

Decision Summary RA20010

This document summarizes my reasons for issuing Approval RA20010 under the *Agricultural Operation Practices Act* (AOPA). Additional reasons are in Technical Document RA20010. All decision documents and the full application are available on the Natural Resources Conservation Board (NRCB) website at www.nrcb.ca under Confined Feeding Operations (CFO)/CFO Search. My decision is based on the act and its regulations, the policies of the NRCB, the information contained in the application, and all other materials in the application file.

1. Background

On January 14, 2020 representatives of the Hutterian Brethren Church of Vegreville, operating as Vegreville Colony Farming Co. Ltd. (Vegreville Colony) disclosed to the NRCB that they had constructed a catch basin (a manure collection area) and feedlot pens (the west pen row, manure storage facilities) at an existing beef feedlot CFO without a permit under AOPA. They apologized for their errors and indicated that they were willing to do what it takes to make things right.

On February 18, 2020, Vegreville Colony submitted a Part 1 application to the NRCB to expand the existing beef feedlot CFO. On August 12, 2020 the applicant requested additional time to complete additional geotechnical testing and to submit their Part 2 application. The Part 2 application was submitted on November 17, 2020. On November 25, 2020, I deemed the application complete.

The application proposed:

- Increasing livestock numbers from 2,000 to 3,000 beef finishers
- Permitting the already constructed west feedlot pen row (175 m x 50 m) utilizing a naturally occurring protective layer
- Permitting an already constructed catch basin, and relining it so that that it has a compacted soil liner (60 m x 60 m x 2 m deep)
- To construct a runoff control structure (a combination of berms and ditches)

On January 8, 2021, the applicant submitted an addendum to the application which requested to modify the catch basin dimensions to 61 m x 61 m x 2.1 m deep, construct runoff control structures to direct runoff from the west pen row (including the newly proposed pen) to the catch basin, and to construct a new feedlot pen (75 m x 60 m) on the north side of the above noted already constructed west feedlot pen row. The processing of this application addendum further discussed in section two below.

Under AOPA, this type of application requires an approval. (This is one of several types of “permits” issued under AOPA. For an explanation of the different types and when each one applies, see www.nrcb.ca.)

a. Location

The existing CFO is located at E½ 19-50-13 W4M in the County of Minburn, roughly 13 km south of Lavoy, Alberta. The terrain at and surrounding the CFO is relatively flat.

b. Existing permitted facilities

The CFO is grandfathered with a deemed approval under section 18.1 of AOPA. This deemed approval allows the construction and operation of a feedlot CFO with a capacity of 930 beef finishers.

The CFO's deemed permitted facilities include two rows of feedlot pens (east pen row measures approximately 240 m x 60 m and central pen row measures approximately 240 m x 30 m). The location of these two pen rows, the west pen row and the catch basin are indicated on page six of Technical Document RA20010. The east and central pen row are discussed further below and in Appendix A. Appendix A also documents how the CFO's grandfathered status was determined. A list of the CFO's deemed permitted facilities are listed in the Appendix to RA20010.

c. Existing facilities and livestock capacity

The CFO currently has two fenced in pen rows that measure approximately 240 m x 60 m (east pen row, mentioned above) and 175 m x 50 m (west pen row), respectively. In addition, the CFO has the central pen row that is not currently fenced in (the status of this pen row is further discussed in Appendix A). The cumulative area of the fenced in pen areas is 23,750 m². Both of these pens are paved with roller compacted concrete (RCC).

Based on livestock numbers permitted at other AOPA permitted feedlot CFOs, I am aware that a feedlot pens paved with a RCC are able to house more livestock in a given area than a similar sized one with a soil floor. Despite this, the densities claimed seem to vary by operator and area. By comparison, the Canada Plan Service's Plan 1000 (revised 84:07) "Beef Cattle Housing and Equipment" document indicates that a paved feedlot can house beef finishers at approximately one finisher per 80 square feet (or 7.4 m²). This is approximately 3.75 times the stocking density stated in the same document for livestock in a pen with a soil floor.

