



SPR Context and Methodology

An adaptive approach to working with SPR in the City of Maple Ridge

A Review of Maple Ridge SPR (Hybrid model)

September 2005





Background

- **City has used Streamside Protection Regulations (SPR) for 15+ years to promote long term protection of fish habitat, integrated ecological based benefits, risk mitigation, and low impact development practices**
- **Federal/provincial senior environmental agencies along with the College of Biologist recommended this Stream Protection Regulation method SPR in 2004.**
- **City of Maple Ridge adopts & endorses SPR in 2005**
- **Province introduces MOE Riparian Area Regulation (RAR) in 2005. No scientific evidence for RAR but strong support from the development community. No endorsement by the DFO or college of approved biologists.**





Comparison of RAR / SPR

- **Provincial RAPR protection method addresses immediate fish protection concerns but is not designed to protect fish habitat in the long run.**
 - No scientific evidence of long term success or viable protection for fish habitat
 - Cohen Report: ongoing issues, challenges, and problems associated with misuse, abuse, and poor interpretation of RAR method
- **Maple Ridge SPR method is designed to provide a multitude of benefits to citizens in the local community and helps to provide a healthier natural environment in the long run.**
 - Scientifically supported by senior environmental agencies and BC College of Applied Biologists
 - Integrated, comprehensive method for protection and management of riparian areas with numerous economic, social, and ecological benefits



Proven Multi-Economic, Social and Ecological Benefits

SPR provides sufficient buffer widths that are scientifically proven to benefit other environmental considerations along stream health. This includes...

- Terrestrial hubs and wildlife movement corridors
- Buffer for Steep slopes, ravines, and hillside areas
- Healthy long term riparian health and fish survival
- Stormwater management buffer proven to help improve water quality, flows, and reduce costs
- Bio-diversity: provides wide range of habitat for numerous flora and fauna species
- Broader Eco-Services: wider buffers provide numerous services including stormwater mgmt., flood protection, air quality and water quality improvements, air temperature regulation, critical habitat for wide variety of species (flora & fauna), climate change resilience, increased property value
- Community trail network opportunities



RAPR Cohen Report Concerns

- **Additional studies & setbacks required beyond RAR setbacks** i.e. slopes, trees, wildlife, soils, vegetation, species at risk, geotechnical,
- **No scientific evidence** to support RAR methods
- **Longer delays in approval process (1-2 years) by Province** with issues around interpretation by QEPs
- **Additional risk and liability** for local government because of smaller RAR buffers around streams, slopes & tree lines. QEPs allowed to choose smaller detailed setbacks 10m.
- **Reliance on environmental professionals** working for developers to determine appropriate setbacks
- **Cohen Report:** unclear interpretation of RAR, inadequate science, increase risk of liability to public and private, and evidence of degradation to fish habitat in long term
- **Increase costs to tax payers** because of loss of ecological services, increased risks, costs, delays, and long term negative impacts to health of watersheds



SPR Benefits based on scientific literature review searches

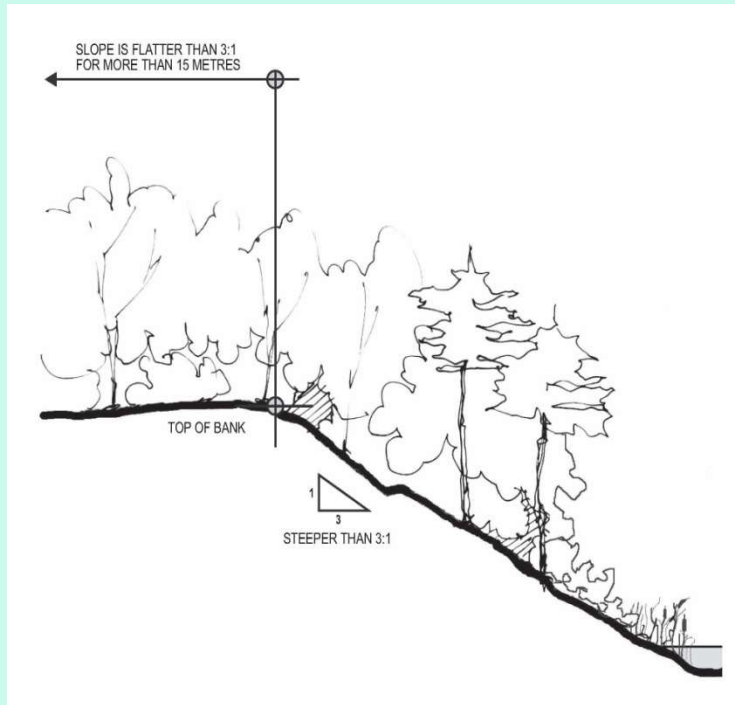
- **Protection of aquatic habitat - fish & wildlife habitat**
- **Protection of unique, endangered, and threatened flora and fauna that utilize riparian areas**
- **Slope stability, erosion control, and hillside management.**
- **Floodplain/ Local flood management with larger riparian flood way areas and overflow zones.**
- **Tree Canopy Cover and protection of Forest Edges**
- **Stormwater Buffers - Drainage or water runoff from surrounding development & roads enters into riparian buffer area to help reduce cost of pipes/grey infrastructure**
- **Community Trail Network & Open Space opportunities**
- **Air quality, climate change resilience, GHG reduction.**
- **Wildlife & Recreation movement corridors and hubs**
- **Increase Property Values, Health, and Pride**

