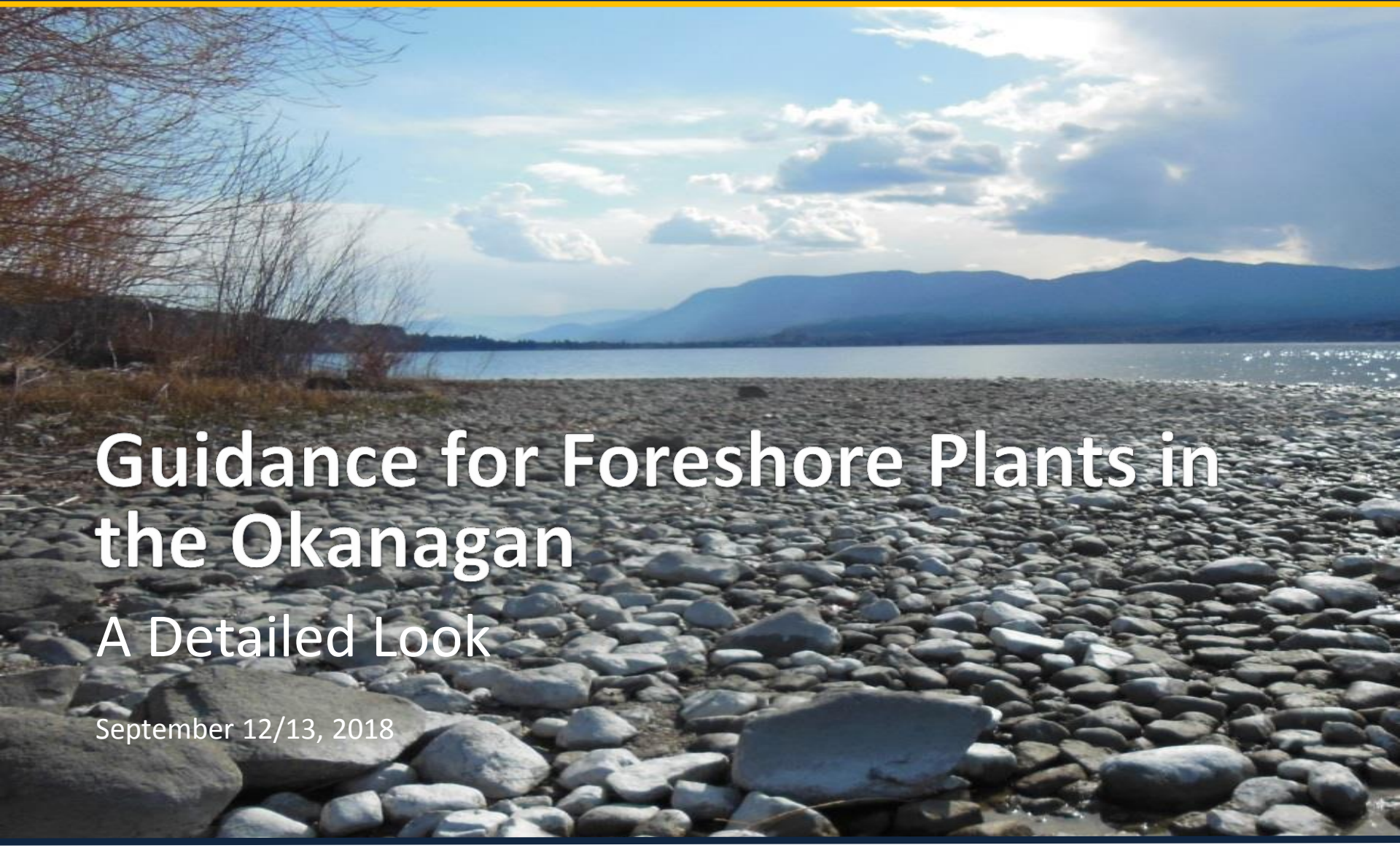


Guidance for Foreshore Plants in the Okanagan

A Detailed Look

September 12/13, 2018

Presented by:
Josie Symonds, Ecosystems Biologist &

Presented for:
2018 Foreshore Plant SAR ID and Survey Workshop
Summerland, B.C.

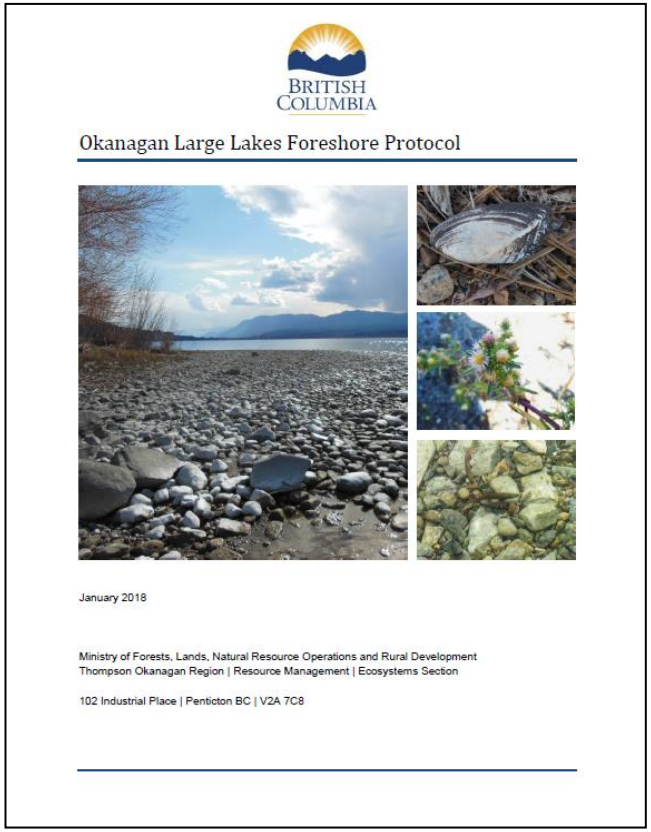
Presentation Outline

1. Okanagan Large Lakes Foreshore Protocol
2. Foreshore Plant SAR Sensitivity Zones
3. Foreshore Plant SAR Surveys
    1. When Surveys are Required
    2. Surveyor Qualifications
    3. Preliminary Habitat Survey
    4. Detailed Plant SAR Survey
4. Foreshore Plant SAR Mitigation

Okanagan Large Lakes Foreshore Protocol

Okanagan Large Lakes Foreshore Protocol

Introduction



- Developed following strategic direction in the *Okanagan Shuswap Land and Resource Management Plan* (2001) to manage large lake shorelines and fish habitat, both above and below the high water mark (HWM)
- Originally released in 2009 and updated in 2018 based on current management priorities, best available science and up-to-date mapping
- Ecosystem's direction to manage for high sensitivity foreshore values

