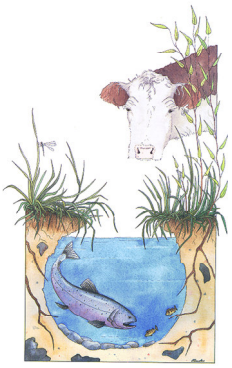
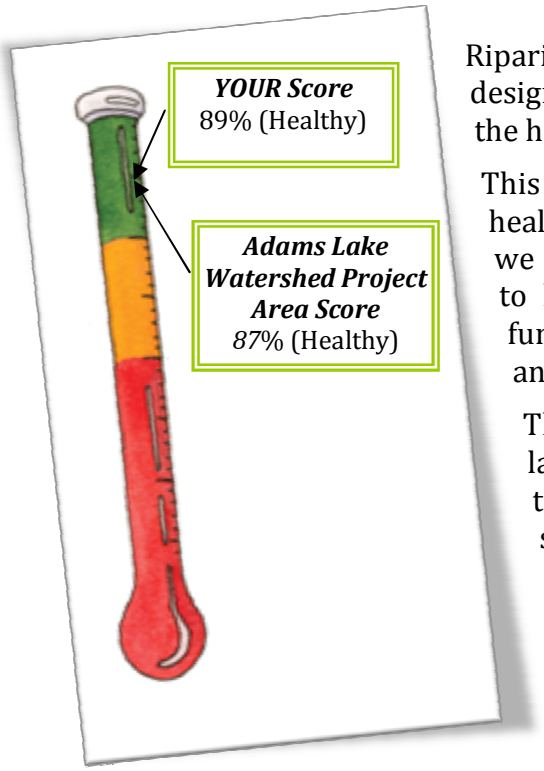
Cows and Fish

Alberta Riparian Habitat Management Society



Riparian Health Summary Report 2011

Rob and Doris Nanninga
Adams Lake



Riparian Health Inventories and Assessments are tools designed to help individuals like you evaluate and understand the health of riparian areas within your landholdings.

This summary report provides information on the current health of your riparian area along **Adams Lake** based on data we collected on **June 21, 2011**. This information is intended to help direct your efforts to promote important riparian functions such as improved water quality, forage production and fish habitat.

This project was initiated by Red Deer County and landowners in the Adams Lake watershed and was funded through Red Deer County and Cows and Fish. In total, eight sites were assessed within the Adams Lake Watershed project area. Overall, the average riparian health of these sites is healthy (87%). Your site scored 89% (healthy), slightly above the project average. An explanation of your score can be found starting on page 2.

D. White, RHIP01ADS011

Your Riparian Health Score

A description of how health score categories are derived can be found in the *Riparian Health Score Sheet Categories for Lakes and Wetlands* (Appendix C, page 10).

Waterbody: Adams Lake **Location:** SE 10-36-4 W5M

Site Code: ADS1 **Inventory Date:** June 21, 2011

QUESTION	YOUR SCORE	MAXIMUM SCORE	
VEGETATION			
1. Vegetative Cover of Site	6	6	
2a. Invasive Plant Species (Cover)	2	3	
2b. Invasive Plant Species (Density Distribution)	1	3	
3. Disturbance-Caused Undesirable Herbaceous Species	3	3	
4. Preferred Tree and Shrub Establishment and Regeneration	6	6	
5a. Browse Utilisation of Available Preferred Trees and Shrubs	3	3	
5b. Live Woody Vegetation Removal by Other than Browsing	3	3	
6. Human Alteration of Site Vegetation	6	6	
Vegetation Rating	**30**	**33**	**91%**
SOIL/HYDROLOGY			
7a. Human Alteration of Site Physical Structure	12	12	
7b. Severity of Human-Caused Alterations to Physical Site	2	3	
8. Human-Caused Bare Ground	6	6	
9. Degree of Artificial Removal/Addition of Water	6	9	
Soil/Hydrology Rating	**26**	**30**	**87%**
OVERALL RATING	**56**	**63**	**89%**

Healthy (80-100%) – Little or no impairment to riparian functions.

Healthy but with Problems (60-79%) – Some impairment to riparian functions due to human or natural causes.

Unhealthy (<60%) – Impairment to many riparian functions due to human or natural causes.

Riparian Health Score Discussion

Riparian areas are defined by the presence of vegetation and soils that are highly influenced by water. In some lake habitats this may extend some distance inland and/or into the water (including the littoral zone where the cattails and bulrushes generally grow).

