Revised Historic and Heritage Resources Study Area

In September, 2012, just prior to mobilization for fieldwork, elements of the PDA were revised to include Road Option 2. While the northern portion of Road Option 2 deviated only slightly from the original corridor, the southern half followed an entirely different route extending west toward the Labrador / Québec border, and then in a generally southern, western and southeast orientation around a number of large waterbodies to link with the proposed rail loop (Figure 5.2). Because the layout of Road Option 2 was not available to the Study Team during background research for the Stage 1 Assessment, analysis of its archaeological potential was not considered or mapped / modeled prior to the field study following the usual potential mapping criteria. A thorough field study of Road Option 2 was nevertheless completed in 2012 based on route mapping. The results of that work are presented below.

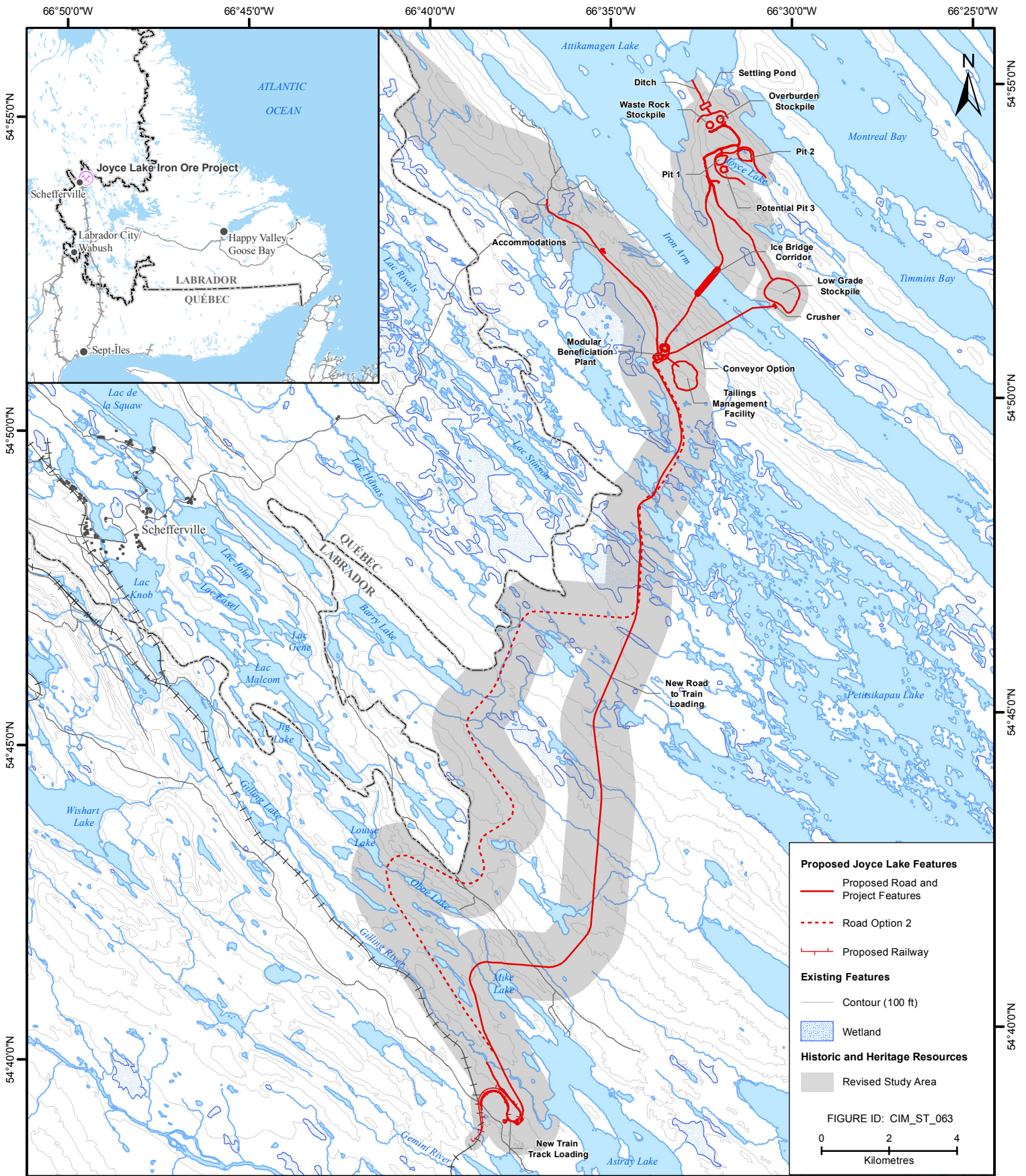


FIGURE TITLE: Revised Historic and Heritage Resources Study Area			
CLIENT: LABEC CENTURY IRON ORE INC.			
CHECKED BY: C. Shupe	FIGURE ID: FIGURE 5.2	PROJECT NUMBER: 121810649	FIGURE SOURCES: Project features provided by CIMA+ version 4 received 2012/09/28. Basemap information from NRCan CanVec database and Newfoundland and Labrador Department of Natural Resources.





5.1.2.2 Revised Archaeological Potential Ratings

The field study of the mine site in September 2012 was focused on assessment of the entire Study Area, including Road Option 2 (Figure 5.2), but with particular emphasis directed toward investigation of the 11 zones assigned a rating of Higher archaeological potential and the eight assigned a rating of Moderate (see Figure 5.1). All Moderate and Higher potential zones are located along the shorelines of relatively large lakes, including Attikamagen, Petitsikapau and Astray, or adjacent to smaller unnamed ponds, rivers and streams. However, due to the nature and extent of topographical conditions noted at various zones during the initial confirmatory aerial over-flight, specifically the prevalence of rocky and alder / willow-covered shorelines, with poorly drained, wet topography inland of the cobble beaches, several zones assigned a rating of Moderate and Higher potential during background research were revised to reflect actual conditions. No zones assigned a rating of Low were changed. The revisions to the archaeological potential zones are as follows:

- Three of the 11 zones assigned a rating of Higher were revised to Moderate.
- Seven of the 11 zones assigned a rating of Higher were revised to Low.
- Five of the eight zones assigned a rating of Moderate were revised to Low.

Regarding the southern portion of Road Option 2 (assigned zone reference number JL-34), topographic and hydrographic information as well as the vegetation patterns and distribution of surface-rock observed during the helicopter over-flight, indicated that the entire length of the corridor, including the buffer zone on either side of the road centre-line, was of Low archaeological potential. In summary, the revised and updated archaeological potential of the total Study Area, based on aerial observations of ground conditions, indicated that one zone is rated as having Higher potential, six zones are rated as having Moderate potential, and 27 zones were rated as having of Low potential, including Zone JL-34 (Figure 5.3).

