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Impact Assessment Agency of Canada
Prairie and Northern Region
Canada Place
Suite 1145, 9700 Jasper Ave
Edmonton, AB T5J C3

Date: May 24, 2022
File: N:\1510-032\L09

Attention: Mr. Andrew Clarke
Environmental Assessment Officer

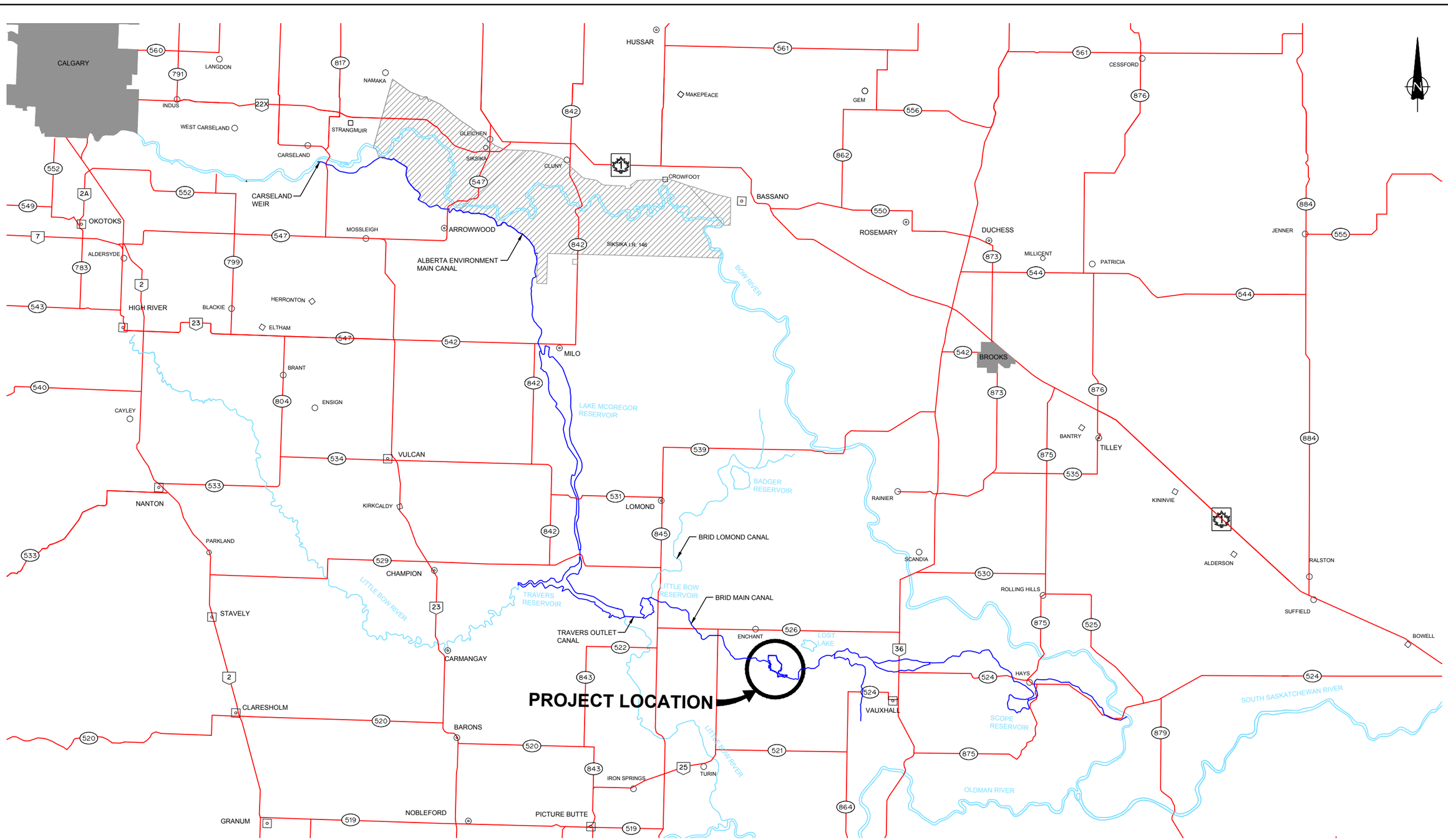
Dear Sir:
Re: Project Designation Information Request - Deadhorse Reservoir Project Reference No. 83563

In response to the request for additional information on the Deadhorse Reservoir Project from the Impact Assessment Agency of Canada (IAAC) please find enclosed the responses to the questions regarding the project and its effects. The responses listed below follow the questions posed in the April 27, 2022 request to the Bow River Irrigation District.

1. Information about key project activities, maps, and layouts of the location of project components, land tenure, zoning, and estimates timelines for planning, construction, operation, decommissioning, and abandonment.

