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**Appendix A**  
**Environmental Reports Previously Prepared for**  
**Victoria and Esquimalt Harbours**

## ENVIRONMENTAL REPORTS AND MAPPING FOR VICTORIA AND ESQUIMALT HARBOURS

Lead agency	Themes studied, mapped	Area covered	Mapping Scale	Digital	Date	Author
<b>Victoria and Esquimalt Harbours Environmental Action Program</b>	Valued habitats	Upper Victoria Harbour and Selkirk Waters	1:500	No	1996	Archipelago Marine Research
	Shoreline and aquatic habitat	Both harbours	1:40,000	No	1995	LGL Limited
	Shoreline sensitivity associated with potential sewage bypasses	Both harbours	1:40,000	No	1994	Aquatic Science Consultants Ltd.
<b>PROVINCE</b>						
Ministry Of Environment, Lands And Parks, Conservation Data Centre	Sensitive Ecosystem Inventory (SEI) - e.g., coastal bluffs	Both harbours (upland)	1:20,000	Yes	1992	Conservation Data Centre
Land Use Coordination Office	Coastal Resource Inventory (e.g., bald eagle nests, eelgrass beds, kelp beds, salmon streams)	Both harbours	1:20 - 80,000	Yes	1992-6	Various authors - compiled by LUCO.
<b>FEDERAL GOVERNMENT</b>						
Department of Fisheries and Oceans	Marine Resource Inventory (e.g., clams, herring, crabs )	Both harbours	1:40,000?	Yes	?	DFO
Environment Canada, Canadian Wildlife Service	Bird count	Both harbours		No	1997	Ken Morgan

<b>Lead agency</b>	<b>Themes mapped</b>	<b>Area mapped</b>	<b>Mapping Scale</b>	<b>Digital</b>	<b>Date</b>	<b>Author</b>
Department of National Defence / Royal Roads University	Ecological assessment of Royal Roads Property	Esquimalt Lagoon	1:5,000?	No	1995	Madrone Consultants
Transport Canada	Ecological Risk Assessments	Selected Transport Canada sites			On-going	Various authors
<b>CAPITAL REGIONAL DISTRICT</b>						
CRD intertidal biophysical shoreline survey	Intertidal habitat	Entire harbours	1:2,500	No	1994	Derek Hutchison
<b>MUNICIPALITIES</b>						
City of Victoria	None					Dennis Carsen - 361 0294
District of Saanich	ESA Inventory of streams and wetlands	Saanich estuaries (i.e. Colquitz)			1997	Hurley et al
Town of View Royal	None - use SEI				1992	
Town of Esquimalt	None - use SEI				1992	
City of Colwood	oceanography, geomorphology vegetation, wildlife, "sensitive areas"	Esquimalt Lagoon	1:20,000	No	1993	Westland Resource Group

**REPORTS PREPARED FOR THE  
VICTORIA AND ESQUIMALT HARBOURS  
ENVIRONMENTAL ACTION PROGRAM**

Aquatic Science Consultants Ltd., 1994. "Present and Historical Uses Within the South Coast Harbours of the Capital Regional District."

Aquatic Science Consultants Ltd. (D. Hull) and Sectar Environmental Resource Consulting (J. Sectar), January 1996. "Victoria and Esquimalt Harbours, Gorge Waterway and Portage Inlet Existing Regulatory Responsibilities."

Archipelago Marine Research Ltd., July 1996. "The Environmental Status of Upper Victoria Harbour and the Selkirk Waters."

LGL Limited environmental research associates, 26 May 1995. "Environmental Priorities for Victoria and Esquimalt Harbours."

Reid Crowther & Partners Ltd., 1998. "Storm Sewer Contaminant Sampling, Source Tracing & Reduction Study in Victoria and Esquimalt Harbour."

Sector Consultation, Sectar Environmental Resource Consulting, 1994. "Victoria and Esquimalt Harbour Use."