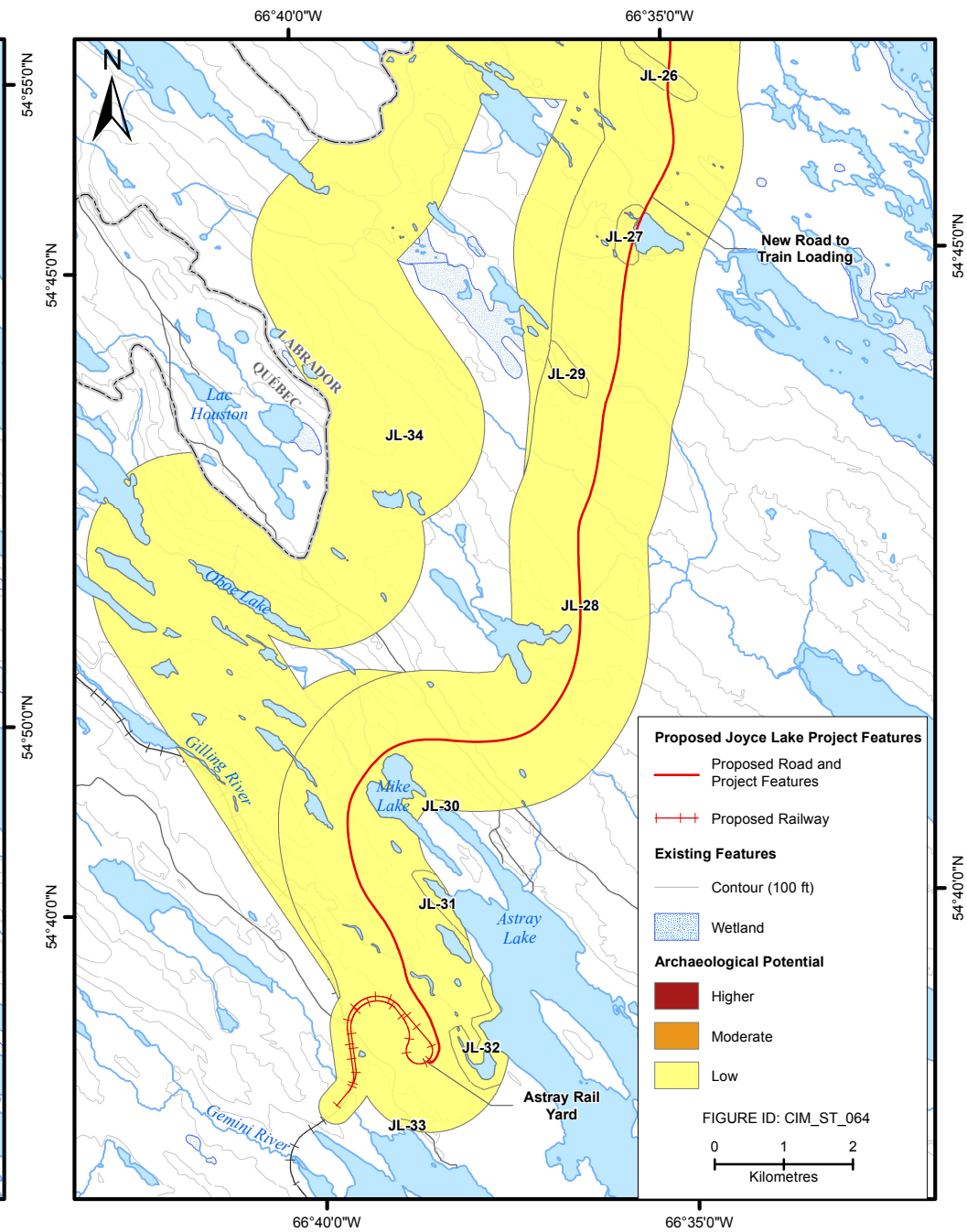
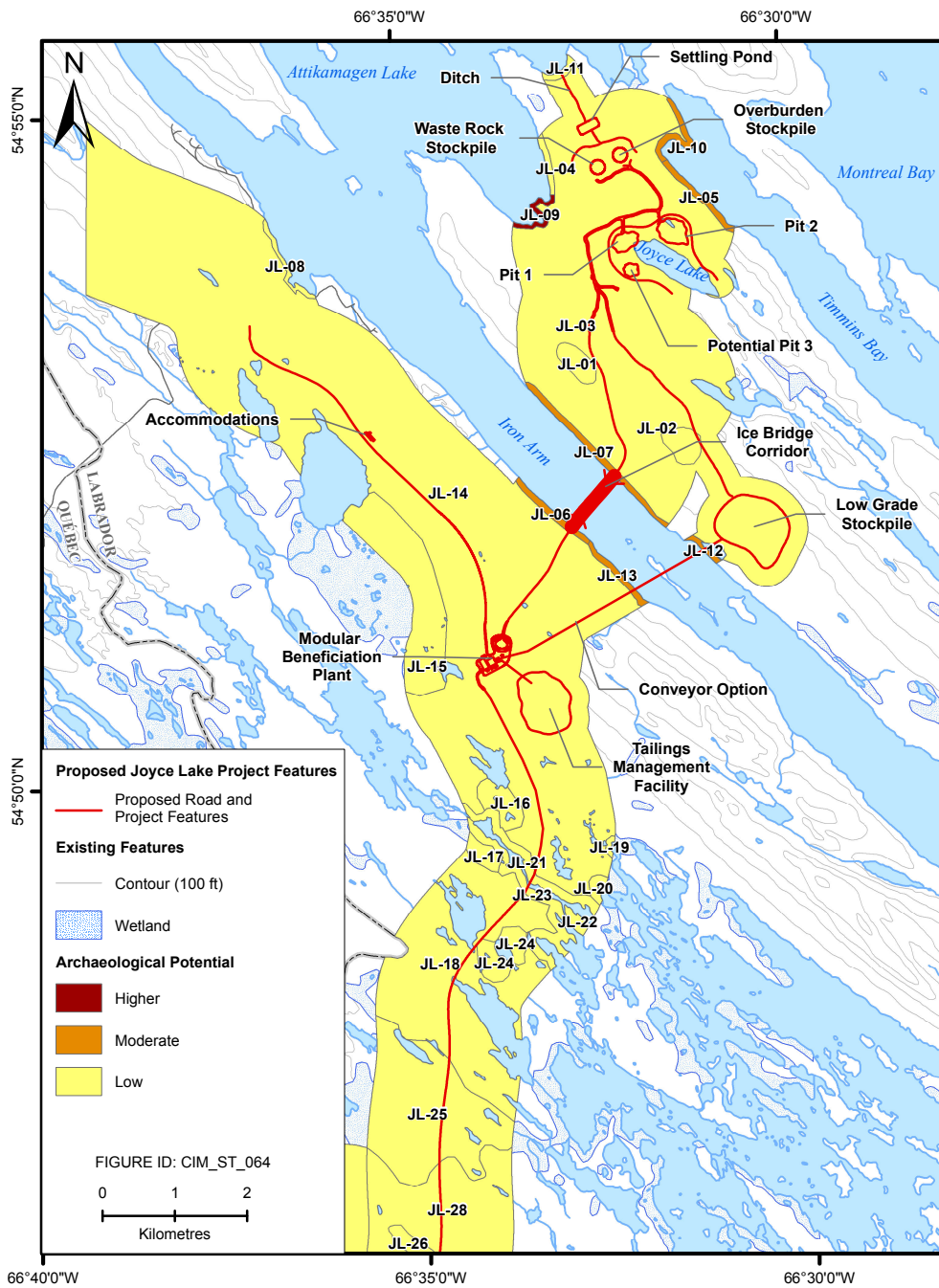


	FIGURE TITLE: Revised Archaeological Potential Mapping of Study Area				
	CLIENT: LABEC CENTURY IRON ORE INC.				
CHECKED BY: C. Shupe	FIGURE ID: FIGURE 5.3	PROJECT NUMBER: 121810649	FIGURE SOURCES: Project features provided by CIMA+ version 1 received 2012/08/02. Basemap information from NRCan CanVec database and Newfoundland and Labrador Department of Natural Resources.		



Table 5.1 below provides a listing of the archaeological potential zones and their initial ratings based on a review of background sources and analysis of 1:50,000-scale topographic maps as well as the revised / updated ratings based on aerial and ground observations completed during the field study.

