

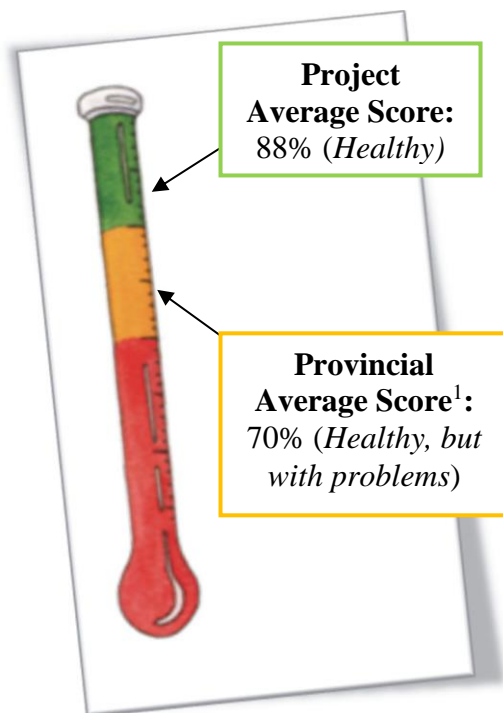
# Cows and Fish

Alberta Riparian Habitat Management Society



## Riparian Health Summary Report – 2018 Bighill Creek

A Riparian Health Assessment is a tool designed to help individuals and organizations evaluate and understand the health of riparian areas within their landholdings and watersheds. This information is intended to document the current state of riparian health and help direct future efforts to promote important riparian functions, such as improved water quality, forage production, and fish habitat. To assess a trend in riparian health, we recommend that riparian health assessments be repeated every three to five years to track progress and riparian recovery in response to a management change.



This summary report provides information on the riparian health of **3 sites** along Bighill Creek, based on data we collected in **July 2018**. Information obtained from the assessment of riparian health in the watershed will help to inform and facilitate landscape management planning within the local municipality, and further encourage private landowners to understand and effectively manage riparian areas under their care.

This project was initiated by the Bighill Creek Preservation Society (BCPS) and funded by Alberta Ecotrust with in-kind support from Cows and Fish.

The Bighill Creek watershed and associated riparian areas provide important fish and wildlife habitat, improve water quality, and maintain water quantity on the landscape. The project area encompasses two riparian sites on private landholdings and one site on County owned land along Bighill Creek. The riparian sites were assessed using the *Alberta Lotic Health*

*Assessment (Survey)*. Overall, all sites assessed as part of this project rate *healthy*, as shown in Table 1. The average riparian health rating for all three sites in the project area is 88% well above the provincial average (70%, *healthy, but with problems*)<sup>1</sup>. The project area includes approximately 14 hectares of riparian habitat and 1.9 kilometers of streambank.

To better understand the overall health rating for the project area, it is helpful to take a closer look at which pieces of the riparian area are intact and functioning and which are not. Table 1 lists the health parameters evaluated and how they rate for the Bighill Creek project sites. Figure 2 provides an overview of the health ratings for each of the riparian health parameters assessed.

<sup>1</sup> Cows and Fish Riparian Health Inventory Data 1996 – 2017. Based on 2,803 sites, on 728 waterbodies in Alberta.

**Table 1 Riparian Health Parameters Evaluated along Bighill Creek by Number of Sites in each Health Category (3 Sites)**

RIPARIAN HEALTH	RIPARIAN HEALTH CATEGORY		
PARAMETER	HEALTHY	HEALTHY, BUT WITH PROBLEMS	UNHEALTHY
<b>VEGETATION</b>	Number of Sites Per Health Category		
1. Vegetative Cover of Riparian Area	3	0	0
2a. Invasive Plant Species - Cover	0	3	0
2b. Invasive Plant Species - Density / Distribution	0	0	3
3. Disturbance-Caused Undesirable Herbaceous Species	1	2	0
4. Preferred Tree/Shrub Establishment & Regeneration	3	0	0
5a. Utilization of Preferred Trees and Shrubs	0	1	2
5b. Live Woody Vegetation Removal Non-Browse	3	0	0
6. Decadent and Dead Woody Material	3	0	0
<b>Number of Sites by Overall Vegetation Health Category</b>	<b>2</b>	<b>1</b>	<b>0</b>
<b>SOIL/HYDROLOGY</b>			
7. Streambank Root Mass Protection	3	0	0
8. Human-caused Bare Ground	3	0	0
9. Human-caused Streambank Structural Alterations	2	1	0
10. Human Physical Alterations to Rest of Lotic Site	3	0	0
11. Stream Channel Incisement	3	0	0
<b>Number of Sites by Overall Soil/Hydrology Category</b>	<b>3</b>	<b>0</b>	<b>0</b>
<b>NUMBER OF SITES BY OVERALL HEALTH CATEGORY</b>	<b>3</b>	<b>0</b>	<b>0</b>

	<b>Healthy (80-100%)</b> – Little or no impairment to riparian functions.
	<b>Healthy, but with problems (60-79%)</b> – Some impairment to riparian functions due to human or natural causes.
	<b>Unhealthy (&lt;60%)</b> – Impairment to many riparian functions due to human or natural causes.

