



GUIDE TO COMPLETING THE SHELLFISH MANAGEMENT PLAN



February 2006, M. Parker; Prepared for the Aquaculture Development Branch, Ministry of
Agriculture and Lands.
Photographs courtesy of: Tim DeJager and Penny White

How to Use this Guide

This Guide is a companion document to the **Shellfish Management Plan**. It is intended to provide further detail regarding the sections of the plan and the information required to fill out the plan. Each section of the plan has a corresponding section in the Guide. Sections are identified by wide blue title bars. A table of contents is provided to help you quickly find the section for which you are looking.

Examples and important information are highlighted in text boxes in the side bar like the one below:

*Please note that the information in the **Management Plan** should*

If you have any questions that are not answered by this guide, please feel free to contact:

Front Counter BC
Integrated Land Management Bureau
Suite 142 - 2080 Labieux Road,
Nanaimo BC V9T 6J9
Tel: (250) 751-7220 Fax: (250) 751-7224

The most current version of the Shellfish Management Plan and the Guide can be found on the Ministry web site at:

<http://www.agf.gov.bc.ca/fisheries/licences/licences-shellfish.htm>

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Cover Page

This portion of the form contains the information needed to process your application and provides contact information for all future correspondence.

GENERAL INFORMATION (Table 1):	
Name of Company:	Telephone Number: ()
Name in Full of Applicant:	Alternate Telephone Number: ()
Contact Name (if different from above):	Fax Number: ()
Mailing Address of Applicant:	Cellular Phone: ()
City, Province, Postal Code	Email Address:
<input type="checkbox"/> New Application <input type="checkbox"/> Renewal <input type="checkbox"/> Amendment	

General Information:

Name of Company

Please provide the legal, registered name of your company.

Name in Full of Applicant

Use the full name found on your drivers licence or other legal identification.

Contact Name

Give the name of the person who will be responsible for answering questions and providing information regarding your application

Mailing Address

Provide the address to which all correspondence regarding this file should be sent.

*Please note that the information in the **Management Plan** should be the same as that given on the Aquaculture Licence Application and other documents such as the Crown Land application forms.*

Government Reference Numbers

If this Management Plan submission is regarding changes or updates to an existing operation, please provide the reference numbers from your present documents in the box provided.

Section A - Description of Site

This section of the management plan provides the information needed to properly identify the area in which aquaculture operations will be carried out.

Examples:

Surveyed lot – Sayward District, lot 319

Un-surveyed lot – Un-surveyed foreshore of Sproat Bay, Barclay District between Garnet Creek and Octopus Point.

Example:

Marine Chart 3441

Lat: 49°27'37.00"N

Long: 124°44'4.00" W
(NAD 83)

1. Legal Description of Site

Where possible, provide the land district and legal lot number of the culture area. If the site is un-surveyed, note this in the description and make reference to the nearest surveyed lot in the description of location below. All culture activities identified within this management plan must be carried out within the area described in this section

2. Geographic Location of Site

Describe the general location of the site or tenure. Include the latitude and longitude of the centre of the site and identify the marine chart for the area.

3. Estimated Total Area of Site

Estimate the total area of the site in hectares (ha).

1 hectare = 100m x 100m
= 10,000m²
= 2.47 acres

Section B - Operational Facilities and Typical Layout

The diagrams you provide should reflect your actual operations at the time of filing or, if this is a new submission, as you intend to carry out your operations. All diagrams must be to scale in order to accurately show the relative size and location of all elements shown. Sample diagrams are provided in the appendices of this Guide.

Section B - Operational Facilities and Typical Layout

1. Location Map

This illustration shows the general location of the proposed or actual tenure site. The scale should be large enough to accurately identify the tenure site within the context of the surrounding territory. Maps are required to have a scale in the range of 1:20,000 to 1:40,000.

*An example of a location map can be found in **Appendix 1** on page 14*

2. Site Layout Diagram

Culture activities can involve more than one species on the same tenure and may be quite complex to describe in writing. These diagrams can help to illustrate planned activities and explain how areas of the tenure will be used (*improvements* are defined in **Section C** of the Guide). The diagrams must include the following types of information, if applicable:

*An example of a layout diagram can be found in **Appendix 2** on page 15*

- ◆ The location and relative size of all proposed or existing structures related to or impacting your operations within the tenure boundaries and also those outside the boundaries, including those on nearby land. This includes: toilets (permanent or portable), storage or sorting sheds, docks, floating work stations and other similar structures.
- ◆ The location and relative size of culture areas for all species being farmed on the tenure. It is also wise to indicate any areas within the tenure that are not suitable for culture purposes.
- ◆ Areas not being used for active farming, but to store culture equipment should also be clearly identified on the diagram.
- ◆ Activities of other users in the area that may impact tenure activities should also be identified, i.e. nearby log storage, or traffic lanes.