Deadhorse Reservoir is a proposed off-stream storage reservoir to be located in Deadhorse Coulee near the midpoint of the Bow River Irrigation District (BRID) Main Canal between Little Bow Reservoir and Scope Reservoir. Deadhorse Coulee is a natural coulee located approximately 10 km southeast of Enchant, AB in the Oldman River basin. The BRID Main Canal runs through Deadhorse Coulee until it is diverted out of the coulee by an existing dam 1.5 km downstream of Range Road 18-1. For the location of the project refer to Figure 1. Existing land use is shown in Figure 2. Deadhorse Reservoir will act primarily as a balancing and re-regulating reservoir which will enable greater precision of water delivery and help the BRID better manage water usage and improve efficiency. However, storage contained in the reservoir can be used to support irrigation demand as well. The location of the reservoir is within intensively cultivated agricultural land wholly within the MD of Taber. The land within the reservoir is privately owned with one parcel owned by the Municipal District of Taber, there are no provincial or federally owned lands within the reservoir.

Deadhorse Reservoir would be created by damming Deadhorse Coulee. Two additional dams would be built on the north and south sides of the reservoir to enclose the reservoir. A gated cast in place concrete outlet structure will control flows from the reservoir into the BRID Main Canal. The reservoir will have a surface area of 470 ha at full supply level (814.50 m) with a storage volume of 24,860 dam^3. The main dam will have a maximum height of 9.8 m and a length of 250 m, the north dam will have a maximum height of 10.2 m and a length of 4.8 km, and the south dam will have a maximum height of 5.0 m and a length of 2.3 km. All dams required for the project are less than 15.0 m in height. A site plan of the reservoir, and associated infrastructure is shown on Figure 3.



MPE Engineering Ltd.		BOW RIVER IRRIGATION DISTRICT	
		DEADHORSE RESERVOIR LOCATION PLAN	
SCALE: 1:300 000	DATE: MAY 2022	JOB: 1510-032-00	FIGURE: 1