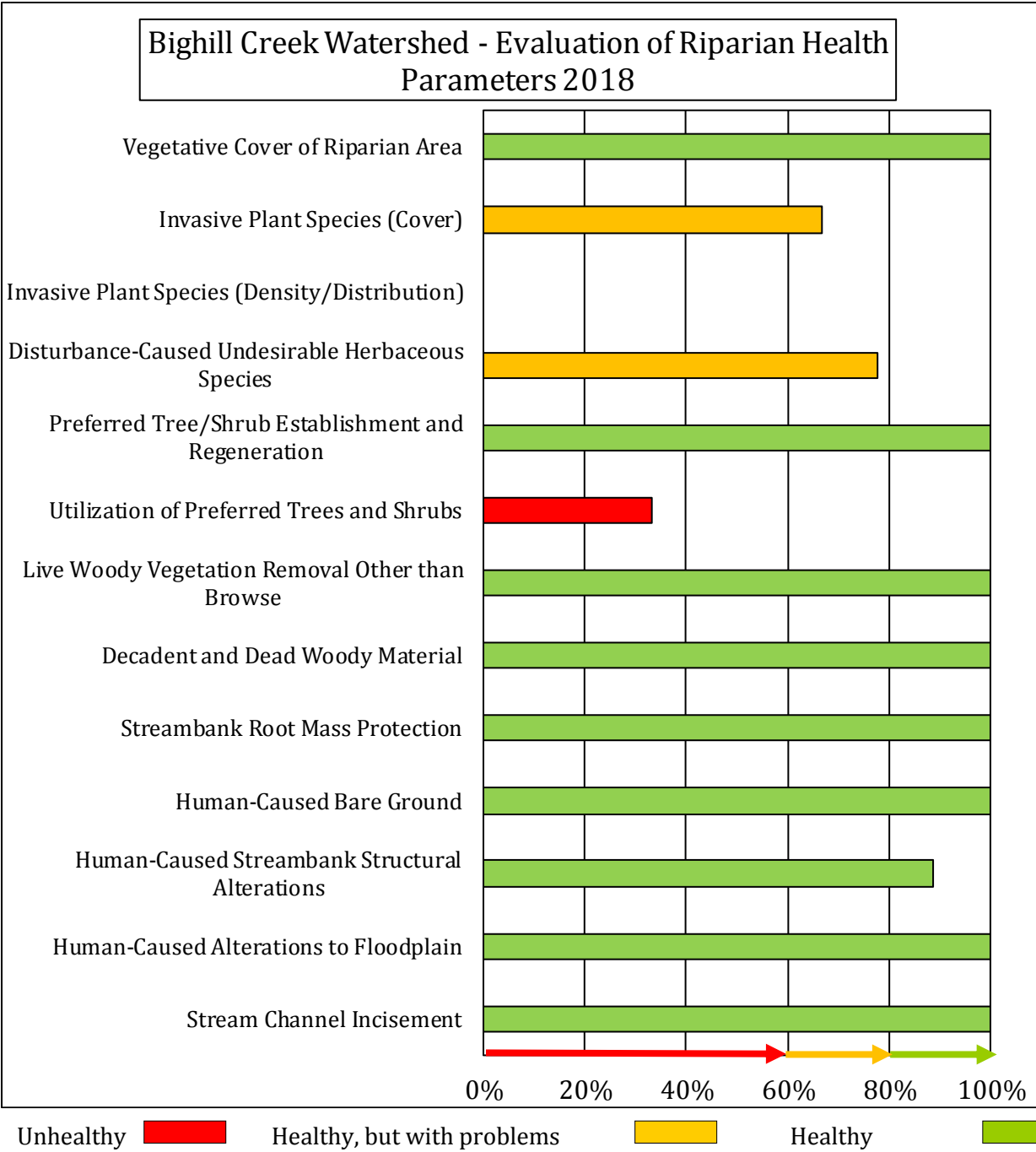
All three sites assessed were along Bighill Creek which is considered a perennial stream. A *Perennial Stream* flows continuously for most of most years and is fed in part from springs or groundwater discharge. Perennial streams are less than 15m wide.