Victoria and Esquimalt Harbours Environmental Action Program, April 1997. "Victoria and Esquimalt Harbours Environmental Management Strategy."

Westland Resource Group (Robyn Wark and David Harper), March 1996. "Approaches to Protecting Environmentally Significant Areas in Victoria and Esquimalt Harbours."

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## **Appendix B**

### **Participants in the HEIR Program**

## People interviewed as part of the HEIR program

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Barbara Avery - Town of View Royal, Planning Department.

Daryl Beck - Town of Esquimalt, Engineering Department

Doug Bright - Royal Roads University Environmental Planning Committee

Dennis Carlsen - City of Victoria, Planning Department

Jim Dodd - City of Colwood, Engineering Department

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Don Howes - Land Use Coordination Office

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Glenn Jamieson - Fisheries and Oceans Canada

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Jan Kirkby - Provincial Conservation Data Centre.

Doug Leslie - City of Victoria, Engineering Services

Rick Lloyd - District of Saanich

Rob MacDonald - Transport Canada and VEHEAP

Norm Mogensen - Victoria Natural History Society

Ken Morgan - Canadian Wildlife Service

John Munn - City of Colwood

Tony Queen - Town of View Royal

John Roe - Veins of Life

Mike Shepherd - VGI Vision

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Laura Taylor - Capital Regional District and VEHEAP

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## **Appendix C**

### **Examples of Field Record Data Sheets**







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**Appendix D**  
**Database Structure and Data Dictionary**  
**(Biological, Physical, Land Use Codes)**

## Appendix D

### HEIR Database Table Definitions

**Table D1**  
**Attributes of HEIR Shoreline**

<b>Database File Name</b>	<b>Database Description</b>	<b>Field Names</b>	<b>Comments/Codes</b>
V_Shore.dbf	Attributes attached to HEIR mapped shoreline	Unitkey	Unique identifier for each shore unit assigned by LUCO.
		Rep_Type	Representative summary of shoreline physical form and material.
		Veheap_Key	Unique identifier for each shore unit assigned by VEHEAP. Contains LUCO unit number, followed by 2 decimal places.
		Loc_Code	3 character code describing nine sub-areas of the harbours: ECC, EIH, ELA, EOH, VIH, VOH, VPI, VTG, VUH. See Table D5.
		Wave_Exp	Wave exposure. See Table D6.
		Marine_Inf	Summary code for the relative marine influence of the unit, based on subjective assessment of LOC_CODE and proximity to wave exposure and salinity associated with open Juan de Fuca Strait. See Table D7.

**Table D2**  
**Backshore and Intertidal Land Use Descriptions**

<b>Database File Name</b>	<b>Database Description</b>	<b>Field Names</b>	<b>Comments/Codes</b>
LandBack.dbf	Backshore Land Use Description	BACKSHOR_A through BACKSHOR_F	Backshore land use codes for up to six types. See Table D8.
		PCT_BAK_A through PCT_BAK_F	Percentage of shore unit backshore covered by each land use type
		COMMENTS	Memo field containing comments on land use features
Land_Int.dbf	Intertidal Land Use Description	INTERT_I and INTERT_II	Intertidal land use codes for up to two types. See Table D8.
		PCT_INT_I and PCT_INT_II	Percentage of shore unit intertidal area covered by each land use type.
Land_UCI.dbf	Backshore Planned Land Uses (Urban Capacity Inventory)	UCI_1 through UCI_6	Planned backshore land use codes for up to six types. Source: 1995 CRD Urban Capacity Inventory.
		PCT_UCI_1 through PCT_UCI_6	Percentage of shore unit covered by each planned land use type.

