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CHANGING TIDES: THE DEVELOPMENT OF AN ARCHAEOLOGICAL EXHIBIT

By

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ABSTRACT

This thesis report is part of a larger thesis project which includes the museum exhibit Changing Tides and the UBC Museum of Anthropology Museum Note No. 13, entitled Changing Tides: The Development of Archaeology in B.C.'s Fraser Delta. This report chronicles the planning and production of this exhibit project and outlines the criteria on which it is based.

The main objective of this project was to aid in the development of public appreciation for scientific archaeology. Justification for this objective is provided through a discussion of the role of public interpretation in archaeology. Funding, exhibit development, exhibit co-ordination and scheduling, exhibit conservation, Museum Note developmnet, and related activities are discussed and evaluated. A series of appendixes are included which document the development of Changing Tides.

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I would never have returned to university and tackled such a project as Changing Tides without the enthusiastic support of my family. I am extremely grateful to my parents for their constant and generous support, as well as my mother's skillful late night, last minute typing, especially of this report. My sister Sue's expert editing has contributed enormously to the quality of this project. I am extremely grateful to her. Without my husband Gervais' encouragement and support my involvement with Changing Tides would not have been possible.

1.0 INTRODUCTION

The planning and production of the museum exhibition Changing Tides and its companion publication Changing Tides: The Development of Archaeology in B.C.'s Fraser Delta are the primary components of my Master's thesis in Anthropology. This report provides the opportunity to document this planning process and to briefly explain some of the criteria used in the development of these projects.

Since museum exhibits are not usually undertaken as the primary component of a Master's thesis, this report will also serve as a reflection of this experience. Although it is beyond the scope of this brief report to critically outline all aspects of the planning process, I hope it will provide some useful information for others considering a similar undertaking, as well as provide a record of a particular exhibit's development.

This report follows chronologically the development of Changing Tides and the associated Museum Note. A variety of documents are included which were produced at various stages in this project's development.

The report is organized as follows: this section discusses the role of public interpretation in archaeology, and considers how the exhibit was conceived in light of this role. This discussion follows a brief introduction to the exhibit within the context of a M.A. programme. The second section discusses the reconceptualization of the project in view of a number of considerations. Section 3 outlines the exhibit's

development and production, and Section 4 discusses the Museum Note. Section 5 looks at activities related to this exhibit project, Section 6 discusses conservation, and a final section provides a brief overall evaluation of the project.

The bibliography contains the selection of readings which I found most useful in developing Changing Tides. It covers a variety of subjects including: the archaeology of the Fraser delta, the history of archaeological method and theory, the natural history of the Lower Mainland, the role of public interpretation in archaeology, the literature on exhibit development, and on Coast Salish material culture and history.

The appendixes are the core of this report and are the keys to documenting the development of the exhibition Changing Tides.

1.1 AN EXHIBIT THESIS

The impetus for creating an exhibit as the major element of my M.A. thesis resulted from a desire to combine archaeology and museum studies, even though the M.A. programme at UBC has no formal museum studies specialization. Since archaeology is a formal emphasis, I pursued this route and took additional courses in museum studies. I also gained practical experience in a variety of jobs within the Museum of Anthropology. The practical experience gained was very important preparation for curating Changing Tides. A working knowledge of the museum and the roles of its various staff members and volunteers was essential for producing realistic budgets and schedules, and for making and meeting crucial deadlines.

While curating an exhibit requires competence in practical museum procedures, the resulting exhibit thesis is also judged by the scholarly appropriateness of the ideas presented. Before I discuss how the ideas presented in the exhibit were conceived and developed it seems logical to present a justification for venturing outside the normal bounds of scholarship to produce a thesis developed specifically for the general public.

1.2 PUBLIC INTERPRETATION AND ACADEMIC ARCHAEOLOGY

Public interpretation is constantly cited as important for archaeology (Feder 1984:525; Fladmark 1980-81:18; McGimsey and Davis 1977:78), nevertheless, it is a relatively neglected and academically unrewarded aspect of the discipline. Research, publication and teaching aimed at colleagues and university students are the internally rewarded aspects of archaeology. Although public funds finance most archaeological endeavours, the return to the public, in the form of reports or interpretative projects aimed specifically at this audience is low. This trend appears to be changing, at least on major funding organization in British Columbia is committed to supporting archaeological research designs which include public interpretation (Charlton 1984). If public accountability becomes more important, on-site interpretation at accessible locations will probably increase. Public lectures or publicatons aimed at a general audience may prove an acceptable alternative to on-site interpretation for some projects.

Although there is a great deal of public interest in archaeology (Fagan 1977:120), it often takes a form which is detrimental to the discipline. Even if archaeologists devote more attention to the public, they still have to compete with the readily available, speculative, and sensational books and productions such as those by Erich von Daniken (1970), and Barry Fell (1976), as well as with flashy treasure oriented exhibits like the Treasures of Tutankhamen.

Another detrimental aspect of academic archaeology's relative neglect of the public is that it has done little to foster public support for the protection of sites or significant archaeological objects. Public awareness is necessary for effective legislation, but equally as important for promoting individual respect for the protection of sites and objects. Awareness requires education; education in terms of the scientific and cultural value of archaeological resources. It is within this context that the broad objectives of this thesis were developed.

1.3 OBJECTIVES

The main objective of this thesis project is to aid in the development of interest and knowledge of scientific archaeology through exposing museum visitors to archaeology's methods and goals, as well as to present some of the results of archaeological research. Also this exposure aims to help foster an awareness of archaeology and contribute in a positive way to public understanding of the discipline.

To acheive these objectives it is necessary to present a perspective on archaeology which counters the popular view that archaeology is a search for tresure, that is the view which considers that objects alone carry the important information. To counter this view, it is necessary to show that an archaeological site as a whole is important, or that the context is as important as the objects. It is also important to show that archaeological sites are non-renewable resources, and once they are dug, whether by careful excavation or by careless relic collection, they are gone forever. Or as Flannery puts it:

> Archaeology is the only branch of anthropology where we kill our informants in the process of studying them. (Flannery 1982:275)

In view of these objectives and in light of the fact that an exhibit was considered anacceptable part of a Master's thesis, an exhibition outline (Appendix 1) was produced to meet the National Museums of Canada, Museums Assistance Programme, Exhibition Assistance funding deadline of February 1983. Some tentative ideas existed for an exhibit based on the 1977 excavation of Crescent Beach by Leonard Ham (see Ham 1982). From these ideas, I developed a plan for an exhibit which would present to the public modern archaeological methods for making inferences about the economic strategies of prehistoric people. It would integrate ethnographic, historical and environmental information, and would use both archaeological and ethnographic collections, as well as graphics, photographs and original illustrations. In

consultation with the Museum's exhibition designer, Herb Watson, it was also decided that modular wooden frame and silkscreened panel construction, used for other travelling archaeological exhibits, would be employed. The funding proposal (Appendix 2) was developed with Prof. R.G. Matson, my advisor.

2.0 FUNDING

Since the archaeology gallery at the Museum of Anthropology had not been updated since its installation, it was decided that the exhibit would be tied to a larger gallery revitalization project. The initial funding application (Appendix 2) was for funds to research and to produce the exhibit, as well as to remove permanent display cases from one section of the gallery. This gallery space would be used for Changing Tides and for future temporary archaeology exhibits.

The National Museums of Canada, Museums Assistance Programme For Exhibition Assistance (MAP) was approached for funding since their stated purpose is

> to provide opportunities for the production of exhibitions which extend access to the collections which reflect our natural, cultural and technological heritage. (National Museums of Canada n.d.)

The project was conceived as a phased plan, which would include, as separate phases, a national tour for the exhibit and gallery revitalization. Although MAP expressed interest in the exhibit, the funding application was declined.

During the summer of 1983, it was decided that we would reapply to MAP in 1984 as well as seek other sources of funds and consider using internal funds for a scaled down version of the exhibit, if necessary. The gallery revitalization project was separated from the exhibit.

2.1 THE RECONCEPTION OF THE EXHIBIT

Since the first funding application was turned down, I had time to do further research and to reconceive the exhibit

during the summer of 1983. In this reconception, an important concern was how to balance public appeal and accessibility with academic archaeological content.

Appendix 3 is the revised storyline for Changing Tides. This new version of the exhibit outlines the history of archaeological research in the Fraser delta region of British Columbia; it focusses both on the changing perspectives of archaeologists through time, and on the changing techniques they have used to answer questions about the region's prehistory. This new version also contains information on what shell middens are all about, and a concluding section, which I call the "commercial", about the rapid disappearance of sites in the area. I have specifically focussed on professional archaeologists and have concentrated on work done through UBC where applicable. Amateur or avocational archaeologists and other institutions have also made valuable contributions to the archaeology of the area; however, since I was working with UBC collections, I felt it was appropriate to limit discussion to them, if possible.

The new theme resulted fundamentally from research of numerous sources, covering local and general archaeology, natural history and environmental development, Coast Salish history, and museum exhibition literature. Other influences included Professor Halpin's review of the British Columbia Provincial Museum's galleries (Halpin 1978) and funding

considerations. A primary influence came from the Museum of Anthropology and Laboratory of Archaeology collections.

By changing the exhibit I hoped to accomplish a number of objectives. First of all, since collections are the primary focus and most important medium of an exhibit, I wanted to use objects more effectively. The Crescent Beach material is scant and the appropriate Coast Salish material is virtually non-existent at UBC. Since these were the collections emphasized in the old scheme, it appeared necessary to expand the potential use of the UBC collections in the exhibit. Fortunately, the Laboratory of Archaeology does have an extensive archaeological collection from the Fraser delta region. A large portion of this collection is a poorly provenienced teaching collection which is used for touchables. This type of collection is also ideal for use in a travelling exhibit. I also considered that using replicas was a distinct possibility as long as they were clearly labelled as such. Replicas could be used to fill in gaps in the collection, but more importantly, excellent replicas of important specimens could also be used for a travelling exhibit, whereas it would be too great a conservation risk for the originals to travel. Another advantage of replicating objects from the research collections is that the originals would remain available for study.

Secondly, I wanted to provide a conceptual framework which would aid visitor comprehension (ROM 1976:85). Since

the exhibit would be designed to travel, the theme of the exhibit should be comprehensible to a national audience. This comprehension could be enhanced by participating museums if they tied the historical developments of archaeology into parallel developments in their own localities. I also considered that the developmental approach allowed by an historical perspective would help the viewer with little or no background in archaeology to move through the various stages of research.

Of course, the nature of museum audiences is complex, ranging from school groups, to tourists, to native people, to university students, to scholars and to other interested members of the public. This diverse audience has a variety of motives and interests for visiting a museum or a specific exhibit, thereby requiring that multiple objectives be addressed in exhibition development. Although it is beyond the scope of this report to discuss the complexity of exhibit audiences, I did give considerable thought to this question in developing Changing Tides.

Thirdly, I wanted to stimulate interest by "humanizing" or "personalizing" the exhibit. This to be done by relating objects to the people who originally made, traded, used, lost or discarded them, as well as to the people who dug them up and interpreted them.

Also, by making the interpretative context explicit, I hoped to address Professor Halpin's perspective that

archaeological exhibits are cultural performances which show as much about archaeologists as they show about the prehistoric people under study (Halpin 1978:42-3).

Finally, I considered that this new scheme would have a broader appeal than the original exhibit, and would therefore be more acceptable to funding agencies. Since funding applications sent to MAP (Appendix 4) and to the British Columbia Heritage Trust (Appendix 5) in the spring of 1984, were both successful, I concluded that the new scheme was an improvement.

3.0 EXHIBITION DEVELOPMENT

Once the funding amount for the exhibit was known, it was possible to begin organizing the exhibit into sections, and to outline in detail what would be included in each one. Appendix 6 is the final exhibit outline from which the sections were developed. The storyline, the history of archaeology in the Fraser delta region, was broken down into six sections. The first section serves as an introduction to this history and as an explanation of shell middens. The three stages of archaeological development are covered in the next four sections, and a final section covers the future of this research. Appendix 7 shows in detail how ideas for the appropriate text, artifacts, photographs, and graphics were outlined for each section.

Due to time restrictions it was necessary to limit my search for sources of photographs mainly to the Vancouver and Victoria area. I also decided not to venture outside of the Laboratory of Archaeology, or the Ethnology collections of the Museum of Anthropology for artifacts, except to search for contemporary Coast Salish pieces for section 5. In the end, even these pieces were selected from the museum's collection in consultation with the Curator of Documentation, Audrey Shane, and the Conservator, Miriam Clavir. All other objects were selected from the Laboratory of Archaeology collections, or replicated by

the Museum's technician, Len McFarlane. Conservation and research considerations were paramount in this selection process.

Many changes and rearrangements occurred in the exhibit between the time Appendix 7 was drafted in August 1984 and the late fall when the final text was completed and the final artifacts, graphics and photographs were selected or prepared. The section outlines provided an invaluable organizing tool for developing and arranging ideas, and for searching for the appropriate artifacts and illustrations to enhance the ideas to be presented.

3.1 TEXT DEVELOPMENT

The writing and editing of the exhibit text was undertaken in the fall of 1984. Major changes to the text occurred between the first draft (Appendix 8), and the second draft (Appendix 9). Between the third and seventh, or final draft (Appendix 10) the changes are mainly refinements rather than wholesale revisions.

From the first draft, it was my intention to develop the text using a modified newspaper approach (Watson 1978). This style of exhibit presents the information in a hierarchical fashion; the first sentence or short paragraph is in larger or bolder print and provides an easily read summary for the entire section. This approach allows the reader to grasp the main point of each section by scanning only the first few lines.

Since the exhibit was to be in both English and French, it was important to strive for concision. The illusion of

brevity was also attempted by presenting the text in smaller parcels with sub-headings. This helped to break up some of the longer sections.

One major difficulty with developing didactic exhibits on technical or unfamiliar subjects is presenting the information in terms which are understandable to the viewing audience. While the first draft was being reviewed by the editors (Professors Ames and Matson), I had an opportunity to try the text out on twenty-six university students. My sister presented the text to her English 100 class as an assignment. Since an English 100 class is composed of mainly first year university students with little or no background in archaeology, they provided a good mid-range audience to informally evaluate the exhibit text. They were instructed to write a letter or memo which specified any comprehension problems they had or any terminology they had difficulty with, any places where the text did not seem clear, and any aspects of the text they considered interesting, as well as those aspects which were not. Their replies were extremely helpful for eliminating or defining terminology, for showing that the conclusion did not tie into the rest of the exhibit, and for pointing the way to clarifying the stages of archaeological research I had defined.

Although my official editors pointed out many of the same deficiencies and other critical problems, the English 100 class replies presented a different and important

perspective. Since their views represented a subset of the audience I was addressing, their evaluations provided a novel way of testing audience response.

It is beyond the scope of this report to fully discuss audience evaluation of exhibit text drafts within the broader context of museum evaluation, nevertheless I believe such evaluations have a place in this study.

3.2 EXHIBIT CO-ORDINATION AND SCHEDULING

Another critical factor in exhibit development is the co-ordination and timing of the various aspects of the exhibit. Appendix 11 is the final production schedule for Changing Tides. It represents the co-operative agreement between the Exhibit Curator (myself) and the Designer (Herb Watson), of what needed to be done and how long it should take to complete each task. This schedule illustrates how a problem or hold-up in one aspect of the exhibit can create hold-ups in other areas.

To facilitate the co-ordination and documentation of the exhibit, we also developed an exhibit book which could be updated as the exhibit progressed. The system used in this book is based on Herb Watson's considerable experience designing and producing successful exhibits. This book was an invaluable aid for co-ordinating the text with the artifacts, graphics, and labels. The final version (Appendix 12) also serves as a record of all the exhibit's components. In earlier versions of this exhibit book, the comments sections

listed artifacts that were not finalized, or options for photographs, graphics yet to be produced, and other tasks left to be completed.

In section D2, (see page 174) the illustration of prehistoric activities at the Crescent Beach site (D2-G3), required the compilation of a variety of material from archaeological and ethnographic sources, photographs of the Crescent Beach area as it looks today, as well as all available photographs of the activities to be illustrated. Appendix 13 represents some of the information which was compiled for the artist, Gordon Miller's, consideration. A black and white version of the original painting is found on page 15 of the Museum Note (Appendix 19).

4.0 THE MUSEUM NOTE

The Museum Note Changing Tides: The Development of Archaeology in B. C.'s Fraser Delta (Appendix 19), was published to provide an enhancement to a temporary travelling exhibit. It also provides an accessible introduction to the history of archaeology in the Fraser delta region in a more permanent form than the exhibit itself presents.

The Museum Note text took three drafts to complete. Appendix 14 and 15 correspond to the first and final drafts of its text. The text follows the exhibit quite closely, with the main changes being a new introduction, a greater emphasis placed on the developmental historical theme, the addition of references, and the selection and revision of graphics.

When proof-reading problems appeared in the French portion of the exhibit text, I was compelled to have the Museum Note's French text proofed by an outside professional. Although problems with the exhibit text were caught and corrected, I could have avoided the lost time and considerable expense by undertaking the same process for the exhibit as I subsequently followed with the Museum Note.

Both the exhibit text and the Museum Note text were stored and revised on the computer. The Textform word processing programme available on UBC's MTS system was used. Textform saved many hours of labourious typing and eliminated typesetting errors as UBC's typesetting services had

direct access to the files. Word processing also lessened the turn-around time between drafts which helped greatly when final deadlines approached.

The Museum Note was designed by Gordon Miller, with the cover adapted from the exhibition's poster, also of his design. Tying the Museum Note and the poster together visually helps people to identify the booklet with the exhibit.

5.0 RELATED ACTIVITIES

A variety of activities and enhancements were developed in conjunction with the exhibition Changing Tides. The major enhancement was the Museum Note which is discussed in the previous section.

A poster was designed for the exhibit. It was developed specifically for publicity purposes rather than as an item for sale. The Museum's Public Relations officer, Ruth Anderson, suggested that since the poster was conceived primarily to advertise the exhibit, and because the exhibit would travel to five locations across the country, we should consider leaving a blank strip on a number of the posters where the participating museums could print in their own exhibition information. We followed through on this proposal and offered museums participating in the tour, up to fifty posters for their own use.

Appendix 16 outlines the national travel schedule developed for Changing Tides.

During the exhibition's run at the UBC Museum of Anthropology a public lecture series was held at the museum (Appendix 17). This lecture series was organized by Professor R. G. Matson and covered topics related in various ways to the exhibit. The attendance at these lectures was excellent, and they provided an opportunity for professional archaeologists to present to the public aspects of their current research, as well as to express their views on the

directions archaeological research in the area is taking.

There are a number of other activities related to the exhibit Changing Tides which I have not discussed, including the organization of the national tour, the exhibition opening, exhibition publicity, and the development of a video tape based on the exhibit. Since the opening, publicity, and the video tape are primarily the responsibility of others, I will not deal with these activities, except to say that they require the same type of co-ordination and co-operative agreement as exhibition production.

Although the travelling phase of Changing Tides does not commence until early 1986, much of the ground work has already been completed. Setting up the travel schedule requires a seemingly endless series of letters, the first to a number of museums who might be interested in hosting the exhibit, the second to provide detailed information and possible dates to those museums who are interested in the exhibit, and after funding was approved, a final series to those museums who both accepted the available times and who fit into a logical progression across the country.

After the tour was set, various curatorial and publicity information was sent to host museums, and when the appropriate times come, someone associated with the exhibit will travel to each museum to help with publicity and with any last minute set-up problems which might be encountered.

6.0 CONSERVATION

The modular frame and panel construction system used in temporary, travelling archaeological exhibits designed at the Museum of Anthropology incorporates fixed mounted artifacts in secured plexiglas cases. Artifacts are attached in several ways depending upon their material, structure, weight and fragility. Wax and silicone-based adhesives are used alone or in combination with flexible straping.

Although, in the main these mounting techniques are theoretically reversible, it is impossible to remove all the residue from mounted objects after a lengthy exhibition run. Since residue analysis of archaeological artifacts is an increasingly important technique (Loy 1983) necessitating minimal contamination, it seemed important not to subject research collections to mounting adhesives. Exceptions to this were two artifacts used in Changing Tides which had already undergone residue analysis and which were used specifically to illustrate the rudiments of this increasingly sophisticated technique.

During the process of removing artifacts from another temporary, travelling exhibition, damage was noted on several types of specimens, noteably shell and slate. Inclusion of similar artifacts or specimens in Changing Tides was given careful consideration, and selections were often made on the basis of this review. Although the sturdiness of specimens and artifacts was an important consideration, it was

difficult to find suitable non-provenienced artifacts which fit this criteria since many of these objects are weathered, surface finds.

The design of the artifact cases used in this exhibit also necessitated that the Museum's standard conservation forms for travelling exhibits be modified. Since the cases are not to be opened, and the possibilities for damage can be outlined more specifically than for other types of exhibits, a conservation system was designed specifically for Changing Tides (see Appendix 18). The damage inspection routine to be followed by the participating museums parallels the system already set out by the Museum of Anthropology; the major changes are in considering each case as the unit for inspection and in emphasizing the security of the mounts.

Colour photographs of each case are included in the conservation inspection kit to aid in this damage inspection.

7.0 EVALUATION

It may be premature to give a final evaluation of Changing Tides since the exhibit has a major portion of its viewing life ahead of it. Nevertheless, it is not too early to evaluate the process of exhibit development.

7.1 PLANNING

After the development of an exhibit's storyline, the most important requirement is a well co-ordinated plan, and the co-operative agreement of a number of people. It is not just the physical exhibit but the planning of the tour, the various aspects of publicity, the opening, and the enhancements which must all come together at the appropriate times to create a successful exhibition.

Since planning the exhibit is the key, it is necessary to create the most effective devices, and to canvass the veterans for the best ways to facilitate exhibit development. For Changing Tides, the creation of a detailed outline, or storyline (Appendix 6), was crucial to the development of many aspects of the exhibit, from funding proposals, to section outlines, to production schedules. It was also the basis on which the text was written, and the basis on which other people could plan additional activities, such as the video production, publicity, and even the food to be served at the opening.

The organizational devices, such as the section outline (Appendix 7), the production schedule (Appendix 11),

and the exhibit book (Appendix 12) were invaluable aids to producing the exhibit on time with the minimum of delays, disasters, or misunderstandings. Perhaps similar devices would have been useful for other aspects of the project beyond production, especially for the Museum Note and for the video production.

7.2 EVALUATION

The development of a museum exhibit requires continuous or formative evaluation of the various aspects being undertaken. I have already mentioned a few of these, such as the reconceptualization of the exhibit in light of funding criteria, the nature of collections, and the desire to create a more effective exhibit, as well as the informal evaluation of the exhibit text by English 100 students.

Evaluation also played a role in examing the exhibit after installation. For instance, the original layout of the exhibit was reviewed and modified after it was observed that the layout of the exhibit panels and the natural flow of traffic did not coincide.

It is rather difficult to judge, from my particular vantage point, the success or failure of the project as a whole. So far, however, written feedback has been positive: letters have been received praising the exhibit's clarity and the Museum Note's suitability for a national audience. A review of the exhibition is also favorable (Mason 1985:13).

Without some type of summative evaluation, it is difficult to judge how well the exhibit communicates ideas to the public. Since the stated purpose of this thesis project is to help foster public awareness and support for the goals of scientific archaeology, it seems logical to attempt to test the exhibit's effectiveness in these terms. Perhaps some of this type of evaluation could have been undertaken during the exhibit's run; however, museum evaluation is a complex and controversial endeavour worthy of time and consideration beyond the limits of the present project.

7.3 EDUCATIONAL PROGRAMMING

Another aspect of the exhibit which has not received a great deal of attention to date is educational programming. This omission will be partially rectified for the national tour by a video production currently being developed, by supplemental curatorial information, and by host museums who are planning to incorporate the exhibit into their educational programmes. If these educational programmes are undertaken they could expand audience appeal during the national tour. By emphasizing the parallel history of the development of archaeological research in various regions, the educational value of the exhibit would also be enhanced.

The incorporation of Changing Tides into the existing school programmes at the Museum of Anthropology was restricted to informal use in school programmes which focussed

specifically on archaeology. It was also incorporated into tours given by Volunteer Associates and others who were familiar with archaeology. This limited use of the exhibit in educational programmes at the Museum of Anthropology was due primarily to the time constraints of the Curator, and the lack of initial planning for funds to undertake these programmes. The lack of a structural channel to co-ordinate archaeological exhibits into the main stream of the Museum's educational activities may also be an underlying factor. This is due in part to the perceived separation of activities associated with archaeology from those of the rest of the museum. Unfamiliarity with archaeology, is also an important factor for those undertaking these programmes.

7.4 CONCLUSION

In conclusion, I am struck by the fact that two such seemingly incompatible pursuits as the necessarily co-operative venture of a museum exhibit and the usually solitary one of a Master's thesis can be combined. Changing Tides is the result of such a synthesis of an intellectual endeavour with a co-operative, public-oriented venture. I firmly believe that the discipline needs to promote this kind of synthesis from within if it is to gain the public awareness and support it so urgently requires.

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9.1 APPENDIX 1 Jan. 1, 1983

ARCHAEOLOGY TEMPORARY EXHIBIT

(Untitled as yet)

The primary purpose of this exhibit will be to show how archaeologists make inferences about the economic strategies of prehistoric people through the utilization of a variety of methods and techniques when analyzing materials from archaeological sites. The focus of the proposed temporary archaeological exhibit will be the results of the 1977 excavation of the Crescent Beach site, which has shown that viable information on the economic strategies of prehistoric Northwest Coast peoples, can be obtained when midden analysis is undertaken in conjunction with ethnographic and environmental information. This exhibit will reflect not only the kind of substantive research which is ongoing at UBC but also important aspects of archaeological research in general.

The Crescent Beach midden site is situated on Boundary Bay in the southern portion of the Fraser River Delta system and ethnographically is contained within the boundaries of the Coast Salish culture area. This site represents an important aspect of a complex seasonally differentially adaptive strategy, specifically the utilization of the February-March herring run and concommitantly the processing of shellfish and other available, though less important, resources. Significant evidence for woodworking activities at the site were also discerned archaeologically.

Archaeological investigations at this and other sites supports the thesis that a seasonally diverse, complex and specialized adaptive strategy has persisted in the region for several millenia.

The regional variations of this adaptive strategy are the basis for the development and subsequent flourishing of the Northwest Coast culture-culture which is widely identified by its magnificent art style and ceremonies. The prehistoric evidence for one aspect of this adaptation is the subject of this exhibit, as well as the archaeological methods utilized to discern it.

The exhibit will contain information presented in a variety of ways. For example, maps, photos, diagrams, faunal remains and artifacts will be utilized to enhance the storyline. Archaeological methods will be illustrated; for example, shellfish growth ring analysis, which is utilized to determine the season of shellfish procurement and to infer the season of site use. Reconstruction of subsistence activities such as clam and herring procurement and processing will be represented, as well as the archaeological evidence from which these activities are inferred. Aspects of the environmental and ethnographic information utilized in the research design and analysis at Crescent Beach will also be illustrated. Possible inclusions may be an introductory slide-tape presentation or a reconstructed midden feature, space and logistics permitting.

PROJECT

DESCRIPTION: (Use only space provided; do not add additional sheets. Include information on need for project, aim or objectives, audience to be served and anticipated duration. If applicable explain need for research, conservation, staff travel and/or justify why exhibition may not travel nationally.)

Changing Tides represents the first of a three stage plan to revitalize and expand the exhibit capacity of the archaeology gallery in the Museum of Anthropology. The objective of Phase One is to repalce part of the existing permanent archaeology display installed under severe time limitations for the opening of the museum in 1976. It is informative but static, as no space is available for public reports on current research and other temporary displays of general interest. However, minor changes to the gallery and to the exhibit philosophy will permit a more effective use of this space.