1. Riparian Setback Determination Matrix

Key criteria

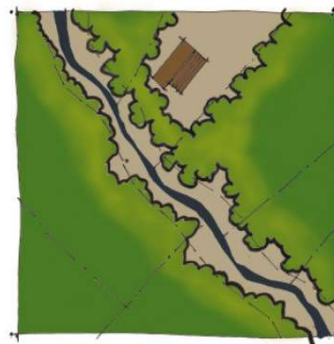
- Fish presence or potential for fish presence;
- Abundance and continuity of surrounding habitat or riparian area;
- Connectivity & ‘permanence’ of watercourse
- Context of site, surrounding area, & other determinants

Existing or Potential Riparian Vegetation status (Figure 2-2)	FISH BEARING		NON FISH BEARING	
	*Class A or AO - Upland	*Class A or AO - Lowland	*Class B (no distinction between permanent and non-permanent)	*Class C
		Forested or potentially forested	Unforested (e.g., vegetated floodplain)	
Continuous for 30 m or greater, or discontinuous but occasionally > 30 m to 50 m	30 m minimum Modifiers – Set 1: 2a Stability: Basic setback is adequate for banks up to 15 m in height. If bank is > 15 m, a geotechnical assessment is required. 3a Flood risk: Basic setback is adequate except for watercourses subject to extensive flooding and/or significant bank erosion where a detailed assessment will be required. 4a Tree integrity: Basic setback is adequate in most situations; if the City is acquiring, it may require a forest stand integrity assessment. 5a Wildlife: Nest tree assessment required; basic setback is adequate for most other wildlife requisites unless species or ecosystems at risk occur – see Determinants and Modifiers Table. 6a Drainage: Basic setback is adequate. 7a Trails: Nature trail may be permitted in setback; multi-use trail must be outside setback.		30 m min. See Modifiers – Set 1. Exception – 4c Tree integrity: No tree-related assessment required.	30 m min. See Modifiers – Set 1.
Narrow but continuous for 15 m or discontinuous but occasionally > 15 m to 30 m	Greater of existing width, potential width or 15 m Modifiers – set 2: 2b Stability: Basic setback must be 2X the height of the bank; if it is not, a geotechnical assessment may be required. 3b Flood risk: Basic setback is adequate if certain conditions are met – see Determinants and Modifiers Table; if not, detailed assessment is required. 4b Tree integrity: A forest stand integrity assessment is required. 5b Wildlife: Nest tree assessment required; general wildlife assessment may be required. 6a Drainage: Basic setback is adequate. 7b Trails: Must be located outside the setback.	15 m See Modifiers – Set 2. Exception – 4c Tree integrity: No tree-related assessment required	15 m See Modifiers – Set 2.	No Fisheries Setback Determinants: 2b Stability: setback must be minimum 2X the height of the bank. 3c Flood risk: Assessment may be required. 4b Tree integrity: A forest stand integrity assessment is required. 5b Wildlife: Nest tree assessment required; general wildlife assessment may be required. 6b Drainage: Right-of-way of 5 m from top of bank required. 7c Trails: Generally permitted, taking into account other factors.
Very narrow but continuous up to 5 m or discontinuous but occasionally > 5m to 15 m	5-15 m See Modifiers – Set 2.		At least 5 and up to 15 m See Modifiers – Set 2. Exception – 3c Flood risk: Assessment may be required.	

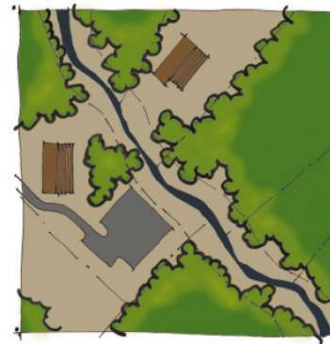


Top of Bank Or Top of Ravine Bank

Existing and Potential Vegetation



Continuous areas $\geq 30\text{m}$ or
discontinuous but occasionally
>30m to 50m.



Narrow but continuous areas
= 15m or discontinuous but
occasionally >15m to 30m.



Very narrow but continuous
areas up to 5m or discontinuous
but occasionally >5m to 15m.



Two main components:

- Riparian management objectives for Maple Ridge Class C (streams with marginal fish habitat values)
Allows other municipal aquatic management objectives to be addressed (e.g. stormwater management, risk management i.e. slope stability & erosion control, infrastructure mgmt. and maintenance, wildlife movement corridors and trail networks, species at risk, tree retention.)
- Historical land use & individual site history
- Hardship issues – size or shape of a site, complexity of a site i.e. available developable areas vs. protected area
- Rationale for setback reductions along with appropriate compensatory measures that provide an overall ‘net ecological benefit’ to natural environment.