Table 5.1 Revised Archaeological Potential Zones, Zone Types and Ratings

Zone Number	Zone Type(s)	Initial Archaeological Potential Rating	Revised / Updated Archaeological Potential Rating
JL-01	10	Low	Low
JL-02	10	Low	Low
JL-03	09	Low	Low
JL-04	02	Moderate	Low
JL-05	02	Moderate	Moderate
JL-06	02	Moderate	Moderate
JL-07	02	Moderate	Moderate
JL-08	01	Higher	Low
JL-09	01	Higher	Higher
JL-10	01	Higher	Moderate
JL-11	01	Higher	Low
JL-12	01	Higher	Moderate
JL-13	01	Higher	Moderate
JL-14	09	Low	Low
JL-15	10	Low	Low
JL-16	10	Low	Low
JL-17	10	Low	Low
JL-18	09	Low	Low
JL-19	02	Moderate	Low
JL-20	02	Moderate	Low
JL-21	01	Higher	Low
JL-22	01	Higher	Low
JL-23	01	Higher	Low
JL-24	01	Low	Low
JL-25	10	Low	Low
JL-26	10	Low	Low
JL-27	10	Low	Low
JL-28	09	Low	Low
JL-29	10	Low	Low
JL-30	01	Higher	Low
JL-31	02	Moderate	Low
JL-32	01	Higher	Low
JL-33	02	Moderate	Low
JL-34	09 and 10	Not Rated	Low

5.1.2.3 Ground Survey and Sub-surface Testing

The ground survey and sub-surface testing completed as part of the Stage 1 Assessment of the Study Area involved investigation of 24 individual locations and excavation of 124 testpits. Even though all 24 locations were walked and examined, only those exhibiting dry, level and partially open terrain suitable for habitation were investigated by subsurface testing. The distribution of the ground survey / testing locations is shown on Figure 5.4.

5.1.2.4 Archaeological and Contemporary Sites

The following is a description of the one archaeological and six contemporary sites recorded during Stage 1 Assessment.

GfDp-01 (Attikamagen Lake 1)

This archaeological site is situated on a small point of land on the east side of Iron Arm, outside the Study Area and just south of Zone JL-12, which was rated as having Higher potential during background research but subsequently revised to Moderate potential (Photos 1 and 2 and Figure 5.4). The site is located among a grove of fir trees set back from a pebble and sand beach ideally suited to landing and deploying small and medium-sized craft. The terrain back from the beach is sheltered, level and relatively well-drained, and an ample supply of firewood is present throughout the surrounding area. In short, the point of land where the site is located is ideally situated as a place to camp if travelling the lake in boats or on the ice in winter. It is also possible that it was a good location from which to hunt.



**Photo 1 GfDp-01 (Attikamagen Lake 1)
South View**



**Photo 2 GfDp-01 (Attikamagen Lake 1)
East View**

Archaeological materials identified in two shovel testpits dug at the site included 145 flakes (*i.e.*, stone chipping debris from tool manufacture) of chert of which roughly half are wine-coloured, with the remaining being grey-white and beige. While no finished artifacts were identified among the assemblage, there were many small sharpening and thinning flakes suggesting that stone was being worked into finished tools at the site. It is also of note that all but four of the 145 flakes were concentrated in a single 40 cm by 40 cm testpit.



In the absence of finished artifacts (or significant sections thereof), it is not possible to confirm the cultural affiliation and age of these artifacts and the site. Excavation of 30 testpits over the entire point of land failed to identify any additional Pre-contact Period materials or historic artifacts. Given the limited distribution of chipping debris recorded, it appears that the site was occupied for a brief period of time, possibly by a small group. The density of lithic materials recorded at the site could indicate the presence of a hearth. If so, organic materials (such as charcoal or burnt bone) could provide additional information on the site, including the time-period when it was occupied and the cultural group represented. Even though the site falls just outside the Study Area as defined in September 2012, its proximity to the western edge of the buffer zone around the Crusher and Low Grade Stockpile (approximately 100 m) warranted testing as a precautionary / due diligence measure.

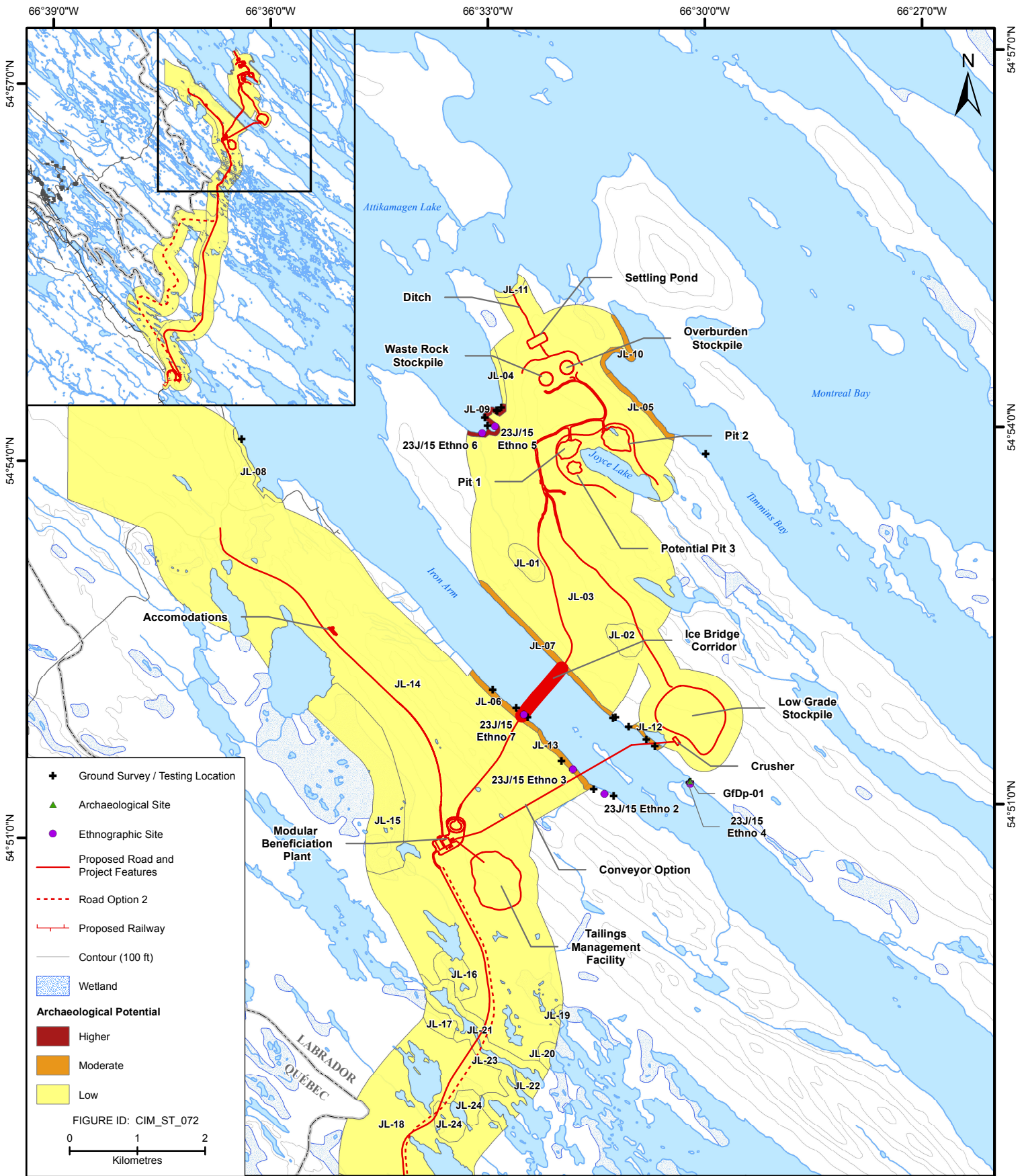


FIGURE TITLE: Ground Survey/Testing Locations and Archaeological and Contemporary Sites			
CLIENT: LABEC CENTURY IRON ORE INC.			
CHECKED BY: C. Shupe	FIGURE ID: FIGURE 5.4	PROJECT NUMBER: 121810649	FIGURE SOURCES: Project features provided by CIMA+ version 4 retrieved 2012/09/28. Basemap information from NRCan CanVec database and Newfoundland and Labrador Department of Natural Resources.