The Phase One temporary exhibit will draw upon the museum's research collections to illustrate the process of archaeological reconstruction of past events and the analogous ethnographic activities. Phase Two will consist of packaging this exhibit for travel, and Phase Three will be a recasting of the entire archaeology gallery, as funds become available. Phasing distributes costs over a longer period and allows exhibit planning to be more effectively integrated with research and teaching programmes.

The removal of one built-in case, so flexible modular display units can be used for the temporary exhibit, will provide future space for changing displays, thus adding more vitality to the archaeological presentation. This feature will be retained when the remainder of the gallery is upgraded as part of a proposed Phase Three.

Phase One: Changing Tides will show how archaeologists piece together, from the patterning of shell, stone, charcoal, bones and ash remains, the activities which supported a distinctive and complex culture. By combining archaeological techniques with environmental and ethnographic information, the varied activities which went on at a site are discovered. The exhibit will thus demonstrate the techniques and orientation of modern archaeology which are used to discover past lifeways.

The cultures along the British Columbia coast culminated in a highly successful andunique way of life which the public typically identifies with its magnificient art. People are less acquainted, however, with the equally fascinating, complex system which these people evolved for exploiting their environmnet.

Changing Tides will utilize materials excavated from the Crescent Beach site to demonstrate how archaeologists discover the range and season of activities through

(contined on page 2b)

PERSONNEL List all permanent or part-time staff associated with the Project, their title and function. If person(s) contracted for this project, please attach resumé(s) and list duties.

Curator: Responsible for the storyline, research and development and academic content of production.

Director: Responsible for editing exhibit copy (Dr. M.M. Ames)

Exhibit Designer: Prepares exhibit design and panel layout, supervises technical aspects of production.

Illustrator: Depicts the prehistoric activities which occurred at or near the site, in watercolour graphics, from information provided by the Curator and Research Assistant.

Photographer Designer: Designs and prepares photographs for exhibit.

Research Assistant: Assists in the research and development of the storyline and in documentation of exhibit material as well as literature search.

Design Assistant: Assists the Exhibit Designer, arranges text typesetting and exhibit photos, and prepares and mounts exhibit materials.

Curatorial Assistant: Prpares figures for display, proofreads typesetting.

Administative/Clerical Staff: Administrates budget, requistions purchase orders, types manuscripts for exhibit text.

A.V. Editor: Edits video and prepares sound overlay.

such analytical techniques as shell fish growth ring studies, residue analysis of stone tools, and constituent analysis of remains. These archaeological techniques are combined with environmental and ethnographic information to provide a wider perspective by showing how various activities were interrelated, when and why prehistoric people used the site, and how these prehistoric activities related to historic ones.

Photographs, graphics, maps, and commissioned illustrations will accompany Crescent Beach artifacts to enhance the storyline and to provide a more complete view of how archaeologists discover the past. The installation of a video access unit will provide a wide range of complementary archaeological programmes. A brief catalogue will also be issued in conjunction with Changing Tides, as part of the Museum Note Series. A public lecture series including archaeologists, ethnologists, biologists and other relevant experts will be arranged to enhance the exhibit.

Once the exhibit is installed in the Museum of Anthropology, a plan for national travel will be undertaken as Phase Two. This exhibit with its supplementary video and catalogue will be the fourth in a series of successful travelling archaeology exhibits prepared at U.B.C. with the aide of the Exhibitions Assistance Programme. This second phase and the Phase Three plan to upgrade the permanent archaeology display will be scheduled according to funding and each phase can be completed before the next begins. The Museum of Anthropology recognizes that support of Changing Tides does not entail a commitment to support later phases, but that each must be judged on its own merits.

LIST OF CONTENTS

TITLE, TYPE OR DESCRIPTION OF OBJECTS	ARTIST OR PROVENANCE	OWNED BY	AVAILABILITY CONFIRMED	VISUALS ATTACHED
All objects are owned by the UBC Museum of Anthropology or held in trust by the Museum for the Semiahmoo band.				

If additional space is required, please attach additional sheets following the same format.

RUNNING OR SQUARE FEET (METRES) REQUIRED FOR EXHIBITION: 300 sq. ft.

DURATION OF EXHIBITION FROM: Sept. 1984 TO: May 1984

23/6/79

ITINERARY

DURATION OF ENTIRE TOUR: FROM _____ TO _____

PROJECTED TOUR

LOCATION	ARRIVAL DATE	DEPARTURE DATE	CONFIRMED	UNCONFIRMED
No circulation is planned within present application. A separate application for exhibit travel will be submitted at a later date as Phase Two.				

If additional space is required, please attach additional sheets following the same format.

METHOD OF SHIPMENT: RAIL _____

AIR _____

ROAD _____ OWN VEHICLE _____

COMMERCIAL SHIPPER _____ (attach quotes)

* WHEN AN EXHIBITION IS FUNDED BY EAP, THE ORGANIZER MUST NOT CHARGE SHIPPING COSTS TO THE BORROWING INSTITUTIONS.

INSURANCE VALUE: $_____

* WHEN AN EXHIBITION IS FUNDED BY EAP, THE ORGANIZER MUST PAY ALL INSURANCE COSTS, EXCEPT WHEN A BORROWING INSTITUTION HAS BLANKET COVERAGE AND CAN INSURE THE BORROWED EXHIBITION WITHOUT ADDITIONAL COST TO THEIR ANNUAL PREMIUM.

* WHEN AN EXHIBITION IS FUNDED BY EAP, THE ORGANIZER MAY NOT CHARGE A BORROWING FEE TO THE BORROWING INSTITUTIONS.

CATALOGUES/BROCHURES/POSTERS

TEN (10) COPIES OF ALL PRINTED CATALOGUES AND BROCHURES PRODUCED WITH EXHIBITIONS ASSISTANCE PROGRAMME ASSISTANCE MUST BE FORWARDED, FREE OF CHARGE, TO THE EXHIBITIONS ASSISTANCE PROGRAMME. THESE WILL BE DISTRIBUTED TO THE NATIONAL MUSEUMS LIBRARY, THE NATIONAL LIBRARY, AND THE NATIONAL GALLERY LIBRARY. THE APPLICANT IS ALSO RESPONSIBLE FOR DISTRIBUTING ONE COPY EACH, FREE OF CHARGE, TO ALL APPROPRIATE ASSOCIATE MUSEUMS. (A CURRENT LIST OF ASSOCIATE MUSEUMS WILL BE FORWARDED TO SUCCESSFUL APPLICANTS WHEN FUNDS ARE RELEASED.)

Describe the educative value and objectives.

An exhibit catalogue in the form of a museum note, will provide information comparable to the exhibit. This catalogue will permit enhanced exhibit appreciation and interpretation. A brief bibliography of relevant articles and other publications will be included for the individual who wishes further information.

The exhibit poster will feature one of the watercolour reconstructions of prehistoric activities.

	CATALOGUES	BROCHURES	POSTERS
DIMENSIONS	8" x 10"		24" x 17"
NUMBER OF PAGES	10		
NUMBER OF COLOUR REPRODUCTIONS	none		
NUMBER OF BLACK AND WHITE REPRODUCTIONS	14		
NUMBER OF CATALOGUES, BROCHURES, POSTERS	3000		300
ESTIMATED PUBLISHING COST	$ 3280		$ 790
ESTIMATED HANDLING COST	$ 300		-
NUMBER TO BE GIVEN AWAY	100		200
NUMBER TO BE SOLD	2900		100
SELLING PRICE	$ 1.25		$ 1.00
ESTIMATED ADMINISTRATIVE COST	$ Under General Administrative Costs		
ANTICIPATED REVENUE *	$ 45		$ 100
PRICE QUOTES AND MOCK-UPS ATTACHED	See attached 'Blood From Stone' estimate		
TOTAL ANTICIPATED REVENUE FROM ALL PRINTED MATERIAL	$ 145		

ALL NATIONAL TRAVELLING EXHIBITION MATERIAL SHOULD BE PRODUCED IN BOTH OFFICIAL LANGUAGES.

* Revenue 3,625 less costs 3580

Final retail and wholesale prices to be established after final (1984) publication costs are known.

ENHANCEMENT

ACTIVITIES AND MATERIALS WHICH FACILITATE A BETTER UNDERSTANDING OF AN EXHIBITION ARE SUPPORTED WHEN THEY CAN BE JUSTIFIED IN TERMS OF NEED, EXHIBITION OBJECTIVES AND THE AUDIENCE TO BE SERVED. THEY MAY INCLUDE FILM, A-V PRODUCTIONS, PERFORMANCES, DEMONSTRATIONS, TAPES, ETC. IN THE SPACE BELOW DESCRIBE THE ENHANCEMENT PROPOSED AND ITEMIZE THE COSTS.

The addition of a video access unit will not only enable presentation of a greater range of complementary information in conjunction with Changing Tides but will allow ongoing short lenght video programmes to be utilized in the archaeology gallery. Current research reports as well as special and general interest video tapes can be presented. The present application also includes the editing and production of a video tape from existing footage of the excavation and laboratory analysis of Crescent Beach materials. Slide tapes will be prepared on the local habitat and on procuring and processing activities. This video package will not only enhance the temporary exhibit but can be packaged to travel in Phase Two. Some video material is all ready available, including Northwest Coast Prehistory, A Museum of Anthropology production. The following titles will be srceened for suitablity and possible availability to transfer to video; Archaeological Dating: Retracing Time, Garbage and Garf: A Parable for Archaeology.

A public lecture series will be arranged to enhance the exhibit. Archaeologists, ethnologists, biologists and other relevant experts will be included. Negotiations will be undertaken to arrange for Wayne Suttles of Portland State University and Donald Mitchell of The University of Victoria to lecture in this series, as well as, several local speakers.

INSTRUCTIONS FOR COMPLETION OF BUDGET

1. BEGIN WITH PAGES 8 AND 9 - BUDGET. TWO COPIES OF THESE PAGES ARE INCLUDED WITH THE APPLICATION FORM, SO THAT ONE MAY BE USED AS A WORKING COPY FOR PREPARATION OF THE BUDGET. USE THE COMPLETED BUDGET ON PAGES 8 AND 9 AS A GUIDE IN FILLING OUT THE BUDGET SUMMARY ON PAGE 10.

2. PLEASE BE ADVISED THAT NATIONAL MUSEUMS OF CANADA WILL NOT FUND 100% OF TOTAL COSTS OF ANY PROJECT. TOTAL COST MEANS THE ENTIRE EXPENSE OF THE PROJECT, THAT IS, HOW MUCH IT WILL COST TO REALIZE THE PROJECT. PLEASE INCLUDE COSTS OF ALL ITEMS, INCLUDING SPACE, LABOUR, MATERIALS, CONSERVATION, PUBLICATIONS, EDUCATION ACTIVITIES, ETC., WHICH MAY BE DONATED OR CONTRIBUTED BY THE APPLICANT OR AN OUTSIDE SOURCE. THIS WILL NECESSITATE ASSIGNING MONETARY VALUES TO SUCH ITEMS AS DONATED EXHIBITION SPACE, CONTRIBUTED LABOUR, ETC.

3. CONTRIBUTION OF APPLICANT IS THE AMOUNT CONTRIBUTED BY YOUR INSTITUTION OR ORGANIZATION IN EITHER SERVICES OR MONEY. IN ORDER TO COMPLETE THIS COLUMN, YOU WILL HAVE TO ASSIGN A MONETARY VALUE TO STAFF TIME, MATERIALS, SERVICES, ETC., WHICH WILL BE USED IN THE DEVELOPMENT, PREPARATION AND ADMINISTRATION OF YOUR PROJECT.

4. OTHER INCOME IS MONEY OR SERVICES CONTRIBUTED BY OTHER DONORS OR GRANTING AGENCIES. IT IS ALSO THE REVENUE ANTICIPATED FROM THE SALE OF CATALOGUES, BROCHURES OR POSTERS.

5. BALANCE IS THE AMOUNT OF MONEY NEEDED TO REALIZE THE PROJECT AFTER SUBTRACTION OF THE APPLICANT'S CONTRIBUTION. FOR EXAMPLE, UNDER SUPPLIES AND MATERIALS, THE APPLICANT MAY CONTRIBUTE 4 DISPLAY CASES FOR AN EXHIBITION, VALUED AT $2400. IN ORDER TO PREPARE AN ADEQUATE PRESENTATION, 4 ADDITIONAL DISPLAY CASES ARE REQUIRED, AT A COST OF $2800. TOTAL COST OF DISPLAY CASES IS $5200, APPLICANT'S CONTRIBUTION IS $2400, AND BALANCE FOR DISPLAY CASES IS $2800.

6. EACH BUDGET CATEGORY MUST BE ITEMIZED. AS A GUIDE TO ITEMIZING THE CATEGORIES, SOME OF THE EXPENSE ITEMS WHICH MIGHT BE INCURRED UNDER EACH CATEGORY ARE LISTED BELOW.

PERSONNEL SALARIES AND FEES:	CONTRIBUTED STAFF TIME CONTRACTED STAFF FEES OR HONORARIUM TO GUEST LECTURERS, ETC. FEES TO ARTISTS: MUST BE PAID BY THE APPLICANT TO CONTEMPORARY CANADIAN ARTISTS WHEN WORKS ARE LOANED BY THE ARTIST FOR INCLUSION IN EXHIBITIONS FUNDED BY THE NATIONAL MUSEUMS OF CANADA, SUCH FEES TO BE AGREED UPON BY BOTH THE ARTIST AND THE BORROWING INSTITUTION. PAYMENT OF FEES REQUESTED MUST BE INDICATED IN THE FINAL AUDIT OR FINANCIAL REPORT.
PERSONNEL TRAVEL:	TRANSPORTATION AND PER DIEM FOR PROJECT EMPLOYEES OR CONTRACTED SPECIALISTS
RESEARCH COSTS:	EXPENSES NOT COVERED BY SALARIES OR TRAVEL
PRODUCTION COSTS:	EXPENSES NOT COVERED ABOVE THAT MUST BE INCURRED IN THE PROCESS OF CREATING THE FINISHED EXHIBITION (CRATES, DISPLAY UNITS, MOUNTING, EQUIPMENT RENTALS, CONSERVATION)
ENHANCEMENT COSTS:	EXPENSES NOT COVERED ABOVE THAT MUST BE INCURRED TO ENHANCE THE PUBLIC'S UNDERSTANDING OF THE OBJECTS DISPLAYED. (TRANSLATIONS, PRINTING, CATALOGUES, DEMONSTRATIONS, PERFORMANCES, A-V, FILM, POSTERS, ADVERTISING, PRESS KITS, INFORMATION KITS)
CIRCULATION:	EXPENSES NOT COVERED ABOVE AND INCURRED DURING THE PERIOD OF CIRCULATION (INSURANCE, SHIPPING, STORAGE, MAINTENANCE)

7. BE AS ACCURATE AS POSSIBLE. IF YOU HAVE RECEIVED A QUOTATION FROM A CONTRACTOR OR SHIPPER ON A PARTICULAR ITEM, PLEASE INCLUDE A COPY WITH YOUR COMPLETED BUDGET.

8. ALL PROJECTS IN EXCESS OF $10,000 WILL HAVE 10% WITHHELD UNTIL THE MUSEUM ASSISTANCE PROGRAMMES RECEIVE FINAL AUDITING OF THE TOTAL AMOUNT REQUIRED.

9. EXHIBITIONS ASSISTANCE PROGRAMME DOES NOT GRANT FUNDS TO AID INSTITUTIONS TO BORROW EXHIBITIONS. EXHIBITION ORGANIZERS MAY APPLY FOR ALL SHIPPING AND INSURANCE COSTS. NEITHER OF THESE COSTS NOR ANY OTHER PARTICIPATION FEE MAY BE CHARGED TO INSTITUTIONS BORROWING AN EXHIBITIONS ASSISTANCE PROGRAMME FUNDED EXHIBITION.

* IF YOU HAVE FURTHER QUESTIONS PLEASE CONSULT YOUR REGIONAL OFFICER.

23/6/79 -8-

BUDGET Please read the instruction page before completing the budget. Itemize each category.

CATEGORY	TOTAL COST	CONTRIBUTION OF APPLICANT	OTHER INCOME donations grants or revenue	BALANCE REQUESTED FROM E.A.P.
PERSONNEL SALARIES & FEES				
Curator 8 weeks	6,000	6,000	-	-
Exhibit Designer 6 weeks	3,600	3,600	-	-
Photographer 1 week	600	600	-	-
Illustrator on contract	2,500	-	-	2,500
Design Assistant on contract	900	-	-	900
Curatorial Assistant 3 weeks @$11.00 105x11 & benefits	1,200	1,200	-	-
Research Assistant 3 weeks @$10.00 105x11 & benifits	1,100	-	-	1,100
A.V. Editor (contract)	250	-	-	250
Administration 2 weeks	1,500	1,500	-	-
SUB-TOTAL	17,650	12,900	-	4,750
PERSONNEL TRAVEL				
Travel expenses and honoraria for guest speakers	600	-	-	600
SUB-TOTAL	600	-	-	600
RESEARCH COSTS				
SUB-TOTAL				

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BUDGET, CONTINUED

	TOTAL COST	CONTRIBUTION OF APPLICANT	OTHER INCOME donations grants revenue	BALANCE REQUESTED FROM E.A.P.
PRODUCTION COSTS				
Removal of 6' wide wall (&security unit) and built-in case. Repairs where necessary.	1,400	-	-	1,400
20 panels @ $75.00	1,500	-	-	1,500
10 modular frames & connectors	3,900	-	-	3,900
Photography (film, processing and enlarging)	1,900	-	-	1,900
Typesetting	700	-	-	700
Silkscreen text and labels	2,200	-	-	2,200
6 plexiglas cases	660	-	-	660
Misc. & construction	1,000	-	-	1,000
SUB-TOTAL	13,260	-	-	13,260
ENHANCEMENT COSTS				
Catalogue	3,580	300	45	3,235
Poster	790	-	100	690
Video access unit	6,700	-	-	6,700
Video tape production	350	-	-	350
SUB-TOTAL	11,450	300	145	10,975
CIRCULATION COSTS				
SUB-TOTAL				

23/6/79

SUMMARY OF BUDGET

	TOTAL COST	CONTRIBUTION OF APPLICANT	OTHER INCOME donations grants or revenue	BALANCE REQUESTED FROM E.A.P.
PERSONNEL SALARIES & FEES.....	17,650	12,900	-	4,700
PERSONNEL TRAVEL.....	600	-	-	600
RESEARCH COSTS.....	-			
PRODUCTION COSTS.....	13,260	-	-	13,260
ENHANCEMENT COSTS.....	11,420	300	145	10,975
CIRCULATION COSTS.....	-	-	-	-
TOTAL:	42,930	13,200	145	29,585
% OF COSTS:	100%	31%	1%	68%

SUMMARY OF OTHER INCOME

LIST ALL DONATIONS, GRANTS AND/OR ANTICIPATED REVENUE

SOURCE	$	CONFIRMED	ANTICIPATED

ANTICIPATED DATES WHEN FUNDS WILL BE REQUIRED: Project to commence September 1983

9.3 APPENDIX 3

CHANGING TIDES Storyline draft

February 18, 1984

Exhibit Overview:

Ever since the 1880's when a road construction crew working in what is now Marpole, south Vancouver, unearthed numerous prehistoric artifacts, archaeologists have been investigating midden sites in the Fraser delta region. These midden investigations have ranged from quickly organized salvage operations to large scale research projects. Changing Tides traces the history of this local archaeological research through several developmental stages, beginning with the late nineteenth century research of Harlan I. Smith and ending with recent work at the Crescent Beach site. This exhibit will outline how investigations of local midden sites have led to a greater understanding not only of their composition and contents, but also of how prehistoric people developed complex and unique systems for exploiting the potential of the Fraser delta and vicinity. The insights gained through this research are important because they promise to expand our understanding of Northwest Coast culture in general, and Coast Salish culture in particular. Whereas the public usually identifies Northwest Coast culture with spectacular ceremonials and impressive woodwork, the results of Coast Salish midden research indicate that less impressive

artifacts and often mundane remains can provide a fuller appreciation of the complexity and antiquity of Northwest Coast culture.

The development of archaeological research in the lower Fraser delta region has been the cumulative process of methodological developments and substantive results. Existing archaeological methods have been adopted, with local innovations applied to particular situations. Changing Tides follows these developments through four stages, prefaced by an orientation section and followed by a section which focusses on future research. The preface provides a general introduction to middens giving a sense of their composition, and the general environmental and cultural components intrinsic to their formation. This general introduction to middens is designed to eliminate the need for digressions from archaeological research techniques and their results in the next four sections of the exhibit. The final section of the exhibit will again look at the areas' midden sites in general to examine their future as cultural resources requiring protection if they are to play a role in the future of archaeological research.

Exhibit Outline:

Changing Tides is divided into six sections and progresses from an introductory section, through four stages of archaeological midden research to a summary section which looks at the future of this research. Section one serves to

introduce the exhibit's developmental theme and orient the visitor to the area's midden sites in general terms. Section two deals with the "descriptive stage" of archaeological research which focused primarily upon describing the artifactual content of midden sites. Section three shows how systematic and controlled excavations led to the development of a local cultural chronology. This chronology was defned by a series of diagnostic artifacts and traits which served to typify each phase. The fourth section sees a broadening of scope and a change in emphasis to subsistence research. Quantification of faunal remains and artifact data, as well as the correlation of this data to environmental information was utilized to provide a more complete understanding of the adaptive stages which correspond to the cultural phases previously outlined. Section five focuses on the techniques of recovery and analysis of shell midden layers which were utilized at the Crescent Beach site. These techniques allowed archaeologists to determine precise information on prehistoric site use. The final section of the exhibit will consider the future of the areas' middens as cultural resourses and therefore the future of archaeological research.

Section One

This section serves to introduce the exhibit's developmental theme, in general terms, and to orient the visitor to the lower Fraser delta region's midden sites. As the development of archaeological research in this region is

based upon the investigation of midden sites spanning an almost 9,000 year period, it is important to broadly define this type of site at the outset of the exhibit. Middens can be defined as valuable cultural resources since they are the complex records of cultural activities and natural events which archaeologists utilize to gain insights into the past. Northwest Coast middens are often recognized by an abundance of marine shells and usually seen as an intricate layering of these shells with soils and other remains. Locally these middens are located along the shoreline and at the base of upland areas adjacent to delta formations. Although in general, sea levels, climate and resources have remained relatively stable for the past 5,500 years. delta and estuary development has had an important impact on the location of habitation and resource utilization sites through time. Therefore, the present location of midden sites is dependent on the interplay of these factors in the past. As archaeologists have perceived and analyzed these sites in different ways through time, this introduction should serve as a focal point from which to view the development of this research.

Section Two

Local interest in midden research began with Charles Hill-Tout, but it was Harlan I. Smith's work with the Jesup North Pacific Expedition which received the attention of a wider archaeological audience. Changing Tides will focus on Harlan I. Smith's 1898 investigation of the Marpole site,

which was also known as the Eburne or "Great Fraser Midden" site. Smith and a small force of hired labour rapidly excavated a portion of this site by shovel. Although little attention was paid to the provenience of artifacts as they were removed from the site, Smith felt confident to state that there appeared to be little difference between artifacts in the upper layers and those in the lower layers of the site. Smith concluded that objects from all layers were similar to those made by the historic Coast Salish, and therefore indicated that there was a continuity of culture for the 2,000 years he estimated the site to represent. Smith saw this continuity of artifact types as a continuation of economic activities extending into the past. For example, he equated the presence of retrieving harpoons with sea mammal hunting, and the presence of woodworking tools as evidence that this activity has an antiquity much greater than that to which the wooden objects themselves can attest. However, the presence of chipped stone and decorative arts he saw as interior traits; therefore, he postulated an early migration of interior peoples to the coast. The importance of Smith's conclusions, concerning both continuity and discontinuity is that they established two themes which run through much of the areas' archaeological research. These themes have been variously expressed but basically depend on viewing differences in cultural remains either in terms of cultural discontinuity or as differential site use or

adaptational responses.

Section Three

This section will focus on the development of a regional sequence of cultural phases, primarily as derived by Borden. His recognition that a lack of provenience controls in previous work had provided only general descriptions and speculative interpretations led him to conduct systematic and controlled excavations at a series of sites. These excavations established components from which he developed a local chronology. This chronology is the foundation for the local sequence generally used today. Each component or phase was defined by a set of diagnostic artifacts or traits. During Borden's thirty year investigation and interpretation of this local cultural sequence he made several modifications. Whereas, his earlier work identified the differences between components as representing discontinuity in culture created by the influx of new groups, his later sequence emphasized continuity but still allowed for the influx of new groups, at least to explain the Whalen 11 component. This section will outline the Fraser delta chronology but will emphasize in particular, those sites which are directly comparable to the other sections. For example, Borden's Marpole excavations will be contrasted with Smith's investigation, and the Whalen Farm site will be contrasted with Crescent Beach. To make the transition between this section on the development of cultural chronology and subsequent ones, questions will be raised

about possible interpretations for the Whalen 11 material.

Section Four

As differences between site inventories became viewed in terms of cultural adaptations and seasonal site utilization rather than as necessarily differences in cultural groups, new methods were introduced to help answer new questions. This section deals with the advent of subsistence research which broadened the scope of archaeological investigations. This research emphasizes faunal remains and seasonality studies. The quantification and correlation of artifactual, subsistence, and environmental data is undertaken for the express purpose of obtaining information which sheds light on the development of cultural adaptations and innovations in the area. The main focus for this section will be the Glenrose Cannery site, with the major emphasis on techniques of analysis.

Section Five

This section will illustrate recent refinements in midden excavation and analysis which allow more precise information on economic strategies to be recovered. The recovery and analysis of shell midden layers at the Crescent Beach site is the focus of this section. This site represents an important aspect of a complex seasonally differentiated adaptive strategy, specifically the utilization of the early spring herring run and the processing for storage or trade of large quantities of shellfish.

The reconstruction of subsistence activities such as clam or herring procurement and processing are represented, as well as the archaeological evidence from which these activities are inferred. Specific data on the local biotic communities and ethnographic uses of them are necessary to illustrate how models of site use are developed and tested.

The archaeological remains of activities are rarely represented by complete "tool kits" or even by direct associations of artifacts and remains. It is by looking at the structure of remains and by incorporating a wide variety of information that the activities are inferred. Contrasting an archaeologically defined "tool kit" with an ethnographic one, illustrates this principle difference.

Section Six

The final section of the exhibit speculates on the future of archaeological research at midden sites in the lower Fraser delta region. Demonstrating that midden sites are important, not only for their artifact content, but as the structured remains of prehistoric activities, shows that they can be regarded as intrinsically valuable cultural resources, worthy of protection. The development of local archaeology shows that although a basic outline or cultural chronology has been developed, what that chronology means in terms of the development of Coast Salish culture is only beginning to be understood.

PROJECT

DESCRIPTION: (Use only space provided; do not add additional sheets. Include information on need for project, aim or objectives, audience to be served and anticipated duration. If applicable explain need for research, conservation, staff travel and/or justify why exhibition may not travel nationally.)

Changing Tides traces the history of Northwest coast archaeological research through four developmental stages. This exhibit outlines how investigations of midden sites have led to a greater understanding of how prehistoric people developed complex and unique systems for exploiting the potential of their environment. The insights gained through this research are important because they expand our understanding of Northwest coast culture. Changing Tides introduces the Canadian public to the evolution of this research and to the insights it has provided. Whereas the public usually identifies this culture with spectacular ceremonials and impressive woodworking, the results of midden research indicate that less impressive artifacts and often mundane remains can provide a fuller appreciation of the complexity and antiquity of Northwest coast culture. While this exhibit focusses specifically on Northwest coast midden research, the developmental trends illustrated are more widely applicable to the general history of Canadian archaeology.

