



NORTH SASKATCHEWAN WATERSHED

RIPARIAN REGULATIONS DISCUSSION GUIDE

August 2024

ACKNOWLEDGMENTS

Land Acknowledgement

In the spirit of respect and reciprocity, we acknowledge that the lands within the watershed of the North Saskatchewan River are in Treaty 6, Treaty 8, and the Métis Homeland. These lands are the traditional territories, traveling routes, and gathering places of the Cree, Saulteaux, Blackfoot, Métis, Dene, Stoney, Nakoda Sioux, and Inuit people.

We recognize the contributions of Indigenous peoples who have cared for this land since time immemorial and whose rich histories, cultures, languages, and presence continue to enrich these sacred lands that we all steward as Treaty People.

We recognize the role of watershed management and its practitioners in perpetuating a colonial system by excluding and ignoring the perspectives offered by Indigenous culture and science. We make this statement as an affirmation of our commitment as an organization to improving the practice of watershed stewardship by improving our relationships with our indigenous neighbors.

Riparian areas are shared spaces: an intersection of land and water, of people and nature, settlers and indigenous people.

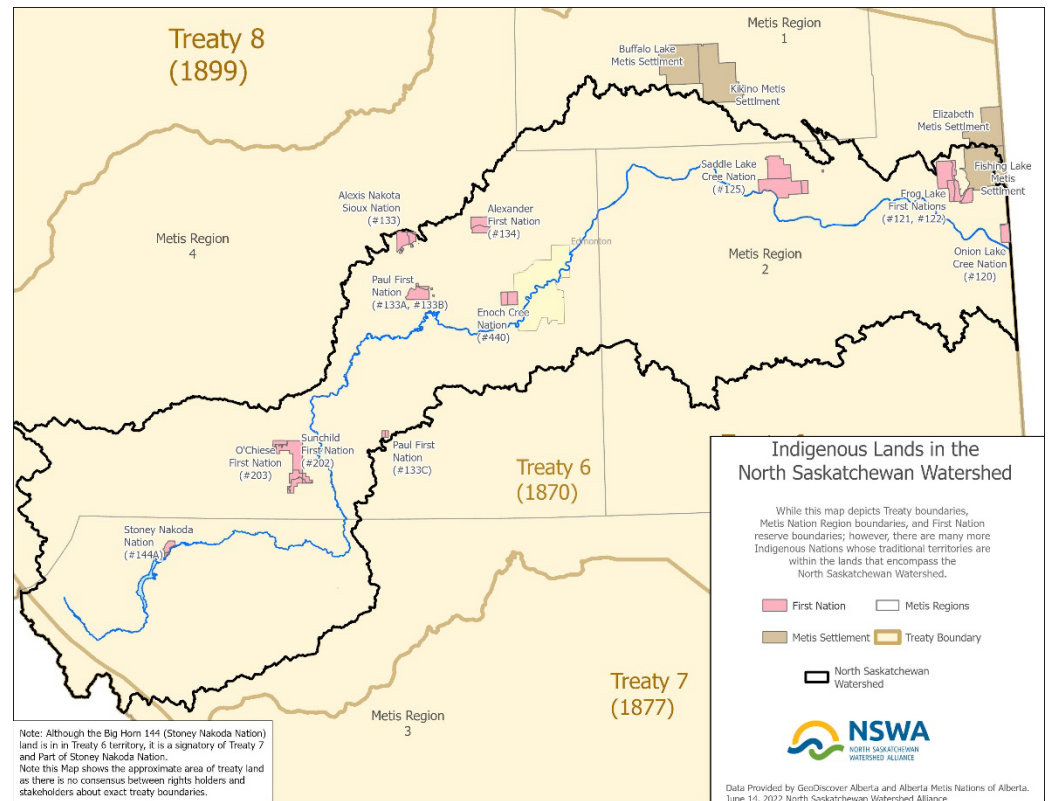


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EXECUTIVE SUMMARY

The *NSWA Riparian Regulations Discussion Guide* is stage one of a three stage project intended to provide local governments within the North Saskatchewan River Watershed (the Watershed) with straightforward recommendations and tools to improve the regulatory protection of lands nearest to watercourses and waterbodies.

Municipalities within the Watershed expressed interest in a focused review of their bylaws with the goal of better understanding how their regulations might be updated to improve riparian health, aligning with the goals of the NSWA's Riparian Conservation and Restoration Strategy. This direction provided the impetus for this project.

The *Riparian Regulations Discussion Guide* provides an assessment of current municipal regulatory documents related to land use near riparian areas, identifies current regulatory successes, and targeted opportunities for amendments to Land Use Bylaws to maintain and improve riparian intactness.

ACTIONS

The analysis of municipal Land Use Bylaws (LUBs) is organized based on three ACTIONS to align regulatory documents with the preservation of riparian intactness.

Action 1: Identify **common language** in regulatory documents within the North Saskatchewan Watershed.

Action 2: Identify **subdivision regulations** to delineate and protect riparian areas.

Action 3: Identify **development regulations** to mitigate the impact of development on riparian areas.

ACTION 1 – COMMON LANGUAGE

Definitions in LUBs impact functionality, interpretation and a municipality's ability to consistently interpret and defend the bylaw. The focus of this part of the project is to: identify omissions, identify opportunities to improve transparency and build greater consistency throughout the watershed.

Findings

- Limited defined language around riparian areas
- Focus on flood hazard terminology
- No significant differences between urban and rural municipalities
- Deferral to other mechanisms – policy documents, Acts and Regulations
- Context-specific
- Administrative complexity and resources

Opportunities

The following opportunities have been identified for amendments to LUBS to improve consistency in language related to riparian areas:

1. Provide definitions for water features within municipalities, including watercourses, waterbodies, wetlands.
2. Provide definitions for riparian areas adjacent to water features to aid in delineating sensitive riparian lands.
3. Provide definitions related to other hazard lands, ex. steep slopes, ravines, etc.

ACTION 2 – SUBDIVISION REGULATIONS

Municipalities are required to undertake an assessment of the suitability of a proposed lot when considering a subdivision application. Factors that impact suitability include: assessing slope stability, flood hazard, and groundwater table.

Municipalities have the authority to restrict development in these areas using tools that are only implementable at the time of subdivision.

Many of the features that are considered “hazards” to future development are also features that characterize riparian areas. Requiring these features to be identified at the time of subdivision and including regulations to minimize impacts on these features from future development can reduce municipal risk, and financial costs to landowners and help to achieve riparian health goals.

Findings

- Very little direction within LUBs related to subdivision
- No significant differences between urban and rural municipalities
- Deferral to other mechanisms – policy documents, Acts and Regulations
- Few LUBs provide regulations related to the taking of Environmental Reserves or Reserve Easements
- Only two LUBs reviewed identified conditions related to subdivision near water features

Opportunities

The following opportunities have been identified for amendments to LUBs to improve consistency in controlling subdivision impacts on riparian areas.

- For new subdivision applications, provide explicit requirements for information required to accurately delineate waterbodies, watercourses, wetlands and any associated riparian lands within or adjacent to the subject parcel. Such information may include the location of water features on or adjacent to the subject site, flood hazard delineation, etc.
- Identify specific site triggers for new subdivision applications that require additional application requirements, in alignment with applicable municipal conservation priorities. Triggers and resulting application requirements may include:
 - a. Waterbody, watercourse or wetland within or adjacent to subject site – require assessment report by a professional engineer or other qualified professional as necessary;
 - b. Identify flood hazards affecting the subject site – require assessment report by a professional engineer;
 - c. Identify slope stability hazards – require geotechnical study;
 - d. Identify Environmentally Significant Areas (ESAs) within or adjacent to the subject site – require environmental assessment by a qualified professional.
- For new subdivisions, require the provision of environmental and/or municipal reserves between the lots and the legal bank ¹ of water bodies, watercourses, and wetlands. The width and size of the reserve should take into consideration the guidelines and/or recommendations of:
 - a. Qualified professionals; and/or
 - b. Riparian Setback Matrix Model (RSMM); and/or
 - c. The Government of Alberta's *Stepping Back from the Water: A Beneficial Management Practices Guide for New Development Near Water Bodies in Alberta's Settled Region*; and/or

¹ As defined in Section 17 of the *Surveys Act*, the bed and shore of a body of water ends at the legal bank, also known as the ordinary high-water mark. The legal bank is a natural boundary

formed by the presence of water that typically results in vegetation distinct from the upland vegetation. The legal bank may fluctuate over time.

- d. ESRD Recommended Setbacks Chart (see Appendix D).
- Identify general or specific conditions of approval that may be applied for subdivisions impacting water bodies, watercourses, wetlands, and any associated riparian lands. Conditions may include:
 - a. The provision of Environmental Reserve or Environmental Reserve Easements where appropriate;
 - b. Compliance with Erosion and Sediment Control Plan;
 - c. Compliance with Lot Grading and Drainage Plan;
 - d. Compliance with Stormwater Management Plan; and/or
 - e. Any other conditions requested by the Subdivision Authority to address matters affecting the protection of riparian areas.

ACTION 3 – DEVELOPMENT REGULATIONS

The LUB is one of the most powerful tools available to a municipality to effect change to the development footprint. It impacts riparian intactness and minimizes municipal risks and costs associated with development.

Identifying application and design requirements for new developments in the LUB will enable municipalities to identify and mitigate risks associated with development and, it can reduce infrastructure costs and help municipal and regional achieve conservation and restoration objectives.

Findings

- Most LUBs reviewed included requirements for identifying water features at development permit stage
- Reliance on development officer discretion to assess on a site-by-site basis, to interpret regulations, and to apply development permit conditions
- Deferral to other mechanisms – policy documents, Acts and Regulations

- Variety of approaches to determining setbacks from water features, controlling development in proximity to riparian areas, and for applying conditions

Opportunities

The following opportunities have been identified for amendments to LUBs to improve consistency in controlling development impacts on riparian areas.