Section B - Operational Facilities and Typical Layout

3. Illustration of Operational Methods

Examples of operational method illustrations can be found in Appendix 3 on page 16

These diagrams are intended to show how you intend to carry out your culture activities. They should clearly show the number, type, and size of culture unit, including the length of longlines; placement of the units within the tenure boundaries; size and placement of anchors; length and placement of anchor lines; and any additional operational components.

Section C - Schedule of Improvements

Improvements means any additions or alterations to Crown land tenure or physical structures that will temporarily or permanently occupy space on the tenure site required for the cultivation of a culture species. Improvements may include, but are not limited to, longlines, anchor lines, rafts, floats, barges, net pens, net cage arrays, vexar cover or fencing, docks, storage sheds or other buildings. The following instructions will help you complete Table 2 – Schedule of Improvements

Anchor lines -	note the length of your lines that secure the culture equipment to your anchors
Longlines -	record the length of line on which product is/will be suspended
Predator netting -	indicate the area of the site which is/will be covered by netting. The reported area of netting should be the total of area of each panel added together. Please indicate whether the netting is vertical or horizontal. You should also include any planned temporary placement of netting
Rafts -	indicate the area of improvements by calculating the length x width of each raft
Rock Walls -	record the length of existing and proposed rock walls
Vexar Fencing -	record the length of fencing which will be placed around the perimeters of growing areas

Work Floats - as with rafts, indicate the area of improvements by calculating the length x width of each existing or intended float

Section D - Environmental Information

This section of the plan deals with the disposal of waste from both the operations and staff of the site. Explain in detail your plan to dispose of waste from operations and any arrangements for approved sanitary facilities for company employees.

Please note that, in accordance with the Canadian Shellfish Sanitation Program (Manual of Operations, Chapter 2 – section 2.3.4), shellfish must not be harvested from an area within 125m radius around a float home or other floating accommodation. If appropriate waste management and zero effluent discharge are conditions of the aquaculture licence, the prohibited area can be reduced to a 25m radius.

For further information or clarification regarding the Canadian Shellfish Sanitation Program, consult:

<http://www.inspection.gc.ca/english/anima/fispoi/manman/cssppccsm/chap2e.shtml>

Additional environmental information may be required by other agencies.

Clients should also be aware that additional environmental information may be required by other agencies involved in the Management Plan review process.

Example:

Toilet facilities are available at the upland residence adjacent to the site. The home has an approved septic system.

1. Location of Sanitary Facilities

This section must be completed for your plan to be approved. You must describe the facilities available and the means of disposal of human waste.

Example:

Any waste material will be sent to the nearest landfill or recycling depot as appropriate. Waste will be transported by boat to Campbell River and placed in the marina dumpster.

2. Method of Waste Disposal

The nearest location of proper waste disposal should be identified and the method for transporting solid waste (garbage) should be described.

Section E– Detailed Production Information

In order to assess the viability of the Shellfish Management Plan and to assist in production planning, detailed information on the species being grown and culture methods being used is needed.

1. Site Utilization

Total hectares in production -	identify the area of your tenure that is being used to grow or store shellfish
Total unusable hectares -	indicate the total area of your tenure where you <i>cannot</i> grow shellfish. This area may be unusable due to poor substrate, shallow water depth, or lack of access
Total non-production hectares-	record the area of your tenure that you intend to use for activities other than actually growing shellfish. For example, this might include storing equipment

Beach Culture

This section covers farming activities that take place in the area between the lowest low tide boundary and the high tide line. Generally, shellfish are grown on the surface of the beach or within the substrate.

