

# **Archaeological Consulting**

**Prepared by: Matrix Research Ltd.** 

Prepared for: Canadian Forest Products Ltd.

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Archaeological Data Inventory of the Quesnel Forest District, 2007.

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Doug Glaum and Eric Forgeng of the Archaeology Branch, Ministry of Tourism Sport and the Arts met with us to discuss the project and offered direction and advice. Al Mackie provided current lists of heritage permits issued by the branch as well as bibliographic tools to aid us in the search for pertinent reports and / or publications. David Suttill provided clarification on the origin of some spurious Borden numbers contained in a permit report. John McMurdo provided information on previously recorded archaeological sites in the Quesnel Forest District.

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Although many people and organizations provided the data necessary for the project, Matrix Research Ltd. alone is responsible for the accuracy of the final product.

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## 1.0 INTRODUCTION

This study was conducted at the request of Canadian Forest Products Ltd. The objective of the project was to build on four previous archaeological data inventory projects conducted in the Quesnel Forest District that compiled data resulting from previous archaeological assessments and research (Map 1). Weldwood of Canada Limited initiated an inventory project of this kind in three of their operating areas in 2004 that covered 34 BCGS 1:20,000 map sheets (McNeney, 2004). In 2005, Canfor and the Nazko First Nation initiated a similar inventory project for 6 BCGS 1:20,000 map sheets (Berkey, 2005). In 2006 Nazko First Nation sponsored a project that added 10 more BCGS 1:20,000 map sheets (Anderson, 2006) and Canfor initiated a data inventory project that added another 73 BCGS 1:20,000 map sheets (McNeney, 2006). The current data inventory project includes data for the remaining 78 BCGS 1:20,000 map sheets in Quesnel Forest District that were not included, or only partially included, in the study areas of the previous inventories as well as all archaeological data accumulated during the 2006 field season. This project completes the archaeological data inventory for the Quesnel Forest District up to and including 2006 and represents the accumulated archaeological record of over thirty years of archaeological work in the region.

In addition to compiling archaeological assessment information, the Quesnel Forest District heritage trail inventory was also updated and refined to include new trail data acquired during archival research at the National Archives in Ottawa and the Hudson's Bay Archives in Winnipeg. A detailed archaeological site database was also constructed that records a series of attributes for all recorded archaeological sites that relate to the position of the site relative to biophysical and cultural landscape features that will prove useful during future analyses related to predictive modeling.

By compiling existing archaeological assessment data in a Geographic Information System (GIS) format, this study aims to allow its users to quickly identify the locations of previously assessed areas and to query the results and details of each assessment. This GIS database provides an effective tool for managing archaeological assessment needs and archaeological values. It will prove to be an invaluable tool for future archaeological overview assessments and predictive models. The following steps were taken to achieve the outlined goals:

- 1. All relevant archaeological data and sources were reviewed.
- 2. Previously assessed areas (cut blocks, roads, inventory areas, etc.) were digitized as polygons in a GIS format.
- 3. Archaeological assessment data and results were entered into attribute tables in a GIS database that is spatially linked to the assessment area polygons.
- 4. Archaeological sites and cultural heritage sites (post-1846 CMTs, historic sites) were digitized as polygons and heritage trails were digitized as lines.
- 5. Archaeological site data, cultural heritage site data, and heritage trail data were entered into attribute tables as a GIS database that is spatially linked to the site polygons and trail lines.

Standards followed during this study include those contained in the *British Columbia Archaeological Impact Assessment Guidelines* (Archaeology Branch 1998) and the *British Columbia Archaeological Inventory Guidelines* (Archaeology Branch 2000).

#### **Definitions**

This study incorporates cultural heritage resource data. According to the *Heritage Conservation Act* (Province of British Columbia 1986), cultural heritage resources include both protected and non-protected resources. This broad definition encompasses a wide variety of site categories such as archaeological and traditional use sites. An archaeological site is any geographical location that contains physical evidence of past human activity. Archaeological sites that predate 1846 AD are automatically protected by the *Heritage Conservation Act*. Examples include lithic scatters, cultural depressions, petroglyphs, and pictographs. Traditional use sites post-date 1846 AD and represent a resource category that has meaning in cultural tradition both conceptually (i.e. spiritually) and tangibly (i.e. through traditional physical activity). These resources are often representative of geographically defined areas that have traditionally been used by one or more contemporary groups of aboriginal people for one or more culturally significant activities, such as bathing pools and locations of significant events. Also included under this definition are resource gathering areas, such as post-1846 culturally modified tree (CMT) sites. For purposes here, cultural heritage resources will refer to historic sites, post-1846 trails and post-1846 CMT sites, resources that are not automatically protected under the *Heritage Conservation Act*.