1. For new development applications, provide explicit requirements for information required to accurately delineate waterbodies, watercourses, wetlands and any associated riparian lands within or adjacent to the subject parcel. Such information may include the location of water features on or adjacent to the subject site, flood hazard delineation, etc.
2. Identify specific site triggers for development applications that require additional application requirements, in alignment with applicable municipal conservation priorities. Triggers and resulting application requirements may include:
 - a. Waterbody, watercourse or wetland within or adjacent to subject site – require assessment report by a professional engineer or other qualified professional as necessary to determine appropriate setbacks;
 - b. Identify flood hazards affecting the subject site – require assessment report by a professional engineer to determine site suitability, setbacks and/or flood mitigation conditions;
 - c. Identify slope stability hazards – require geotechnical study to determine site suitability and setback requirements;
 - d. Identify Environmentally Significant Areas (ESAs) within or adjacent to subject site – require environmental assessment by a qualified professional to determine any mitigation requirements.
3. Identify general or specific conditions of approval that may be applied where a proposed development may impact waterbodies,

watercourses, wetlands, and any associated riparian lands. Conditions may include:

- a. Requirements to prevent soil or debris entering waterbodies during or after construction, such as silt fences or traps;
 - b. Responsibility of the applicant to ensure surface runoff water does not discharge from the site through grading;
 - c. Compliance with Erosion and Sediment Control Plan;
 - d. Compliance with Lot Grading and Drainage Plan; and/or
 - e. Any other conditions requested by the Development Authority to address matters affecting the protection of riparian areas.
4. Include a minimum setback distance regulation for new developments and redevelopment on existing lots that meets or exceeds the minimum development setback regulations from waterbodies, watercourses or wetlands for buildings on a site.
 5. Require development permits for shoreline modifications on lands above and abutting the riparian areas of waterbodies, watercourses, wetlands and other water bodies
 6. Require development permits where a development is proposed on lots which includes or abuts riparian areas for:
 - a. Modifications to lot grading or drainage which could alter the quantity or quality of surface water runoff into a watercourse or water body;
 - b. Clearing of vegetation;
 - c. Landscaping which could alter the quantity or quality of surface water runoff into a watercourse or water body.**This should not apply to agricultural parcels in most cases.**

INTRODUCTION

Purpose

The *NSWA Riparian Regulations Discussion Guide* is stage one of a three stage project intended to provide local governments within the North Saskatchewan River Watershed (the Watershed) with straightforward recommendations and tools to improve the regulatory protection of lands nearest to watercourses and waterbodies.

The intended outcome of the project is to assist NSWA partner municipalities to achieve the riparian intactness goals of:

- A minimum of 65% highly intact riparian areas across the watershed and within each of its sub-basins, and
- A maximum of 25% very low and low intact riparian areas;

adopted by the partner municipalities within the watershed and help reduce risk associated with development adjacent to or within riparian areas. This project is one element of the North Saskatchewan Watershed Alliance (NSWA) Riparian Health Strategy (2021) and supports the action items in the Integrated Watershed Management Plan (IWMP, 2012).

Municipalities hold a range of legislated powers to manage land use, as established in the *Municipal Government Act*. Riparian areas – those lands immediately adjacent to waterbodies and watercourses – are vital natural spaces within our watershed, performing many significant ecosystem services. These lands are also particularly sensitive to land use and development impacts.

A wide range of regulatory approaches are presently applied by municipalities across the Watershed, reflecting the diversity of land use pressures and historic development contexts. Despite differences, common issues exist in how best to manage land use in proximity to riparian areas to best protect them from the impact of human use and development.

Municipalities within the Watershed expressed interest in a focused review of their bylaws with the goal of better understanding how their regulations might be updated to align with the goals of riparian intactness. This direction provided the impetus for this project.



This project was organized into three stages:

1. NSWA Riparian Regulations Discussion Guide

- The purpose of this discussion guide is to assess the current municipal regulatory environment related to land use near riparian areas, and to identify current regulatory successes and targeted opportunities for amendments to LUBs to maintain and improve riparian intactness that can be implemented at time of subdivision or development permit approval; and

2. Municipal Workshops

- The purpose of the workshops with members of the North Saskatchewan Watershed Alliance and its Subwatershed Alliances is to:
 - Review the findings of the Riparian Regulations Discussion Guide;
 - Gather stories from local governments on successes and challenges related to land use policy and regulations for riparian intactness; and
 - Seek input to focus the recommendations to be included in the next stage.

3. NSWA Riparian Regulations Best Management Practices Guide

- The purpose of this deliverable, which will be developed following the discussion guide, is to identify a set of regulations, based on best practices, that may be adopted or adapted by municipalities and incorporated into Land Use Bylaws to:
 - support the NSWA riparian intactness goal,
 - improve municipal riparian management systems,
 - mitigate environmental and legal risks associated with development on hazard lands, and
 - support local conservation objectives and targets.

About the Watershed

Within the Province of Alberta, the North Saskatchewan Watershed stretches from the headwaters in the Canadian Rockies, east to the Saskatchewan border. It encompasses over 57,000 km² of land within Alberta. The North Saskatchewan River and the various water features that feed it, including glaciers, rivers, reservoirs, creeks, lakes, oxbows, groundwater, and wetlands, make up approximately 11% of the total land area of the watershed. (Atlas of the North Saskatchewan River Watershed in Alberta, 2012)

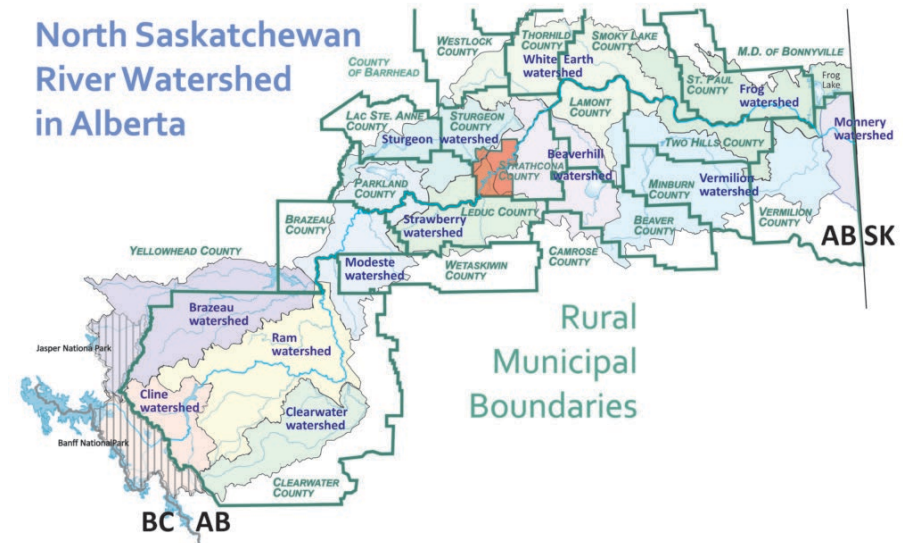
Lands within the Watershed are part of Treaty 6 and 8 Territories, the traditional lands of First Nations peoples stretching from Alberta's eastern slopes to the Manitoba border. The lands are also the traditional homeland of the Métis. Indigenous peoples have stewarded the river, its tributaries, lakes and the lands they sustain since time immemorial. There are many First Nations reserves administered by ten First Nations and three Métis settlements with lands lying within the watershed.

Other lands within the North Saskatchewan Watershed are administered by the Federal Government (Parks Canada), 71 municipalities, and the Government of Alberta. Development on private lands within the watershed is regulated by the Land Use Bylaws and statutory plans of the 71 respective municipalities. The full list of municipalities, First Nations, and Métis Settlements with lands lying within the North Saskatchewan Watershed is included in Appendix A.

Statutory plans include Intermunicipal Development Plans (IDPs), Municipal Development Plans (MDPs), and Area Structure Plans (ASPs). Land use planning and development is a complex process in the watershed because of the different statutory plans, bylaws, provincial and federal regulations and Indigenous jurisdictions.

The land cover across the watershed is diverse, and includes barren land at the headwaters, coniferous and deciduous forests, mixed agricultural land, and built-up urban areas.

Much of the headwaters region of the watershed is public land. These lands are predominantly used for forestry, tourism and recreation, oil and gas exploration and development, with some built-up communities. The central and downstream regions are predominantly used for agriculture, oil and gas, and urban development. Major urban and industrial areas are located in the central region around Edmonton and the surrounding communities. The majority of the watershed's population is found in the central region.



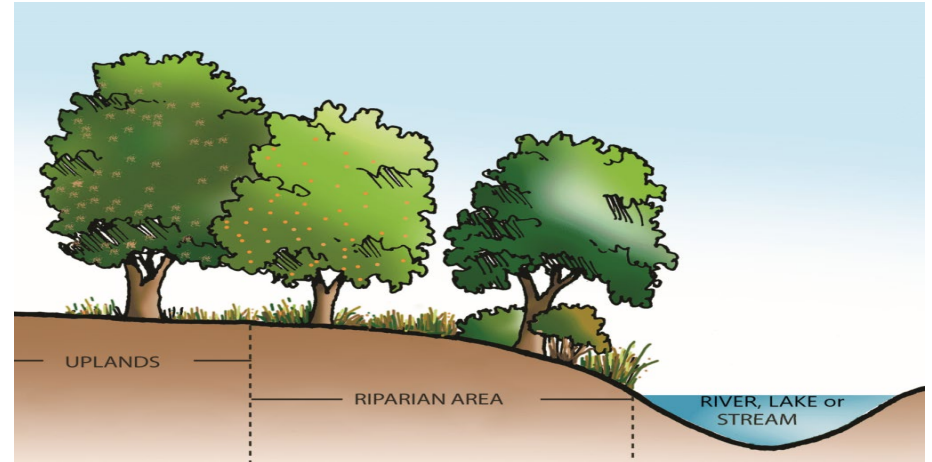
Riparian Intactness & the Role of Local Government

Riparian Lands

Riparian Lands are the transitional areas between upland and aquatic ecosystems. These areas can have variable width and extent both above and below ground. These lands are influenced by and/or exert an influence on associated water bodies, which includes alluvial aquifers and floodplains, when present. Riparian lands usually have soil, biological, and other physical characteristics that reflect the influence of water and/or hydrological processes. (Alberta Water Council, 2013)

Riparian areas play a vital role in maintaining water quantity and quality for streams and lakes and providing habitat for aquatic and terrestrial species. The ecosystem services they provide include:

- Trapping and storing sediment
- Building and maintain banks and shorelines
- Storing water and energy
- Recharging aquifers
- Filtering and buffering water
- Reducing and dissipating kinetic energy of stormwater
- Promoting plant growth
- Providing habitat for aquatic and riparian reliant species and providing corridors for terrestrial species
- Maintaining biodiversity.



Riparian Intactness

Across the North Saskatchewan River watershed, development and land use change has contributed to a deterioration of riparian intactness. Disturbance to riparian areas decreases the ability of these lands to contribute to water quality and quantity available to support ecosystem functions and the services our communities depend upon.

