SUMMARY

Introduction

In December 2006, Baseline Archaeological Services Ltd. (Baseline) was engaged by the Campbell River Forest District (MOF) to undertake a revision of the Northern Nuu-chah-nulth Archaeological Overview Assessment (AOA). The MOF wished to refine and revise the original Arcas Consulting Archeologists Ltd (Arcas) overview model originally created in 1997.

As with the 1997 overview, the purpose of the present study is to assess and map the archaeological potential within the original study area covering approximately 460,000 hectares consisting of TFL 19 as well as some private lands and 'Indian Reserves'. The study area encompasses the asserted traditional territories (also known as Hahoulthees) of the Che:K'tles7et'h', Ehattesaht, Ka;'yu:'K't'h', Mowachaht, Muchalaht, and Nuchatlaht First Nations.

This report is not considered to be a stand alone document. It builds on the original 1997 overview report and adds further information where necessary or discusses pertinent changes from the original study. Otherwise, readers are referred to the original report for background information regarding the original research.

Objectives and Methods

- Along with the original objectives of the 1997 study, this overview was intended to address the additional objective of updating the digital information currently available for the proposed study area.

Access to Information

The results of this overview are presented on digital maps showing different classes of archaeological potential and known archaeological site locations with attached database. The digital data is held by the MOF. Requests for access to digital data or paper printouts of digital plot files should be directed to the MOF. Paper copies of this report were distributed to the MOF.

Results

Two different models were used to classify the archaeological potential of the study area. One model focused on archaeological sites other than CMTs. This model met with varying degrees of success. The second model focused on the potential for the presence of CMTs and the results were improved compared to the 1997 results. On the paper maps, non-CMT archaeological potential is indicated by red polygons for lands considered to have high archaeological potential and yellow polygons for those considered to have moderate archaeological potential, the CMT model results are indicated by green hatchered lines that overlay the non-CMT colours.

CREDITS

Project Manager	Heather Pratt, MA
Data Coordination	Heather Pratt Don Davis, Forsite Ltd.
Model Development	Heather Pratt
Archaeological Site Mapping	Don Davis
GIS Services	Don Davis
Report Drafting	Heather Pratt

ACKNOWLEDGEMENTS

Baseline would like to thank the Campbell River Forest District for their ongoing support and the opportunity to conduct this overview. We would also like to thank the numerous licensees who were involved in this project along with the First Nations within whose Hahoulthees this study took place.

Besides thanking the Campbell River Forest District office in general for their ongoing support of the two AOA projects, we would like to thank Aaron Smeeth specifically for his support.

Baseline would like to also acknowledge Gary Maquinna (Mowachaht/Muchalaht First Nation) for his participation in the groundtruthing component of this project. It was a pleasure to have the opportunity to conduct groundtruthing with him of the study area. Andy Flynn and his boat were also an integral part of the groundtruthing component of this project. The opportunity to spend four days groundtruthing resulted in a great deal of learning and discussion about the past and resulting archaeological potential. It was a valuable trip and everyone was very positive about the experience even when the wind was blowing and the rain was pouring down. **Klecko!**

Although the expertise of many individuals has contributed to making this project what it is, the professional opinions expressed in this report are those of the author and not necessarily those of any individual groups or institutions involved with the study. Baseline is solely responsible for the contents of this report, including any errors, omissions, or shortcomings.

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FIGURES

1.0 INTRODUCTION

This report describes the methods and results of a revised Archaeological Overview Assessment (AOA) of the lands located within the traditional Hahoulthees (asserted traditional territories) of the six Northern Nuu-chah-nulth First Nations on the west coast of Vancouver Island (Che:K'tles7et'h', Ehattesaht, Ka;'yu:'K't'h', Mowachaht, Muchalaht, and Nuchatlaht). This AOA was conducted in order to revise and refine an earlier AOA model developed by Arcas Consulting Archeologists (Arcas) to which this document should be considered an appendix.

The terms of reference for the present project encompassed the West Coast of Vancouver Island. As with the 1997 AOA, the results of this study consist of a series of digital maps and digital files which reside with the Campbell River Forest District office.

The primary objective of this overview is the same as described for the 1997 study which was to map the relative archaeological potential of the study area using a Geographic Information System (GIS)-based predictive model. The overview research was conducted by Baseline with the assistance of Don Davis of Forsite (GIS services). This overview was funded by the Campbell River Forest District (MOF), who was the lead partner on the project.

1.1 Study Area

The study area consists of those lands within the study area as defined by the original AOA (Figure 1). The study area extends from Escalante Point north to the Brooks Peninsula and is approximately 460,000 hectares in area, The study area is entirely located within the Campbell River Forest District and is 200,000 hectares less than the original study area which was a little more than 669,000 hectares.

As described in the original AOA report, there is considerable environmental and cultural diversity in the study area. Figures 2, 3, 4, and 5 provide a general impression of the study area.

1.2 Study Team

The individual members of the study team are listed on the Credit Sheet. Overall project management, documentary research, direct consultation, model development and review, and reporting were the responsibility of Heather Pratt. Don Davis (Forsite) was subcontracted to provide digitized coverages for the revised model developed by Baseline.

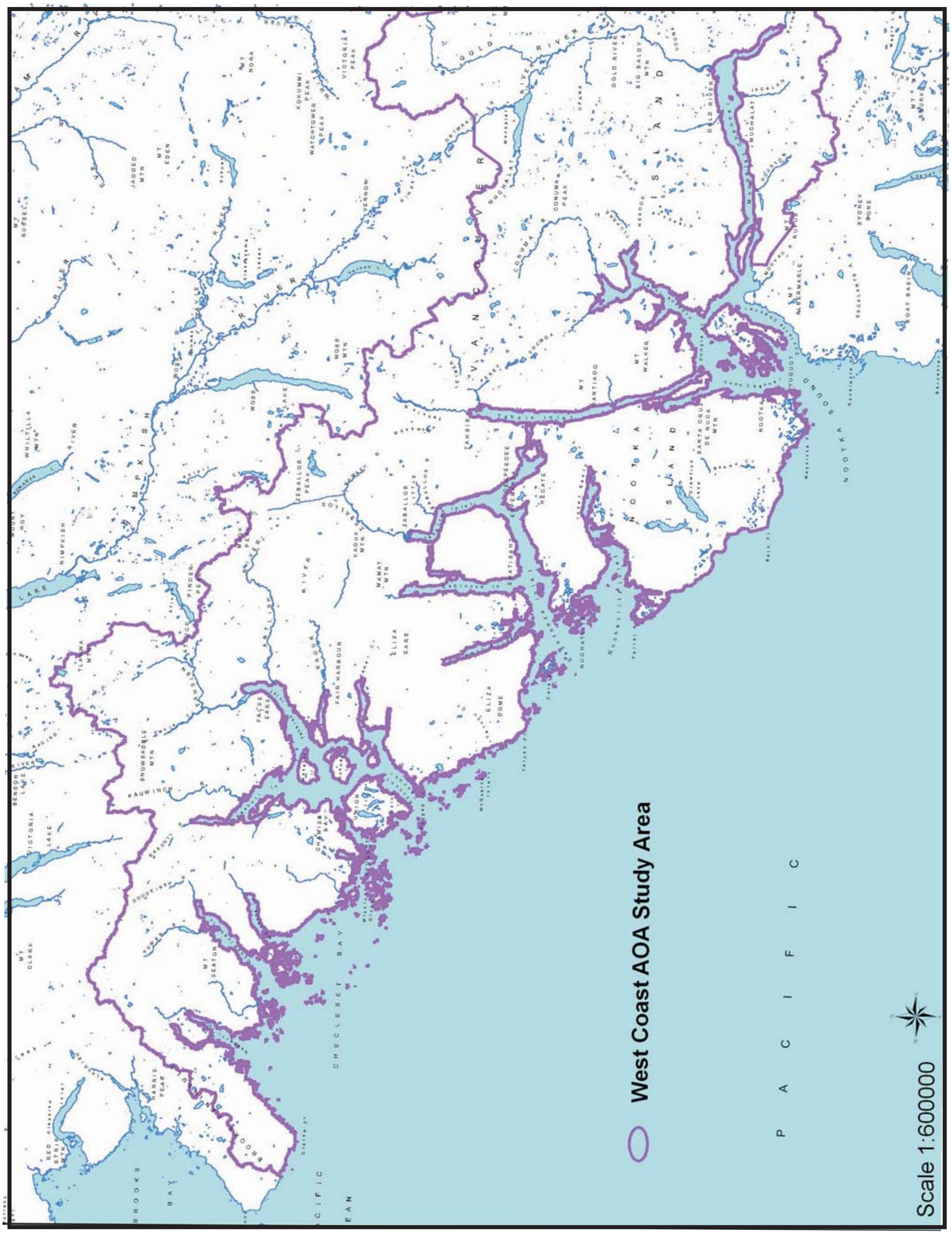

Figure 1. The Study Area.

Figure 2. Muchalat Inlet.

Figure 3. Shoreline Chee-ish DkSo-006, Hanna Channel.

Figure 4. Pictograph Site DjS0-001, Hanna Channel.