The inventory was completed along approximately 310 meters of the shoreline and encompassed an area of 2.4 hectares (5.8 acres). Riparian area width ranged from 30 to 180 meters. As a result of the riparian area not being subjected to land use pressures, it has maintained its natural structure and plant communities.

An aerial image and benchmark photographs of the site are provided in Appendix A (page 7). A list of plant species found on the site is given in Appendix B (page 8).

The following points elaborate on the Riparian Health Score outlined in the table above.

- **Overall, the riparian area is well vegetated.** The majority of the site is covered by a sedge community, with a band of common cattail along the water's edge. Trees and shrubs were found along the back or drier edge of the riparian area. Native plants dominate the site, with only minimal cover by non-native species. A large amount of vegetative cover helps to perform riparian functions such as filtering nutrients and stabilising soil surfaces.

- **Invasive plant species are present.** Invasive plants include ***prohibited noxious*** and ***noxious*** weeds listed on the *Weed Control Act of Alberta* and other non-native species known to be problematic in riparian areas. Invasive species spread rapidly and are difficult to control. Two species of invasive plants were observed at this site: Canada thistle and perennial sow-thistle. Canada thistle was more common, being found in a patch as well as sporadically throughout the site. Only a few sporadic perennial sow-thistle plants were found. Invasive plants were most prevalent throughout the drier portions of the riparian area. Continuing to allow the riparian area to remain in its natural state will help to discourage the further spread of invasive plants.

- **Disturbance-caused undesirable plant species are also present.** These plants are typically non-native grasses and forbs (broad-leaf plants) that have a tendency to aggressively displace native plants once the soil surface has been disturbed. Disturbance-caused plants tend to be shallow rooted and have limited value for bank binding, nutrient filtration and erosion prevention. Kentucky bluegrass and other disturbance-caused plants, such as common dandelion and quack grass, were found throughout less than 5% of the riparian area and were most abundant near the east end of the site surrounding areas used for recreational access. It may not be realistic to completely eliminate these undesirable species from the riparian area; however, their progression can be inhibited by continuing to minimise disturbance to the soil surface and maintain overall vegetation cover.

- **Preferred woody plant communities (e.g. willows) are present and display signs of regeneration.** 'Preferred' woody plants refer to those trees and shrubs that have high forage and habitat values for livestock and wildlife and are often good indicators for assessing riparian health. Willows were found throughout the site, but provide little overall cover. Other tree and shrub communities were found along the outer edges of the riparian area and included both apsen and balsam poplar. Throughout the site, preferred woody plants displayed good age class structure – young, middle-aged and mature plants were all present. The presence of young plants is particularly important to ensure the longevity of woody plant communities. There were a few seedling white spruce observed within the site from plantings that occurred the previous year. These seedlings appeared to well established.

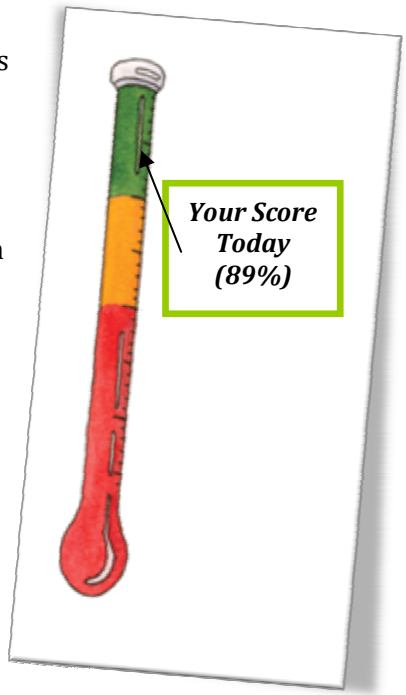
- **Browsing pressure (utilisation of woody plants by wildlife and/or livestock) is not impacting woody plant communities.** Most trees and shrubs throughout the riparian site are not being browsed by wildlife; however, some of the more palatable species, such as beaked willow and saskatoon, are receiving light utilisation. The current level of browse pressure is natural and is not having a negative effect on the health of woody plant communities.