An archaeological overview assessment (AOA) is meant to determine the archaeological resource potential of a given area and involves research into natural and cultural factors affecting archaeological potential. An archaeological impact assessment (AIA) can be defined as a detailed archaeological survey of a proposed development area where potential conflict between archaeological resources and the proposed development have been identified. Typically during AIAs, subsurface testing is implemented in order to identify any buried archaeological resources that may be present. A preliminary field reconnaissance (PFR), conversely, can be defined as a preliminary walk through of a proposed development area in order to collect biophysical data, determine archaeological potential, and recommend or perform an AIA, if deemed necessary. Both of these types of surveys have the potential to result in the discovery of archaeological sites. Surveys strictly for the purpose of locating CMTs are usually done in the winter and do not have the same potential to result in the discovery of archaeological sites (other than CMTs) due to conditions of snow, frozen ground, or reduced visibility. Inventory projects are typically designed to identify and record archaeological resources within a given study area. While inventory projects often result in the identification of many archaeological sites, those sites are rarely subjected to detailed assessment.

This study compiles the results of archaeological assessments completed in the study area. This study does not address, evaluate or comment on traditional aboriginal use of the area and should not be considered valid for that purpose.

## **Project Deliverables**

Deliverables resulting from this study include GIS digital map files with associated attribute tables containing all relevant information, this written report, and a detailed archaeological site database. There are four main GIS coverages with associated attribute tables, one each for assessment areas, archaeological sites, cultural heritage resource sites, and cultural heritage trails. A fifth GIS coverage of archaeological sites has an associated attribute table containing only the site designation numbers. All GIS and database files, as well as an electronic copy of this report in PDF format are contained on the CD located in the back cover of this report.

#### **Use of Archaeological Data**

Please note that archaeological site location information is contained in the digital information. The Archaeology Branch has authority over access to this information in accordance with the Heritage Conservation Act. This information is provided to archaeologists, development proponents, and other concerned individuals on a need to know basis. The site information provided in these files is in agreement with the Third Party Access section of the Heritage Register Data Request Form. Under the terms of the data request submitted to the Archaeology Branch for this project, the archaeological site information can be used by Canadian Forest Products Ltd., other forest licensees, First Nations, and the Ministry of Forests but cannot be distributed to any other third parties without the written permission of the Archaeology Branch. Copyright of digital site information belongs exclusively to the Province of British Columbia.

The database was compiled from archaeological permit reports for planning purposes and to serve as an overview of archaeological survey and site information. It is not intended to amend or replace management recommendations provided in the original permit reports. Furthermore, the data represents areas where previous survey / assessment has taken place; it does not represent areas where no further archaeological study is needed. Report references are provided throughout the database to ensure easy access to the results and recommendations of individual assessments.

## **Data Currency**

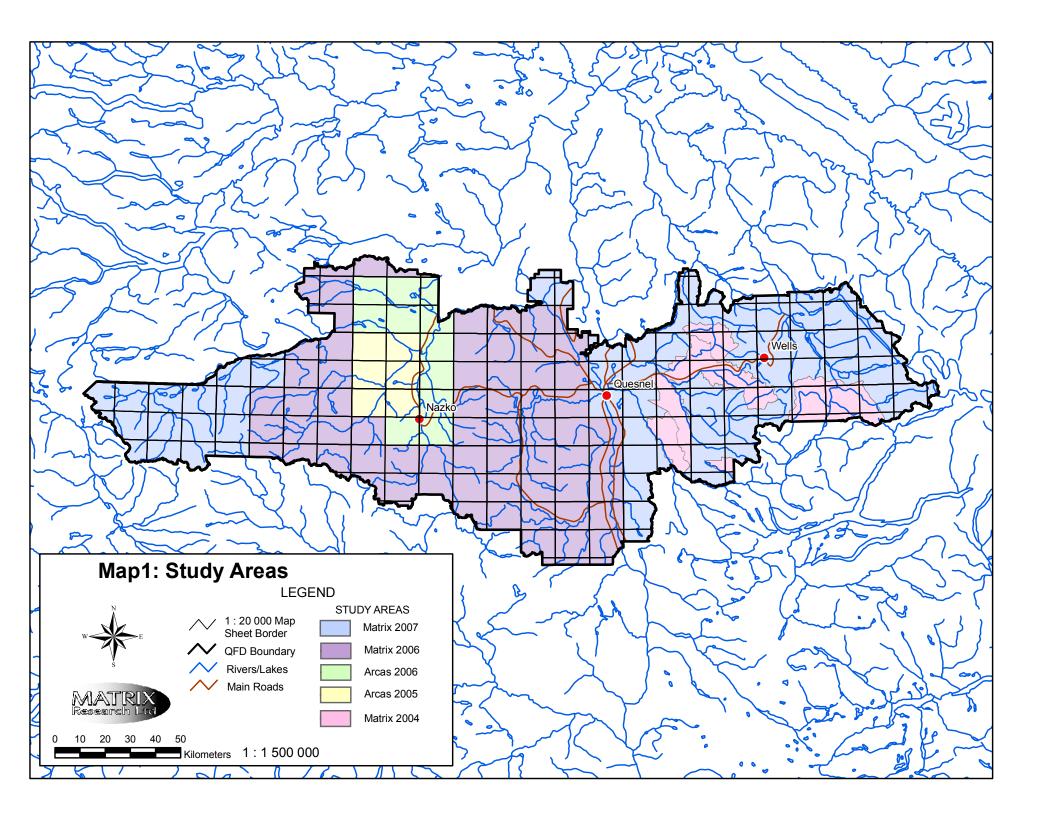
It is important to note that the archaeological data summarized during this project changes through time as more assessments are conducted and sites are located or updated. The utility of a database of this type is enhanced by periodic updates as new data become available.