Okanagan Large Lakes Foreshore Protocol

Purpose and Scope

- Provides direction to proponents and QPs on requirements for provincial natural resource applications
- 2018 Protocol focuses on three values:
  - Shore Spawning Kokanee
  - Freshwater Mussels
  - **Foreshore Plants**
- Application/submission requirements based on the environmental sensitivity of the site and the risk of the proposed foreshore development

https://www2.gov.bc.ca/gov/content/environment/natural-resource-stewardship/laws-policies-standards-guidance/best-management-practices/okanagan-large-lakes-foreshore-protocol

Okanagan Large Lakes Foreshore Protocol

Key Updates in 2018

- Simplified risk ratings and flow charts
- Provides updated mapping
  - Incorporates new surveys
  - Considers federally identified Critical Habitat
- Corrects data and erroneous errors
- Includes two supporting Guidance Documents that must be used in conjunction with Protocol
- Considered a “living document” – will be updated as new information comes available****

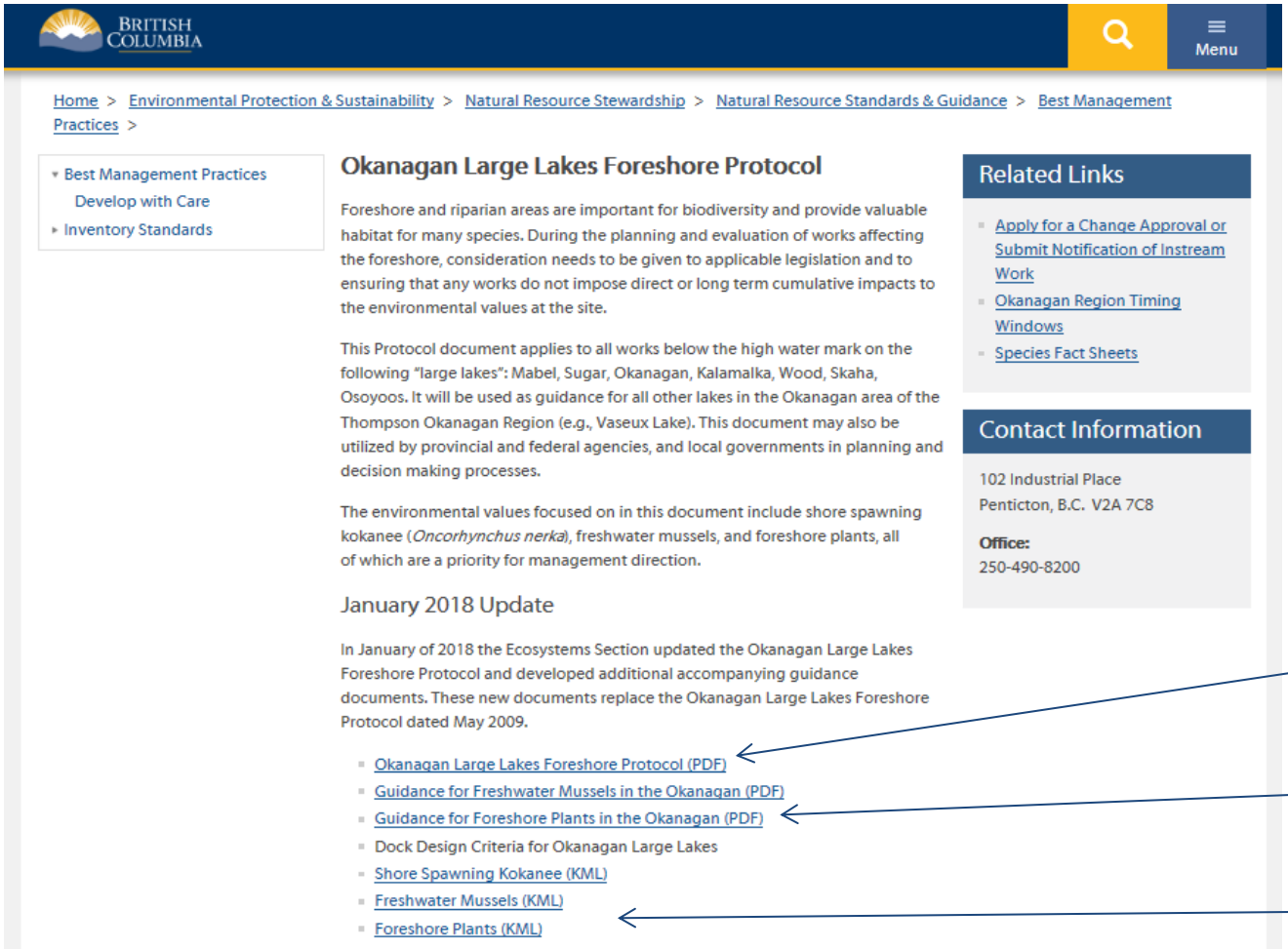
Okanagan Large Lakes Foreshore Protocol

Foreshore Legislation and Jurisdiction

- Most foreshore areas below the natural boundary of a lake are considered provincial crown land
- Development in these areas typically requires authorization/tenure under:
  - *Water Sustainability Act*
  - *Land Act*
- Residential, commercial and industrial developments above the high water mark are generally subject to the *Riparian Areas Regulation*
- Other provincial, federal and local government legislation may also be applicable

Okanagan Large Lakes Foreshore Protocol

Protocol Website



https://www2.gov.bc.ca/gov/content/environment/natural-resource-stewardship/natural-resource-standards-and-guidance/best-management-practices/okanagan-large-lakes-foreshore-protocol

Protocol

Guidance Documents

Mapping (KMLs)

Okanagan Large Lakes Foreshore Protocol

How to Use the Protocol

For each environmental value:

1. Determine the **Foreshore Sensitivity Zones**
2. Determine the **Activity Risk** associated with the proposed development
3. Determine the **Application/Submission Requirements** and when the engage a QP
4. Determine required species-specific **Guidance Documents**: survey and mitigation requirements

Okanagan Large Lakes Foreshore Protocol

1. Determine the Foreshore Sensitivity Zone

- Mapping available for three values: Shore Spawning Kokanee, Freshwater Mussels, Foreshore Plants
- Zone mapping available via iMapBC, Data BC (shapefiles) and Protocol website (KMZ)

BLACK	Critical Habitat
RED	High Habitat Value
YELLOW	Moderate Habitat Value
NO COLOUR	Low or Unknown Habitat Value