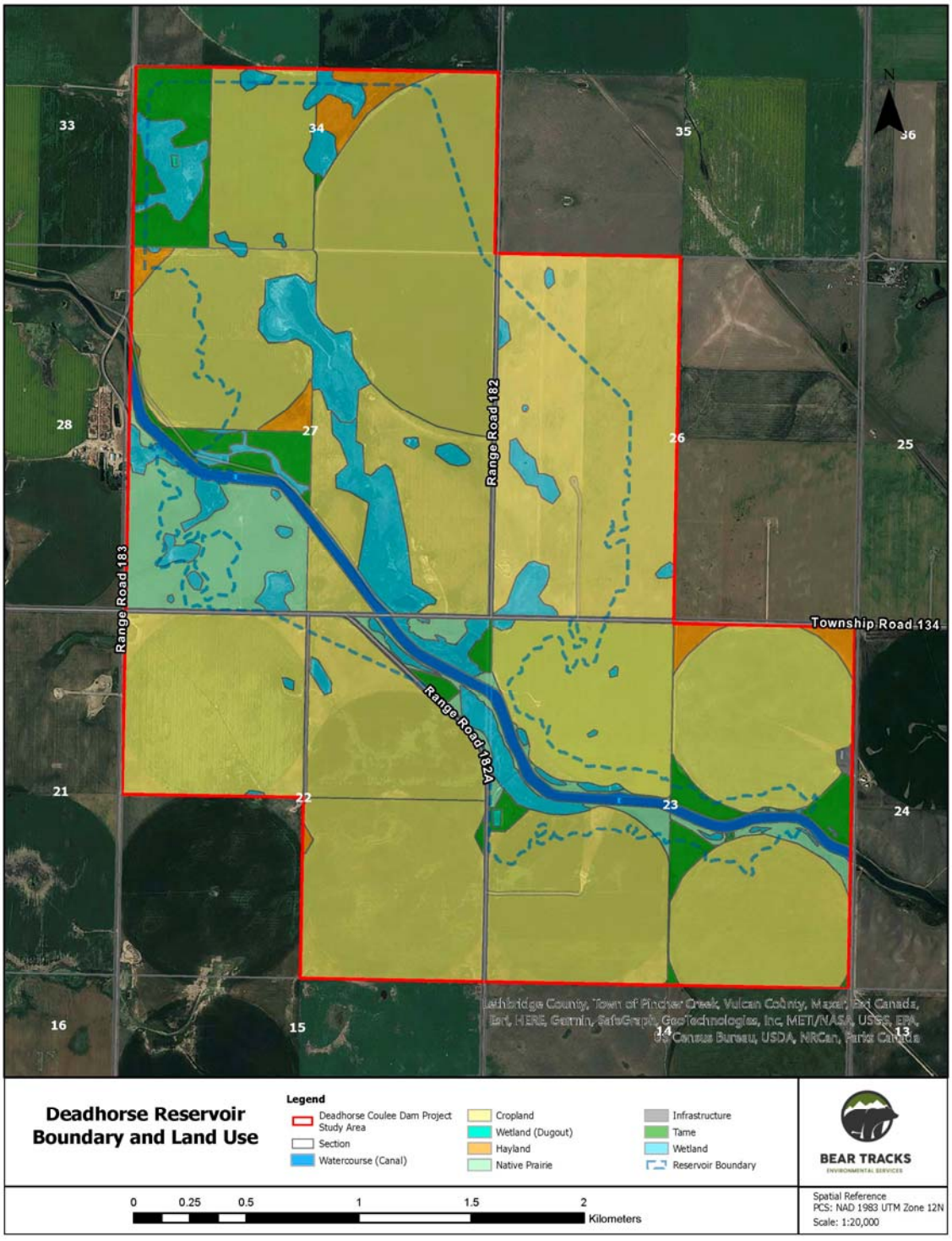
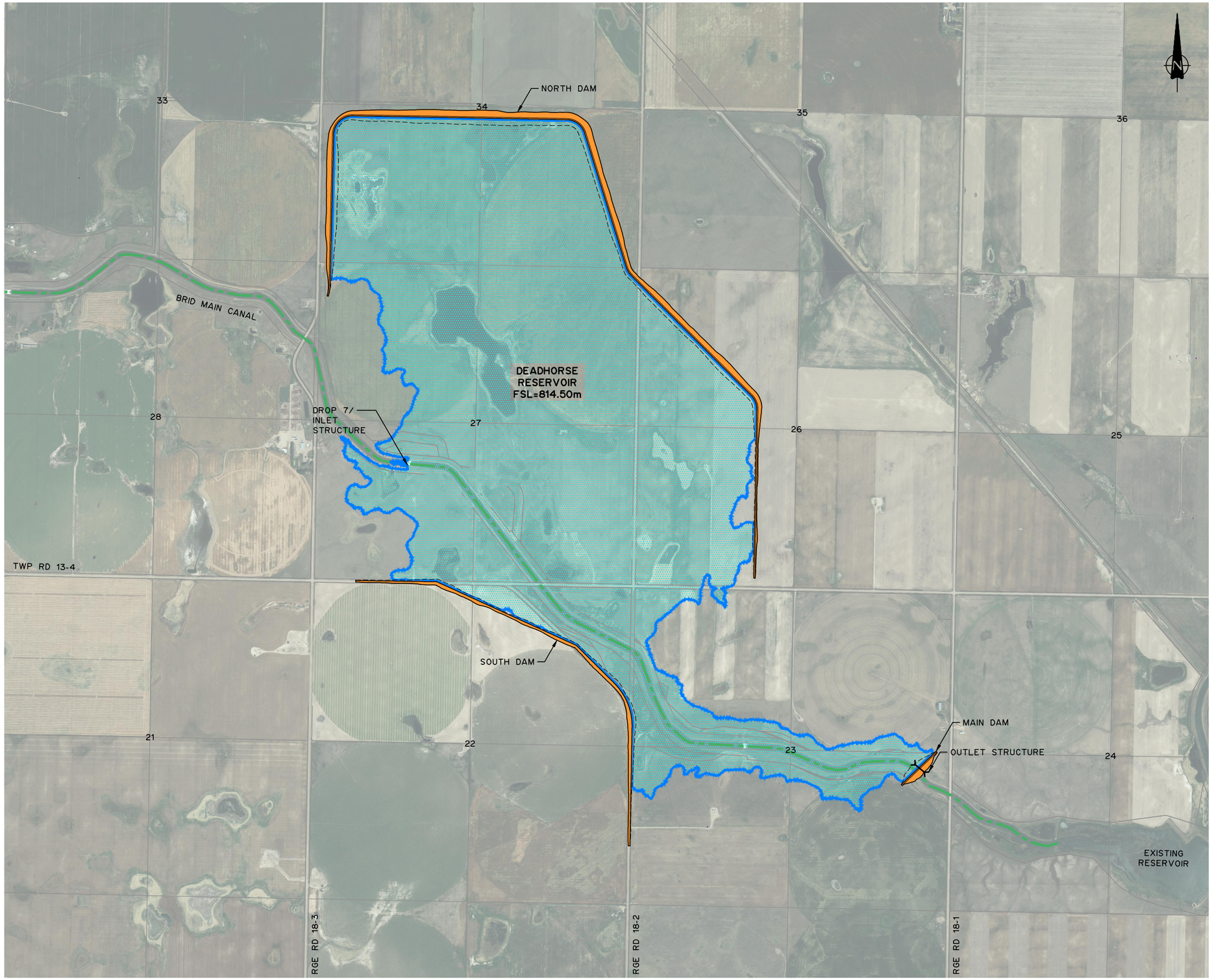


Figure 2. Land cover types delineating within the project study area.