I note how the stocking density stated in the Plan 1000 document is lower per beef finisher (300 square feet or 27.87 m²) than what is considered in Technical Guideline Agdex-096-81, "*Calculator for Determining Livestock Capacity of Operations as They Existed on January 1, 2002*" (200 square feet or 23.23 m²).

Based on the above the existing RCC paved pens should be able to confine the proposed 3,000 beef finishers. I also note how the above stated livestock capacity does not include the central pen row (discussed above and in Appendix A) or the new pen that is proposed in the application addendum.

2. Notices to affected parties

Under section 19 of AOPA, the NRCB is required to notify (or direct the applicant to notify) all parties that are "affected" by an approval application. Section 5 of AOPA's Part 2 Matters Regulation defines "affected parties" as:

- the municipality where the CFO is or is to be located
- any other municipality whose boundary is within a specified distance from the CFO, depending on the size of the CFO
- all persons who own or reside on land within a specified distance from the CFO, depending on the size of the CFO

For this application, the distance is 1.5 miles. (The NRCB refers to this distance as the

“notification radius.”)

Municipalities that are affected parties are defined by the act to be “directly affected” and are entitled to provide evidence and written submissions. The County of Minburn is an affected party (and therefore also a directly affected party) because the CFO is located within its boundaries. Beaver County is also an affected party (and directly affected) because its boundary is within the 1.5 mile affected party radius.

All other parties who receive notice of the application may request to be considered “directly affected.” Under NRCB policy, all individuals who own or reside on land within the affected party radius are presumed to be “directly affected” if they submit a written response to the notice within the prescribed timeline. See NRCB Operational Policy 2016-7: *Approvals*, part 6.2.

Under section 20 of the act, all directly affected parties are entitled to a reasonable opportunity to provide evidence and written submissions regarding the application.

All directly affected parties are also entitled to request an NRCB board review of the approval officer’s decision on the approval application.

The NRCB published notice of the application in the Vegreville News Advertiser and the Weekly Review on November 25, 2020 and posted the full application on the NRCB website for public viewing. The NRCB also emailed referral letters and a copy of the complete application to the County of Minburn, Beaver County, Alberta Health Services (AHS), Alberta Environment and Parks (AEP), and ATCO Gas and Pipelines; and mailed to Canadian Natural Resources Limited. Five courtesy letters were sent to people identified by the County of Minburn and Beaver County as owning or residing on land within the affected party radius.

Normally the amendment to the application noted above would require the public notice to be redone. I have elected to not do so in this case as:

- the application addendum does not propose to increase livestock numbers or to otherwise alter the amount of manure produced at the CFO on an annual basis from what was included in the above mentioned public notice
- the applicant received a written waiver from the owner of the closest residence to the west which indicates no-objection to the application addendum
- I discussed the application addendum with the same representatives of the municipalities and referral agencies noted below, and none of those people were in opposition to the application amendment
- I could have treated the application addendum as a separate application for an authorization and undergone the same effective process as above with the same effective end result without need for public notice or courtesy letters. For authorizations, notice is required only to the municipality(ies).

3. Responses to the application

I received responses from the County of Minburn, Beaver County, AHS and AEP. These responses are in the possession of the applicant. No response was received from ATCO Gas and Pipelines or Canadian Natural Resources Limited.

Mr. Davin Gegoick, a planning and development officer with the County of Minburn, provided a written response on behalf of the County of Minburn. As noted in section 2, the County of

Minburn is a directly affected party.

Mr. Gegolick stated that the application is consistent with the County of Minburn's municipal development plan. The application's consistency with the land use provisions of the County of Minburn's municipal development plan is addressed in Appendix B, attached.

He also listed the setbacks required by the County of Minburn's land use bylaw (LUB) and noted that the application appears to meet the setback requirements.

When I provided Mr. Gegolick with a copy of the addendum to the application, he advised that he had no concerns with it.