Table 3 – Beach Production Information

Species	Culture unit	Culture Area m ² or hectares	Seeding Density	Expected Production	Grow out Period
	<input type="checkbox"/> Singles				
	<input type="checkbox"/> Cultch				
	<input type="checkbox"/> Singles				
	<input type="checkbox"/> Cultch				
	<input type="checkbox"/> Net Panels				
	<input type="checkbox"/> Pipes				
Additional Information					
Dimensions of vexar bag:		cm X		cm X	cm
Average number of cultch pieces per bag:					

Section E– Detailed Production Information

The table is intended to provide a way to summarize current or intended culture activities. If you are unsure of the scientific name, or the generally accepted common name of a species being grown, please consult **Section F**, where both names are listed. An example of a completed Table 3 is provided below:

Species	Culture unit	Culture Area m ² or hectares	Seeding Density	Expected Production	Grow out Period
Pacific Oyster	<input checked="" type="checkbox"/> X Singles	3.4ha/34,000m ²	200 / m ²	24 kg/m ²	2 years
	<input checked="" type="checkbox"/> X Cultch	1.2ha/12,000m ²	300 / m ²	32 kg/m ²	2.5 years
	<input type="checkbox"/> Singles <input type="checkbox"/> Cultch				
Manila Clams		2.6ha/26,000m ²	250 / m ²	3.75 kg/m ²	3 years
Geoduck	<input type="checkbox"/> Net Panels				
	<input type="checkbox"/> Pipes				
Other					
Additional Information					
Dimensions of vexar bag: 100 cm X 50 cm X 10 cm					
Average number of cultch pieces per bag: <u>200, approximately 15 spat per</u>					

Deepwater Suspended Culture

This section is for reporting culture activities that involve suspending product within the water column, off the bottom of the body of water. The table is intended to provide a way to summarize current or intended culture activities. If you are unsure of the scientific name, or the generally accepted common name of a species being grown, please consult **Section F**, where both names are listed.

Section E– Detailed Production Information

Table 4 – Deepwater Suspended Production Information

Species	Method:	Culture Unit	Number of units	Seed/unit	Expected Production	Grow out Period
	<input type="checkbox"/> Rafts	<input type="checkbox"/> Tray				
	<input type="checkbox"/> Longlines	<input type="checkbox"/> String / Sock				
		<input type="checkbox"/> Nets				
	<input type="checkbox"/> Rafts	<input type="checkbox"/> Tray				
	<input type="checkbox"/> Longlines	<input type="checkbox"/> String / Sock				
		<input type="checkbox"/> Nets				
	<input type="checkbox"/> Rafts	<input type="checkbox"/> Tray				
	<input type="checkbox"/> Longlines	<input type="checkbox"/> String / Sock				
		<input type="checkbox"/> Nets				
Additional Information						
Average length of string: _____ Average length of sock: _____						
Tray type: _____ Net type: _____						
Tray dimensions: _____ cm X _____ cm X _____ cm						
Net dimensions: Number of tiers: Diameter of net:						
Number of rafts: Oysters: Mussels: Scallops: Other:						
Number of longlines: Oysters: _____ Mussels: _____ Scallops: _____ Other: _____						

- Method -** how you intend to support the species, using which particular method of suspension. Common choices are listed within the table as check boxes. If the method that you intend to use is not listed, please add it to the table in one of the empty spaces provided.
- Culture Unit -** the container in which the product will be held during grow out. If you are using more than one culture unit (i.e. trays and strings, for singles and shucked oyster products respectively) please check both boxes and complete a separate line of the table for both units.
- Number of Units -** the total number of each type of culture unit being used for the entire tenure production. It is understood that product will need to be separated into an increasing number of culture units (growing containers) as size increases due to growth. Please record the number of initial units in this column. In the **Additional Information** section, indicate the overall number of rafts or longlines needed to support mature product before harvest.
- Seed / Unit -** the starting amount of product that you are placing in the culture units to begin farming

Section E– Detailed Production Information

Expected Production- the amount of product that you expect to have in the container (or transferred to the beach) at the end of the grow out period. This number should take into account loss of product through predation and other natural factors. This can be expressed as number of individuals, kilograms, metric tonnes, or pounds. Please be sure to indicate which measure you have used.

Grow out Period - the length of production time from seeding to harvest. You can record the period in years, partial years or months.

