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

August 28, 2026

International St. Mary and Milk Rivers Study Board
International Joint Commission Canadian Section
234 Laurier Avenue West, 22nd Floor
Ottawa, ON K1P 6K6 Canada
By email: smmr@ijc.org

RE: Comments on the International St. Mary and Milk Rivers Study Board Final Draft Report and Recommendations

To the International St. Mary-Milk Rivers Study Board:

Alberta Wilderness Association (AWA) appreciates the opportunity to comment on the International St. Mary and Milk Rivers Study Board Final Draft Report and Recommendations. Founded in 1965, AWA strives to help Albertans understand the intrinsic values that wilderness provides. We engage with communities in conservation initiatives that will ensure a legacy for future generations. With over 10,000 members and supporters in Alberta and across Canada, AWA is dedicated to conserving Alberta's wilderness and maintaining the health of our natural ecosystems.

The St. Mary and Milk Rivers are shared between Canada and the United States. The Boundary Waters Treaty (1909) continues to govern water sharing in these rivers, allocating 75 percent of the St. Mary River to the States and 75 percent of the Milk River to Canada during the irrigation season. However, as the report states, neither country currently possesses the infrastructure to utilize their full allocation. The study draws the conclusion that more infrastructure investment would allow allocations to be used.

We agree that rehabilitation of current infrastructure, including the St. Mary Canal and the Lower St. Mary Lake Storage, may be considered to improve water storage. However, we argue that rehabilitation should also consider improvements to reduce the impact on downstream communities.

We disagree with the necessity of expanding or building new infrastructure to fully utilize water allocations, particularly as the recommendations for structural improvements provided only suggest gray infrastructure investments, or investment into artificial (man-made) concrete and metal structures. These structures not only have high economic costs — reservoirs currently proposed for Alberta cost between $7 million[1] for construction of a small, underground reservoir to approximately $130[2] to $170 million[3] for reservoir expansions — they are also detrimental to the environment.

While we are glad to see mention of the environmental impacts in discussions of water allocation, we would also like to see these discussions be incorporated further into recommendations. Structural options should also include green infrastructure, which can slow water flow on the landscape and allow water to better penetrate the landscape. For instance, beaver dam analogs have been shown to improve water infiltration into groundwater, thus raising the water table[4]. Similarly, wetland restoration can improve water retention in soil and nearby landscapes[5], providing buffers against flood and drought.

We support the recommendations for water modelling, data analysis and visualization, and integrating aquatic ecosystem considerations. However, we argue that there are already multiple indicators that could be used to determine aquatic health beyond the impact on bull trout populations. For instance, in Alberta, in-stream flow needs — the water flow necessary for the river to remain healthy — have been studied in many watersheds[6]. As well, water conservation objectives — the target for water levels set by the province — have been established[7]. Given that the allocations have long been underutilized by both countries, we suggest that allocations should also be set aside for water to remain in the river, maintaining the health of the ecosystem and improving sustainability.

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[1] Government of Alberta. 2025. Didsbury Water Reservoir. Retrieved August 25, 2026, from: https://majorprojects.alberta.ca/details/Didsbury-Water-Reservoir/11770
[2] Government of Alberta. 2021. Chin Reservoir Expansion. Retrieved August 25, 2026, from: https://majorprojects.alberta.ca/details/Chin-Reservoir-Expansion/4498
[3] Government of Alberta. 2021. Snake Lake Reservoir Expansion. Retrieved August 25, 2026, from: https://majorprojects.alberta.ca/details/Snake-Lake-Reservoir-Expansion/4373
[4] Munir, T. M., & Westbrook, C. J. (2021). Beaver dam analogue configurations influence stream and riparian water table dynamics of a degraded spring-fed creek in the Canadian Rockies. River Research and Applications, 37(3), 330-342.
[5] Jones, C. N., Evenson, G. R., McLaughlin, D. L., Vanderhoof, M. K., Lang, M. W., McCarty, G. W., ... & Alexander, L. C. (2018). Estimating restorable wetland water storage at landscape scales. Hydrological processes, 32(2), 305-313.
[6] Government of Alberta. [n.d.] Environmental flows project. Retrieved August 26, 2026, from: https://www.alberta.ca/environmental-flows-projects
[7] Government of Alberta. [n.d.] Water conservation objectives. Retrieved August 26, 2026, from: https://www.alberta.ca/water-conservation-objectives

Maintaining the health of the river and surrounding ecosystems also provides economic opportunities. For instance, native grasslands and wetlands provide habitat for pollinators and beneficial insects, and preserving the natural habitat has been found to boost agricultural productivity[8]. They are also habitat for insectivores, such as swallows[9] and bats[10], which feed on agricultural pests and reduce the need for pesticides[11]. Maintaining and restoring these ecosystems provides extensive and often overlooked benefits to the economy.