The North Saskatchewan Watershed Alliance (NSWA), through its Riparian Health Action Plan (RHAP), aims to enhance collaboration between restoration programs to improve riparian intactness across the watershed.

The NSWA's Riparian Conservation and Restoration Strategy (2021) establishes a goal of a minimum of 65% highly intact riparian areas across the watershed and within each of its sub-basins. This is to be achieved through restoration of degraded riparian areas. Equally important is the need to limit further disturbance to existing intact riparian areas.

The NSWA believes that the goal of 65% high intactness is achievable and ambitious given that over 90% of the waterbodies assessed so far in the North Saskatchewan River basin require some restoration activity to achieve the goal of 65% health.

The NSWA assessed the condition (i.e., “intactness”) of approximately 17,300 km of riparian areas located in the North Saskatchewan River watershed through a detailed desktop study of riparian lands. Using these baseline datasets (i.e., intactness data and prioritization data), stakeholders can identify hotspot areas for priority action. A municipality, for example, can use this data to determine their current intactness rating and calculate the amount of restoration required to reach the goal of 65%. They can then direct their restoration budget toward water bodies with the lowest intactness scores within their jurisdiction. Maintaining the condition of existing high intactness areas is also an essential aspect of reaching the 65% target. Therefore, conservation activities are essential. Stakeholders are encouraged to implement incentive programs that promote conservation and target areas identified as a high priority for conservation action.

Local Government Interests

Municipalities have a significant role in stewarding riparian lands through their authority to regulate land use on private land. Among their obligations under the *MGA* and the *Provincial Land Use Policies*, municipalities must contribute to the maintenance and enhancement of a healthy natural environment.

Municipalities have a vested interest in minimizing incompatible land uses. The purpose of land use planning is in large part an attempt to avoid instances where incompatible land uses negatively affect one another. This principle extends to the land use and development’s impact on significant natural features.

Increasingly, municipalities are aware of their liability in managing land use and development activities. Through municipal policy documents and Land Use Bylaws, municipalities can support riparian conservation and

restoration and reduce risks associated with increased occurrences of extreme climate events including flooding and wildfires.

Risk Management

Activities on the land can impact the quality of environment. Management of land, particularly in riparian areas, which is largely the responsibility of municipalities, has direct effects on provincial water resources.

Riparian areas play an important function in maintaining water quality by mitigating the potential impacts from pollutants and sedimentation in surface waters; providing habitat for aquatic and riparian reliant species, providing corridors for terrestrial species; and attenuating flooding and mitigating flood risk.

Municipalities are responsible for ensuring the effective and efficient delivery of services. Developments that directly, or indirectly cause harm to riparian areas can negatively impact the function of ecological services that provide tangible benefits within the municipality by enhancing water quality and reducing flood risk².

Environmental risks can result in legal risks. By developing and implementing clear regulatory requirements and conditions in municipal Land Use Bylaws, municipalities may mitigate risks of legal liability, reduce delays to developers through administrative law challenges, and minimize conflicts between landowners and other levels of government.

Responsible land use decision-making is necessary to reduce risk, avoid liability on the part of municipalities, support an efficient and effective development process and minimize costs associated with the provision of necessary municipal infrastructure services.

² *Legal Foundations for Municipal Riparian Management*. Prepared for the North Saskatchewan Watershed Alliance. (March 2023) Environmental Law Centre., pp.3-4.

Objectives

Recognizing the role local governments have in stewarding the land through responsible land use management practices, the objectives of the Riparian Regulations Discussion Guide are to:

- Increase awareness of the importance and value of riparian intactness;
- Communicate the important role of local governments in best managing land use within and in proximity to riparian lands;
- Understand the current state of municipal regulations related to managing development affecting riparian lands;
- Provide specific land use regulatory tools for municipalities to consider for managing development in proximity to riparian lands; and
- Encourage alignment of land use regulations, where appropriate, to support increased riparian intactness across the North Saskatchewan Watershed.

Limitations & Applicability

This guide is intended primarily for use by municipalities governed under the *Municipal Government Act (MGA)*. The overall project was instigated at the request of municipalities to better align their regulatory documents with the goals of riparian intactness. The NSWA received direction from its municipal partners that review of the current state of existing municipal bylaws would be of value. This phase of the project is focused on municipal bylaws and the powers established through the MGA.

The project team recognizes that the applicability of this Guide may be limited in other jurisdictions, such as First Nations and Métis Settlements. The project team recognizes that comparison of municipal bylaws and processes under the MGA to Indigenous land management process is not directly comparable or appropriate. Indigenous land management regimes are subject to colonial history and ongoing colonial systems that operate in unique political contexts. As such, Indigenous land governance

documents were not included in this review and Discussion Guide. However, the NSWA and the project team invites and encourages Indigenous governments and land managers to participate in the collaboration and co-creation process for the remaining phases of the project.

The review of documents for the Riparian Regulations Discussion Guide was limited in scope to select municipal Land Use Bylaws and select statutory plans, policies and strategies adopted by municipal governments within the Watershed. There was no review of First Nations or Métis land governance documents. The project team recognizes that such documents operate in unique political contexts and would require out-of-scope consultation and collaboration with Indigenous land managers to adequately understand the complexity and uniqueness of those communities.

The focus of the regulatory review for the Riparian Regulations Discussion Guide is on currently approved Land Use Bylaws. The project team relied on consolidated versions of these documents available publicly on each municipality's website at the time of the review. As municipalities update their documents this assessment will become outdated.

There was limited and focused review of statutory plans or other municipal policies or strategies. No comprehensive review of these other policy documents was undertaken across the Watershed.

The assessment of municipal planning documents was undertaken in the absence of consultation with municipal administration. A process of data validation will be included in the project to ensure the project team's assessment of current land use regulation is accurate.

Current Regulatory Environment & Successes

Land use and development in the North Saskatchewan Watershed is regulated through the approved statutory plans and Land Use Bylaws of the 71 respective municipalities. Land use and development within the Watershed is also managed by the Government of Alberta, the Government of Canada, First Nations, and Métis Settlements.

The 71 municipalities in the North Saskatchewan Watershed each have unique Land Use Bylaws and statutory plan policies that direct how to guide and regulate land use. These documents reflect the unique circumstances and contexts of each municipality. Increasingly, however, there is broad recognition of the need to align policy and regulatory documents as they relate to shared water resources.

Increasingly, municipalities are cooperating to adopt Intermunicipal Development Plans that include policy addressing development adjacent to lakes. Others are aligning regulatory bylaws to ensure development is managed in a coordinated way to best protect water resources. Examples of this include the municipalities within the Pigeon Lake Watershed working toward adoption of statutory plans and Intermunicipal Collaboration Frameworks aligned with the Pigeon Lake Watershed Management Plan.

Significance of Municipal Regulations and Bylaws

The primary planning and development tool for a municipality is the Land Use Bylaw. A Land Use Bylaw is a regulatory document that implements the policy direction set forth in a statutory plan (IDP, MDP, ASP). It regulates and controls the use and development of lands and buildings in a municipality. It identifies where specific land uses are allowed to be developed, and establishes specific building height, setback distance, area, and density requirements.

Land Use Bylaws are specific to each municipality and are not shared between municipalities. Two adjacent municipalities may develop different regulatory approaches to the same land use issue (e.g. setback distances, the types of uses that may be permitted in an area, etc.). This

has historically been the approach within the watershed. As a result, the development footprint within each of the municipalities within the watershed is unique and reflects the historic regulatory approaches to land development within that community. However, individual municipalities may choose to incorporate regulations into their Land Use Bylaws similar to the regulations adopted by a neighbouring municipality in order to develop a regionally consistent approach to land development.

Additionally, municipalities may choose to adopt supplementary bylaws to further address, regulate, and provide processes for specific land use issues. Two common examples of this include Fertilizer and Wastewater Bylaws.

Methodology

The following steps were taken to complete the Riparian Regulations Discussion Guide objectives:

Step 1 – Identify Land Use Bylaws from a selected sample of municipalities across the North Saskatchewan Watershed, reflecting those municipalities with significant land cover or populations impacting the North Saskatchewan River and its major tributaries, and a diversity of community type and size.

Step 2 – Identify Land Use Bylaw regulations within the Watershed with respect to riparian protection and intactness.

Step 3 – Identify the municipal authority for regulating the issues identified in Step 2 through Land Use Bylaws.

Step 4 – Identify how municipalities in the Watershed regulate the issues identified in Step 2 through their respective Land Use Bylaws.

Step 5 – Identify opportunities for municipalities in the Watershed to implement best practices in protecting or mitigating disturbance to riparian areas.

The following sample municipalities were selected in Step 1 of the Riparian Regulations Discussion Guide for review of their approved Land Use Bylaws:

- City of Beaumont
- City of Edmonton
- City of Fort Saskatchewan
- City of Leduc
- City of St. Albert
- Beaver County
- Smoky Lake County
- County of St. Paul
- Strathcona County
- Sturgeon County
- County of Two Hills
- County of Vermilion River

- Brazeau County
- Clearwater County
- Lac Ste Anne County
- Lamont County
- Leduc County
- County of Minburn
- Parkland County

- County of Wetaskiwin
- Yellowhead County
- Summer Village of Kapasiwin
- Summer Village of Seba Beach
- Town of Devon
- Town of Drayton Valley
- Town of Two Hills
- Town of Vermilion



IMPLEMENTATION

The analysis of municipal Land Use Bylaws (LUBs) is organized based on three ACTIONS to align regulatory documents with the preservation of riparian intactness.

Action 1: Identify **common language** in regulatory documents within the North Saskatchewan Watershed.

Action 2: Identify **subdivision regulations** to delineate and protect riparian areas.

Action 3: Identify **development regulations** to mitigate the impact of development on riparian areas.

The following sections describe the municipal authority related to each action, present the current conditions as expressed through the LUBs

reviewed by the project team, and identify opportunities for regulatory changes in support of riparian intactness.

Tables showing the information gathered in the assessment of municipal LUBs are divided between the Upstream, Central, and Downstream municipalities (see map, below). This classification is intended only to provide a more accessible presentation of the information.

In certain instances, the LUBs reviewed did not have specific policy language that clearly or explicitly articulated the criteria defined by the project team. In these cases, the table may identify “Not Explicitly” for those criteria. The LUB language may be such that other regulations could be interpreted broadly to meet the criteria, but would be open to the interpretation of the user or the application of another regulatory or policy mechanism.