RGE 18 W4M

TWP 13



LEGEND

PROPOSED DEADHORSE RESERVOIR

THIS DRAWING MAY HAVE BEEN MODIFIED FROM ITS ORIGINAL SIZE. ALL SCALE NOTATIONS INDICATED ARE BASED ON 11"x17" FORMAT DRAWINGS

1	21-09-29	FOR APPROVAL
ISSUE	YY-MM-DD	REVISION

MPE Engineering Ltd.

BOW RIVER IRRIGATION DISTRICT

DEADHORSE RESERVOIR
SITE PLAN

DESIGNED	J.W.H.	JOB	1510-032-00
DRAWN	R.B.H.	SCALE	1:20 000
DATE	MAY 2022	DRAWING	

For additional context on the BRID, all water used within the BRID is diverted from the Bow River at the Carseland Weir under several different water licences. The BRID is not increasing diversion rates or volumes at the Carseland Weir and there will be no additional water licences required to develop the project. The BRID does not have any entitlement to water from the Little Bow River, which flows through Travers Reservoir.

The project will improve water delivery efficiency and store and conserve water for irrigation use. However, there is no irrigation area expansion that results directly from the reservoir project. The BRID has no irrigation acres (water rights) available within its current expansion limit for new parcels of land. Any change to the expansion limit to enable future expansions needs approval by the current irrigators through a plebiscite process mandated by the Irrigation Districts Act. There is no guarantee that the district will propose an increase to its expansion limit in the future, or that a plebiscite to increase the limit would pass. The funding program for this reservoir does not require that the district attempt to expand, and speculation on the area or location of possible irrigation expansion attributable to the reservoir is irrelevant. If expansion does occur in the future, it will be on existing unirrigated privately owned farmland, as in past expansions.

The project is currently in preliminary engineering; however, the following timelines are estimated for the project:

Table 1: Project Timelines

Project Phase	Approximate Timeline
Design, Planning, and Regulatory Approvals	February 2021 – June 2023
Construction	September 2023 – March 2025
Commissioning	March 2025 – June 2025
Operation	200 year minimum estimated service lifespan
Decommissioning	Unknown

2. A list of all regulatory approvals (federal, provincial, municipal, other) and any federal financial assistance that would be required for the Project and the associated project components or activities.

3.

a) For each regulatory approval that would be required, please provide the following information:

i. Name of the licence, permit, authorization or approval, the associated legislative framework, and the responsible jurisdiction.

ii. The status of attaining any regulatory approvals.

iii. Whether it would involve an assessment of any of the effects outlined in the paragraphs above, and if so, a general description of the assessment that you intend to undertake and if applicable, any benchmarks or standards you intend to meet. Would conditions be set and if yes, what effects would those conditions address?

iv. Whether public and/or Indigenous consultation would be required and if yes, provide information on the approach you intend to take (if any steps have been taken, please provide a

summary, including issues raised as well as your responses). If the Project is anticipated to result in permanent changes or cumulative effects, how you intend to manage those impacts.

A listing of the applicable acts, regulations, and approvals required for the Deadhorse Reservoir project is summarized in Table 2 below, with the approval required, assessments completed, and status of the approvals.

No federal funding is being provided or requested for the project. The project is funded as part of the Alberta Irrigation Modernization (AIM) Program. The funding for the AIM Program is provided through a 30% grant from the Province of Alberta, 20% upfront investment from the participating irrigation districts, and 50% through an interest-bearing loan to the irrigation districts from the Canada Infrastructure Bank (CIB). In essence the funding for this project is 70% BRID and 30% Government of Alberta.

To address question 3. iv. an application has been made to the Alberta Aboriginal Consultation Office (ACO) to determine the Indigenous consultation requirements for the project. Once the requirements are known they will be followed. The project is on private land and there are no federal lands involved. Public consultation will be primarily focused on the affected landowners and irrigators within the BRID.

Table 2: Relevant Regulatory Approvals and Legislation

Agency	Legislation	Requirement	Status	Estimated Submission Date	Estimated Time for Approval
Federal					
Impact Assessment Agency Canada (IAAC)	Impact Assessment Act	None (Unless Minister uses discretional authority to designate the project to the IAA process)	N/A	N/A	N/A
Fisheries and Oceans Canada	Fisheries Act	Authorization	Fieldwork Complete	TBD	~ 3 Months
Environment and Climate Change Canada	Species at Risk Act and Migratory Birds Convention Act	No Contraventions	Baseline studies complete, no authorization required	N/A	N/A
Provincial					
Alberta Environment and Parks (AEP) and Natural Resources Conservation Board (NRCB)	Environmental Protection and Enhancement Act	TBD, project does not meet the threshold of 15.0 m dam height for an EIA	Application to determine EIA requirements submitted to AEP	Submitted	Unknown
Alberta Environment and Parks (AEP)	Water Act: Water (Ministerial) Regulation, Alberta Dam and Canal Safety Directive	Dam and Canal Safety Review	Dam Consequence Classification	TBD	Unknown