Sample completed Table 4:

Species	Method:	Culture Unit	Number of units	Seed/unit	Expected Production	Grow out Period
Pacific Oys.	<input checked="" type="checkbox"/> Rafts	<input checked="" type="checkbox"/> Tray	1400	300	63 t	18 months
	<input type="checkbox"/> Longlines	<input checked="" type="checkbox"/> String / Sock	100	3000	36 t	22 months
		<input type="checkbox"/> Nets				
Blue mussel	<input checked="" type="checkbox"/> Rafts	<input checked="" type="checkbox"/> Tray	700	500	11 t	2 years
	<input type="checkbox"/> Longlines	<input type="checkbox"/> String / Sock				
		<input type="checkbox"/> Nets				
Scallops	<input type="checkbox"/> Rafts	<input type="checkbox"/> Tray				
	<input type="checkbox"/> Longlines	<input type="checkbox"/> String / Sock				
		<input type="checkbox"/> Nets				
Other						
Additional Information						
Average length of string: <u>1.5 m</u>			Average length of sock: _____			
Tray type: <u>Hi Flow</u>			Net type: _____			
Tray dimensions: <u>80</u> cm X _____ cm			_____ cm X <u>25</u> cm			
Net dimensions: _____			Number of tiers: _____ Diameter of net: _____			
Number of rafts: _____			Oyster s: <u>6</u> Mussels: <u>2</u> Scallops: _____ Other: _____			
Number of longlines: _____			Oyster s: _____ Mussels: _____ Scallops: _____ Other: _____			

Section E– Detailed Production Information

Deepwater Seabed Culture

Certain species may be grown within the substrate or on the bottom of water at depths greater than the intertidal. The table in this section is intended to assist you in recording these culture activities. If you are unsure of the scientific name, or the generally accepted common name, of a species being grown, please consult **Section F**, where both names are listed. An example of a completed table is provided.

Table 5 – Deepwater Seabed Production Information

Species	Culture Unit	Number of units	Seed/unit	Expected Production	Grow out Period
<input type="checkbox"/> Geoduck	<input type="checkbox"/> Net Panels				
	<input type="checkbox"/> Pipe				
	<input type="checkbox"/> Other				
<input type="checkbox"/> Other	_____				
Dimensions of Culture unit:					

Culture Unit - the container in which the product will be held during grow out. If you are using more than one culture unit, please indicate each type being used and complete a separate line of the table for each type.

Number of Units - the total number of each type of culture unit being used for the total species production

Seed / Unit - the starting amount of product that you are placing in the culture units to begin farming

Expected Production- the amount of product that you expect to have at the end of the grow out period. This number should take into account loss of product through predation and other natural factors. This can be expressed as number of individuals, kilograms, metric tonnes, or pounds. Please be sure to indicate which measure you have used.

Grow out Period - the length of production time from seeding to harvest. You can record the period in years, partial years or months.

Section E– Detailed Production Information

Sample completed Table 5:

Species	Culture Unit	Number of units	Seed/unit	Expected Production	Grow out Period
<input type="checkbox"/> Geoduck	<input type="checkbox"/> Net Panels				
	<input type="checkbox"/> X Pipe	25,000	4	20 t	8.5 years
	<input type="checkbox"/> Other				
<input type="checkbox"/> Other					
Dimensions of Culture unit: 40 cm length X 10 cm diameter					

Section F– Species and Production Summary

Table 6 provides a format to summarize the production information recorded in detail in the previous section.

Table 6 – Species and Production Summary Information

Species	Metric tonnes / year			
	Beach	Deepwater Suspended	Deepwater Seabed	Total Species Production
Pacific Oyster (<i>Crassostrea gigas</i>)				
Gallo Mussel (<i>Mytilus galloprovincialis</i>)				
Eastern Blue Mussel (<i>Mytilus edulis</i>)				
Western Blue Mussel (<i>Mytilus trossulus</i>)				
Japanese Scallop (<i>Pactinopecten yessoensis</i>)				
Manila Clam (<i>Tapes philipinarum</i>)				
Littleneck Clam (<i>Protothaca staminea</i>)				
Geoduck Clam (<i>Panope abrupta</i>)				
Varnish Clam (<i>Nuttallia obscurata</i>) (for harvest purposes only – no seeding)				
Other (please specify)				
Other (please specify)				
For Office Use Only				
Minimum Site Production				
Six year running average of production all species not to be less than \$_____ per year (becomes enforceable six years after first licensed).				
Maximum Total Site Production For All Species				
Maximum production of all species not to exceed _____ Metric tonnes/year as shell-on weight averaged over 6 years.				