23J/15 Ethno 2 (Attikamagen Lake Trap 1)

This contemporary site is situated on the western shore of Iron Arm in Zone JL-13, which was rated as Higher potential but was subsequently revised to Moderate as it was confirmed to be a contemporary generic shoreline, with no particular strategic locations observed (Figure 5.4). The site consists of a low-standing mound of tree branches stacked against the base of a large spruce tree. Even though no metal or wooden trap parts were identified, it appeared that the branches were used to conceal a small-mammal trap. The age and cultural affiliation of the trap could not be confirmed from the physical evidence but it is certainly less than 50 years old and therefore it has been assigned an ethnographic designation in accordance with PAO policy for evidence of recent land use in Labrador. Four testpits were dug at this location, with no sub-surface findings.

23J/15 Ethno 3 (Attikamagen Lake Boat Landing)

This contemporary site is also situated on the west shore of Iron Arm, in Zone JL-13, which was rated as Higher potential during background research but subsequently revised to Moderate (Figure 5.4). The site consists of a line of flagstones laid out on the narrow beach so that a boat could be landed without damage. A small area above the beach had been cleared of trees and brush for the boat but no evidence of a camp was noted. The area had likely been used while hunting, trapping and/or fishing in the fall. The age and cultural affiliation of the site could not be confirmed but it is certainly less than 50 years old. Eight testpits were dug at this location, with no sub-surface findings.

23J/15 Ethno 4 (Attikamagen Lake Camp 2)

This contemporary site is also situated on the east shore of Iron Arm on the same point of land where the pre-contact site GfDp-01 was recorded (Figure 5.4). Materials found include a circular stone hearth and a metal cooking grill as well as glass and various sizes of tin cans. Without question the point is used from time to time for stays of short duration, possibly while camping. The age and cultural affiliation of the recent component of the site was not confirmed but it was likely occupied within the last 20 years.

23J/15 Ethno 5 (Attikamagen Lake Hunting Shelters)

This contemporary site, consisting of two features thought to have been used as shelters during fall bird hunting, is situated at the south end of an unnamed cove on Attikamagen Lake to the west of Montreal Bay in Zone JL-09 (Figure 5.4). The two features are situated in a wooded area approximately 30 m inland from a sandy and gravel shoreline but with a clear view of the lake. Debris scattered along the shoreline, including shotgun shells and bird decoys, suggest the cove is still used for bird hunting. The initial potential rating of this zone was Higher and, given the level and dry terrain comprising it, as well as the protected beach along portions of the shoreline, there is potential for archaeological materials to be present. Thus, the potential rating determined from field observations remains as Higher.



The most easterly of the two features is comprised of a circular configuration of relatively large cobbles that were appear to have been used as 'hold-down stones' around the perimeter of a tent or temporary canvas shelter. An area measuring approximately 5 m in diameter was cleared of moss and other surface vegetation and eight testpits were excavated in the immediate vicinity. While no remains were identified to confirm the age or cultural affiliation of this area of the site, the growth of moss suggests that the area was used at least 20 years ago.

The second feature recorded at this site is situated to the southwest of the remains described above and also appears to have been used as a shelter or low-standing blind for bird hunting. However, in this case the frame of the shelter was fabricated with a horizontally-positioned wooden pole that was likely fastened to two wooden horizontal supports at either end of the approximately 1.5 m high structure.

23J/15 Ethno 6 (Attikamagen Lake Camp 3)

This contemporary site is located on dry and level terrain in an open, lichen / woodland setting to the south of the shoreline defined as Zone JL-09. Findings at the site were limited to the remains of two deteriorated, wooden pegs used to support a metal stove that almost certainly had been used inside a tent, possibly during hunting or fishing. Despite the excavation of a number of testpits adjacent to the stove pegs (*i.e.*, a key activity area inside the tent), no evidence was identified to establish the age or seasonality of the site, although it is likely at least 20 years old and would appear to be of Innu cultural affiliation. Even though no evidence to establish that the area had been used during the Pre-contact or Historic periods was located, the potential for findings from these periods remains rated as Higher (Figure 5.4).

23J/15 Ethno 7 (Attikamagen Lake Camp 4)

This contemporary site is located on dry and level terrain in a small clearing next to the shoreline at Zone JL-06 defined as having Moderate archaeological potential. Findings at the site include four deteriorated wooden pegs used to support a metal stove set up inside a tent (Photo 3). Despite the excavation of a number of testpits adjacent to the stove pegs, no evidence was identified to establish the age or seasonality of the site, although it is like at least 20 years old, if not older, and would appear to be of Innu cultural affiliation. No evidence to establish that the area had been used during the Pre-contact or Historic Periods was located. Because this zone possesses no particularly strategic, shorelines locations, its current potential remains as Moderate (Figure 5.4).



Photo 3 23J/15 Ethno 07 (Note Wooden Stove Pegs) – Northeast View

5.2 2013 Stage 1 Historic and Heritage Resources Assessment

In early 2013, the PDA was revised. To determine if the alterations resulted in infrastructure being shifted into areas not previously subject to historic and heritage resources assessment, the revised PDA was superimposed over maps of the 2012 Study Area, which included the revised and updated archaeological potential mapping (Figure 5.5). The results of this exercise showed that the vast majority of the revised PDA was assessed in September 2012. Locations that were not assessed include two sections of the haulage road and the corridors identified for the drainage and water Infrastructure and ice bridge. These locations are on or adjacent to shorelines; typically, it is such topographic features that hold the highest potential for archaeological materials. This potential data gap in the baseline coverage of the current Study Area was addressed through a review of the relevant 1:50,000-scale, NST topographic maps, aerial imagery and photographs obtained during the helicopter over-flight completed during the Stage 1 Assessment field study.