**Table D3  
Backshore Biology Definitions**

<b>Database File Name</b>	<b>Database Description</b>	<b>Field Names</b>	<b>Comments/Codes</b>
BackVeg.dbf	Backshore Vegetation	VEG_A through VEG_F	Backshore vegetation type for up to six types. See Table D10.
		PCT_VEG_A through PCT_VEG_F	Percentage of shore unit covered by each vegetation type.
		COMMENT	Memo field containing comments on backshore vegetation.
BackPhys.dbf	Backshore Physical Descriptions	PHYS_A through PHYS_C	Backshore physical descriptions for up to three codes. See Table D11.
		PCT_PHYS_A through PCT_PHYS_C	Percentage of shore unit covered by each physical description.
		DESCRIPTIO	Narrative physical descriptions with up to 40 characters.
BackWild.dbf	Backshore Wildlife Observations	HABITAT_A through HABITAT_C	Backshore habitat codes for up to three types. See Table D11.
		PCT_HAB_A through PCT_HAB_C	Percentage of shore unit covered by each habitat type.
		COMMENTS	Memo field containing comments on wildlife observations.



**Table D4  
Intertidal Biology Definitions**

<b>Database File Name</b>	<b>Database Description</b>	<b>Field Names</b>	<b>Comments/Codes</b>
Int_Phys.dbf	Intertidal Physical Descriptions	HABTYPE_1 and HABTYPE2	Summary code number of the primary habitat type for each shore unit. See Table D13.
		SOURCE	Source of the data for the unit (Field observation, airphoto, inferred, or other).
		CLASS	Summary for the unit as a whole to degree of modification
		A_FORM	Descriptive codes for the physical Form observed in Zone A of the unit. More than one Form may be coded and multiple codes are separated by semi-colon. See Table D14 for list of Form codes and definitions.
		A_MATERIAL	Descriptive codes for the physical Materials observed in Zone A of the shore unit. More than one Material may be coded and multiple codes are separated by semi-colon. See Table D15 for list of Material codes and definitions.
		B1_FORM	Descriptive codes for the physical Form observed in Zone B1 of the unit. More than one Form may be coded and multiple codes are separated by semi-colon. See Table D14 for list of Form codes and definitions.
		B1_MATER	Descriptive codes for the physical Materials observed in Zone B1 of the shore unit. More than one Material may be coded and multiple codes are separated by semi-colon. See Table D15 for list of Material codes and definitions.
		B2_FORM	Descriptive codes for the physical Form observed in Zone B2 of the unit. More than one Form may be coded and multiple codes are separated by semi-colon. See Table D14 for list of Form codes and definitions.
		B2_MATER	Descriptive codes for the physical Materials observed in Zone B2 of the shore unit. More than one Material may be coded and multiple codes are separated by semi-colon. See Table D15 for list of Material codes and definitions.

Database File Name	Database Description	Field Names	Comments/Codes
		COAST_DESC	Brief text descriptive summary of the physical form and material observed in the unit.
Int_Bio.dbf	Intertidal Biology	CLASS	Summary for the unit as a whole to degree of modification. A=Anthropogenic, N=Natural, M=Mixed
		ZONE	Relative position of Band details in the across-shore elevation of the unit. See Table D16 for list of codes and definitions.
		BAND_1	Code for Bio band observed (if any) in the Zone. Up to three Bio bands can be recorded in each Zone (Band_1, Band_2, Band_3). See Table D16 for list of Bio Band codes and definitions.
		PCT_LEN_1	Visual estimate of the percent length of the shore unit covered by Band 1. Data recorded in percent.
		PCT_COV_1	Visual estimate of the percent cover of the shore unit covered by Band 1. Data recorded in percent.
		SPEC1_A through SPEC1_F	Latin name or name of group species observed incidentally in the Band, if any. Species noted are in addition to those defined as part of the Bands. Up to six species names can be recorded for each Band. See Table D16.
		BAND_2	Code of Bio band observed (if any) in the Zone. Up to three Bio bands can be recorded for each Zone (Band_1, Band_2, & Band_3). See Table D16 for list of Bio Band codes and definitions.
		PCT_LEN_2	Visual estimate of the percent length of the shore unit covered by Band 2. Data recorded in percent.
		PCT_COV_2	Visual estimate of the percent cover of the shore unit covered by Band 2. Data recorded in percent.
		SPEC2_A through SPEC2_F	Latin name or name of group species observed incidentally in the Band, if any. Species noted are in addition to those defined as part of the Bands. Up to six species names can be recorded for each Band. See Table D16.