Action 1 – Common Language

Municipal Authority

Through Part 17 of the *MGA*, the Province of Alberta has delegated the authority to regulate the use of land to municipalities based on the regulatory frameworks adopted through municipal Land Use Bylaws (LUBs). An LUB must prescribe the “uses of land or buildings that are permitted... with or without conditions.” A LUB may also provide for subdivision design standards, the amount of land to be provided around or between buildings, landscaping, the excavation or filling in of land, the development of buildings (including appearance, height, and size), population density, *development on lands subject to flooding or subsidence, and development on lands adjacent to waterbodies* (emphasis added).

Within LUBs, key terms are defined. The defined terminology in LUBs enables clearer and consistent interpretation of the bylaw. Most terms defined in an LUB are related to use types, which can be either permitted, discretionary, or not permitted by their omission from listed uses within Land Use Districts. However, other terms unrelated to use types are often defined to provide transparency and aid in interpreting other aspects of the bylaw.



Action 1 – Common Language																																						
Include definitions for terms related to waterbodies and riparian areas.																																						
POLICY REVIEW RESULTS																																						
FINDINGS																																						
	- How riparian features are defined or described varies considerably between municipalities within the watershed - Definitions relating to flood terminology are generally consistent - Few municipalities included terms identifying the extent of riparian area such as “Top of Bank or “Shoreline”																																					
Upstream Municipalities	Central Municipalities	Downstream Municipalities																																				
Flood Susceptibility Shoreline Other Top of Bank None <table><thead><tr><th>Category</th><th>Percentage</th></tr></thead><tbody><tr><td>Flood Susceptibility</td><td>38%</td></tr><tr><td>Other</td><td>31%</td></tr><tr><td>Top of Bank</td><td>8%</td></tr><tr><td>None</td><td>8%</td></tr><tr><td>Shoreline</td><td>15%</td></tr></tbody></table>	Category	Percentage	Flood Susceptibility	38%	Other	31%	Top of Bank	8%	None	8%	Shoreline	15%	Flood Susceptibility Shoreline Other Top of Bank None <table><thead><tr><th>Category</th><th>Percentage</th></tr></thead><tbody><tr><td>Flood Susceptibility</td><td>32%</td></tr><tr><td>Other</td><td>23%</td></tr><tr><td>Top of Bank</td><td>23%</td></tr><tr><td>None</td><td>9%</td></tr><tr><td>Shoreline</td><td>13%</td></tr></tbody></table>	Category	Percentage	Flood Susceptibility	32%	Other	23%	Top of Bank	23%	None	9%	Shoreline	13%	Flood Susceptibility Shoreline Other Top of Bank None <table><thead><tr><th>Category</th><th>Percentage</th></tr></thead><tbody><tr><td>Flood Susceptibility</td><td>34%</td></tr><tr><td>Other</td><td>25%</td></tr><tr><td>Top of Bank</td><td>8%</td></tr><tr><td>None</td><td>25%</td></tr><tr><td>Shoreline</td><td>8%</td></tr></tbody></table>	Category	Percentage	Flood Susceptibility	34%	Other	25%	Top of Bank	8%	None	25%	Shoreline	8%
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OPPORTUNITIES TO IMPROVE CONSISTENCY																																						
	- Provide definitions for water features within municipalities, including: watercourses, waterbodies, wetlands. - Provide definitions for riparian areas adjacent to water features to aid in delineating sensitive riparian lands. - Provide definitions related to other hazard lands, ex. steep slopes, ravines, etc.																																					

Action 2 – Subdivision Regulations

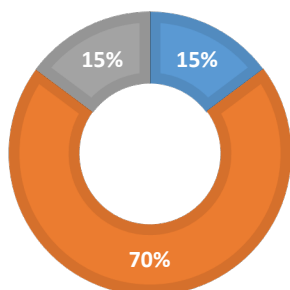
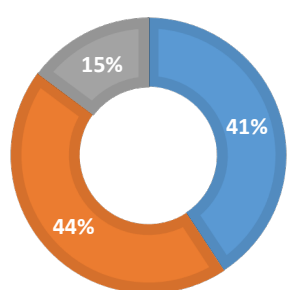
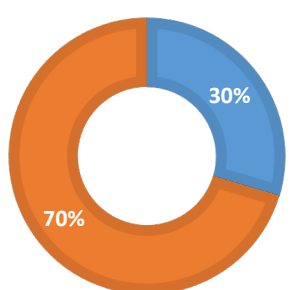
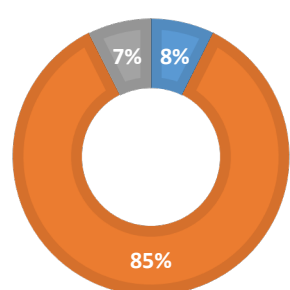
Municipal Authority

Municipal authority to consider and approve subdivision applications is established in the *MGA* and in the *Matters Related to Subdivision and Development Regulation* (the Regulation). These documents provide direction on subdivision application processes. The Regulation also includes conditions, setback requirements and variances for subdivision applications.

The *MGA* identifies mechanisms whereby a municipality may require the dedication of Environmental or Municipal Reserves. In certain instances, Environmental Reserve (ER) may be required by the Subdivision Authority at the time of subdivision where the land consists of: a swamp, gully, ravine, coulee or natural drainage course; where the land is subject to flooding or is considered unstable; or, a strip of land, not less than six metres in width, abutting the bed and shore of any body of water. Where an ER lot is required as a condition of subdivision approval, municipalities may increase the width of the parcel to ensure that the environmentally sensitive plans are included in the ER or to provide a buffer width that is more consistent with recommendations from Stepping Back from the Water. The Subdivision Authority may require land be provided as ER only for one or more of the following purposes:

- To preserve the natural features of lands as listed above;
- To prevent pollution of the land or the bed and shore of the adjacent body of water;
- To ensure public access to and beside the bed and shore of the body of water on or adjacent to the land;
- To prevent development of the land where the natural features of the land would present significant risk of personal injury or property damage occurring during development or use of the land.

Municipalities and landowners may also agree to address such lands through an Environmental Reserve Easement (ERE) registered against the land in favour of the municipality. The easement remains in effect despite any future sale and is to protect and enhance the environmental character of the land.

Action 2 – Subdivision Regulations																																		
Provide direction in subdivision policies and regulations to identify and protect riparian areas.																																		
POLICY REVIEW RESULTS																																		
FINDINGS		• Lack of consistency or alignment relating to subdivision application requirements and conditions of subdivision approval affecting sites characterized by riparian areas.																																
LUB requires specific information regarding water features to be provided with an application		LUB requires the delineation of water features at application stage	LUB identifies Reserve dedication requirements	LUB identifies conditions related to subdivision near water features																														
■ Yes ■ No ■ Not explicit <table><tr><th>Response</th><th>Percentage</th></tr><tr><td>Yes</td><td>15%</td></tr><tr><td>No</td><td>70%</td></tr><tr><td>Not explicit</td><td>15%</td></tr></table>		Response	Percentage	Yes	15%	No	70%	Not explicit	15%	■ Yes ■ No ■ Not explicit <table><tr><th>Response</th><th>Percentage</th></tr><tr><td>Yes</td><td>41%</td></tr><tr><td>No</td><td>44%</td></tr><tr><td>Not explicit</td><td>15%</td></tr></table>	Response	Percentage	Yes	41%	No	44%	Not explicit	15%	■ Yes ■ No <table><tr><th>Response</th><th>Percentage</th></tr><tr><td>Yes</td><td>30%</td></tr><tr><td>No</td><td>70%</td></tr></table>	Response	Percentage	Yes	30%	No	70%	■ Yes ■ No ■ Not explicit <table><tr><th>Response</th><th>Percentage</th></tr><tr><td>Yes</td><td>8%</td></tr><tr><td>No</td><td>85%</td></tr><tr><td>Not explicit</td><td>7%</td></tr></table>	Response	Percentage	Yes	8%	No	85%	Not explicit	7%
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OPPORTUNITIES TO IMPROVE CONSISTENCY		• For new subdivision applications, provide explicit requirements for information required to accurately delineate waterbodies, watercourses, and wetlands and any associated riparian lands within or adjacent to the subject parcel. Such information may include the location of water features on or adjacent to the subject site, flood hazard delineation, etc. • Identify specific site triggers for new subdivision applications that require additional application requirements, in alignment with applicable municipal conservation priorities. Triggers and resulting application requirements may include: ○ Waterbody, watercourse or wetland within or adjacent to subject site – require assessment report by a professional engineer or other qualified professional as necessary; ○ Identify flood hazards affecting the subject site – require assessment report by a professional engineer; ○ Identify slope stability hazards – require geotechnical study; ○ Identify Environmentally Significant Areas (ESAs) within or adjacent to subject site – require environmental assessment by a qualified professional.																																

	• For new subdivisions, require the provision of environmental and/or municipal reserves between the lots and the legal bank ³ of water bodies, watercourses, and wetlands. The width and size of the reserve should take into consideration the guidelines and/or recommendations of: ◦ Qualified professionals; and/or ◦ Riparian Setback Matrix Model (RSMM); and/or ◦ The Government of Alberta's <i>Stepping Back from the Water: A Beneficial Management Practices Guide for New Development Near Water Bodies in Alberta's Settled Region</i>; and/or ◦ ESRD Recommended Setbacks Chart (see Appendix B). • Identify general or specific conditions of approval that may be applied for subdivisions impacting waterbodies, watercourses, wetlands, and any associated riparian lands. Conditions may include: ◦ The provision of Environmental Reserve or Environmental Reserve Easements where appropriate; ◦ Compliance with Erosion and Sediment Control Plan; ◦ Compliance with Lot Grading and Drainage Plan; ◦ Compliance with Stormwater Management Plan; and/or • Any other conditions requested by the Subdivision Authority to address matters affecting the protection of riparian areas.
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³ As defined in Section 17 of the *Surveys Act*, the bed and shore of a body of water ends at the legal bank, also known as the ordinary high-water mark. The legal bank is a natural boundary formed by the presence of water that typically results in vegetation distinct from the upland vegetation. The legal bank may fluctuate over time.