	Water Act: Alberta Wetland Policy	Water Act	Wetlands have been identified, possible compensation for lost wetlands in reservoir footprint to be determined by AEP	TBD	6 Months-1 Year
Alberta Culture and Status of Women	Historical Resources Act	Approval	Desktop study completed, application to Alberta Culture and Status of Women	1-2 Months	1-2 Months
Aboriginal Consultation Office (ACO)	Duty to consult under Government of Alberta's policy on consultation with First Nations	Consultation Requirements and Letters of No Objection	Application to ACO office under Water Act completed	Submitted	3-6 Months

4. For all federal licences, permits, authorizations, approvals, and/or financial assistance that may be provided for the project, describe any anticipated adverse direct or indirect effects (including changes to health social and economic conditions) that may occur as a result.

   Adverse effects resulting directly from the project are expected to be minimal because the project primarily impacts existing cultivated agricultural land and is located in a sparsely populated area. The project stores irrigation water and will provide habitat for fish as well as other wildlife. The project supports a robust irrigated agricultural sector in Southern Alberta which contributes 28% of Alberta's agricultural GDP on 4.4% of its agricultural land base[1].

   No changes to public health are anticipated with developing the project. The project is an irrigation water storage reservoir; there are no harmful chemicals being stored, used, or produced. Greenhouse gas emissions from the project are primarily from the construction phase as long term operation of the reservoir does not require inputs of power or fossil fuel consumption and water is delivered into and from the reservoir by gravity.

   No federal funding is being provided or requested for the project.

5. What steps have you taken to consult with the public? What steps so you plan to undertake during all phases of the Project? Are you aware of any public concerns in relation to this project? If yes, provide an overview of the key issues and the way in which (in general terms) you intend to address these matters.

   Consultation has occurred with impacted landowners on the project. An information session was held with local landowners to introduce the project. Land negotiations have been ongoing to purchase the land required for the project. General public information sessions for the project are not being contemplated at this time as the project is located in a sparsely populated rural area and impacts few people.

   The main concern of local landowners with the project is the potential for seepage related to the reservoir impacting productive agricultural land outside the reservoir. In order to address the seepage concerns during the design of the reservoir seepage will be assessed and mitigative measures incorporated into the design to reduce seepage and retain the productivity of agricultural land.

   The BRID as a member of Irrigating Alberta Inc. has met with representatives of the Southern Alberta Group for the Environment (SAGE), and the Canadian Parks and Wilderness Society (CPAWS) to discuss the project and the Alberta Irrigation Modernization (AIM) project, including Deadhorse Reservoir.

   The BRID's general manager has made public presentations regarding the AIM project, including Deadhorse Reservoir, to the Bow River Basin Council and the Southern Alberta Council on Public Affairs. A copy of the presentation given is enclosed.

[1] ACERA Consult for the Alberta Irrigation Districts Association "The Economic Value of Alberta's Irrigation Districts", 2021.

A project overview has been posted on the Alberta Water Portal website.

6. What steps have you taken to consult with Indigenous communities? What steps do you plan to undertake during all phases of the project? Are you award of any Indigenous community concerns in relation to this project? If yes, provide an overview of the key issues and the way in which (in general terms) you intend to address these matters.

   To date there have been no consultations with Indigenous communities and there is no legal requirement to consult as there is no federal land or known traditional use within the project footprint. As part of the Water Act review of the project an application has been made to the Aboriginal Consultation Office (ACO) related to the Water Act approval, and Indigenous consultation requirements for the project will be determined through that office. At this time, given the private land ownership, disturbed nature of the existing lands, and the fact that no changes to the overall diversion volume or rate from the Bow River will occur no significant Indigenous issues are anticipated.

7. Do you have any other comments in relation to environmental effects or impacts to the public or Indigenous peoples and how you intend to address and manage those?

   The overall environmental impacts of the project are low. There is very little native habitat within the reservoir footprint and it is completely surrounded by extensive cultivated land which diminishes its ecological value The reservoir will create year-round habitat for fish, and the edges of the reservoir will become wetland and riparian habitat areas which will support wildlife in the area. An environmental assessment of the project is included for additional information as an attachment to this report.

   There are some existing wetlands within the reservoir footprint that will be lost as part of the project. Approval from Alberta Environment and Parks will be required to construct the reservoir and compensation for the lost wetlands will be determined during the process. Some of the wetland compensation will come from new wetlands in shallow portions of the reservoir. The BRID currently supplies water to several Ducks Unlimited wetland projects which total 12,000 acres; potentially more wetland development could be completed to compensate for the lost wetlands.

   Effects to the public are related to the owners of the land which the reservoir is located on. The area inundated by the reservoir has no homes, and no people would be displaced by its construction. The area around the reservoir is sparsely populated and there are minimal disruptions and impacts from the project. It will provide a new fishery which is expected to become popular with local anglers.