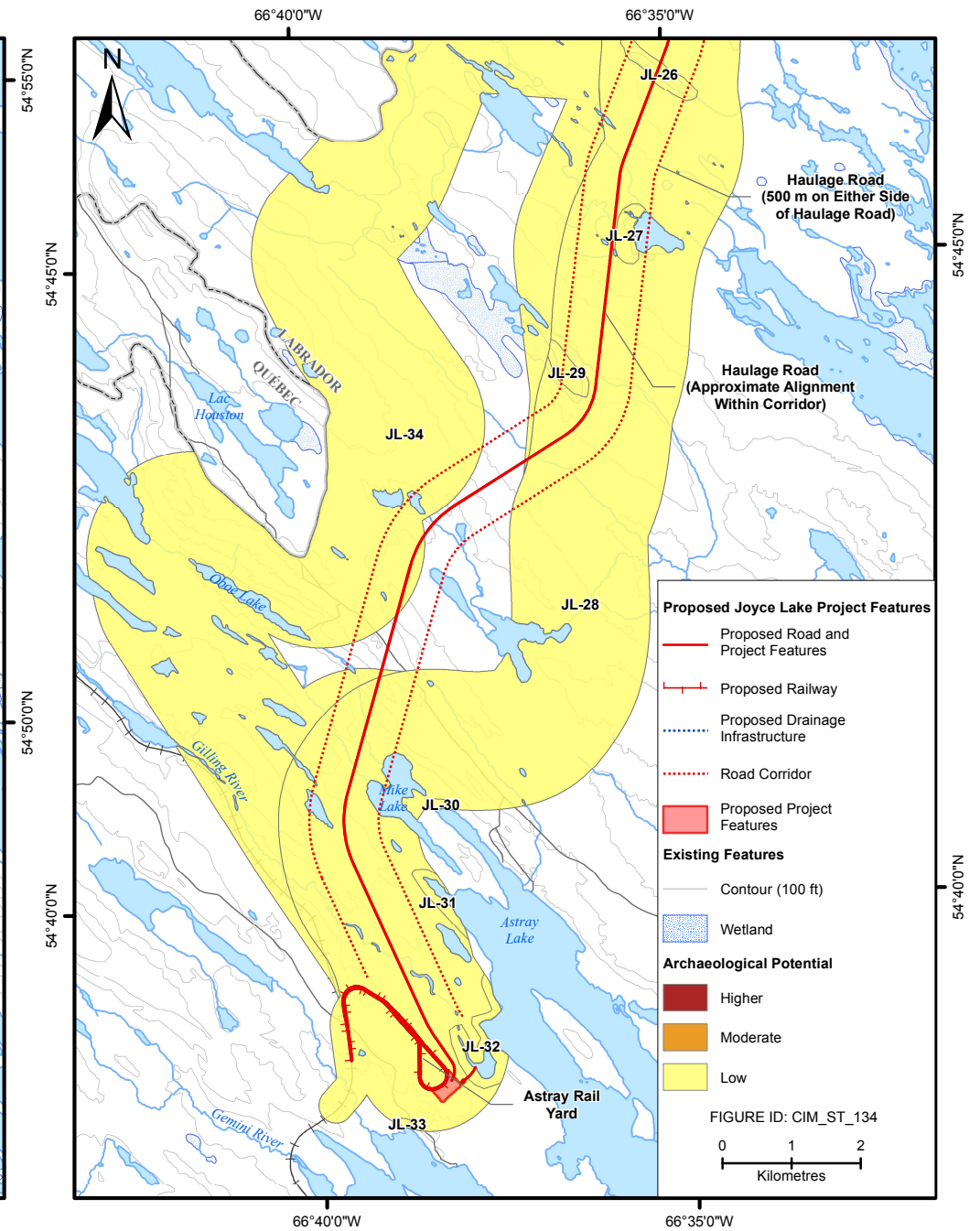
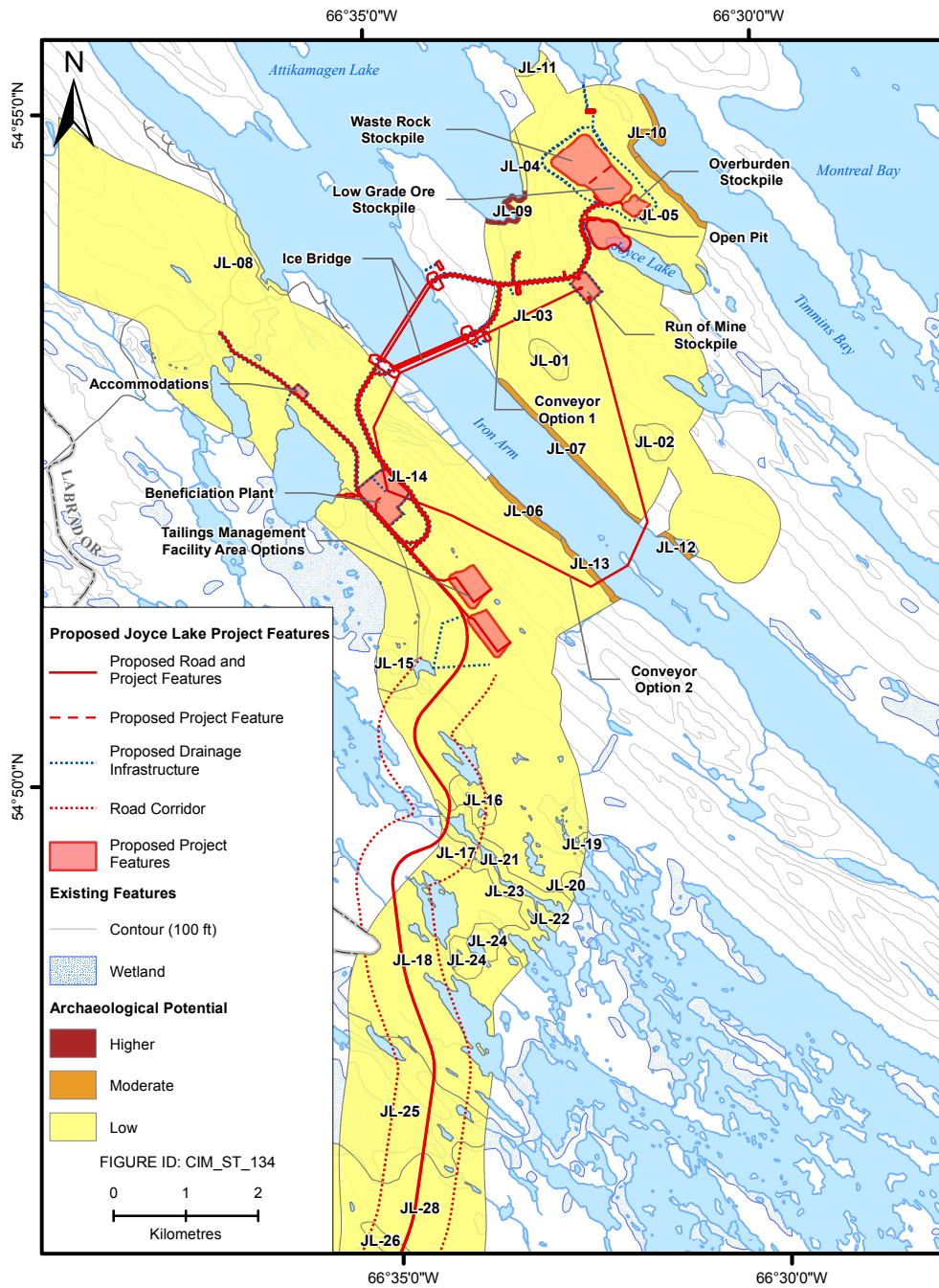


FIGURE TITLE:

Revised Project Development Area In Relation to Area Subjected to Stage 1 Assessment

CLIENT:

LABEC CENTURY IRON ORE INC.

CHECKED BY:

A. Frickleton

FIGURE ID:

FIGURE 5.5

PROJECT NUMBER

121810649

FIGURE SOURCES:

