

## Information Request Form Crystal Springs Lagoon Project

**Information Request  
Number:**

REPLY Second Request - Information Request No. 5 (Gimli)

**Submitted by:**

The Proponent

**Date Submitted:**

March 20, 2026

**Subject Matter:**

Lagoon Operation

**Reference document:**

Permit 2021-A-29 issued by the Fisher Armstrong Planning District, October 14, 2021 (**Appendix A to Reply to Information Request No. 5**)

**Request 1:** Other wastewater lagoons in the Province with abattoir wastewater have aerated secondary cells to assist with treatment, and/or discharge to land (as prescribed by their Licenses). Can the Proponent comment on why these approaches are not being proposed here?

**Reply 1:** It is important to understand that the Proponent is a Hutterite Colony that processes livestock for their own consumption; the abattoir is not a commercial killing plant. The colony only operates the kill plant periodically when the colony members are processing their own food.

The majority of Hutterite Colonies within Manitoba operate an abattoir for on colony consumption at their respective colony sites - we are not aware of any that have aerated lagoon cells.

Typically, aerating lagoons will improve wastewater treatment efficiency and can be effective at treating high organic loading. In the opinion of the Proponent's consulting engineers (BMCE), the commercial abattoirs and their lagoons that are being referred to are likely receiving higher organic loads and are deeper with a smaller footprint. In those situations, aeration would be a suitable option. BMCE did not design the proposed facultative lagoon in this manner, as there was suitable land available to obtain optimum surface area/depth.

Additionally, it is BMCE's opinion that a facultative lagoon with natural biological treatment process is the desirable design strategy for most small lagoons. Implementing mechanical equipment to a lagoon increases the complexity of the operations as well as potential for breakdowns and therefore insufficient treatment. BMCE's preference is to design the lagoon and allow the natural biological processes to occur without the complexities of mechanical equipment.

**Request 2:** Considering this is a facility that is being designed for one (1) annual discharge event, can the Proponent confirm that the Primary cell will not experience overloading during the period (approximately 40 days) when the secondary cell is isolated in preparation for the discharge event?

**Reply 2:** Yes, the primary cell has been sized with additional storage capacity to allow for 40 days of isolation and trickle discharge of the secondary cell. The additional capacity built into the primary cell is approximately 4,300 m<sup>3</sup>.

**Follow-Up Information Request 2:** The Proponent has indicated that approximately 4,300 m<sup>3</sup> of additional capacity has been provided in the primary cell to accommodate the period during which the secondary cell is isolated for discharge. Can the Proponent identify:

a) The assumed influent flow conditions used in sizing this additional storage capacity;

**Reply to Follow-Up Request 2(a):** The influent flow conditions during trickle discharge are assumed to be the same as the total hydraulic loading conditions. Domestic wastewater, abattoir wash water, WTP backwash, truck wash, and infiltration inflows are assumed to be contributing to the lagoon during the trickle discharge. The daily inflow is estimated at 108 m<sup>3</sup>/day.

b) Whether any peaking factors, batch loading from abattoir operations, or wet-year inflow conditions were considered in the storage assessment; and

**Reply to Follow-Up Request 2(b):** Peaking factors are utilized for calculating peak flows for wastewater systems to account for periods where the majority of the population are simultaneously utilizing the system. For instance, the liftstation, forcemain and gravity sewer mains would be designed with a peak flow. The lagoon is volume storage that can buffer peak flows and the design of such is based on an average daily flow.

As we are calculating flows over a multi-day period we are not concerned about hourly fluctuations of inflow, as such no peaking factor are utilized in lagoon designs.

Abattoir loading as well as infiltration have been considered on an average daily basis in the lagoon design.

c) The level of contingency, storage allowance, and/or factor of safety, if any, incorporated into the design of the primary cell capacity to accommodate the period during which the secondary cell is isolated for discharge.

**Reply to Follow-Up Request 2(c):** It is important to understand how a colony split and development of a daughter colony occurs. Typically, a colony will begin looking for a new site and acquiring land once they have exceeded a population of over 100 people. The planning will begin before the population reaches 150 people and the split will occur anytime after. When the split occurs, 50% of the population will relocate to the new daughter colony. So the initial population of  $\pm 75$  people would be expected. The lagoon is designed with an assumed population of 250 people, 20% more than is expected at the colony's maximum size.

Total storage allowance added to the primary cell to account for the 40 days of trickle discharge is equal to 40 days. Daily Hydraulic Loading Rate equaling  $4,300\text{m}^3$ .

Should, during the trickle discharge release, the primary cell reach the maximum cell depth of 1.2m, the Colony will be required to halt discharge, re-equalize the primary and secondary cells, re-isolate and test the secondary cell before continuing discharge.

It is also important to note that a free board of 1.0m is required by the Manitoba Design Objectives for Wastewater Treatment Lagoons. While licenses do not allow freeboard to be used for storage, in an emergency scenario where discharge is not possible due to downstream flooding or failed effluent tests, this free board provides a volume of  $9,980\text{m}^3$  which equates to an additional 92 days of storage.

**Request 3:** Can the proponent confirm that it has applied for and received the relevant development permits associated with the construction of the lagoon and associated outbuildings? If so, can the proponent produce copies of the permits that have been issued in relation to the construction of the lagoon and the associated outbuildings.

**Reply 3:** The proponent applied for a Development Permit for the establishment of a Communal Farm Dwelling along with associated cooking, eating, living, sleeping and sanitary facilities. Permit 2021-A-29 was issued by the Fisher Armstrong Planning District on October 14, 2021; a copy is attached hereto as **Appendix “A”**.

The Environmental Act Proposal (EAP) and licensing is the primary license for the construction of a wastewater treatment lagoon in Manitoba. This is the process that is the subject of these proceedings.