Changing Tides consists of six sections, progressing from an introduction which describes the nature and importance of midden sites through four stages of archaeological research to a summary section which looks at the future of this research. The initial stage of archaeological research focusses on the descriptive results of Harlan I. Smith's 1898 investigation of the Marpole midden site. The importance of Smith's work is that his conclusions concerning cultural continuity and discontinuity established two themes which run through much of Northwest coast archaeological research. The second stage shows how Charles E. Borden's subsequent excavations of Marpole and other sites were inspired by his recognition that a lack of provenience controls in previous work only provided general description and speculative interpretations. His work established a regional sequence generally utilized today. The advent of subsistence research characterizes the third stage of Northwest coast archaeology. The main focus for this stage is the Glenrose Cannery site where quantification and correlation of artifactual, subsistence and environmental data was undertaken for the express purpose of obtaining information which shed light on the development of cultural adaptations and innovations. The last stage illustrates recent refinements in midden excavation and analysis which allow more precise information on economic strategies. The recovery and analysis of

PERSONNEL List all permanent or part-time staff associated with the Project, their title and function. If person(s) contracted for this project, please attach resumé(s) and list duties.

Director: Responsible for editing exhibit copy (Halpin/Ames)
Curator: Responsible for the exhibit text, research, development and academic content, also initiates travel itinerary and provides academic consultation to host institutions.
Exhibit Designer: Prepares exhibit design and panel layout, supervises techical aspects of production. (H.Watson)
Illustrator: For stage three section of exhibit; depicts prehistoric activities in watercolour graphics, from information provided by the Curator. (G.Miller)
Photographer Designer: Designs and prepares photographs for exhibit, museum note and poste
Design Assistant: Assists Exhibit Designer, arranges text typesetting and exhibit photos, prepares and mounts exhibit materials.
Curatorial Assistant: Prepares figures for display, proofreads typesetting. (Irvine/Tisdale)
Administrative/Clerical Staff: Administrates budget, requisition purchase orders, types manuscipts for exhibit and arranges travel logistics and public relations. (J.Kendon)
Research Assistant: Assists Curator in developing academic content as well as documentation of exhibit material. (A.Stevenson)

shell midden layers at the Crescent Beach site is the focus of this fourth stage.

Changing Tides draws upon the museum's archaeological and ethnographic collections, allowing the Canadian public to see archaeological artifacts and subsistence remains normally not exhibited, and view ethnographic artifacts in a new context. Every stage of this exhibit examines artifacts and/or faunal remins from a different perspective. For example, stage three contains artifacts which have undergone residue analysis to determine prehistoric activities, and faunal remains which indicate the season of these activities. Such remains are rarely seen by the public although these are the essential tools of archaeological research. Stage four compares archaeologically determined tool kits with ethnographic ones to illustrate principles of archaeological research. This juxtaposition of ethnographic objects with archaeological remains will provide the public with a new perspective on the connection between the unfamiliar materials of archaeological research and more familiar ethnographic artifacts. Photographs, grahics, maps and commissioned illustrations will accompany the exhibit to enhance the storyline. Changing Tides will utilize display panels mounted on free-standing and laquered cedar frames. This system has been used successfully in several of the museum's travelling exhibits, and allows considerable flexibility for exhibit set-up. The approximately 70 square meters required for Changing Tides will therefore fit into a variety of temporary exhibit spaces.

LIST OF CONTENTS

TITLE, TYPE OR DESCRIPTION OF OBJECTS	ARTIST OR PROVENANCE	OWNED BY	AVAILABILITY CONFIRMED	VISUALS ATTACHED
All objects are owned by the U.B.C. Museum of Antropology or are held in trust by the museum for the Semiahmoo, Tswwassen or Musqueam bands. The illustrations are produced in house, and the photographic credits will be confirmed before final selection.				
I. Artifacts				
Section Two:	-representative sample of artifacts from the Marpole site			
Section Three:	-diagnostic artifacts for cultural phases			
Section Four:	-artifacts and faunal remains to illustrate laboratory analysis			
Section Five:	-archaeological and ethnographic tool kits and faunal remains			
II. Photos (tentative selection)				
Section One:	-composite photo, drawn from the body of the exhibit			
Section Two:	-Harlan I. Smith in midden excavation			
Section Three:	-Borden's excavation of Marpole and Whalen Farm site illustrating excavation technique and sampling			
Section Four:	-Glenrose Cannery excavation and laboratory analysis			
Section Five	-Crescent Beach excavation layers, feature mapping and water-screening. Also photos of ethnographic activities			
Section Six	-photos of midden sites as they appear today			
III. Graphics & Illustrations				
Section One:	-illustration of delta/estuary development and illustration in map form of seasonal round			
Section Three:	-graphic representation of culture phase sequence			
Section Four:	-graphical illustrations of laboratory analysis eg; seasonality studies of shellfish from middens sites (growth ring studies)			
Section Five:	-commissioned illustrations of ethnographic activities and other illustrations of environmental and ethnographic information			

If additional space is required, please attach additional sheets following the same format.

RUNNING OR SQUARE FEET (METRES) REQUIRED FOR EXHIBITION: 70 sq. meters min.

DURATION OF EXHIBITION FROM: January 1985 TO: December 1986

23/6/79

ITINERARY

DURATION OF ENTIRE TOUR: FROM May 1985 TO December 1986

PROJECTED TOUR

LOCATION	ARRIVAL DATE	DEPARTURE DATE	CONFIRMED	UNCONFIRMED
1) Provincial Museum of Alberta				
Edmonton, Alberta	June 1/85	July 15/85		*
2) Prince of Wales Northern Heritage				
Centre, Yellowknife N.W.T.	Sept.1/85	Oct.15/85		*
3) Museum of Natural History				
Regina, Saskatchewan	Dec. 1/85	Jan.15/86		*
4) Manitoba Museum of Man and Nature				
Winnipeg, Manitoba	March1/86	April15/86		*
5) Royal Ontario Museum				
Toronto, Ontario	June 1/86	July 15/86		*
6) Musee de Quebec				
Quebec, P.Q.	Sept.1/86	Oct. 15/86		*

If additional space is required, please attach additional sheets following the same format.

METHOD OF SHIPMENT: RAIL X

AIR _____

ROAD X OWN VEHICLE _____

COMMERCIAL SHIPPER X (attach quotes) Costs based on verbal quotes

* WHEN AN EXHIBITION IS FUNDED BY EAP, THE ORGANIZER MUST NOT CHARGE SHIPPING COSTS TO THE BORROWING INSTITUTIONS.

INSURANCE VALUE: $ 20,000.00

* WHEN AN EXHIBITION IS FUNDED BY EAP, THE ORGANIZER MUST PAY ALL INSURANCE COSTS, EXCEPT WHEN A BORROWING INSTITUTION HAS BLANKET COVERAGE AND CAN INSURE THE BORROWED EXHIBITION WITHOUT ADDITIONAL COST TO THEIR ANNUAL PREMIUM.

* WHEN AN EXHIBITION IS FUNDED BY EAP, THE ORGANIZER MAY NOT CHARGE A BORROWING FEE TO THE BORROWING INSTITUTIONS.

* Letters have been sent to 13 institutions, ten of which expressed interest in the Blood From Stone exhibit. Therefore, we anticipate at least six institutions to be interested in Changing Tides.

CATALOGUES/BROCHURES/POSTERS

TEN (10) COPIES OF ALL PRINTED CATALOGUES AND BROCHURES PRODUCED WITH EXHIBITIONS ASSISTANCE PROGRAMME ASSISTANCE MUST BE FORWARDED, FREE OF CHARGE, TO THE EXHIBITIONS ASSISTANCE PROGRAMME. THESE WILL BE DISTRIBUTED TO THE NATIONAL MUSEUMS LIBRARY, THE NATIONAL LIBRARY, AND THE NATIONAL GALLERY LIBRARY. THE APPLICANT IS ALSO RESPONSIBLE FOR DISTRIBUTING ONE COPY EACH, FREE OF CHARGE, TO ALL APPROPRIATE ASSOCIATE MUSEUMS. (A CURRENT LIST OF ASSOCIATE MUSEUMS WILL BE FORWARDED TO SUCCESSFUL APPLICANTS WHEN FUNDS ARE RELEASED.)

Describe the educative value and objectives.

An exhibit brochure, in the form of a museum note, will provide information on the exhibit and a summary in English and French of the exhibit's contents. This brochure will permit enhanced appreciation and interpretation by reiterating the exhibits main points. A brief bibliography of relevant articles and other publications will be included for those who wish further information.

The exhibit poster will feature one of the exhibit's watercolour reconstructions of prehistoric activities.

	CATALOGUES	BROCHURES	POSTERS
DIMENSIONS		4"x9"	24"x17"
NUMBER OF PAGES		16	
NUMBER OF COLOUR REPRODUCTIONS			
NUMBER OF BLACK AND WHITE REPRODUCTIONS (and line drawing)		12	
NUMBER OF CATALOGUES, BROCHURES, POSTERS		3000	300
ESTIMATED PUBLISHING COST	$	2600	870
ESTIMATED HANDLING COST	$	300	-
NUMBER TO BE GIVEN AWAY		100	50
NUMBER TO BE SOLD		2900	250
SELLING PRICE	$	$1.00	$1.00
ESTIMATED ADMINISTRATIVE COST	$	Under General Administrative Costs	
ANTICIPATED REVENUE	$	250	125
PRICE QUOTES AND MOCK-UPS ATTACHED		For brochure format see attached Museum Guide.	
TOTAL ANTICIPATED REVENUE FROM ALL PRINTED MATERIAL	$ 375		

ALL NATIONAL TRAVELLING EXHIBITION MATERIAL SHOULD BE PRODUCED IN BOTH OFFICIAL LANGUAGES.

ENHANCEMENT

ACTIVITIES AND MATERIALS WHICH FACILITATE A BETTER UNDERSTANDING OF AN EXHIBITION ARE SUPPORTED WHEN THEY CAN BE JUSTIFIED IN TERMS OF NEED, EXHIBITION OBJECTIVES AND THE AUDIENCE TO BE SERVED. THEY MAY INCLUDE FILM, A-V PRODUCTIONS, PERFORMANCES, DEMONSTRATIONS, TAPES, ETC. IN THE SPACE BELOW DESCRIBE THE ENHANCEMENT PROPOSED AND ITEMIZE THE COSTS.

A public lecture series will be arranged to enhance the exhibit. Archaeologists, ethnologists, and other relevant experts will be included. Negotiations will be undertaken to arrange for Wayne Suttles of Portland State University and Don Mitchell of The University of Victoria to lecture in this series, as well as, several local speakers. The travel costs will be provided by University of British Columbia's Laboratory of Archaeological funding.

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BUDGET Please read the instruction page before completing the budget. Itemize each category.

CATEGORY	TOTAL COST	CONTRIBUTION OF APPLICANT	OTHER INCOME donations grants or revenue	BALANCE REQUESTED FROM E.A.P.
PERSONNEL SALARIES & FEES				
Curator 6 weeks	5,400	5,400	-	-
Exhibit Designer 6 weeks	3,600	3,600	-	-
Photographer 2 weeks	1,200	1,200	-	-
Illustrator on contract	1,500	-	-	1,500
Curatorial Assistant 3 weeks @$11.00 105x11 & benefits	1,200	1,200	-	-
Design Assistant on contract	900	-	-	900
Administration 4 weeks	3,000	3,000	-	-
SUB-TOTAL	16,800	14,400		2,400
PERSONNEL TRAVEL				
Travel expenses and honoraria for guest speakers	600	600		
Travel by Curator to each exhibit location				
Vancouver-Edmonton (return)	282	-	-	282
Vancouver-Yellowknife (")	622	-	-	622
Vancouver-Regina (return)	308	-	-	308
Vancouver-Winnipeg (return)	490	-	-	490
Vancouver-Toronto (return)	778	-	-	778
Vancouver-Quebec (return)	890	-	-	890
Ground transportation	144	-	-	144
Hotel 8 days @$50/day	400	-	-	400
Per diem 14 days @32/day	448	-		448
SUB-TOTAL	$4962	600		4362
RESEARCH COSTS				
SUB-TOTAL				

23/6/79

BUDGET, CONTINUED

	TOTAL COST	CONTRIBUTION OF APPLICANT	OTHER INCOME donations grants revenue	BALANCE REQUESTED FROM E.A.P.
PRODUCTION COSTS				
24 panels @ $ 95.00	2,280	-	-	2,280
12 modular frames and connectors @ $400.00	4,800	4,800	-	-
8 plexiglas cases	880	-	-	880
4 crates for frames @ $390.00	1,560	1,170	-	390
4 containers for 24 panels @ $420.00	1,680	1,260	-	420
4 containers for cases & artifacts @ 320.00	1,280	640	-	640
Photography (film, processing and enlarging)	1,900	-	-	1,900
Typesetting	1,200	-	-	1,200
Silkscreen text and labels	2,600	-	-	2,600
Misc. & Construction	1,000	-	-	1,000
SUB-TOTAL	19,180	7,870	-	11,310
ENHANCEMENT COSTS				
Brochure (translation incl.)	2,900	300	250	2,350
Poster	870		125	745
Translation:exhibit text	1,000	-	-	1,000
SUB-TOTAL	4,770	300	375	4,095
CIRCULATION COSTS				
Insurance premium during circulation	200	-	-	200
Repair & Maintenance	500	-	-	500
Transportation quote (CN- 300 cu ft.)	4,500	-	-	4,500
SUB-TOTAL	5,200	-	-	5,200

23/6/79

SUMMARY OF BUDGET

	TOTAL COST	CONTRIBUTION OF APPLICANT	OTHER INCOME donations grants or revenue	BALANCE REQUESTED FROM E.A.P.
PERSONNEL SALARIES & FEES.....	16,800	14,400	-	2,400
PERSONNEL TRAVEL.....	4,962	600	-	4,362
RESEARCH COSTS.....				
PRODUCTION COSTS.....	19,180	7,870	-	11,310
ENHANCEMENT COSTS.....	4,770	300	375	4,095
CIRCULATION COSTS.....	5,200	-	-	5,200
TOTAL:	50,912	23,170	375	27,367
% OF COSTS:		45%	1%	54%

SUMMARY OF OTHER INCOME

LIST ALL DONATIONS, GRANTS AND/OR ANTICIPATED REVENUE

SOURCE	$	CONFIRMED	ANTICIPATED

ANTICIPATED DATES WHEN FUNDS WILL BE REQUIRED: September 1984

9.5 APPENDIX 5

THE UNIVERSITY OF BRITISH COLUMBIA
6393 N.W. MARINE DRIVE
VANCOUVER, B.C., CANADA
V6T 1W5

MUSEUM OF ANTHROPOLOGY

March 12, 1984

J. Pauline Rafferty
Program Manager
B.C. Heritage Trust
Parliament Buildings
Victoria, B.C.
V8V IX4

Dear Pauline:

I am requesting funds from the B.C. Heritage Trust's Additional Activities Program to help produce an archaeological exhibit scheduled to open in January 1985. This exhibit, entitled Changing Tides traces the development of archaeological research in southwestern British Columbia. The exhibit is designed to promote public understanding of the area's prehistoric heritage thereby increasing public appreciation of the need to preserve and protect local archaeological resources. This exhibit will coincide with a public lecture series featuring current topics in B.C. archaeology.

A detailed cost estimate with current resources and funds requested is presented as Appendix II. A list of personnel resources is outlined in Appendix III, and the exhibit is more fully described in Appendix I after the following exhibit overview.

> Ever since the 1880's when a road construction crew working in what is now Marpole, south Vancouver, unearthed numerous prehistoric artifacts, archaeologists have been investigating midden sites in the Fraser delta region. These investigations have ranged from quickly organized salvage operations to large scale research projects. Changing Tides traces the history of this local archaeological research through several developmental stages, beginning with the late nineteenth century research of Harlan I. Smith and ending with recent work at the Crescent Beach site. This exhibit will outline how investigations of local midden sites have led to a greater understanding not only of their composition and contents, but also of how prehistoric people developed complex and unique systems for exploiting the potential of the Fraser delta and vicinity.
>
> The insights gained through this research are important because they promise to expand our understanding of Northwest Coast culture in general, and Coast Salish culture in

APPENDIX I

Exhibit Outline:

Changing Tides is divided into six sections and progresses from an introductory section, through four stages of archaeological midden research to a summary section which looks at the future of this research. Section one serves to introduce the exhibit's developmental theme and orient the visitor to the area's midden sites in general terms. Section two deals with the "descriptive stage" of archaeological research which focused primarily upon describing the artifactual content of midden sites. Section three shows how systematic and controlled excavations led to the development of a local cultural chronology. This chronology was defined by a series of diagnostic artifacts and traits which served to typify each phase. The fourth section sees a broadening of scope and a change in emphasis to subsistence research. Quantification of faunal remains and artifact data as well as the correlation of this data to environmental information was utilized to provide a more comp`te understanding of the adaptive stages which correspond to the cultural phases previously outlined. Section five focusses on the techniques of recovery and analysis of shell midden layers which were utilized at the Crescent Beach site. These techniques allowed archaeologists to determine precise information on prehistoric site use. The final section of the exhibit will consider the future of the areas' middens as cultural resources and therefore the future of archaeological research.

Section One

This section serves to introduce the exhibit's developmental theme, in general terms, and to orient the visitor to the lower Fraser delta region's midden sites. As the development of archaeological research in this region is based upon the investigation of midden sites spanning an almost 9,000 year period, it is important to broadly define this type of site at the outset of the exhibit. Middens can be defined as valuable cultural resources since they are the complex records of cultural activities and natural events which archaeologists utilize to gain insights into the past. Northwest Coast middens are often recognized by an abundance of marine shells and usually seen as an intricate layering of these shells with soils and other remains. Locally these middens are located along the shoreline and at the base of upland areas

adjacent to delta formations. Although in general, sea levels, climate and resources have remained relatively stable for the past 5,500 years, delta estuary development has had an important impact on the location of habitation and resource utilization sites through time. Therefore, the present location of midden sites is dependent on the interplay of these factors in the past. As archaeologists have perceived and analyzed these sites in different ways through time, this introduction should serve as a focal point from which to view the development of this research.

Section Two

Local interest in midden research began with Charles Hill-Tout, but it was Harlan I. Smith's work with the Jesup North Pacific Expedition which received the attention of a wider archaeological audience. Changing Tides will focus on Harlan I. Smith's 1898 investigation of the Marpole site, which was also known as the Eburne or "Great Fraser Midden" site. Smith and a small force of hired labour rapidly excavated a portion of this site by shovel. Although little attention was paid to the provenience of artifacts as they were removed from the site, Smith felt confident to state that there appeared to be little difference between artifacts in the upper layers and those in the lower layers of the site. Smith concluded that objects from all layers were similar to those made by the historic Coast Salish, and therefore indicated that there was a continuity of culture for the 2,000 years he estimated the site to represent. Smith saw this continuity of artifact types as a continuation of economic activities extending into the past. For example, he equated the presence of retrieving harpoons with sea mammal hunting, and the presence of woodworking tools as evidence that this activity has an antiquity much greater than that to which the wooden objects themselves can attest. However, the presence of chipped stone and decorative arts he saw as interior traits; therefore, he postulated an early migration of interior peoples to the coast. The importance of Smith's conclusions, concerning both continuity and discontinuity is that they established two themes which run through much of the areas' archaeological research. These themes have been variously expressed but basically depend on viewing differences in cultural remains either in terms of cultural discontinuity or as differential site use or adaptational responses.

Section Three

This section will focus on the development of a regional sequence of

cultural phases, primarily as derived by Borden. His recognition that a lack of provenience controls in previous work had provided only general descriptions and speculative interpretations led him to conduct systematic and controlled excavations at a series of sites. These excavations established components from which he developed a local chronology. This chronology is the foundation for the local sequence generally used today. Each component or phase was defined by a set of diagnostic artifacts or traits. During Borden's thirty year investigation and interpretation of this local cultural sequence he made several modifications. Whereas, his earlier work identified the differences between components as representing discontinuity in culture created by the influx of new groups, his later sequence emphasized continuity but still allowed for the influx of new groups, at least to explain the Whalen II component. This section will outline the Fraser delta chronology but will emphasize in particular, those sites which are directly comparable to the other sections. For example, Borden's Marpole excavations will be contrasted with Smith's investigation, and the Whalen Farm site will be contrasted with Crescent Beach. To make the transition between this section on the development of cultural chronology and subsequent ones, questions will be raised about possible interpretations for the Whalen II material.

Section Four

As differences between site inventories became viewed in terms of cultural adaptations and seasonal site utilization rather than as necessarily differences in cultural groups, new methods were introduced to help answer new questions. This section deals with the advent of subsistence research which broadened the scope of archaeological investigations. This research emphasizes faunal remains and seasonality studies. The quantification and correlation of artifactual, subsistence, and environmental data is undertaken for the express purpose of obtaining information which sheds light on the development of cultural adaptations and innovations in the area. The main focus for this section will be the Glenrose Cannery site, with the major emphasis on techniques of analysis.

Section Five

This section will illustrate recent refinements in midden excavation and analysis which allow more precise information on economic strategies to be recovered. The recovery and analysis of shell midden layers at the Crescent Beach site is the focus of this section. This site represents an important

aspect of a complex seasonally differentiated adaptive strategy, specifically the utilization of the early spring herring run and the processing for storage or trade of large quantities of shellfish.

The reconstruction of subsistence activities such as clam or herring procurement and processing are represented as well as the archaeological evidence from which these activities are inferred. Specific data on the local biotic communities and ethnographic uses of them are necessary to illustrate how models of site use are developed and tested.

The archaeological remains of activities are rarely represented by complete "tool kits" or even by direct associations of artifacts and remains. It is by looking at the structure of remains and by incorporating a wide variety of information that the activities are inferred. Contrasting an archaeologically defined "tool kit" with an ethnographic one, illustrates this principle difference.

Section Six

The final section of the exhibit speculates on the future of archaeological research at midden sites in the lower Fraser delta region. Demonstrating that midden sites are important, not only for their artifact content, but as the structured remains of prehistoric activities, shows that they can be regarded as intrinsically valuable cultural resources, worthy of protection. The development of local archaeology shows that although a basic outline or cultural chronology has been developed, what that chronology means in terms of the development of Coast Salish culture is only beginning to be understood.

APPENDIX II

Exhibit Costs and Funding Requirements

Exhibit Costs;

	Total costs	Museum of Anthropology contribution	Funds required
Personnel (excluding permanent staff)			
Illustrator on contract	$1,500	-	1,500
Design assistant on contract	900	-	900
Research assistant - 3 wks. @$10 per hr. 105x10 & benefits	1,100	-	1,100
SUB-TOTAL	3,500	-	3,500
Production Costs			
24 panels @ $95	2.280	-	2.280
12 frames & connectors @ $400	4,800	4,800	-
8 plexiglas cases @ $110	880	-	880
Typesetting	800	-	800
Photography	1,900	-	1,900
Silkscreen text & labels	2,200	-	2,200
Construction costs	1,000	-	1,000
SUB-TOTAL	13,860	4,800	9,060
Enhancement Costs			
Travel expenses and honoraria for guest speakers	600	-	600
Poster	870	125	745
SUB-TOTAL	1,470	125	1,345

APPENDIX II con't

Summary of Costs:

	Total costs	MOA contribution	Funds required
Personnel	$3,500	-	3,500
Production	13,860	4,800	9,060
Enhancement	1,470	125	1,345
TOTAL	18,830	4,925	13,905

Summary of Funding Requirements

Total exhibit costs.....	$18,830
Less Museum of Anthropology contribution.....	4,925
The Charles and Alice Borden Museum of Anthropology Fund (committed).....	6,700
Required funds.....	7,205*

*Funds requested from B.C. Heritage Trust under Additional Activities Program total $7,205

APPENDIX III

Exhibit Personnel

Director: (Dr. M. Halpin/Dr. M. M. Ames) Responsible for editing exhibit copy.

Curator: (Dr. R. G. Matson) Responsible for the exhibit's academic content, supervising research and development.

Research Assistant: (A. Stevenson) Responsible for the research and development of exhibit, in consultation with the Curator; as partial requirement for Master's thesis in Archaeology/Museology.

Exhibit Designer: (H. Watson) Prepares exhibit design and panel layout, supervises technical aspects of production.

Illustrator: (G. Miller) Depicts prehistoric activities in watercolour graphics, from information provided by the Curator/Research Assistant for section five of the exhibit.

Photographer Designer: (B. McLennan) Designs and prepares photographs for the exhibit and poster.

Design Assistant: Assists Exhibit Designer, arranges text typesetting and exhibit materials.

Curatorial Assistants: (M. Irvine/M. Tisdale) Prepares figures for display, proofreads typesetting.

Administrative/Clerical Staff: (J. Kendon et al) Administrates budget, requisition purchase orders, types manuscripts for exhibit and handles public relations.

9.6 APPENDIX 6

Exhibit Outline:

Changing Tides is divided into six sections and progresses from an introductory section, through three stages of archaeological midden research to a summary section which looks at the future of this research. Section one serves to introduce the exhibit's developmental theme and orient the visitor to the area's midden sites in general terms. Section two deals with the "descriptive stage" or archaeological research which focused primarily upon describing the artifactual content of midden sites. Section three shows how systematic and controlled excavations led to the development of a local cultural chronology. This chronology was defined by a series of diagnostic artifacts and traits which served to typify each phase. The fourth section sees a broadening of scope and a change in emphasis to subsistence research. Quantification of faunal remains and artifact data, as well as the correlation of this data to environmental information was utilized to provide a more complete understanding of the adaptive strategies which correspond to the cultural phases previously outlined. Section five focusses on the techniques of recovery and analysis of shell midden layers which were utilized at the Crescent Beach site. These techniques allowed archaeologists to determine precise information on prehistoric site use. The final section of the exhibit will consider the

future of the areas' middens as cultural resources and therefore the future of archaeological research.

Section One

This section serves to introduce the exhibit's developmental theme, in general terms, and to orient the visitor to the lower Fraser delta region's midden sites. As the development of archaeological research in this region is based upon the investigation of midden sites spanning an almost 9,000 year period, it is important to broadly define this type of site at the outset of the exhibit. Middens can be defined as valuable cultural resources since they are the complex records of cultural activities and natural events which archaeologists utilize to gain insights into the past. Northwest Coast middens are often recognized by an abundance of marine shells and usually seen as an intricate layering of these shells with soils and other ramains. Locally these middens are located along the shoreline and at the base of upland areas adjacent to delta formations. Although in general, sea levels, climate and resources have remained relatively stable for the past 5,500 years, delta and estuary development has had an important impact on the location of habitation and resource utilization sites through time. Therefore, the present location of midden sites is dependent on the interplay of these factors in the past. As archaeologists have perceived and analyzed these sites in different ways through time, this introduction

should serve as a focal point from which to view the development of this research.

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Local interest in midden research began with Charles Hill-Tout, but it was Harlan I. Smith's work with the Jesup North Pacific Expedition which received the attention of a wider archaeological audience. Changing Tides will focus on Harlan I. Smith's 1898 investigation of the Marpole site, which was also known as the Eburne or "Great Fraser Midden" site. Smith and a small force of hired labour rapidly excavated a portion of this site by shovel. Although little attention was paid to the provenience of artifacts as they were removed from the site, Smith felt confident to state that there appeared to be little difference between artifacts in the upper layers and those in the lower layers of the site. Smith concluded that objects from all layers were similar to those made by the historic Coast Salish, and therefore indicated that there was a continuity of culture for the 2,000 years he estimated the site to represent. Smith saw this continuity of artifact types as a continuation of economic activities extending into the past. For example, he equated the presence of retrieving harpoons with sea mammal hunting, and the presence of woodworking tools as evidence that this activity has an antiquity much greater than that to which the wooden objects themselves can attest. However, the presence of chipped stone and decorative arts

he saw as interior traits; therefore, he postulated an early migration of interior peoples to the coast. The importance of Smith's conclusions, concerning both continuity and discontinuity is that they established two themes which run through much of the areas' archaeological research. These themes have been variously expressed but basically depend on viewing differences in cultural remains either in terms of cultural discontinuity or as differential site use or adaptational responses.