In comparison, dams and reservoirs affect the aquatic, riparian, and nearby terrestrial ecosystems. On-stream reservoirs create barriers, blocking the movement of fish[12], invertebrates[13], and other small organisms. Many at risk species, including bull trout and lake sturgeon, migrate hundreds of kilometres between their spawning and feeding grounds; dams affect their ability to migrate and successfully complete their life cycle. Reservoirs also impact the downstream movement of nutrients[14] and sediment[15], which

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[8] Isaacs, R., Tuell, J., Fiedler, A., Gardiner, M., & Landis, D. (2009). Maximizing arthropod-mediated ecosystem services in agricultural landscapes: the role of native plants. Frontiers in Ecology and the Environment, 7(4), 196-203; Duque-Trujillo, D., Hincapié, C. A., Osorio, M., & Zartha-Sossa, J. W. (2023). Strategies for the attraction and conservation of natural pollinators in agroecosystems: a systematic review. International Journal of Environmental Science and Technology, 20(4), 4499-4512.

[9] Berzins, L. L., Morrissey, C. A., Howerter, D. W., & Clark, R. G. (2022). Conserving wetlands in agroecosystems can sustain aerial insectivore productivity and survival. Canadian Journal of Zoology, 100(10), 617-629.

[10] Blakey, R. V., Law, B. S., Straka, T. M., Kingsford, R. T., & Milne, D. J. (2018). Importance of wetlands to bats on a dry continent: a review and meta-analysis. Hystrix the Italian Journal of Mammalogy, 29(1), 41-52.

[11] Tuneu-Corral, C., Puig-Montserrat, X., Riba-Bertolín, D., Russo, D., Rebelo, H., Cabeza, M., & López-Baucells, A. (2023). Pest suppression by bats and management strategies to favour it: a global review. Biological Reviews, 98(5), 1564-1582; Perrot, T., Princé, K., Fontaine, C., Rigal, S., Schulz, R., Wolfram, J., & Porcher, E. (2026). Declines in insectivorous bird abundance are related to increasing agricultural insecticide use. Agriculture, Ecosystems & Environment, 407, 110447.

[12] Pelicice, F. M., Pompeu, P. S., & Agostinho, A. A. (2015). Large reservoirs as ecological barriers to downstream movements of Neotropical migratory fish. Fish and Fisheries, 16(4), 697-715.

[13] Schneider, D. W., Stoeckel, J. A., Rehmann, C. R., Douglas Blodgett, K., Sparks, R. E., & Padilla, D. K. (2003). A developmental bottleneck in dispersing larvae: implications for spatial population dynamics. Ecology Letters, 6(4), 352-360.

[14] Powers, S. M., Tank, J. L., & Robertson, D. M. (2015). Control of nitrogen and phosphorus transport by reservoirs in agricultural landscapes. Biogeochemistry, 124(1), 417-439; Webster, B. C., Waters, M. N., & Golladay, S. W. (2021). Alterations to sediment nutrient deposition and transport along a six reservoir sequence. Science of the Total Environment, 785, 147246.

[15] Kondolf, G. M., Gao, Y., Annandale, G. W., Morris, G. L., Jiang, E., Zhang, J., ... & Yang, C. T. (2014). Sustainable sediment management in reservoirs and regulated rivers: Experiences from five continents. Earth's Future, 2(5), 256-280; Gonzalez Rodriguez, L., McCallum, A., Kent, D., Rathnayaka, C., & Fairweather, H. (2023). A review of sedimentation rates in freshwater reservoirs: recent changes and causative factors. Aquatic Sciences, 85(2), 60.

can increase erosion downstream as the water draws in additional sediment to replace what was trapped by the barrier[16].

Even with off-stream reservoirs, which are less harmful to the environment, there remain impacts on the downstream water quality. For instance, reduced water levels downstream of the reservoir can concentrate toxins and nutrients[17]. Shallower water is also more susceptible to temperature changes, especially heating in summer, leading to lower dissolved oxygen levels[18] and further increasing toxicity for organisms[19]. The combination of high water temperatures and nutrient concentrations can create ideal conditions for algae blooms and fish kills[20], as has occurred in Europe[21]. These effects of reservoirs can greatly degrade the river and aquatic ecosystem health.

Reservoir expansion and creation also floods nearby ecosystems. Many of Alberta's river valleys along the Milk River contain sensitive riparian habitats, wetlands, and native grasslands. Temperate grasslands are the most endangered ecosystems in the world[22].

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[16] Krishnan Kutty, S., Damodaran, P., Mathai, J., Mathew, M., Rani, A., Kumar Sharma, R., & Kesavan, M. (2025). Role of Hungry Water on Sediment Dynamics: Assessment of Valley Degradation, Bed Material Changes and Flood Inundation in Pamba River During Kerala Flood, 2018. Hydrology, 12(4), 79.