- Riparian management objectives for Maple Ridge Class C (streams with marginal fish habitat values)
Allows other municipal aquatic management objectives to be addressed (e.g. stormwater management, risk management i.e. slope stability & erosion control, infrastructure mgmt. and maintenance, wildlife movement corridors and trail networks, species at risk, tree retention.)
- Historical land use & individual site history
- Hardship issues – size or shape of a site, complexity of a site i.e. available developable areas vs. protected area
- Rationale for setback reductions along with appropriate compensatory measures that provide an overall ‘net ecological benefit’ to natural environment.

SPR Setback considerations

Modifiers to basic setback from other management categories that are considered in final review

BEARING

*Class C

Existing or Potential Riparian Vegetation status (Figure 2-2)	FISH BEARING		NON FISH
	*Class A or AO - Upland	*Class A or AO - Lowland	*Class B (no distinction between permanent and non-permanent)
		Forested or potentially forested	Unforested (e.g., vegetated floodplain)
Narrow but continuous for 15 m or discontinuous but occasionally > 15 m to 30 m	<p>Greater of existing width, potential width or 15 m</p> <p>Modifiers – set 2:</p> <p>2b Stability: Basic setback must be 2X the height of the bank; if it is not, a geotechnical assessment may be required.</p> <p>3b Flood risk: Basic setback is adequate if certain conditions are met – see Determinants and Modifiers Table; if not, detailed assessment is required.</p> <p>4b Tree integrity: A forest stand integrity assessment is required.</p> <p>5b Wildlife: Nest tree assessment required; general wildlife assessment may be required.</p> <p>6a Drainage: Basic setback is adequate.</p> <p>7b Trails: Must be located outside the setback.</p>	<p>15 m</p> <p>See Modifiers – Set 2.</p> <p>Exception – 4c Tree integrity:</p> <p>No tree-related assessment required</p>	<p>15 m</p> <p>See Modifiers – Set 2.</p>
Very narrow but continuous up to 5 m or discontinuous but occasionally > 5m to 15 m	<p>5-15 m</p> <p>See Modifiers – Set 2.</p>		<p>At least 5 and up to 15 m</p> <p>See Modifiers – Set 2.</p> <p>Exception – 3c Flood risk: Assessment may be required.</p>

No Fisheries Setback

Determinants:

2b Stability: setback must be minimum 2X the height of the bank.

3c Flood risk: Assessment may be required.

4b Tree integrity: A forest stand integrity assessment is required.

5b Wildlife: Nest tree assessment required; general wildlife assessment may be required.

6b Drainage: Right-of-way of 5 m from top of bank required.

7c Trails: Generally permitted, taking into account other factors.

Maple Ridge based SPR adaptations

Includes opportunities for disturbed riparian lands and watercourses to be enhanced or restored where possible



Riparian Setback Determinants & Modifier Table – cont'd

Other Determinants' General Rules:

Flood risk	30 m for “ordinary” (large) streams if extensive ongoing flooding or erosion concerns. 15 m for “smaller” streams or ordinary streams under specified conditions
Tree stand integrity	30 m - retention & hazard study with mitigation required if City takes ownership; lesser setbacks may require forest stand assessment with possible re-planting requirements
Drainage	5 m buffer or right-of-way required for class C streams, for heavily built out development areas with drainage ditches, and/or for active farmed ALR agricultural lands
Trails	30 m setback - nature trail may be permitted inside or multi-purpose trail w/ pervious materials but not in setbacks \leq 15 m setback – all trails outside setback.



Riparian Setback Determinants & Modifier Table – cont'd

Wildlife – special considerations:

General Rule:

- Setback of 30 m adequate for most wildlife corridor requirements from top of bank
- Wildlife setbacks are not “determining” final setbacks until federal or provincial legal requirements in place
- Adequate buffers must be designated for nest trees for herons, eagles and other raptors protected under *Wildlife Act*





The Pilot Sites





Pilot Sites - assessments

Fisheries	Field survey using RAR Simple and Detailed Assessment methods
Slope stability	Topographic analysis and application of "General Rule"
Tree integrity	Field survey and application of "General Rule"
Wildlife	Field survey and application of nest tree requirements and current wildlife BMPs – apply and refine "General Rule"
Flood risk	Desktop analysis and application of "General Rule"
Drainage	Application of "General Rule"
Trail	Application of "General Rule"





Comparative Study

Pilot Sites – lessons learned

- Use “top of bank” or top of ravine as sole starting point for SPR assessments (except RAR-based Detailed Assessment for fisheries).
- Largest setback defined under simple assessment becomes “determining” setback for submission requirements to senior environment agencies.
- Basic fisheries setback may not be adequate for other management categories if <30 m.
- Applicant may trigger detailed RAPR assessment with variances to SRP Setbacks and approvals from senior agencies along with City of Maple Ridge SPR
- Net Habitat Benefit for any compensation related to setback reductions, variances, relocations. Starts at 2:1 for reductions below 30m. A 3:1 net benefit is required for variances below 15 metres.



Questions, Comments, Discussion