Archaeological site data contained in this database is current as of March 2, 2007 (the date of the heritage data request response from the Archaeology Branch). We also included data for archaeological sites recorded by Matrix Research Ltd. but for which site forms had been submitted after March 2, 2007. These sites were included so that the data set would be as complete as possible.

Archaeological assessment data is complete up to and including the 2006 permit year. At the time of this project not all 2006 permit reports had been submitted to the Archaeology Branch but we contacted all archaeological consultants who conducted permitted archaeological work within the Quesnel Forest District and they kindly supplied us with the necessary information.

Data on cultural heritage resource sites is as current as the permit reports from which the data were compiled.

Heritage trail data is current to March 31, 2007. All maps containing trails that were obtained during the archival research component of the project have been mapped and are included in the trail layer. However, we are still awaiting delivery of microfiche copies ordered from the archives and were not in receipt of these items prior to the project deadline. As a result, there are trails that will need to be added to the trail layer at some time in the future.



## 2.0 BACKGROUND AND PROJECT AREA

# 2.1 The Study Area

The study area encompasses the entire Quesnel Forest District (Map 1). The Quesnel Forest District represents a land base of land base of 2,075,876 hectares.

## 2.2 Previous Archaeological Research

Previous archaeological research in the study area falls into three main categories, archaeological overview assessment (AOA), archaeological impact assessment (AIA) and archaeological inventory study (AIS). Other studies not included in this project, but of note include regional overview assessments (Bussey and Alexander 1992), cultural heritage overviews (Alexander 1997), data gap analysis (Equinox 1997), and a GIS model of archaeological potential for the Quesnel Forest District (Arcas 1998). Prior to the creation of an archaeological overview model for the forest district, site-specific archaeological overview assessments of forest development plans were conducted (Will and Rousseau, 1995, Equinox and Arcas, 1996).

Most of the archaeological assessments conducted within the study area were prompted by the requirement for forest developers to conduct archaeological impact assessments (starting in 1995 under the *Forest Practices Code*, Section 17; Ministry of Forests 1995), or were large scale inventory studies conducted in the 1970's. Throughout the 1970's and 1980's various archaeological impact assessment surveys were conducted in the study area at the request of the Heritage Conservation Branch (Archaeology Division). These assessments were typically in response to referrals submitted to the Branch by various governmental land use and planning agencies.

Heritage Inspection Permits (HIPs) issued by the Archaeology Branch that pertain to archaeological work conducted in the study area include the following (Table 1).

Table 1: List of Heritage Inspection Permits Relevant to the Study Area.