- **Removal of live woody material by means other than browsing is minimal.** This parameter refers to the removal of parts of, or whole, trees and shrubs by beaver or human actions (i.e. logging). This type of activity can result in many of the same negative effects to the plant community, such as loss of species diversity and wildlife habitat, which are caused by excessive browsing. At the time of the inventory, some removal of woody plant material by beavers was observed, but was affecting less than 5% of the woody plant cover. Beavers have the potential to negatively affect the riparian area over the short term, as their impacts are direct and immediate. However, beavers are a natural part of the ecosystem and, in the long term, provide many ecological

benefits, such as improved water quality, more reliable water sources, decreased risk of major flood events and habitat creation.

- **Plant communities within the riparian area have not been significantly altered by human activities.** Clearing along the trail at the east end of the site was the only evident alteration to the plant community. This activity was impacting less than 1% of the riparian area. Allowing riparian plant communities to remain natural will continue to benefit the riparian area and provide for ecological functions such as filtering nutrients, maintaining water quantity and quality and providing forage and habitat for wildlife.
- **Human-caused bare ground and structural alterations to the riparian area are minimal.** Recreational use of the riparian area has created some human-caused bare ground as well as a small amount of soil compaction within the riparian area. Although present, human-caused bare ground and structural alterations affect less than 1% of the site. The severity of these structural alterations is considered to be slight because they have not had a significant impact on plant communities and have not altered hydrological functions such as water infiltration and storage.
- **The present degree of artificial water level change (i.e. removal or addition of water by human activities) is minor.** This inventory acknowledges that Adams Lake is subjected to minor water level change. The man-made outlet control structure located on the east side of Adams Lake is maintaining a higher and likely more permanent water level than might naturally be expected. The shore areas within this site remain well vegetated and withdrawal or addition of water is limited or slow enough that vegetation is able to maintain growth and prevent bare soil. Naturally, wetlands will experience cycles of higher and lower water. Native vegetation is typically adapted to respond to this variability, particularly by growing in areas of exposed shoreline when the water level goes down. Human-caused water fluctuation, when present, and depending on the degree of fluctuation, can challenge many riparian functions. This can result in, but is not limited to, increasing erosion and hindering establishment and/or preservation of native plant communities. The current rate of artificial water level change in Adams Lake does not appear to be significantly hindering the establishment of riparian plant communities along the lake and is therefore minor.

How Can You Improve or Maintain Riparian Health?



Now that you know and understand the current health of your riparian area it is important to set management goals to maintain this state of health.

Priority Management Goals

From our observations, your riparian area would benefit most from management actions that:

- Reduce invasive weed cover;
- Maintain existing tree and shrub cover; and
- Continue to limit disturbance to the soil surface.

Riparian Management Strategies

To maintain your riparian health, here are a few helpful **management strategies** to consider:

- **Control invasive plants.** Contact Red Deer County for assistance and information about managing invasive plants (Art Preachuk, Agricultural Fieldman, Phone (403) 350-2162, apreachuck@rdcounty.ca). In addition to your agricultural fieldman you can review invasive weed identification and control measures on the Alberta Invasive Plant Council website, located at www.invasiveplants.ab.ca.
- **Maintain existing, and promote further establishment of riparian plant species (i.e. cattails, sedges and willows).** Vegetated shorelines protect against wind, water and ice, which erode shorelines over time. Vegetation traps sediments and nutrients, rebuilding shorelines and improving water quality. These types of plant communities also provide habitat for a diversity of bird and wildlife species. The conservation easement in place for 20 years (now expired) has contributed to overall riparian function and the health of native plant communities.
- **Continue to allow the natural growth of preferred woody plant material to occur.** These plants are important for stabilising shoreline substrates and soil surfaces, and play a vital role in the succession of native plant communities.
- **Monitor the establishment of planted trees.** It is important to monitor the success rate of planted trees or shrubs. Competition with surrounding vegetation, moisture availability, erosion and browse pressure may limit the ability of plantings to establish and survive. Any future plantings should continue to utilise native tree and shrub species.
- **Limit future development and/or subdivision of lands within the riparian area.** This type of land use can contribute significantly to habitat fragmentation, which can be detrimental to wildlife. The Adams Lake Watershed project area is providing critical flyways and byways for wildlife in the area. Large, un-impacted areas of habitat are becoming less frequent in Alberta, and should be preserved.
- **Maintain light recreational and/or human activities.** Minimising or localising existing, or future, recreational use, while allowing the majority of the shoreline to remain in its natural state, will ensure ongoing riparian function.
- **Get to know your watershed.** Watershed activities may alter flow or water levels, impacting your riparian area.