Ms. Kim Vana, a development officer with Beaver County, did not raise any concerns with the application (or its addendum) aside from inquiring if the NRCB would be notifying landowners within Beaver County of the application. As noted in the previous section, the NRCB already provided official public notice of the application in the News Advertiser and the Weekly Review in addition to sending courtesy letters to land owners identified by Beaver County. Also as noted previously, if I had treated the addendum to the application as an application for an authorization, this process would not have been required.

Mr. Gregory Ward, a public health inspector/executive officer with AHS, commented that:

- the (applicant should) make sure that all water wells to be used for human consumption are to be located more than 100 m from sewage lagoons
- the generation of any type of solid and liquid wastes from this operation be compliant with the Nuisance and General Sanitation Regulation
- the day to day operations and processes should not create or become a nuisance
- he recommended feedlot operators conduct regular sampling of water wells for microbiological purposes if those wells are used for human consumption
- the disposal of any dead livestock should be compliant with the Nuisance and General Sanitation Regulation and any other applicable legislation

Mr. Ward indicated that he did not have any concerns with the addendum to the application.

Ms. Laura Partridge, a senior water administration officer with AEP, indicated in her response to the application that licensing and a groundwater evaluation report are required. She went on to state that any construction or diversion of water which has the potential to impact water management or the aquatic environment or other water users without first obtaining *Water Act* and/or *Public Lands Act* authorizations may be considered a contravention. Despite this, she did not raise any other concerns with the application or its addendum.

Mr. Robin Naslund owns the closest residence to the CFO; that residence is located approximately 2,400 m west. He provided the applicant with a letter of non-opposition to the addendum to the application (see it in Technical Document RA20010).

Aside from the above noted responses, I did not receive any other responses related to this application.

4. Environmental risk screening of facilities

As part of my review of this application, I assessed the risk to surface water and groundwater posed by the CFO's existing and proposed manure storage facilities. I used the NRCB's

environmental risk screening tool for this purpose (see NRCB Operational Policy 2016-7: *Approvals*, part 8.13). The tool provides for a numeric scoring of risks, which can fall within either a low, moderate, or high risk range. (A complete description of this tool is available under CFO/Groundwater and Surface Water Protection on the NRCB website at www.nrcb.ca.)

All of the CFO's existing and proposed facilities pose a low potential risk to groundwater and surface water.

5. Other factors considered

The application meets all relevant AOPA requirements, with the terms and conditions summarized in part 6.

In addition, the proposed CFO expansion is consistent with the land use provisions of the County of Minburn's municipal development plan and land use bylaw. (See Appendix B for a more detailed discussion of the county's planning requirements.)

Under section 20(1.2)(a) of AOPA, an approval officer shall not consider whether the existing facilities (the east and central pen rows) meet the requirements of the regulations unless those structures may cause a risk to the environment. As noted previously, the feedlot pens constructed before AOPA came into effect pose a low potential risk to surface water and groundwater. In addition to this, while completing geotechnical testing to see if the west pen row and the proposed pen have an adequate protective soil layer below them, the applicant effectively demonstrated that the east and central pen rows have the same protective layer located below them that meets AOPA requirements.

With respect to the act's technical requirements, the proposed feedlot pens and catch basin renovation:

- Meet the required AOPA setbacks from all nearby residences (AOPA setbacks are known as the "minimum distance separation" requirements, or MDS)
- Meet the required AOPA setbacks from water wells, springs and common bodies of water
- With a condition, has sufficient means to control surface runoff of manure (see part 6 below)
- Meet AOPA's nutrient management requirements regarding the land application of manure
- Meet AOPA groundwater protection requirements for the design of floors and liners of manure and manure collection areas

In addition, I assessed the effects of the proposed CFO expansion on the environment. Consistent with NRCB policy, I presumed that these effects are acceptable because the application meets all of AOPA's technical requirements. I also presumed that the application's effects on the economy and community are acceptable, and that the proposed CFO expansion is an appropriate use of land. Under NRCB policy, these presumptions are based on the application's consistency with the municipal development plan and land use bylaw. (See NRCB Operational Policy 2016-7: *Approvals*, part 8.7.3.) Having considered information gathered from my site visits, the application, related documents provided by the operator, and comments from the two municipalities and the referral agencies, I find these presumptions are not overturned.