Database File Name	Database Description	Field Names	Comments/Codes
		BAND_3	Code of Bio band observed (if any) in the Zone. Up to three Bio bands can be recorded for each Zone (Band_1, Band_2, Band_3). See Table D16 for list of Bio Band codes and definitions.
		PCT_LEN_3	Visual estimate of the percent length of the shore unit covered by Band 3. Data recorded in percent.
		PCT_COV_3	Visual estimate of the percent cover of the shore unit covered by Band 3. Data recorded in percent.
		SPEC3_A through SPEC3_F	Latin name or name of group species observed incidentally in the Band, if any. Species noted are in addition to those defined as part of the Bands. Up to six species names can be recorded for each Band. See Table D16.

# HEIR Inventory Codes

**Table D5**  
**Harbour Location Codes**

Database	Code	Definition
Attributes of HEIR Shoreline	ECC	Esquimalt, Constance Cove
	EIH	Esquimalt Inner Harbour
	ELA	Esquimalt Lagoon
	EOH	Esquimalt Outer Harbour
	VIH	Victorian Inner Harbour
	VOH	Victoria Outer Harbour
	VPI	Victoria, Portage Inlet
	VTG	Victoria, the Gorge
	VUH	Victoria Upper Harbour

**Table D6**  
**Wave Exposure Codes**

Database	Code	Definition
Attributes of HEIR Shoreline	VP	Very Protected; < 1 km
	P	Protected: < 10 km
	SP	Semi-Protected; 10 to 50 km
	SE	Semi-Exposed; > 50 km

**Table D7**  
**Marine Influence Codes**

Database	Code	Definition
Attributes of HEIR Shoreline	H	High--“ranked as relative to the study area”
	M	Moderate
	L	Low

**Table D8  
Actual Land Use Codes**

<p><b>Residential</b> DL = Detached large lot DS = Detached small lot TH = townhouse AP = Apartment RW = Residential wharf, dock</p>	<p><b>Industrial</b> IL = Light industry IH = Heavy industry IO = Industrial, other Subcodes m = marine-dependent n = non marine-dependent</p>	<p><b>Commercial</b> CM = Marina CD = Shipping dock, pier CO = Commercial, other Subcodes m = marine-dependent n = non marine-dependent</p>
<p><b>Institutional</b> NS = School NH = Hospital, health care NG = Government office NO = Other</p>	<p><b>Utility</b> UP = Parking lot or structure US = Storm drain UR = Road, highway, bridge UO = Other</p>	<p><b>Park and open space</b> PN = Nature park PA = Active park PW = Paved or board walk PO = Other vacant land or open space</p>
<p><b>Military</b> MW = Wharf, dock MR = Ship repair MS = Structure, building MV = Vacant open space MO = Other military</p>		

**Table D9  
Urban Capacity Inventory Codes**

AA = Apartment	AT = Townhouse	CC = Commercial
CR = Commercial residential	EC = Environmentally constrained	ID = Industrial
IR = Indian Reserve	IS = Institutional	PK = Park
SF = Detached housing	SS = Special Status	UN = Utility

**Table D10**  
**Backshore Vegetation Codes**  
 (Backshore habitat proportions are based primarily on observation from the water)