**Table 2. Project Area Site Description**

Site Number	Waterbody Type	Riparian Distance Inventoried (km)	Riparian Area Inventoried (ha)	Average Riparian Width (m)
BIG4	Perennial Stream	0.9	5.8	82
BIG7	Perennial Stream	0.6	3.3	136
BIG8	Perennial Stream	0.3	5.0	220
		<b>Total KM</b>	<b>Total Ha</b>	<b>Avg. width</b>
		<b>1.8</b>	<b>14.1</b>	<b>146</b>

Collectively, the vegetation parameters in the project area rate *healthy, but with problems* (71%). Riparian areas are well vegetated on all sites with a diversity of mostly native species. In total, 119 different species were recorded, of which 79% are native. Plant *community or habitat types* in the project area include: **yellow willow / red-osier dogwood habitat type** with 37% cover, **awned sedge habitat type** with 32% cover, **beaked willow / awned sedge habitat type** with 23% cover, **white spruce / low-bush cranberry habitat type** with 4% cover and **flat-leaved willow / water sedge habitat type** with 3% cover. The remaining 1% was designated as open water and was excluded from the site. Preferred tree and shrub regeneration is considered *excellent* on all sites, with each site having greater than 15% of the canopy cover of preferred trees and shrubs being seedlings and/or saplings. Structural diversity is important for providing different habitat layers for livestock and wildlife as well as ensuring longevity of the stand. Beaver activity was noted on two of the sites, only one of which showed signs of recent activity. Live woody vegetation removal by beaver use (chewed, cut stems) or human clearing is not a concern in the project area. Although beavers can reduce the tree canopy in the short term, beaver cuttings often stimulate regeneration and suckering of willows and poplars which has a long-term benefit to riparian health. Beaver ponds and dams can also benefit riparian restoration efforts and promote resiliency by raising the water table, flooding out weedy species and promoting conditions for native sedges and willows to thrive.

Detracting from the vegetative health is the presence of 4 invasive weed species which cover approximately 1% of the project area. These species include: Canada thistle, common tansy, perennial sow-thistle and tall buttercup (in order of highest to lowest % cover). These noxious weeds are well distributed throughout the project area and all sites have weeds present. Disturbance-caused undesirable herbaceous species cover approximately 6.5% of the project area and commonly include introduced grasses like Kentucky bluegrass, smooth brome and quack grass. Disturbance-caused plants tend to be shallow rooted and have limited value for bank binding, nutrient filtration and erosion prevention. Browse or utilization of preferred trees and shrubs by livestock or wildlife in the project area ranges from light to heavy. Woody plants can sustain low levels of use but continuous browsing at moderate or heavy levels can deplete root reserves and inhibit establishment and regeneration. The indicators of heavy browse are umbrella-shaped mature shrubs and flat-topped or hedged seedlings and saplings.



**Figure 2. Riparian Health Parameter Ratings for Bighill Creek Watershed 2018 Project Area**

The soil/hydrology parameters in the project area rated *healthy* (98%) on average. Streambank root mass protection is *excellent* on all sites, with native grasses and willows providing most of this bank cover. The role of streambank vegetation is to maintain the integrity and structure of the bank by dissipating energy, resisting erosion, and trapping sediment to build and restore banks. Healthy, well vegetated riparian areas slow the rate of erosion and balance erosion in one spot with bank increases elsewhere through deposition. The overall cover of bare soil due to human or livestock causes is low in the project area, with each site having less than 1% of the area comprised of human-caused bare ground. Recreation and livestock grazing impacts contribute to the amount of bare ground observed. Two of the sites have little to no concern with

alterations to the streambank having less than 5% and between 5-15% of the bank altered. The remaining site shows no evidence of physical alterations to the bank. Human activities can over time alter the soil structure, stability, and slope of a riparian area and are usually related to soil compaction from livestock trailing and construction (roads, berms, dugout etc.) in grazing situations and trailing from people and/or vehicles in recreational situations. Modifications to the natural soil structure, stability, and slope can reduce the ability of the riparian area to perform key functions such as water infiltration and storage. All three sites have no concerns with physical alterations to the riparian area as each site has less than 5% of the riparian area altered due to human or livestock activities. However, although localized these alterations range from slight to moderate across sites and are mainly due to recreational trails and livestock use. Stream flows in the project area are not restricted from accessing the floodplain. Periodic flood events are important to disperse moisture throughout the riparian area for the maintenance of riparian vegetation. Flooding also spreads the energy of moving water over the riparian area, allowing sediment to be deposited and creating new areas for seedling establishment. Incisement occurs when the channel bed lowers within the floodplain so that high water events cannot escape the banks of a regular basis. There was no channel incisement observed in the project area and natural processes are progressing unhindered.

Management recommendations for the riparian areas assessed have been included with each individual site report. These include (but are not limited to): improving grazing management (for those sites that are grazed), promoting and maintaining native plant communities, invasive weed monitoring and control, minimizing new human-caused ground disturbance and allowing for rest and natural recovery of disturbed areas. Landowners are encouraged to maintain best management practices already in place, such as riparian exclusion fencing, off-site water development, hardened crossings and designated trails, to continue to improve riparian health.

For further information on any aspect of this summary, please contact:

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