8. Explain your views on whether the project should be designated under IAA.

   The project should not be designated under the IAA for the following primary reasons:

   The proposed reservoir area is 470 ha, which is far below the threshold of 1500 ha in the Impact Assessment Act, and the dam heights are also shorter than the 15.0 m required to activate a Provincial Environmental Impact Assessment process. Overall, given the small storage volume, short dam heights (less than 15 m), and small surface area, it does not warrant being listed as a designated project. The project is not a unique development or one that causes significant environmental or social impacts.

   Additional reasons why the project should not be designated are as follows:

   To construct the reservoir the BRID does not need to modify their water licences from the Bow River to withdraw more water volume or increase the withdrawal rate. Due to efficiency gains from changing irrigation methods, and pipeline conversions since the late 1980's the BRID is irrigating far more land with less water. Since 1980 the area of irrigated land in the BRID has increased from 165,000 acres to 287,000 acres, an increase of 74%. However, the average annual diversion from the Bow River has decreased from an average of 339,676 ac-ft in 1980 to 281,722 ac-ft in 2021(refer to Figure 4). Annual diversion varies greatly depending on rainfall, but the highest withdrawal from the Bow River of 424,000 ac-ft was only 78% of the available allocation.

   Deadhorse Reservoir will help to prevent spills and waste of irrigation water by allowing storage on the midpoint of the BRID main canal which will improve efficiency within the irrigation district. Three past increases in reservoir storage volumes comparable to this project occurred within the period covered by Figure 4 with no discernable lasting impact on diversion. These include the construction of Badger Reservoir in 1984 with a capacity of 57,000 dam^3, the expansion of Lake McGregor Reservoir by 31,000 dam^3 in 2008, and the expansion of Little Bow Reservoir by 22,000 dam^3 in 2017.

   It should be noted the BRID diversion volumes include municipal water supply for the Town of Vauxhall, hamlets including Enchant, Hays, and Lomond, and an approximately 5000 acre irrigation project on the Siksika Nation. The BRID has committed to supplying the Siksika project and Municipal users first in the event of droughts or water supply challenges.

   The impacts on the flow in the Bow River are not changed because of the project. The BRID diversion is only from the Bow River so there are no impacts to the Little Bow River, Oldman River, or Highwood River Basins. Water Survey of Canada flow records immediately below the BRID diversion at the Carseland Weir (i.e., after the BRID diverts irrigation water from the Bow River) show that since 1983 the mean daily flow in the irrigation season (April – October) has increased. This means on average there is more water in the river for instream flow needs. Figure 5 shows the average daily mean flows on the Bow River below the Carseland Weir have increased from around 105 m^3/s in 1980 to 150 m^3/s in 2020.