Section F– Species and Production Summary

Sample completed Table 6:

Species	Metric tonnes / year			
	Beach	Deepwater Suspended	Deepwater Seabed	Total Species Production
Pacific Oyster (<i>Crassostrea gigas</i>)	1200 t	99 t	0	1299 t
Gallo Mussel (<i>Mytilus galloprovincialis</i>)				
Eastern Blue Mussel (<i>Mytilus edulis</i>)	0	11 t	0	11 t
Western Blue Mussel (<i>Mytilus trossulus</i>)				
Japanese Scallop (<i>Pactinopecten yessoensis</i>)				
Manila Clam (<i>Tapes philipinarum</i>)	97.5 t	0	0	97.5 t
Littleneck Clam (<i>Protothaca staminea</i>)				
Geoduck Clam (<i>Panope abrupta</i>)	0	0	20 t	20 t
Varnish Clam (<i>Nuttallia obscurata</i>) (for harvest purposes only – no seeding)				
Other (please specify)				
Other (please specify)				
Office Use Only				
Minimum Site Production				
Six year running average of production all species not to be less than \$ _____ per year (becomes enforceable six years after first licensed).				
Maximum Total Site Production For All Species				
Maximum production of all species not to exceed _____ Metric tonnes/year as shell-on weight averaged over 6 years.				