Okanagan Large Lakes Foreshore Protocol

2. Determine the Activity Risk

Table 1 Risk Rating by Activity Type

Risk	Activity Type
High	Marina – New
	Boat Launch – New
	Erosion Protection – New (Hard)
	Dredging – Foreshore
	Infill – Foreshore
	Beach Creation
	Waterline (Trenched) – New
	Aquatic Invasive Vegetation Removal – Rototilling, Harvesting
Moderate	Dock/Piled Structure – New
	Dock – Removable
	Stormwater Outfall – New
	Erosion Protection – New (Riprap)
	Debris Removal – Large / By Machine*
	Aquatic Invasive Vegetation Removal – By Hand
	Restoration Works*
	Recreation – Beach Maintenance
Low	Dock/Piled Structure – Repair/Upgrade*
	Rail Launch – Permanent, Removable
	Marina – Repair/Upgrade*
	Boat Launch – Repair/Upgrade*
	Waterline (Drilled) – New
	Waterline – Repair/Upgrade*
	Stormwater Outfall – Repair*
	Erosion Protection – New (Soft)
	Erosion Protection – Repair (all types)*
	Debris Removal – Small / By Hand*
	Vegetation Removal – By Hand*
	Mooring Buoy

*Assumes no significant terrestrial disturbance or change to site hydrology; if not valid, increase risk by one level

High = large footprints and/or associated habitat disturbance

Moderate = new works with some associated habitat disturbance

Low = repairs and other projects with small footprints/disturbance

Okanagan Large Lakes Foreshore Protocol

3. Determine Application Requirements

High Risk Activity	(1) Retain QP to assist in design and construction utilizing existing BMPs ; where existing BMPs cannot be followed, QP must develop site-specific mitigation measures to avoid, mitigate and/or offset risk (2) QP must follow Guidance Documents for Freshwater Mussels and Foreshore Plants (Section 3.4) including appropriate level of survey based on Foreshore Sensitivity Zone and development of mitigation measures (3) QP must submit a complete Environmental Impact Assessment report and a QP Checklist (Appendix B) with application
Moderate Risk Activity	(1) Retain QP to assist in design and construction utilizing existing BMPs; where existing BMPs cannot be followed, QP must develop site-specific mitigation measures to avoid, mitigate and/or offset risk (2) QP must follow Guidance Documents for Freshwater Mussels and Foreshore Plants (Section 3.4) including appropriate level of survey based on Foreshore Sensitivity Zone and development of mitigation measures (3) QP must submit QP Checklist (Appendix B) with application; complete Environmental Impact Assessment report not required
Low Risk Activity	(1) Follow existing BMPs; where existing BMPs cannot be followed, retain QP to develop site-specific mitigation measures to avoid, mitigate and/or offset risk (2) If BMPs not followed QP must submit QP Checklist (Appendix B); complete Environmental Impact Assessment report not required

Okanagan Large Lakes Foreshore Protocol

3. Determine Application Requirements (cont.)

BLACK ZONE

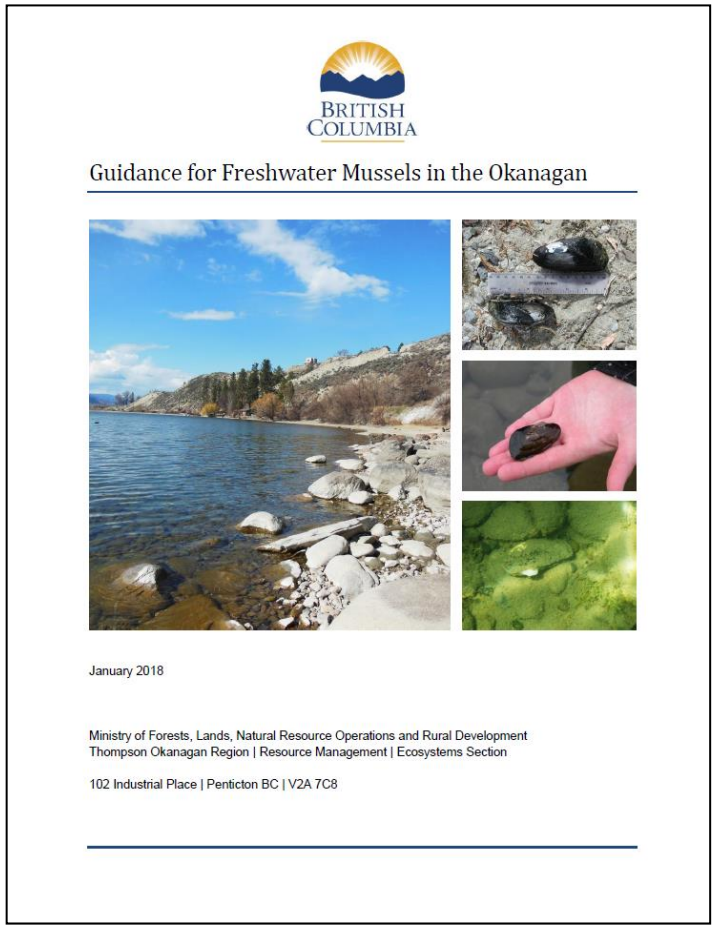
(1) Consult Thompson Okanagan Region Ecosystems Section Head prior to hiring a QP or submitting a provincial natural resource application; project likely not consistent with provincial priorities/direction; high likelihood project will not be approved

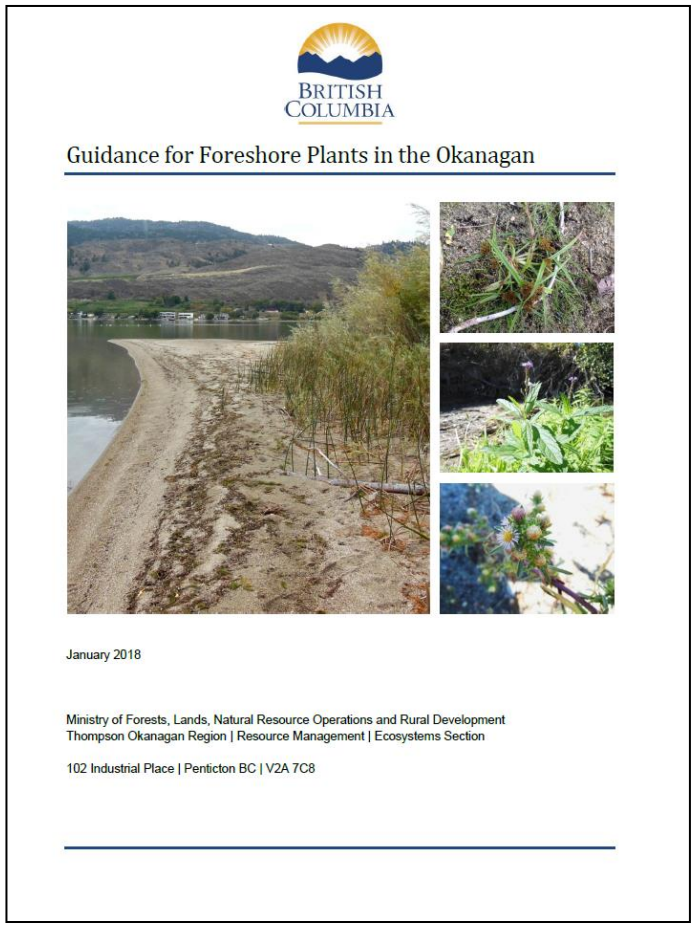
NOTE: Works in a Black Zone will likely fall under the *Water Sustainability Act* Change Approval process