6. Terms and conditions

Approval RA20010 specifies the new permitted livestock capacity as 3,000 beef finishers. The approval also:

- permits the already constructed west feedlot pen row
- permits the construction of a new feedlot pen on the north side of the west pen row
- requires the construction of runoff control structures to direct runoff from the west pen row (including the new pen) to the catch basin
- requires the construction of a compacted soil liner for the catch basin

Further, Approval RA20010 contains terms that the NRCB generally includes in all AOPA approvals, including terms stating that the applicant must follow AOPA requirements and must adhere to the project descriptions in their application and accompanying materials.

In addition to the terms described above, Approval RA20010 includes conditions that:

- Require Vegreville Colony to cease construction and notify the NRCB immediately if the water table is encountered during construction
- Require submission of an engineer's completion report for the catch basin
- Set a deadline of November 30, 2021 for the approved and required construction to be completed
- Prohibit Vegreville Colony from placing manure or livestock in the new pen or from allowing manure impacted runoff to enter the relined catch basin until the facilities have been inspected by the NRCB following their construction

For an explanation of the reasons for these conditions, see Appendix C.

7. Conclusion

Approval RA20010 is issued for the reasons provided above, in the attached appendices, and in Technical Document RA20010.

Vegreville Colony's deemed approval is therefore cancelled, unless Approval RA20010 is held invalid following a review and decision by the NRCB's board members or by a court, in which case the deemed approval will remain in effect.

February 16, 2021

(Original Signed)
Jeff Froese
Approval Officer

Appendices:

- A. Grandfathering determination
- B. Consistency with the municipal development plan
- C. Explanation of conditions in Approval RA20010

APPENDIX A: Grandfathering determination

The applicant claims that its CFO is grandfathered (that is, it has a “deemed” permit) under section 18.1 of AOPA. I am treating that as a request for a determination of deemed permit status. Under section 11(1) of the Agricultural Operation Practices Act Administrative Procedures Regulation (APR), because I am cross-appointed as an NRCB inspector, I conducted an investigation into the deemed permit status of the CFO.

The CFO is not covered by a municipal development permit (or permit issued under the *Public Health Act*) issued before AOPA came into effect on January 1, 2002. However, under section 18.1(1)(a) of AOPA, the CFO may still be grandfathered if:

- the CFO “existed” on January 1, 2002; and,
- the CFO facilities were at a size that was at or greater than the permit threshold sizes under AOPA. (See NRCB Operational Policy 2016-6: *Public Notice on Grandfathering Decisions*, part 1.)

To determine whether the CFO meets these two criteria, the NRCB must consider, among other things what facilities existed at the site on January 1, 2002, including their dimensions, types of physical structures and other physical characteristics and how they were used.

As required under section 11(2) of the APR, I provided notice to those parties who would be entitled to notice if this were an application for a new approval. In this case, that included sending courtesy notices to land owners identified by the County of Minburn and Beaver County as owning or residing on land within 1.5 miles of the CFO. In addition, the NRCB placed a public notice of the grandfathering determination in the Vegreville News Advertiser and the Weekly Review on November 25, 2020.

I did not receive any feedback in relation to the deemed permit determination in response to the notice or courtesy letters.

The most reliably dated historical imagery I could locate for the CFO in or around 2002 was one from 2003 on the County of Minburn website. In that image two rows of feedlot pens are visible, which measure approximately 240 m x 30 m (central pen row) and 240 m x 60 m (east pen row); cumulatively these pens have an area of 21,600 m².

In the most recently available aerial photo of the CFO, and based on my site observations, two pen rows exist at the CFO. However, one of the two pen rows currently at the CFO is the west ones that were constructed without a permit.