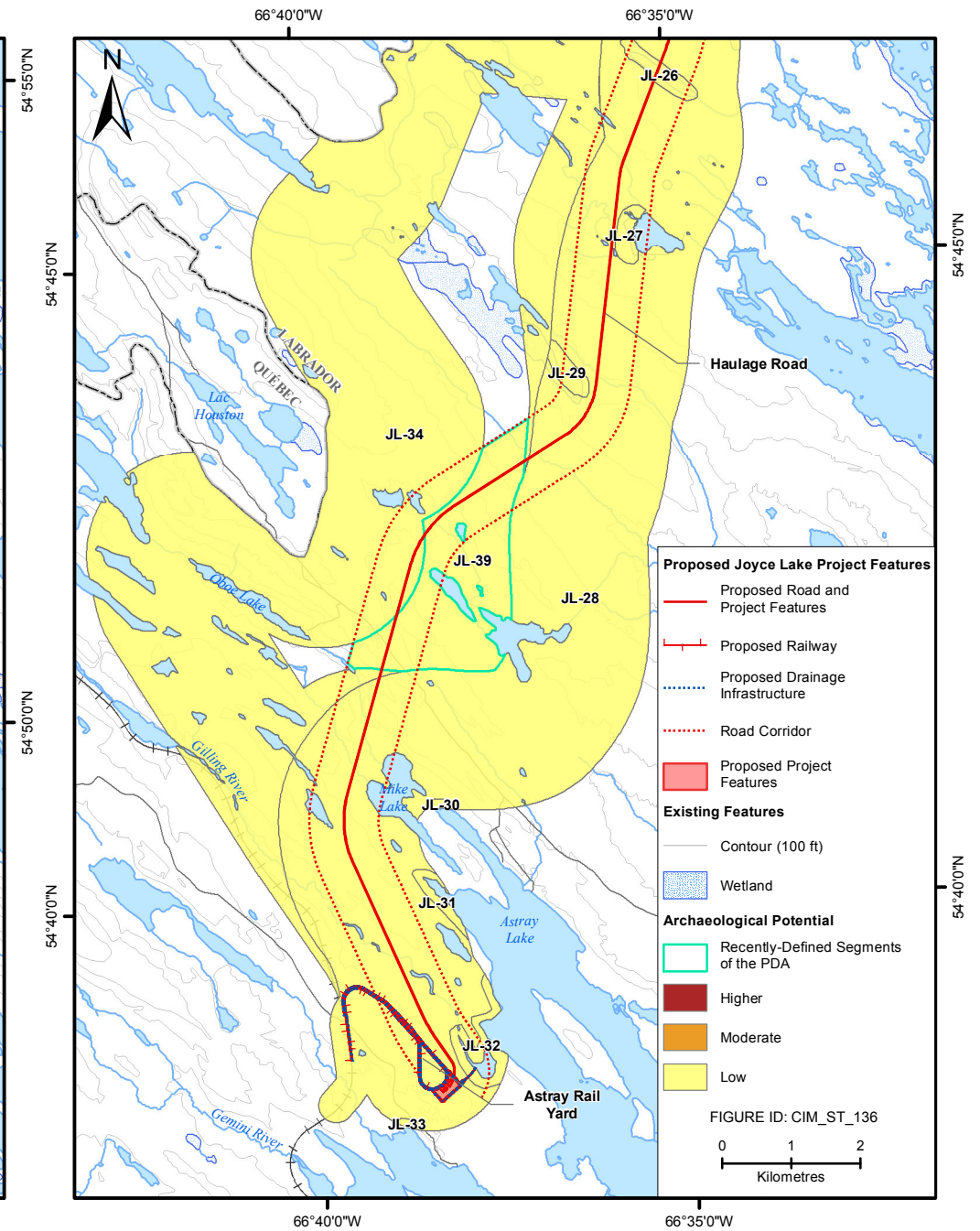
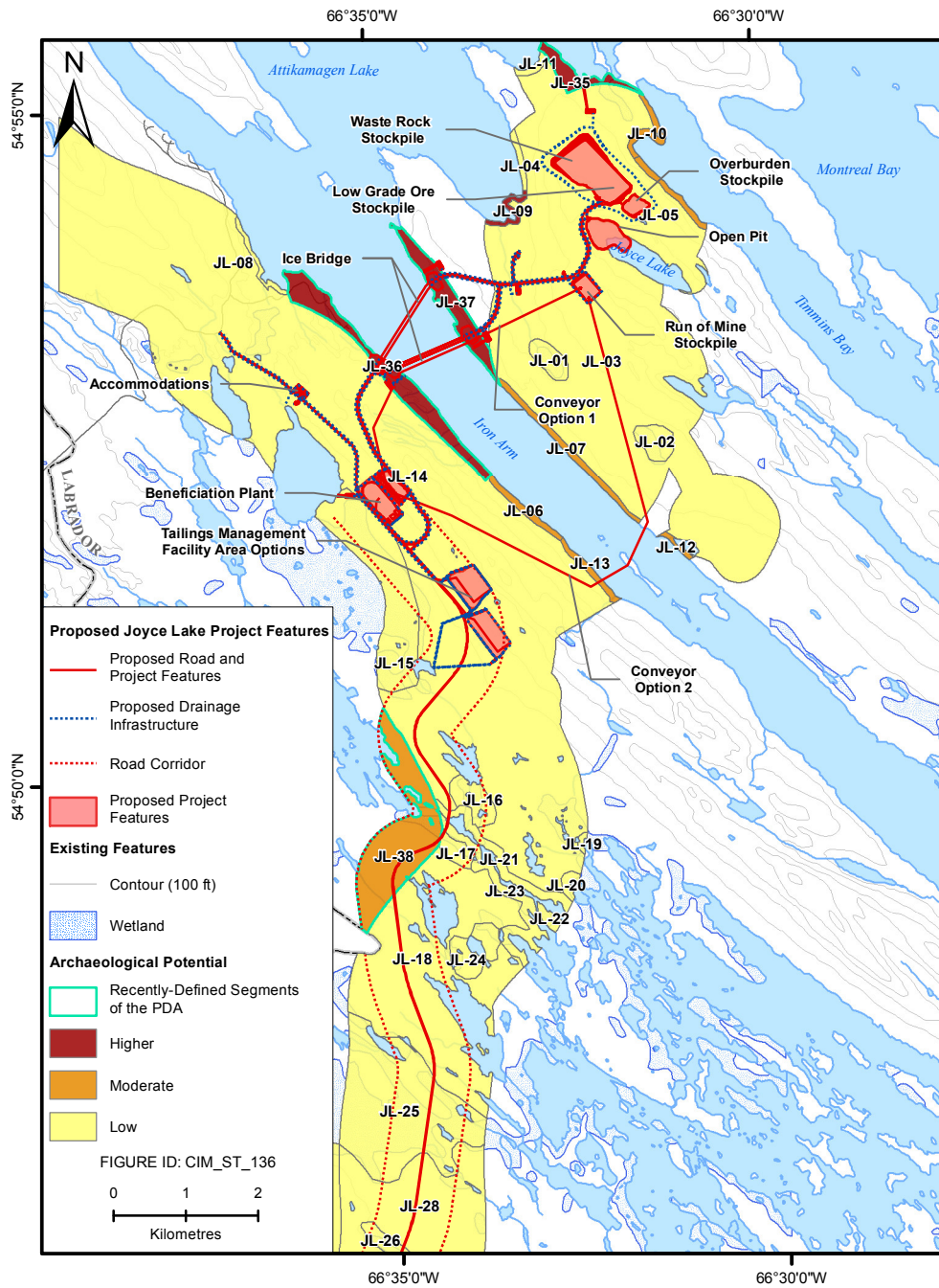
Project features provided by CIMA+ version 9 received 2013/02/11. Basemap information from NRCan CanVec database and Newfoundland and Labrador Department of Natural Resources.





5.2.1 Evaluation of the Revised Project Development Area

An evaluation of the revised segments of the PDA suggested a rating of Higher for Zones JL-35, JL-36 and JL-37 based on their proximity to shorelines and prominent points of land that project out into large waterbodies. These areas are similar to where the Pre-contact Period site was identified. The evaluation of Zone JL-38 suggested a potential rating of Moderate, due to its proximity to a large waterbody. Zone JL-39 was assigned a rating of Low, as it is bordered by a number of similar Low potential zones that were over-flown during the 2012 field study. Further assessment of Zones JL-35 to JL-38 was therefore warranted prior to any ground disturbing activities, as a due diligence / precautionary measure. A copy of the revised and updated archaeological potential mapping showing Zones JL-35 to JL-39 is presented in Figure 5.6.



Archaeological Potential Ratings in Current Project Development Area

FIGURE TITLE:

CLIENT:

LABEC CENTURY IRON ORE INC.

CHECKED BY:
A. Frickleton

FIGURE ID:
FIGURE 5.6

PROJECT NUMBER
121810649

FIGURE SOURCES:
Project features provided by CIMA+ version 11 received 2013/03/22. Basemap information from NRCan CanVec database and Newfoundland and Labrador Department of Natural Resources.





5.2.2 Field Study

The ground survey and sub-surface testing completed as part of the 2013 Stage 1 Assessment field study commenced with a helicopter over-flight of all Zones, followed by a walk-over and thorough visual inspection of Zones JL-35 to JL-39 and excavation of 20 test pits at six discrete locations. Only one contemporary site was recorded, which is described below (Figure 5.7).

23J/15 Ethno 8 (Attikamagen Lake Trap 2)

This contemporary site is situated on the eastern shore of Iron Arm in Zone JL-37, which was rated as having Higher potential (Figure 5.7). The site consists of a wooden trap fastened to a tree approximately 1.5 m above ground. The age and cultural affiliation of the trap could not be confirmed from the physical evidence but it is certainly less than 50 years old and is therefore assigned an ethnographic designation in accordance with PAO policy for evidence of recent land use in Labrador. Two testpits were dug at this location, with no sub-surface findings (Figure 5.7).