- **Continue learning.** Watch for opportunities to learn more about riparian management techniques and your landscape at events such as workshops and field days.
- **Be proactive, active, involved and informed.** There are people in your area working together to better understand the watershed and how individuals can join forces to make improvements or maintain the health of lakes and water in general. Watch for future activities to get to know your neighbors and learn more about your watershed, including a meeting on March 2, 2012 to discuss the results of the Adams Lake Riparian Health Inventory Project.

> ***Please note:*** *For a more specific Management Plan and more in depth analysis of your current management, further understanding of your property's goals and ownership boundaries would be required. If this is something you are interested in, please contact us for more information.*

Monitoring

To track your progress toward improving the health of your landscape, we encourage you to document and take photographs of riparian sites. Monitoring may be as simple as re-taking photographs taken during our inventory or at other locations that are of interest to you.

To assess riparian health trend, we recommend that health assessments be repeated every three to five years. The field workbook ***Riparian Health Assessment for Lakes, Sloughs and Wetlands*** is available from Cows and Fish. This workbook explains how to conduct a rapid survey to quickly check the health status of your riparian area.

Please contact Cows and Fish if you would like assistance in monitoring the long-term health of your riparian area. The Cows and Fish website (www.cowsandfish.org) has additional information on riparian areas, management, community tools for dealing with riparian issues and community and landowner riparian success stories.

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

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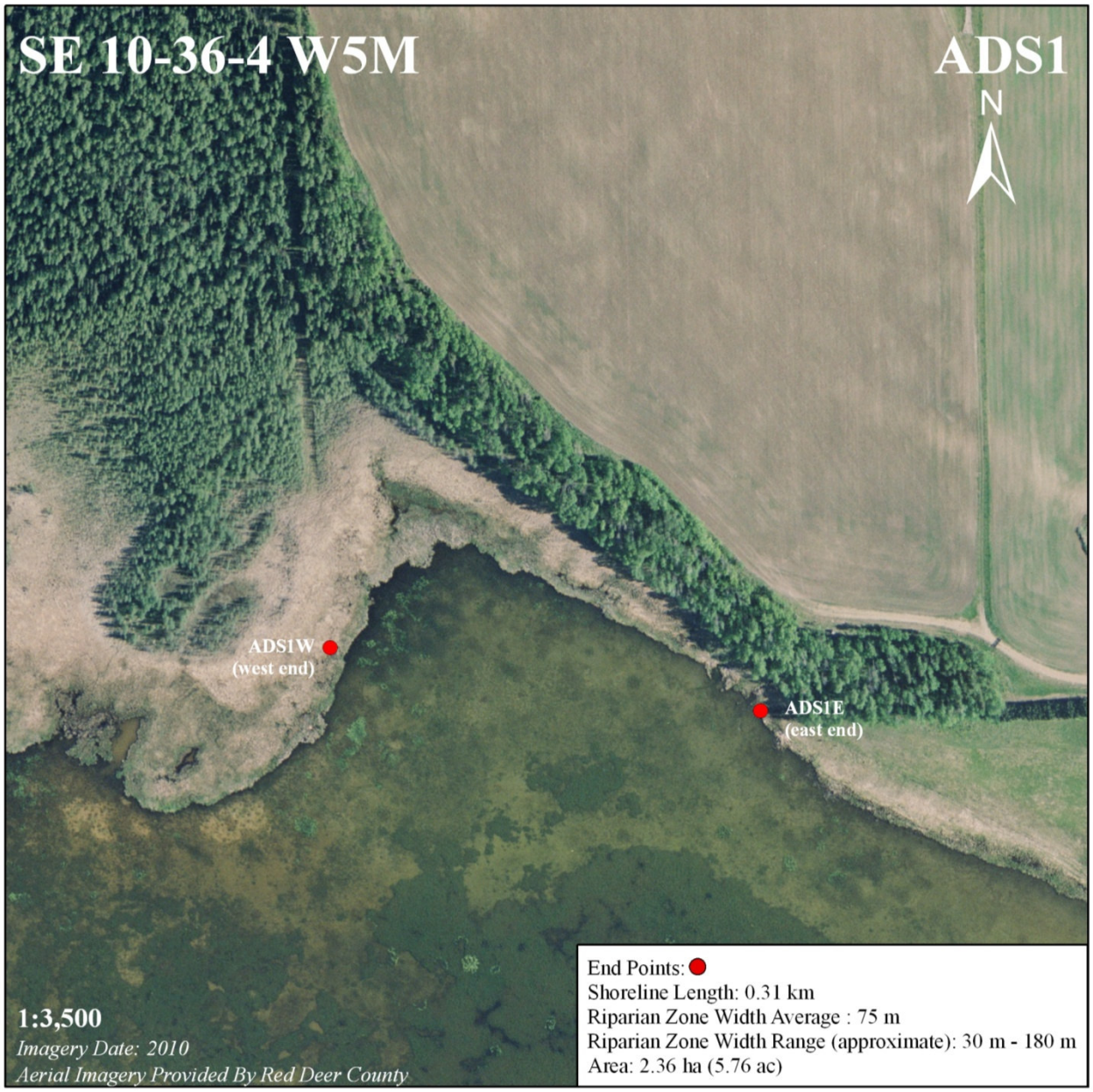