Note: Application requirements for **Private Moorage and Docks** do not follow this flow chart and are addressed under separate guidance. Docks are the most common foreshore development activity type on Okanagan large lakes. Consequently, a significant effort has been put in to develop specific guidance to reduce impacts through design and mitigation practices. If you propose to construct a dock you must follow the Dock Design Criteria for Okanagan Large Lakes.

Okanagan Large Lakes Foreshore Protocol

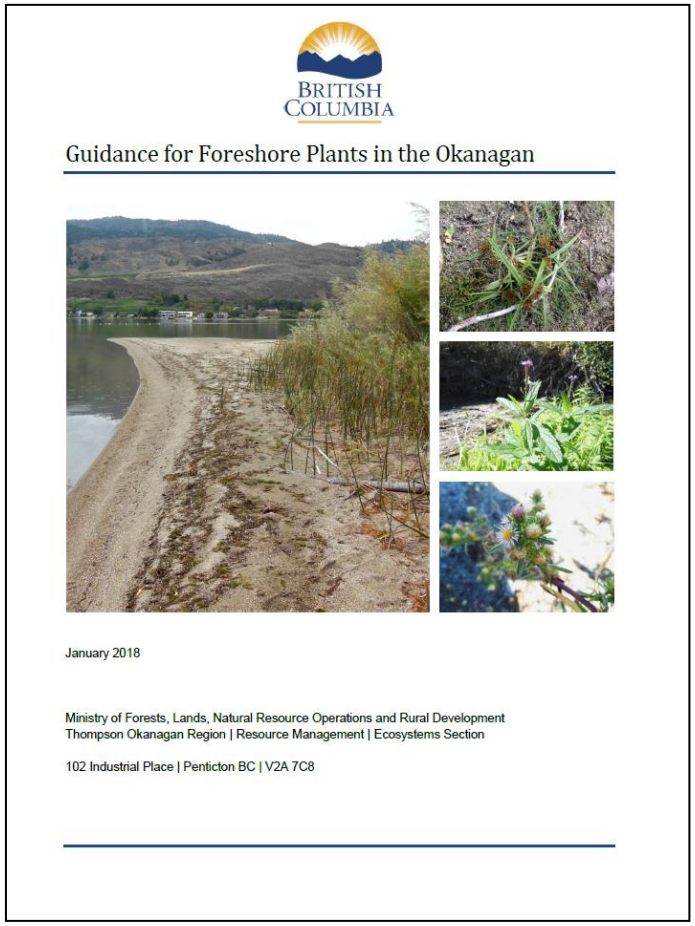
4. Determine Need for Guidance Documents





Okanagan Large Lakes Foreshore Protocol

Guidance for Foreshore Plants in the Okanagan



Why include foreshore plants?

- Species group has been historically neglected
- Better data now: numerous surveys conducted
- Betters tools to assist with ID (fact sheets, training, guidance, etc.)
- Federal Critical Habitat now defined for four species
- Improve consistency between projects

https://www2.gov.bc.ca/assets/gov/environment/natural-resource-stewardship/best-management-practices/okanagan/guidance_for_foreshore_plants_in_the_okanagan.pdf

Foreshore Plant SAR Sensitivity Zones

Foreshore Plant SAR Sensitivity Zones

Rationale to Define Sensitivity Zones

Zonation	Foreshore Plants
Black	Critical Habitat polygons identified for one or more foreshore plant species at risk (SAR) in a federal recovery strategy by Canadian Wildlife Service as of 2017
Red	Known occurrences of red-listed or blue-listed foreshore plant SAR identified either by BC Conservation Data Centre (CDC) or in recent surveys led by FLNRORD as of 2017; includes a 50 m buffer to take into account indirect/edge effects of development on species biology
Yellow	High potential habitat for red-listed or blue-listed foreshore plant SAR identified in recent surveys led by FLNRORD on Vaseux and Osoyoos Lake only as of 2017; includes a 50 m buffer to account for indirect/edge effects of development on species biology
No Colour	Habitat has not been assessed for foreshore plant SAR presence as of 2017