Section Three

This section will focus on the development of a regional sequence of cultural phases, primarily as derived by Charles E. Borden. His recognition that a lack of provenience controls in previous work had provided only general descriptions and speculative interpretations, led him to conduct systematic and controlled excavations at a series of sites. These excavations established components from which he developed a local chronology. This chronology is a foundation for the local sequence generally used today. Each component or phase was defined by a set of diagnostic artifacts or traits. During Borden's thirty year investigation and interpretation of this local cultural sequence he made several modifications. Whereas, his earlier work identifies the differences between components as representing discontinuity in culture created by the influx of new groups, his later sequence emphasized continuity but still allowed for the infux of new groups,

at least to explain the Whalen 11 component. This section will outline the Fraser delta chronology but will emphasize in particular, those sites which are directly comparable to the other sections. For example, Borden's Marpole excavations will be contrasted with Smith's investigation, and the Whalen Farm site will be contrasted with Crescent Beach. To make the transition between this section on the development of cultural chronology and subsequent ones, questions will be raised about possible interpretations for the Whalen 11 material.

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Section Five

This section will illustrate recent refinements in midden excavation and analysis which allow more precise information on economic strategies to be recovered. The recovery and analysis of shell midden layers at Crescent Beach site is the focus of this section. This site represents an important aspect of a complex seasonally differentiated adaptive strategy, specifically the utilization of the early spring herring run and the processing for storage or trade of large quantities of shellfish.

The reconstruction of subsistence activities such as clam or herring procurement and processing are represented, as well as the archaeological evidence from which these activities are inferred. The archaeological remains of activities are rarely represented by complete "tool kits" or even by direct associations of artifacts and remains. It is by looking at the structure of remains and by incorporating a wide variety of information that the activities are inferred. Contrasting an archaeologically defined "tool kit" with an ethnographic one, illustrates this principle difference.

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The final section of the exhibit speculates on the future of archaeological research at midden sites in the lower Fraser delta region. Demonstrating that midden sites are important, not only for their artifact content, but as the structured remains of prehistoric activities, shows that they can be

regarded as intrinsically valuable cultural resources, worthy of protection. The development of local archaeology shows that although a basic outline or cultural chronology has been developed, what that chronology means in terms of the development of Coast Salish culture is only beginning to be understood.

CHANGING TIDES: Section I General Introduction to middens and Lower Fraser delta archaeology

Text and description	Artifacts	Photographs and Illustrations	Notes
A breif overview of the exhibit introducing the four stages of archaeological research which follow.		Photos - taken from the four stages of archaeological research, showing changes in excavation methods through time. 1. Harlan I Smith's excavation of Marpole (1898) 2. Borden's excavation at Marpole or Whalen Farm. 3. Glenrose or Lab analysis 4. Open area excavation at Crescent Beach	
Middens will be introduced as complex records of cultural activities and natural events. They are recognized by their abundance of shell and by their intricate layering. Some factors which will be discussed and/or illustrated are preservation (role of shell in neutralizing acid forest soils and waterlogging) cultural factors such as seasonal site use, and environmental factors particularily the development of the Fraser delta/estuary.	Artifacts and faunal remains will be used to show the types of materials archaeologists find: For example: stone - artifacts cooking stones bone - artifacts faunal remains shell - artifacts faunal remains wood - netting etc. others- floral remains		
		Graphic presentation of an idealized seasonal round for the Coast Salish (River-Fishermen emphasis) -Four Seasons illustrations or modifications are a possibility or Jomon type line drawing	
To orient the visitor to the exhibit's locational focus as well as illustrate environmental factors which have effected the location of sites and the prehistoric utilization of the Fraser delta.		The general area and specific site locations will be shown in relation the development of the Fraser delta/estuary. - a map series (line drawings) of three main stages of this development	

CHANGING TIDES : Section II Descriptive stage

Text and description	Artifacts	Photographs and illustrations	Notes
Harlan I. Smith's 1898 excavation of the Marpole (also Eburne or Great Fraser Midden) site is used to show initial investigation of local midden sites Factors to be covered: Artifact description and distributions was the primary outcome of Smith's work in British Columbia. His simultaneous study of historic Coast Salish society enabled him to postulate economic continuity through time, but he saw differences as evidence of an early migration of people from the Interior. This assertion was mere speculation as he had not controlled for stratigraphy. In other words he did not keep records to show what artifacts had come from which layers. Smith's analysis: Estimated site age- forest growth, delta development, midden accumulation and degree of decay.	-will be grouped in economic categories, although there is some overlap of categorization. The artifacts Smith lists as "most common"will be grouped in his economic categories For example: Men's Tools Woodworking-"Eburne type maul antler wedge bone cisel celts (adze blade) Hunting & Fishing chipped points ground slate points bone points sinker stones Women's Tools awls needles fish knife Decorative & art objects Engraved stone, bone & shell beads pendants harpoon points etc.	Photo- Harlan I. Smith's excavation of Marpole showing man in midden with shovel. Stratigraphic layers and forest growth on midden are evident.	Smith 1903 Plate VII Fig. 1 See Smith 1913

CHANGING TIDES Section III Cultural Chronology

Text and description	Artifacts	Photographs & Illustrations	Notes
The focus will be Charles E. Borden's excavations of Marpole and Whalen Farm, to show how systematic and controlled excavations lead to the development of a regional sequence of cultural phases or types. Archaeological techniques and/or terminology to be covered (emphasizing photographs with breif labels) Stratigraphy - profile drawing and relative dating Provenience control- in situ measuring of features/artifacts/ samples dry screening? Absolute dating- Carbon 14 Component/Phase- diagnostic artifacts which typify the phases discussed	Diagnostic artifacts for the cultural phases specifically dealt with in this section (see attached) Marpole Whalen II Inclusion of others dependent on space, especially Stselax and Locarno component at Whalen Farm.	Borden's excavations showing one or more of the following features -measuring of an artifact/sample or feature in situ -profile drawing -site stratigraphy, illustraing the difference between natural and arbitrary layers (DfRs 3) Possibly a graphical representation of the Fraser delta sequence	-Whalen 1949 (Duff)

Text and description	Artifacts	Photographs and Illustrations	Notes
The Glenrose Cannery and Crescent Beach sites are the focus of this section.			
Recently archæologists have developed a greater concern with investigating past adaptations and changes in economic strategies through time. Glenrose, a deep, multi-component site appeared to be the logical choice to begin research into the development of the Northwest Coast's unique subsistence pattern.			
This section will concentrate on techniques of analysis for excavating and examining artifacts and non-artifact remains which have been developed to aid in subsistence research.			
Techniques to be presented (under revision)			
Excavation:			
Sampling-column sampling		-photo showing column sample removal	(Glenrose)
Water screening		-photo of waterscreening	(Crescent Beach)
Laboratory:		-photo of lab workers	
Residue analysis	-those used to determine activities	-illustration of residue analysis	(Crescent Beach)
Shell seasonality	-prepared shell sections	-illustration of shell sections	" " or Glenrose
Faunal studies, reconstruction of diet.	-faunal remains	-graphic reconstruction of diet changes through time at Glenrose	
Computers-correlation of data			

CHANGING TIDES

Section V Activities anc Midden Layers

Text and description	Artifacts	Photographs and illustrations	Notes
Crescent Beach-reconstruction of subsistence and other activities. To show how the excavation and analysis of midden layers can provide specific information on prehistoric site use. Site development in terms of cultural and natural processes is also a possibility.	Ethnographic tool kits will be compared to the archaeological remains of activities. For example: clam basket and digging stick will be compared to the debris of clam processing woodworking tools will be compared to the broken and incomplete tool kits found at Crescent Beach.	Excavation showing layer removal (photo) Midden feature mapping (photo) Ethnographic activities -historic photographs -commissioned illustrations For example -herring fishing and processing -clam digging and processing Site development will be graphically presented. Area map indicating seasonal area of optimum use-eelgrass beds with relevant species present and rocky-foreshore with resources.	(See Four Seasons exhibit)

CHANGING TIDES

Section VI Future

Text and description	Artifacts	Photographs and illustrations	Notes
Looks at the future of middens as cultural resources in need of protection. Possibly speculation on archaeological trends for the future ???		Several photographs of middens as they appear today. Possibilities: Harpole (Beer parlor parking lot) St. Mungo (Active bridge construction) Beach Grove (Visible features) Crescent Beach (Park-site and residences)	

9.8 APPENDIX 8

Changing Tides

Exhibit text - First draft

Section I a: Introduction

Changing Tides outlines the history of archaeology in British Columbia's Fraser delta region. This exhibit traces nearly one hundred years of shell midden research through three basic eras. Each era represents a major change in focus and techniques, each period building on the last.

Section I b: What is a shell midden?

The site is the basic resource for the archaeologist. The most important type of site in the Fraser delta region is the shell midden which provides the archaeologist with a complex record of cultural activities and natural events. This record dates back nearly nine thousand years.

Middens are commonly viewed as ancient garbage dumps, but they can be much more. The complex layers of soils, shells and other remains found in these sites result both from the various activities which have occurred there and from periods of abandonment. These layers contain complex clues which the archaeologist must interpret in order to determine a site's history. Different layer patterns result when various activities occur at the same place over time. For example, in a coastal shell midden the refuse of an old shellfish steaming mound may later be covered by the debris from a nearby house. In this way, the layers accumulate, reaching up to five meters in depth. Other sites may show a more regular pattern of continuous, but seasonal use. For instance, a fall salmon fishing site leaves a different pattern of debris than a spring herring fishing location.

Investigating these middens is further complicated by natural processes of decay. Most organic materials decay relatively quickly unless special conditions aid their preservation. In coastal middens the presence of shells helps to preserve bone

Section I b con't.

and antler, but wood and fibers survive only if they are constantly waterlogged. Therefore, the wooden artifacts usually identified with Northwest Coast cultures are rarely found. Consequently, more mundane remains such as shells, bones and cooking stones play a vital role in our understanding of the patterns and development of prehistoric cultures.

Section I c: Beyond the midden

To understand the role of a particular site within a region, archaeologists must consider environmental and geographic changes. For the Fraser delta region it is important to look at the dramatic evolution of the Fraser delta estuary. The developing estuary has played a vital role in the location, stability and quantity of resources used by the region's inhabitants for nearly nine thousand years.

Section II: The Descriptive Period

Harlan I Smith's 1898 investigation of the Marpole site is representative of early midden research. Characteristic of this period, he was primarily concerned with finding and describing artifacts.

Smith estimated the initial occupation of the Marpole site as having occurred 2,000 years ago. He based this estimate on such factors as the age of the trees growing over the midden, depth of midden accumulation, and degree of midden material decay. Recent, more refined techniques support his estimate.

Using a small force of hired labour, Smith rapidly excavated a portion of this site by shovel. Little attention was paid to the layers in which artifacts were found. However, he concluded that artifacts of all layers provided evidence of a stable economic structure spanning at least two millenia. He argued for this economic continuity based on the recovery of woodworking, fishing, basketry and mat making tools, many of which were similar to those he saw still in use by local Coast Salish people. On the other hand, he viewed the presence of chipped stone points and geometric decoration as evidence for an early migration of Interior people to the coast. These two themes of economic continuity and cultural discontinuity reappear in much of the later archaeological research undertaken in this area.

Section III a: The Development of a Cultural Sequence

Since the late 1940's work at Marpole and other Fraser delta sites by Charles E. Borden has been instrumental in establishing the basic cultural sequence still used today. To establish this sequence, Borden used systematic controlled excavations, coupled with careful documentation of artifacts and features found within these sites.

Borden realized that to move beyond Smith's speculative interpretations, he must keep accurate records of where artifacts were found in a site. Artifacts excavated from a series of levels are grouped into components, with significant stratigraphic breaks and important changes in artifact inventories signalling new components. Radio-carbon dating helped to order the components and therefore the phases which these components defined.

Borden concentrated his efforts on establishing a cultural chronology, defining each phase of this sequence by isolating artifacts he felt were distinctive of a particular time period. These phases were usually named for the first site in which characteristic components were found, but any one site could contain several phases. For example, marpole phase components are found at many sites in the region, including the Marpole site where it was first defined and the Glenrose Cannery site further upriver.

Section IIIa con't.

On the other hand, the Whalen II phase is confined to the Whalen Farm site.

Like Smith, Borden related the introduction of certain traits, or trait complexes, with the arrival of particular cultural groups. As a result, he defined a series of cultural displacements corresponding to his various phases. However, as archaeological work in adjacent regions progressed, he allowed for greater cultural continuity. By the early 1970's, he still saw the Whalen II phase representing an influx of new people into the Fraser delta region.

Section IIIb: The Whalen II Phase

Borden's reliance on a specific set of artifacts to determine a cultural phase made cultural discontinuity the obvious conclusion. However, a growing concern with understanding the role of seasonal site use in the Fraser delta region has led to new insights into the Whalen II problem. For example, the absence of ground slate, particularily fish knives, now suggests the absence of salmon fishing, rather than an influx of new people who did not use these knives.

Section IV: Subsistence Research

Archaeologists investigating midden sites are now applying new techniques to answer new questions. There is a greater concern with understanding the process of cultural adaptation, rather than the events of cultural history. The development of the Northwest Coast's unique subsistence pattern is considered critical to understanding the cultural pattern as a whole. Therefore, archaeologists are focussing their research on subsistence strategies.

Although the Fraser delta cultural sequence is now in place, an understanding of the subsistence strategy each phase represents is just beginning to take shape. The Glenrose Cannery site proved a good starting point for such research because it provides a 6,000 year record of the continuing but variable use of certain resources, such as salmon, shellfish, land and sea mammals. More recently, intensive investigation at the Crescent Beach site has provided a greater understanding of a particular type of seasonal site, a shellfish and herring processing camp.

To aid subsistence research archaeologists employ more refined excavation procedures and new laboratory techniques. Investigating the relationship between artifacts, faunal remains and other midden constituents is complex but critical to this research. Due to costs and time constraints, all layers within a site cannot be completely analyzied; therefore representative samples are

Section IV con't.

taken. For instance, archaeologists use column samples to reconstruct the relative importance of shellfish, fish and game in the diet of the site's occupants, at a particular time. Also, waterscreening through fine mesh provides a refined technique which allows greater recovery of fish vertebrae and other small items, than traditionally dry screening methods. Computers become increasingly important for analyzing the masses of data created by such techniques.

New laboratory techniques are also being developed to aid subsistence research. For example, the growth rings in a cross-section of shell can accurately show the season of collection, thereby determining the season of site use. Detecting residues on stone tools, such as blood, fats and pitch, helps to show tool function and in turn what activities may have been preformed at these seasonal sites.

Section V: Midden layers and past activities

The 1977 excavation and subsequent anayysis of shell midden layers at the Crescent Beach site provides specific information on the type and season of activities undertaken at that site. This project reflects a current concern with developing a specific research strategy for investigating a particular site.

In most previous studies sites were dug by arbitrary levels. One important refinement at the Crescent Beach site involved careful removal of the natural midden layers, allowing greater accuracy in determining the interrelationship of various midden constituents, and from them the specific activities which occurred at the site.

Analysis of data from the site was aided by predictions of what should be found in this location. Models for particular expected layer types were developed by studying the resources available to the site inhabitants, taking into consideration historic Coast Salish use of the area and those times of the year when certain resources are most abundant. In other words, certain layer types, features, artifacts and faunal remains are expected for a particular group of predicted activities. However, due to such factors as decay, humus build-up during periods of disuse, and the removal of many tools and structures onced used at the site, these expectations cannot be totally realized. For example, archaeological

Section V con't.

evidence that shell-fish processing or wood working activities occurred at a particular site often bears little direct resemblance to the tools and structures actually used for such activities.

Section VI: The Future of the Past

A major and continuing problem facing archaeologists working in urban areas, such as the Fraser delta region, is the continuing destruction of midden sites. Important sites, such as Marpole have been excavated with the bulldozers already at work. Many other sites are destroyed by urban expansion before any archaeological work is possible.

Archaeologists are just beginning to provide us with some understanding of the long, rich prehistory of this region. This understanding results from a continuing process of building on past results by asking new questions and developing new techniques to answer them. In order to accomplish these ends, we need to view archaeological sites as non-renewable resources which require our protection.

9.9 APPENDIX 9

October 1,1984

Changing Tides

Exhibit text - Second draft

Section Ia: Introduction

Changing Tides outlines the history of archaeology in British Columbia's Fraser delta region. This exhibit traces nearly one hundred years of shell midden research through three basic periods: the Descriptive, Cultural Sequence, and Subsistence Research eras. As you move through the exhibit, you will see how each subsequent era builds on previous research while it also represents a major change in focus and techniques.

Section Ib: What is a shell midden site?

For the archaeologist, a site is any location which contains evidence of past human activity. The most important type of site in the Fraser delta region is the shell midden which provides the archaeologist with a complex record of cultural activities and natural events. This record dates back nearly nine thousand years.

Although middens are commonly viewed as ancient garbage dumps, they can be much more. The complex layers of soils, shells and other remains found in shell middens result from both the activities which have occurred there and from times when the site was not used. These layers contain clues which the archaeologist must interpret in order to discover a site's history. Different layer patterns result when different activities occur at the same place over time. For example, in a coastal shell midden the remains of an abandoned house may later be covered by the refuse of a shell fish steaming mound which in turn, may be covered by the remains of a campsite hearth. In this way, the layers accumulate, reaching up to five meters in depth. In other cases, a site may show a more regular pattern of continuous, but seasonal site use. For instance, the activities associated with fall salmon fishing leave a distinctive pattern of debris which differs from that left by spring herring fishing.

Section Ib: con't

Investigating these middens is further complicated by natural processes of decay. Most organic materials decay relatively quickly unless special conditions aid their preservation. In coastal shell middens the presence of shells helps to preserve bone and antler, but wood and fibers usually survive only if they are constantly waterlogged. Therefore, the wooden artifacts most commonly identified with Northwest Coast cultures are rarely found. Consequently, more mundane remains such as shells, bones and cooking stones play a vital role in our understanding of the patterns and development of prehistoric cultures.

Section Ic: Beyond the midden

To understand the role of a particular site within a region, archaeologists must consider both environmental and cultural factors. The rich environment of the Northwest Coast, including that of the Fraser delta region, is often seen as fundamental to the development of the unique cultures of this area. Over the past one hundred years, archaeologists have come to realize that understanding how these spectacular cultures developed requires an awareness of the seasonal cycle of Northwest Coast life.

For the Fraser delta region, in particular, it is important to look at environmental change in terms of the evolution of the Fraser delta. The present location of midden sites reflects this development. For example, a site that once fronted on tidal flats may now be several kilometers upriver.

The developing estuary —the tidal mouth of the river and surrounding waters—has played a vital role in the location, stability and quantity of important resources for over seven thousand years. The Fraser delta and estuary provided a rich variety of sea and land resources which were extensively used by the Coast Salish inhabitants of the region. Although many resources were abundant, they were often available only seasonally,

Section Ic: con't.

and very often were difficult to acquire. Consequently, a wide variety of ingenious and often complex methods were developed to take advantage of abundant but short term resources, such as fish runs. Herring and eulachon were netted or raked during spring runs, and salmon were netted, trapped in weirs, speared, harpooned, or hooked, depending on the season, the species, and the location where the were fished.

Section II: The Descriptive Era

Archaeological investigation in the Fraser delta region began in the late nineteenth century. This early work was primarily concerned with finding and describing artifacts.

Harlan I. Smith's 1898 investigation of the Marpole site is representative of this early era of midden research. Using a small force of hired labour, Smith rapidly excavated a portion of the site by shovel. Little attention was paid to the layers in which artifacts were found. Nevertheless, he concluded that artifacts from all layers provided evidence of a stable economic structure spanning at least two thousand years. Smith based his estimate for the 1,000 years of site occupation, followed by 1,000 years of disuse on such factors as the age of trees growing over the midden, depth of midden accumulation, and the degree of midden material decay. Recent research supports his estimate.

Smith used the artifacts which he recovered from the site to answer questions concerning the economic and cultural stability of the area. He argued for economic stability based on the recovery of woodworking, fishing, basketry, and mat making tools similar to those he saw still in use by local Coast Salish peoploe. On the other hand, he argued for cultural change. He viewed the presence of chipped stone points and geometric decoration as evidence for an early migration of Interior people

Section II: con't.

to the coast. Characteristic of the Descriptive Era, Smith's questions were important ones, but his conclusions remained speculative. More conclusive answers required more refined techniques.

Section IIIa: The Development of a Cultural Sequence(methods)

Since the late 1940's work by Charles E. Borden at Marpole and other Fraser delta sites has been instrumental in establishing the basic cultural sequence still used today. To establish this sequence, Borden used systematic controlled excavations, coupled with careful documentation of the artifacts and features found within these sites.

Borden realized that to move beyond Smith's speculative interpretations, he must keep accurate records of where artifacts were found in a site. He grouped layers with similar artifacts into what archaeologists call a component. He used significant changes in artifact inventories to distinguish between components. In turn, Borden grouped similar components from different sites into cultures or cultural phases, which radio-carbon dating helped to order.

Borden's efforts to establish a cultural sequence involved defining each phase by isolating artifacts he felt were distintive of a particular time period. These phases were usually named for the first site in which the characteristic component was found, but any site could contain several components or phases. For example, Marpole phase components are found at many sites in the region, including the Marpole site where it was first defined and the Glenrose Cannery site further upriver. On the other hand, the Whalen II phase is confined to a single site.

Section IIIb: The Development of a Cultural Sequence (results)

Although Borden first viewed his cultural phases as a series of distinctive cultures, he eventually modified his position to allow for greater local cultural development. His cultural sequence remains an important operational framework for more recent research.

Borden's early conclusions, like Smith's, equated the introduction of certain artifact types with the arrival of new cultural groups into the area. He later modified his position, however, when archaeological work in adjacent regions failed to support his hypotheses concerning the regions from which certain traits originated. Although he eventually viewed most locally defined phases as outgrowths of previous ones, he continued to view the Whalen II phase as representing an influx of new people into the region, from the interior.

Borden's view of the Whalen II phase creates questions concerning why a relatively recent cultural phase should appear at only one site. Although archaeologists have yet to answer this question, they have begun asking new questions which may lead to a better understanding of the Whalen II problem. To ask such questions as how the occupants of a site exploited the local environment or why these activities changed through time, archaeologists had first to shift their focus from describing and categorizing artifacts to investigating more mundane remains as well. Despite this new focus, recent research relies on

Section IIIb: con't.

Borden's chronology is an important operational tool. For example, his chronology allows archaeologists to match the various phases with major environmental developments of the Fraser delta.

Section IVa: Subsistence Research

Since the early 1970's, archaeologists investigating midden sites have been applying new techniques to answer new questions. There is a greater concern with understanding the process of cultural adaptation, rather than the events of culture history. The development of the Northwest Coast's unique subsistence pattern is considered critical to understanding the cultural pattern as a whole. Therefore, archaeologists are focussing their research on subsistence strategies, that is on how the prehistoric inhabitants of the region furnished themselves with food and other necessities.

Although the Fraser delta cultural sequence is now in place, an understanding of the subsistence strategy each phase represents is just beginning to take shape. The Glenrose Cannery site proved a good starting point for such research because it provides a 6,000 year record of continuing but variable use of certain resources, such as salmon, shellfish, land and sea mammals. More recently, intensive investigation at the Crescent Beach site has provided a greater understanding of a particular type of seasonal site, a shellfish and herring processing camp.

To aid subsistence research, archaeologists employ more refined excavation procedures and new laboratory techniques. Investigating the relationship between artifacts, animal, fish and shell remains, as well as other midden constituents is complex but

Section IVa: con't.

critical to this research. Due to costs and time constraints, all layers within a site cannot be completely analyzied; therefore representative samples are taken. For instance, archaeologists use a series of column samples in order to reconstruct the relative importance of shellfish, fish and game in the diet of the site's occupants, at a particular time. Also, waterscreening through fine mesh provides a refined technique which allows for greater recovery of fish vertebrae and other small items than traditional dry screening methods. Computers become increasingly important for analyzing the masses of data created by such techniques.

New laboratory techniques are also being developed to aid subsistence research. For example, the growth rings in a cross-section of shell can accurately show the season of collection, thereby determining the season of site use. Detecting residues on stone tools, such as blood, fats and pitch, helps to show tool function and in turn what activities may have been performed at these seasonal sites.

Section IVb: Midden layers and past activities

The 1977 excavation and subsequent analysis of shell midden layers at the Crescent Beach site povides specific information on the type and season of activities undertaken at that site. This project reflects both the ongoing development of more refined archaeological techniques and the current concern with developing a specific research strategy for investigating a particular site.

In most previous studies, sites were dug by arbitrary levels. One important refinement at the Crescent Beach site involved careful removal of the natural midden layers, allowing greater accuracy in determining the interrelationship of various midden constituents. This detailed investigation helped to determine the specific activities which occurred at the site.

Analysis of data from the site was aided by predictions of what should be found in this location. Models for particular expected layer types were developed by studying the resources available to the site inhabitants, taking into consideration historic Coast Salish use of the area and those times of the year when certain resources are most abundant. In other words, certain layer types, features, artifacts and faunal remains are expected for a particular group of predicted activities. However, due to such factors as decay, humus build-up during periods of disuse, and the removal of many tools and structures once used at he site, these expectations cannot be totally

Section IVb: con't.

realized. For example, archaeological evidence that shellfish processing or wood working activities occurred at a particular site often bears little direct resemblance to the tools and structures actually used for such activities.

Section V: The Future of the Past

Archaeologists are beginning to provide us with some understanding of the long, rich prehistory of this region. This understanding results from a continuing process of building on past results by asking new questions and developing new techniques to answer them.

The Descriptive era not only provided initial artifact descriptions, but also asked important questions concerning both economic and cultural change. The subsequent development of a regional Cultural Sequence resulted from more refined excavation techniques and new laboratory procedures. Recent Subsistence Research is beginning to outline the development of the seasonally diverse subsistence pattern upon which Northwest Coast cultures are based. While the basic subsistence pattern is now considered to have persisted for thousands of years, important developmental changes are just beginning to be understood.

Unfortunately, for many areas, especially urban ones, such as the Fraser delta region, a major and continuing problem involves the destruction of midden sites. Marpole, and other important sites, have been excavated with the bulldozers already at work. Many other sites are destroyed before any archaeological work is possible. If a greater appreciation of the development of Northwest Coast cultures is to be acheived, archaeologists must continue to investigate a cross-section of sites within

Section V: con't

a region. In order to accomplish these ends, we need to view archaeological sites as non-renewable resources which require our protection.

9.10 APPENDIX 10

CHANGING TIDES

THE DEVELOPMENT OF ARCHAEOLOGY IN B.C.'S FRASER DELTA

Exhibit Text
Ann Stevenson
November 2,1984

Section A1:

Changing Tides **examines the history of archaeological research in British Columbia's Fraser delta region by tracing our evolving knowledge of its prehistory. Each stage of this research has changed and refined our perception of the past.**

As you move through the exhibit, you will see how each stage of research--here titled the "Descriptive", "Cultural Sequence", and "Subsistence" stages--not only builds on earlier knowledge but also introduces new ideas and new techniques.