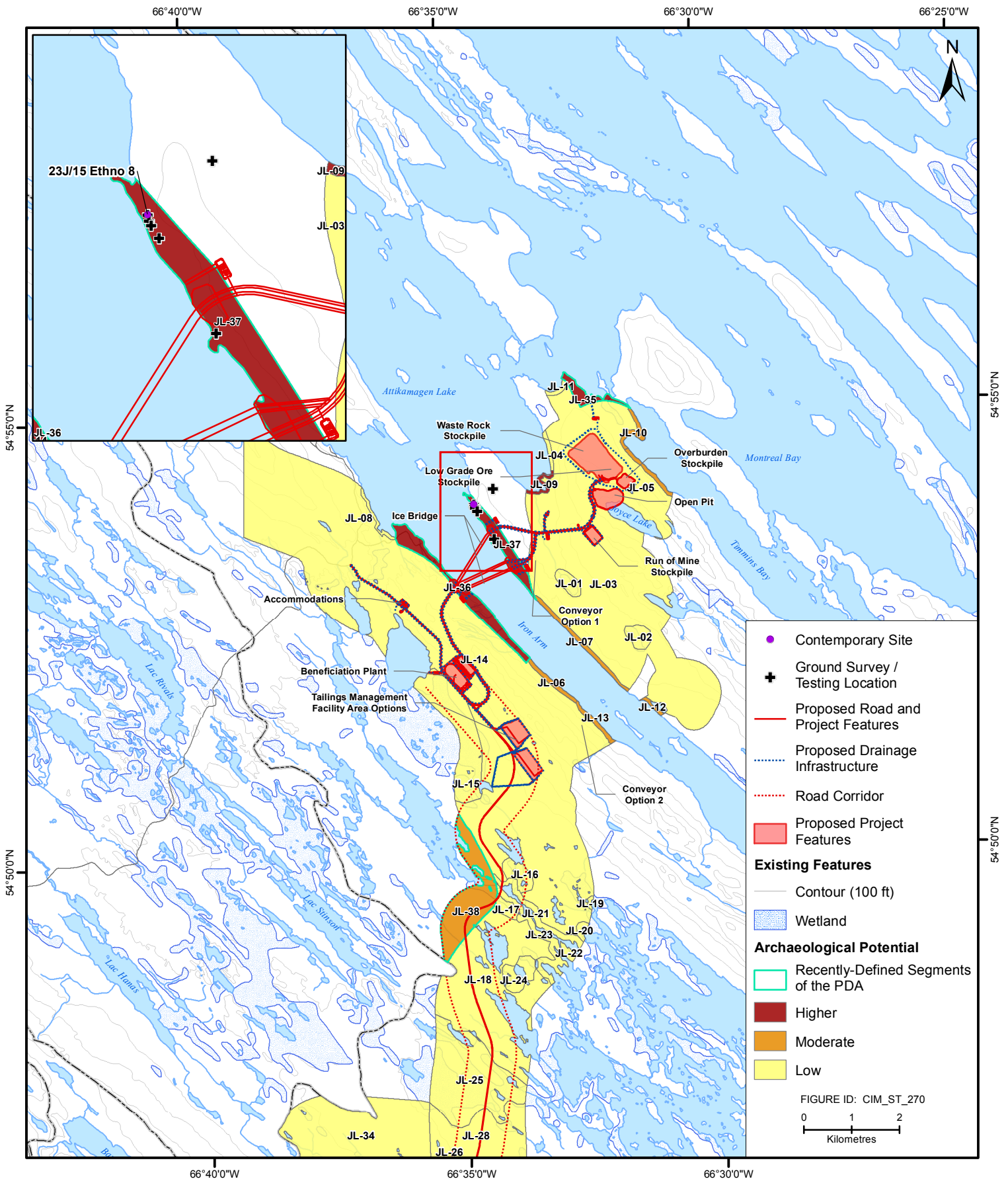


FIGURE TITLE: Ground Survey, Sub-Surface Testing Locations and Contemporary Site			
CLIENT: LABEC CENTURY IRON ORE INC.			
CHECKED BY: Z. Bartlett	FIGURE ID: FIGURE 5.7	PROJECT NUMBER: 121810649	FIGURE SOURCES: Project features provided by CIMA+ version 4 received 2012/09/28. Basemap information from NRCAN CanVec database and Newfoundland and Labrador Department of Natural Resources.





6.0 SUMMARY AND CLOSURE

Background research completed prior to the 2012 Stage 1 Assessment field study confirmed that the mine site lies within a region that has been intermittently occupied by Aboriginal peoples for the past several millennia. Use by Aboriginal peoples, Europeans and Euro-Canadians continued throughout the Historic Period and to the present day. As a result, archaeological and contemporary materials resulting from these occupations could be present in the Study Area.

A field study of the mine site conducted in 2012 as part of the Stage 1 Assessment included a helicopter over-flight to view and photograph all 33 mapped zones and Road Option 2 in order to confirm, revise and/or update as needed the archaeological potential ratings assigned during background research. This was followed by a ground survey involving close surface inspection and subsurface shovel testing of zones rated as having Moderate or Higher potential, either initially during background research or subsequent to the helicopter over-flight. Zones considered to have Low archaeological potential following over-flight were not subject to a ground survey.

This 2012 work resulted in the identification of one archaeological site and six contemporary sites. Even though the archaeological site falls outside the Study Area as configured in September 2012, its proximity to infrastructure planned at that time warranted testing as a precautionary / due diligence measure. In accordance with the provincial *Historic Resources Act* (1985) and the guidelines for historic and heritage resources research in Newfoundland and Labrador, no additional field assessment or mitigation is required or recommended for the sites identified in 2012.

In early 2013, the Project Development Area (PDA) was revised. To determine if the alterations resulted in infrastructure being shifted to areas that had not been subject to historic and heritage resources assessment, the updated PDA was superimposed over mapping of the 2012 Study Area. While it was confirmed that the vast majority of the PDA had been previously assessed, additional field work was determined to be necessary. An evaluation of the revised PDA suggested a rating of Higher for three additional zones (JL-35, JL-36 and JL-37), based on their proximity to shorelines and prominent points of land that project out into waterbodies, similar to the Pre-contact Period site identified in 2012. One zone (JL-38) suggested a rating of Moderate, due to its proximity to a large waterbody. The third additional zone (JL-39) was assigned a rating of Low, as it was bordered by a number of similar Low potential zones over-flown during the 2012 field study. A Stage 1 Assessment of Zones JL-35 to JL-39 was completed in August 2013.

Despite a walkover and thorough visual inspection of Zones JL-35 to JL-38, and excavation of 20 test pits at six separate locations, no archaeological sites were identified, and the zone ratings on the Project mapping have been revised to indicate a Low archaeological potential, similar to Zone JL-39. Over the course of the 2013 Stage 1 Assessment field study, one



contemporary site was identified, which does not require any additional field investigation or mitigation under the *Historic Resources Act* (1985).

A copy of the final archaeological potential mapping is included below (Figure 6.1). The information included on the map is now available for use by the Proponent and the Regulatory Agency – the Provincial Archaeology Office (PAO) - as a guide to the archaeological potential of the PDA in the event Project infrastructure requires further alterations or adjustments for geotechnical and/or environmental reasons.