<b>Code</b>	<b>Habitat type</b>	<b>Description</b>
<b>CF</b>	<b>Coniferous Forest</b>	More than 60% of backshore area is dominated by coniferous, or evergreen tree species. Key species include: Douglas-fir, western redcedar, and grand fir.
<b>DF</b>	<b>Deciduous Forest.</b>	More than 60% of backshore area is dominated by deciduous, or broadleaf, tree species. Key species include: Arbutus, Bigleaf maple, black cottonwood, garry oak, pacific willow, red alder, black hawthorn and dogwood.
<b>SB</b>	<b>Shrub</b>	More than 60% of the backshore habitat is dominated by shrubs. Key species include: thimbleberry, oceanspray, Indian plum, salal, salmonberry, snowberry, red osier dogwood, rose and honeysuckle.
<b>IN</b>	<b>Invasives</b>	More than 60% of the backshore habitat dominated by non-native shrub species. Typical species include: Himalayan blackberry, scotch broom, gorse, and evergreen blackberry.
<b>GR</b>	<b>Grass</b>	More than 60% of the backshore habitat is dominated by native and non-native grass species.
<b>MA</b>	<b>Marsh</b>	More than 60% of the backshore habitat is dominated by wetland plant species. Typical species include: sedges, rushes, cattail, Salicornia and wetland shrubs such as willow, red osier dogwood.
<b>BG</b>	<b>Bare Ground</b>	More than 60% of the backshore habitat has little or no vegetation.
<b>NO</b>	<b>None</b>	No vegetation (native or non-native) was observed.
<b>LA</b>	<b>Landscaped</b>	More than 60% of the backshore habitat is landscaped using non-native tree, shrub and grass species. Typical species include: weeping willow, rhododendron, lawns, and non-native flowering plants. Typical areas include formally landscaped parks, grounds of large residential and institutional buildings.

**Table D11  
Backshore Habitat Descriptions**

Physical Description Codes	<b>SA</b>	Sand
	<b>RK</b>	Rock (exposed bedrock)
	<b>FI</b>	Fill
	<b>LA</b>	Landscaped
	<b>ST</b>	Structures, hard edge
	<b>PK</b>	Parking or storage lot
	<b>BO</b>	Boardwalk or wooden dock
Wildlife Description Codes	<b>NT</b>	Nest tree
	<b>RL</b>	Rock ledge
	<b>HA</b>	Haulout area
	<b>UC</b>	Undercut shelter or den
	<b>AE</b>	Artificial enhancement
	<b>BR</b>	Bridge abutment or structure
	<b>DP</b>	Driftwood pile
	<b>OT</b>	Other

**Table D12  
Across-Shore Zone Definitions**

<b>Code</b>	<b>Description</b>
<b>A</b>	The 'splash zone' between highest high water and the landward marine limit, at the limit of terrestrial vegetation.
<b>B</b>	The intertidal zone, from highest high water to the zero chart datum. For this project, zone B divided into:
<b>B1</b>	Upper intertidal – approximately >2m elevation which is the <i>Fucus</i> band and above.
<b>B2</b>	Lower intertidal – approximately <2m elevation which is approx. below the <i>Fucus</i> band.

**Table D13  
Habitat Type Summary Codes**

<b>Habitat Type</b>	<b>Relative marine influence</b>	<b>Habitat Type</b>	<b>Typical substrate</b>	<b>Comments</b>
<b>1</b>	H and M	man-made SEAWALLS and EMBANKMENTS	riprap, rubble, concrete	diversity decreases with less proximity to harbour entrances
<b>2</b>	L	man-made SEAWALLS and EMBANKMENTS	riprap, rubble, concrete	many units bare, sparse barnacle band and diatom haze
<b>3</b>	H and M and L (esp. with current)	PILINGS, WHARVES & FLOATS	pilings and floating docks	diversity of encrusting biota greater than on adjacent riprap
<b>4</b>	L and M	natural BEACHES	pebble, cobble, sand	
<b>5</b>	H and M	natural BEDROCK CLIFF, RAMPS OR PLATFORMS	bedrock, often with pocket beaches of Habitat type 7	units with highest species diversity are in this type and occur nearest to harbour mouths. Many units include small pocket beaches.
<b>6</b>	L and M	natural BEDROCK CLIFF, RAMPS OR PLATFORMS	bedrock, often with pocket beaches of Habitat type 7	sparse macro-biota, low diversity. Often fines/mud in B2 and nearshore subtidal Many units include small pocket beaches.
<b>7</b>	H and M and L	natural POCKET BEACHES	pebble-cobble-fine sediment, some with shell hash	always a secondary habitat type in large units of bedrock or man-made shoreline
<b>8</b>	L and M	mudflats, tidal flats MUDFLATS	wide sand or mud terrace in lower intertidal	describes the large estuary units in Portage Inlet and head of Esquimalt Harbour as well as a few other units with seawall or bedrock in upper intertidal and wide tidal flats in the lower intertidal