The applicant has provided me with information detailing how, when the west pen row was constructed, the central pen row was renovated. The renovation utilized fill material from the catch basin and was completed to raise the elevation of the central pen row (to eliminate muddy conditions for livestock). There were no fences erected around the central pen row during my site inspections, but it was apparent to me based on the information provided and my observations that the applicant does not intend to abandon the central pen row. Rather, there is intent to reconstruct the fencing around the central pen row when finances allow.

Under section 18.1(2)(a) of AOPA, if a CFO existed on January 1, 2002, the CFO’s deemed capacity is its physical capacity to confine livestock on January 1, 2002.

The applicant claims that the CFO's deemed permit capacity is 2,000 beef finishers. The applicant was not able to provide documentation indicating what type or amount of livestock was present at the CFO in 2002 to support this livestock capacity claim.

To confirm if the livestock capacity claim is reasonable, I used Technical Guideline Agdex-096-81, "*Calculator for Determining Livestock Capacity of Operations as They Existed on January 1, 2002.*"

Pen capacity (northern) = pen area / animal space allocation = 930 beef finishers
Area available for livestock = 21,600 m²
Animal space allocation = 23.23 m² per beef finisher

I realize that that management methods between CFOs may vary from one operation to the next. Differences including but not limited to ones of this nature may allow for some variance in stocking densities from what is stated above. Despite this, I am of the opinion that the claimed capacity of 2,000 finishers is not reasonable in this case. The claimed capacity of 2,000 beef finishers is likely an indicator of what the feedlot is currently able to confine and feed with pens lined with roller compacted concrete.

Based on the above, the pens that existed as of January 1, 2002 had enough space to confine and feed 930 beef finishers. Based on this, it is my determination that the CFO is considered to have a deemed approval and a deemed capacity of 930 beef finishers.

APPENDIX B: Consistency with the municipal development plan

Under section 20 of AOPA, an approval officer may approve an application for an approval only if the approval officer finds that the application is consistent with the “land use provisions” of the applicable municipal development plan (MDP).

The NRCB interprets the term “land use provisions” as covering MDP policies that provide generic directions about the acceptability of various land uses in specific areas and that do not call for discretionary judgements relating to the acceptability of a given confined feeding operation (CFO) development. (See NRCB Operational Policy 2016-7: *Approvals*, part 8.2.5.) Under this interpretation, the term “land use provisions” also excludes MDP policies that impose procedural requirements. In addition, section 20(1.1) of the act precludes approval officers from considering MDP provisions “respecting tests or conditions related to the construction of or the site” of a CFO or manure storage facility, or regarding the land application of manure. (These types of MDP provisions are commonly referred to as MDP “tests or conditions.”)

Vegreville Colony’s CFO is located in the County of Minburn and is therefore subject to that county’s MDP. The County of Minburn adopted the latest revision to this plan on December 19, 2016, under Bylaw 1253-16. As relevant here:

Section 1.5 includes a statement where all land within the county is designated for agriculture or rural land use unless otherwise specified in an Intermunicipal Development Plan (IDP) or Area Structure Plan (ASP).

Maps 2 and 3 are not directly referenced in the parts of the MDP. Despite this they are titled Generalized Future Land Use – County West and County East. These maps include an overlay of the IDPs and ASPs within the county and “Confined Feeding Operation Prohibited” areas. No IDPs or ASPs apply to this CFO.

It is not clear if the CFO prohibition areas are meant to apply to existing, existing and expanding or proposed CFOs. Nonetheless, this CFO is not located within any of the CFO prohibited areas and does not conflict with either of these maps as it is not located in a prohibited area.

Part 3’s objective statement discusses how the “right to farm” in AOPA is respected in the MDP’s provisions. I consider this objective statement not to be a valid land use provision. Regardless, it provides insight for the interpretation of the remaining portions of the MDP and land use bylaw (LUB).

3.1.5 directs the county to consider certain site-specific factors when preparing referral comments to the NRCB for CFOs requiring an approval (subsection A) or registrations and authorizations (subsection B).