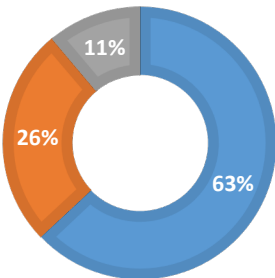
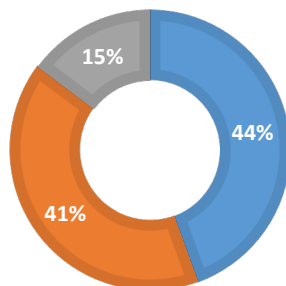
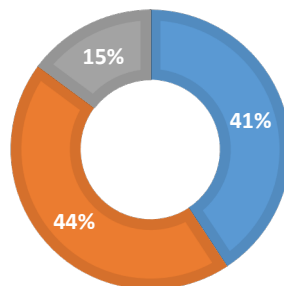
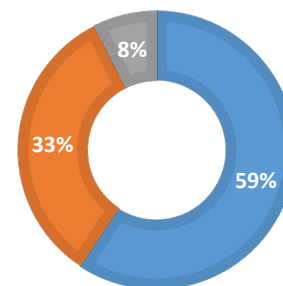
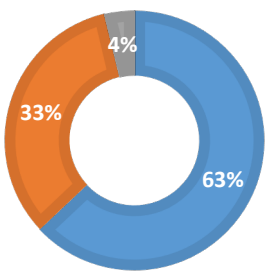
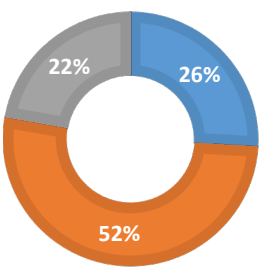
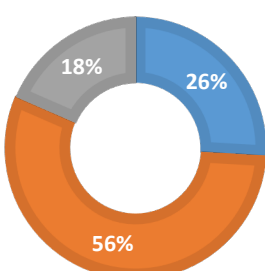
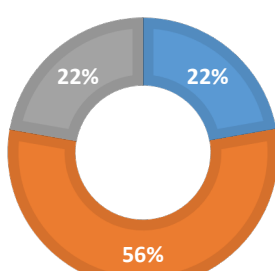
Action 3 – Development Regulations

Municipal Authority

Municipal authority to consider and approve development applications is established in the *MGA* and in the *Matters Related to Subdivision and Development Regulation* (the Regulation). These documents provide direction on development application processes. The Regulation also includes certain direction related to conditions, setback requirements and variances for development applications.

Through the LUB, municipalities can exert specific control on the types of development allowed, the location of development, design standards, landscaping, the excavation or filling in of land, and the development of buildings. Further, municipalities can implement development setbacks to protect all riparian areas including those associated with watercourses, waterbodies, and wetlands throughout the watershed. Municipalities can also establish restrictions on the clearing of vegetation within these areas.



Action 3 – Development Regulations																																				
Control upland development in proximity to riparian areas to minimize impacts and improve riparian area intactness.																																				
POLICY REVIEW RESULTS																																				
FINDINGS	Some municipalities include provisions regulating upland development in proximity to water features, while others include little direction.																																			
LUB requires specific information regarding water features	LUB requires the delineation of water features at application stage	LUB requires a development permit for stripping or grading near riparian lands	LUB identifies setback requirements from riparian lands																																	
■ Yes ■ No ■ Not explicit <table><tr><th>Response</th><th>Percentage</th></tr><tr><td>Yes</td><td>63%</td></tr><tr><td>No</td><td>26%</td></tr><tr><td>Not explicit</td><td>11%</td></tr></table>	Response	Percentage	Yes	63%	No	26%	Not explicit	11%	■ Yes ■ No ■ Not explicit <table><tr><th>Response</th><th>Percentage</th></tr><tr><td>Yes</td><td>44%</td></tr><tr><td>No</td><td>41%</td></tr><tr><td>Not explicit</td><td>15%</td></tr></table>	Response	Percentage	Yes	44%	No	41%	Not explicit	15%	■ Yes ■ No ■ Not explicit <table><tr><th>Response</th><th>Percentage</th></tr><tr><td>Yes</td><td>41%</td></tr><tr><td>No</td><td>44%</td></tr><tr><td>Not explicit</td><td>15%</td></tr></table>	Response	Percentage	Yes	41%	No	44%	Not explicit	15%	■ Yes ■ No ■ Not explicit <table><tr><th>Response</th><th>Percentage</th></tr><tr><td>Yes</td><td>59%</td></tr><tr><td>No</td><td>33%</td></tr><tr><td>Not explicit</td><td>8%</td></tr></table>		Response	Percentage	Yes	59%	No	33%	Not explicit	8%
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LUB restricts types of development near riparian lands	LUB regulates the disturbance of riparian lands	LUB regulates clearing of vegetation near riparian lands	LUB identifies conditions related to development near riparian lands																																	
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OPPORTUNITIES TO IMPROVE CONSISTENCY	For new development applications, provide explicit requirements for information required to accurately delineate waterbodies, watercourses, wetlands, and any associated riparian lands within or adjacent to the subject parcel. Such information may include the location of water features on or adjacent to the subject site, flood hazard delineation, etc.																																			

	• Identify specific site triggers for development applications that require additional application requirements, in alignment with applicable municipal conservation priorities. Triggers and resulting application requirements may include: ◦ Waterbody, watercourse or wetland within or adjacent to subject site – require assessment report by a professional engineer or other qualified professional as necessary to determine appropriate setbacks; ◦ Identify flood hazards affecting the subject site – require assessment report by a professional engineer to determine site suitability, setbacks and/or flood mitigation conditions; ◦ Identify slope stability hazards – require geotechnical study to determine site suitability and setback requirements; ◦ Identify Environmentally Significant Areas (ESAs) within or adjacent to subject site – require environmental assessment by a qualified professional to determine any mitigation requirements. • Identify general or specific conditions of approval that may be applied where a proposed development may impact waterbodies, watercourses, wetlands, and any associated riparian lands. Conditions may include: ◦ Requirements to prevent soil or debris from entering waterbodies during or after construction, such as silt fences or traps; ◦ Responsibility of the applicant to ensure surface runoff water does not discharge from the site through grading; ◦ Compliance with Erosion and Sediment Control Plan; ◦ Compliance with Lot Grading and Drainage Plan; and/or ◦ Any other conditions requested by the Development Authority to address matters affecting the protection of riparian areas. • Include a minimum setback distance regulation for new developments and redevelopment on existing lots that meets or exceeds the minimum development setback regulations from waterbodies, watercourses, or wetlands for buildings on a site. • Require development permits for shoreline modifications on lands above and abutting the riparian areas of waterbodies, watercourses, wetlands, and other water bodies • Require development permits where a development is proposed on lots that include or abut riparian areas for: ◦ Modifications to lot grading or drainage which could alter the quantity or quality of surface water runoff into a watercourse or water body; ◦ Clearing of vegetation; • Landscaping which could alter the quantity or quality of surface water runoff into a watercourse or water body. This should not apply to agricultural parcels in most cases.
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Other Plans and Policies

Land Use Bylaws are not the only mechanism available to municipalities to regulate land use and development in riparian areas. Municipalities may use statutory plans, non-statutory plans and strategies, or other policy documents to establish controls on development in proximity to waterbodies, watercourses, and wetlands.

The project team identified and assessed select plans and policies to sample other “tools” available to municipalities outside their Land Use Bylaws.

Statutory Plans

Statutory Plans include Municipal Development Plans (MDPs), Intermunicipal Development Plans (IDPs), and Area Structure Plans (ASPs). These documents provide high-level policy direction on a range of land use and development matters. They are particularly significant in relation to subdivision. A municipality’s subdivision authority is bound by the provisions in a statutory plan.

Many municipalities include policies related to environmental matters in their statutory plans, most commonly in the MDP. The project team reviewed three MDPs to broadly assess how urban and rural municipalities have chosen to address riparian area management through these documents. The City of Edmonton’s *City Plan* and Strathcona County and Sturgeon County MDPs were reviewed to assess how they address:

- Riparian area identification and delineation;
- Environmental and Municipal Reserve dedication;
- Setbacks from natural features, including waterbodies, watercourses, and wetlands;
- Natural area restoration; and
- And other matters that may impact riparian intactness.

		City of Edmonton	Strathcona County	Sturgeon County
Statutory plan policy direction related to riparian areas.	Does the MDP provide direction on the delineation or identification of riparian related to land use and development decisions?	Not explicitly	Not explicitly	YES
	Does the MDP provide direction on the dedication of Environmental or Municipal Reserves?	YES	YES	YES
	Does the MDP provide direction on determining setbacks from watercourses, waterbodies, or wetlands?	NO	YES	YES
	Does the MDP provide direction on natural area restoration?	YES	YES	YES
	Does the MDP provide direction on any other matters related to riparian land management?	YES	YES	YES

City of Edmonton City Plan

The City of Edmonton's *City Plan* provides enabling policy statements that support further policy or regulatory direction related to the protection or interaction with riparian areas. Policies related to riparian management include:

- Protect, restore, maintain and enhance a system of conserved natural areas within a functioning and interconnected ecological network. (1.4.2.1)
- Partner to effectively manage, monitor and communicate air, land and water quality to protect human and ecosystem health. (1.4.2.2)
- Conserve, restore and reconnect natural areas and ecological networks within the built environment for human and ecosystem health. (2.4.1.2)
- Maintain the North Saskatchewan River Valley and Ravine System's key role as an environmental protection area and for open space, cultural and recreational uses. (5.1.1.5)
- Acquire lands within the North Saskatchewan River Valley and Ravine System for natural areas protection, open space connectivity and use. (5.1.1.6)
- Pursue the protection, management and integration of wetlands into new and existing developments. (5.1.2.3)
- Use environmental reserve to protect land and water bodies that meet the definition of environmental reserve but are not claimed by the Province in a manner that balances interests and enables contiguous and efficient urban development. (5.1.2.4)
- Coordinate protection, restoration and enhancement of the North Saskatchewan River Valley and Ravine System and ecological networks through outreach, education and partnerships. (5.1.2.5)
- Steward ecological networks and systems to ensure ongoing function, long-term sustainability and ecological connectivity within Edmonton and the region. (5.1.2.6)
- Manage and protect the watershed and water supply to maintain the quality of Edmonton's drinking water supply. (5.4.1.3)

Strathcona County Municipal Development Plan

The Strathcona County MDP provides policy direction that commit the municipality to varying levels of commitment. Certain policies REQUIRE action or particular direction, others ENCOURAGE action or direction, while others commit the County to CONSIDER action or direction.

The following MDP policy statements related to riparian areas REQUIRE:

- That statutory plans, infrastructure plans, and development proposals that may impact environmental features have supporting environmental and technical studies.
- That conservation of environmentally significant areas are prioritized.
- The use of environmental reserves and environmental reserve easements in accordance with the MGA as a means of conserving environmental features.
- That the boundaries of an environmental reserve or environmental reserve easement be dependent on site-specific characteristics and are established through a combination of applicable technical studies such as top of bank survey, slope stability report, floodplain/flood hazard analysis, geotechnical assessment and biophysical assessment.
- Minimum development setbacks from unstable slopes, floodplains, flood plain hazard lands and waterbodies.
- Compliance with the County's Wetland Conservation Policy in alignment with provincial legislation which addresses no net loss of wetlands through the following methods in order of priority:
 - Avoidance of impacts on wetlands;
 - Minimization of impacts on wetlands; or
 - Replacement of lost wetland value.

