



Alberta Wilderness Association
"Defending Wild Alberta through Awareness and Action"

Dear Justin Ellis,

Alberta Wilderness Association (AWA) is a part of the Cardinal Divide Conservation Coalition (CDCC), who provided input to the Cadomin Area Trails Management Planning on March 4th last week. Our CDCC rep indicated that you would also appreciate written notes to support our coalition's verbal feedback.

AWA emphasizes the need to consider the biodiversity baselines within the planning area. Alberta Environment and Protected Areas and the Alberta Biodiversity Monitoring Institute have co-developed and mapped biological indicators across the province for the Land-use Framework's biodiversity management framework, to support and inform land use planning. [Landscape Connectivity](#) and [Stream Connectivity](#) are two such indicators, and data is available for both in the planning area, dating back to 2010.

Each indicator is calculated as a proportion of 100, where 100 reflects the environmental state at desirable reference conditions within the boundaries of a given watershed. Each watershed has been delineated by their Hydrological Unit Code (HUC). [Landscape Connectivity data](#) is reported for the second finest level (HUC 8), while [data for Stream Connectivity](#) is calculated at a slightly coarser watershed level (HUC 6).

| HUC 8 Name | 2010 | 2022 | % Change |
|----------------------------------|-------|-------|----------|
| Upper Athabasca and Oldman Creek | 16.97 | 15.61 | -1.36 |
| Upper McLeod River | 22.02 | 18.85 | -3.17 |
| Upper Pembina River | 12.39 | 11.63 | -0.76 |
| Cardinal River | 50.14 | 48.31 | -1.83 |
| Brazeau River | 49.70 | 42.70 | -7.00 |

As an indicator, Landscape Connectivity measures both structural and functional connectivity, which captures the ability of both species and ecological processes to move and function freely a given area. Landscape connectivity in the Cadomin Planning Area is already quite poor (provincial average is 33.3%) and is showing declining trends in all HUC 8 watersheds since 2010.

Stream Connectivity reflects how connected aquatic ecosystems are on both spatial and temporal scales, and is important for supporting healthy aquatic organism populations and lifecycles at all trophic levels.

| HUC 6 Name | 2010 | 2018 | % Change |
|-------------------------------------|-------|-------|----------|
| Athabasca River above Berland river | 34.81 | 34.35 | -0.46 |
| Upper McLeod River | 20.83 | 18.96 | -1.87 |
| Upper Pembina River | 41.31 | 38.89 | -2.42 |
| Brazeau River | 48.04 | 47.60 | -0.44 |

Stream connectivity is similarly poor (provincial average is 63.8%) and is showing declining trends in all HUC 6 watersheds since 2010.

These connectivity trends indicate that to improve biological integrity within the planning region, more must be done to connect terrestrial and aquatic ecosystems at spatial and temporal scales, which necessitates that trails be planned to reduce habitat fragmentation. This requires also considering the needs and threats to species in the planning area known to be representative of ecosystem health, as well as species at risk.