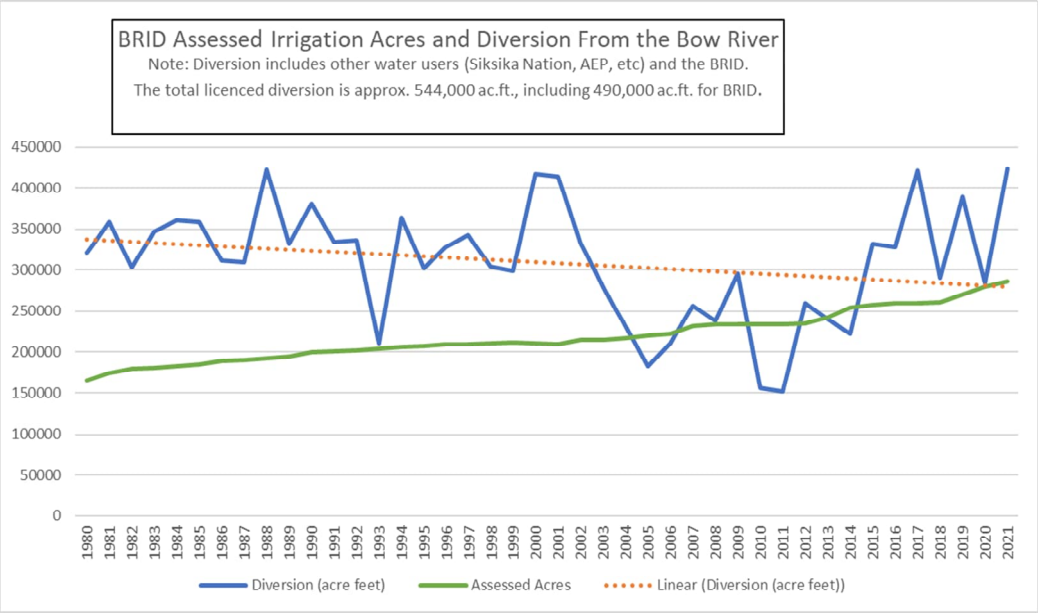


Figure 4: Assessed Irrigation Acres in BRID and Annual Diversion Volume

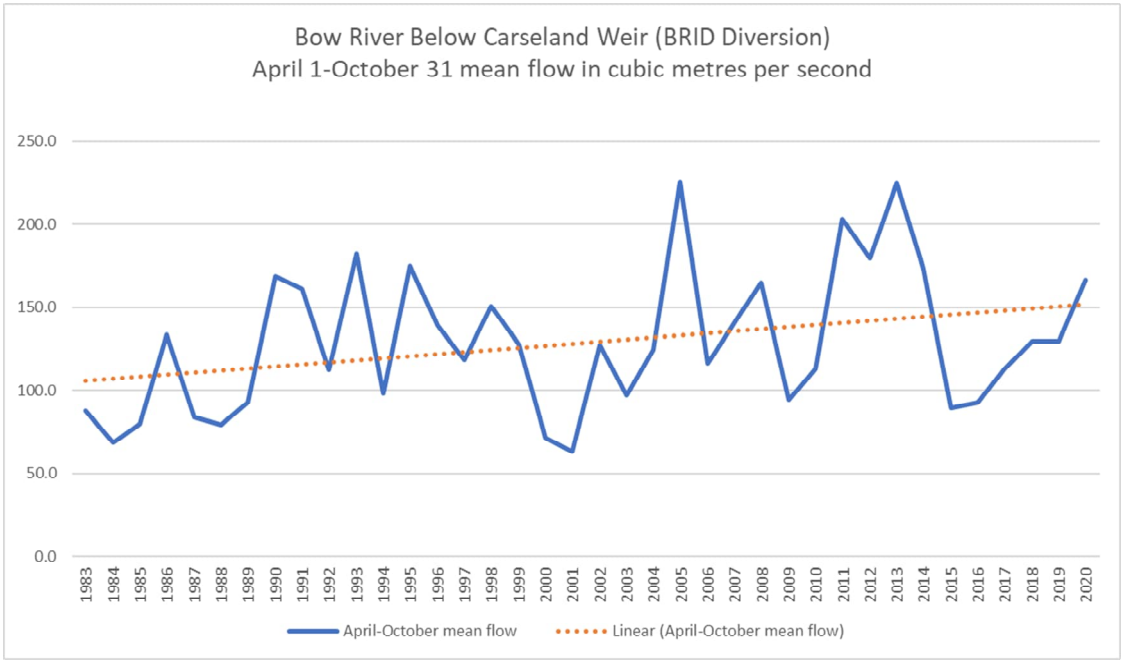


Figure 5: Bow River Mean Flow Below Carseland Weir (April – October)

The BRID understands the importance of environmental stewardship and currently supplies water for 12,000 acres of wetland development which creates habitat and natural environments for wildlife.

There are minimal cumulative effects environmentally that cannot be effectively mitigated through adherence to existing regulations and legislation. The project team understands the requirements and

approvals required and is committed to completing the project in a responsible manner. The environmental value of the site is marginal as it is currently cultivated agricultural land.

The request for project designation letter from Ecojustice contains a listing of environmental and other concerns related to the development of Deadhorse Reservoir. To address these issues and increase the understanding of the project responses from the BRID to specific points in the letter are provided in Table 3 below.

Table 3: Clarifications to Ecojustice Project Designation Request

Page	Comment	Response
2	Irrigation expansion project is the largest expansion of irrigation infrastructure in Alberta's history with over 200 km of canal and pipelines, 1.850 ha of new reservoir footprint, and 95,000 hectares of newly irrigated land.	Larger expansions of irrigation reservoirs occurred in the 1980's including construction of Badger Reservoir, Crawling Valley Reservoir and 40 Mile Reservoir which totalled 3,800 ha of reservoir footprint. The length of pipelines and canal is also less than in comparable recent periods. The predicted increase in irrigated land is much less than the increase in the 1970's and comparable to the increases in the 1980's and from 2000 to 2020. Expansion of the BRID is not guaranteed by constructing Deadhorse Reservoir. There are no requirements for expansion under the funding program.
3	Project is located within the Oldman River subbasin (Little Bow Subbasin), and the source of water is partly through a diversion from the Bow River subbasin, (including the Highwood River sub-basin) which are stressed watershed already suffering from increasingly high water demand.	The reservoir is not located in the Little Bow River sub-basin. It is in the Oldman River Basin. All water used by the BRID is from a diversion off the Bow River at the Carseland weir. Flows within the Little Bow River are passed through Travers Reservoir to the Little Bow River downstream.
3	One of the stated goals of the Project, and the broader Alberta irrigation expansion and modernization program to which it belongs, is to support the future development of irrigated land which implies enabling conversion of dryland cropland and native grasslands to irrigated agricultural lands.	Less than 2% of historic irrigation expansion in the BRID has occurred on grassland. During the most recent BRID expansion of 35,000 acres no irrigation expansion occurred on native grassland. Current applications to the BRID to convert unirrigated cultivated land to irrigated land exceed the number of additional irrigation acres that could be supported by the proposed reservoir.