D. White, RHIP01ADS002

ADS1W. West end, south view. The site is well covered by native, riparian vegetation.

D. White, RHIP01ADS011

ADS1E. East end, west view. The riparian area remains in a natural state, allowing it to effectively perform its many functions.

Appendix B - Riparian Plant Information (ADS1)

Category	Species Common Name *(Scientific Name)*	Plant Status[1]	% Canopy Cover[2] ADS1
Trees	aspen *(Populus tremuloides)*	native	10.0
	balsam poplar *(Populus balsamifera)*	native	10.0
	tamarack *(Larix laricina)*	native	3.0
	white spruce *(Picea glauca)*	native	0.5
Shrubs	basket willow *(Salix petiolaris)*	native	0.5
	beaked willow *(Salix bebbiana)*	native	3.0
	bog birch *(Betula glandulosa)*	native	3.0
	bog willow *(Salix pedicellaris)*	native	0.5
	bracted honeysuckle *(Lonicera involucrata)*	native	0.5
	buckbrush/snowberry *(Symphoricarpos occidentalis)*	native	3.0
	choke cherry *(Prunus virginiana)*	native	0.5
	common wild rose *(Rosa woodsii)*	native	0.5
	false mountain willow *(Salix pseudomonticola)*	native	0.5
	hoary willow *(Salix candida)*	native	3.0
	red-osier dogwood *(Cornus stolonifera)*	native	0.5
	saskatoon *(Amelanchier alnifolia)*	native	0.5
	wild red raspberry *(Rubus idaeus)*	native	0.5
	yellow willow *(Salix lutea)*	native	0.5
Grasses (and Grass-like species)	bluejoint *(Calamagrostis canadensis)*	native	10.0
	fowl bluegrass *(Poa palustris)*	native	3.0
	Kentucky bluegrass *(Poa pratensis)*	*disturbance, introduced*	3.0
	quack grass *(Agropyron repens)*	*disturbance, introduced*	0.5
	reed canary grass *(Phalaris arundinacea)*	native	0.5
	rush-like sedge *(Carex scirpoidea)*	native	0.5
	small bottle sedge *(Carex utriculata)*	native	0.5
	small-fruited bulrush *(Scirpus microcarpus)*	native	3.0
	two-stamened sedge *(Carex diandra)*	native	3.0
	water sedge *(Carex aquatilis)*	native	60.0
	wire rush *(Juncus balticus)*	native	10.0
Forbs (broad leaf plants)	common cattail *(Typha latifolia)*	native	10.0
	alfalfa *(Medicago sativa)*	*introduced*	0.5
	alsike clover *(Trifolium hybridum)*	*disturbance, introduced*	0.5
	arrow-leaved coltsfoot *(Petasites sagittatus)*	native	3.0
	Canada goldenrod *(Solidago canadensis)*	native	0.5
	Canada thistle *(Cirsium arvense)*	***invasive**, introduced*	0.5
	common blue-eyed grass *(Sisyrinchium montanum)*	native	0.5
	common dandelion *(Taraxacum officinale)*	*disturbance, introduced*	0.5
	common fireweed *(Epilobium angustifolium)*	native	0.5
	common horsetail *(Equisetum arvense)*	native, *poisonous*	0.5
	common yarrow *(Achillea millefolium)*	native	0.5
	early blue violet *(Viola adunca)*	native	0.5
	marsh cinquefoil *(Potentilla palustris)*	native	0.5
	marsh-marigold *(Caltha palustris)*	native	0.5
	perennial sow-thistle *(Sonchus arvensis)*	***invasive**, introduced*	0.5