Figure 5. Port Eliza.

2.0 ARCHAEOLOGICAL POTENTIAL MODELLING APPROACH

A GIS was used for the revisions to the earlier archaeological potential model because this study is intended to build onto the significant amount of work already done for the original 1997 overview. The most significant change to the GIS model was an attempt to fine tune the models using extensive Near Analysis and negative results of past archaeological surveys.

The present overview research developed two distinct GIS models that are applied in conjunction with each other to assess the potential for archaeological resources over the landscape of the study area. One model focused solely on the potential for culturally modified trees (CMTs). The revised CMT model adopted for this overview predicts the archaeological potential for CMTs within the physical landscape, and predominantly focuses on western redcedar trees greater than 100 years of age. This reasoning is carried over from the original overview research, and assumes that a forest utilization site often reflects traditional use of that location over a long period of time. Therefore, if a particular setting was used 100 years ago, then it is also likely to have been used 200 years ago as well. In contrast, a conscious decision was made to not attempt a model for CMT occurrences in second growth stands, as previous attempts to accomplish this goal had not been very successful.

The second GIS model was developed to predict the potential for non-CMT archaeological resources and the potential for their presence on the landscape. Traditionally, a non-CMT model is the primary focus of most overview projects, but past experience has shown that non-CMT focused modelling does not adequately capture lands exhibiting potential only for CMTs. Nevertheless, the distinct CMT and non-CMT archaeological resource models are intended to work in conjunction with one another in the GIS model.

2.1 Potential Classes

The two models developed for the revised overview study employ slightly different approaches to potential, as discussed below. Both approaches were originally developed and utilized during the previous overview. The following information was also presented in the 1997 overview report written by Arcas.

Non-CMT Resource Potential

Three levels of potential are proposed for non-CMT archaeological resources:

- **Class 1 (High potential, Low constraint)**: This is the highest level of archaeological resource potential. The highest density of archaeological sites, and the greatest range in archaeological site types, is expected for this class. Few or no constraints on use of the landscape are presented by the macro-features. The micro-features are not expected to increase the level of constraints (decrease potential).

- **Class 2 (Moderate potential, Low constraint)**: A moderate-to-high site density and range of site types is expected. This level has some constraints presented by macro-features, but is expected to have areas where micro-features either increase or decrease the level of constraint.

- **Class 3 (Low potential, High constraint)**: A low density of sites and only a few site types is expected. This level has a high degree of constraints resulting from macro-features, and is not expected to have micro-features which decrease the level of constraint (which would increase the level of potential).

CMT Resource Potential

In terms of CMT potential the landscape was regarded as exhibiting either Low or Moderate-to-High potential. It was determined that if the most important macro-features used for modelling (i.e. forest cover, slope, and distance to water) fell within predefined parameters, Moderate-to-High potential for CMTs could be assessed. A preliminary field reconnaissance (PFR) or in-office review would clarify whether or not the micro-topographic landscape features present would increase or decrease the level of constraint and the resulting level of potential.

2.2 Review of Previous Modelling Attempts

This revised GIS model adopted for this study continues the deductive approach of the original overview. "Constraint modelling" has been used successfully in the past and was employed for this study as well. The original Arcas GIS model was revised for the present overview to provide a better modelling outcome. Access to any new digital information was regarded as beneficial.

3.0 AOA METHODOLOGY

3.1 First Nations Consultation

The MOF submitted a call for proposals in December 2006 which was rewarded to Baseline for revision of the 1997 overview. Preliminary discussions with Aaron Smeeth of the MOF resulted in Baseline obtaining some digital TUS data for the revised GIS model. It was hoped that the TUS data could be overlaid onto the overview study area and incorporated into the logical statements as they were revised. However, it was quickly determined that the data was not uniform over the study area and that there were large data gaps. It was also unclear how accurately the digital TUS data was digitized.

A letter of introduction concerning the overview was sent to all the Chief and Councils of the Northern Nuu-chah-nulth communities informing them of the plan to revise the overview and inviting everyone to submit comments prior to the study completion as well as any pertinent data. Ongoing communications between Baseline and the First Nation communities also involved phone calls and correspondence concerning the groundtruthing component and First Nation participation.

3.2 Other Consultation

The GIS-based modelling, map-database linkages, data-set formatting, creation, implementation, and final digital end products was subcontracted to Don Davis of Forsite. Don provided his previous experience of working with overviews and his input concerning matters relating to GIS and GIS modelling.

3.3 Background Research

The background research component of this overview was essentially completed in the context of the 1997 overview project. That data was incorporated into this project when at all possible. The following sections discuss any changes from the original overview that occurred during the present project.

3.3.1 Site Frequency and Distribution

Changes to the study area boundary did not reduce the number of archaeological sites to be considered. As of December 2006, a total of 684 sites had been recorded within the study area. The number of recorded sites at the time of the 1997 overview was 308. This is a significant increase in the number of recorded sites. Figure 6 and Table 1 summarize information about the sites. As with the original overview, the total number of archaeological sites does not match the numbers provided in the Provincial Heritage Register because several archaeological features can occur together within a single recorded site. Each type of archaeological feature recorded from a particular site is treated as if it was a single site and listed in Table 1 accordingly.

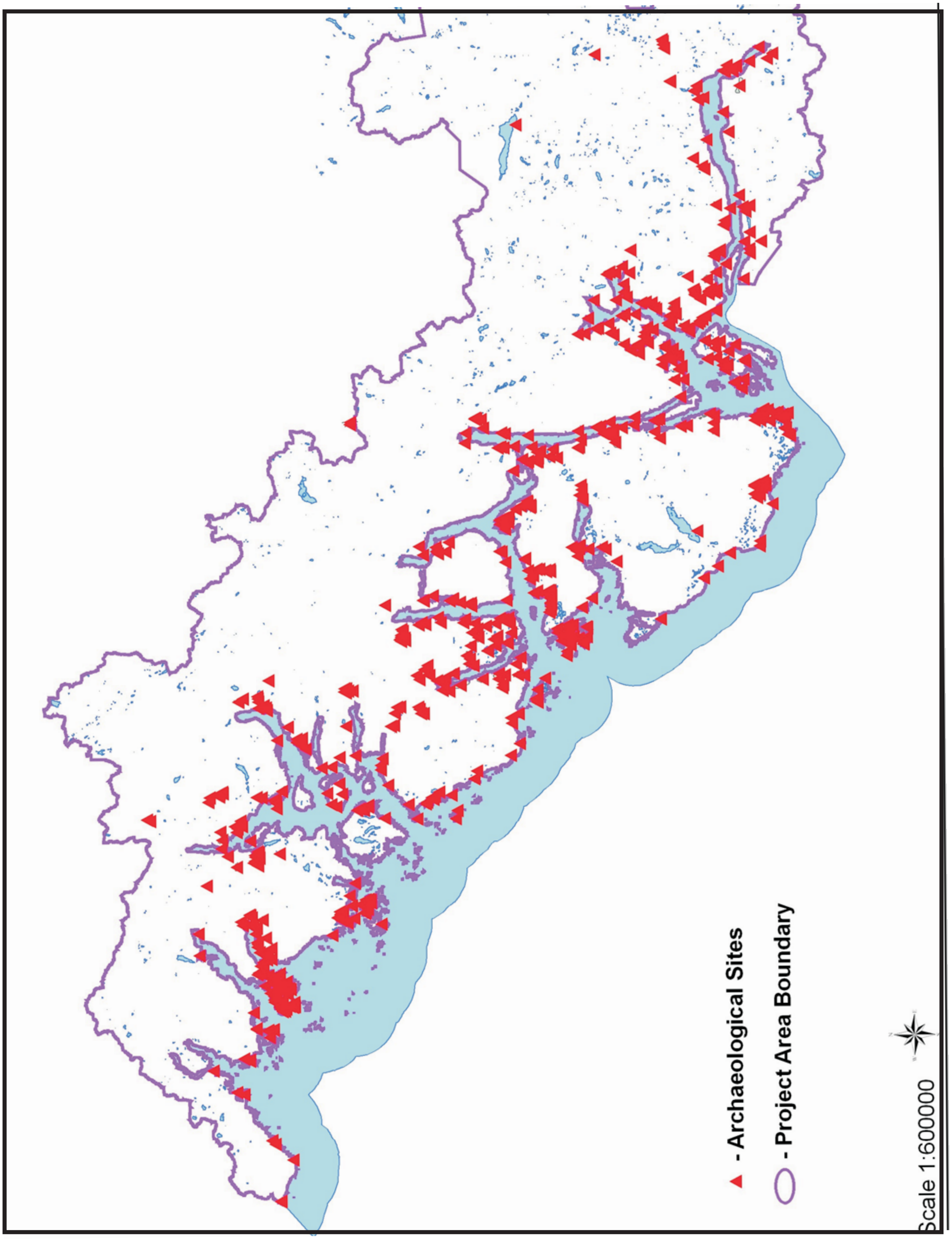

Figure 6. Recorded Archaeological Sites Within the Study Area.

Table 1.a. Archaeological Sites in Study Area by Revised Site Feature Type.