1970-014         1992-057         1996-196         2001-093         2004-0           1970-024         1992-071         1996-248         2001-113         2004-0           1971-001         1993-067         1996-301         2001-131         2004-0           1971-030         1993-078         1997-019         2001-134         2004-0           1975-004         1993-096         1997-115         2001-137         2004-0           1976-005         1993-097         1995-217         2001-238         2004-0           1977-017         1993-111         1997-218         2001-254         2004-0           1978-007         1993-131         1997-220         2001-258         2004-0           1978-009         1994-036         1997-223         2001-291         2004-0           1979-006         1994-056         1997-244         2001-376         2004-0           1979-013         1994-103         1998-068         2002-065         2005-0           1979-022         1995-052         1998-149         2002-138         2005-0           1981-025         1995-076         1998-155         2002-178         2005-0           1983-016         1995-103         1998-327         2002-182         2005-0 </th <th>077 078 082 104</th>	077 078 082 104
1971-001         1993-067         1996-301         2001-131         2004-0           1971-030         1993-078         1997-019         2001-134         2004-0           1975-004         1993-096         1997-115         2001-137         2004-0           1976-005         1993-097         1995-217         2001-238         2004-0           1977-017         1993-111         1997-218         2001-254         2004-0           1978-007         1993-131         1997-220         2001-258         2004-0           1978-009         1994-036         1997-223         2001-291         2004-0           1979-006         1994-056         1997-244         2001-376         2004-0           1979-013         1994-103         1998-068         2002-065         2005-0           1979-015         1994-110         1998-069         2002-069         2005-0           1981-025         1995-052         1998-149         2002-138         2005-0           1982-018         1995-076         1998-155         2002-178         2005-0           1983-016         1995-103         1998-327         2002-182         2005-0           1983-034         1995-105         1999-002         2002-185         2005-0 </td <td>078 082 104 144</td>	078 082 104 144
1971-030         1993-078         1997-019         2001-134         2004-0           1975-004         1993-096         1997-115         2001-137         2004-0           1976-005         1993-097         1995-217         2001-238         2004-0           1977-017         1993-111         1997-218         2001-254         2004-0           1978-007         1993-131         1997-220         2001-258         2004-0           1978-009         1994-036         1997-223         2001-291         2004-0           1979-006         1994-056         1997-244         2001-376         2004-0           1979-013         1994-103         1998-068         2002-065         2005-0           1979-022         1995-052         1998-149         2002-138         2005-0           1981-025         1995-076         1998-155         2002-178         2005-0           1983-016         1995-103         1998-327         2002-181         2005-0           1983-034         1995-105         1999-002         2002-185         2005-0           1986-011         1995-121         1999-134         2002-230         2005-0           1986-011B         1995-193         1999-156         2002-394         2005-0<	082 104 144
1975-004         1993-096         1997-115         2001-137         2004-1           1976-005         1993-097         1995-217         2001-238         2004-1           1977-017         1993-111         1997-218         2001-254         2004-1           1978-007         1993-131         1997-220         2001-258         2004-1           1978-009         1994-036         1997-223         2001-291         2004-2           1979-006         1994-056         1997-244         2001-376         2004-2           1979-013         1994-103         1998-068         2002-065         2005-0           1979-015         1994-110         1998-069         2002-069         2005-0           1979-022         1995-052         1998-149         2002-138         2005-0           1981-025         1995-076         1998-155         2002-178         2005-0           1983-016         1995-080         1998-191         2002-181         2005-0           1983-034         1995-105         1999-002         2002-185         2005-0           1986-011         1995-121         1999-134         2002-198         2005-0           1986-011B         1995-193         1999-156         2002-394         2005-0<	104 144
1976-005         1993-097         1995-217         2001-238         2004-7           1977-017         1993-111         1997-218         2001-254         2004-7           1978-007         1993-131         1997-220         2001-258         2004-7           1978-009         1994-036         1997-223         2001-291         2004-7           1979-006         1994-056         1997-244         2001-376         2004-7           1979-013         1994-103         1998-068         2002-065         2005-0           1979-015         1994-110         1998-069         2002-069         2005-0           1979-022         1995-052         1998-149         2002-138         2005-0           1981-025         1995-076         1998-155         2002-178         2005-0           1983-018         1995-080         1998-191         2002-181         2005-0           1983-034         1995-103         1998-327         2002-182         2005-0           1984-020         1995-106         1999-119         2002-198         2005-0           1986-011         1995-121         1999-134         2002-230         2005-0           1986-011B         1995-193         1999-156         2002-394         2005-0<	144
1977-017         1993-111         1997-218         2001-254         2004-7           1978-007         1993-131         1997-220         2001-258         2004-7           1978-009         1994-036         1997-223         2001-291         2004-7           1979-006         1994-056         1997-244         2001-376         2004-7           1979-013         1994-103         1998-068         2002-065         2005-0           1979-015         1994-110         1998-069         2002-069         2005-0           1979-022         1995-052         1998-149         2002-138         2005-0           1981-025         1995-076         1998-155         2002-178         2005-0           1982-018         1995-080         1998-191         2002-181         2005-0           1983-034         1995-103         1998-327         2002-182         2005-0           1984-020         1995-106         1999-002         2002-185         2005-0           1986-011         1995-121         1999-134         2002-230         2005-0           1986-011B         1995-193         1999-156         2002-394         2005-0	