Foreshore Plant SAR Sensitivity Zones

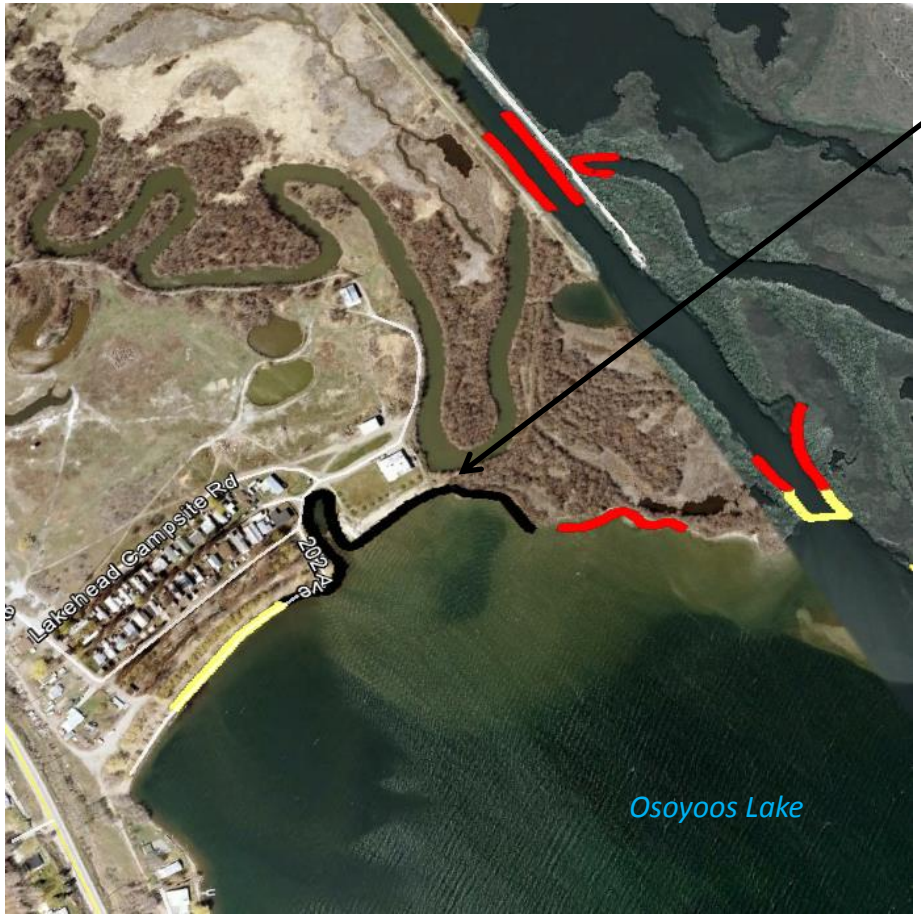
Comparison of 2009 and 2018 Mapping

2009 Mapping

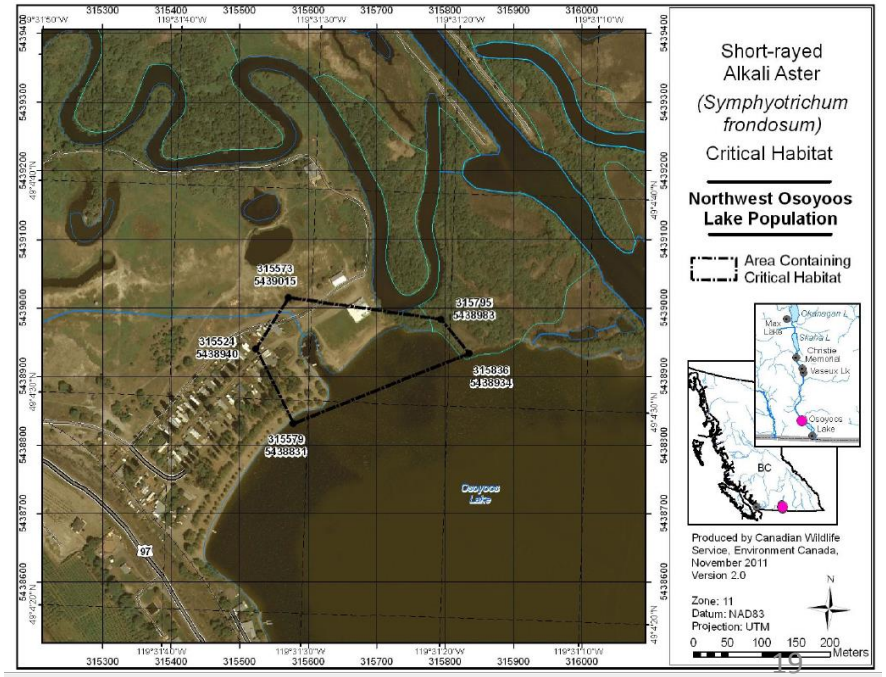
2018 Mapping

Foreshore Plant SAR Sensitivity Zones

Example: Osoyoos Lake



Black Zone = Short-rayed Aster Critical Habitat (2013)



Foreshore Plant SAR Sensitivity Zones

Example: Osoyoos Lake (cont.)

Red Zones = Known Habitat (CDC + various surveys)

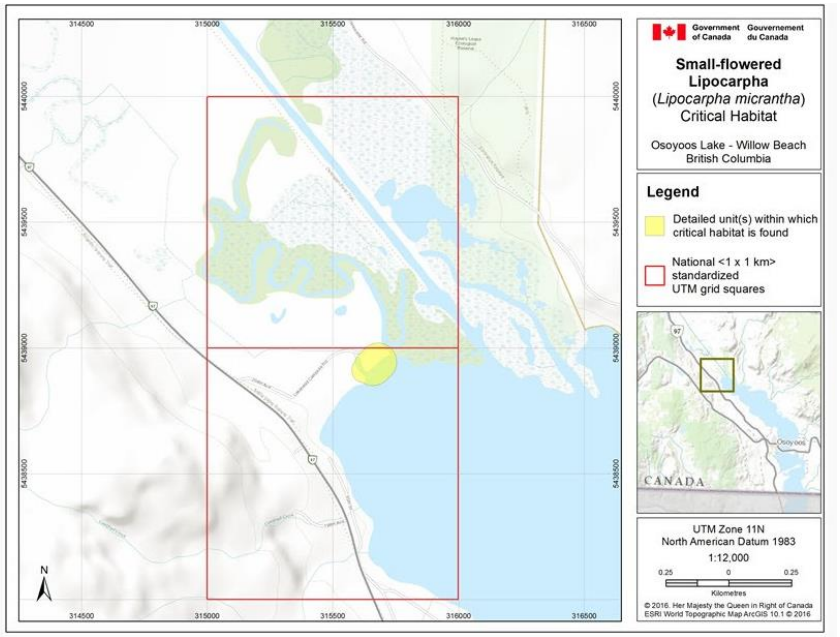
and

Yellow Zones = *Osoyoos/Vaseux Lake Plant SAR Inventory* (McIntosh 2013)