Type	**Borden Block**															
	DjSm	**DjSn**	**DjSo**	**DjSp**	**DjSq**	**DjSr**	**DkSm**	**DkSn**	**DkSo**	**DkSp**	**DkSq**	**DkSr**	**DlSn**	**DlSp**	**DlSq**	**DlSr**
Artifact Scatter	1	1	--	--	--	--	1	--	1	--	--	--	--	--	--	1
Midden Village	--	--	--	8	3	2	3	1	5	8	2	5	--	1	--	4
Midden	1	--	5	9	--	--	2	--	11	8	5	21	--	2	2	9
Rock Art	1	1	1	--	--	--	1	--	1	3	--	1	--	--	--	--
Canoe Run	--	--	--	1	--	--	--	--	--	--	--	--	--	--	--	--
CMT barkstrip-WRC	4	4	5	8	19	--	6	--	26	21	5	11	1	5	15	47
CMT barkstrip YC	--	--	--	--	--	--	--	3	1	--	--	1	1	--	--	1
CMT aboriginal logged	3	3	4	6	1	--	2	--	12	15	3	5	--	3	20	22
Fish Trap	--	--	--	4	--	--	--	--	7	4	--	--	--	--	--	--
Fish Weir	--	--	--	--	--	--	--	--	--	--	1	1	--	--	--	2
Human Remains	1	--	2	8	--	--	1	--	4	3	--	8	--	3	1	--
Petroform	1	--	1	1	--	--	--	--	--	1	--	--	--	--	--	--

[1] Totals may exceed total of ** sites in study area, because more than one type of archaeological remain could be present at a single site.

Table 1.b. Archaeological Sites in Study Area by Revised Site Feature Type.

Type	Borden Block												Σ[1]
	DlSs	**DlSt**	**DlSu**	**EaSp**	**EaSs**	**EaSt**	**EaSu**	**EaSv**	**EaSw**	**EaSx**	**EbSt**	**EbSu**	
Artifact Scatter	--	--	--	--	1	1	--	--	--	--	--	--	**7**
Midden Village	3	1	--	--	--	--	7	7	1	--	--	1	**63**
Midden	2	9	1	--	1	7	18	20	2	2	--	1	**138**
Rock Art	--	--	--	--	--	--	--	1	--	--	--	1	**10**
Canoe Run	--	--	--	--	--	--	--	--	--	--	--	--	**2**
CMT-barkstrip WRC	--	--	--	--	--	--	--	--	--	--	--	--	**301**
CMT-barkstrip YC	--	--	--	--	--	--	--	--	--	--	--	--	**19**
CMT-Aboriginal Logged	--	1	--	--	--	1	--	--	--	--	--	--	**158**
Fish Trap	--	4	3	1	4	3	2	6	1	--	1	7	**22**
Fish Weir	--	3	--	--	--	--	--	--	--	--	--	1	**9**
Human Remains	1	--	--	--	--	--	--	--	--	--	--	--	**58**
Petroform	--	--	1	--	--	3	1	4	4	--	--	1	**6**

[1] Totals may exceed total of ** sites in study area, because more than one type of archaeological remain could be present at a single site.

3.3.2 Biophysical

There are no new additional biophysical constraints resulting from the minor change to the original study area.

3.3.3 Slope

For the purpose of this overview, slope is expressed in percentages for both the CMT and non-CMT models. Slope information was obtained from MOF by Don Davis at the beginning of this project.

3.3.4 Data Acquisition and Translation

As illustrated in Figure 8 of the 1997 overview report, building the digital coverages for the GIS-based model is a very important part of the overview process. The revised overview used TRIM which was the mapsheet grid used for the 1997 overview. The resulting coverages are identified in Tables 2 and 3.

- **Landforms**: Derived from the TRIM data made available to Baseline from MOF. Coastlines were provided by MOF. Unfortunately, TEM data was not available for the entire study area. However, Don Davis was able to gain access to some surficial material data which could be used for this project.

- **Slope**: Derived from the provincial TRIM data, Digital Elevation Model (DEM) along with the slope classes generated from the model using ArcGRID. The two models developed for this overview used the same slope parameters.

- **Aquatic Features**: These features were available from TRIM. In the case of streams, single and double-lined streams were used. Indefinite and intermittent streams were excluded from the non-CMT model because they were considered to have low potential for fish values. As with the 1997 overview in order for a stream to be considered to have salmon or other fish potential, its gradient had to range from 0% to 20% and be directly linked to the ocean. All water bodies classified as lakes in TRIM were used.

- **Vegetation**: In order to model for CMTs, forest cover data was acquired from MOF. Of most importance was the classification of old growth western redcedar and yellow cedar stands. It was very quickly determined that there are certain challenges with the forest cover data which will be discussed shortly.

- **Archaeological Sites**: The Archaeology and Registry Services Branch provided Baseline and Don Davis with a digital copy of all sites recorded within the study area. All sites were plotted as polygons as provided by the Archaeology Branch.

Table 2. Site Type and Associated Variables.

Arcas Archaeological Site Type, Output Code, and Simplified Logical Statement	**Variable**
Artifact Scatter (TYP1)	Coastline ≤ 50 m Fish stream ≤ 150 m Slope ≤ 40% Aspect (South, East, West, North) Salmon run past or present
Midden-village (TYP2)	Coastline ≤ 150 m Fish stream ≤ 1500 m Slope ≤ 40% Aspect (South, East, West, North) Distance to archaeological site ≤ 1000 m Surface Material (fluvial, glaciofluvial, marine) Salmon run past or present
Midden (TYP3)	Coastline ≤ 150 m Fish stream ≤ 1500 m Slope ≤ 50% Aspect (South, East, West, North) Distance to archaeological site ≤ 1000 m Surface Material (fluvial, glaciofluvial, marine) Salmon run past or present
Rock Art (TYP4)	Coastline ≤ 75 m Slope ≤ 100% Surface Material (bedrock)
Canoe Run (TYP5)	Coastline ≤ 25 m Distance to Archaeological Site ≤ 100 m Slope ≤ 30%
Culturally Modified Tree-western redcedar barkstrip (TYP6)	Age class ≥ 100 Slope ≤ 80% Coastline ≤ 2000 m Fish stream/river ≤ 500 m Non-Fish stream/river ≤ 500 m Distance up Fish stream/river ≤ 3000 m Distance up stream/river ≤ 3000 m Elevation ≤ 500 m above sea level Species = western redcedar Salmon run past or present
Culturally Modified Tree-yellow cedar barkstrip (TYP7)	Age class ≥ 100 Slope ≤ 80% Coastline ≤ 3000 m Non-Fish stream/river ≤ 500 m Distance up fish stream/river ≤ 4000 m Distance up stream/river ≤ 4000 m Elevation ≤ 700 m above sea level Species = yellow cedar Salmon run past or present

Arcas Archaeological Site Type, Output Code, and Simplified Logical Statement	**Variable**
Culturally Modified Tree-logged feature (TYP8)	Age class ≥ 100 Slope ≤ 70% Coastline ≤ 1500 m Non-Fish stream/river ≤ 500 m Fish stream/river ≤ 500 m Distance up Non-Fish stream/river ≤ 2000 m Distance up Fish stream/river ≤ 2000 m Elevation ≤ 300 m above sea level Species = western redcedar Salmon run past or present
Fish Trap (TYP9)	Coastline ≤ 25 m Fish stream/river ≤ 500 m Slope ≤ 40% Salmon run past or present
Fish Weir (TYP10)	Coastline ≤ 200 m Fish stream/river ≤ 100 m Slope ≤ 20% Salmon run past or present
Human Remains (TYP11)	Coastline ≤ 200 m Species = Sitka spruce Age class ≥ 100 Slope ≤ 70% Distance to Archaeological Site ≤ 500 m Fish stream/river ≤ 1000 m
Petroform (TYP12)	Coastline = 75 m Slope ≤ 40% Surface Material (fluvial) Distance to Archaeological Site ≤ 500 m

Table 3. Input Grids.