The following MDP policy statements related to riparian areas ENCOURAGE:

- The County to become a wetland restoration agent and mentor to other municipalities with respect to conservation.
- Stewardship of the watersheds in cooperation with Watershed Planning and Advisory Councils such as the North Saskatchewan Watershed Alliance.
- Cooperation with a number of industry, conservation, regional partnerships, and agencies toward environmental stewardship.

Sturgeon County Municipal Development Plan

The Sturgeon County MDP provides enabling policy statements that support further policy or regulatory direction related to the protection or interaction with riparian areas. Policies related to riparian management include:

- Should support rehabilitation and restoration initiatives for degenerated natural areas.
- Should ensure that settlement patterns, new subdivisions and development avoid Environmentally Significant Lands unless there is potential for significant net positive Countywide municipal, community and environmental gain. Compensation for lost ecological function may be sought as per legislation set out under the Water Act, Public Lands Act, Federal Policy on Wetland Conservation and Provincial Wetland Restoration and Compensation Guide (2007) as amended from time to time.
- Shall apply Environmental Reserve entitlements to protect lands not suitable for development and to reduce impacts on Environmentally Significant Lands.
- May consider the application of Environmental Reserve Easements in instances where lands are not suitable for development or for features that are identified as environmentally significant and where public access is not required.

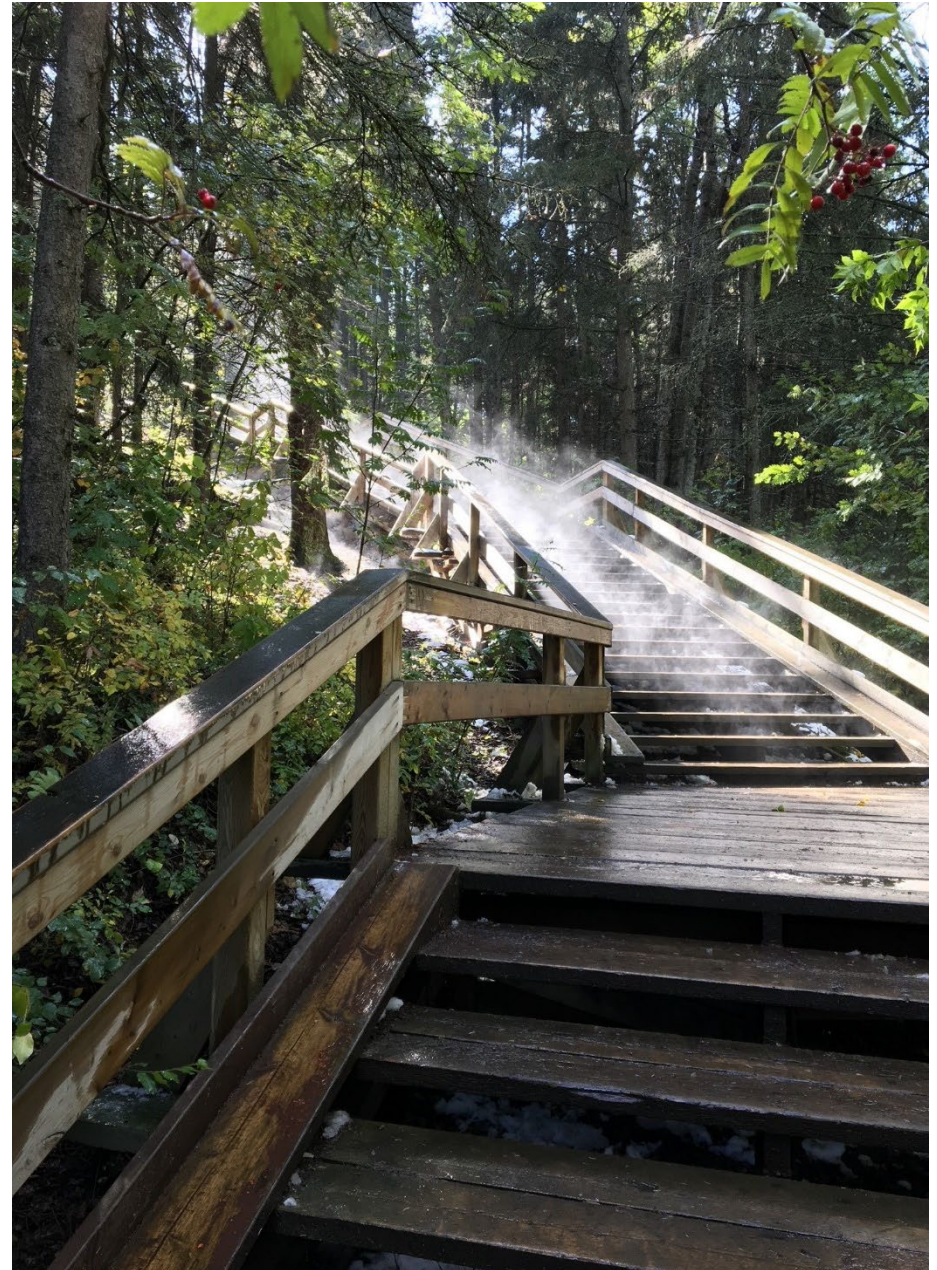
- Shall refer to the findings of the Environmentally Sensitive Areas study when evaluating subdivision and development proposals to ensure that adequate regard is given to the identified areas. The study should be updated to identify new County Environmental Sensitive Areas of local, regional, provincial and national significance.
- Should require developments to minimize and mitigate impacts of subdivision and development through low-impact design principles on lands in close proximity to Environmentally Sensitive Areas.
- Should initiate the development and implementation of a Watershed Management Plan in consultation with regional stakeholders and provincial authorities to identify and map significant water resources (and associated lands) including riparian lands, wetlands, flood zones, natural drainage systems and dedicated reserve lands.
- Shall seek to improve the overall health of the Sturgeon sub-watershed by discouraging the filling and alteration of existing wetlands and by encouraging the restoration of drained natural wetlands.
- Should ensure adequate protection of the aquatic environment, while minimizing the limitation on development (where possible), by prescribing setbacks established through scientific investigation and application of the Riparian Setback Matrix Model (RSMM).
- Should apply the recommended setbacks of the RSMM on a site-by-site basis to non-Primary Industry developments to achieve a 90% reduction in sediment, phosphorus and nitrogen inputs to the nearby aquatic resource.
- Shall maintain established vegetation on steep slopes and watercourse banks to minimize erosion and subsidence.

Policies

In addition to statutory plans, municipalities may also adopt separate policies by bylaw on specific matters. While this approach can enable very specific bylaws to address particular matters, it does increase the level of complexity for decision-makers, administration, landowners and developers. Municipalities may choose to take this approach where they have sufficient resources to manage the complexity.

The City of Edmonton is an example of a municipality with a more complex policy and regulatory hierarchy.

Plan, Strategy, Policy	Purpose
The City Plan (MDP)	High-level policy direction to inform other strategic and regulatory documents.
North Saskatchewan River Valley Area Redevelopment Plan (ARP)	Identifies future land use policy specifically as it affects development within the river valley and ravines.
Breathe, Edmonton's Green Network Strategy	Strategic document to guide the City's open space network for new development areas and established neighbourhoods. Identifies targets and preferred uses for open spaces, including naturalized areas and the river valley and ravines.
Ribbon of Green	Strategic planning framework for open space development within the river valley and ravines. Recently expanded to cover new areas within the NE and SW portion of the city.
Top of Bank Policy (C542)	Establishes development setbacks requirements to be applied at the time of subdivision from the top of bank for the North Saskatchewan River Valley and its tributary ravines within city limits.



Summary

The Riparian Regulations Discussion Guide identifies opportunities to better align regulatory documents across the North Saskatchewan River watershed toward improving riparian intactness. The accompanying Riparian Regulations Best Management Practices Guide will provide comprehensive recommendations for consideration by local

governments. The adoption of recommended regulatory best practices will enable coordinated action and collaboration across local government jurisdictions for the protection and improvement of riparian areas throughout the watershed.



APPENDIX A | MUNICIPALITIES, FIRST NATION RESERVE LANDS, AND MÉTIS SETTLEMENTS WITHIN THE NORTH SASKATCHEWAN WATERSHED

Municipalities identified with **GREEN** text have been included in the regulatory review process as a representative sample across the watershed and based on significant land cover or population impact.

Cities

Beaumont	Fort Saskatchewan	Lloydminster	St. Albert
Edmonton	Leduc	Spruce Grove	

Counties

Athabasca County	County of Minburn	Lac Ste. Anne County	Strathcona County
Beaver County	County of St. Paul	Lamont County	Sturgeon County
Brazeau County	County of Two Hills	Leduc County	Thorhild County
Camrose County	County of Vermilion River	Municipal District of Bonnyville	Westlock County
Clearwater County	County of Wetaskiwin	Parkland County	Yellowhead County
County of Barrhead	Flagstaff County	Smoky Lake County	

Towns

Bon Accord	Gibbons	Redwater	Tofield
Bruderheim	Lamont	Rocky Mountain House	Two Hills
Calmar	Legal	Smoky Lake	Vegreville
Devon	Morinville	St. Paul	Vermilion
Drayton Valley	Mundare	Stony Plain	
Elk Point	Onoway	Thorsby	

Summer Villages

Betula Beach	Lakeview	Seba Beach	Sunset Point
Castle Island	Point Alison	Silver Sands	Val Quentin
Horseshoe Bay	Ross Haven	South View	West Cove
Kapasiwin	Sandy Beach	Sunrise Beach	Yellowstone

First Nations

Alexander First Nation	Frog Lake First Nation	Paul First Nation	Sunchild First Nation
Alexis Nakota Sioux Nation	O'Chiese First Nation	Saddle Lake Cree Nation	
Enoch Cree Nation	Onion Lake Cree Nation	Stoney Nakoda First Nation	

Métis Settlements

Elizabeth	Fishing Lake	Kikino
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APPENDIX B | LAND USE BYLAW REVIEW

In certain instances, where the LUB does not include specific direction on development, the **topic may be addressed** through statutory plans, non-statutory plans, policies or other bylaws not assessed through this project.