Foreshore Plant SAR Sensitivity Zones

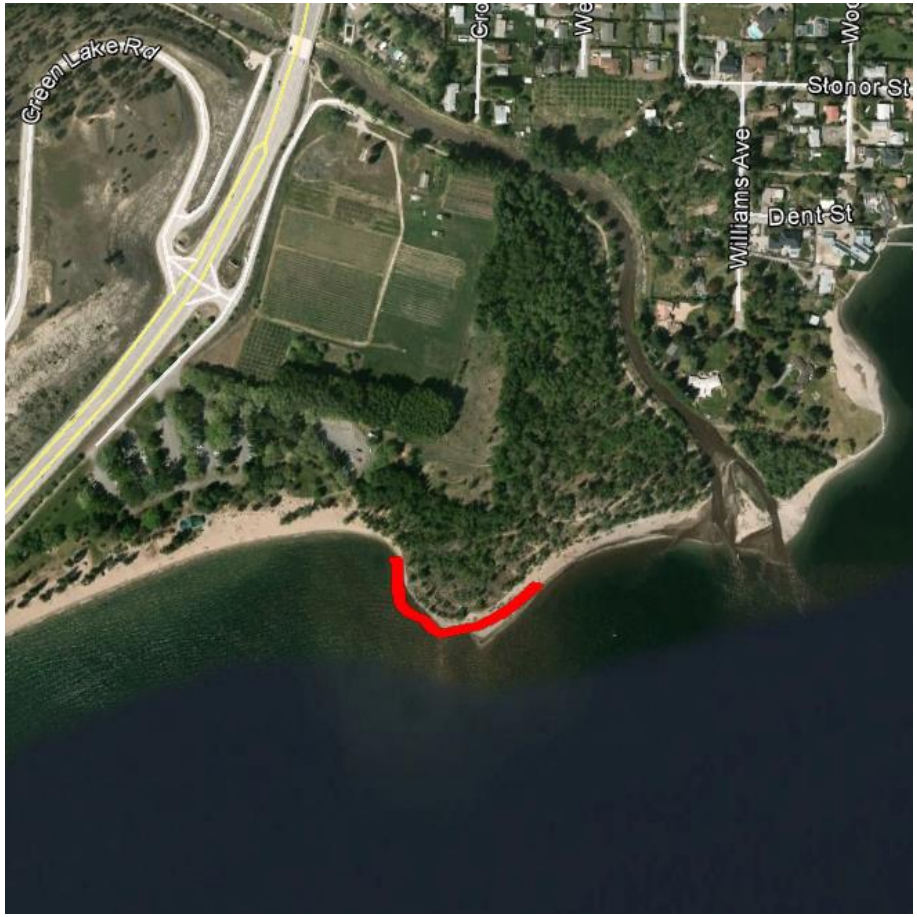
Example: Osoyoos Lake (cont.)

Small-flowered Lipocarpha Critical Habitat (2018) **not included!**

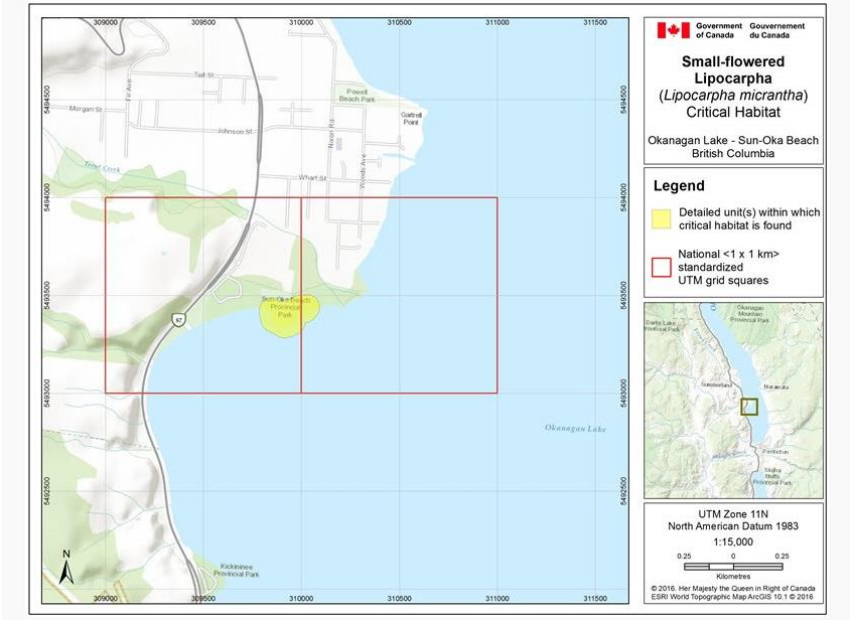


Foreshore Plant SAR Sensitivity Zones

Example: SunOka Provincial Park



Small-flowered Lipocarpha Critical Habitat (2018) **not included!**



Foreshore Plant SAR Surveys

Foreshore Plant SAR Surveys

When Surveys are Required

A certain level of survey is required for all development activities that have the potential to adversely affected foreshore plant SAR populations based on (i) Activity Risk and (ii) Foreshore Sensitivity Zone

Table 1 Foreshore Plant SAR Survey Requirements by Activity Risk and Zone

Activity Risk	Foreshore Sensitivity Zone			
	No Colour	Yellow	Red	Black
Low Risk (follows BMPs)	N/A	N/A	N/A	Contact Ecosystems Section Head before proceeding
Low Risk (does not follow BMPs)	Preliminary Assessment	Detailed Survey	Detailed Survey	
Moderate Risk	Preliminary Assessment	Detailed Survey	Detailed Survey	
High Risk	Preliminary Assessment	Detailed Survey	Detailed Survey	

Low = repairs and other projects with small footprints/disturbance
Moderate = new works with some associated habitat disturbance (e.g., riprap, beach maintenance, restoration)
High = large footprints and/or associated habitat disturbance (e.g., retaining wall, dredge, beach creation)

Foreshore Plant SAR Surveys

When Surveys are Required (cont.)

- Foreshore plant SAR surveys are not required for:
  - Low Risk activities that follow available BMPs in a No Colour Zone (i.e., unknown potential habitat) or Yellow Zone (i.e., known potential habitat)
  - Low Risk activities that follow available BMPs in a Red Zone (i.e., known foreshore plant SAR habitat); in this case the known presence of foreshore plant SAR precludes the need for additional survey effort, but mitigation may be required
- In all other cases, some level of foreshore plant SAR survey by a QP will be required

Foreshore Plant SAR Surveys

Surveyor Qualifications

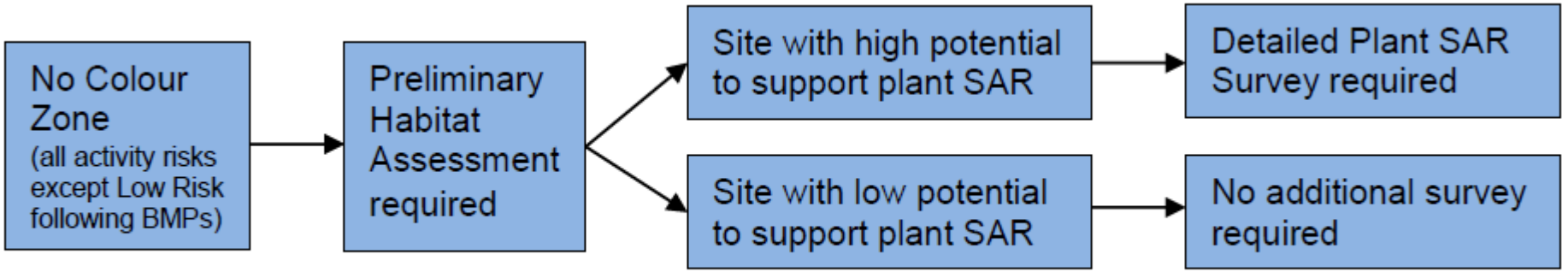
Table 2 Plant Species at Risk Surveyor Qualifications