Forbs (broad leaf plants) Continued	seaside arrow-grass *(Triglochin maritima)*	native, *poisonous*	0.5
	star-flowered Solomon's-seal *(Smilacina stellata)*	native	0.5
	tall lungwort *(Mertensia paniculata)*	native	3.0
	three-flowered avens *(Geum triflorum)*	native	0.5
	vine-leaved coltsfoot *(Petasites vitifolius)*	native	0.5
	water smartweed *(Polygonum coccineum)*	native	0.5
	western dock *(Rumex occidentalis)*	native	0.5

[1] Plant status is designated by Cows and Fish in association with Alberta Public Lands and the Alberta Weed Control Act.

[2] Based on visual estimates of the amount of ground the canopy of the plant covers. The percent cover values presented are the mid-values for the following ranges: 0.5=less than 1%; 3.0=1%-5%; 10.0=5%-15%; 20.0=15%-25%; 30.0=25%-35%; 40.0=35%-45%; 50.0=45%-55%; 60.0=55%-65%; 70.0=65%-75%; 80.0=75%-85%; 90.0=85%-95%; 97.5=greater than 95%.

Appendix C - Riparian Health Score Sheet Categories for Lakes and Wetlands

Some factors on the evaluation will not apply on all sites. For example, sites without potential for woody species are not rated on factors concerning trees and shrubs. Vegetative site potential can be determined by using a key to site type. On severely disturbed sites, vegetation potential can be difficult to determine. On other sites, clues to potential may be sought on nearby sites with similar landscape position.

Most of the factors in this evaluation are based on ocular estimations. Such estimation may be difficult on large, brushy sites where visibility is limited, but extreme precision is not necessary. While the rating categories are broad, evaluators do need to calibrate their eye with practice. It is important to remember that a health rating is not an absolute value. The factor breakout groupings and point weighting in the evaluation are somewhat subjective and are not grounded in quantitative science so much as in the collective experience of an array of riparian scientists, range professionals and land managers.

Each factor below will be rated according to conditions observed on the sites. The evaluator will estimate the scoring category and enter the value on the score sheet. It is important to **remember that a health rating is not an absolute value**. Each factor is rated according to conditions observed on the site at the time of evaluation.

1. Vegetative Cover of Polygon

6 = More than 95% of the polygon area is covered by plant growth.
4 = 85% to 95% of the polygon area is covered by plant growth.
2 = 75% to 85% of the polygon area is covered by plant growth.
0 = Less than 75% of the polygon area is covered by plant growth.

2a. Total Canopy Cover of Invasive Plant Species

3 = No invasive plants (weeds) on site.
2 = Invasive plants present with total canopy cover less than 1% of the polygon area.
1 = Invasive plants present with total canopy cover between 1 and 15% of the polygon area.
0 = Invasive plants present with total canopy cover more than 15% of the polygon area.

2b. Density/Distribution of Invasive Plant Species (Table 1)

3 = No invasive plants (weeds) on site.
2 = Invasive plants present with density/distribution in categories 1, 2 or 3.
1 = Invasive plants present with density/distribution in categories 4, 5, 6 or 7.
0 = Invasive plants present with density distribution in categories 8 or higher.

3. Disturbance-Caused Undesirable Herbaceous Species

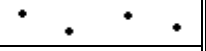
3 = Less than 5% of the site covered by disturbance-caused undesirable herbaceous species.
2 = 5% to 25% of the site covered by disturbance-caused undesirable herbaceous species.
1 = 25% to 50% of the site covered by disturbance-caused undesirable herbaceous species.
0 = More than 50% of the site covered by disturbance-caused undesirable herbaceous species.

4. Preferred Tree and Shrub Establishment and Regeneration

(N/A will appear in the Riparian Health Score Table if the polygon lacks potential for preferred trees or shrubs)

6 = More than 15% of the total canopy cover of preferred trees/shrubs is seedlings and saplings.
4 = 5% to 15% of the total canopy cover of preferred trees/shrubs is seedlings and saplings.
2 = Less than 5% of the total canopy cover of preferred trees/shrubs is seedlings and saplings.
0 = Preferred tree/shrub seedlings and saplings absent.

Table 1. Density/distribution of invasive plant species.