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1978-009       1994-036       1997-223       2001-291       2004-3         1979-006       1994-056       1997-244       2001-376       2004-4         1979-013       1994-103       1998-068       2002-065       2005-0         1979-015       1994-110       1998-069       2002-069       2005-0         1979-022       1995-052       1998-149       2002-138       2005-0         1981-025       1995-076       1998-155       2002-178       2005-0         1982-018       1995-080       1998-191       2002-181       2005-0         1983-016       1995-103       1998-327       2002-182       2005-0         1984-020       1995-105       1999-002       2002-185       2005-0         1986-011       1995-121       1999-134       2002-230       2005-0         1986-011B       1995-193       1999-156       2002-394       2005-0	
1979-006       1994-056       1997-244       2001-376       2004-4         1979-013       1994-103       1998-068       2002-065       2005-0         1979-015       1994-110       1998-069       2002-069       2005-0         1979-022       1995-052       1998-149       2002-138       2005-0         1981-025       1995-076       1998-155       2002-178       2005-0         1982-018       1995-080       1998-191       2002-181       2005-0         1983-016       1995-103       1998-327       2002-182       2005-0         1983-034       1995-105       1999-002       2002-185       2005-0         1984-020       1995-106       1999-119       2002-198       2005-0         1986-011       1995-121       1999-134       2002-230       2005-0         1986-011B       1995-193       1999-156       2002-394       2005-0	172
1979-013         1994-103         1998-068         2002-065         2005-065           1979-015         1994-110         1998-069         2002-069         2005-065           1979-022         1995-052         1998-149         2002-138         2005-065-076           1981-025         1995-076         1998-155         2002-178         2005-076-076           1982-018         1995-080         1998-191         2002-181         2005-076-076-076           1983-016         1995-103         1998-327         2002-182         2005-076-076-076-076-076           1983-034         1995-105         1999-002         2002-185         2005-076-076-076-076-076-076-076           1984-020         1995-106         1999-119         2002-185         2005-076-076-076-076-076-076-076-076-076-076	388
1979-015       1994-110       1998-069       2002-069       2005-0         1979-022       1995-052       1998-149       2002-138       2005-0         1981-025       1995-076       1998-155       2002-178       2005-0         1982-018       1995-080       1998-191       2002-181       2005-0         1983-016       1995-103       1998-327       2002-182       2005-0         1983-034       1995-105       1999-002       2002-185       2005-0         1984-020       1995-106       1999-119       2002-198       2005-0         1986-011       1995-121       1999-134       2002-230       2005-0         1986-011B       1995-193       1999-156       2002-394       2005-0	414
1979-022       1995-052       1998-149       2002-138       2005-7         1981-025       1995-076       1998-155       2002-178       2005-7         1982-018       1995-080       1998-191       2002-181       2005-7         1983-016       1995-103       1998-327       2002-182       2005-7         1983-034       1995-105       1999-002       2002-185       2005-7         1984-020       1995-106       1999-119       2002-198       2005-7         1986-011       1995-121       1999-134       2002-230       2005-7         1986-011B       1995-193       1999-156       2002-394       2005-7	078
1981-025       1995-076       1998-155       2002-178       2005-7         1982-018       1995-080       1998-191       2002-181       2005-7         1983-016       1995-103       1998-327       2002-182       2005-7         1983-034       1995-105       1999-002       2002-185       2005-7         1984-020       1995-106       1999-119       2002-198       2005-7         1986-011       1995-121       1999-134       2002-230       2005-7         1986-011B       1995-193       1999-156       2002-394       2005-7	)84
1982-018       1995-080       1998-191       2002-181       2005-7         1983-016       1995-103       1998-327       2002-182       2005-7         1983-034       1995-105       1999-002       2002-185       2005-7         1984-020       1995-106       1999-119       2002-198       2005-7         1986-011       1995-121       1999-134       2002-230       2005-7         1986-011B       1995-193       1999-156       2002-394       2005-7	103
1983-016       1995-103       1998-327       2002-182       2005-7         1983-034       1995-105       1999-002       2002-185       2005-7         1984-020       1995-106       1999-119       2002-198       2005-7         1986-011       1995-121       1999-134       2002-230       2005-7         1986-011B       1995-193       1999-156       2002-394       2005-7	116
1983-034     1995-105     1999-002     2002-185     2005-7       1984-020     1995-106     1999-119     2002-198     2005-7       1986-011     1995-121     1999-134     2002-230     2005-7       1986-011B     1995-193     1999-156     2002-394     2005-7	166
1984-020     1995-106     1999-119     2002-198     2005-2       1986-011     1995-121     1999-134     2002-230     2005-2       1986-011B     1995-193     1999-156     2002-394     2005-3	177
1986-011     1995-121     1999-134     2002-230     2005-2       1986-011B     1995-193     1999-156     2002-394     2005-3	194
1986-011B 1995-193 1999-156 2002-394 2005-3	237
	267
1986-012 1995-195 1999-333 2003-070 2005-3	335
	398
1988-038 1995-210 1999-342 2003-106 2006-0	002
1988-066         1995-230         2000-083         2003-114         2006-7	104
1989-039         1995-250         2000-118         2003-132         2006-7	110
1989-106 1996-001 2000-121 2003-134 2006- <sup>2</sup>	114
1991-054 1996-069 2000-134 2003-139 2006- <sup>2</sup>	116
1991-068 1996-087 2000-300 2003-182 2006- <sup>2</sup>	168
1991-079 1996-103 2000-303 2003-189	
1992-019 1996-106 2000-305 2003-220	
1992-053 1996-163 2000-392 2003-322	
1992-054 1996-164 2001-071 2003-330	