Coverage-General		Coverage-specific	Definition	Code
TRIM	Terrain	Slope Classes	1 = 0 – 10% 2 = 11 - 20% 3 = 21 - 30% 4 = 31 - 40% 5 = 41 - 50% 6 = 51 - 60% 7 = 61 - 70% 8 = 71 - 80% 9 = 81 - 90% 10 = 91 - 100%	SLOPE_CODE
		Elevation	1 = 0 - 100 m 2 = 101 - 200 m 3 = 201 - 300 m 4 = 301 - 400 m 5 = 401 - 500 m 6 = 501 - 600 m 7 = 601 - 700 m	RANGE_CODE
		Aspect	0 = Flat 1 = N 2 = NE 3 = E 4 = SE 5 = S 6 = SW 7 = W 8 = NW	ASPECT_COD
LANDFORM	Surficial Geology	Primary Surficial Materials	1 = fluvial (F) 2 = marine (M) 3 = glaciofluvial (FG) 4 = bedrock (B)	SURFM1
Marine/Aquatic Classification		Streams	1 = 0 - 100 m 2 = 101 - 150 m 3 = 151 - 500 m 4 = 501 - 1000 m 5 = 1001 - 1500 m	SSALM (Salmon present)
			1 = 0 - 500 m	STR (Salmon absent)

Coverage-General	**Coverage-specific**	**Definition**	**Code**
	Coastline	1 = 0 - 25 m 2 = 26 - 50 m 3 = 51 - 75 m 4 = 76 - 150 m 5 = 151 - 200 m 6 = 201 - 1500 m 7 = 1501 - 2000 m 8 = 2001 - 3000 m	COA1
		1 = 0 - 2000 m 2 = 2001 - 3000 m 3 = 3001 - 4000 m	COA2
Forest Cover	Sitka Spruce	0 = Absent 1 = Present	SS
	Western redcedar	0 = Absent 1 = Present	CW
	Yellow cedar	0 = Absent 1 = Present	YC
	Age Class	12 = 90 - 100	AGE_CL
Sites	Midden	1 = 0 - 100 m 2 = 101 - 500 m	ARC1
	Midden-village	1 = 0 - 100 m 2 = 101 - 500 m	ARC2
	Other Archaeology Sites	1 = 0 - 500 m 2 = 501 - 1000 m	ARC3
	All Archaeology Sites Preliminary Buffer	1 = 0 - 250 m	ARC4

3.3.5 NEAR Analysis and Definitions of Feature Buffers

Previous work concerning feature buffers was done for the 1997 study and proved to be of great value to this study, because buffer-width decisions could be made based on previous experience. The old buffer widths were re-examined and discussed at the onset of this overview. These assumptions were then tested against the distribution of archaeological sites for the revised study area. This NEAR analysis helped to determine the effectiveness of the previous buffer widths. Of particular interest was the data gathered for previously recorded CMT sites and the buffer widths required to more accurately predict CMT locations over the landscape. There were changes to the buffers for elevation and slope for the three different CMT models.

The resulting buffer widths are presented in Table 3 of this document and should be compared to Tables 4 and 5 of the original report. Changes to buffer widths were significant in some cases, and adjustments made in many cases. The most obvious difference reflects the better knowledge of the location of CMT sites over the landscape and their accompanying buffers. As with the 1997 overview, previously recorded archaeological sites were automatically buffered for 250m in order to protect surrounding terrain which may contain unrecorded archaeological or traditional resources, as well as compensating for sites with imprecisely defined locations.

3.3.6 Model Building

Model building for the revised overview was conducted according to the same steps as the 1997 overview research. Figure 10 of the 1997 report illustrates the sequential steps of model building used for this project.

The final step in model-building is the most important and also the most time consuming. This involves development of a series of logical statements which instruct the GIS when modelling the definition for each site type within the landscape. The revised overview models commenced with working from the significant information gathered during the NEAR analysis as well as a familiarity with the original logical statements created for the 1997 overview. The original logical statements were not included in the 1997 report and have been subsequently misplaced. The revised logical statements are presented in Figure 7.

Figure 7. Logical Statements Used in the Overview Model.

TYPE 1: ARTIFACT SCATTER

1) Distance to fish-bearing stream OR Distance to coastline = 0-150m
AND
Slope = 0-40%

Potential = Moderate

2) Aspect ≠ N, NE, OR E
AND
Distance to fish-bearing stream OR Distance to coastline = 0-150m
AND
Slope = 0-40%

Potential = High

TYPE 2: MIDDEN VILLAGE

1) Distance to coastline = 0-150m

AND
Distance to ARC site = 0–1000m
AND
Slope = 0-40%
AND
Distance to fish-bearing stream = 1500m

Potential = Moderate

2) Primary Surficial Material = Fluvial, Marine, or Glaciofluvial
AND
Distance to fish-bearing stream = 0-1000m
AND
Slope = 0-40%
AND
Distance to coastline = 0-150m
AND
Distance to ARC site = 0-500m
AND
Aspect ≠ N, NE, OR E

Potential = High

TYPE 3: MIDDEN

1) Distance to coastline = 0-150m
AND
Distance to fish-bearing stream = 0-1500m
AND
Slope = 0-50%
AND
Distance to ARC site = 1000m

Potential = Moderate

2) PSM = F, FG, or M
AND
Distance to fish-bearing stream = 0-1000m
AND
Distance to coastline = 0-150m
AND
Slope = 0-50%
AND
Aspect ≠ N, NE, OR E
AND
Distance to ARC site = 1000m

Potential = High

TYPE 4: ROCK ART

1) PSM = B
AND
Distance to coastline = 0-75m
AND

Slope = 0-100%

Potential = Moderate

TYPE 5: CANOE RUN

1) Distance to ARC site = 0-1000m
AND
Distance to coastline = 25m
AND
Slope = 0-30%

Potential = Moderate

TYPE 6: CMT BARKSTRIP, WESTERN REDCEDAR

1) Age class (AGE) = greater than 100 years old
AND
Species composition (SC) = western redcedar
AND
Slope = 0-80%
AND
Distance to coastline = 0-2000m
AND
Elevation = 0-500m
AND
Distance to fish-bearing stream OR distance to non fish-bearing stream = 500m

Potential = Presence of CMTs

2) AC = greater than 100 years old
AND
SC = western redcedar
AND
Slope = 0-80%
AND
Distance to coastline = 0-3000m
And
Distance to fish-bearing stream OR non fish-bearing stream = 0-500m
AND
Elevation = 0-500m

Potential = Presence of CMTs

TYPE 7: CMT BARKSTRIP, YELLOW CEDAR

1) AC = greater than 100 years old
AND
SC = yellow cedar
AND
Slope = 0-80%
AND
Distance to coastline =0-3000m

AND
Elevation = 0-500m
AND
Distance to fish-bearing stream OR non fish-bearing stream = 0-500m

Potential = Presence of CMTs
2) AC = greater than 100 years old
AND
SC = yellow cedar
AND
Slope =0-80%
AND
Distance to coastline =0-4000m
AND
Distance to fish-bearing stream OR non fish-bearing stream = 0-500m
AND
Elevation = 0-500m

Potential = Presence of CMTs

TYPE 8: ABORIGINALLY LOGGED CMTS

1) AC = greater than 100 years old
AND
SC = western redcedar
AND
Slope = 0-70%
AND
Distance to coastline = 0-1500m
AND
Elevation = 0-300m
AND
Distance to fish-bearing stream OR non fish-bearing stream = 0-500m

Potential = Presence of CMTs

2) AC = greater than 100 years old
AND
SC = presence of western redcedar
AND
Slope = 0-70%
AND
Distance to coastline = 0-2000m
AND
Distance to fish-bearing stream OR non fish-bearing stream = 0-500m
AND
Elevation = 0-500m

Potential = Presence of CMTs

TYPE 9: FISH TRAP

Distance to coastline =0-25m
AND

Distance to fish-bearing stream = 0-500m
AND
Slope = 0-40%

Potential = Moderate

TYPE 10: FISH WEIR

Distance to fish-bearing stream = 0-100m
AND
Distance to coastline = 0-200m
AND
Slope = 0-20%

Potential = Moderate

TYPE 11: HUMAN REMAINS

1) Distance to recorded ARC site = 0-500m
AND
Distance to fish-bearing stream = 0-1000m
AND
PSM = B
AND
Slope = 0-70%

Potential = Moderate

2) Distance to recorded ARC site = 0-500m
AND
Species = Sitka Spruce
AND
AC = greater than 100 years old
AND
Distance to coastline = 0-200m

Potential = Moderate

TYPE 12: PETROFORM

PSM = F
AND
Distance to coastline = 0-75m
AND
Distance to recorded ARC site = 0-25m
AND
Slope = 0-40%

Potential = Moderate

The lands covered by the study area are portrayed on various portions present on 55 TRIM maps and is just over 460,000 ha in size. The original 1997 study area was approximately 670,000 ha in size, so there is a significant difference.

As with the original project, two test areas within the study area were chosen for an operational test of the CMT and non-CMT models. The models were run for the entire study area every time the logical statements were revised, but "fine-tuning" of the model was achieved through examination of the model results in the two test areas. Figure 8 indicates the location of the test areas within the study area.

Test Area 1 is found on map-sheets 092E078 and 092E079 and is representative of an "inside" environment as discussed in Section 3.8.1 of the 1997 overview report. This area is comprised of Tlupana Inlet, Head Bay, Nesook Bay, Hisnit Inlet, and Hanna Channel. Figures 3 and 4 show part of the shoreline along Hanna Channel as well as a pictograph site revisited during the groundtruthing component.

Test Area 2 is divided among map-sheets 092E086 and 092E095, and is representative of an "outside" environment as discussed in Section 3.8.1 of the 1997 report. Port Eliza and surrounding lands have a rich history of past use and the diversity of resources present were suspected to be helpful for identifying patterns of looking for archaeological resource potential.

The model was applied to the test areas first to permit a manageable review of the preliminary application of the non-CMT and CMT models. One set of results yielded paper maps to be used for reference during the groundtruthing component of the project. After groundtruthing, the models were applied to the entire study area, and results were printed in digital format. Errors in GIS coverage and logical statements were identified and corrected on a regular basis. In some cases, the buffer widths were also changed over the course of the project. When the modelled output met with all expectations, the model was run for a final time.