Prerequisite	Qualifications
Academic Background	▪ Academic background (Bachelor of Science, or higher) in botany, plant taxonomy, plant ecology or a related field ▪ Extensive training and/or field experience may substitute for a formal academic background in some cases
Field Experience	▪ Taxonomic field experience conducting plant SAR surveys or working under the direction of an experienced surveyor ▪ Minimum of 120 days field experience in plant ID for field crew leads ▪ Direct field experience with specific target species may substitute for general plant SAR field experience in some cases
Local Knowledge	▪ Knowledge of potential plant SAR and habitats in project area ▪ Knowledge of most or all plant species likely encountered in project area
Technical Skills	▪ Ability to use regional floras and familiarity with botanical terminology ▪ Ability to use maps, GPS, compass and clinometers (or equivalent tools) to record plant locations and habitat attributes ▪ Ability to collect voucher specimens, as required, following provincial protocols (MoE 1999) ▪ Ability to use data forms to accurately record and report occurrences

Foreshore Plant SAR Surveys

(1) Preliminary Habitat Assessment

- For Moderate Risk or High Risk activities in No Colour zones (i.e., unknown habitat potential) and Low Risk activities that cannot follow BMPs
- Includes desktop review and preliminary site visit to verify onsite habitat potential



Foreshore Plant SAR Surveys

(1) Preliminary Habitat Assessment (cont.)

Table 3 Attributes Identifying High and Low Potential Foreshore Plant SAR Habitat

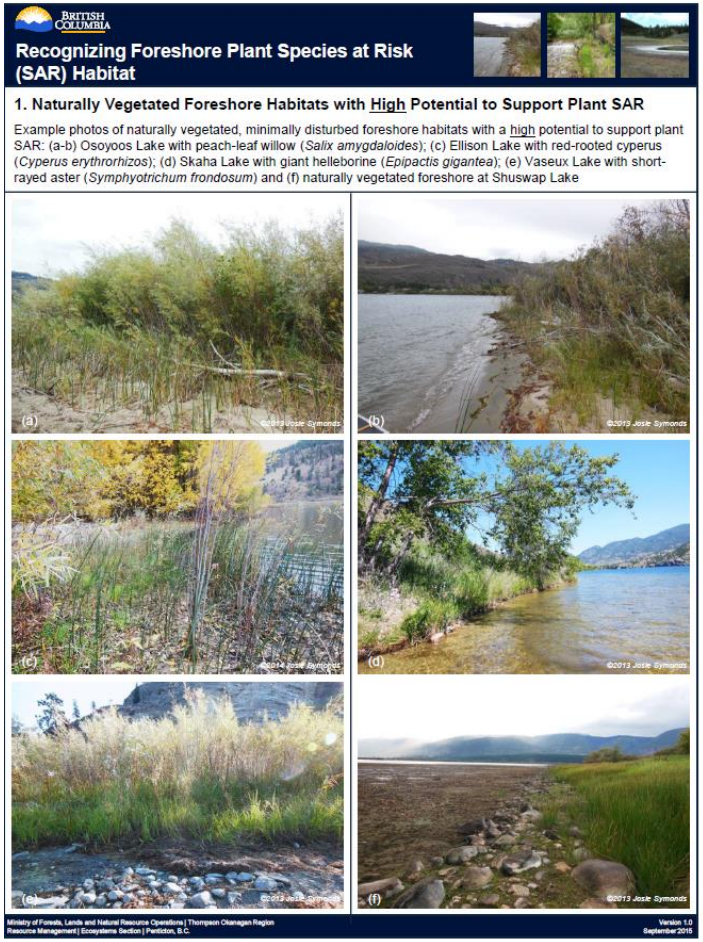
Foreshore Habitat Attribute[1]	Habitat Potential	
	High (Yellow Zone)	Low
Disturbance	Natural, modified	Disturbed
Exotic Plant Cover	<30% cover	>30% cover
Wave Action / Erosion	Minimal, infrequent	Substantial, frequent
Beach Substrate	Natural silts, sands and gravels	Imported, non-natural
Topography	Depression to gentle (<10%) slope	Moderate to steep (>10%) slope
Vegetation	Vegetation present	Non-vegetated

[1] Consult Recognizing Foreshore Plant SAR Habitat fact sheet for examples of foreshore habitats with high and low potential to support plant SAR

- Desktop review using FIM, TEM, SEI, ortho photos, reports etc.
- Preliminary site visit required unless foreshore habitat potential can be confirmed as high via desktop methods
- Proponents may opt to go straight to Detailed Plant SAR Survey

Foreshore Plant SAR Surveys

(1) Preliminary Habitat Assessment (cont.)



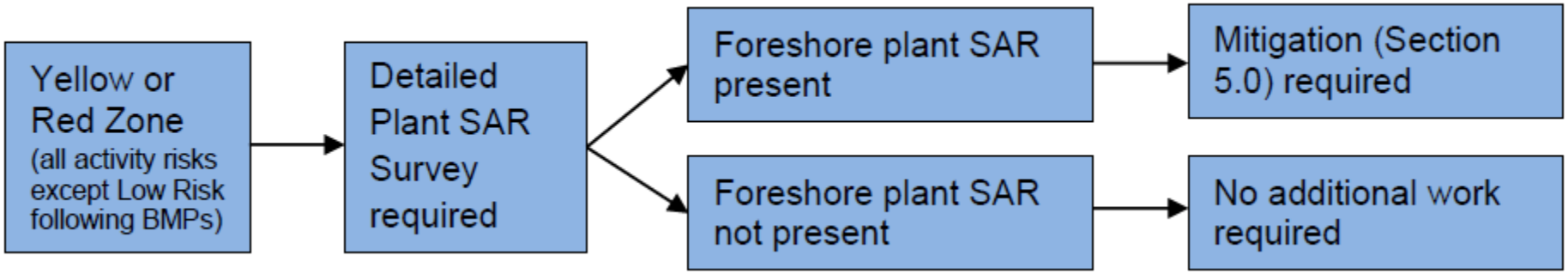
QP Tools: Fact Sheet

- Guidance document supported by "Recognizing Foreshore Plant Species at Risk (SAR) Habitat" Fact Sheet
- Includes photos and descriptions of naturally vegetated, sandy/rocky and modified habitats with high potential to support foreshore plant SAR
- Also includes photos and descriptions of sites with low habitat potential

Foreshore Plant SAR Surveys

(2) Detailed Plant SAR Survey

- For Moderate Risk or High Risk activities in Yellow or Red zones (i.e., habitat potential already known) and Low Risk activities that cannot follow BMPs
- Includes compiling potential species list, preparing for and conducting the field survey, and reporting requirements
- Proponents may opt to bypass Detailed Survey in a Red Zone and move straight mitigation if project interaction is already known



Foreshore Plant SAR Surveys

(2) Detailed Plant SAR Survey (cont.)