This section and its subsections are effectively a message from the county to itself to assist in its responses to AOPA applications. In my view, they are not land use provisions because not only are they procedural, but they are also internally directed to the county and not to the NRCB. Therefore, they are not directly relevant to my MDP consistency determination.

I note that the county did provide a response to this application, as summarized in part 3 of this decision summary which did not raise any concerns with this application, or the addendum to the application. Had the county objected to the application on the basis of one of the listed considerations in 3.1.5, that objection might have had weight in my interpretation of 3.1.5.

3.1.6 encourages CFOs to be located on “dry land pasture” whenever possible and how land is determined to be dry land pasture. I am of the opinion that this condition might be interpreted to be either a land use planning provision, or a test and condition. Based on my reasoning below I have concluded that it is a test or condition that I may not consider.

The MDP defines dryland pasture as land having a “Farmland Assessment Value” of \$157.49 per acre or less based on the most recent “Farmland Calculation Report”. The farmland calculation report, or how to locate it, is not defined within the MDP. It also appears that the assessed value of a given parcel of land could change over years, such that the assessed value could change from less than \$157.49 per acre to something over that amount (or vice versa). Because of the potential variability in assessed value and because of the lack of clarity in how to access the most recent “Farmland Calculation Report”, I am treating this part of the MDP as a “test or condition” related to the site for a CFO and I will therefore not consider it in my MDP determination (see paragraph 2 of this Appendix).

I note that according to the information from the publically available portion of the county’s website, the eastern half of section 19-50-13 W4M is valued per acre below the dryland pasture threshold stated above (based on 2019 taxation values. I am unable to confirm if this is what is referred to as a “Farmland Calculation Report”).

Regardless, the CFO is located on agriculturally zoned land under the county’s land use bylaw and does not conflict with that land use zoning. Further, the county has not objected to this application, or the addendum to the application.

For these reasons, I conclude that the application is consistent with the land use provisions of the County of Minburn’s MDP. The county’s responses to the application and the addendum to it support this conclusion.

In my view (see NRCB Operational Policy 2016-7: *Approvals*, part 8.2.3), under sections 1.5, 2.1, 3.1.2, and 3.2, the MDP clearly intend to incorporate the County of Minburn’s LUB #1254-16, last amended December 21, 2020. Accordingly, I considered the LUB.

Under that bylaw, the subject land is currently zoned as Agricultural “A” District. CFOs are listed a discretionary use within that zoning category. In section 8.3 of the *Approvals Policy* (2016-7), an approval officer is to deem an application consistent with a land use bylaw if the CFO is listed as a discretionary use.

APPENDIX C: Explanation of conditions in Approval RA20010

Approval RA20010 includes several conditions, discussed below:

a. Construction above the water table

Under section 9(3) of AOPA's Standards and Administration Regulation (SAR), the bottom of the liner of a manure storage facility or manure collection area (MSF/MCA) must be at least one metre above the water table "at the time of construction."

Information in the geotechnical report attached to the application indicates that groundwater may be encountered as shallow as 2.7 m below ground surface. I note how the colony proposes to construct a 2.1 m deep catch basin with a 0.6 m thick liner.

Based on this information, the proposed catch basin liner does not meet the one metre requirement of section 9(3). However, because the height of the water table can vary over time, the lack of adequate depth to water table indicated in Vegreville Colony's report does not mean that there will be an inadequate depth at the time of construction. To address this variability and ensure that the depth requirement is met at the time of construction, a condition is included requiring applicant to cease construction and notify the NRCB immediately if the water table is observed to be within one metre of the base of the catch basin liner at the time of construction.

b. Groundwater protection requirements

Catch basin

To demonstrate compliance with Section 9(6)(b) of the SAR, Vegreville Colony provided lab measurements of the hydraulic conductivity of the materials that will be used to construct the compacted soil liner.