After the model was run, the output was examined. The levels of CMT and non-CMT potential, and known site locations, were reviewed each time to assess the model's effectiveness. Figures 9 and 10 provide examples of how the two GIS models within the test areas translated visually. When it was agreed that the modelled output for the two test areas appropriately reflected the "real world" situation, the model was run for a final time and the results were recorded digitally.

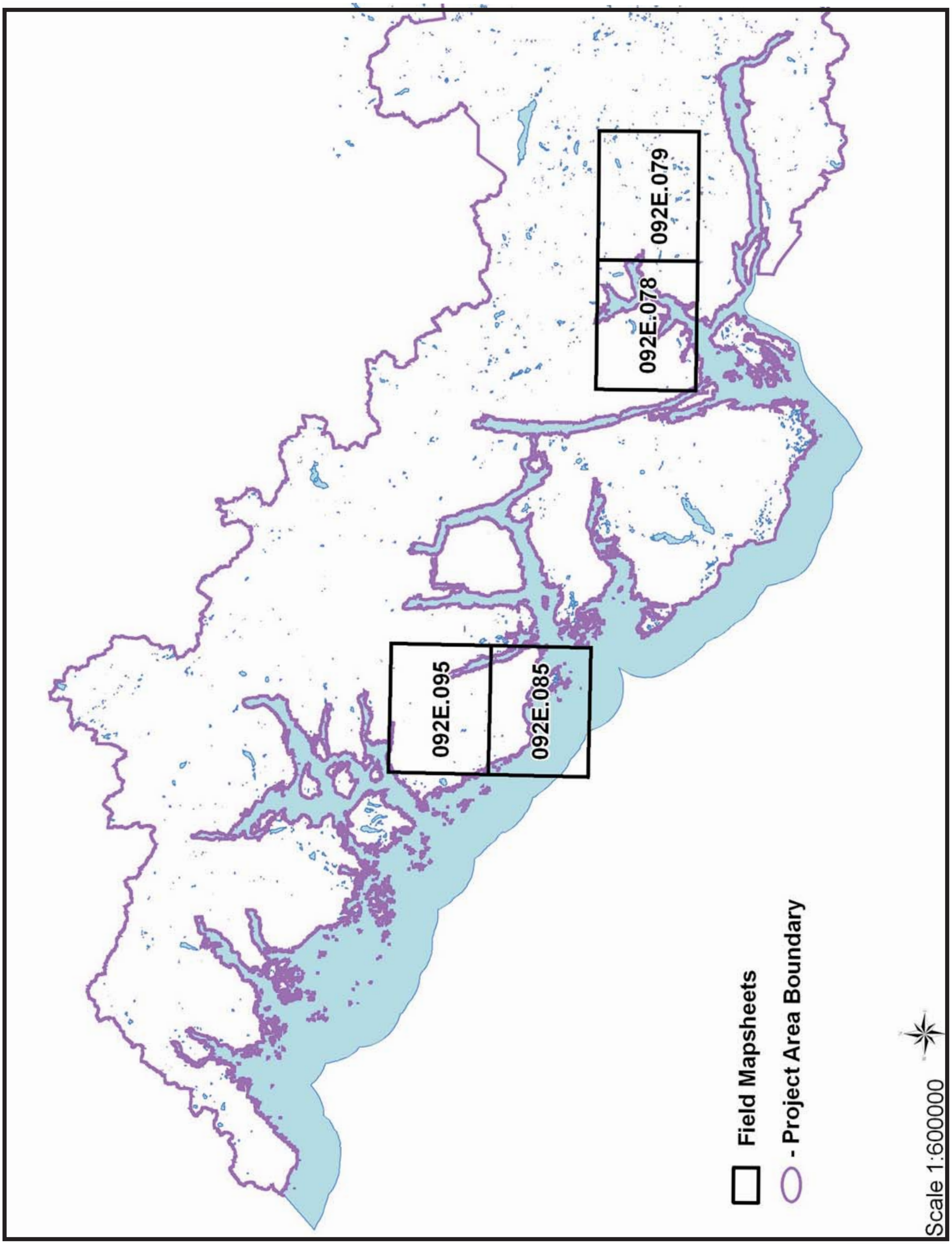

Figure 8. Test Area Locations Within Study Area.

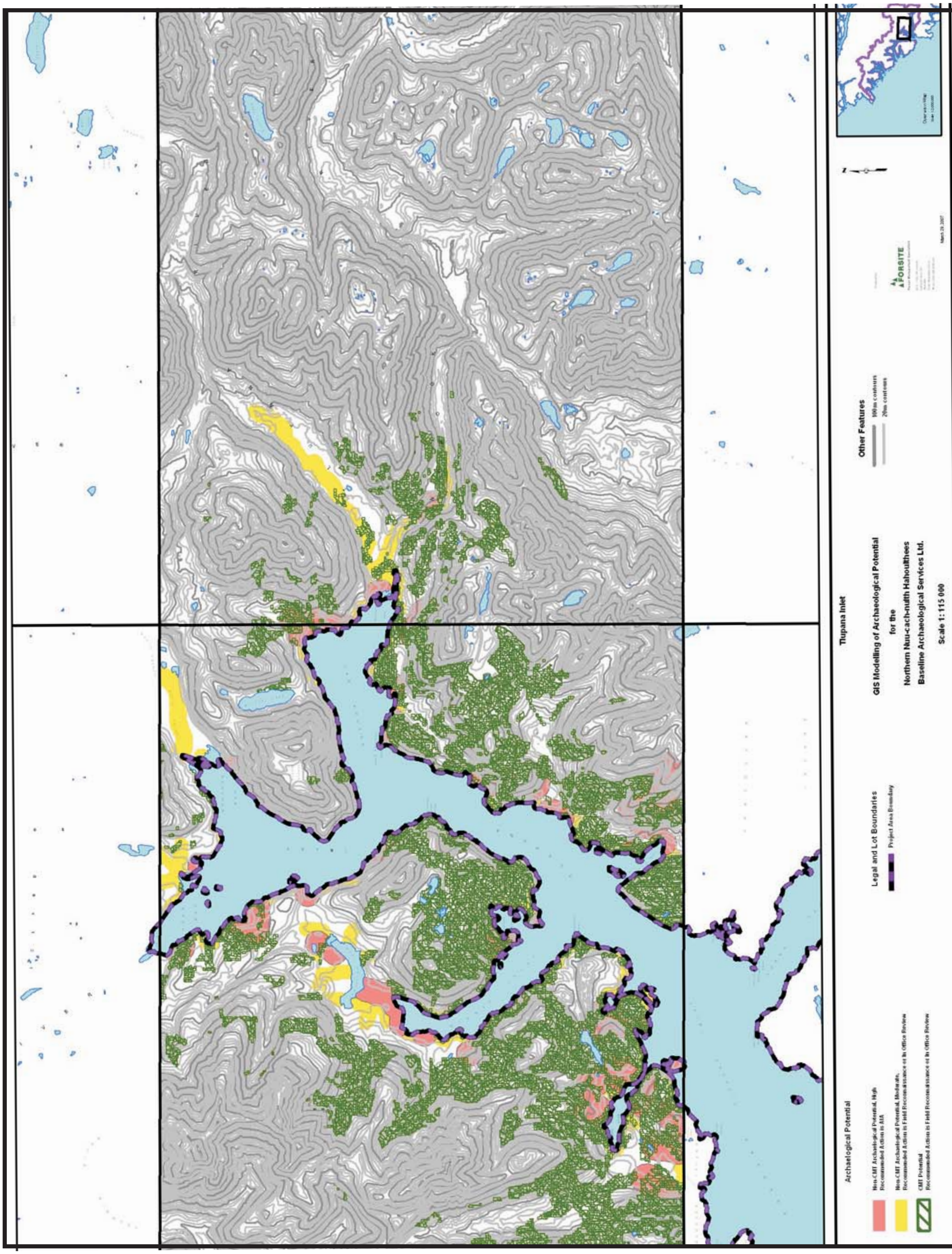

Figure 9. Tlupana Inlet Modelled for non-CMT and CMT Archaeological Resource Potential.

