

## Information Request Form Crystal Springs Lagoon Project

**Information Request  
Number:**

REPLY to Information Request No. 1 (CEC)

**Submitted by:**

The Proponent

**Date Submitted:**

March 20, 2026

**Subject Matter:**

Operation Discharge Criteria and Contingency Planning

**Reference document:**

N/A

**Request:**

The EAP and Notice of Alteration describe the lagoon configuration, storage volumes, and the intended trickle discharge approach. However, the operational decision framework governing discharge timing and contingency measures is not clearly defined in the record. Clarification of these operational procedures will assist in understanding how the proposed discharge approach will be implemented under varying receiving water conditions.

To support the review, the Proponent is requested to provide:

## 1. Discharge Initiation Criteria

**Request 1(a):** A description of the operational criteria used to determine when lagoon discharge may proceed, including:

- Seasonal timing assumptions
- Required receiving water conditions
- Effluent quality confirmation prior to discharge

**Proponent Reply 1(a):** 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.

This lagoon has been designed for 250 people. Most colonies do not exceed 200 people before they split, so there is a 50 person buffer built into the lagoon sizing. The rate of which the colony will grow is difficult to predict as it depends on the number of young families that will be living at the new colony site. It will be a number of years before a population of 100 is reached and the planning cycle starts over.

For the reasons described above, a lagoon discharge is not anticipated for the first few years as the evaporation rate will exceed the inflow rate while the colony grows in the initial years.

Once the colony has reached a population that requires a discharge, it would be completed in accordance with the license terms and conditions. In Manitoba a discharge is prohibited until after the fish spawning season, that is any discharge must occur between June 15<sup>th</sup> and November 1<sup>st</sup> of the same year. When a discharge is required the valve between the primary and secondary cells will be closed, isolating the two cells. A minimum of 2 weeks of isolation time will be allowed to elapse to allow for continued treatment within the secondary cell. After two weeks samples will be collected from the secondary cell and submitted to an accredited laboratory for analysis. Typical license terms are as follows:

The licensee shall not discharge effluent from the wastewater treatment lagoon:

- a) where the organic content of the effluent, as indicated by the five-day carbonaceous biochemical oxygen demand, is in excess of 25 milligrams per litre;

- b) where the total suspended solids content of the effluent is in excess of 25 milligrams per litre, unless the exceedance is caused by algae;
- c) where the coliform content of the effluent, as indicated by the *E. coli* content measured by the MPN index, is in excess of 200 per 100 millilitres of sample;
- d) where the unionized ammonia content of the effluent is in excess of 1.25 milligrams per litre expressed as nitrogen (N), at 15°C ±1°C;
- e) where the total phosphorus content of the effluent is in excess of 1.0 milligrams per litre;
- f) between the 1<sup>st</sup> day of November of any year and the 15<sup>th</sup> day of June of the following year;
- g) when flooding from any cause is occurring along the discharge route;  
or

when the discharge of effluent will cause or contribute to flooding in or along the discharge route.

Provided the above conditions are satisfied, the discharge valve would be opened at a trickle discharge rate (approximately 14 l/s) and the secondary cell would be drawn down. The primary cell has an additional 4,300 m<sup>3</sup> capacity built into it to allow for the isolation during the discharge period, however if the level in the primary cell reaches maximum operation level the discharge valve would be closed, the intercell valve would be opened and the cells will be equalized again. Depending on the volume remaining, the intercell valve may be closed again and the process repeated as required to draw the secondary cell down. Once the secondary cell has been emptied the discharge valve would be closed and the intercell valve opened to allow equalization and full operation of the lagoon.

Should the discharge criteria not be met, additional time would be allowed to elapse, and a second sample would be collected and analyzed to ensure conformance before discharge.

From the above operational procedure, the operator has some flexibility as to when the lagoon would be discharged to ensure that the receiving environment is suitable. Provided the discharge occurs after June 15<sup>th</sup> and before November 1<sup>st</sup>.

**Request 1(b):** Confirmation whether lagoon discharge is governed by fixed seasonal windows or may be adapted to real-time receiving water conditions.

**Proponent Reply 1(b):** As discussed above, the lagoon discharge is fixed by a season window of June 15<sup>th</sup> to November 1<sup>st</sup>. During this window there is some

flexibility to allow operations to adapt to the receiving water conditions. It would be typical to discharge early July and late October of each year.

## 2. Receiving Water Conditions and Deferral Provisions

**Request 2(a):** The receiving water flow metric, hydraulic condition, or operational benchmark(s) used (if any) to confirm discharge suitability.

**Proponent Reply 2(a):** The discharge receiving water flow metric was not specifically evaluated during the design process, this would not typically be completed. It is understood that the discharge would not occur during excessively wet or dry conditions. That said, this is an area that could be further evaluated to establish discharge benchmarks.

**Request 2(b):** The procedure to be followed if receiving water conditions during the anticipated discharge period differ from those assumed in the EAP for discharge, including circumstances such as atypically low flow, elevated water levels, or backwater conditions.

**Proponent Reply 2(b):** See **3. Contingency Measures**, below, for description of operations in the event that receiving water conditions are not suitable for a discharge.

**Request 2(c):** The maximum duration discharge can be deferred using available lagoon storage volumes.

**Proponent Reply 2(c):** The lagoon design includes conservative loading rates. If we utilize the conservative design loading that the lagoon has been designed with, the lagoon could potentially store an additional 20 days before a discharge would be required. If the anticipated loading rates are utilized to calculate there would be an additional 38 days of storage before discharge is required. These values assume that the operational level remains within design parameters, below high-water level. As discussed below, in the event of an emergency the lagoon freeboard is utilized for storage there would be an additional 92 days of storage available.

### 3. Contingency Measures

A description of the contingency actions available should discharge be required but receiving water conditions are unsuitable, including any alternative management measures, supplemental treatment (if contemplated), temporary storage, hauling provisions, or other operational controls, and any associated regulatory notification procedures.

**Proponent Reply 3:** In the event that the lagoon cannot be discharged due to receiving water levels the license will require the operator to report the circumstances to the environment officer and seek instruction.

In the event that the receiving water conditions are unsuitable for discharge the most likely occurrence will be excessive moisture conditions such as flooding in Willowcreek. In this scenario the most appropriate measure will be to store for an additional period of time until the receiving waters have capacity to handle the discharge. If additional time is required prior to discharge the lagoon has 1m of freeboard storage above the high level of the lagoon. Within this 1m of freeboard there is additional 9,980m<sup>3</sup> of storage available. While the license does not permit the levels to exceed the high level, in the event of an emergency the additional storage is available. The 9,980m<sup>3</sup> of storage represents an additional 92 days of storage. It is anticipated this would be sufficient time to allow the receiving water level to recede to the level that discharge would be permissible.

As a secondary excessive moisture measure, while very unlikely, the colony members would implement water conservation measures, shut down the liftstation so that no additional flow to the lagoon occurs and the wastewater would be loaded and hauled to a facility that has capacity to accept the wastewater. The level in the lagoon would remain constant until such a time as a discharge is possible.

In the event that the Willowcreek flows are atypically low the operator could seek approval from the environment office for irrigation of the wastewater onto adjacent lands owned by the proponent, where the nutrients will be utilized by the vegetation that presumably would be in a drought condition if Willowcreek is running excessively low.

All operations outside that of the normal operations would be consulted with and approved by the environment officer prior to implementation.