The above review reflects the municipal Land Use Bylaws approved and publicly available as of May 2023. Subsequent updates may not be reflected in this review.

Upstream Municipalities

			City of Beaumont	City of Leduc	Brazeau County	Clearwater County	Leduc County	Parkland County	County of Wetaskiwin	Yellowhead County	Town of Devon	Town of Drayton Valley
Common Language Provide consistency in regulatory language across the watershed.	Defined terms related to waterbodies and riparian areas.		NONE	Floodplain	Floodplain (and related)	Flood Prone Lands	Conservation Easement	Flood Plain	Bank Break	Hazard Land	Riparian Area	NONE
				Natural Feature (includes wetlands, ravines, rivers, valleys)	Shoreline	Flood area	Environmental Impact	Hazard Lands (includes ravines, natural drainage courses, swamps)	Floodplain	Water Body	Top of Bank	
				Top of Bank	Top of Bank		Environmentally Sensitive Area		Top of Bank		Flood Plain	
				Top of Bank	Waterbody		Environmentally Sensitive Area Study	Shoreline	Water Feature		Nature Conservation	
					Watercourse		Shoreline				Waterway Corridor	
							Top of Bank					
							Waterbody					

			City of Beaumont	City of Leduc	Brazeau County	Clearwater County	Leduc County	Parkland County	County of Wetaskiwin	Yellowhead County	Town of Devon	Town of Drayton Valley
Subdivision Regulations Provide direction in Subdivision policies and regulations to identify and protect riparian areas.	Subdivision applications	Does the LUB require specific information related to riparian areas for subdivision applications?	NO	NO	NO	NO	NO	NO	YES	YES	NO	NO
		Does the LUB require, as an application requirement during subdivision, the delineation of riparian areas?	NO	YES	NO	YES	YES	NO	YES	YES	NO	YES
	Reserve Dedication	Does the LUB require: Conservation Easement Agreements, Environmental Reserves, Municipal Reserves, Environmental Reserve Easements related to riparian areas or other hazard lands?	NO	NO	NO	YES	NO	NO	YES	YES	NO	NO

		Does the LUB identify any compensation, mitigation, restoration, or other management processes or programs triggered by subdivision development affecting riparian areas?	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
		Does the LUB identify a minimum reserve requirement for new subdivisions adjacent to riparian areas?	NO	NO	Not Explicitly	NO	NO	NO	YES	NO	NO	NO
	Conditions	Does the LUB identify particular conditions of subdivision approval related to riparian areas?	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

			City of Beaumont	City of Leduc	Brazeau County	Clearwater County	Leduc County	Parkland County	County of Wetaskiwin	Yellowhead County	Town of Devon	Town of Drayton Valley
Development Regulations Control upland development in proximity to riparian areas to minimize impact.	Development permit applications	Does the document require specific information related to riparian areas for development applications?	NO	YES	NO	YES	YES	YES	YES	YES	NO	NO
		Does the LUB require, as an application requirement for development permit, the delineation of riparian areas?	NO	YES	NO	YES	YES	YES	YES	YES	NO	YES
		Does the LUB require development permits for stripping and grading in proximity to riparian areas (including any waterbody, watercourse, or wetland)?	NO	NO	YES	YES	YES	NO	Not explicitly	NO	NO	YES

		Does the LUB require development permits for shoreline modifications on lands adjacent to riparian areas (including any waterbody, watercourse, or wetland)?	NO	NO	NO	NO	Not explicitly	NO	YES	NO	NO	NO
	Setback requirements	Does the LUB identify a setback requirement for development from riparian areas (including any waterbody, watercourse, or wetland)?	NO	NO	NO	YES	YES	YES	YES	YES	NO	YES
		Does the LUB identify a setback requirement for new developments, re-development, and subdivision related to steep slopes or other hazards?	NO	NO	YES	YES	YES	YES	YES	YES	NO	YES
		How does the LUB regulate the determination of setbacks adjacent to riparian areas?	N/A	N/A	High water mark, 1:100 flood plain area, or site specific flood hazard assessment	High water mark, 1:00 flood plain area or site specific flood hazard assessment	Minimum established setbacks, variable through engineering reports	Minimum established setbacks, variable through engineering reports	Minimum established setbacks, variable through engineering reports	Minimum established setbacks, variable through engineering reports	NO	Minimum established setbacks, variable through engineering reports
	Restrictions on development	Does the LUB restrict the types of development allowed in proximity to riparian areas?	NO	NO	YES	YES	YES	YES	YES	YES	NO	NO
		Does the LUB restrict or prohibit the disturbance of wetlands, streams, and riparian areas?	NO	YES	YES	YES	Not explicitly	Not explicitly	YES	NO	NO	NO
		Does the document regulate the clearing of vegetation in proximity to riparian areas?	NO	NO	YES	YES	YES	YES	YES	NO	NO	Not Explicitly
	Conditions	Does the LUB identify particular conditions of development approval related to riparian areas?	NO	NO	NO	YES	NO	NO	Not explicitly	NO	NO	NO

Central Municipalities

		City of Edmonton	City of Fort Saskatchewan	City of St. Albert	Lac Ste. Anne County	Lamont County	Strathcona County	Sturgeon County	SV of Kapasiwin	SV of Seba Beach
Common Language Provide consistency in regulatory language across the watershed.	Defined terms related to waterbodies and riparian areas.	Natural Areas	Floodplain Natural Features (includes wetlands, ravines, rivers)	Designated Flood line Stripping	1:100 Year Floodplain Flood Fringe/Flood Hazard Area/ Floodway Shoreline Waterbody	NONE	Bed and Shore Environmentally Sensitive Lands Flood Fringe Floodplain or Flood Hazard Lands Floodway Top of Bank Water Body Watercourse Wetland	Environmentally Significant Lands (includes swamps, drainage courses, riparian lands, wetlands, hazardous lands) Hazardous Lands (includes steep slopes, flood hazard areas)	Lake	Shoreline

			City of Edmonton	City of Fort Saskatchewan	City of St. Albert	Lac Ste. Anne County	Lamont County	Strathcona County	Sturgeon County	SV of Kapasiwin	SV of Seba Beach
Subdivision Regulations Provide direction in Subdivision policies and regulations to identify and protect riparian areas.	Subdivision applications	Does the LUB require specific information related to riparian areas for subdivision applications?	NO*	NO	NO	Not explicitly	NO	NO	NO	NO	NO
		Does the LUB require, as an application requirement during subdivision, the delineation of riparian areas?	NO*	YES	NO	Subdivision applications may require ER or ERE to be delineated	NO	YES	YES	NO	NO
	Reserve dedication	Does the LUB require: Conservation Easement Agreements, Environmental Reserves, Municipal Reserves, Environmental Reserve Easements related to riparian areas or other hazard lands?	NO*	YES	NO	YES	NO	NO	NO	NO	NO
		Does the LUB identify any compensation, mitigation, restoration, or other management processes or programs triggered by subdivision development	NO	NO	NO	NO	NO	NO	NO	NO	NO

		affecting riparian areas?								
		Does the LUB identify a minimum reserve requirement for new subdivisions adjacent to riparian areas?	NO*	Not explicitly	NO	Not explicitly	NO	Not explicitly	NO	NO
	Conditions	Does the LUB identify particular conditions of subdivision approval related to riparian areas?	NO	YES	YES	Not explicitly	NO	NO	NO	NO

			City of Edmonton	City of Fort Saskatchewan	City of St. Albert	Lac Ste. Anne County	Lamont County	Strathcona County	Sturgeon County	SV of Kapasiwin	SV of Seba Beach
Development Regulations Control upland development in proximity to riparian areas to minimize impact.	Development permit applications	Does the document require specific information related to riparian areas for development applications?	YES	YES	YES	YES	Not explicitly	YES	YES	YES	YES
		Does the LUB require, as an application requirement for development permit, the delineation of riparian areas?	NO*	YES	NO*	Not explicitly	NO	YES	YES	NO	NO
		Does the LUB require development permits for stripping and grading in proximity to riparian areas (including any waterbody, watercourse, or wetland)?	YES	YES	NO	NO	YES	YES	Not explicitly	NO	NO
		Does the LUB require development permits for shoreline modifications on lands adjacent to riparian areas (including any waterbody, watercourse, or wetland)?	NO*	Not explicitly	NO	NO	NO	Not explicitly	Not explicitly	NO	NO
	Setback requirements	Does the LUB identify a setback requirement for development from riparian areas (including any waterbody, watercourse, or wetland)?	NO*	YES	NO*	YES	YES	YES	YES	NO	NO

		Does the LUB identify a setback requirement for new developments, redevelopment, and subdivision related to steep slopes or other hazards?	NO*	YES	NO*	YES	Not explicitly	YES	YES	NO	NO
		How does the LUB regulate the determination of setbacks adjacent to riparian areas?	N/A*	Minimum established setbacks, variable through engineering reports	Established by the Designated Flood Line and through other City mechanism	Environmental conditions assessment process	Top of bank; 1:100 year floodplain	Minimum established setbacks, variable through engineering reports	Minimum setbacks based on slope height, verified through engineering reports	Determined through engineering reports	NO
	Restrictions on development	Does the LUB restrict the types of development allowed in proximity to riparian areas?	YES	YES	YES	NO	YES	YES	YES	YES	YES
		Does the LUB restrict or prohibit the disturbance of wetlands, streams, and riparian areas?	NO*	YES	NO	YES	NO	Not explicitly	Not explicitly	Not explicitly	NO
		Does the document regulate the clearing of vegetation in proximity to riparian areas?	Not explicitly	YES	NO	NO	NO	YES	Not explicitly	NO	NO
	Conditions	Does the LUB identify particular conditions of development approval related to riparian areas?	YES	YES	YES	Not explicitly	Not explicitly	NO	NO	YES	NO

Downstream Municipalities

		Beaver County	County of Minburn	County of Two Hills	County of Vermilion River	Smoky Lake County	County of St. Paul	Town of Two Hills	Town of Vermilion
Common Language Provide consistency in regulatory language across the watershed.	Defined terms related to waterbodies and riparian areas.	Lake	Flood-Fringe Floodplain Floodway Hazard Lands Water body Top of Bank	NONE	Flood plain Floodway, 1:100 Year Hazard lands Natural area	Environmental Reserve Flood Plain Natural Area	Flood Fringe Floodway Lake Shoreline Watercourse	NONE	NONE