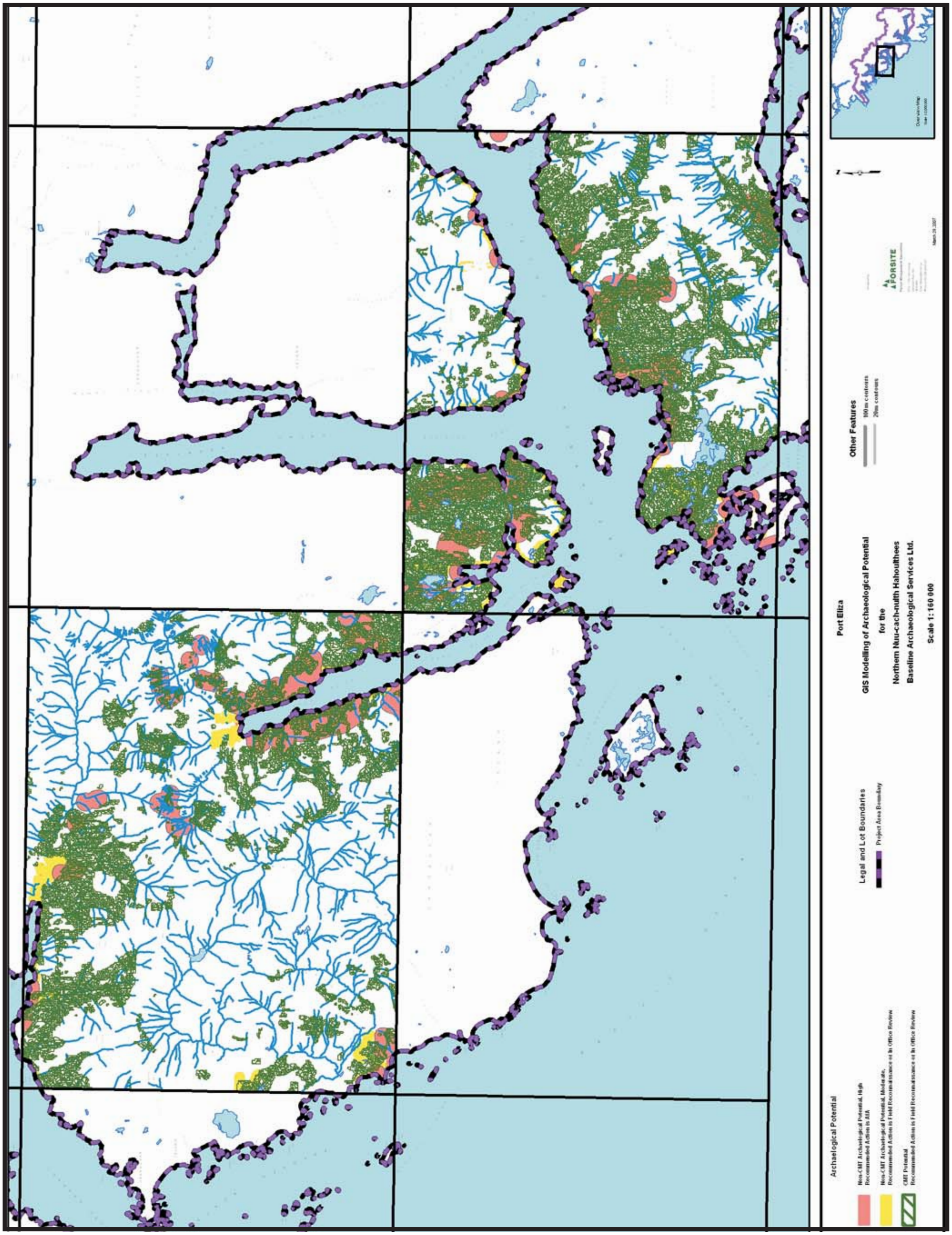

Figure 10. Port Eliza Modelled for non-CMT and CMT Archaeological Resource Potential.

3.3.7 Groundtruthing of Model in Test Areas

When the possibility of revising the 1997 AOA results was discussed between MOF and Baseline, it was agreed that funds should be set aside in order to allow for groundtruthing of the revised model output as there was no groundtruthing in the original overview project. It was suggested that the two original test areas should be considered appropriate areas for groundtruthing of the revised overview model for the same reasons as put forth in the original project, each area represents a different but important geographical aspect of the study area. In this way the Test Areas were used to "fine-tune" the GIS models, as well as allowing for a first hand inspection of the areas around Tlupana Inlet and Port Eliza.

Groundtruthing commenced after the logical statements had been revised and an acceptable outcome had been produced for both the non-CMT and CMT models. Arrangements were made with the Mowachaht/Muchalaht to have Gary Maquinna participate in the groundtruthing component and a boat was chartered for the fieldwork. A total of four days (March 19-22) were spent on the groundtruthing fieldwork component. Weather conditions were a particular concern during the fieldwork, notably severe winds and rain.

Field methods for the present project involved spending as much time as possible in the study area in order to observe and discuss what was shown in the modelled outputs and what was being observed in the field. It was believed that in order to obtain an accurate impression of the study area and of the people who inhabited it for thousands of years, it would be illuminating to employ a perspective that would be comparable to that of past peoples. Travelling by boat seemed an obvious way to provide that similar perspective.

The purpose of the groundtruthing component had three objectives: 1) verification of accuracy of baseline data; 2) verification of the modelling assumptions; and 3) verification of the modelling results.

Past experience with the study area's digital data used for the 1997 study, along with Don Davis's experience and knowledge of the digital data set, meant that the digital data used for the project is a fairly accurate representation of the physical landscape.

The groundtruthing component demonstrated that modelling assumptions for overview studies on the coast of British Columbia must consider slope and access to water (any kind of aquatic or marine landscape features) as the two most important landscape constraints on archaeological potential. Aside from these two principle constraints, the availability of traditional food resources also dictated where and how people could live. Baseline's in-house experience within much of the overview study area was extremely useful, in that we were able to identify lands with archaeological potential and discuss the resources that would have been accessible to ancient people in each location. Knowing what resources were locally available is not always obvious. Of further significant use to this study was the work conducted by Yvonne Marshall within a portion of the study area (including Tlupana Inlet) for her PhD dissertation. Her extensive field maps and discussion of village sites was extremely valuable.

The groundtruthing component took place near the end of the modelling stage and the results were incorporated into the final model. Preliminary non-CMT and CMT potential model results were portrayed on 1:20,000-scale maps for the groundtruthing component. The modelled output and the field reconnaissance demonstrated that there are many variables to be taken into consideration when conducting a complex study like this AOA. The complexity of the cultural data is such that relying solely on physical attributes data for information about past cultures will always result in a model that is missing numerous cultural indicators that cannot be linked to a physical data set.

In the four days of groundtruthing fieldwork spent on and around the study area, approximately two thirds of the study area shoreline was covered by boat. Weather conditions were less than ideal on three days. The trips were made in typically stormy, wet, windy, and/or snowy March weather which somewhat hampered the time that could be spent on the 'outside" coastline as opposed to the more sheltered "inside" coastline. The bad weather also reminded the participants that the ancient inhabitants of this region had to be cognizant of the weather, particularly the prevailing winds and ocean currents. In settings where the effects of the prevailing winds were minimized, there were almost always indications of past and/or present occupation. The daily and seasonal rounds of pre-contact First Nations' people was a key discussion topic throughout the field project.

Coastline travelled included all of Muchalat Inlet, Matchlee Bay, and the Burman River estuary as well as Williamson Passage and Kings Passage on either side of Gore Island at the entrance to Muchalat Inlet. An interesting and unusual pictograph site (DkSp-001) depicting a man with a hat on a horse was relocated near the Burman River. Mooyah Bay and an associated defensive site (DjSo-006) as well as a historic/prehistoric pictograph site at Muchalat Inlet (DjSn-001) were also observed. The opportunity was taken to land at Kleeptee (DjSo-006) and a contemporary western redcedar barkstrip was discovered adjacent to the site.

The shoreline of Hanna Channel, Tlupana Inlet, Nesook Bay, Moutcha Bay, Head Bay, and Hisnit Inlet was travelled via boat in their entirety. Various sites of interest and importance were observed, including the very significant village site Nusmoq (DkSp-017), the defensive site In-mah-pee-ah (DkSo-019) which has a commanding view of Tlupana Inlet, two rock shelter/burial caves were relocated but not re-visited (DkSo-12 and DkSp-22), Huacuk (DkSo-022), as well as the village site Chee-ish (DkSo-006). Time was spent walking in the area of Mowactca (DkSo-001) which was not as well defined or obvious as Chee-ish. The pictograph located near Galiano Bay (DjSo-001) was relocated and found to be in relatively good shape, especially when compared to some of the other pictographs in the study area such as DkSp-008. The density of sites in the Tlupana area attest to its importance prehistorically.

The shoreline of Tahsis inlet was travelled in its entirety. Unfortunately, a significant portion of Tahsis inlet has been extensively modified due to the long history of industrialization and the tendency of historical logging to take place where prehistoric occupations once existed. Nevertheless, there are still places where pre-contact sites exist. A significant portion of the forest along the inlet has been logged however and when compared to Tlupana Inlet and Port Eliza, therefore the CMT potential for Tahsis Inlet is significantly lower.

The visit to Port Eliza commenced from Gold River and included Tahsis Narrows, Hecate Channel, and Esperanza Inlet. As one crosses Esperanza Inlet to reach the mouth of Port Eliza swells provide a reminder that the open ocean is close by. The entire shoreline of Port Eliza, including the estuary at the head of the inlet was observed and visited. The western shore of Port Eliza is a significant wood procurement area and numerous CMTs, including three canoes, have been recorded over the years. The village of Queens Cove was visited along with Newton Cove. Rough weather in the afternoon of the fourth day did not allow the crew to reach the outer coast (Rolling Roadstead). An intimate knowledge of local weather conditions was certainly appreciated during the fieldwork. The eastern shoreline of Esperanza Inlet was also travelled as significant CMTs have been recorded in that vicinity, including Hecate Lake on the western shore, over the past five years. Old growth western redcedar is still abundant in the area.