Appendix 1 - Example Location Map

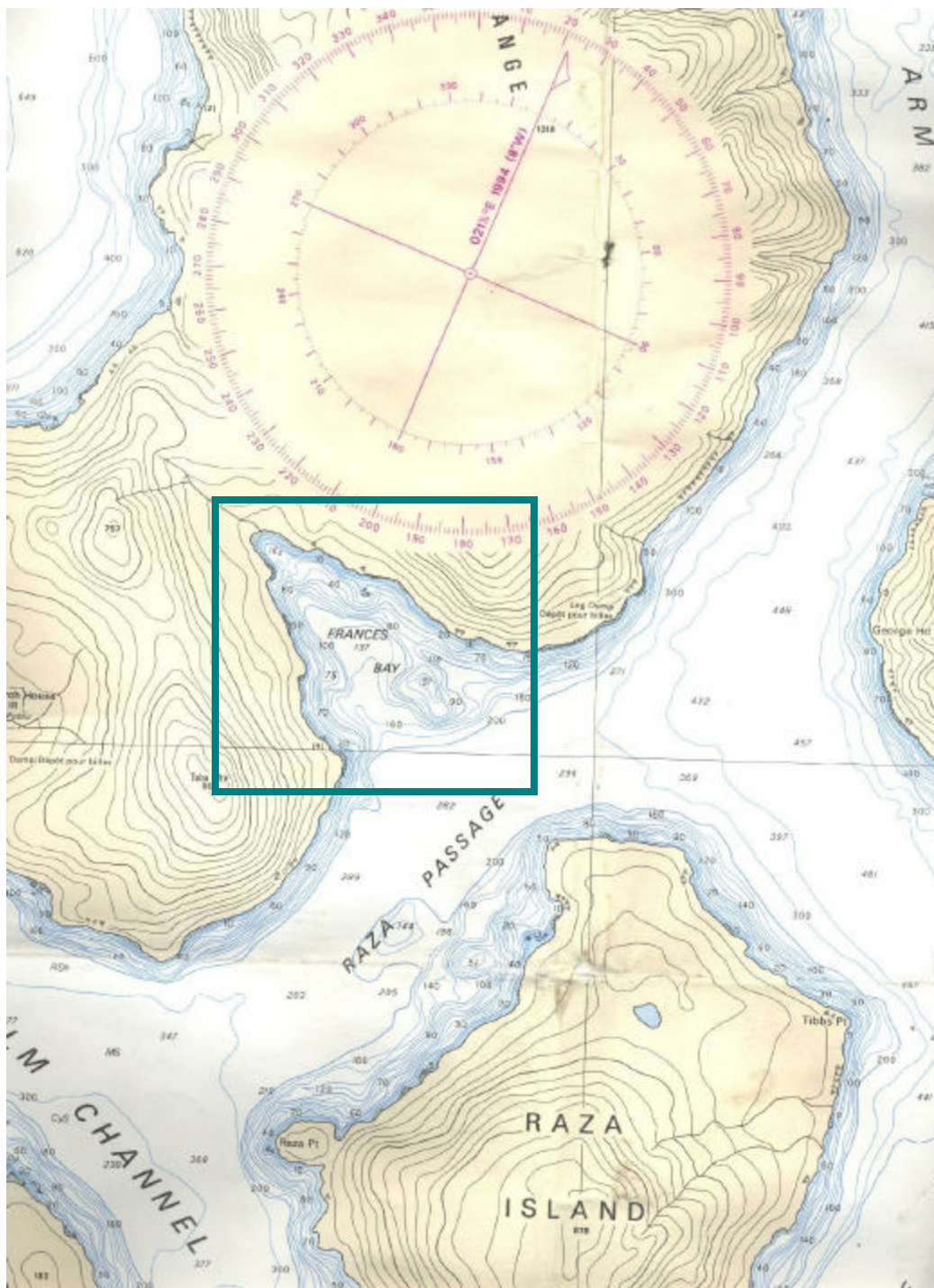
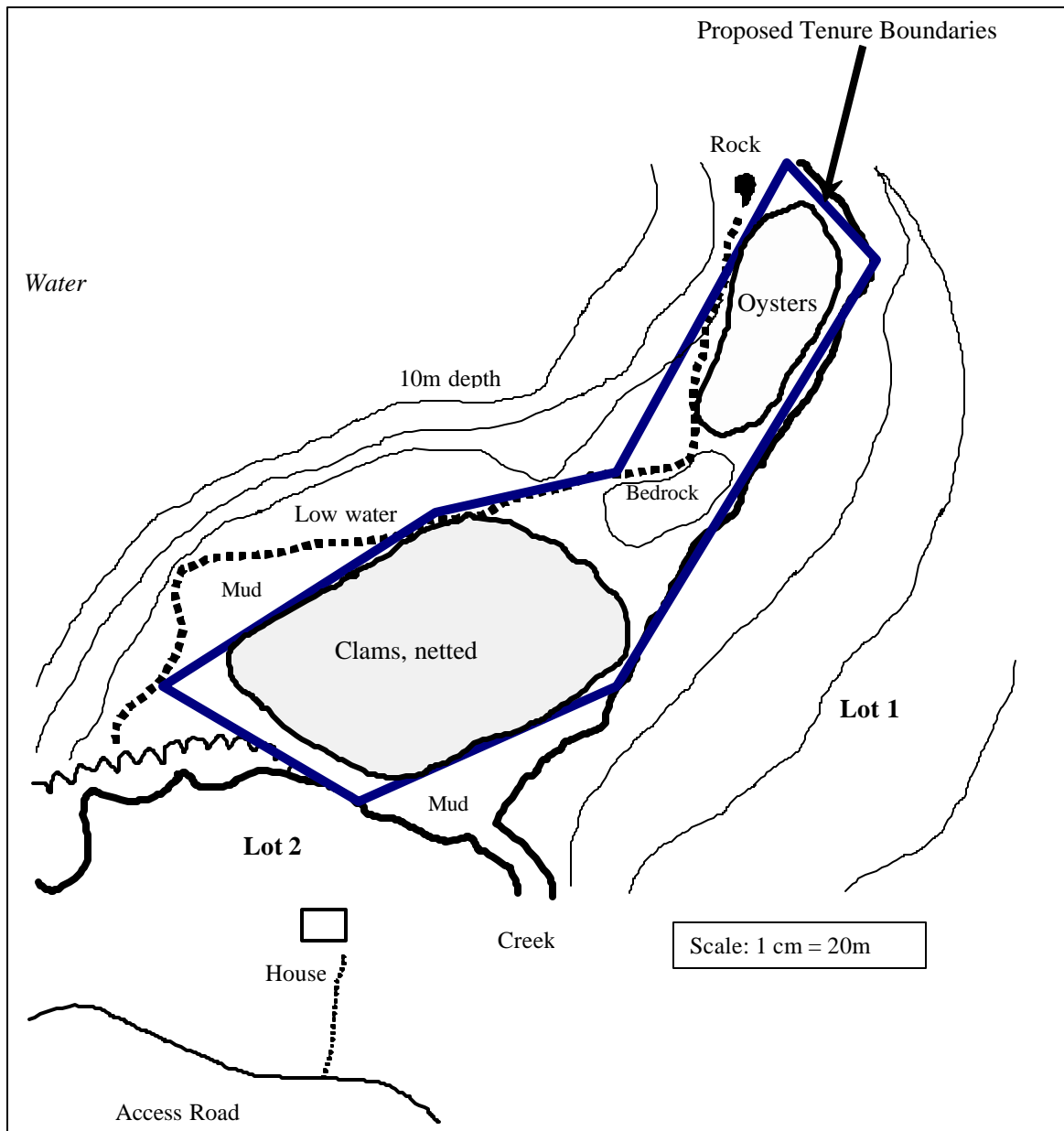
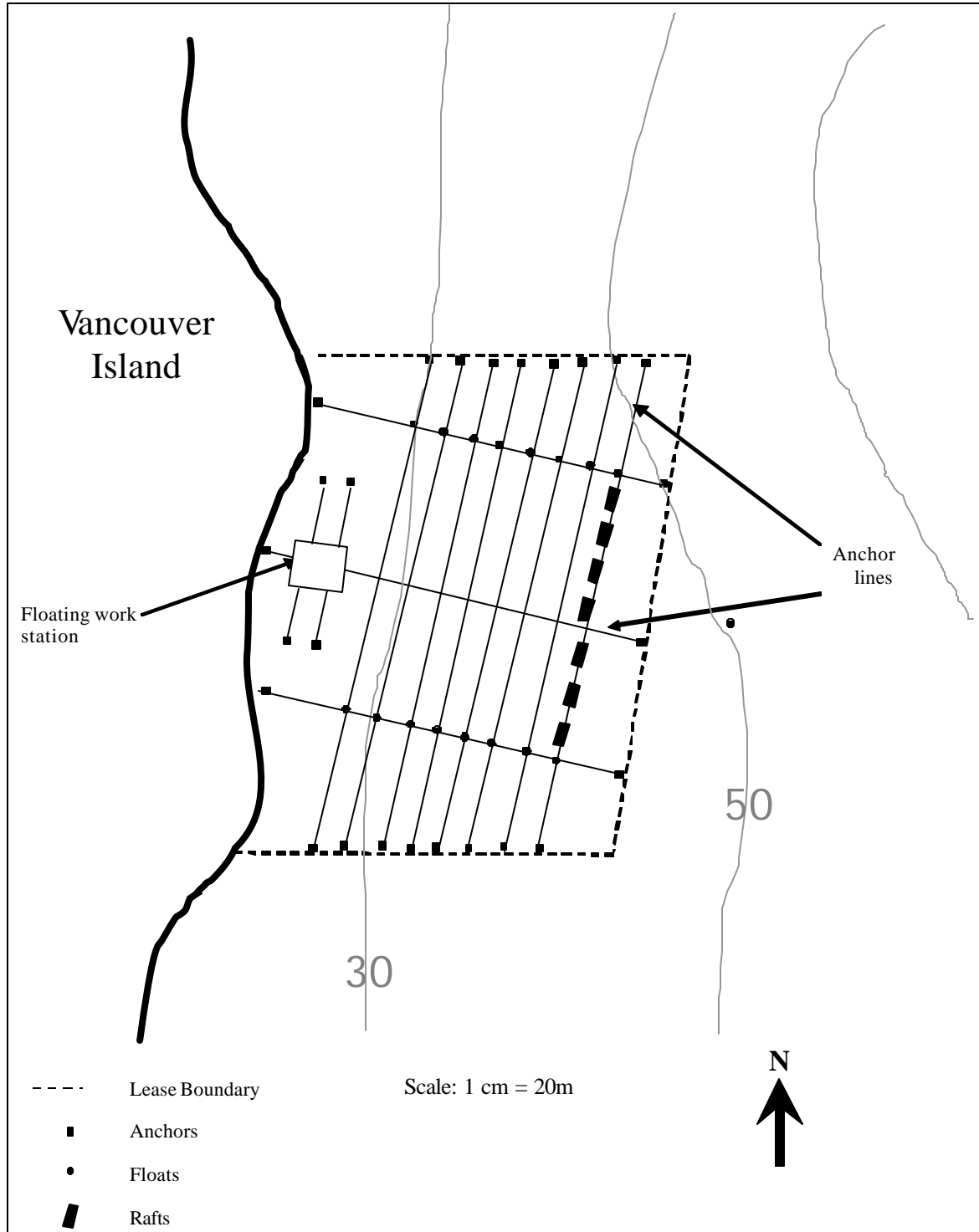


Chart 3541 (NAD83)

Appendix 2- Example Site Layout Diagram



Appendix 3– Illustration of Operational Methods



Appendix 3– Illustration of Operational Methods