Section A2:

THE SIGNIFICANCE OF SHELL MIDDENS

Shell midden sites provide the most important evidence for prehistoric human activity in the Fraser delta region. These sites contain the remains of dwellings, work areas and garbage dumps, providing a record of human habitation spanning nearly 9,000 years.

In midden sites, different activities created characteristic patterns of remains. These remains resulted in the build up of midden layers which the archaeologist interprets in order to discover a site's history.

Different layer patterns result when diverse activities occur at the same place over time. For example, in a coastal shell midden the remains of an abandoned house may later be covered by the refuse of a shellfish steaming mound that, in turn, may be covered by remains of a campsite hearth. In this way the layers accumulate, reaching up to 5 meters in depth.

In other cases, a site may show a more regular pattern of continuous, but seasonal use. For instance, fall salmon fishing activities leave a distinctive pattern of debris which differs from that left by spring herring fishing. The complex layers of soil, shells and other remains result not only from these human activities, but also from naturally deposited debris.

THE CONTENTS OF SHELL MIDDENS

Investigating shell middens is further complicated by natural processes of decay. Most organic materials decay quite quickly unless special conditions help to preserve them. In coastal shell middens, the presence of shells helps to preserve bone and antler, but wood and plant fibers usually survive only if they are constantly waterlogged. Thus, the carved wooden objects for which the Northwest Coast is well known are rarely found in archaeological sites.

Exhibited here are a range of items found in coastal shell middens.

Section A3:

SHELL MIDDENS AND THEIR SETTING

To understand the role of a particular site within a region, archaeologists must consider the changing natural environment in which the site's occupants lived. The rich and diverse environment of the Northwest Coast, including that of the Fraser delta region, influenced the development of the area's unique cultures.

The Fraser river delta and estuary provided a wide variety of sea and land resources which were extensively used by the region's inhabitants. The developing estuary--the tidal mouth of the river and surrounding ocean waters--played a vital role for over 7,000 years in the location, stability and quantity of these resources.

THE SEASONAL ROUND

Although many resources were abundant, they were often available only seasonally, and even then, they could be difficult to acquire. The Coast Salish inhabitants of the region used diverse, and often complex methods to harvest these short-term resources. For example, during spring fish runs, herring or eulachon were netted and raked; salmon were netted, trapped in weirs, speared, harpooned or hooked, depending on the species, the season and location.

THE DEVELOPING DELTA

In examining the Fraser delta region, it is important to consider the evolution of the delta itself. The present location of midden sites reflects this development. For instance, a site that fronted on tidal flats at the river's mouth 2,000 years ago may now be several kilometers upriver.

Section B:

THE DESCRIPTIVE STAGE

Archaeological investigation in the Fraser delta region began in the late 1800's. This early work was mainly concerned with finding artifacts, describing them, and speculating about their significance.

The 1898 investigation of the Marpole site by the American Museum of Natural History's Harlan I. Smith is representative of this early research. Using a small force of hired labour, Smith rapidly excavated a portion of the site by shovel. Little attention was paid to the layers in which artifacts were found. Nevertheless, he concluded that artifacts from all layers provided evidence of a stable economic structure beginning at least 2,000 years ago.

Smith based his estimates for the 1,000 years of occupation, followed by 1,000 years of disuse, on such factors as the age of trees growing over the midden, the depth of accumulation, and the degree of midden material decay. Recent research supports his estimate.

DESCRIPTION AND SPECULATIONS

Smith used the artifacts that he recovered from the site to answer questions concerning the economic and cultural stability of the area. He argued for economic stability based on the recovery of woodworking, fishing, basketry, and mat making tools similar to those he saw still in use by the local Coast Salish residents of the area. On the other hand, Smith also argued for cultural replacement. He viewed the presence of chipped stone points and geometric decoration as evidence for early migration of interior people to the coast.

Smith asked important questions, but his answers were speculative, in a manner characteristic of early descriptive archaeology. More conclusive answers would require more refined theories and research techniques, which were introduced as archaeology developed.

Section C1:

THE CULTURAL SEQUENCE STAGE

British Columbia's first archaeologist, Charles E. Borden, worked at Marpole and other Fraser delta sites, from the late 1940's to the 1970's, and was instrumental in establishing the basic cultural sequence still used today. He realized that to move beyond Smith's speculative interpretations of the area's prehistory, accurate records must be kept of where artifacts or tools, and features--such as hearths--were found in a site.

To establish a cultural sequence, Borden grouped layers with similar artifacts into what archaeologists call a component. He then grouped similar components from different sites into cultures or cultural phases. Radio-carbon dating, invented in 1948, was used to verify the order of these phases, as well as to date them.

DEFINING CULTURAL PHASES

The phases Borden defined are the Locarno Beach phase, the Marpole phase, the Whalen II phase, and the Stselax phase. These phases were usually named after the first site in which the characteristic component was found, but any site could contain several components or phases.

For example, Marpole phase components, first defined at the Marpole site, are found at many sites in the region including the Glenrose Cannery site upriver. The Whalen II phase, on the other hand, is confined to a single site.

Shown here is a selection of artifacts Borden considered representative of each cultural phase.

Section C2:

REFINING THE CULTURAL SEQUENCE

Initially, Borden viewed his cultural phases as representing a series of migrations into the region. He eventually modified his postion, however, recognizing that cultural change could also result from local development.

This change in Borden's postion resulted when archaeological work in adjacent areas failed to support his hypotheses about the origin of certain traits. Although he eventually allowed that most phases could have developed locally out of previous ones, he continued to argue that the Whalen II phase represented the arrival of new people from the interior.

By considering the Whalen II phase to represent the entire region during one time period, Borden ignored other possible explanations. The presence of particular artifacts might have resulted from trade, and absence of others might be due to the season of site use.

For example, the presence of small chipped stone points, commonly found in interior sites, were also found at the Whalen Farm site, and could be accounted for by trade between coast and interior peoples. On the other hand, the absence of thin ground slate knives usually associated with salmon processing and found in earlier and later phases in the region may simply indicate that the site in question was not used for salmon fishing.

A recognition of the potential importance of seasonal site use distinquishes the next stage of archaeological research. This new focus provides an alternative explanation for the uniqueness of the Whalen II component, while adding a new dimension to complement Borden's basic cultural sequence.

Section D1:

THE SUBSISTENCE RESEARCH STAGE

Since the 1970's, archaeologists have been applying new techniques to midden sites in order to answer new questions about the process of cultural adaptation in the region. Their investigations focussed on how the prehistoric inhabitants of the area supplied themselves with food and other necessities.

An understanding of the subsistence strategy each phase of the Fraser delta sequence represents is just beginning to take shape. The Glenrose Cannery site proved a good starting point for such research because it provided a 6,000 year record of continuing but variable use of resources, such as salmon, shellfish, land and sea mammals. More recently, intensive investigation at the Crescent Beach site has provided a greater understanding of a particular type of seasonal site, a shellfish and herring processing camp.

REFINING EXCAVATION AND LABORATORY TECHNIQUES

To aid subsistence research, archaeologists employ more refined excavation procedures and new laboratory techniques. A critical aspect of this research is discovering the relationships among artifacts, food remains, and other midden materials.

Because these techniques are expensive, all layers within a site cannot be analyzed with the same intensity. Archaeologists therefore select representative samples in order to reconstruct the relative importance of shellfish, fish and game in the diet of the site's occupants. The use of waterscreening through fine mesh allows for greater recovery of fish vertebrae and other small items than do traditional dry screening methods. Computers are increasingly important for analyzing the masses of data generated by such field techniques.

New laboratory techniques are also being developed to aid subsistence research. For example, the growth rings in a cross-section of shell can accurately show the season of collection, thereby indicating the season of site use. Detecting residues such as blood, fats, and resins on stone tools helps to show tool function and, consequently, what activities might have been performed at these seasonal sites.

Section D2:

INVESTIGATING A SEASONAL SITE

The excavation of shell midden layers at the Cresent Beach site shows how the type and season of activities undertaken at a site may be determined by careful analysis.

One important refinement at the Crescent Beach site was the careful removal of midden layers following the natural contours of the site. Previous sites were excavated by removing flat, even layers, usually 10 to 20 cm. thick. This refinement helped to isolate the specific activities which had occurred at this site.

MIDDEN LAYERS AND PAST ACTIVITIES

To understand each layer type, models of site use were developed. Models are used to predict what activities might have occurred at the site during different times of the year. Important considerations include the historic Coast Salish use of the area and those times of the year when certain resources were most abundant. Certain layer types, features, artifacts, and faunal remains thus can be predicted for a particular group of expected activities.

Although such factors as decay, and the removal of many tools and structures once at the site, might make analysis difficult, the prediction of site use helps to overcome this problem. For example, if shellfish harvesting and processing are predicted for a site, the baskets, digging sticks and drying racks might have been removed or have decayed. On the other hand, other evidence will remain, such as the remains of steaming mounds, discarded clam shells, and the post holes for the drying racks.

If the problematic Whalen II component at the Whalen Farm site were re-examined in this manner, it might now be seen as a seasonal variant of another cultural phase rather than as an unique cultural phase.

Section E:

THE FUTURE OF THE PAST

Archaeological research in the Fraser delta region has developed through several stages paralleling general changes in North American archaeology. Each stage has built on previous results. These results have laid the foundation upon which new questions are raised and new techniques are developed.

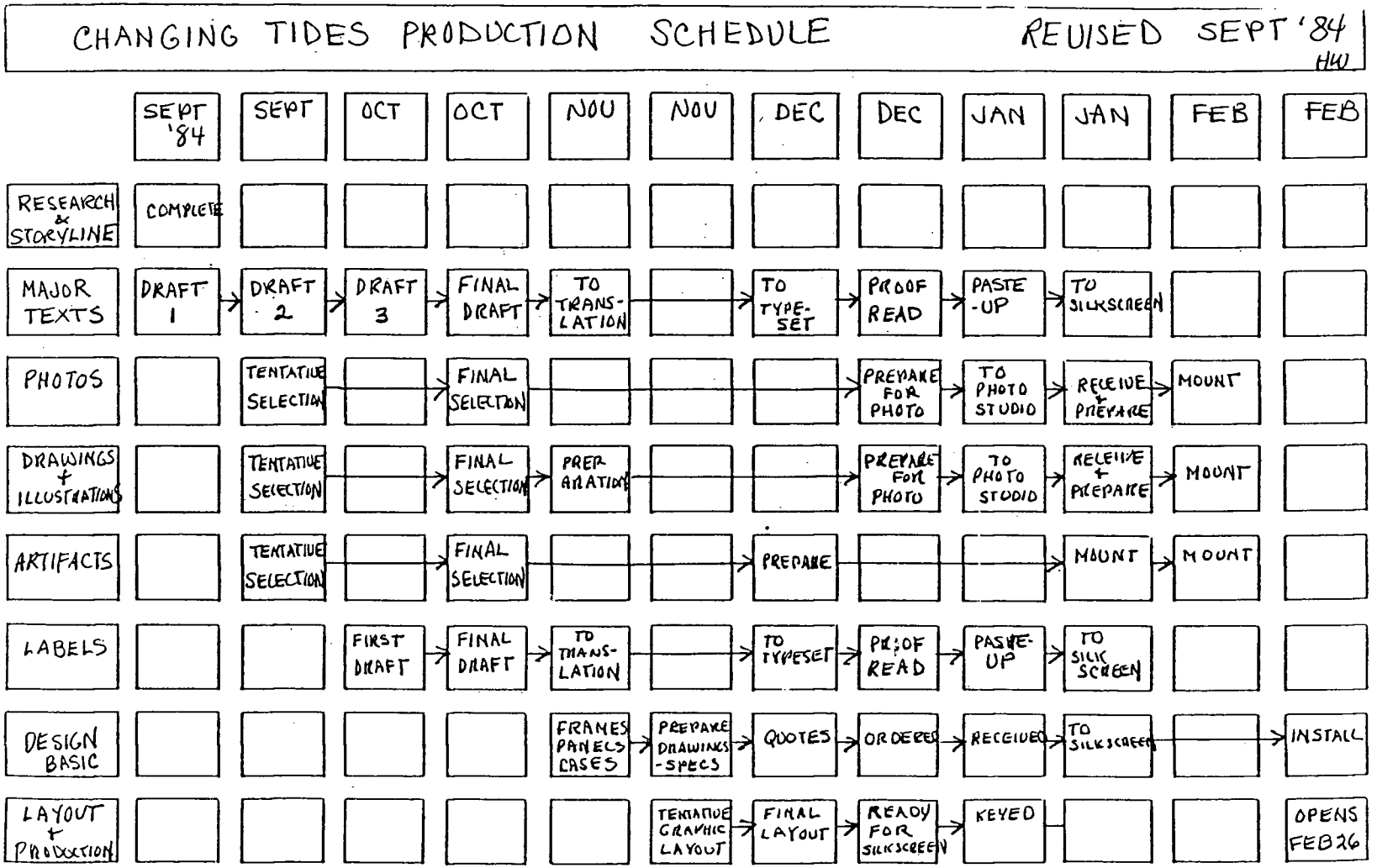
The Descriptive stage not only provided initial descriptions, but asked important questions concerning both economic and cultural change. The subsequent development of a regional Cultural Sequence resulted from more refined excavation techniques and laboratory procedures. Recent Subsistence Research is beginning to outline the development of the Northwest Coast's seasonally diverse subsistence pattern.

While we now know that a similar range of resources was used in this area for thousands of years critical changes occurred in resource use, for instance the development of large scale salmon processing for storage, these changes have only recently received attention. A new focus on social questions, such as on how social organization and subsistence stategies interrelate, suggests that a new stage of archaeological research is also taking shape. The future of such research, however, is seriously threatened.

HERITAGE DESTRUCTION

The destruction of midden sites, especially in urban areas like the Fraser delta, is a major problem. Marpole and other important sites were excavated just before bulldozers moved in. Unfortunately, many other sites were destroyed before any archaeological investigation could take place. As a result, valuable heritage information has been lost forever.

If a greater appreciation of the development of Northwest Coast cultures is to be achieved, archaeologists must continue to investigate a cross-section of sites within a region. But to do this, archaeological sites must be viewed as non-renewable resources that require our protection.


CHANGING TIDES PRODUCTION SCHEDULE
REVISED SEPT '84
HW
SEPT '84
SEPT
OCT
OCT
NOV
NOV
DEC
DEC
JAN
JAN
FEB
FEB
RESEARCH & STORYLINE
COMPLETE
MAJOR TEXTS
DRAFT 1
DRAFT 2
DRAFT 3
FINAL DRAFT
TO TRANS-LATION
TO TYPE-SET
PROOF READ
PASTE -UP
TO SILKSCREEN
PHOTOS
TENTATIVE SELECTION
FINAL SELECTION
PREPARE FOR PHOTO
TO PHOTO STUDIO
RECEIVE + PREPARE
MOUNT
DRAWINGS + ILLUSTRATIONS
TENTATIVE SELECTION
FINAL SELECTION
PREPARATION
PREPARE FOR PHOTO
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FINAL DRAFT
TO TRANS-LATION
TO TYPESET
PROOF READ
PASTE-UP
TO SILK SCREEN
DESIGN BASIC
FRAMES PANELS CASES
PREPARE DRAWINGS -SPECS
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TO SILKSCREEN
INSTALL
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TENTATIVE GRAPHIC LAYOUT
FINAL LAYOUT
READY FOR SILKSCREEN
KEYED
OPENS FEB 26

9.12 APPENDIX 12

EXHIBIT CHANGING TIDES

SECTION A1 PAGE A1-1

SUBJECT INTRODUTION

TEXT OR ARTIFACT LABEL(S)

CHANGING TIDES

A1-T1 E

Changing Tides examines the history of archaeological research in British Columbia's Fraser delta region by tracing our evolving knowledge of its prehistory. Each stage of this research has changed and refined our perception of the past.

As you move through the exhibit, you will see how each stage of research--here titled the "Descriptive", "Cultural Sequence", and "Subsistence" stages--not only builds on earlier knowledge but also introduces new ideas and new techniques.

MAREES CHANGEANTES

A1-T1 F

Marées Changeantes passe en revue l'histoire de la recherche archéologique dans la région du delta du fleuve Fraser, en Colombie Britannique, en suivant l'évolution de notre connaissance de sa préhistoire. Chaque étape de cette recherche a modifié et raffiné notre perception du passé.

En parcourant l'exposition, vous observerez comment chaque étape de recherche, portant les titres "La Description", "La Succession des cultures" et "Les Stratégies de Subsistance" ont non seulement consolidé les connaissances acquises mais aussi innové au niveau des idées et des techniques.

EXHIBIT CHANGING TIDES

SECTION A1		PAGE A1-2	
SUBJECT			
A. NO.	ARTIFACTS	G. NO.	GRAPHICS
	NONE	A1-G1	Harlan I. Smith's Marpole excavation (mural)
COMMENTS			
			No photo credit this section, see section B.

EXHIBIT CHANGING TIDES

SECTION A 2	PAGE A2 - 1
SUBJECT	
TEXT OR ARTIFACT LABEL(S)	

A2-T1E

THE SIGNIFICANCE OF SHELL MIDDENS

Shell midden sites provide the most important evidence for prehistoric human activity in the Fraser delta region. These sites contain the remains of dwellings, work areas and garbage dumps, providing a record of human habitation spanning nearly 9,000 years.

In midden sites, different activities created characteristic patterns of remains. These remains resulted in the build up of midden layers which the archaeologist interprets in order to discover a site's history.

A2 - T1 F

LA SIGNIFICATION DES AMAS DE COQUILLES

Les amas de coquilles constituent la documentation la plus importante pour se renseigner sur les activités humaines préhistoriques dans la région du delta du Fraser. Ces stations préhistoriques contiennent des vestiges d'habitations, des zones d'activités et des amoncellements de déchets qui témoignent d'une occupation humaine ayant duré près de 9,000 ans.

Les différentes activités qui se déroulaient dans les stations à amas de coquilles y ont laissé des vestiges caractérestiques. Ces vestiges ont produit une accumulation de couches que les archéologues interprètent afin de reconstruire l'histoire d'une station.

A2-T2 E

Different layer patterns result when diverse activities occur at the same place over time. For example, in a coastal shell midden the remains of an abandoned house may later be covered by the refuse of a shellfish steaming mound that, in turn, may be covered by remains of a campsite hearth. In this way the layers accumulate, reaching up to 5 meters in depth.

In other cases, a site may show a more regular pattern of continuous, but seasonal use. For instance, fall salmon fishing activities leave a distinctive pattern of debris which differs from that left by spring herring fishing. The complex layers of soil, shells and other remains result not only from these human activities, but also from naturally deposited debris.

A2-T2F

Les diverses activités réalisées sur un même emplacement durant un laps de temps laissent derrière elles des couches distinctes. Dans une station côtière d'amas de coquilles, par exemple, les restes d'une maison abandonnée seront plus tard, recouvert par les débris d'un amas de mollusques cuits à la vapeur, lequels le seront à leur tour, par les restes d'un feu de camp. Les couches peuvent de la sorte atteindre une épaisseur de 5 mètres.

Dans d'autres cas, une station pourra contenir des vestiges d'occupations saisonnières. C'est ainsi que la pêche au saumon en automne produira des restes caractéristiques, permettant de les distinguer de ceux provenant de la pêche printannière au hareng. La série complexe de couches de sols, de coquilles et d'autres activités provient non seulement de produits de l'activité humaine mais aussi de dépots naturels.

EXHIBIT CHANGING TIDES

SECTION A2 PAGE A2-2

SUBJECT

TEXT OR ARTIFACT LABEL(S)

A2-T3E

THE CONTENTS OF SHELL MIDDENS

Investigating shell middens is further complicated by natural processes of decay. Most organic materials decay quite quickly unless special conditions help to preserve them. In coastal shell middens, the presence of shells helps to preserve bone and antler, but wood and plant fibers usually survive only if they are constantly waterlogged. Thus, the carved wooden objects for which the Northwest Coast is well known are rarely found in archaeological sites.

Exhibited here are a range of items found in coastal shell middens.

A2-T3F

CONTENU DES AMAS DE COQUILLES

L'effet de la décomposition ajoute à la complexité de l'étude des amas de coquilles. La majorité des matières organiques entrent rapidement en décomposition, à moins que des conditions spéciales n'interviennent en faveur de la préservation. Dans le cas des stations côtières, la présence de coquilles contribuera à la préservation de l'os et de l'andouiller. Le bois et les fibres végétales, par contre, dépérissent à moins d'être engagés constamment dans l'eau. Ces conditions rendent compte de la rareté, dans les gisements archéologiques, des pièces en bois sculptées qui ont fait la renommée de la côte du Pacifique Nord.

Voici un inventaire d'objets trouvés dans un amas de coquilles de la côte.

EXHIBIT CHANGING TIDES

SECTION A2 PAGE A2-3

SUBJECT

A. NO.	ARTIFACTS		G. NO.	GRAPHICS
A2-A1	1. Ground slate knife	A950	A2-G1	Photo showing midden layers
A2-A2	2. Chipped stone tools	DhRt11:68		
		DhRt6:28		
A2-A3	3. Cooking stones (2)	no #'s		
A2-A13	4. Sandstone abrader	DhRt6:63		
A2-A14	5. Waste flakes	DgRr6:2601		
		" 1928		
		" 3511		
A2-A4	6. Bone awl (c)	DgRr6:1554c		
A2-A5	7. Figure (c)	DgRr6:2687c		
A2-A6	8. Salmon vertebrae	no #'s		
A2-A7	9. Bird bone	no #		
A2-A9	10. Shell disc	Ma3344		
A2-A10	11. Clam shells	no #'s		
A2-A12	12. Carbonized seeds	no #'s		
A2-A11	13. Basketry frag.	DhRt4:70249		

COMMENTS

(c) = Replica

A2-G1 Leica 49 VII #11
(no label)

EXHIBIT CHANGING TIDES

SECTION A2	PAGE A2-4
SUBJECT	
TEXT OR ARTIFACT LABEL(S)	

SECTION A2-L1E+F

1. Ground slate knife
   Couteau en ardoise polie
2. Chipped stone tools
   Outils en pierre taillée
3. Cooking stones
   Pierres servant à la cuisson
4. Sandstone abrader
   Polissoir en grès
5. Waste flakes from artifact manufacture
   Eclats de taille
6. Deer bone awl (replica)
   Alène en os de cerf (réplique)
7. Carved antler tool handle ca. 2000 B.C. (replica)
   Manche d'outil en andouiller gravé vers 2000 B.C. (réplique)
8. Salmon vertebrae
   Vertébres de saumon
9. Bird bone
   Os d'oiseau
10. Shell ornament
    Ornement en coquillage
11. Clam shells and fragments
    Coquilles et fragments de palourde
12. Carbonized salmonberry seeds
    Graines de baies (Rubis spectabilis) carbonisées
13. Basketry fragment ca. 750 B.C.
    Fragment de vannerie vers 750 av. J.C.

EXHIBIT CHANGING TIDES

SECTION A3 PAGE A3-1

SUBJECT

TEXT OR ARTIFACT LABEL(S)

SECTION A3-T1 E
SHELL MIDDENS AND THEIR SETTING

To understand the role of a particular site within a region, archaeologists must consider the changing natural environment in which the site's occupants lived. The rich and diverse environment of the Northwest Coast, including that of the Fraser delta region, influenced the development of the area's unique cultures.

A3-T1 F

LES AMAS DE COQUILLES ET LEUR MILIEU

Les archéologues doivent tenir compte du milieu naturel au sein duquel vivaient les occupants d'un site particulier, afin de comprendre son rôle dans une région. La richesse et la diversité du milieu de la côte du Pacifique Nord, y compris celui de la région du delta du Fraser, ont influencé le développement de cette aire culturelle exceptionnelle.

A3-T2 E

The Fraser river delta and estuary provided a wide variety of sea and land resources which were extensively used by the region's inhabitants. The developing estuary--the tidal mouth of the river and surrounding ocean waters--played a vital role for over 7,000 years in the location, stability and quantity of these resources.

A3-T2 F

Les habitants de la région du delta et de l'estuaire du fleuve Fraser savaient tirer largement profit des ressources marines et terrestres qu'elle offrait. La formation de cet estuaire, comprenant une embouchure à marées et une bordure océanique, a joué de façon décisive, durant plus de 7,000 ans, sur la localisation, la stabilité et la quantité de ces ressources.

EXHIBIT CHANGING TIDES

SECTION A3 PAGE A3-2

SUBJECT

TEXT OR ARTIFACT LABEL(S)

A3-T3 E

THE SEASONAL ROUND

Although many resources were abundant, they were often available only seasonally, and even then, they could be difficult to acquire. The Coast Salish inhabitants of the region used diverse and often complex methods to harvest these short-term resources. For example, during spring fish runs, herring or eulachon were netted and raked; salmon were netted, trapped in weirs, speared, harpooned or hooked, depending on the species, the season and location.

Fishing was supplemented by various activities, such as berry picking in summer and shellfish gathering the year round. Specialists hunted sea mammals in the spring and land mammals in the autumn and winter. During winter, stored foods were relied upon as ceremonial and manufacturing activities dominated winter village life.

A3-T3F

LE CYCLE SAISONNIER

L'occurence de plusieurs ressources, malgré leur abondance, demeurait cependant saisonnière et leur acquisition pouvait offrir des difficultés. Les populations Salish qui occupaient la région côtière avaient recours à des méthodes diverses et souvent complexes, afin de s'approvisionner en ressources à disponibilité éphémère. Au cours des migrations printannières du poisson, par exemple, on capturait le hareng et l'éperlan avec des filets et par ratissage; les saumons, avec des filets, des barrages, à la foëne, au harpon ou à l'hameçon, selon les espèces, la saison ou le lieu.

Diverses activités suppléaient à la pêche, telles que la collecte des baies en été, le ramassage des mollusques tout au long de l'année. La chasse aux mammifères terrestres, en automne et en hiver. La subsistance au cours de l'hiver dépendait d'aliments stockés, saison durant laquelle la vie dans les résidences villageoises était dominée par les activités cérémonielles et artisanales.

A3-T4 E

THE DEVELOPING DELTA

In examining the Fraser delta region, it is important to consider the evolution of the delta itself. The present location of midden sites reflects this development. For instance, a site that fronted on tidal flats at the river's mouth 2,000 years ago may now be several kilometers upriver.

A3-T4F

EVOLUTION DU DELTA

Il importe de tenir compte de l'évolution du delta lui-même, lorsque l'on examine cette partie de la région du Fraser. L'emplacement actuel des amas de coquilles le réflète. C'est ainsi qu'une station qui se situait, il y a 2,000 ans, en face des terres basses à marées dans l'embouchure du fleuve, pourrait se trouver maintenant à plusieurs kilomètres en amont.