## 3.0 METHODOLOGY

#### 3.1 Research

#### **Assessment Areas**

Previous archaeological assessment data was obtained through the review of Heritage Permit final and interim reports resulting from archaeological impact assessments and inventories conducted in the study area. These permit reports, as well as harder to find non-permit reports, were obtained from a number of sources other than the existing library at Matrix Research Ltd. Sources included the Archaeology Branch, Canadian Forest Products Ltd., West Fraser Mills Ltd., Tolko Industries Ltd., the Ministry of Forests and Range, Cariboo Forest Consultants Ltd., Arcas Consulting Archaeologist Ltd., and Terra Archaeology Ltd. The Archaeology Branch maintains a list of all heritage inspection permits issued in the Province and a catalogue of all associated permit reports. These references were searched for any mention of the study area (e.g. Quesnel Forest District, Quesnel, Nazko, Kluskus, the Blackwater, Baezaeko and Euchiniko Rivers, Merston and Baker Creek, etc.). The bibliographies of all major reports were also reviewed for references to other archaeological reports pertinent to the study area.

The Ministry of Forests and Range, Quesnel had been tracking archaeological impact assessments from 1999 to 2003. This tracking system included a spreadsheet of proposed development areas where an archaeological assessment was completed. This list was submitted annually by all licensees in the forest district and contains information on the development area, archaeological consultant, permit number and results. The UTM locations of development areas and recorded sites were also tracked and digitized (only partially) as a point feature. This information was used to track down heritage inspection permit reports that may be relevant to the study area and importantly as a quality check that all assessment areas had been accounted for.

## **Archaeological Sites**

Archaeological site data was acquired from a few sources. The Archaeology Branch of the Ministry of Tourism, Sport, and the Arts maintains the Provincial Heritage Register, which includes information for all recorded archaeological sites in the province. Data was obtained from the Archaeology Branch in the form of a B.C. Archaeological Site Data Request. The request was submitted on February 20, 2007 and the data was received March 2, 2007. Site data was provided in an ESRI shapefile format along with a Microsoft Access database file. Unfortunately, the Archaeology Branch does not have a method to supply detailed site forms and site maps during a data request. The detailed site forms and maps were manually downloaded site-by-site from the Archaeology Branch Remote Access to Archaeological Data (RAAD) website. Archaeological site information was also obtained for archaeological sites recorded during 2006 that had not yet been entered in the Provincial Heritage Register. This information was either on file at Matrix Research Ltd. or was obtained from interim reports supplied by other archaeological consultants.

## **Cultural Heritage Resource Sites**

Cultural heritage resource sites are those sites post-dating 1846 and therefore not automatically protected under the Heritage Conservation Act. Prior to 2001, the Archaeology Branch entered information for these sites into the Provincial Heritage Register and provided permanent site numbers (Borden

numbers). Since 2001, however, there has been no central repository for information on these sites. Most archaeological consultants record these sites when encountered during archaeological impact assessments and include the information in their permit reports. Information on these sites was obtained from the Provincial Heritage Register for post-1846 sites recorded prior to 2001. For post-1846 sites recorded during and after 2001 the information was obtained from permit and non-permit reports on file at the Archaeology Branch or development proponent office.

#### **Trails**

A heritage trail database was created in 1998 as part of the *GIS Modelling of Archaeological Potential, Quesnel Forest District, 1998* (Howe and Klassen 1998). Although this data set provided a good baseline of information on heritage trails in the study area, it was recognized as being incomplete. During the current project, we consulted the extensive archival map microfiche collection housed at the offices of both Norcan Consulting Ltd. and Matrix Research Ltd. that had been compiled during extensive research conducted over the years at the British Columbia Archives in Victoria. New trail data was added to the inventory from these in-house sources. Up to this point all trail research had focused on information available in British Columbia and these resources had been all but exhausted. The Hudson's Bay Archives in Winnipeg, in particular, and also the National Archives in Ottawa were seen as having untapped potential as sources for additional trail information. Researchers were sent to both archives during the week of March 5-9, 2007. A considerable amount of new information was obtained. Unfortunately, microfiche copies and digital scans of archival maps need to be ordered and take 3-4 weeks to receive. Some of the information arrived prior to the completion date for this project and the trail information was added. Unfortunately, much of the information is still en route and will need to be incorporated into the database at a later date.