The CMT potential of the study area varies depending upon the level of historic logging which has taken place. For example, Tahsis Inlet has some remnant patches of old growth western redcedar, but there is less CMT potential than in Port Eliza, Nootka Island, or Tlupana Inlet. The new CMT potential model developed for this project predicted that CMTs would be present more or less in similar places as the old model, however, this time the new model has benefited from the numerous CMT sites that have been recorded throughout the study area. Though not confirmed by a pedestrian survey during the groundtruthing, recent CMT surveys by Baseline in the study area have confirmed that the new CMT model helps to predict the location of CMTs.

Overland trails were certainly present in the distant past, but their locations are rarely easy to verify , primarily due to their destruction by historic resource harvesting and land use as well as the lack of use over time. The lack of particular trail information was discussed and identified as an obvious data gap for this project.

Upon completion of the groundtruthing component the three objectives were re-visited and assessed for success: 1) Baseline data appeared to be relatively accurate, slope, elevation, and streams observed in the field, correlated with data on the digitized maps. Forest cover was a known problem and that was confirmed based on field observations as well as personal experience; 2) Modelling assumptions appeared to be relatively accurate and this was largely due to the significant amount of previous knowledge for the study area, particularly familiarity with CMT sites; and 3) Modelling results as presented on the maps appeared to be fairly accurate in the field. While CMT model groundtruthing was only minimal, recent experience by Baseline personnel in the study area adequately confirmed the accuracy of the new and improved CMT model.

4.0 RESULTS OF ARCHAEOLOGICAL POTENTIAL MAPPING

4.1 Model Results

The GIS models adopted by the present overview classified the entire study area into three classes of non-CMT potential as was accomplished by the 1997 overview: Class 1 (High potential, Low constraint); Class 2 (Moderate potential, Moderate constraint); and Class 3 (Low potential, High constraint). As well, two classes of CMT potential were used: Moderate-to-High, and Low. These classes are defined in the previous report.

Overall for non-CMT archaeological resource potential, the revised GIS model has decreased the areas of land with Class 1 and Class 2 potential ratings, with 3.00% of the overview study area is modelled as having Class 1 potential (versus 9.0% with the previous model) and, 6.0% now modelled as having Class 2 potential (versus 8.0% by the original model). This is a difference of 63,432 ha in the first model versus 15,052 ha in the revised model for Class 1 potential and 53,010 hectares in the original model versus 25, 995 hectares in the revised model for Class 2 potential. Approximately 13.7% of the overview study area is modelled as having CMT potential (versus 8.0% by the 1997 model) which represents a significant increase in the CMT archaeological resource potential, although the difference in hectares is not as significant due to the overall decrease in the study area (50,328 hectares in the 1997 model versus 63,398 in the 2007 model (Tables 4 and 5).

Lands with high archaeological potential exhibit the largest number of attributes/variables/characters that favourably influenced the distribution of archaeological sites. However, as previously discussed, though the highest overall density and frequency of archaeological sites should be found in Class 1 lands, sites may not be present at all points within these settings. Conversely, Class 3 lands exhibit the fewest attributes that would have influenced site distribution, and the lowest overall site density and frequency are expected in such locations. However, it is important to keep in mind that low-potential lands do not have ‘nil potential’, and archaeological sites of some kinds are probably present within Class 3 lands. The presence of significant archaeological data gaps, including information about the absolute distribution of documented archaeological sites, means that these results should not be considered as representative of the study area as a whole.

Table 4. Study Area Breakdown by Non-CMT Potential Class.

Potential Class (Non-CMT)	Area (in hectares)	Percent of Total Area
1 (High)	15,052	3.0%
2 (Moderate)	25,995	6.0%
3 (Low)	418,745	91.0%
Total	459,792	100%

Table 5. Study Area Breakdown by CMT Potential Class.

Potential Class (CMT)	Area (in hectares)	Percent of Total Area
Moderate-to-High	63,398	13.7%
Low	396,394	86.3%
Total	459,792	100%

4.2 Overall Modelling Limitations

The following limits to the revised GIS models have been observed:

- Modelling for salmon and non-salmon streams took a significant amount of time and there are concerns as to accuracy of the streams as found on TRIM. Groundtruthing was able to confirm the general presence and accuracy of the salmon and non-salmon stream model, however further work and study should be completed concerning salmon potential;

- Slope classification appeared to be more or less accurately reflected in the field but a significant amount of time was not spent on this particular aspect of the project;

- Accuracy of forest cover data came as a surprise. NEAR analysis of CMT sites and forest cover revealed that approximately 4% of the forest cover data did not reflect the occurrence of western redcedar and or yellow cedar;

- An attempt was made in the 1997 model to accurately predict the presence of potential for marmot hunting. No such attempt was made this time due to the over abundance of area indicated to have marmot hunting potential in the first AOA;

- The groundtruthing surveys revealed a poor understanding about the specific location of inland trails in the landscape, and yet such trails (be it of secondary importance to navigable marine routes) are important for potential modelling;

- Some landscape features which are suspected to affect archaeological potential could not be used, due to a lack of data or GIS limitations. For example, the inability to differentiate between the different beach or shoreline types precluded the ability to model for canoe runs with any great accuracy;

- Insufficient understanding of paleoshoreline data that could be used to predict the location of early habitation sites;

- Site distribution data has improved significantly since the 1997 AOA and there is more information available to help determine the appropriate width of feature buffers. The extensive use of NEAR Analysis for this project greatly improved the knowledge of where sites were located on the landscape vis-à-vis other variables, however, there is always more area in need of accurate survey; and

- Ethnographic sources for modelling traditional land use do not accurately reflect all pre-Contact land use activities that could have resulted in the formation of archaeological sites; this cannot be over-emphasized, as it has significant consequences for the reliability of any GIS model that may be developed.

4.3 Data Gaps

This study could not have taken place without the extensive research and work done for the original 1997 AOA project conducted by Arcas. Since that time, there has been a significant increase in the number of recorded CMT sites and some improvement in non-TRIM data. However some data gaps continue to exist and are discussed below.

4.3.1 Archaeological Inventory

The development of a reliable archaeological potential GIS model is partially dependent on the quality of data concerning the distribution of archaeological sites within the study area. Information used to build the model should come from all parts of the study area and should represent all environmental settings present. The current database is still biased towards sites in shoreline settings, although in the past ten years there has been a significant increase in the area of surveyed inland settings, which is related to the amount of CMT survey being conducted by licensees in the study area. A systematic site inventory for the entire study area has not been conducted, although Yvonne Marshall's work in the asserted traditional territory of the Mowachaht/Muchalaht and the work conducted by Duncan McLaren in the asserted traditional territory of the K̲a;'yu:'K't'h' and Che:K̲'tles7et'h' territory are significant steps along that path in the ongoing process of understanding the distribution of archaeological resources throughout all environmental settings. Although there is a significant interest in the location of CMT sites and the potential for CMTs in the landscape, the absence of major systematic inland survey should be considered when developing terms of reference for any site inventory research in the study area.

As emphasized in the 1997 report, it is important that an archaeological site inventory be conducted for the entire study area, and that it be complete, accurate, and current. The results from the present project can be considered to represent an improvement over the original 1997 AOA, but, this research is merely a starting point for understanding patterns of archaeological potential in the region.

4.3.2 Digital Mapping Information

This project would have benefited from more accurate forest cover data, as well as a an easier means for ascertaining the differences between salmon and non-salmon streams.

The inability to differentiate between different classes of beaches within the study area was unfortunate. While there was discussion during the groundtruthing survey about the presence of canoe runs and the importance of sandy beaches versus rocky beaches for shellfish harvesting, beach type characteristics could not be elicited from the data-sets. Perhaps this information could be obtained at a later date.

The absence of accurate digital information for trails was a data gap that the 1997 study attempted to address. However the end result was not encouraging as only a handful of trails were recorded and many were water trails rather than overland trails.

Therefore, the absence of a more complete knowledge of overland trails in the study area is still observed as a data gap.

Lastly, the absence of accurate and concise TUS data over the entire study area is also recognized as an ongoing data gap which should be addressed by an appropriate TUS study for the entire study area.

4.3.3 Data Gap Recommendations

The following specific recommendations are made in order to address data gaps identified during the present study. More general recommendation on how to deal with data gaps by future projects is provided in Section 5 of this report.

Archaeological Inventory

- To address deficiencies regarding archaeological inventory data, we recommend that the licensees, MOF, and the appropriate First Nations initiate an application for a systematic archaeological inventory of the overview area, particularly focusing on inland settings with or without CMT potential.

Digital Mapping Information

- The issue of accurate forest cover data as well as stream data and predicting the presence or absence of salmon should be addressed as well as the lack of accurate shoreline data.

- Missing trail data and TUS data is a cross-over issue from the 1997 overview. Some funds should be allocated to enable the First Nations to conduct an accurate trail mapping project and TUS in the study area, with the results to be shared between the stakeholders.

5.0 RESOURCE MANAGEMENT AND RECOMMENDATIONS

5.1 Archaeological Resource Management Recommendations

Section 5 of the 1997 overview report includes an introduction to archaeological resource management and how an overview fits into the overall process as defined by the Archaeology Branch (Ministry of Tourism, Sport, and the Arts).