**Table D14  
Shore Zone Form Codes**

<b>A = ANTHROPOMORPHIC</b>					
a	dolphin	k	dyke	s	seawall
b	breakwater	I	cable, pipeline	r	ramp
c	log dump	m	marina	t	landfill, tailings
f	float	n	ferry terminal	w	wharf
h	shell bed, midden	o	log boom	x	outfall
j	jetty	p	port facility	y	intake
<b>B = BEACH</b>					
b	berm	n	relic ridges, raised beaches	s	storm ridge
c	washover channel	m	multiple intertidal bars	t	low tide terrace
d	spit	r	ridge (single intertidal	w	washover fan
f	face		bar)	v	veneer (modifier)
I	inclined				
<b>C = CLIFF HEIGHT</b>					
l	<5m	m	5 - 10m	h	>10m
<b>C = CLIFF SLOPE</b>					
I	20 – 35	c	cave	p	passive
s	>35	f	fans or aprons	r	ramp
a	eroding	g	surge channel	t	terraced
<b>D = DELTA</b>					
b	bars	l	levee	s	single channel
f	fan	m	multiple channel	p	delta plain
<b>E = DUNE</b>					
b	blowouts	o	ponds	v	veneer
I	irregular	r	ridge, swale	w	vegetated
n	relic	p	parabolic, crescentic		
<b>F = REEF</b>					
f	horizontal	r	ramp		
I	irregular	s	smooth		
<b>L = LAGOON</b>					
o	open	c	closed		
<b>M = MARSH</b>					
h	high	c	tidal creek	p	pond
l	low	e	levee	s	salt or brackish

<b>O = OFFSHORE ISLAND</b>					
b	barrier	p	pillar, stack	l	low (<5m)
c	chain of islets	w	whaleback	m	moderate (5 – 10m)
t	table shaped			h	high (>10m)
<b>P = PLATFORM</b>					
f	horizontal	I	irregular	r	ramp
g	surge channels	l	low tide platform	s	smooth
h	high tide platform	p	tidal pools		
<b>R = RIVER</b>					
a	perennial	m	multiple channel		
t	intermittent	s	single channel		
<b>T = TIDAL FLATS</b>					
b	bar, ridge	f	flood tidal delta	t	flats
c	tidal channel	l	levee	p	tidepool
e	ebb tidal delta	s	multiple tidal channels		

**Table D15**  
**Shore-zone Texture Codes**

**A = ANTHROPOGENIC**

a	metal (structural)
d	debris (man-made)
e	concrete (loose blocks)
f	undifferentiated, mixed fill
c	concrete (solid cemented blocks)
r	rubble, riprap
t	logs (cut trees)
w	wood (structural)

**B = BIOGENIC**

c	coarse shell
f	fine shell hash
g	grass
l	trees (dead)
o	organic litter
p	peat
t	trees (alive)

**U = UNDEFINED**

v	veneer (modifier)
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**C = CLASTIC**

a	blocks
b	boulder
c	cobble
d	diamicton
f	finer, mud
g	gravel (mixture of b,c,p,gran.)
k	clay
p	pebbles
r	rubble
s	sand
S	silt
x	angular fragments