EXHIBIT CHANGING TIDES

SECTION A3 PAGE A3-3

SUBJECT

A. NO.	ARTIFACTS	G. NO.	GRAPHICS
	NONE	A3-G1	Illustrations (4) of seasonal round (from Four Seasons)
		A3-G2	Series of delta development maps
		A3-G3	Photo of Beach Grove midden
		A3-G4	Denman Island shell midden (mural)

COMMENTS

A2-G3 Delta 56 I #10

A2-G4 Leica 46 I #12

EXHIBIT CHANGING TIDES

SECTION A3 PAGE A3-4

SUBJECT

TEXT OR ARTIFACT LABEL(S)

A3-G1: E+F
WINTER
L'HIVER

SPRING
LE PRINTEMPS

SUMMER
L'ETE

AUTUMN
L'AUTOMNE

A3-G2: E+F
THE EVOLUTION OF THE FRASER DELTA
L'EVOLUTION DU DELTA DU FRASER

6000 B.C.
3000 B.C.
PRESENT DELTA
LE DELTA AUJOURD'HUI

GLENROSE CANNERY GLENROSE CANNERY GLENROSE CANNERY

MARPOLE

STSELAX

LOCARNO BEACH

CRESCENT BEACH CRESCENT BEACH

BEACH GROVE

WHALEN FARM

Burrard Inlet Burrard Inlet Burrard Inlet

Fraser River Fraser River Fraser River

Strait of Georgia Strait of Georgia Strait of Georgia

Roberts Island Roberts Island

Roberts Peninsula

A3-G3: E+F

The Beach Grove midden, 1956.
Photo by Charles E. Borden
L'amas de coquilles de Beach Grove, 1956.
Photographie prise par Charles E. Borden

EXHIBIT CHANGING TIDES

SECTION B PAGE B-1

SUBJECT

TEXT OR ARTIFACT LABEL(S)

Section B-T1E

THE DESCRIPTIVE STAGE

Archaeological investigation in the Fraser delta region began in the late 1800's. This early work was mainly concerned with finding artifacts, describing them, and speculating about their significance. The 1898 investigation of the Marpole site by the American Museum of Natural History's Harlan I. Smith is representative of this early research.

B-T1F

L'ETAPE DESCRIPTIVE

Les débuts de la recherche archéologique dans la région du delta du Fraser remontent à la fin du siècle dernier. Ces premiers travaux se consacraient avant tout à la découverte et à la description des pièces archéologiques, ainsi qu'à des spéculations quant à leur signification. L'étude de la station de Marpole en 1898, par Harlan I. Smith, du Musée Américain d'Histoire Naturelle, illustre bien cette étape de recherche.

B-T2E

Using a small force of hired labour, Smith rapidly excavated a portion of the site by shovel. Little attention was paid to the layers in which artifacts were found. Nevertheless, he concluded that artifacts from all layers provided evidence of a stable economic structure beginning at least 2,000 years ago.

Smith based his estimates for the 1,000 years of occupation, followed by 1,000 years of disuse, on such factors as the age of trees growing over the midden, the depth of accumulation, and the degree of midden material decay. Recent research supports his estimate.

B-T2F

Avec l'aide d'une petite équipe de travailleurs à gages, Smith fouilla rapidement à la pelle une partie du gisement, sans se préoccuper de la provenance par couches des pièces. Il n'en conclut pas moins que l'ensemble de ces trouvailles démontrait l'existence d'une structure économique stable, dont le début remontait à au moins 2,000 ans.

Smith se fiait à des facteurs tels que l'âge des arbres qui croissaient au sommet du gisement, la profondeur des dépots et l'état de décomposition des vestiges, pour estimer une durée de 1,000 ans pour l'occupation, suivi de 1,000 ans d'abandon. Des recherches récentes confirment ses estimations.

EXHIBIT CHANGING TIDES

SECTION B PAGE B-2

SUBJECT

TEXT OR ARTIFACT LABEL(S)

B-T3 E

DESCRIPTION AND SPECULATIONS

Smith used the artifacts that he recovered from the site to answer questions concerning the economic and cultural stability of the area. He argued for economic stability based on the recovery of woodworking, fishing, basketry, and mat making tools similar to those he saw still in use by the local Coast Salish residents of the area. On the other hand, Smith also argued for cultural replacement. He viewed the presence of chipped stone points and geometric decoration as evidence for early migration of interior people to the coast.

Smith asked important questions, but his answers were speculative, in a manner characteristic of early descriptive archaeology. More conclusive answers would require the more refined theories and research techniques which were introduced as archaeology developed.

B-T3 F

DESCRIPTION ET SPECULATIONS

Smith eut recours aux pièces obtenues par la fouille de la station pour trouver réponse aux questions concernant la stabilité économique et culturelle de la région. Il soutint que les ressemblances entre l'outillage recueilli au cours des fouilles qui servait au travail du bois, à la pêche, à la vannerie et au tressage, et celui, toujours en usage par les populations côtières Salish du même endroit, témoignaient en faveur d'une stabilité économique. Smith prétendit, par ailleurs, que la présence de décorations géométriques et de pointes en pierre taillée un remplacement des cultures, par la migration vers la côte démontrait de populations venant de l'intérieur.

Smith souleva des questions importantes mais le caractère spéculatif des réponses qu'il leur apporta marque l'orientation de cette étape essentielment descriptive de l'archéologie. Des réponses plus concluantes demandent l'emploi de théories et de techniques plus poussées, lesquelles feront leur apparition aux stages suivants du dévelopment de la recherche archéologique.

EXHIBIT CHANGING TIDES

SECTION B PAGE B-3

SUBJECT

A. NO.	ARTIFACTS		G. NO.	GRAPHICS
	Decorated Objects			
B-A15	1. Decorated bone	DhRs1:9013	B-G1	Harlan I. Smith's excavation (photo)
		DhRs1:3946		
B-A14	2. Tooth pendants	Ma8771		
		Ma403		
B-A13	3. Shale beads	DhRs1:9071		
	Women's Tools			
B-A12	4. Fish knife	Ma460		
B-A11	5. Needles	A1209		
		A887		
B-A10	6. Awls	A829		
		Ma3424		
		A1234		
	Hunting & Fishing Tools			
B-A5	7. Chipped points	Ma3975		
		A1029		
		Ma3782		
B-A6	8. Slate points	A721		
		Ma3807		
B-A7	9. Bone & antler points			
		A765		
		A974		
		A994		
		EB158		
B-A8	10. Harpoon points	Ma433		
		EB148		
	11. (c)	DgRr6:1935c		
B-A9	12. Perforated stones	Ma6279		
		Ma3289		
	Woodworking Tools			
B-A4	13. Adze blades	Ma438		
		EB553		
B-A3	14. Antler chisel	A866		
B-A2	15. Antler wedge	A1084		
B-A1	16. Hand maul	MuE821		

COMMENTS

B-G1 American Museum of Natural History neg.# 42964

EXHIBIT CHANGING TIDES

SECTION B	PAGE B-4
SUBJECT	
TEXT OR ARTIFACT LABEL(S)	

SECTION B: L1E+F

Marpole midden artifacts
Pièces archéologiques de l'amas de coquilles de Marpole

Decorative objects
Objets décorés

1. Incised bone and antler objects
   Objets incisés en os et en andouiller
2. Canine tooth pendants
   Pendeloques en canine
3. Shale beads
   Grains de collier en argile schisteuse

Women's tools
Outillage employé par les femmes

4. Ground slate fish knife
   Couteau à poisson en ardoise polie
5. Bone and antler needles
   Aiguilles en os et en andouiller
6. Bird and mammal bone awls
   Alène en os d'oiseau et de mammifére

Hunting and fishing tools
Outillage pour la chasse et la pêche

7. Chipped projectile points and knife
   Pointes de projectile et couteauen pierre taillée
8. Ground slate points
   Pointes en ardoise polie
9. Bone and antler points
   Pointes en os et en andouiller
10. Unilaterally barbed antler harpoon points
    Pointes de harpon à barbes unilatérales en andouiller
11. Bilaterally barbed harpoon point (replica)
    Pointes de harpon à barbelure bilatérale (réplique)
12. Perforated stones
    Pierres perforées

Woodworking tools
Outillage pour le travail du bois

13. Nephrite adze blades
    Lames d'herminette en néphrite
14. Antler chisel
    Ciseau en andouiller
15. Antler wedge
    Coin en andouiller
16. Hand maul
    Masse

EXHIBIT CHANGING TIDES

SECTION B	PAGE B-5
SUBJECT	
TEXT OR ARTIFACT LABEL(S)	

B-G1 E+F

Harlan I. Smith's Marpole excavation, 1898.
Courtesy of the American Museum of Natural History
La fouille de Marpole par Harlan I. Smith, 1898
Avec la permission de l'American Museum of Natural History.

EXHIBIT CHANGING TIDES

SECTION C1 PAGE C1-1

SUBJECT

TEXT OR ARTIFACT LABEL(S)

Section C1: C1-T1 E

THE CULTURAL SEQUENCE STAGE

Charles E. Borden, premier archéologue de la Colombie Britannique, effectua des travaux à Marpole et dans d'autres stations du delta du Fraser, entre la fin des années quarante et les années soixante-dix et établit l'essentiel de la succession des cultures dont l'emploi continut de nos jours. Il se rendit compte que le but de dépasser les interprétations spéculatives sur la préhistoire de la région éffectués par Smith, exigeait un enrégistrement rigoureux de la provenance des pièces, des outils et des structures d'habitat telles que les foyers.

C1-T1 F

LA SUCCESSION DES CULTURES

British Columbia's first archaeologist, Charles E. Borden, worked at Marpole and other Fraser delta sites, from the late 1940's to the 1970's, and was instrumental in establishing the basic cultural sequence still used today. He realized that to move beyond Smith's speculative interpretations of the area's prehistory, accurate records must be kept of where artifacts or tools, and features--such as hearths--were found in a site.

C1-T2 E

To establish a cultural sequence, Borden grouped layers with similar artifacts into what archaeologists call a component. He then grouped similar components from different sites into cultures or cultural phases. Radio-carbon dating, invented in 1948, was used to verify the order of these phases, as well as to date them.

C1-T2 F

Afin de mettre sur pied une succession des cultures, Borden groupa les couches possédant des pièces semblables en un ensemble que les archéologues nomment une composante. Il ordonna ensuite les composantes de différentes stations qui se ressemblaient en cultures ou en phases culturelles. La datation au radiocarbonne, inventée en 1948, fut employée afin de vérifier l'ordre successif de ces phases et de les dater.

EXHIBIT CHANGING TIDES

SECTION C1 PAGE C1-2

SUBJECT

TEXT OR ARTIFACT LABEL(S)

C1-T3 E

DEFINING CULTURAL PHASES

The phases Borden defined are the Locarno Beach phase, the Marpole phase, the Whalen II phase, and the Stselax phase. These phases were usually named after the first site in which the characteristic component was found, but any site could contain several components or phases.

For example, Marpole phase components, first defined at the Marpole site, are found at many sites in the region including the Glenrose Cannery site upriver. The Whalen II phase, on the other hand, is confined to a single site.

Shown here is a selection of artifacts Borden considered representative of each cultural phase.

C1-T3F

LA DEFINITION DES PHASES CULTURELLES

Les phases définies par Borden comportent celles de Locarno Beach, de Marpole, de Whalen II et Stselax. La nomenclature de ces phases s'obtient habituellement en adoptant comme station-type la première où eut lieu la découverte de la composante qui la caractérise. Toute station demeure néanmoins susceptible de contenir plusiers composantes ou plusiers phases.

C'est ainsi que les composantes de la phase Marpole, définies pour la première fois dans la station de Marpole, se rencontrent dans plusieurs stations de la région, y compris celle de Glenrose Cannery, en amont. La phase Whalen II, par ailleurs, n'est représentée que par une seule station.

Voici un choix de pièces que Borden considérait comme représentatives de chacunes des phases culturelles.

EXHIBIT CHANGING TIDES

SECTION C1 PAGE C1-3

SUBJECT

A. NO.	ARTIFACTS		G. NO.	GRAPHICS
	Locarno Beach Phase			
C1-A1	1. Toggle valve	Wh325		
C1-A3	2. Toggle head	DhRt6:204	C1-G1	Photo of profile drawing
C1-A4	3. Slate points	DhRt6:344		
		DhRt6:74	C1-G2	Photo of Marpole excavation
C1-A5	4. Slate knife	Al94		
C1-A6	5. Facetted bone point	Wh162c	C1-G3	Photo of measuring in situ
C1-A7	6. Serrated point	DhRt6:72c		
C1-A8	7. Chipped points	DhRt6:11	C1-G4	Beach Grove excavation (mural)
		DhRt6:30		
C1-A9	8. Shell adze frag.	DgRr1:4193		
C1-A10	9. Small adze blade	MuNE78		
C1-A12	10. Bone needle	Al203		
C1-A13	11. Bird bone awl	DhRt6:1064		
C1-A14	12. Labret	DrRt6:287		
C1-A15	13. Cobble hammerstone	DhRt6:117		
C1-A16	14. Sea mammal bones	DhRt6:6213f		
C1-A58	15. Death head	DhRt6:218c		
C1-A60	16. Harpoon foreshaft	Wh283		
	Marpole Phase			
C1-A21	1. Adze blades	DhRs1:9185		
		Ma405		
		Ma3585		
C1-A22	2. Antler pestle	Ma3299c		
C1-A23	3. Stone bowl	DhRs1:9216c		
C1-A24	4. Shale beads	no #'s		
C1-A25	5. Antler pendant	Ma3345		
C1-A27	6. T-shaped labret	Ma368		
C1-A28	7. Antler points	Ma428		
		Ma430		
C1-A29	8. Chipped points	Ma3259		
		Ma3577		
		Ma3797		
		Al011		
C1-A31	9. Beaver incisor	DgRr2:71		
C1-A32	10. Salmon vertbrae	no #'s		
C1-A61	11. Bone needle	DhRs1:3975		
C1-A62	12. Bird bone awls	EB172		
		Al233		
C1-A63	13. Perforated stone	Ma3288		
	(con't p.C1-4)			

COMMENTS

c= replica
f= faunal remain

C1-G1 Leica 49 XII #8
C1-G2 Leica 55 VIII #25
C1-G3 Leica 65 II #8
C1-G4 Leica 57 III #23

EXHIBIT CHANGING TIDES

SECTION C1 PAGE C1-4

SUBJECT

A. NO.	ARTIFACTS		G. NO.	GRAPHICS
	Marpole Phase con't			
C1-A17	14. Harpoon point	A1191		
C1-A18	15. Ground slate knife	Ma427		
C1-A19	16. Antler wedge	A1061		
C1-A20	17. Hand maul	DhRs1:4385		
	Whalen II Phase			
C1-A33	1. Microblades (c)	no #'s		
C1-A34	2. Olivella beads (c)	no #'s		
C1-A35	3. Chipped points	Wh253		
		Wh282		
		Wh662		
C1-A37	4. Toggle head	Wh91c		
C1-A38	5. Antler wedge	A1058		
C1-A40	6. Adze blade	Wh304		
C1-A41	7. Incised object	Wh534c		
C1-A43	8. Beaver incisor	MuE806		
C1-A44	9. Barbed point	Wh536c		
C1-A45	10. Bird bone awl	Ma3433		
C1-A46	11. Dentalium	DhRs1:9205		
C1-A39	12. Hand maul	DgRnx:56		
	Stselax Phase			
C1-A47	1. Toggle heads	MuE2060		
		MuE4312		
		MuE2092		
C1-A48	2. Ground slate points	MuE2170		
		MuE4361		
C1-A49	3. Wedge	MuE2667		
C1-A51	4. Adze blades	MuE4527		
		MuE4676		
C1-A52	5. Fish knife	MuE2138		
C1-A54	6. Knotched point	MuE4872		
C1-A55	7. Spindle whorl	MuE354c		
C1-A56	8. Bone pin	MuE510c		
C1-A57	9. Bone points	MuE4868		
C1-A64	10. Drinking tube	MuE2942		
C1-A65	11. Pipe frag.	MuE2942		
C1-A66	12. Beaver incisor	DhRt4:6843		
C1-A67	13. Bird bone awl	MuE2533		
C1-A50	14. Hand maul	MuE2636		

COMMENTS

c = replica

EXHIBIT CHANGING TIDES

SECTION C1	PAGE C1-5
SUBJECT	
TEXT OR ARTIFACT LABEL(S)	

SECTION C1: L1 E+F

Locarno Beach Phase (ca. 1100–400 B.C.)
Phase Locarno Beach (entre 1100 et 400 av. J.C.)

1. Antler toggle valves for harpoon heads
   Crans de têtes de harpons femelles en andouiller
2. One piece toggle valve for harpoon head (replica)
   Crans de tête de harpon femelle simple (réplique)
3. Ground slate points
   Pointes en ardoise polie
4. Thick ground slate knife
   Couteau épais en ardoise polie
5. Facetted ground bone point (replica)
   Pointe facettée en os poli (réplique)
6. Serrated bone point (replica)
   Pointe denticulée en os (réplique)
7. Chipped stone projectile points
   Pointes de projectiles en pierre taillée
8. Shell adze blade fragment
   Fragment de lame d'herminette en coquillage
9. Small adze blade
   Petite lame d'herminette
10. Bone needle
    Aiguille en os
11. Bird bone awl
    Alène en os d'oiseau
12. Labret (replica)
    Labret (réplique)
13. Cobble hammerstone
    Percuteur de galet
14. Sea mammal bones
    Os de mammifère marin
15. Human skull effigy carved from deer bone (replica)
    Effigie en forme de crâne humain sculptée dans un os de cerf (réplique)
16. Antler harpoon foreshaft
    Hampe de harpon en andouiller

EXHIBIT CHANGING TIDES

SECTION C1 PAGE C1-6

SUBJECT

TEXT OR ARTIFACT LABEL(S)

C1-L1 E+F

Marpole Phase (ca. 400 B.C.-A.D. 450)
Phase Marpole (entre 400 av. J.C. et 450 A.D.)

1. Adze and chisel blades
   Lames d'herminette et de ciseaux
2. Great blue heron miniature antler pestle (replica)
   Pilon miniature en andouiller sous forme de grand héron bleu (réplique)
3. Small human figure bowl (replica)
   Petit bol anthropomorphe (réplique)
4. Shale beads
   Grains de collier en argile schisteuse
5. Antler pendant
   Pendeloque en andouiller
6. T-shaped labret
   Labret en forme de T
7. Barbed antler points
   Pointes à barbelures en andouiller
8. Chipped projectile points
   Pointes de projectiles en pierre taillée
9. Beaver incisor carving tool
   Outil à sculpter en incisive de castor
10. Salmon vertebrae
    Vertèbres de saumon
11. Bone needle
    Aiguille en os
12. Bird bone awl
    Alène en os d'oiseau
13. Perforated stone
    Pierre perforée
14. Antler harpoon point
    Pointe de harpon en andouiller
15. Ground slate knife
    Couteau en ardoise polie
16. Antler wedge
    Coin en andouiller
17. Hand maul
    Masse

EXHIBIT CHANGING TIDES

SECTION C1	PAGE C1-7
SUBJECT	
TEXT OR ARTIFACT LABEL(S)	

C1-12 E+F

Whalen II Phase (ca. A.D. 350–800)
Phase Whalen II (entre 350–800 A.D.)

1. Obsidian microblades (replicas)
   Microlame en obsidienne (réplique)
2. Olivella shell beads (replicas)
   Grains de colliers en coquille d'Olivella (réplique)
3. Chipped projectile points
   Pointes de projectiles en pierre taillée
4. Antler toggle valves for harpoon heads (replicas)
   Crans de têtes de harpons femelles en andouiller (réplique)
5. Antler wedge
   Coin en andouiller
6. Nephrite adze blade
   Lame d'herminette en néphrite
7. Incised siltstone object (replica)
   Object incisé en roche sédimentaire (réplique)
8. Beaver incisor carving tool
   Outil à sculpter en incisive de castor
9. Barbed bone point fragment (replica)
   Fragment de pointe à barbelures en os (réplique)
10. Bird bone awl
    Alène en os d'oiseau
11. Dentalium shell
    Coquille de Dentalium
12. Hand maul
    Masse

EXHIBIT CHANGING TIDES

SECTION C1 PAGE C1-8

SUBJECT

TEXT OR ARTIFACT LABEL(S)

C1-LL E+F

Stselax Phase (ca. A.D. 800–1808)
Phase Stselax (entre 800–1808 A.D.)

1. Valves for toggling harpoon heads
   Crans de têtes de harpon femelle
2. Ground slate points
   Pointes en ardoise polie
3. Antler wedge
   Coin en andouiller
4. Adze blades
   Lame d'herminette
5. Ground slate knife
   Couteau en ardoise polie
6. Side notched point
   Pointe à encoche latérale
7. Antler spindle whorl (replica)
   Fuseau en andouiller (réplique)
8. Bone pin (replica)
   Epingle en os (réplique)
9. Bone points and point fragment
   Pointes en os et fragments de pointes
10. Bird bone drinking tube
    Tube à boire en os d'oiseau
11. Steatite pipe fragment
    Fragment de pipe en stéatite
12. Beaver incisor carving tool
    Outil à sculpter en incisive de castor
13. Bird bone awl
    Alène en os d'oiseau
14. Hand maul
    Masse

EXHIBIT CHANGING TIDES

SECTION C1	PAGE C1-9
SUBJECT	
TEXT OR ARTIFACT LABEL(S)	

C1-G1 E+F

Profile drawing of midden layers. Whalen Farm site, 1949.
Photo by Charles E. Borden
Coupe des couches du gisement. Station de Whalen Farm, 1949.
Photographie prise par Charles E. Borden

C1-G2 E+F

A view of the Marpole excavation, 1955.
Photo by Charles E. Borden
Vue de la fouille de Marpole, 1955.
Photographie prise par Charles E. Borden

C1-G3 E+F

Measuring the location of an artifact. Pt Grey site, 1965.
Photo by Charles E. Borden
Prise de coordonnées d'une pièce archéologique
Photographie prise par Charles E. Borden

C1-G4 E+F

Beach Grove excavation, 1957.
Photo by Charles E. Borden
Fouille de Beach Grove, 1957.
Photographie prise par Charles E. Borden

EXHIBIT CHANGING TIDES

SECTION C2 PAGE C2-1

SUBJECT

TEXT OR ARTIFACT LABEL(S)

Section C2-T4 E
REFINING THE CULTURAL SEQUENCE

Initially, Borden viewed his cultural phases as representing a series of migrations into the region. He eventually modified his position, however, recognizing that cultural change could also result from local developement.

C2-T5 E

This change in Borden's position resulted when archaeological work in adjacent areas failed to support his hypotheses about the origin of certain traits. Although he eventually allowed that most phases could have developed locally out of previous ones, he continued to argue that the Whalen II phase represented the arrival of new people from the interior.

By considering the Whalen II phase to represent the entire region during one time period, Borden ignored other possible explanations. The presence of particular artifacts might have resulted from trade, and absence of others might have been due to the season of site use.

For example, the presence of small chipped stone points, commonly found in interior sites, were also found at the Whalen Farm site, and could be accounted for by trade between coast and interior peoples. On the other hand, the absence of thin ground slate knives usually associated with salmon processing and found in earlier and later phases in the region may simply indicate that the site in question was not used for salmon fishing.

A recognition of the potential importance of seasonal site use distinguishes the next stage of archaeological research. This new focus provides an alternative explanation for the uniqueness of the Whalen II component, while adding a new dimension to complement Borden's basic cultural sequence.

EXHIBIT CHANGING TIDES

SECTION C2 PAGE C2-2

SUBJECT

TEXT OR ARTIFACT LABEL(s)

C2-T4 F

LE RAFFINEMENT DE LA SEQUENCE DES CULTURES

Au début, Borden envisageait ses phases culturelles comme l'aboutissement d'une série de migrations dans la région. Il modifia son point de vue, en définitive, en admettant qu'un développement à l'échelle locale pourrait également produire un changement culturel.

C2-T5 F

Cette modification de point de vue eut lieu lorsque des recherches archéologiques dans des régions voisines ne purent confirmer son hypothèse sur l'origine de certains traits. Bien qu'ayant concédé que la majorité des phases pouvait être issue d'antécédants à l'échelle locale, il continua cependant de soutenir que la phase Whalen II représentait un mouvement de population provenant de l'intérieur.

En considérant la phase Whalen II comme valable pour l'ensemble de la région durant une seule période, Borden ne tenait pas compte de la possibilité d'autres explications. Ainsi, la présence de pièces avec des particularités aurait pu résulter d'échanges tandis que l'absence d'autres pièces, de l'emploi saisonnier d'une station.

On pourrait rendre compte, par exemple, des petites pointes en pierre éclatée, répandues dans les stations de l'intérieur et trouvées également à Whalen Farm, par des échanges entre les populations de la côte et celles de l'intérieur. L'absence, par contre, de couteaux minces en ardoise polie, associés habituellement avec la préparation du saumon et que l'on rencontre dans les phases anciennes et récentes de la région, signifierait simplement que cette même station ne servait pas à la pêche au saumon.

La reélisation de l'importance possible de l'emploi saisonnier des stations marque l'étape suivante des recherches archéologiques. Cette nouvelle façon de voir rend compte du caractère inusité de la composante Whalen II, tout en ajoutant une dimension nouvelle et complémentaire à la séquence construite par Borden.

EXHIBIT CHANGING TIDE

SECTION C2			PAGE C2-3
SUBJECT			
A. NO.	ARTIFACTS	G. NO.	GRAPHICS
	NONE		NONE
COMMENTS			

EXHIBIT CHANGING TIDES

SECTION D1 PAGE D1-1

SUBJECT

TEXT OR ARTIFACT LABEL(S)

D1-T1 E

THE SUBSISTENCE RESEARCH STAGE

Since the 1970's, archaeologists have been applying new techniques to midden sites in order to answer new questions about the process of cultural adaptation in the region. Their investigations have focussed on how the prehistoric inhabitants of the area supplied themselves with food and other necessities.

D1-T1 F

LES STRATEGIES DE SUBSISTANCE

Depuis les annés soixante-dix, les archéologues ont eu recours à de nouvelles techniques, pour l'étude des stations en amas de coquilles, afin d'aborder de nouveaux problèmes concernant les processus d'adaptation culturelle dans la région. Leurs recherches se sont consacrées à l'étude des moyens employés par les occupants préhistoriques de la région pour s'approvisionner en aliments et en autres besoins.

D1-T2 E

An understanding of the subsistence strategy each phase of the Fraser delta sequence represents is just beginning to take shape. The Glenrose Cannery site proved a good starting point for such research because it provided a 6,000 year record of continuing but variable use of resources, such as salmon, shellfish, land and sea mammals. More recently, intensive investigation at the Crescent Beach site has provided a greater understanding of a particular type of seasonal site, a shellfish and herring processing camp.

D1-T2 F

Une compréhension des stratégies de subsistance pratiqués au cours de chacunes des phases qui se sont succédées dans le delta n'en est qu'à ses débuts. La station de Glenrose Cannery démontre pour la première fois les possibilités offertes par une telle orientation de la recherche. Elle illustre pour une durée continue de plus de 6,000 ans les différentes modalités d'exploitation des ressources telles que le saumon, les mollusques, les mammifères terrestres et marins. L'étude plus récente de la station Crescent Beach a permis de connaître l'emploi saisonnier d'une station se spécialisant dans la préparation des mollusques et du hareng.

EXHIBIT CHANGING TIDES

SECTION D1	PAGE D1-2
SUBJECT	
TEXT OR ARTIFACT LABEL(S)	

D1-T3 E

REFINING EXCAVATION AND LABORATORY TECHNIQUES

To aid subsistence research, archaeologists employ more refined excavation procedures and new laboratory techniques. A critical aspect of this research is discovering the relationships among artifacts, food remains, and other midden materials.

D1-T3F

LE RAFFINEMENT DES TECHNIQUES DE FOUILLE ET EN LABORATOIRE

Les archéologues recourent à des méthodes de fouille plus détaillées et à des techniques de laboratoire nouvelles qui rendent l'étude de la subsistance plus efficace. Un aspect d'importance capitale pour ce genre de recherche est de découvrir les liens pouvant exister entre les outillages, les restes alimentaires et les autres vestiges dans les amas de coquilles.

D1-T4 E

Because these techniques are expensive, all layers within a site cannot be analyzed with the same intensity. Archaeologists therefore select representative samples in order to reconstruct the relative importance of shellfish, fish and game in the diet of the site's occupants. The use of waterscreening through fine mesh allows for greater recovery of fish vertebrae and other small items than do traditional dry screening methods. Computers are increasingly important for analyzing the masses of data generated by such field techniques.