## 3.2 Creating the Database

Assessment data was compiled in an attribute table and linked spatially to the corresponding digital map information. Data selected for entry included specifics concerning development information and location, and assessment information and results. In total there are four shape file layers that are spatially linked to the database in the attribute table. The shape file headings and the linked database information include: Assessment\_Areas\_2007 (attribute table includes information on proponent, development area, survey and site type if sites were found, report title and permit number, etc.); Archaeological\_Sites\_2007 (attribute table includes information on site number and type, permit number, assessor's name, the confidence level in the site location and boundaries and whether or not these were corrected from RAAD, etc.), Cultural\_Heritage\_Resources\_2007 (attribute table includes information on site number and type and the development information etc.) and Recorded\_Trails\_2007 (attribute table includes information on trail number and type, general route, reference information, etc.).

## 3.3 GIS Methods and Application

The digital mapping was done using ArcGIS, ArcToolbox and ArcCatalog. A standard NAD 83, UTM Zone 10 projection was applied to all files using ArcToolbox. Assessment areas were digitized using AIA interim report maps and final reports for inventory studies or early impact assessment studies (1970-

1980). Archaeological Overview Assessment (AOAs) maps are rarely included in final reports and therefore were not accessible for inclusion in the project. The only AOAs included in the assessment layer are those performed by Matrix Research Ltd. from 2002 to present. Previous assessment areas for Matrix Research Ltd. were likewise already available in a compatible digital format that was easily imported into the layer. All other assessment areas were digitized with the aid of forest development plan (FDP) maps and / or specific features for rectification. FDP maps were used whenever possible to aid with digitizing previously surveyed areas, however, block shapes found on these maps did not always correspond to surveyed block boundaries. In all cases the assessment area boundaries were used. Features used for rectification of assessment areas included streams, block boundaries, forest cover, roads, modeled high potential and contours.

Archaeological site information was imported from RAAD and corrected, if necessary. Site locations and boundaries in interim or final reports were checked against the polygon supplied by RAAD and they were corrected, if necessary, using orthophotos, forest cover, site maps, description information and site forms. These corrected site polygons will be submitted to the Archaeology Branch. A confidence level for the site location, size and shape was assigned to all archaeological sites. Low confidence refers to sites where the location and size could not be determined. In these cases the site polygons assigned by RAAD were left alone. Moderate confidence refers to sites where the location was corrected from RAAD to match the reports and site forms but the site boundary (polygon size and shape) was not altered. High confidence refers to instances when there was enough information to correct the site's location and/or boundary. In cases where sites have been updated through subsequent survey only the most recent site boundary is displayed. If more than one permit number is associated with a site, the site has more than likely been updated.

Post-1846 CMT site information is also digitized into polygons and saved as a separate layer (Cultural Heritage Resource layer). This information is generally only available in interim reports unless it was recorded in the Provincial Heritage Register and assigned a Borden Number (this practice was common up until 2001 but no longer occurs). CMT site polygons were generally created by buffering individual CMT features at 10 m. CMT sites are located in the archaeological site layer if the site pre-dates 1846.

Trails have also been assigned to a separate layer. Trail information was obtained from four sources: 1) the existing trail database for the Quesnel Forest District (Howe and Klassen 1998); 2) individual assessment reports; 3) existing archival map microfiche collections housed at Norcan Consulting Ltd. and Matrix Research Ltd.; and 4) archival maps obtained during research conducted as part of this project at the National Archives in Ottawa and the Hudson's Bay Archives in Winnipeg. Only trails that can be confidently determined to be cultural heritage trails were included in this inventory.