The results of the present overview study are presented in the same configuration as the 1997 overview report. There are three classes of archaeological resource potential for non-CMT resources: Class 3 (Low potential), Class 2 (Moderate potential), and Class 1 (High potential). The archaeological potential for CMT potential is expressed as either Low or Moderate-to-High potential. On paper maps and plot files, recorded buffered archaeological sites are coloured red, Moderate-to-High Non-CMT potential is coloured yellow; and CMT potential is indicated by green hatched lines.

As recommended in the 1997 report, all proposed forestry developments in the present study area should be reviewed to determine whether archaeological studies are required in the context of the Archaeological Impact Assessment and Review Process discussed in Section 5.2 of the 1997 overview report. The original list of management actions in response to a proposed development within the study area are repeated here as they are important and bear repeating.

Furthermore, the MOF is responsible for consultation with all First Nation communities with identified interests in the study area, and while specific management recommendations concerning First Nations' consultation are not provided in the following management recommendations, the MOF is once again reminded of its responsibility for such consultation and for ensuring that consultation occurs in a manner acceptable to all parties.

Non-CMT Resource Potential:

- If a proposed development is planned in an area with **Class 3 Potential (Low)**, and no conflicts or concerns are demonstrated, it is recommended that no further archaeological studies take place. If possible conflicts or concerns are demonstrated, it is recommended that MOF consider the need for further work in consultation with an archaeologist.

- If a proposed development is planned in an area with **Class 2 Potential (Moderate)**, the appropriate level of effort is further consultation with an archaeologist which may include, an in office review, a PFR, or an AIA of the development area to identify micro-topographic features and assess their effect on the archaeological potential rating assigned to the location by the overview. If such landscape features can be identified on airphotos or maps, then an in-office review is recommended. If such features are not visible on airphotos or maps, then a PFR is recommended.

- If a proposed development is planned in an area with only **Class 1 Potential (High)** present, the recommended action is further work in consultation with an archaeologist in order to determine the specific recorded archaeological site in the vicinity of the proposed development and whether an in office review, a PFR, or an AIA of the development area is required.

- If a proposed development is planned in an area with a combination of **Class 3 and 2 Potential, or Class 2 and 3 Potential**, the recommended action is that the highest potential rating present (i.e. most constraining) should be applied over the entire proposed development area, with the expectation of adjustments to the work required based on a field inspection.

CMT Resource Potential

- If a proposed development is planned in an area with **Low CMT Potential** and no conflicts or concerns are demonstrated, the recommended action is that no further archaeological studies take place. If possible conflicts or concerns are demonstrated, then the proponent should decide the need for an in-office review, PFR, or AIA in consultation with the First Nations and an archaeologist.

- If a proposed development is planned in an area with **Moderate-to-High CMT Potential**, the recommended action is: a PFR to identify the presence or absence of CMTs. Where the PFR identifies CMTs, a follow-up AIA may be required. The need for an AIA should be determined in consultation with the archaeologist.

- If a proposed development area has potential for both CMT and non-CMT resources, the recommended action is for a PFR or AIA to be conducted under a Heritage Inspection Permit, depending on the level of non-CMT potential.

In accordance with Heritage Inspection Permit conditions, the results of an AIA must be reported to the Archaeology Branch, who will review the assessment and forward recommendations for the management of possible archaeological impacts to MOF. It is possible that some impacts will be so severe that a development cannot proceed, but more frequently the development can proceed if design or development plans are modified to avoid or reduce adverse impacts.

As discussed in the above recommendations, a reconnaissance assessment can consist of a variety of activities. The main purpose of the reconnaissance is to “fine tune” the archaeological potential rating for the development area, using detailed information that was not practical or available for use in the overview model development. Such information could include: airphotos, topographic and biophysical mapping at scales larger than 1:20,000, revised or more detailed forest stand data, and information about traditional use sites provided by First Nations communities. A reconnaissance assessment might include the previously discussed PFR as defined in the *British Columbia Archaeological Impact Assessment Guidelines*. A PFR could consist of a simple overflight or windshield survey of the development area, or pedestrian groundtruthing to accurately assess its archaeological resource potential. Shovel and/or auger testing is sometimes needed to confirm non-CMT site potential. If so, such a PFR must be conducted in accordance with a Heritage Inspection Permit issued by the Archaeology Branch, pursuant to Section 14 of the *Heritage Conservation Act*.

The reconnaissance assessment will result in recommendations either to conduct an AIA or to not carry out further archaeological studies for a particular development area. If no AIA is recommended, the reconnaissance assessment usually completes the archaeological work required for that development. The results of the reconnaissance assessment should be reported (see below).

5.2 Application of Overview Results

This overview study, as was the case with the 1997 overview, was initiated and designed specifically for forestry planning. However, the results are also applicable to management planning for all kinds of land-altering developments in the study area, as well as to archaeological research and traditional use studies generally. It is recommended that the revised GIS models results be used during development planning by all regulatory authorities, and industries responsible for overseeing or initiating land-altering activities, including the MOF, Ministry of Transportation, Lands and Waters BC, BC Parks, forestry licensees, mining companies, real-estate developers, and tourism operators.

All proposed land-altering developments should be reviewed to determine if (and what kind of) archaeological studies are required. The CMT and non-CMT site potential coverages are mapped digitally across the entire study area, and are available in the form of digital files or paper maps from the MOF office in Campbell River.

For the application of the overview results in forestry planning, it is recommended that the steps identified in Table 6 be followed (per Table 8 in the 1997 overview report). The MOF is primarily responsible for overseeing the application of the overview in forestry planning.

Table 6. Recommended Steps for Application of Overview Results in Forestry Planning.

Step	Required Action
1	Identify the mapsheets for areas where proposed forestry developments are located.
2	Obtain the appropriate digital files and/or paper archaeological potential maps.
3	Using the digital or paper archaeological potential maps as an overlay on the development plan, determine the archaeological potential of the area affected by the proposed developments.
4	Determine the appropriate archaeological management action(s) for each development area or portion thereof (see Archaeological Management Recommendations).
5	Obtain additional information necessary for determining the appropriate archaeological work in consultation with the relevant First Nations.
6	Where required, engage an archaeologist to conduct a field assessment or further research.
7	Document results of all archaeological fieldwork or research so that future revisions to the model can be made.
8	Determine the appropriate management actions for identified archaeological resources in consultation with the appropriate First Nations and an archaeologist.

5.3 Model Revisions and Recommendations

The revised AOA represents a second attempt to develop a GIS-based archaeological potential model for the study area. The revised overview results are partially limited by the digital information available for developing the potential model. Data gaps, with recommendations for addressing those gaps, are presented in Section 4.3. As new information becomes available through future archaeological studies, digitization of new datasets, and from First Nation communities, it is important that the model be revised, and that the revised model be applied to the overview as was done for revisions of the GIS model during the present study. With this in mind, it is recommended that:

- the MOF commits to a yearly review in order to assess the model's success. The review should be conducted by a committee comprised of representatives from the First Nation communities, MOF, licensees, and an archaeologist. The model should be revised when, in the opinion of the review committee, there is sufficient new information to require revision. This review and revision process would be subject to the availability of funding.

- The Archaeology Branch and MOF support initiatives and studies required to address the data gaps identified in this overview; and

- Any revisions to the model be done under the direction or in consultation with the proposed review committee.

AIA and PFR studies for proposed forestry developments are probably the most critical sources of information required to revise the model used in this overview. However, certain kinds of information about a development area need to be documented during an AIA if this information is to be of value for revising the model. In order to evaluate the model, each development area should be assessed in the field in terms of the criteria used by the model to determine potential. It will then be possible to compare archaeological potential as predicted by the model with archaeological potential as assessed in the field. Investigators also can use other criteria to assess potential, and these additional criteria could be included in future versions of the model. To ensure that the correct information is collected, it is recommended that:

- the MOF require archaeologists undertaking PFR or AIA studies for proposed forestry developments within the study area to complete, as part of the assessments, a form evaluating archaeological potential of the development area, in terms of the criteria used in the model plus any other relevant criteria. The form could be designed by a qualified archaeologist, be made available to the MOF, and be attached to reports submitted to the Archaeology Branch.

In the past, reconnaissance assessments of proposed development areas, particularly timber harvesting blocks, were reported orally, or reported briefly in writing to the proponent, often in the form of a memorandum. These reports are seldom forwarded to the Archaeology Branch or, in the case of forestry developments, to the MOF. As a result, few archaeologists are aware of these reconnaissance assessments. Further complicating the matter are CMT inventory projects, along with questions about who is responsible for compiling and reviewing the information gathered from future CMT inventories of this nature. To ensure that reconnaissance and inventory data are available to assist in the development of archaeological potential models, it is recommended that:

- The Archaeology Branch (and MOF, with respect to provincial forest lands) require that the results of all PFR and CMT inventory assessments be reported in writing and submitted to the Archaeology Branch.

- The MOF should compile and maintain a list of all AIA, PFR, and CMT inventory studies conducted in the district. All reports should be kept on file at the district office.