			Beaver County	County of Minburn	County of Two Hills	County of Vermilion River	Smoky Lake County	County of St. Paul	Town of Two Hills	Town of Vermilion
Subdivision Regulations Provide direction in Subdivision policies and regulations to identify and protect riparian areas.	Subdivision applications	Does the LUB require specific information related to riparian areas for subdivision applications?	NO	YES	Not explicitly	YES	Not explicitly	Not explicitly	NO	NO
		Does the LUB require, as an application requirement during subdivision, the delineation of riparian areas?	NO	YES	Not explicitly	YES	Not explicitly	Not explicitly	NO	NO
	Reserve dedication	Does the LUB require: Conservation Easement Agreements, Environmental Reserves, Municipal Reserves, Environmental Reserve Easements related to riparian areas or other hazard lands?	NO	YES	NO	YES	YES	NO	NO	NO
		Does the LUB identify any compensation, mitigation, restoration, or other management processes or programs triggered by subdivision development affecting riparian areas?	NO	NO	NO	YES	NO	NO	NO	NO
		Does the LUB identify a minimum reserve requirement for new subdivisions adjacent to riparian areas?	NO	NO	NO	NO	Not explicitly	Not explicitly	NO	NO
	Conditions	Does the LUB identify particular conditions of subdivision approval related to riparian areas?	NO	NO	Not explicitly	NO	NO	NO	NO	NO

			Beaver County	County of Minburn	County of Two Hills	County of Vermilion River	Smoky Lake County	County of St. Paul	Town of Two Hills	Town of Vermilion
Development Regulations Control upland development in proximity to riparian areas to minimize impact.	Development permit applications	Does the document require specific information related to riparian areas for development applications?	NO	YES	Not explicitly	YES	YES	Not explicitly	NO	NO
		Does the LUB require, as an application requirement for development permit, the delineation of riparian areas?	NO	YES	Not explicitly	YES	Not explicitly	Not explicitly	NO	NO

		Does the LUB require development permits for stripping and grading in proximity to riparian areas (including any waterbody, watercourse, or wetland)?	NO	NO	NO	YES	Not explicitly	Not explicitly	YES	YES
		Does the LUB require development permits for shoreline modifications on lands adjacent to riparian areas (including any waterbody, watercourse, or wetland)?	NO	NO	NO	YES	NO	NO	NO	YES
	Setback requirements	Does the LUB identify a setback requirement for development from riparian areas (including any waterbody, watercourse, or wetland)?	NO	YES	Not explicitly	YES	Not explicitly	YES	NO	YES
		Does the LUB identify a setback requirement for new developments, redevelopment, and subdivision related to steep slopes or other hazards?	NO	YES	Not explicitly	YES	YES	NO	NO	YES
		How does the LUB regulate the determination of setbacks adjacent to riparian areas?	N/A	Top of bank or escarpment	Top of bank; 1:100 year floodplain	May be determined through engineering reports	1:100 year floodplain; Development Authority discretion	Minimum established setbacks, variable through engineering reports	N/A	Minimum established setbacks
	Restrictions on development	Does the LUB restrict the types of development allowed in proximity to riparian areas?	NO	YES	Not explicitly	YES	NO	YES	NO	NO
		Does the LUB restrict or prohibit the disturbance of wetlands, streams, and riparian areas?	NO	NO	NO	YES	Not explicitly	Not explicitly	NO	NO
		Does the document regulate the clearing of vegetation in proximity to riparian areas?	NO	NO	NO	Not explicitly	Not explicitly	NO	NO	NO
	Conditions	Does the LUB identify particular conditions of development approval related to riparian areas?	NO	YES	Not explicitly	Not explicitly	Not explicitly	NO	NO	NO

APPENDIX C | GLOSSARY OF TERMS

Bed and Shore

Means the land covered so long by water as to wrest it from vegetation or as to mark a distinct character on the vegetation where it extends into the water or on the soil itself.

Development

Means development as defined in the *Municipal Government Act*:

- a. An excavation or stockpile and the creation of either of them,
- b. A building or an addition to or replacement or repair of a building and the construction or placing of any of them on, in, over or under land,
- c. A change of use of land or a building or an act done in relation to land or a building that results in or is likely to result in a change in the use of the land or building, or
- d. A change in the intensity of use of land or a building or an act done in relation to land or a building that results in or is likely to result in a change in the intensity of use of the land or building.

Reserve (Environmental)

Means land designated as Environmental Reserve pursuant to Section 664(1) of the *Municipal Government Act* at the time of subdivision.

Environmental Reserve lands are owned by the municipality and may be required for one or more of the following purposes:

- a. To preserve the natural features of certain lands including natural drainage course, land subject to flooding, and land abutting the bed and shore of any body of water,
- b. To prevent pollution of the land or of the bed and shore of an adjacent body of water,
- c. To ensure public access to and beside the bed and shore of a body of water,

- d. To prevent development of the land where the natural features of the land would present a significant risk of personal injury or property damage occurring during development or use of the land.

Reserve (Municipal)

Means land designated as Municipal Reserve pursuant to the *Municipal Government Act* at the time of subdivision. Municipal Reserve lands are owned by the municipality, or by school boards where agreements exist, and may be used only for:

- a. A public park,
- b. A public recreation area,
- c. School board purposes,
- d. To separate areas of land that are used for different purposes.

Riparian Areas (or Lands)

Means the transitional area between upland and aquatic ecosystems. They have variable width and extent above and below ground and perform various ecological functions. These lands are influenced by and exert an influence on associated water bodies, including alluvial aquifers and floodplains. Riparian lands usually have soil, biological, and other physical characteristics that reflect the influence of water and hydrological processes.

Riparian Intactness

Means the extent to which natural riparian habitat or shorelines have been altered by human activity. Highly intact shorelines are dominated by natural vegetation, while shorelines classified as very-low intactness are dominated by human-built structures or disturbed vegetation.

Setback

Means an established minimum distance that must be maintained between a land use or development from a property boundary, including boundaries with water bodies defined features.

Statutory Plan

Means a plan adopted by a municipal council as a bylaw, requiring three readings and a public hearing. Statutory plans include Municipal Development Plans, Intermunicipal Development Plans, Area Structure Plans and Area Redevelopment Plans.

Subdivision

Means the division of a parcel of land approved by a municipal subdivision authority pursuant to the *Municipal Government Act*.

Upland Area

Means an area of land, usually terrestrial land (not aquatic) either upstream or surrounding a water body. It is not part of the water body but may contribute to the integrity of the water body.

Water Body

Means any location where water flows or is present, whether or not the flow or the presence of water is continuous, intermittent or occurs only

during a flood, and includes but is not limited to wetlands and aquifers. The water boundary is considered bound by its ecological boundary. Water bodies can be natural or man-made.

Watercourse

Means a flowing water body, such as a river, stream, or creek. This includes watercourses that may be ephemeral, intermittent, temporary or seasonal in nature.

Watershed

Means an area of land that catches precipitation and drains it to a specific point such as a marsh, lake, stream or river. A watershed can be made up of a number of sub-watersheds that contribute to the overall drainage of the watershed. A watershed is sometimes referred to as a basin, drainage basin or catchment area.

Wetland

Means land that has the water table at, near, or above the land surface, or which is saturated for a long enough period to promote wetland or aquatic processes as indicated by hydric soils, hydrophytic vegetation, and various kinds of biological activity that are adapted to the wet environment.

APPENDIX D | AB ENVIRONMENT & PARKS RECOMMENDED SETBACKS CHART

Alberta Environment and Parks Recommended Guidelines for Minimum Environmental Reserve/Easement Widths

In reference to Section 664 of the *Municipal Government Act*, the following are recommended where a boundary to a proposed subdivision is a water body or watercourse.

Table 1. Standard recommended minimum widths for Environmental Reserves or Environmental Reserve Easements based on type of water feature.

Water Feature	Minimum ER Width ²	Notes
Reservoirs & Regulated Lakes	30 m from right of way or easement boundary	A regulated lake is a lake where water levels are established to a predetermined elevation and actively managed through use of a licensing requirement (e.g. to pump water into the water body).
Lake (natural & controlled)	30 m from natural boundary	On controlled lakes, 30 m from sill elevation of licensed control structure.
Swamp/wetland ¹	Variable, include wet meadow zone	Wet meadow zone can be extensive in some situations, and in these instances the ER should be wide enough to preserve ecological function.
Large River (≥ 15 m width)	30+ m	See additional requirements for hazardous lands.
Small River/Large Stream (6-15 m)	15 m	See additional requirements for hazardous lands.
Medium Stream (3 - 6 m)	10 m	See additional requirements for hazardous lands.
Small Stream (≤ 3 m)	6 m	See additional requirements for hazardous lands.
Ephemeral watercourse (no defined channel)	0 m	Use bylaw to regulate tree cutting within a defined distance from feature to maintain riparian vegetation and drainage.
Braided Stream	10 m from outside boundary of active floodway	
¹ Alberta Environment and Parks views the term "swamp" to mean any area with hydrological conditions of sufficient duration to have developed saturated soils and hydrophobic vegetation (i.e. wetlands or peat lands).		
² In addition to the recommended ER width for the water feature itself, associated landscape features may require the ER width to be modified to factor in additional inherent hazards to development.		

For lands described in section 664(1)(b) of the *Municipal Government Act* (unsuitable for development because they are subject to flooding, have high risk of erosion, or have existing topographical or geo-technical constraints) the following are recommended.

Table 2. Additional factors that may necessitate an increase in the width of an Environmental Reserve or Environmental Reserve Easement.

Hazardous Lands	ER Modifier	Notes
Floodplain	- The width of the 1:100 year flood line or 30m from the natural boundary of a watercourse or lake, whichever is less. - The width of meander belt for watercourses that tend to meander or entire floodplain if it is highly constrained within a confined valley.	- Residential development within a floodplain is discouraged. - Development within flood fringe area should only be considered if flood proofing undertaken to reduce risk of flood damage. Flood risk mapping or delineation of the 1:100 year flood line generally defines the extent of expected flood occurrence (see Alberta Environment policy and guidelines). - The width of a meander belt is determined by multiplying bankfull width by 20 for each reach, and is split equally on either side of creek along axis of meander belt.
Erosion prone areas	Provide for a toe erosion allowance.	Consider highly erosive soils and annual recession rates.
Gully, ravine, coulee, or valley escarpments	Provide for a stable slope allowance. Apply construction and building setbacks from this line.	Boundary of stable slope allowance measured from top of crest of plateau (terrace), valley slope or tableland.
Steep Slopes ($>15\%$)	3X escarpment height or as recommended by a geotechnical report on slope stability, rate of erosion, etc.	

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