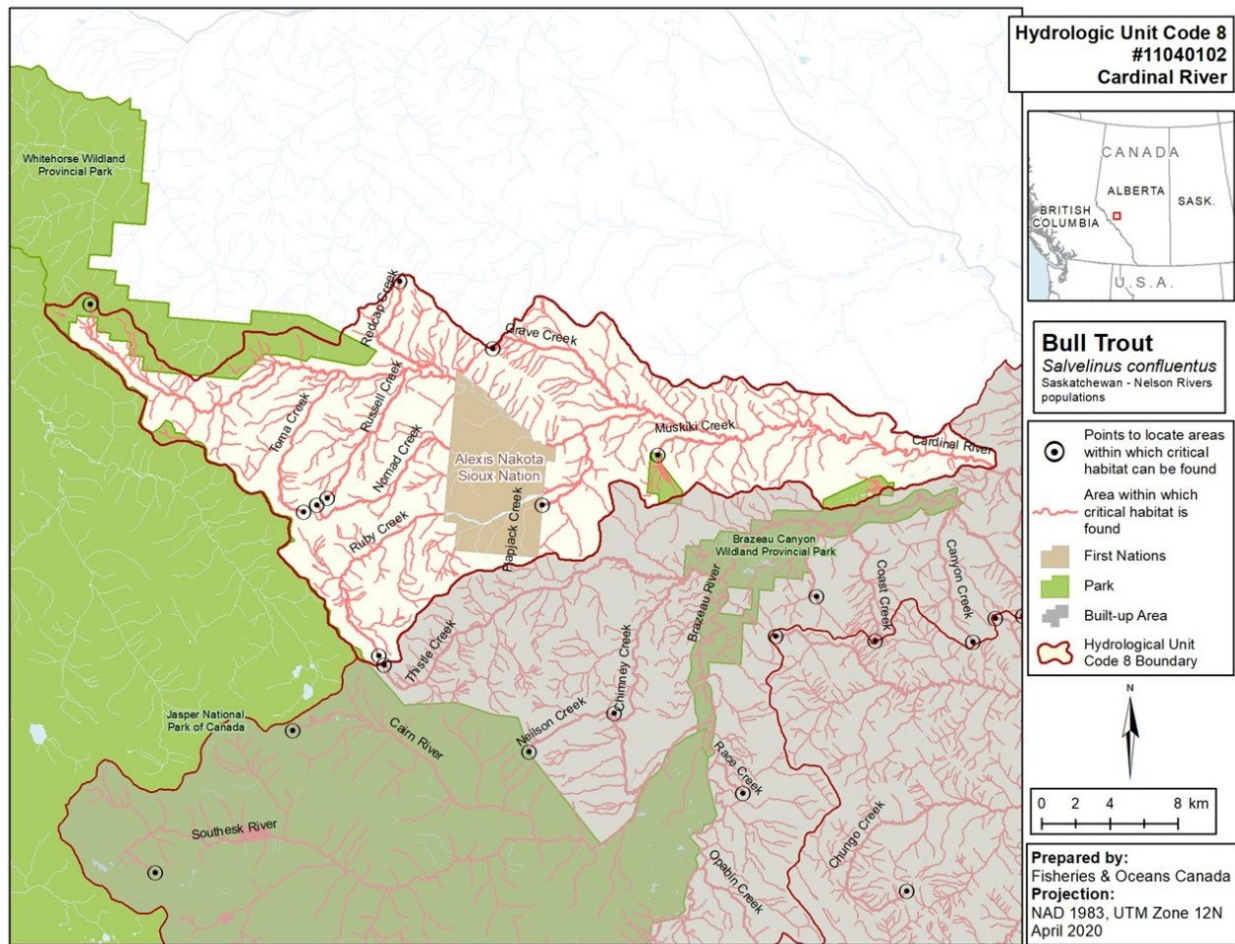
The planning area is within the Core Grizzly Bear Zone and overlaps with critical habitat for Athabasca rainbow trout and bull trout. Both grizzlies and bull trout are known to be sensitive to the density of trails and type of use on trails. In planning areas like the Livingstone Range and Porcupine Hills, specific linear density limits have been established to support recovery of both species, and “sustain biodiversity and watershed integrity” (see 3.1 Detailed Regulatory Limits and Targets in the [Livingstone-Porcupine Hills Land Footprint Management Plan](#)). These should inform the Cadomin trail planning, and similar limits should be adopted in the area to help achieve objectives in [Alberta’s Grizzly Bear Recovery Plan](#) and [Environment and Climate Change Canada’s Bull Trout Recovery Plan](#).

While it has been known for some time that the effects of trails extend past the linear footprint itself, recent research reveals the zone of influence has likely been underestimated. In recent research in the central Rocky Mountains, inclusive of Banff, Yoho, and Kootenay National Parks, [Thompson et al.](#) found that human use of trails exerts measurable influence “as far as 1.8 km for grizzly bears and 6.1 km for wolves” reducing their habitat quality (2024). The researchers noted that much of the impact was because of undesigned trails in the study area, “which could be mitigated with effective public engagement” (Thompson et al., 2024). The Cadomin Area Trail Management Planning should incorporate signage and other educational opportunities for users of the region to learn about the impacts of undesigned trails and have ongoing enforcement to ensure they are not being created moving forward.

The researchers also provide a tool in Appendix S2, that can be used by land managers “to generate optimal buffer distances for excluding land within some undesirable influence of human use” and “calculate the strength of such an influence at any distance away from a trail” (Thompson et al., 2024).

Findings from [Lothian et al.](#) in 2026 reiterated the significant negative impact dense linear features pose to bull trout, also noting that native trout in general preferentially favour “areas of higher elevation and greater tree coverage in direct contrast to non-native trout”. To conserve native trout species like the Athabasca rainbow and bull trout, the researchers emphasize the need for regulating human activities and restoring terrestrial environments in sensitive mountain environments (Lothian et al., 2026). This suggests that the trail planning here should ensure that tree coverage is maintained and that trails are limited in higher elevations and critical habitat for these species, particularly for the bull trout. As the

Cardinal River (HUC 8 #11040102) is designated critical habitat for this species, further trail development and increased linear density should be avoided here.