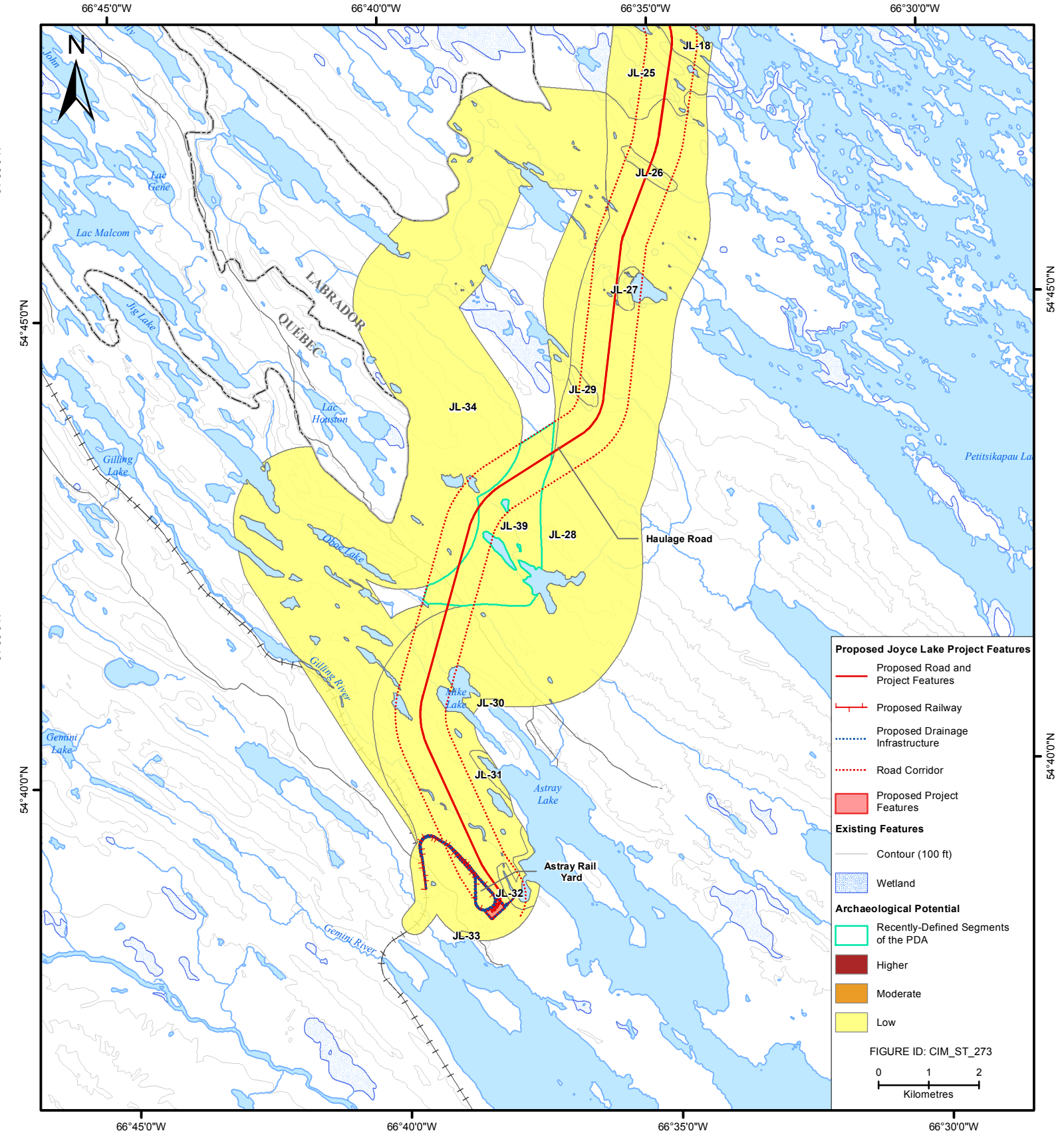
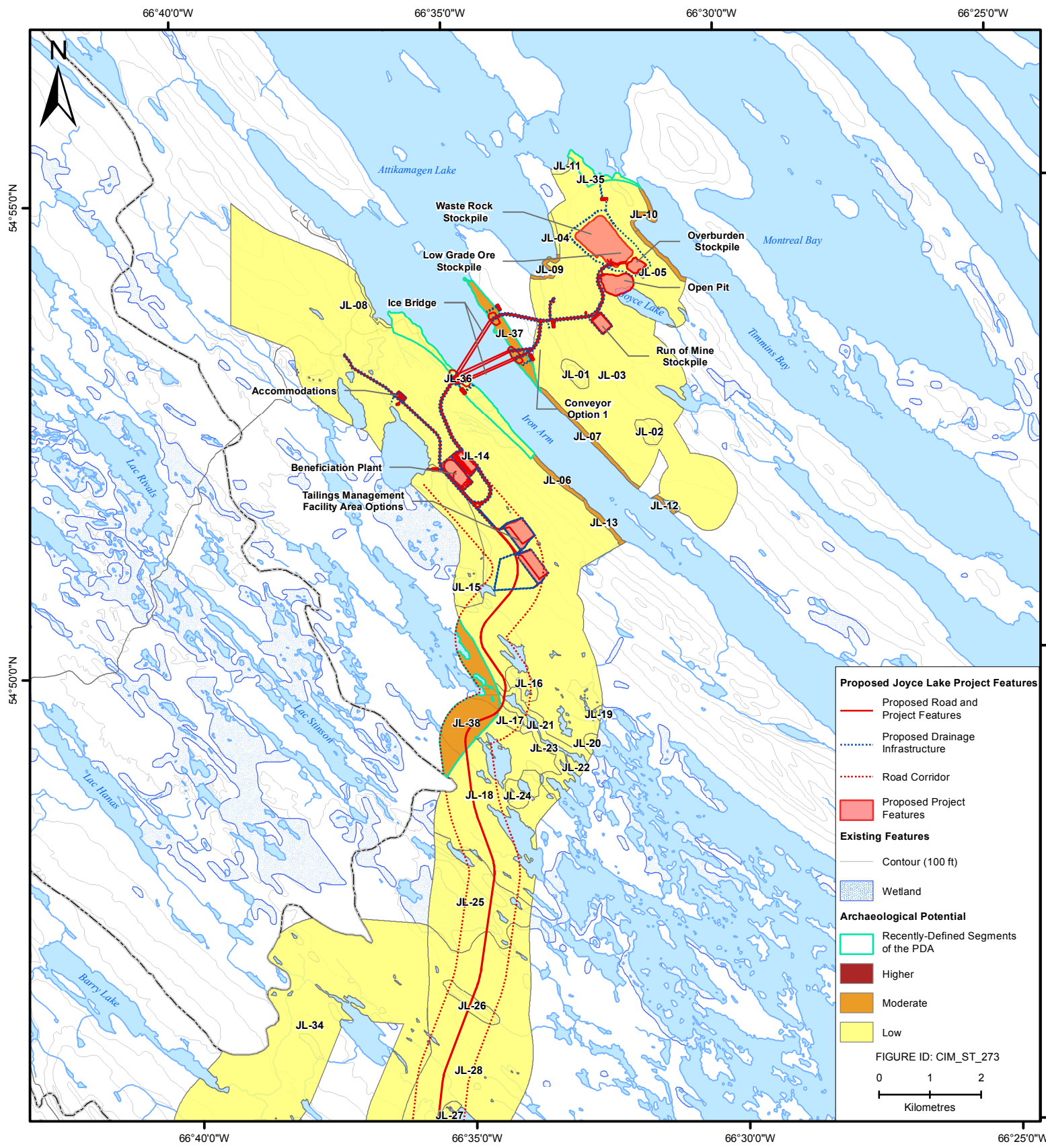


FIGURE TITLE: Final Archaeological Potential Mapping			
CLIENT: LABEC CENTURY IRON ORE INC.			
CHECKED BY: Z. Bartlett	FIGURE ID: FIGURE 6.1	PROJECT NUMBER 121810649	FIGURE SOURCES: Project features provided by CIMA+ version 14 recieved 2013/07/24. Basemap information from NRCan CanVec database and Newfoundland and Labrador Department of Natural Resources.





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