

8.5 Riparian Protection

8.5.1 Background

A riparian area is the transition zone between aquatic and terrestrial ecosystems, where the presence of water supports the growth of water-tolerant vegetation and soils are modified due to temporary or permanent inundation.

As transition zones between the terrestrial and aquatic environment, riparian areas have a variety of functions. Riparian areas protect water quality by slowing the flow of water to facilitate the trapping of sediment (Cooper et al. 1987), nutrients (Gilliam 1994; Vought et al. 1994; Daniels and Gilliam 1996) and bacteria in soils and vegetation. Riparian vegetation is also a key component of streambank stability, as deep binding root mass holds soil together. The impact of stormwater runoff is also lessened by healthy riparian areas as flood water is absorbed in soils and released slowly throughout the remainder of the year. Overhanging riparian vegetation can moderate water temperature, making the creek more suitable for higher species of aquatic life. Finally, the riparian corridor maintains habitat diversity and allows for improved wildlife species distribution and diversity (Castelle et al. 1994). Generally, riparian areas are a small fraction of the landscape, comprising less than 2% of land area; their role, however, is essential to preserving the health of the Nose Creek Watershed.

Principles

Healthy riparian areas contribute to better water quality, stable stream banks, flood reduction and wildlife habitat in the Nose Creek Watershed.

8.5.2 Recommendations to Protect Riparian Areas

Setbacks

- 10 a.** *The riparian setback width should be determined on a site-specific basis based on the greatest of three criteria: the 1:100 year floodplain, the meander belt (20x the bank full width) and the width of escarpments (lands having > 15% slope) that lie adjacent to the meander belt and/or floodplain as per the Riparian Area Management Map (Appendix G). For more information and an example of riparian setback delineation, see appendix C: Guidance Document.*
- 10 b.** *The riparian setback should be applied to intermittent and perennial streams as identified on the Riparian Area Management Map (Appendix G).*
- 10 c.** *Where the slope of the bank adjacent to the watercourse is > 15%, an additional setback from the top of bank will be added to the riparian setback width to provide a stable slope allowance according to the following:*
- *Where the height of bank is less than 6 m, within 12 m from the top of the bank,*
 - *Where the height of bank is between 6 m and 23 m, within a distance that is two times the height of bank, from the top of bank,*
 - *Where the height of bank is more than 23 m, within 46 m from the top of the bank,¹*
 - *The stable slope allowance also pertains to land situated adjacent to or including coulees, ravines, gullies, valleys and where the slope of the bank adjacent to any watercourse is in excess of 15%.*
- 10 d.** *Where the floodplain has not been defined, (i.e. for intermittent streams or perennial tributaries of Nose Creek or West Nose Creek), the meander belt width should be calculated*

¹ MD of Rocky View Land Use Bylaw Section 34 (a)

and the resulting width used as the riparian setback to a minimum width of at least 15 m or as defined by each jurisdiction.

- 10 e.** *The Riparian Area Management Map should be used to identify riparian setbacks for planning purposes, but actual setbacks should be calculated in the field by qualified environmental specialists.*

Restricted and Permitted Activity

- 11 a.** *Except for permitted activities, no further development (including stormwater ponds) or site alteration should be permitted within the riparian setback, thus maintaining riparian areas in their natural state.*
- 11 b.** *Pathways in proximity of bridge crossings should be reviewed on a case by case basis to ensure continued provision of public safety.*
- 11 c.** *The following activities should be permitted in the riparian setback:*
- *existing uses, buildings and structures,*
 - *existing agricultural operations, provided they comply with existing regulations (e.g. runoff regulations),*
 - *existing parks and playgrounds,*
 - *existing recreational facilities and associated surface parking,*
 - *existing roads and pathways,*
 - *public utility installations and facilities,*
 - *natural areas,*
 - *passive recreational uses (e.g. walking); pathways constructed from hard surfaces should be avoided where possible,*
 - *maintenance and repair of existing infrastructure,*
 - *approved water supply wells or wells and associated technology used for the purpose of livestock watering, and*
 - *interpretive signage.²*
- 11 d.** *Public access to Nose Creek, West Nose Creek and associated tributaries should be maintained in a manner that will not compromise riparian function or water quality. Appropriate measures to minimize impact should include:*
- *Construction of pathways consisting of impervious materials limited to above the 1:100 year floodplain.*
 - *The use of bridges should be limited and avoided where the channel is highly active.*
 - *Provision of signs in public areas that describe the ecological significance of riparian areas.*
 - *Provision of bioengineered access points for dogs and signs that will educate dog owners of potential ecological impacts.*
 - *Provision of garbage cans, bags and animal waste disposal areas in parks.*
 - *Control of invasive weeds in riparian areas through the adoption of integrated pest management.*

Agricultural Lands

- 12 a.** *The application of manure and fertilizer on agricultural lands should be consistent with the standards outlined in the Agricultural Operations Practices Act (AOPA) for manure and fertilizer application on forages or direct seeded crops.³*

² Adapted from the Town Cochrane's Watershed Protection and Water Management Bylaw 2005

³ *Agricultural Operations Practices Act (AOPA)*

- *Manure and fertilizer should be applied at an appropriate rate so as not to accumulate in the soil or leach into groundwater.*
 - *Regular soil testing should be conducted to prevent over application of fertilizer and manure.*
 - *Vegetative buffers should be established and protected adjacent to riparian areas at widths of 6 m on slopes less than 6%, and 30 m on slopes greater than 6%.*
 - *Vegetative buffer strips should be seeded using a mixture suitable for forage so to preserve the utility of the land for agriculture.*
 - *Vegetative buffer strips should be maintained by mowing, to not less than 15 cm in height. The forage produced may be used for livestock.*
- 12 b.** *Land that is marginally productive for annual crops should be converted into long-term forage production or retained in its natural state (e.g. ephemeral wetlands).*
- 12 c.** *Ephemeral wetlands should be retained to allow for the process of groundwater recharge and water quality protection.*
- 12 d.** *Riparian vegetation (trees, shrubs and grasses) should be maintained, protected, restored and/or enhanced.*
- 12 e.** *Grazing of livestock should be permitted in the riparian area if best management practices (BMPs) are implemented, including, but not limited to:*
- *Timing restrictions – Cattle should not be grazed in riparian areas during the spring thaw or when soils are moist. Most appropriate grazing periods are summer and/or winter.*
 - *Stocking rate – Cattle should be grazed at the appropriate stocking rate for pastures bisected by a watercourse.*
 - *Offstream watering – Where the sole source of livestock water is Nose Creek, West Nose Creek or a tributary of said Creeks, an offstream watering system should be used to protect riparian function.*
- 12 f.** *When timing restrictions and stocking rates cannot match a pasture's carrying capacity, temporary or permanent fencing should be used to protect water bodies.*
- 12 g.** *Tools, such as salt, artificial windbreaks, temporary or permanent fencing and water should be used to promote even distribution of grazing and manure throughout the entire pasture and discourage use around watercourses.*
- 12 h.** *Seasonal feeding and bedding sites should be located at least 30 m from a common body of water. Where sites are less than 30 m from a common body of water, a properly designed berm between the site and the water should be constructed to divert runoff away from the site. Accumulations of manure and bedding should be removed before runoff occurs. Berming upslope of the wintering site will also divert clean water run-on water away from the site and reduce the amount of manure runoff.*
- 12 i.** *Short-term storage of solid manure should be located:*
- *More than one metre above the water table,*
 - *Above the 1:25 year floodplain,*
 - *100 metres from springs or water wells, and*
 - *30 metres from a common body of water.⁴*

⁴ AOPA 2003