Map of the Cardinal River Hydrological Unit, which is identified as critical habitat for Bull Trout, from the [Bull Trout \(Salvelinus confluentus\), Saskatchewan-Nelson Rivers populations: recovery strategy 2020](#).

As the type of trail and use also impacts wildlife, along with the trail amount and density, effective land management planning must consider what activities are permitted in the area, designing trails to minimize ecological impacts.

[Fairchild et al.](#)'s findings note that river fords can be seen as the “cost-effective, viable option” for stream crossings in other Rocky Mountain jurisdictions, they degraded habitat and resulted in the loss of fauna in headwater streams (2025). This must be avoided in the Cadomin Area, particularly in the critical habitat for aquatic species at risk. The researchers emphasize that “managers seeking to reduce the impacts of unmaintained roads on stream networks would be wise to focus on stream crossings”, and that “proactive prevention of such natural resource degradation is likely to be far more cost-effective” (Fairchild et al., 2025). All water crossings in the planning area must be designed to best ensure passage of aquatic species (culverts are a known barrier to stream connectivity). Their use must also be monitored and enforced to avoid recreation activities degrading and damaging aquatic habitat.

As the researchers restored the headwater streams damaged by off highway vehicle use, they observed that the “the greatest restoration act was the removal of the road from the valley bottom, a process **far more related to effective engagement with OHV user groups** than the technical approach related to stream restoration” (emphasis added, Fairchild et al., 2026). This finding suggests that when removing any existing trails, the planning team and eventual management plan for the Cadomin Area should incorporate continuous education and engagement opportunities with various recreation groups and trail users to increase chances of success. The plan must inform interested parties not just where the trails are located and what uses are permitted, but why any designations, restrictions, and/or compliance is necessary to protect the landscape and watershed.

As the Cadomin Area is within the whirling disease high to moderate risk (yellow) zone, any trails providing access to or near waterbodies also require good signage indicating risk and proper mitigation measures. Equipment and/or vehicle checkpoints may be necessary to ensure compliance and prevent the spread of disease into the watersheds. Additionally, more research, signage, warnings, and/or restrictions need to be considered for stocked recreational fisheries (Mary Gregg Lake) and other angling spots in Cadomin Area, as recent research from the government of Alberta has found that the coal mines upstream “provide a persisting threat to water quality and biota resident to the McLeod River and its tributaries” (Colin et al., 2025).

[Colin et al.](#) found that although there are active reclamation efforts at the Cheviot, Gregg, and Luscar mine sites, water quality downstream remains impaired (2025). Over 17 contaminants of concerns were found at levels many times higher in magnitude than unaffected comparison sites, with several contaminants exceeding the long-term or chronic water quality guidelines for the protection of aquatic life (Colin et al., 2025). For trail users looking to fish in the area, this is information that should be conveyed.

The planning area also overlaps endangered and threatened plant ranges for whitebark pine and porsild’s bryum. Trail planning and development must avoid these species on the landscape, providing sufficient buffers around any known locations of the plants to mitigate potential negative impacts associated with their proximity to trails. Trail planning should be informed by [Alberta Porsild's Bryum Recovery Plan](#) and the Government of Canada’s [Whitebark pine \(Pinus albicaulis\): proposed recovery strategy 2017](#).

In the Castle region, a scientific study observed a “a greater likelihood of exotic species presence closer to trails”, with those found at high elevations “most often associated with off-highway vehicle trails” (Chisholm and McCune, 2024). To avoid spreading exotic and potentially invasive species in sensitive Rocky Mountain environments, researchers [Chisholm and McCune](#) encourage land managers to “restrict high-intensity off-highway vehicle trails to less sensitive vegetation types at lower elevations”, noting the shrubland and mixed forest ecosystems were particularly sensitive to OHV trails (2024). They also suggest that required cleaning stations for vehicles could help reduce the probability of transporting exotic species (Chisholm and McCune, 2024).

Thank you in advance for considering this information in the trail management planning for the Cadomin area, we look forward to seeing it incorporated into the final plan.

Sincerely,

Alberta Wilderness Association

A handwritten signature in black ink, appearing to read 'Kennedy Halvorson', with a long horizontal flourish extending to the right.

Kennedy Halvorson
Conservation Specialist