[17] Frascareli, D., Cardoso-Silva, S., de Oliveira Soares-Silva Mizael, J., Rosa, A. H., Pompêo, M. L. M., López-Doval, J. C., & Moschini-Carlos, V. (2018). Spatial distribution, bioavailability, and toxicity of metals in surface sediments of tropical reservoirs, Brazil. Environmental monitoring and assessment, 190(4), 199.

[18] Rajwa-Kuligiewicz, A., Bialik, R. J., & Rowiński, P. M. (2015). Dissolved oxygen and water temperature dynamics in lowland rivers over various timescales. Journal of Hydrology and Hydromechanics, 63(4), 353-363.

[19] Cairns Jr, J., Heath, A. G., & Parker, B. C. (1975). The effects of temperature upon the toxicity of chemicals to aquatic organisms. Hydrobiologia, 47(1), 135-171.

[20] Tarczyńska, M., Romanowska-Duda, Z., Jurczak, T., & Zalewski, M. (2001). Toxic cyanobacterial blooms in a drinking water reservoir-causes, consequences and management strategy. Water Science and Technology: Water Supply, 1(2), 237-246; Bakker, E. S., & Hilt, S. (2016). Impact of water-level fluctuations on cyanobacterial blooms: options for management. Aquatic ecology, 50(3), 485-498.

[21] Howes, L. Chemical and Engineering News. 2022. What happens when the water in our rivers and lakes reaches record lows? Retrieved August 26, 2026, from: https://cen.acs.org/environment/climate-change/happens-water-rivers-lakes-reaches/100/i38

[22] International Union for the Conservation of Nature. 2010. Towards a conservation strategy for the world's temperate grasslands. Retrieved August 26, 2026, from: iucn.org/content/towards-a-conservation-strategy-worlds-temperate-grasslands-0

Reservoir creation displaces species at risk[23], as well as destroys ecosystems that provide benefits such as drought and flood mitigation[24] and carbon storage[25].

Finally, reservoirs can intensify climate change and the anticipated consequences. Flooding of native grasslands and wetland ecosystems releases stored carbon, with an estimated 25.6 – 86.3Mt of CO_2-equivalents already released in Alberta as of 2017[26] during reservoir construction, and reservoir services releasing additional greenhouse gas emissions during construction and operations[27]. The expanded surface area of reservoirs can further increase evaporation, with the effect being cumulative across multiple reservoirs[28], and larger reservoirs have been shown to impact local climate[29].

Although we acknowledge that the purpose of the report is to "improve access to entitled waters by each country," and ecological protection was largely considered "beyond the scope of the Study," we question the requirement for all allocated waters to be utilized by the country and urge greater consideration of alternative options for water storage which could provide greater benefits to environmental health and to communities.

We commend the open and transparent process and appreciate the opportunity to provide feedback. Thank you for considering our comments.

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[23] Nilsson, C., & Berggren, K. (2000). Alterations of riparian ecosystems caused by river regulation: Dam operations have caused global-scale ecological changes in riparian ecosystems. How to protect river environments and human needs of rivers remains one of the most important questions of our time. BioScience, 50(9), 783-792.

[24] Peng, Y., Wang, Q., Wang, H., Lin, Y., Song, J., Cui, T., & Fan, M. (2019). Does landscape pattern influence the intensity of drought and flood?. Ecological Indicators, 103, 173-181.

[25] Bai, Y., & Cotrufo, M. F. (2022). Grassland soil carbon sequestration: Current understanding, challenges, and solutions. Science, 377(6606), 603-608.

[26] Alcock, J., & Solutions, V. (2017). Wetland and Grassland Retention and Restoration as an Effective Carbon Management Strategy in Alberta.

[27] Deemer, Bridget R., John A. Harrison, Siyue Li, Jake J. Beaulieu, Tonya DelSontro, Nathan Barros, José F. Bezerra-Neto, Stephen M. Powers, Marco A. Dos Santos, and J. Arie Vonk. (2016). Greenhouse gas emissions from reservoir water surfaces: a new global synthesis. BioScience, 66(11), 949-964.

[28] Zhao, G., Li, Y., Zhou, L., & Gao, H. (2022). Evaporative water loss of 1.42 million global lakes. Nature Communications, 13(1), 3686

[29] Degu, A. M., Hossain, F., Niyogi, D., Pielke Sr, R., Shepherd, J. M., Voisin, N., & Chronis, T. (2011). The influence of large dams on surrounding climate and precipitation patterns. Geophysical Research Letters, 38(4); Zhou, H., Qiu, J., Li, M., Lu, H., & Li, F. (2025). Assessment of large-scale reservoirs' impact on the local precipitation. Water Resources Research, 61(5), e2025WR039938.

Sincerely,

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