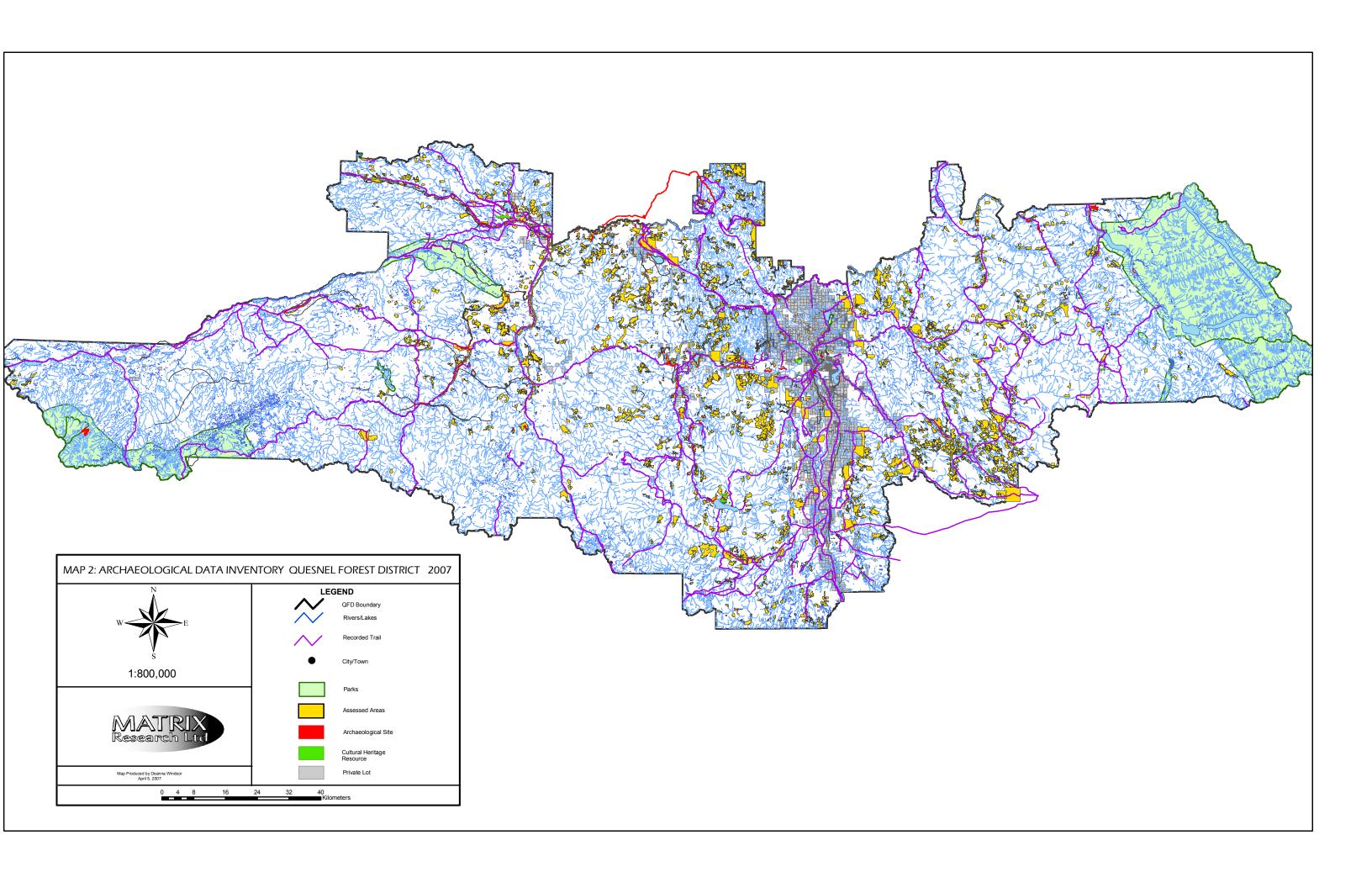
One of the greatest challenges in the project was that assessment areas were not always clear in the reports. This was especially true of inventory studies from the 1970's that do not always depict survey areas on maps and sometimes do not even describe the areas surveyed. In cases when survey areas or block areas were not easily interpreted from the reports, the area was not included in the data inventory. A 50 m wide polygon has been assigned to the survey transect area when these could be determined from the maps and descriptions in the reports. When the survey area could not be determined but archaeological sites were recorded, a minimum 20 m survey area polygon was placed around the site area. This polygon is then spatially linked to the report and survey information in the database. Proposed roads were only considered as part of the assessment area when the proposed road is described as part of the survey area

and results in the report. Assessed proposed road centerlines were buffered at 10 m, creating a 20 m wide area. In instances when a development area was inadvertently assessed on separate occasions, the survey information for each assessment was entered separately.

Several quality checks were performed throughout the project. All archaeological sites located in the study area were automatically checked as described above. A random sample of assessment areas were also checked each day after data entry. At the end of the project a random sample of 20 AIA final reports were checked to ensure that the assessment areas were digitized correctly and that the accompanying database information was correct.

# 4.0 RESULTS

During this project 1320 assessment areas were entered into the inventory (Map 2), for a total of 3,152 archaeological assessment areas digitized to date for the Quesnel Forest District. The total assessed area within the Quesnel Forest District is 135,006 ha, which represents 6.5% of the land base. A total of 1,267 archaeological sites are located within the study area. Three hundred of these sites were entered during this project and the locations and / or boundaries were corrected for 53 of these sites. There are now 414 cultural heritage resource sites (predominantly CMTs) and 121 trails included in the inventory. This improves considerably on the 77 trails included prior to this project and the 162 cultural heritage resource sites entered previously.



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