**R = ROCK**

I	igneous
m	metamorphic
s	sedimentary
v	volcanic

**Table D16**  
**Band Descriptions and Codes**

<b>Zone</b>	<b>Colour Band Name</b>	<b>Code Name</b>	<b>Colour</b>	<b>Description</b>
<b>A</b>	‘Verrucaria’	<b>VER</b>	black or bare rock	splash zone: marked by black encrusting lichen & blue-green algae. Generally observed most clearly on bedrock shoreline
<b>A</b>	<i>Salicornia</i>	<b>SAL</b>	light/bright green	<i>Salicornia</i> and other salt-tolerant low marsh herbaceous plants
<b>A</b>	grasses & sedges	<b>GRA</b>	light/bright green	marsh grasses, dune grasses and other salt-tolerant sedge and herbaceous high marsh plants
<b>A or B upper</b>	bare substrate	<b>BRE</b>	substrate colour	no attached macrobiota observed
<b>B upper</b>	upper barnacle	<b>BAR</b>	grey-white	continuous band of <i>B. glandula</i> , upper intertidal
<b>B upper</b>	‘Fucus’	<b>FUC</b>	golden brown	dominated by <i>Fucus</i> , includes <i>B. glandula</i>
<b>B mid</b>	oyster	<b>OYS</b>	white	abundance of <i>Crassostrea</i>
<b>B mid</b>	blue mussel	<b>BMU</b>	dark blue-black	dense beds of <i>Mytilus trossulus</i> (blue mussel)
<b>B mid</b>	‘Ulva’	<b>ULV</b>	bright green	<i>Ultra</i> ‘ <i>Ulvaria</i> ’ blade greens and <i>Enteromorpha</i> -type filamentous greens
<b>B lower</b>	diatom	<b>DIA</b>	brown ‘beige’	encrusting low mat of filamentous diatoms, may mix with ‘HAL2’, shows as bare-looking lower IT
<b>B lower</b>	mixed filamentous reds	<b>HAL2</b>	golden yellow bleached ‘reds’	named for <i>Halosaccion</i> which is only a minor component in Strait of Georgia. Indicates low-turf of the bleached red algae complex of lower IT, including <i>Leathesia</i> , <i>Gelidium</i> , <i>Neorhodomela</i> , coralline algae and other small reds
<b>B lower</b>	reds: blade & filamentous	<b>RED</b>	dark brick red	lush and diverse filamentous and foliose red algae
<b>B lower</b>	<i>Sargassum</i>	<b>SAR</b>	brown	<i>Sargassum</i> band of lower intertidal. May mix with Laminarians
<b>B lower</b>	mixed Laminarians	<b>BKS</b>	brown	large <i>Laminaria spp.</i> kelps, including <i>L. saccharina</i> , <i>Agarum</i> , <i>Alaria</i> near current
<b>B lower</b>	<i>Metridium</i> anemones	<b>ANM</b>	white or orange	aggregations of anemones, esp. on pilings
<b>B lower</b>	parchment tubeworms	<b>TUB</b>	beige	aggregations of parchment tube worms esp. on pilings and docks. ( <i>Eudistylia</i> ) Consider another category for calcareous tube worms if observed
<b>C upper</b>	‘Zostera’	<b>ZOS</b>	dark green	eelgrass, ( <i>Zostera marina</i> and introduced spp. <i>Z. japonica</i> ) fine sediment, may extend into intertidal. Often heavily encrusted with epiphytic blade red
<b>C upper</b>	Nereocystis	<b>NER</b>	dark brown, shiny	bull kelp beds, floating blades and fronds nearshore
<b>C upper</b>	infauna holes	<b>HOL</b>	holes in soft substrate	worm, clam or shrimp holes in soft bottoms. Includes piddocks. Species noted when possible.
<b>C upper</b>	barrens	<b>LIT</b>	white or pale pink	bare encrusting coralline algae

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**Appendix E**  
**Example of Shore Unit Rating Form**