CLASS	DESCRIPTION OF ABUNDANCE	DISTRIBUTION PATTERN
0	No invasive plants on the polygon	
1	Rare occurrence	
2	A few sporadically occurring individual plants	
3	A single patch	
4	A single patch plus a few sporadically occurring plants	
5	Several sporadically occurring plants	
6	A single patch plus several sporadically occurring plants	
7	A few patches	
8	A few patches plus several sporadically occurring plants	
9	Several well spaced patches	
10	Continuous uniform occurrence of well spaced plants	
11	Continuous occurrence of plants with a few gaps in the distribution	
12	Continuous dense occurrence of plants	
13	Continuous occurrence of plants associated with a wetter or drier zone within the polygon	

5a. Browse Utilisation of Available Preferred Trees and Shrubs

(N/A will appear in the Riparian Health Score Table if the site lacks potential for preferred trees or shrubs)

3 = None (0% to 5% of available 2nd year and older leaders of preferred species are browsed).
2 = Light (5% to 25% of available 2nd year and older leaders of preferred species are browsed).
1 = Moderate (25% to 50% of available 2nd year and older leaders of preferred species are browsed).
0 = Heavy (More than 50% of available 2nd year and older leaders of preferred species are browsed).

5b. Live Woody Vegetation Removal by Other than Browsing

(N/A will appear in the Riparian Health Score Table if the site lacks potential for trees or shrubs)

3 = None (0% to 5% of live woody vegetation expected on the site is lacking due to cutting and/or removal by beaver).
2 = Light (5% to 25% of live woody vegetation expected on the site is lacking due to cutting and/or removal by beaver).
1 = Moderate (25% to 50% of live woody vegetation expected on the site is lacking due to cutting and/or removal by beaver).
0 = Heavy (More than 50% of live woody vegetation expected on the site is lacking due to cutting and/or removal by beaver).

6. Human Alteration of Polygon Vegetation

6 = Less than 5% of polygon vegetation is altered by human activity.
4 = 5% to 15% of polygon vegetation is altered by human activity.
2 = 15% to 35% of polygon vegetation is altered by human activity.
0 = More than 35% of polygon vegetation is altered by human activity.

7a. Human Alteration of Site Physical Structure

12 = Less than 5% of the site is physically altered by human activity.
8 = 5% to 15% of the site is physically altered by human activity.
4 = 15% to 35% of the site is physically altered by human activity.
0 = More than 35% of the site is physically altered by human activity.

7b. Severity of Human-Caused Alteration of Site Physical Structure

3 = ***No physical alterations*** to the site by human activity.
2 = Human alterations to the physical site are ***slight*** in effect.
1 = Human alterations to the physical site are ***moderate*** in effect.
0 = Human alterations to the physical site are ***severe*** in effect.

8. Human-Caused Bare Ground

6 = Less than 1% of the sites is human-caused bare ground.
4 = 1% to 5% of the site is human-caused bare ground.
2 = 5% to 15% of the site is human-caused bare ground.
0 = More than 15% of the site is human-caused bare ground.

9. Degree of Artificial Removal/Addition of Water (Table 2)

9 = The Waterbody is 'Not Subjected' to artificial water removal/addition.
6 = Degree of artificial water removal/addition is 'Minor'.
3 = Degree of artificial water removal/addition is 'Moderate'.
0 = Degree of artificial water removal/addition is 'Extreme'.

Table 2. Categories of Lentic Water Removal Severity.

CATEGORY	DEFINITION
Not Subjected	The waterbody is not subjected to artificial drawdown.
Minor	The waterbody is subject to no more than minor artificial water level change. The shore area remains vegetated and withdrawal of water is limited or slow enough that vegetation is able to maintain growth and prevent exposed soil. A relatively narrow band affected by the water level fluctuation may support only annual plants.
Moderate	The waterbody is subject to moderate quantities, speed and/or frequency of artificial water level change. Where water is removed, it is done in a way that allows pioneer plants to vegetate at least half of the exposed area resulting from drawdown. Where water is added, some flooding may occur at levels or times not typical to the area/season.
Extreme	The waterbody is subjected to extreme changes in water level due to volume (extent), speed and/or frequency of artificial water addition or removal. Frequent or unnatural levels of flooding occur where water is added, including extensive flooding into riparian and/or upland areas; or no natural annual drawdown is allowed to occur. In extreme artificial drawdown situations, a wide band of exposed bottom remains unvegetated.