New laboratory techniques are also being developed to aid subsistence research. For example, the growth rings in a cross-section of shell can accurately show the season of collection, thereby indicating the season of site use. Detecting residues such as blood, fats, and resins on stone tools helps to show tool function and, consequently, what activities might have been performed at these seasonal sites.

D1-T4F

Le coût onéreux de ces techniques ne permet pas d'analyser en détail chacunes des couches d'un gisement. Les archéologues ont donc recours à des échantillons, afin d'établir la part jouée respectivement par les mollusques, le poisson et le gibier dans l'alimentation des occupants d'une station. Le tamisage fin à l'eau assure, mieux que par les techniques traditionnelles, une récupération complète des vertèbres de poisson et d'autres restes de petite dimension. Les ordinateurs acquièrent une importance croissante dans l'analyse du volume de données engendrées par ces techniques de terrain.

De nouvelles techniques de laboratoire sont présentement à l'essai pour assister dans l'étude de la subsistance. L'étude des anneaux de croissance visibles par sections transverses des coquilles permet, par exemple, d'établir la saison de la collecte et par conséquent, celle de l'occupation de la station. La découverte de traces de sang, de graisse et de résine sur les outils de pierre, contribue à l'identification de leur fonction et par conséquent, du genre d'activités qui auraient pu avoir eu lieu dans ces stations à occupation saisonnière.

EXHIBIT CHANGING TIDES

SECTION D1 PAGE D1-3

SUBJECT

A. NO.	ARTIFACTS	G. NO.	GRAPHICS
D1-A1	Tools for residue analysis DgRr1:4196 DgRr1:4312	D1-G2	Waterscreening photo
D1-A2	Cross-section of shell no #	D1-G3	Lab photo
D1-A3	Herring vertebrae no #'s	D1-G4	Illustration of residue analysis (D1-A1)
		D1-G5	Illustration of shell analysis (D1-A2)
		D1-G6	Coloured pie graph of faunal use through time at Glenrose Cannery site

COMMENTS

D1-G2 DgRr1 C3-2 (slide)
D1-G3 Taken for Changing Tides

EXHIBIT CHANGING TIDES

SECTION D1	PAGE D1-4
SUBJECT	
TEXT OR ARTIFACT LABEL(S)	

D1-A1+G4 E+F

Residue analysis showing presence or absence of blood, fats and resins.
Analyse de résidus démontrant la présence ou l'absence de sang, de graisse et de résine

+ blood
+ sang

+ blood
+ sang

+ blood
+ sang

+ blood
+ sang

+ + blood
+ + sang

- blood
- sang

- blood
- sang

+ fats
+ graisse

+ fats
+ graisse

+ fats
+ graisse

+ fats
+ graisse

+ resins
+ résines

- resins
- résines

- resins
- résines

+ present or positive reaction
+ présence ou réaction positive
+ + strong indication of presence
+ + forte indication de présence
- absent or negative reaction
- absence ou réaction négative

EXHIBIT CHANGING TIDES

SECTION D1	PAGE D1-5
SUBJECT	
TEXT OR ARTIFACT LABEL(S)	

D1-A2-G5 E+F
Shell cross-section indicating spring growth at time of collection.
Section d'une coquille indiquant une croissance printanniére lors du ramasage.

Dark bands occur during slow winter growth season.
Les bandes foncées surviennent au cours de la période de croissance lente en hiver.

Cross-section cut
Coupe transversale

Winter growth ring
Anneau de croissance hivernale

Complete annual band
Bande annuelle compléte

spring growth
Croissance printanniére

D1-A3 E+F
Herring vertebrae, recovered by waterscreening.
Vertébres de harengs obtenues par le tamissage à l'eau

D1-G2 E+F
Waterscreening at Crescent Beach, 1977.
Photo by Len Ham
Tamissage à l'eau à Crescent Beach, 1977.
Photographie prise par Len Ham

D1-G3 E+F

Laboratory analysis of stone tool residues, 1985.
Photo by M. Robinson Waters.
Analyse en laboratoire des restes d'outillage de pierre, 1985.
Photographie prise par M. Robinson Waters.

EXHIBIT CHANGING TIDES

SECTION D1 PAGE D1-6

SUBJECT

TEXT OR ARTIFACT LABEL(S)

D1-G6 E+F

Identified fish remains from Glenrose Cannery showing changing resource use through time.
Restes de poisssons identifiés à Glenrose Cannery montrant le changement des ressources exploitées au cours des temps

Marpole Phase ca. 400 B.C.–A.D. 450
Phase Marpole (entre 400 av. J.C. et 450 A.D.)

St. Mungo Phase ca. 2500–1100 B.C.
Phase St. Mungo (entre 2500 et 1100 B.C.)

Old Cordilleran Phase ca. 6200–2500 B.C.
Phase Old Cordilleran (entre 6200 et 2500 B.C.)

SALMON
SAUMON

HERRING
HARENG

EULACHON
EPERLAN

STURGEON
ESTURGEON

STICKLEBACK
EPINOCHE

EXHIBIT CHANGING TIDES

SECTION D2	PAGE D2-1
SUBJECT	
TEXT OR ARTIFACT LABEL(S)	

D2-T1 E

INVESTIGATING A SEASONAL SITE

The excavation of shell midden layers at the Cresent Beach site shows how the type and season of activities undertaken at a site may be determined by careful analysis.

D2-T1F

L'ETUDE D'UNE STATION A OCCUPATION SAISONNIERE

La fouille des couches d'amas de coquilles de la station de Crescent Beach démontre comment des analyses minutieuses peuvent nous renseigner sur le type et la saison des activités qui avaient lieu dans une station.

D2-T2 E

One important refinement at the Crescent Beach site was the careful removal of midden layers following the natural contours of the site. Previous sites were excavated by removing flat, even layers,usually 10 to 20 cm. thick. This refinement helped to isolate the specific activities which had occurred at this site.

D2-T2F

Une amélioration importante apportée à la fouille de Crescent Beach fut le décapage par couches de l'amas de coquilles, en suivant les contours naturels de la station. Les fouilles précédentes des autres stations se faisaient par niveaux arbitraires de 10 à 20 centimétres d'épaisseur. Ce raffinement a permis de séparer les différentes activités ayant eu lieu dans cette station.

EXHIBIT CHANGING TIDES

SECTION D2	PAGE D2-2
SUBJECT	
TEXT OR ARTIFACT LABEL(S)	

D2-T3E

MIDDEN LAYERS AND PAST ACTIVITIES

To understand each layer type, models of site use were developed. Models are used to predict what activities might have occurred at the site during different times of the year. Important considerations include the historic Coast Salish use of the area and those times of the year when certain resources were most abundant. Certain layer types, features, artifacts, and faunal remains thus can be predicted for a particular group of expected activities.

D2-T3F

COUCHES D'AMAS DE COQUILLES ET ACTIVITES DU PASSE

Des modèles d'utilisation de stations ont été construits, afin de se renseigner sur les différents rtypes de couches. Le recours aux modèles permet de prédire le genre d'activités qui aurait pu avoir lieu dans une station, à différents moments de l'année. Ainsi, l'utilisation du milieu par les populations Salish de la côte, au cours de l'histoire récente, et la saisonnalité de l'abondance de certaines ressources, méritent une attention particulière. Il semble donc probable que certains types de couches, de structures d'habitat et d'objets coincident avec le réalisation d'un ensemble de tâches particulières.

D2-T4 E

Although such factors as decay, and the removal of many tools and structures once at the site, might make analysis difficult, the prediction of site use helps to overcome this problem. For example, if shellfish harvesting and processing are predicted for a site, the baskets, digging sticks and drying racks might have been removed or have decayed. On the other hand, other evidence willl remain, such as the remains of steaming mounds, discarded clam shells, and the post holes for the drying racks.

If the problematic Whalen II component at the Whalen Farm site were re-examined in this manner, it might now be seen as a seasonal variant of another cultural phase rather than as a unique cultural phase.

D2-T4F

Maigré l'effet de facteurs contribuant aux difficultés de l'analyse, tels que la décompostion et le transport de plusieurs outils et de structures d'habitat en dehors de la station, un modèle d'utilisation des stations fornit les moyens de surmonter de tels obstacles. Si l'on prévoit, par exemple, qu'une station était utilisée pour la collecte et la préparation des mollusque, il demeure possible que les paniers, les bâtons à fouiller et les claies à séchage aient été transportés ailleurs ou se soient décomposés. D'autres indices s'y trouveront, par contre, tels que les vestiges d'etuves en amas, les coquilles abandonnées et les trous de poteaux pour les claies à séchage.

Une nouvelle étude de la composante problématique de Whalen II pourrait démontrer qu'il s'agissait, en fait, d'une occupation saisonnière faisant partie d'une autre phase culturelle et non pas, d'une phase culturelle distincte.

EXHIBIT CHANGING TIDES

SECTION D2 PAGE D2-3

SUBJECT

A. No.	ARTIFACTS		G. No.	GRAPHICS
	Clam digging tool kit			
D2-A1	1. Small clam basket	A2282 (E)	D2-G1	Photo of midden layer mapping
D2-A2	2. Digging stick	A2239 "		
D2-A3	3. Clams	no #'s	D2-G2	Photo of excavating by layers
	Woodworking tool kit		D2-G3	Illustration of activities
D2-A4	4. Composite adze			
	-blade	DhRr13:3	D2-G4	Drawing of midden build-up
	-handle	no # c		
D2-A5	5. Hand maul	DhRs18:1	D2-G5	Photo of midden feature
D2-A6	6. Antler wedge	MuE64		
	Wooden wedge	DhRt4:8572		
D2-A7	7. Bone chisel	A837		
D2-A8	8. Bone drill	no # c		
D2-A9	9. Dogfish skin	no #		
	Archaeological remains (woodworking)			
D2-A10	10. Adze blade	DgRr1:4050		
D2-A13	11. Antler wedges/frags	DgRr1:4122		
		" 4300		
		" 4194		
D2-A14	12. Bone chisel	DgRr1:4116		
D2-A15	13. Bone drill frag.	DgRr1:4267		
	Archaeological remains (clams)			
D2-A17	14. Clam frags	no #'s		
D2-A19	15. Cooking stones (2)	DgRr1:30		
		no #'s		

COMMENTS

E = Ethnology collection

D2-G1 DgRr1-C2-17
D2-G2 " C1-32
D2-G3 Gordon Miller painting
D2-G5 DgRr1-C2-10

EXHIBIT CHANGING TIDES

SECTION D2 PAGE D2-4

SUBJECT

TEXT OR ARTIFACT LABEL(S)

D2-L1 E+F

Clam digging tool kit
Panoplie pour la récolte des palourdes

1. Small clam basket
   Petit panier à palourdes
2. Digging Stick
   Bâton à fouiller
3. Horse clams
   Palourde

Woodworking Tool Kit
Panoplie pour le travail du bois

4. Straight adze, with antler haft and nephrite blade (replica)
   Herminette droite, avec manche en andouiller et lame en néphrite (réplique)
5. Hand maul
   Masse
6. Antler and wooden wedges
   Coins en andouiller et en bois
7. Bone chisel
   Ciseau en os
8. Bone drill with wooden handle (replica)
   Foret en os, avec poignée de bois (réplique)
9. Dogfish skin sandpaper
   Papier à sabler en peau de chien de mer

Archaeological remains of woodworking tool kit
Vestiges archéologiques de panoplie pour le travail du bois

10. Adze blade
    Lame d'herminette
11. Antler wedges and fragments
    Coins en andouiller et fragments
12. Bone chisel
    Ciseau en os
13. Bone drill fragment
    Fragment de foret en os

Archaeological remains from clam processing
Vestiges archéologiques de la préparation des palourdes

14. Horse clam fragments
    Fragments de palourde
15. Cooking stones
    Pierres servant à la cuisson

EXHIBIT CHANGING TIDES

SECTION D2 PAGE D2-5

SUBJECT

TEXT OR ARTIFACT LABEL(S)

D2-G1 E+F

Mapping midden layer contours. Crescent Beach site, 1977.
Photo by Len Ham
Cartographie du contours des couches de l'amas de coquilles. Station de Crescent Beach, 1977.
Photographie prise par Len Ham

D2-G2 E+F

Excavating by natural layers. Crescent Beach site, 1977.
Photo by Len Ham
Fouille par décapage. Station de Crescen Beach, 1977.
Photographie prise par Len Ham

D2-G3: E
By reconstructing the activities which might have occurred at the Crescent Beach site, archaeologists can better understand the pattern of remains which are left behind. Shown here are some of the activities and structures which would have occurred at an early spring herring fishing camp, before the herring run.

D2-G3 F

Une reconstitution des activités ayant pu se dérouler dans la station de Crescent Beach permet aux archéologues de mieux saisir la signification des vestiges abandonnés. Nous voyons ici certaines des activités et des structures qui devaient avoir lieu dans un camp de pêche avant la migration printannière du hareng.

EXHIBIT CHANGING TIDES

SECTION D2 PAGE D2-6

SUBJECT

TEXT OR ARTIFACT LABEL(S)

D2-G4: E+F
MODEL OF MIDDEN DEVELOPMENT
MODELE DE L'EVOLUTION D'UN AMAS DE COQUILLES

Shellfish harvesting site after use
Station de ramassage des mollusques aprés son occupation

Shellfish harvesting site, 30 years later.
Station de ramassage des mollusques, 30 ans plus tard.

Shellfish harvesting site after reuse
Station de ramassage des mollusques aprés une nouvelle occupation.

Shell harvesting site, 100 years later.
Station de rammassage des mollusques, 100 ans plus tard.

ocean ocean ocean ocean
océan océan océan océan

beach
plage

beach
plage

beach
plage

beach
plage

hearth
foyer

steaming mound
amas d'étuve

refuse heap
amoncellement de déchets

hearth
foyer

steaming mound
amas d'étuve

refuse heap
amoncellement de déchets

hearth
foyer

steaming mound
amas d'étuve

refuse heap
amoncellement de déchets

hearth
foyer

drying rack
séchoir

post holes
troux de poteau

sand and humus
sable et humus

shell
coquille

cobble stone
gros galet

old basket
vieux panier

broken digging stick
bâton à fouiller brisé

charcoal
charbon

storm erosion
érosion par la tempête

EXHIBIT CHANGING TIDES

SECTION D2	PAGE D2-7
SUBJECT	
TEXT OR ARTIFACT LABEL(S)	

D2-G5 E+F

Archaeological remains of a steaming mound. Crescent Beach site, 1977
Photo by Len Ham
Vestiges archéologiques d'un amas d'étuve. Station de Crescent Beach, 1977
Photographie prise par Len Ham

EXHIBIT CHANGING TIDES

SECTION E PAGE E-1

SUBJECT

TEXT OR ARTIFACT LABEL(S)

E-T1 E

THE FUTURE OF THE PAST

Archaeological research in the Fraser delta region has developed through several stages paralleling general changes in North American archaeology. Each stage has built on previous results. These results have laid the foundation upon which new questions are raised and new techniques are developed.

E-T1 F

L'AVENIR DU PASSE

La recherche archéologique dans le delta du Fraser s'est déroulée au cours de plusiers étapes, de façon parrallèle à ce qui s'est passé dans l'ensemble de l'Amérique du Nord. Chaque étape a bénéficié des résultats acquis. Ces résultats ont permis la formulation de nouvelles questions et le développement de nouvelles techniques.

E-T2 E

The Descriptive stage not only provided initial descriptions, but asked important questions concerning both economic and cultural change. The subsequent development of a regional Cultural Sequence resulted from more refined excavation techniques and laboratory procedures. Recent Subsistence Research is beginning to outline the development of the Northwest Coast's seasonally diverse subsistence pattern.

While a similar range of resources was used in this area for thousands of years, critical changes occurred in resource use, for instance the development of large scale salmon processing for storage. These changes have only recently received attention. A new focus on social questions, such as on how social organization and subsistence strategies interrelate, suggests that a new stage of archaeological research is also taking shape. The future of such research, however, is seriously threatened.

E-T2 F

L'Etape Descriptive, en plus de fournir les premières descriptions, a permis d'aborder des problèmes importants sur le changement économique et culturel. L'établissement d'une Succession des Cultures dans la région qui lui fit suite, a été rendue possible par l'emploi de méthodes de fouille et de techniques de laboratoire plus affinées. L'étape récente de la Recherche sur la Subsistance est en voie d'esquisser l'évolution des formes saisonnières différentes de la subsistance sur la côte du Pacifique Nord.

Même s'il semble acquis qu'une utilisation d'un éventail de ressources comparable se soit poursuivie au cours des millénaires dans la région, les méthodes d'exploitation ont subit d'importantes modifications, entre autres le développement d'une préparation intensive du saumon en vue de l'entreposage alimentaire, mais ce n'est que récemment que l'on accorde à de tels changements l'attention qu'ils méritent. On se concentre maintenant sur l'étude des questions sociales, telles que le lien entre l'organisation sociale et les stratégies de subsistance, ce qui indique l'avènement d'une nouvelle étape de la recherche. L'avenir de cette recherche se voit cependant menacé de façon sérieuse.

EXHIBIT CHANGING TIDES

SECTION E PAGE E-2

SUBJECT

TEXT OR ARTIFACT LABEL(S)

E-T3E

HERITAGE DESTRUCTION

The destruction of midden sites, especially in urban areas like the Fraser delta, is a major problem. Marpole and other important sites were excavated just before bulldozers moved in. Unfortunately, many other sites were destroyed before any archaeological investigation could take place. As a result, valuable heritage information has been lost forever.

If a greater appreciation of the development of Northwest Coast cultures is to be achieved, archaeologists must continue to investigate a cross-section of sites within a region. But to do this, archaeological sites must be viewed as non-renewable resources that require our protection.

E-T3F

LA DESTRUCTION DE L'HERITAGE CULTUREL

La destruction des stations en amas de coquilles, particulièrement dans les zones urbaines du delta du Fraser, présente un problème d'envergure. Marpole et d'autres stations furent fouillées immédiatement avant l'arrivée des niveleuses. Malheureusement, un grand nombre de gisements ont été détruits avant que la recherche archéologique ne puisse intervenir, ce qui consitue une perte irréparable d'information précieuse sur l'héritage culturel.

Les archéologues se voient dans l'obligation de poursuivre une recherche portant sur plusieurs types de stations, si l'on désire obtenir une meilleure connaissance de l'évolution des cultures sur la côte du Pacifique Nord. La réalisation de cet objectif exige cependant une protection des gisements archéologiques que l'on doit envisager comme des ressources non-renouvelables.

EXHIBIT CHANGING TIDES

SECTION E		PAGE E3	
SUBJECT			
A. NO.	ARTIFACTS	G. NO.	GRAPHICS
	NONE	E-G1	Photo of Marpole 1955
		E-G2	Photo of Marpole 1984
		E-G3	Crescent Beach 1957
		E-G4	Marpole bulldozer shot (mural)
COMMENTS			

E-G1: Delta 55 I #5
E-G3: Delta 57 III #14
E-G4: Leica 54(55)X #35

EXHIBIT CHANGING TIDES

SECTION E PAGE E-4

SUBJECT

TEXT OR ARTIFACT LABEL(S)

E-G1 E+F

View of Marpole site, 1955
Photo by Charles E. Borden
Vue de la station de Marpole, 1955
Photographie prise par Charles E. Borden

E-G2 E+F

View of Marpole site, 1984
Vue de la station de Marpole, 1984

E-G3 E

Archaeological excavation is often carried out under less than ideal conditions. Salvaging cultural remains threatened by immediate destruction necessitates quick action. This is a regrettable alternative to careful management of heritage resources.
Crescent Beach salvage excavation, 1957.
Photo by Don Abbott

E-G3F

La fouille archéologique se poursuit souvent dans des conditions peu idéales. Le sauvetage des vestiges culturels menacés par une destruction imminente exige une action rapide. Le sauvetage demeure malheureusement le seul recours, lorsqu'une administration attentive aux ressources du patrimoine fait défaut.
Fouille de sauvetage de Crescent Beach, 1957
Photographie prise par Don Abbott

Photo by Charles E. Borden
Photographie pris par Charles E. Borden

EXHIBIT CHANGING TIDES

SECTION F PAGE F-1

SUBJECT ACKNOWLEDGEMENTS

TEXT OR ARTIFACT LABEL(S)

F-T1 E+F

ACKNOWLEDGEMENTS

Changing Tides was produced by the University of British Columbia Museum of Anthropology.

Illustrations: Gordon Miller

Graphics: Moira Irvine

Translation: Prof. Nicolas Rolland

This exhibit was curated by Ann Stevenson in partial fulfilment of the requirements for the M.A. degree in Anthropology, University of British Columbia, 1985.

The curator wishes to thank her graduate committee for supporting and guiding this project and the Museum's staff, volunteers and students for making this exhibit possible.

The museum gratefully acknowledges support for this exhibition from the National Museums of Canada, Exhibitions Assistance Programme and the British Columbia Heritage Trust.

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Illustrations: Gordon Miller

Graphiques: Moira Irvine

Traduction: Prof. Nicolas Rolland

La conservation de cette exposition fut la responsabilité d'Ann Stevenson et faisait partie des conditions exigés pour le grade de Maîtrise es Arts en Anthropologie à l'Université de la Colombie Britannique, 1985.

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9.13 APPENDIX 13

Illustration for the exhibition Changing Tides

This illustration will show a temporary Coast Salish fishing camp at the Crescent Beach site (ca. 1100 A.D.). This camp would have been occupied for approximately one month in the early spring (late February through March), mainly to harvest and process shellfish for storage and trade, as well as, fishing for herring, collecting herring spawn, and drying these for storage. Secondary activities included woodworking, hide processing, bird, sea and land mammal hunting.

The specific activities to be illustrated are shellfish and herring processing, and woodworking. Structures would include temporary mat shelters, hearths, smoking and drying racks, and steaming mounds. The illustration should include a number of people engaged in the above activities, including women actively processing food, men engaged in woodworking, drying rack construction, and possibly other activities associated with food processing. Included in this scene should be two older children engaged in these activities.

It should be recognizably a beach scene and background activities could include herring fishing and possibly plank removal from standing cedars. Canoes would also have been found on the beach.

Shellfish harvesting:

-required the cooperation of an organized pool of labour, or task groups to procure large quantities. As the lowest tides were at night during the early spring, procuring activities would probably not be shown in this illustration.

-Cockles (Clinocardium nuttali) and Horse clams (Tresus sp.) were the most frequently preserved species. Cockles are collected on the surface at low tide, but Horse clams require rapid digging. Other species were also collected, but were either eaten immediately after processing or were stored in smaller numbers.

Main sources for shellfish harvesting and processing include:

Ham 1982:128-132;141
Stern 1969:47-8
Suttles 1974:65-9

Other sources include:

Barnett 1955:65
Haeberlin and Gunther 1930:23-4
Jenness n.d. :43
Kennedy and Bouchard 1983:33-6
Stewart 1977:132

Shellfish processing:

Clams were first steamed open by placing them over heated rocks, covered with kelp, fir or hemlock boughs, or old mats and finally sand.

Variations include pit steaming -

-a shallow pit was lined with hot rocks from the fire, the walls lined with inner cedar bark, shellfish in the shell were placed over the rocks and covered with mats and steamed.

-or the rocks are placed over a large bed of hot coals, when they are hot, the shellfish are added, covered with old mats, and then sand. Seaweed and boughs could be used, but when large quantities were processed at the beach sand was usually used. Steaming took 20-45 minutes.

Sand was removed, then the mats and boughs.

The meat was removed and the shells discarded.

The meat was rinsed of sand, stuck on skewers and roasted, either by angling the sticks towards a fire or by leaning the sticks on a frame over the fire.

After roasting the meat was strung on cedar bark strings, and sun dried before being stored in a small, well ventilated basket.

Herring processing:

-herring were dried by piercing a dozen or more through the gills with a stick which was laid across a six foot high frame and either sun dried or smoked with a fire beneath the frame.
-drying took ten days or more, and smoking may occur only for the first two to three days.
-spawn was also dried on these frames, the roe which adhered to hemlock or cedar boughs would be shaken or stripped off into baskets after drying.
-larger herring were split open with a deer ulna bone knife for drying.

See:

Barnett 1955:86

Boas 1921:184-5

Curtis 1913:51

Jenness n.d. :17

Kennedy and Bouchard 1983:31-2

Stewart 1977:124-7;147-8

Woodworking activities at a shellfish and herring processing camp:

Although subsistence activities would probably predominate this site, certain construction and manufacturing activities would also have taken place. Many items were probably produced at the winter village, however some were undoubtably made at the site.

As herring runs are relatively unpredictable, the group using this site would arrive before the herring run was expected, harvest clams and other resources before the fish appeared.

Woodworking activities would have occurred at this time. A variety of items could have been made including house planks, canoes, boxes, and smaller implements, depending on whether the appropriate specialist was present. As wedges, adze blades, and drill fragments were found at this site, boxes, planks and/or herring rakes could have been produced.

This illustration should include the manufacturing of, at least one appropriate item (herring rake), and could also show the construction of drying and roasting frames or other structures.

Herring rake production:

A herring rake was made by splitting a long, section of cedar or red pine, first from a standing tree (see Boas 1975:50405) then it is slit and shaped to size. It is

rounded at the handle end and flattened for two feet at the other. Barbs of hardwood (ironwood or oceanspray) or bone were fixed to the flattened end by several methods.

-the rake was held on its side by two stakes, then it is drilled along the edge, and teeth driven in.

-sharpened points of ironwood were driven all the way through the wooden shaft in much the same way nails would be.

The herring rake was about 7-14" long, several inches wide by 1/2" to 3/4" thick. Spacing of the barbs vary from less than 1/2" to slightly greater than an inch. The barbs themselves are one to two inches long. See:

Boas 1975:504-5
Stewart 1977:76-7
Suttles 1974:126-7

Basic woodworking Kit:

* 1. Hand maul-generally spool shaped
* 2. Wedges-wooden (yew, dogwood or crabapple) and antler
  -various sizes, often with cedar withe grommets
  -various edge angles
  3. Stone or bone chisels
* 4. Adzes-straight, elbow or D-adzes
  -tone or shell blades
* 5. Drill-bone or antler with wooden haft
  6. Stone or shell knife

Also a variety of other tools:

* -dogfish skin sandpaper
  -scouring rushes
  -paints
* -pegs
* -cedar withes
  -incising tools
* -abrader stones

All kept in a wedge shaped basket (Boas 1921:60)

See:

Barnett 1955:107-9

Haeberlin and Gunther 1930:33

Jenness n.d.:27;38

Suttles 1974:225-7

* these would have been used to make a herring rake, as well as grease for waterproofing and possible heat treatment for strength.

Temporary mat house:

The usual shelter at a temporary camp consisted of lean-tos or four posted frames which were covered with cattailed mats and sometimes bark and roof planks.

Pole frames-lower at the rear, slanting to shed rain.

Cat-tail mats-6' by 15' overlapping on 3 sides and on the roof - tied to the frame with cedar withes.

Cooking hearths were located outside the mat shelters and sometimes several shelters would be erected facing a common fire. In bad weather the cooking fire may be inside.

See:

Barnett 1955:40
Haeberlin and Gunther 1930:18
Jenness n.d.:7-9
Stern 1969:41,52
Suttles 1974:261

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9.14 APPENDIX 14

CHANGING TIDES
The Development of Archaeology in B.C.'s Fraser Delta Region
Ann Stevenson
UBC MUSEUM OF ANTHROPOLOGY
Museum Note No.

...the people lived at the water's edge, derived most of their livelihood from the water, travelled waterways in preference to trails, and regulated their activities by the tides as much as by daylight and dark.