Compile List of Potential Species – see Appendix B of document

Scientific Name[1,2]	Common Name	Family	Status[3]
Ammannia robusta	scarlet ammannia	Lythraceae	Red / E
Bidens vulgata	tall beggarticks	Asteraceae	Blue
Carex comosa	bearded sedge	Cyperaceae	Blue ↓ 2018
Carex hystericina	porcupine sedge	Cyperaceae	Blue
Cyperus erythrorhizos	red-rooted cyperus	Cyperaceae	Blue
Elatine rubella	three-flowered waterwort	Elatinaceae	Blue ↓ 2018
Eleocharis coloradoensis	dwarf spike-rush	Cyperaceae	Red ↓ 2018
Eleocharis engelmannii	Englemann's spike-rush	Cyperaceae	Red
Eleocharis geniculata	bent spike-rush	Cyperaceae	Red / E
Eleocharis ovata	ovate spike-rush	Cyperaceae	Blue
Limosella acaulis	Owyhee mudwort	Scrophulariaceae	Red ↓ 2018
Lindernia dubia var. *anagallidea*	false-pimpernel	Scrophulariaceae	Blue ↓ 2018
Lindernia dubia var. *dubia*	yellowseed false-pimpernel	Scrophulariaceae	Red ↓ 2018
Lipocarpha micrantha	small-flowered lipocarpha	Cyperaceae	Red / E
Potentilla supina ssp. *paradoxa*	bushy cinquefoil	Rosaceae	Blue
Rotala ramosior	toothcup	Lythraceae	Red / E
Salix amygdaloides	peach-leaf willow	Salicaceae	Blue
Schoenoplectus saximontanus	Rocky Mountain clubrush	Cyperaceae	Red
Symphyotrichum frondosum	short-rayed aster	Asteraceae	Red / E
Verbena hastata	blue vervain	Verbenaceae	Blue ↓ 2018

- Default/starter list
- Need to check CDC for updates/ additions
- Refine list based on species range and habitat requirements
- Resources: CDC, E-Flora BC, iMapBC, etc.

Foreshore Plant SAR Surveys

(2) Detailed Plant SAR Survey (cont.)

Prepare/Conduct Field Survey

- Assemble surveyor teams that meet surveyor qualifications
- Allocate enough resources for required coverage of potential habitats
- Schedule survey(s) during optimal survey time for each species (usually flowering/fruiting) = fall for many foreshore plants
- Familiarize team with each species: visit known sites, consult floras
- For smaller sites (<1 ha): ensure complete coverage of all suitable habitats within project footprint including ancillary areas, laydown, access
- For larger sites (>1 ha): search all habitat types using intuitive controlled survey until no additional species identified

Foreshore Plant SAR Surveys

(2) Detailed Plant SAR Survey (cont.)

Data Collection/Reporting

- Use QP Checklist and/or EIA (as required by Activity Risk) for natural resource applications
- Provide full description and species list for each ecological community
- For each foreshore plant SAR encountered:
  - Collect photos of all relevant parts of plant used for ID
  - Collect GPS location
  - Assess condition of plant population, threats, mitigation measures
  - Collect voucher specimens if required: for new occurrences, 1:20 individuals, 5% of parts from individual
- Report all new and resurveyed foreshore plant SAR occurrences to CDC and Ecosystems Section

Foreshore Plant SAR Mitigation

Foreshore Plant SAR Mitigation

Selecting Targets for Mitigation

- Identify foreshore plant SAR values and components that will be adversely affected by project
- Use provincial and federal guidance to develop management target for value/components – prescribe mitigation to meet this target

Table 4 Example of Plant SAR Environmental Value, Components and Indicators

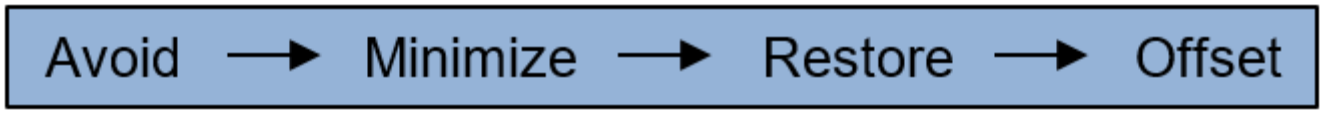
Value[1]	Component	Possible Indicators	Management Target[2]
Short-rayed Aster	Functional habitat area	% area occupied	To maintain the distribution, and to maintain or (where feasible) improve the abundance, of all known extant populations of this species in Canada, as well as any other extant populations that may be identified in Canada
	Functional habitat condition (of area occupied)	% open habitat % native substrate % invasive cover % disturbance	
	Population size	# individuals	
	Reproductive success	# flower heads	

[1] See Environmental Mitigation Procedures for guidance on selecting values, components and indicators
[2] Management target from Environment Canada (2013)

Foreshore Plant SAR Mitigation

Environmental Mitigation Policy

- Document provides specific mitigation measures for foreshore plant SAR following *Environmental Mitigation Policy for BC* (2014)



- Avoid/Minimize: E.g., relocate project components, use elevated structures, redesign, buffers, reduce footprint, BMPs
- Restore/Offset (Compensation): Often must more expensive, limited opportunities, e.g., rehabilitate site, offsite restoration, land securements, conservation covenant = significant challenges
- Translocation: often expensive, poor results, monitoring required, see guidance, contact Ecosystems before proceeding

Foreshore Plant SAR Mitigation

Mitigation Example: Christie Memorial Park (Ok Falls)

Project: Recreational development of beach
(e.g., grooming, high intensity use, pathway)

Foreshore Plant SAR Mitigation

Mitigation Example: Christie Memorial Park (Ok Falls) (cont.)

- No new development of lawns, paths, etc in Critical Habitat (black)
- Seasonal (May-Oct) avoidance of equipment in Low Impact Zone (green)
- Develop site-specific BMPs for beach maintenance
- Delineation/signage

Guidance for Foreshore Plants

Summary

- Region-specific guidance to support provincial natural resource applications
- Purpose is to standardize expectations, costs, etc. associated with surveying and mitigating for foreshore plant SAR
- Some level of foreshore plant SAR survey required for all projects with the exception of Low Risk projects that following BMPs
- Guidance currently focused on vascular plants
- Expectation is that following guidance will limit potential for direct and cumulative adverse effects to foreshore plant SAR populations
- Guidance is a “living document”

Questions?

Lunch and Afternoon Field Session…