Lab measurements of hydraulic conductivity are made in a precisely controlled setting and are typically based on a small soil sample. Therefore, the NRCB generally multiplies lab-measured hydraulic conductivity values by a factor of 10 to reflect the potential variability in actual liner materials and conditions that can reasonably be expected to be achieved in the field.

The regulations provide that the actual hydraulic conductivity of a one metre thick compacted soil liner must not be more than 5×10^{-7} cm/sec.

In this case, the lab measurement was 8.47×10^{-11} cm/sec. With the required ten-fold modification, the expected field value is 8.47×10^{-10} cm/sec. This expected value is below (better than) the maximum value in the regulations. Therefore, the proposed liner meets the hydraulic conductivity requirement in the regulations.

The NRCB's general practice is to include conditions in new or amended permits to ensure that the new or expanded facilities are constructed according to the required design specifications. Accordingly, Approval RA20010 includes conditions requiring Vegreville Colony to provide additional assurance that the as-built catch basin adequately protects groundwater. Approval RA20010 includes a condition requiring Vegreville Colony to provide an engineer's completion report certifying that the as-built catch basin:

- was constructed according to the proposed procedures and design specifications including the liner's thickness (at least 0.6 m), the number of lifts of soil in the construction of the liner, the liner's moisture content and compaction rate

- was constructed with the same liner material as that used for hydraulic conductivity testing,
- its horizontal (61 m x 61 m is proposed) and depth (2.1 m is proposed) along with the portion of the facility above and below ground level and the facility's side wall slopes (3:1 is proposed)

This report must be submitted to the NRCB for review prior to the inspection referred to below.

Pens

To demonstrate compliance with Section 9(5)(c) of the SAR, Vegreville Colony measured the hydraulic conductivity of the proposed protective layer by removing a relatively undisturbed soil sample during borehole drilling (using a Shelby tube) and testing the hydraulic conductivity of that sample in a lab.

As noted above, the NRCB generally multiplies lab-measured hydraulic conductivity values by a factor of 10 to reflect the potential variability in actual protective layer materials and conditions that can reasonably be expected to be achieved in the field.

The regulations provide that the actual hydraulic conductivity of a 2 metre thick naturally occurring protective layer must not be more than 1×10^{-6} cm/sec.

In this case, the lab measurements were 1.4×10^{-7} cm/s and 1.6×10^{-7} cm/s. Conservatively, I have used the faster 1.6×10^{-7} cm/s from clay till. With the required ten-fold modification, the expected field value is 1.6×10^{-6} cm/sec. This expected value is greater than the maximum value in the regulations. Despite this, there is more than 3.2 m thickness of clay till present at the CFO. Therefore, the proposed liner meets the hydraulic conductivity requirement in the regulations.

c. Surface water protection requirement

As noted in Technical Document RA20010, the applicant has proposed to construct (and maintain) a runoff control structure to direct runoff from the west pen row, including the new proposed pen, to the catch basin. Accordingly, Approval RA20010 includes conditions requiring Vegreville Colony to construct structures to direct runoff from the west pen row to the catch basin.

The NRCB routinely inspects newly constructed surface water control structures to assess whether they were constructed according to their required design specifications. To be effective, these inspections must occur in a meaningful timeline. As such, Approval RA20010 includes a condition stating that Vegreville Colony shall construct this structure on or before November 30, 2021.

d. Construction Deadline

Vegreville Colony proposes to complete construction by the end of November 2021. This time-frame is considered to be reasonable for the proposed scope of work. The deadline of November 30, 2021 is included as a condition and requirement in Approval RA20010.

e. Post-construction inspection and review

The NRCB routinely inspects newly constructed facilities to assess whether the facilities were constructed according to their required design specifications. To be effective, these inspections must occur before livestock, manure or manure impacted runoff are placed in the newly constructed facilities. Approval RA20010 includes condition stating that Vegreville Colony shall:

- not place livestock or manure in the manure collection or storage portions of the new pen, and
- not allow manure impacted runoff to enter the catch basin

until NRCB personnel have inspected these facilities and confirmed in writing that they meet the approval requirements.