Philip Drucker,
Archaeological Survey on
the Northern Northwest
Coast
1943

[PLATE I]

INTRODUCTION

The history of archaeological research in British Columbia's Fraser Delta Region is the history of our evolving knowledge of this area's prehistory. Each stage of this reasearch has both changed and refined our perception of this region's past.

The development of archaeology in this region reflects both the changing ideas and new innovations which have generally affected archaeological research across North America. The shell middens of the Fraser delta provide a testing ground for ongoing research which promises to provide us with an increasing knowledge of an important aspect of Northwest Coast prehistory.

THE SIGNIFICANCE OF SHELL MIDDENS

Shell midden sites provide the most important evidence for prehistoric human activity in the Fraser delta region. These sites contain the remains of dwellings, work areas and garbage dumps, providing a record of human habitation spanning nearly 9,000 years.

In midden sites, different activities created characteristic patterns of remains. These remains resulted in the build up of midden layers which the archaeologist interprets in order to discover a site's history.

Different layer patterns result when diverse activities occur at the same place over time. For example, in a coastal shell midden the remains of an abandoned house may later be covered by the refuse of a shellfish steaming mound that, in turn, may be covered by remains of a campsite hearth. In this way the layers accumulate, reaching up to 5 meters in depth.

In other cases, a site may show a more regular pattern of continuous, but seasonal use. For instance, fall salmon fishing activities leave a distinctive pattern of debris which differs from that left by spring herring fishing. The complex layers of soil, shells and other remains result not only from these human activities, but also from naturally deposited debris.

Investigating shell middens is further complicated by natural processes of decay. Most organic materials decay quite quickly unless special conditions help to preserve them. In coastal shell

middens, the presence of shells helps to preserve bone and antler, but wood and plant fibers usually survive only if they are constantly waterlogged. Thus, the carved wooden objects for which the Northwest Coast is well known are rarely found in archaeological sites.

SHELL MIDDENS AND THEIR SETTING

To understand the role of a particular site within a region, archaeologists must consider the changing natural environment in which the site's occupants lived. The rich and diverse environment of the Northwest Coast, including that of the Fraser delta region, influenced the development of the area's unique cultures.

The Fraser river delta and estuary provided a wide variety of sea and land resources which were extensively used by the region's inhabitants. The developing estuary--the tidal mouth of the river and surrounding ocean waters--played a vital role for over 7,000 years in the location, stability and quantity of these resources.

In examining the Fraser delta region, it is important to consider the evolution of the delta itself. The present location of midden sites reflects this development. For instance the Glenrose Cannery site which was at the river's mouth 8,000 years ago is now many kilometers upriver.

[FIGURE I]

THE SEASONAL ROUND

Although many resources were abundant, they were often available only seasonally, and even then, they could be difficult to acquire. The Coast Salish inhabitants of the region used diverse, and often complex methods to harvest these short-term resources. For example, during spring fish runs, herring or eulachon were netted and raked; salmon were netted, trapped in weirs, speared,

harpooned or hooked, depending on the species, the season and location.

Fishing was supplemented by various activities, such as berry picking in summer and shellfish gathering the year round. Specialists hunted sea mammals in the spring and land mammals in the autumn and winter. During winter, stored foods were relied upon as ceremonial and manufacturing activities dominated winter village life.

[FIGURE II]

THE DESCRIPTIVE STAGE

Archaeological investigation in the Fraser delta region began in the late 1800's. This early work was mainly concerned with finding artifacts, describing them, and speculating about their significance. The 1898 investigation of the Marpole site by the American Museum of Natural History's Harlan I. Smith is representative of this early research.

Using a small force of hired labour, Smith rapidly excavated a portion of the site by shovel. Little attention was paid to the layers in which artifacts were found. Nevertheless, he concluded that artifacts from all layers provided evidence of a stable economic structure beginning at least 2,000 years ago.

Smith based his estimates for the 1,000 years of occupation, followed by 1,000 years of disuse, on such factors as the age of trees growing over the midden, the depth of accumulation, and the degree of midden material decay. Recent research supports his estimate.

Smith used the artifacts that he recovered from the site to answer questions concerning the economic and cultural stability of the area. He argued for economic stability based on the recovery of woodworking, fishing, basketry, and mat making tools similar to those he saw still in use by the local Coast Salish residents of the area. On the other hand, Smith also argued for cultural replacement. He viewed the presence of chipped stone points and geometric decoration as evidence for early migration

of interior people to the coast.

Smith asked important questions, but his answers were speculative, in a manner characteristic of early descriptive archaeology. More conclusive answers would require the more refined theories and research techniques which were introduced as archaeology developed.

[PLATE II]

THE CULTURAL SEQUENCE STAGE

British Columbia's first archaeologist, Charles E. Borden, worked at Marpole and other Fraser delta sites, from the late 1940's to the 1970's, and was instrumental in establishing the basic cultural sequence still used today. He realized that to move beyond Smith's speculative interpretations of the area's prehistory, accurate records must be kept of where artifacts or tools, and features--such as hearths--were found in a site.

To establish a cultural sequence, Borden grouped layers with similar artifacts into what archaeologists call a component. He then grouped similar components from different sites into cultures or cultural phases. Radio-carbon dating, invented in 1948, was used to verify the order of these phases, as well as to date them.

The phases Borden defined are the Locarno Beach phase, the Marpole phase, the Whalen II phase, and the Stselax phase. These phases were usually named after the first site in which the characteristic component was found, but any site could contain several components or phases.

For example, Marpole phase components, first defined at the Marpole site, are found at many sites in the region including the Glenrose Cannery site upriver. The Whalen II phase, on the other hand, is confined to a single site.

Although some artifact types are found in several phases, Borden defined each phase by the presence of distinctive features.

Locarno Beach phase is characterized by toggling harpoon heads, ground slate objects and bone points. Marpole Phase is typified by barbed harpoon heads, the Northwest Coast's woodworking trilogy of splitting wedges handmauls and adze blades, as well as thin ground slate knives and a proliferation of decorative objects. The Whalen II phase is defined by an absence of ground slate and the presence of microblades, small chipped points and olivella-shell beads. The most recent, Stselax phase sees an amalgamation of toggling harpoons and woodworking tools with slate grinding.

[PLATE III + IV + FIGURE III]

REFINING THE CULTURAL SEQUENCE

Initially, Borden viewed his cultural phases as representing a series of migrations into the region. He eventually modified his position, however, recognizing that cultural change could also result from local development.

This change in Borden's position resulted when archaeological work in adjacent areas failed to support his hypotheses about the origin of certain traits. Although he eventually allowed that most phases could have developed locally out of previous ones, he continued to argue that the Whalen II phase represented the arrival of new people from the interior.

By considering the Whalen II phase to represent the entire region during one time period, Borden ignored other possible explanations. The presence of particular artifacts might have resulted from trade, and absence of others might have been due to the season of site use.

For example, the presence of small chipped stone points, commonly found in interior sites, were also found at the Whalen Farm site, and could be accounted for by trade between coast and interior peoples. On the other hand, the absence of thin ground slate knives usually associated with salmon processing and found in earlier and later phases in the region may simply indicate that the site in question was not used for salmon fishing.

A recognition of the potential importance of seasonal site use distinquishes the next stage of archaeological research. This new

focus provides an alternative explanation for the uniqueness of the Whalen II component, while adding a new dimension to complement Borden's basic cultural sequence.

THE SUBSISTENCE RESEARCH STAGE

Since the 1970's, archaeologists have been applying new techniques to midden sites in order to answer new questions about the process of cultural adaptation in the region. Their investigations have focussed on how the prehistoric inhabitants of the area supplied themselves with food and other necessities.

An understanding of the subsistence strategy each phase of the Fraser delta sequence represents is just beginning to take shape. The Glenrose Cannery site proved a good starting point for such research because it provided a 6,000 year record of continuing but variable use of resources, such as salmon, shellfish, land and sea mammals. More recently, intensive investigation at the Crescent Beach site has provided a greater understanding of a particular type of seasonal site, a shellfish and herring processing camp.

REFINING EXCAVATION AND LABORATORY TECHNIQUES

To aid subsistence research, archaeologists employ more refined excavation procedures and new laboratory techniques. A critical aspect of this research is discovering the relationships among artifacts, food remains, and other midden materials.

Because these techniques are expensive, all layers within a site cannot be analyzed with the same intensity. Archaeologists therefore select representative samples in order to reconstruct the relative importance of shellfish, fish and game in the diet of the site's occupants. The use of waterscreening through fine mesh allows for greater recovery of fish vertebrae and other small items than do traditional dry screening methods. Computers are increasingly important for analyzing the masses of data generated by such field techniques.

New laboratory techniques are also being developed to aid subsistence research. For example, the growth rings in a cross-section of shell can accurately show the season of collection, thereby indicating the season of site use. Detecting residues such as blood, fats, and resins on stone tools helps to show tool function and, consequently, what activities might have been performed at these seasonal sites.

[FIGURES IV+V & PLATE V]

INVESTIGATING A SEASONAL SITE

The excavation of shell midden layers at the Cresent Beach site shows how the type and season of activities undertaken at a site may be determined by careful analysis.

One important refinement at the Crescent Beach site was the careful removal of midden layers following the natural contours of the site. Previous sites were excavated by removing flat, even layers, usually 10 to 20 cm. thick. This refinement helped to isolate the specific activities which had occurred at this site.

To understand each layer type, models of site use were developed. Models are used to predict what activities might have occurred at the site during different times of the year. Important considerations include the historic Coast Salish use of the area and those times of the year when certain resources were most abundant. Certain layer types, features, artifacts, and faunal remains thus can be predicted for a particular group of expected activities.

Although such factors as decay, and the removal of many tools and structures once at the site, might make analysis difficult, the prediction of site use helps to overcome this problem. For example, if shellfish harvesting and processing are predicted for a site, the baskets, digging sticks and drying racks might have been removed or have decayed. On the other hand, other evidence will remain, such as the remains of steaming mounds, discarded clam shells, and the post holes for the drying racks.

If the problematic Whalen II component at the Whalen Farm site were re-examined in this manner, it might now be seen as a seasonal variant of another cultural phase rather than as an unique cultural phase.

[FIGURE VI + VII + VIII + PLATE VI]

THE FUTURE OF THE PAST

Archaeological research in the Fraser delta region has developed through several stages paralleling general changes in North American archaeology. Each stage has built on previous results. These results have laid the foundation upon which new questions are raised and new techniques are developed.

The Descriptive stage not only provided initial descriptions, but asked important questions concerning both economic and cultural change. The subsequent development of a regional Cultural Sequence resulted from more refined excavation techniques and laboratory procedures. Recent Subsistence Research is beginning to outline the development of the Northwest Coast's seasonally diverse subsistence pattern.

While a similar range of resources was used in this area for thousands of years, critical changes occurred in resource use, for instance the development of large scale salmon processing for storage. These changes have only recently received attention. A new focus on social questions, such as on how social organization and subsistence stategies interrelate, suggests that a new stage of archaeological research is also taking shape. The future of such research, however, is seriously threatened.

The destruction of midden sites, especially in urban areas like the Fraser delta, is a major problem. Marpole and other important sites were excavated just before bulldozers moved in. Unfortunately, many other sites were destroyed before any

archaeological investigation could take place. As a result, valuable heritage information has been lost forever.

If a greater appreciation of the development of Northwest Coast cultures is to be achieved, archaeologists must continue to investigate a cross-section of sites within a region. But to do this, archaeological sites must be viewed as non-renewable resources that require our protection.

[PLATE VII]

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Illustrations:	Gordon Miller
GRAPHICS:	Moira Irvine
TRANSLATION	Dr. Nicolas Rolland
MUSEUM NOTE DESIGN	Gordon Miller

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FIGURE II	Seasonal round - line drawings (4) based on Four Seasons
FIGURE III	Chronology chart
FIGURE IV	Illustration of residue analysis
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FIGURE VI	Woodworking tool kit - line drawing or photo?
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FIGURE VIII	Drawing of midden build-up (4)
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PLATE V	Waterscreening or Lab Photograph
PLATE VI	Excavation by layers or midden feature mapping
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9.15 APPENDIX 15

CHANGING TIDES
The Development of Archaeology in B.C.'s Fraser Delta Region
Ann Stevenson
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Museum Note No. 13

...the people lived at the water's edge, derived most of their livelihood from the water, travelled waterways in preference to trails, and regulated their activities by the tides as much as by daylight and dark.

Philip Drucker,
Archaeological Survey on the Northern Northwest Coast. 1943

INTRODUCTION

The history of archaeological research in British Columbia's Fraser Delta Region is the history of our evolving knowledge of this area's prehistory. The shell middens of the Fraser delta provide a testing ground for ongoing archaeological research which promises to provide us with an ever increasing knowledge of Northwest Coast prehistory. The development of archaeology in this region also reflects both the changing ideas and the innovations which have characterized the growth of archaeology across North America. Each stage of this research--the Descriptive, Cultural Sequence, and Subsistence stages--have changed and refined our perception of this region's past.

THE DESCRIPTIVE STAGE

Archaeological investigation in the Fraser delta region began in the late 1800's. This early work was mainly concerned with finding artifacts, describing them, and speculating about their significance. The 1898 investigation of the Marpole site by the American Museum of Natural History's Harlan I. Smith is representative of this early research.

Using a small force of hired labour, Smith rapidly excavated a portion of the site by shovel. Little attention was paid to the layers in which artifacts were found. Nevertheless, he concluded that artifacts from all layers provided evidence of a stable economic structure beginning at least 2,000 years ago.

Smith based his estimates for the 1,000 years of occupation, followed by 1,000 years of disuse, on such factors as the age of trees growing over the midden, the depth of accumulation, and the degree of midden material decay. Recent research supports his estimate.

Smith used the artifacts that he recovered from the site to answer questions concerning the economic and cultural stability of the area. He argued for economic stability based on the recovery of woodworking, fishing, basketry, and mat making tools similar to those he saw still in use by the local Coast Salish residents of the area. On the other hand, Smith also argued for cultural replacement. He viewed the presence of chipped stone points and geometric decoration as evidence for early migration of interior people to the coast.

Smith asked important questions, but his answers were speculative, in a manner characteristic of early descriptive archaeology. More conclusive answers would require the more refined theories and research techniques which were introduced as archaeology developed.

THE CULTURAL SEQUENCE STAGE

The University of British Columbia's first archaeologist, Charles E. Borden, worked at Marpole and other Fraser delta sites, from the late 1940's to the 1970's, and was instrumental in establishing the basic cultural sequence still used today. He realized that to move beyond Smith's speculative interpretations of the area's prehistory, accurate records must be kept of where artifacts or tools, and features--such as hearths--were found in a site.

To establish a cultural sequence, Borden grouped layers with similar artifacts into what archaeologists call a component. He then grouped similar components from different sites into cultures or cultural phases. Radio-carbon dating, invented in 1948, was used to verify the order of these phases, as well as to date them.

The phases Borden defined are the Locarno Beach phase, the Marpole phase, the Whalen II phase, and the Stselax phase. These phases were usually named after the first site in which the characteristic component was found, but any site could contain several components or phases.

For example, Marpole phase components, first defined at the Marpole site, are found at many sites in the region including the Glenrose Cannery site upriver. The Whalen II phase, on the other hand, is confined to a single site.

Although some artifact types are found in several phases, Borden defined each phase by the presence of distinctive features. Locarno Beach phase is characterized by toggling harpoon heads, ground slate objects and bone points. Marpole Phase is typified by barbed harpoon heads, the Northwest Coast's woodworking trilogy of splitting wedges handmauls and adze blades, as well as thin ground slate knives and a proliferation of decorative objects. The Whalen II phase is defined by an absence of ground slate and the presence of microblades, small chipped points and olivella-shell beads. The most recent, Stselax phase sees an amalgamation of toggling harpoons and woodworking tools with slate grinding.

REFINING THE CULTURAL SEQUENCE

Initially, Borden viewed his cultural phases as representing a series of migrations into the region. He eventually modified his position, however, recognizing that cultural change could also result from local development.

This change in Borden's position resulted when archaeological work in adjacent areas failed to support his hypotheses about the origin of certain traits. Although he eventually allowed that most phases could have developed locally out of previous ones, he continued to argue that the Whalen II phase represented the arrival of new people from the interior.

By considering the Whalen II phase to represent the entire region during one time period, Borden ignored other possible explanations. The presence of particular artifacts might have resulted from trade, and absence of others might have been due to the season of site use.

For example, the presence of small chipped stone points, commonly found in interior sites, were also found at the Whalen Farm site, and could be accounted for by trade between coast and interior peoples. On the other hand, the absence of thin ground slate knives usually associated with salmon processing and found in earlier and later phases in the region may simply indicate that the site in question was not used for salmon fishing.

A recognition of the potential importance of seasonal site use distinquishes the next stage of archaeological research. This new focus provides an alternative explanation for the uniqueness of the Whalen II component, while adding a new dimension to complement Borden's basic cultural sequence.

THE SUBSISTENCE RESEARCH STAGE

Since the 1970's, archaeologists have been applying new techniques to midden sites in order to answer new questions about the process of cultural adaptation in the region. Their investigations have focussed on how the prehistoric inhabitants of the area supplied themselves with food and other necessities. This new focus has resulted in a shift in emphasis from a concentration on artifacts as primary indicators of past human activities to a broader perspective which views a wider variety of remains as essential indicators.

Shell midden sites provide not only artifacts but also, contain the remains of dwellings, work areas and garbage dumps, providing a record of human habitation spanning nearly 9,000 years. In midden sites, different activities created characteristic patterns of remains. These remains resulted in the build up of midden layers which the archaeologist interprets in order to discover a site's history.

Different layer patterns result when different activities occur at the same place over time. For example, the remains of an abandoned house may later be covered by the refuse of a shellfish steaming mound that, in turn, may be covered by remains of a campsite hearth. In other cases, a site may show a more regular pattern of continuous, but seasonal use. For instance, fall salmon fishing activities leave a distinctive pattern of debris which differs from that left by spring herring fishing. The complex layers of soil, shells and other remains result not only from these human activities, but also from naturally deposited debris.

Investigating subsistence patterns in shell middens is further complicated by natural processes of decay. Most organic materials decay quite quickly unless special conditions help to preserve them. In shell middens, the presence of shells helps to preserve bone and antler, but wood and plant fibers usually survive only if they are constantly waterlogged. Thus, the carved wooden objects for which the Northwest Coast is well known are rarely found in archaeological sites.

Even afer we consider these constraints, shell middens remain the ideal location for investigating prehistoric subsistence strategies since they exist as a direct result of food processing activities. This midden research is providing us with more detailed information about the various cultural phases. However, an understanding of the subsistence strategy–or seasonal round--each phase represents is just beginning to take place.

We do know that the Coast Salish inhabitants of the region used diverse, and often complex methods to harvest abundant but often only seasonally available resources. For example, during spring fish runs, herring or eulachon were netted and raked; salmon were netted, trapped in weirs, speared, harpooned or hooked, depending on the species, the season and location.

Fishing was supplemented by various activities, such as berry picking in summer and shellfish gathering the year round. Specialists hunted sea mammals in the spring and land mammals in the autumn and winter. During winter, stored foods were relied upon as ceremonial and manufacturing activities dominated winter village life.

To understand the various phases found in the sites within this region, archaeologists must also consider the changing natural environment in which the site's occupants lived. The developing estuary--the tidal mouth of the river and surrounding ocean waters--played a vital role for over 7,000 years in the location, stability and quantity of these resources. Therefore, in examining the Fraser delta region, it is important to consider the evolution of the delta itself. The present location of midden sites reflects this development. For instance the Glenrose Cannery site which was at the river's mouth 8,000 years ago is now many kilometers upriver.

The Glenrose Cannery site proved a good starting point for such research because it provided a 6,000 year record of continuing but variable use of resources, such as salmon, shellfish, land and sea mammals. More recently, intensive investigation at the Crescent Beach site has provided a greater understanding of a particular type of seasonal site, a shellfish and herring processing camp.

REFINING EXCAVATION AND LABORATORY TECHNIQUES

To aid subsistence research, archaeologists employ more refined excavation procedures and new laboratory techniques. A critical aspect of this research is discovering the relationships among artifacts, food remains, and other midden materials.

Because these techniques are expensive, all layers within a site cannot be analyzed with the same intensity. Archaeologists therefore select representative samples in order to reconstruct the relative importance of shellfish, fish and game in the diet of the site's occupants. The use of waterscreening through fine mesh allows for greater recovery of fish vertebrae and other small items than do traditional dry screening methods. Computers are increasingly important for analyzing the masses of data generated by such field techniques.

New laboratory techniques are also being developed to aid subsistence research. For example, the growth rings in a cross-section of shell can accurately show the season of collection, thereby indicating the season of site use. Detecting residues such as blood, fats, and resins on stone tools helps to show tool function and, consequently, what activities might have been performed at these seasonal sites.

INVESTIGATING A SEASONAL SITE

The excavation of shell midden layers at the Cresent Beach site shows how the type and season of activities undertaken at a site may be determined by careful analysis.

One important refinement at the Crescent Beach site was the careful removal of midden layers following the natural contours of the site. Previous sites were excavated by removing flat, even layers, usually 10 to 20 cm. thick. This refinement helped to isolate the specific activities which had occurred at this site.

To understand each layer type, models of site use were developed. Models are used to predict what activities might have occurred at the site during different times of the year. Important considerations include the historic Coast Salish use of the area and those times of the year when certain resources were most abundant. Certain layer types, features, artifacts, and faunal remains thus can be predicted for a particular group of expected activities.

Although such factors as decay, and the removal of many tools and structures once at the site, might make analysis difficult, the prediction of site use helps to overcome this problem. For example, if shellfish harvesting and processing are predicted for a site, the baskets, digging sticks and drying racks might have been removed or have decayed. On the other hand, other evidence will remain, such as the remains of steaming mounds, discarded clam shells, and the post holes for the drying racks.

If the problematic Whalen II component at the Whalen Farm site were re-examined in this manner, it might now be seen as a seasonal variant of another cultural phase rather than as an unique cultural phase.

THE FUTURE OF THE PAST

Archaeological research in the Fraser delta region has developed through several stages paralleling general changes in North American archaeology. Each stage has built on previous results. These results have laid the foundation upon which new questions are raised and new techniques are developed.

The Descriptive stage not only provided initial descriptions, but asked important questions concerning both economic and cultural change. The subsequent development of a regional Cultural Sequence resulted from more refined excavation techniques and laboratory procedures. Recent Subsistence Research is beginning to outline the development of the Northwest Coast's seasonally diverse subsistence pattern.

While a similar range of resources was used in this area for thousands of years, critical changes occurred in resource use, for instance the development of large scale salmon processing for storage. These changes have only recently received attention. A new focus on social questions, such as on how social organization and subsistence stategies interrelate, suggests that a new stage of archaeological research is also taking shape. The future of such research, however, is seriously threatened.

The destruction of midden sites, especially in urban areas like the Fraser delta, is a major problem. Marpole and other important sites were excavated just before bulldozers moved in. Unfortunately, many other sites were destroyed before any archaeological investigation could take place. As a result, valuable heritage information has been lost forever.

If a greater appreciation of the development of Northwest Coast cultures is to be achieved, archaeologists must continue to investigate a cross-section of sites within a region. But to do this, archaeological sites must be viewed as non-renewable resources that require our protection.

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March 8, 1985

CHANGING TIDES NATIONAL TRAVEL SCHEDULE

Museum of Anthropology UBC Vancouver, B. C.	February 27, 1985 to September 1, 1985	CONFIRMED
The Nova Scotia Museum Halifax, Nova Scotia	January 11, 1986 to April 7, 1986	CONFIRMED
Universite du Quebec a Trois Rivieres Trois Riveres, Quebec	May 1, 1986 to June 15, 1986	CONFIRMED
National Museum of Man Ottawa, Ontario	July 15, 1986 to August 31, 1986	CONFIRMED
Prince of Wales Northern Heritage Centre Yellowknife, NWT	October 15, 1986 to November 30, 1986	CONFIRMED
Langley Centennial Museum and National Exhibition Centre Langley, B.C.	December 21, 1986 January 25, 1987	CONFIRMED

9.17 APPENDIX 17

CHANGING TIDES: THE DEVELOPMENT OF ARCHAEOLOGY IN THE LOWER MAINLAND

A Lecture Series at The UBC Museum of Anthropology

Tuesdays 7:30 pm Free Admission

MARCH 12 SHELL MIDDENS AND CULTURE HISTORY: THE PENDER ISLAND SITE
Professor Roy Carlson, Simon Fraser University

MARCH 19 TWO DECADES OF CHANGE: BRITISH COLUMBIA ARCHAEOLOGY IN THE 1960'S AND 1970'S
Professor Donald Mitchell, University of Victoria

MARCH 26 SHELL MIDDEN LAYERS AND COAST SALISH SETTLEMENT PATTERNS: IDEAS FROM THE INVESTIGATION OF THE CRESCENT BEACH AND ST. MUNGO SITES
Leonard Ham, Ph.D.

APRIL 2 PREHISTORIC LIFEWAYS AT OZETTE
Professor Richard Daugherty, Washington State University

Refreshments will be served following the lecture.

This lecture series is being offered in conjunction with the Museum's exhibition, "Changing Tides: The Development of Archaeology in the Fraser Delta Region," on view from February 27 through August. Both the exhibition and lecture series received special support from the British Columbia Heritage Trust and the National Museums of Canada Exhibitions Assistance Programme.

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9.18 APPENDIX 18

February 1985
Form No.

UBC Museum of Anthropology
Condition Report Form for
Changing Tides exhibition

Case No. _____

Object or group number_____

Condition on ☐ arrival ☐ departure ☐ other (_____)

_____ no damage

_____ no additional damage since previous report

OR the following damages were noted:

_____colour change (fading, discolouration, stains)_____

_____micro-organism growth (moulds, fungi) _____

_____insect damage (frass, holes, presence of insects, eggs, or larvae) _____

_____efflorescence (emergence of salts or wax on surface) _____

_____mechanical damage (appearance or extension of cracks, breakage, etc.)_____

_____distortion of shape (warping, shrinkage, buckling)_____

_____surface damage (abrasion, scratches, loss)_____

_____mounting problems (insecure, loose or detached)_____

_____repairs_____

_____others_____

Note: Use "right" and "left" to designate perspective of viewer. To give additional details, attach sheets necessary, describing the location, nature, and extent of all damage. Diagrams and/or photographs showing precise location of damage may be added.

Completed by (Institution)_____

Signature_____

Date_____

Instructions to borrowing institutions for using the Changing Tides exhibition condition report form. (Form No.)

On arrival condition report forms should be filled in immediately after receipt of the exhibit by your institution. Check the original condition report forms (also see photographs) filled in at the Museum of Anthropology and any subsequent reports filled in by other borrowing institutions, and record on your forms only additional damages not previously reported. If damage is noted, please photocopy your form and return the copy at once to:

The original should be retained with the artifact.
Please do not open the cases for condition reporting of the artifacts.
If there is a problem which may necessitate opening a case please call Herb Watson at the Museum of Anthropology [(604) 228-2148] for instructions.

Since these objects are mounted, a flashlight may be helpful for examing the objects for these reports.

When the exhibit is ready to leave your institution, please fill in departure condition reports in the same manner, and enclose all reports in the packing cases with the artifact cases. If new damages are noted, and if the exhibition is being sent on to an institution other than the Museum of Anthropology, please photocopy the form and return it to the above address. If the exhibition is being returned to the Museum of Anthropology, simply enclose the forms in the packing cases.

THANK YOU.

9.19 APPENDIX 19

Ann Stevenson, Changing Tides: The Development of Archaeology in B.C. 's Fraser Delta UBC Museum of Anthropology, Museum Note No. 13. Vancouver. 1985. Pp.20.

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