Page	Comment	Response
4	The Project may adversely affect Bull Trout critical habitat in the Highwood River through changes to water withdrawal. There may also be impacts on Bull Trout occupying nearby critical habitat in the Sheep River, a tributary of the Highwood River.	The Carseland weir is downstream of Bull Trout habitat and does not impact the Sheep River, Highwood River, or upper reaches of the Bow River.
4	Bull Trout may also experience additional adverse effects from being caught in diversion canals into the Little Bow Basin from the Highwood River near High River and the Bow River near Carseland.	A fish rescue in the Alberta Environment canal downstream of the Carseland weir has been occurring for 20 years and in that time no Bull Trout have been captured.
7	The Project may impact important permanent and temporary wetland habitats and habitat for many waterfowl and migratory bird species.	Project does impact some wetlands however wetlands and habitat are also created from the development of the reservoir and regulations in the Alberta Wetland Policy will be adhered to.
8	The Project may reduce instream flows in the Highwood, Bow, Oldman, and South Saskatchewan Rivers through increased diversions from the rivers and reduced return flows to the rivers.	The project and BRID do not divert water from the Highwood or Oldman Rivers. The BRID diversion is only from the Bow River. Figure 5 shows no trend of decreasing flow due to past reservoir projects.
8	Alberta is obligated to permit a quantity of water equal to one half of the natural flow of a number of watercourses, including the South Saskatchewan River, to flow into Saskatchewan	The apportionment agreement allows Alberta to divert a total volume of 2.1 million ac-ft in any year even if it is greater than 50% of natural flow, as long as the flow into Saskatchewan is greater than 1500 cubic feet per second. The BRID, Alberta Environment and Parks and other irrigation districts coordinate to ensure that apportionment agreement terms are met, and Alberta must remain in compliance even if irrigation diversions need to be reduced.
9	Canal conversion to pipelines, new pipeline construction, reservoir expansion and construction, reservoir operation, changes to instream flows and the expansion of irrigated lands all have the potential to adversely affect water quality in the impacted water systems.	Generally, conversion of canals to pipelines improves water quality in the irrigation system as it reduces the amount of runoff and contaminants entering the system.

Page	Comment	Response
9	Cultivation of native grasslands results in significant release of GHGs.	No native grasslands will be cultivated because of the construction of Deadhorse Reservoir.
10	Specifically, water management infrastructure such as reservoirs, landscaping, riprapping, dredging, and channeling, can complicate and constrain both access to and evaluation of archaeological sites.	Clearance from Alberta Culture will be required to construct the project. Alberta Culture determines the requirements for cataloguing and retaining historical sites.
11	The Project's impacts on instream flow could also cause impacts on Indigenous water rights. This is especially so since the South Saskatchewan River Basin is fully or nearly fully allocated, and there will be likely water shortages in some watercourses.	Increasing the amount of irrigation storage available allows for more water to be diverted and stored when it is abundant, with reductions when water is scarce, improving instream flows during periods of greatest concern.
11	Although it is clear that First Nations have asserted and continue to assert water rights, these rights generally are not reflected in water licences.	The only Alberta First Nation downstream of the Carseland weir is the Siksika Nation which withdraws water for their own irrigation system using the same delivery system as the BRID. The BRID has committed to fulfilling the entire Siksika allocation prior to their own allocation.
11	the Canada Infrastructure Bank has decided to provide significant financial support to the Alberta irrigation expansion and modernization program for the purpose of enabling the Project, among others, to be carried out.	The Canada Infrastructure Bank is providing the BRID with a loan that will be repaid, it is not a grant. The only financial support for the project is a grant from the Government of Alberta for 30% of the project costs.
12	Indigenous peoples may suffer adverse effects to cultural and ecological resources and water rights as a result of the Project. Insofar as Indigenous peoples' access to cultural, archaeological, and ecological resources within the Project footprint or in areas which may be impacted by the Project or the broader expansion and modernization program	The project is located on private lands that are primarily cultivated agriculture with little ecological or cultural value. No known traditional land use occurs in the area. Permitting will be required to construct the project from Alberta Environment and Alberta Culture.

Overall, impacts of constructing Deadhorse Reservoir are low and do not significantly impact Indigenous rights or traditional use, create significant environmental impacts, or impact vulnerable populations. The reservoir will be a positive for fisheries in the region with additional habitat and creating of an overwintering location.

The project will support a vital water delivery system that created a robust agricultural based economy in Southern Alberta that supports thousands of jobs and aids in securing a stable food supply into the future.

Yours truly,

MPE ENGINEERING LTD.
<Original signed by>

Jeffrey Hust, P.Eng.
Project Manager
Encl.
Cc: Richard Phillips