

Decision Summary RA20012

This document summarizes my reasons for issuing Approval RA20012 under the *Agricultural Operation Practices Act* (AOPA). Additional reasons are in Technical Document RA20012. 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 August 28, 2019 and February 4, 2020 the Hutterian Brethren Church of Ribstone (Ribstone Colony) submitted Part 1 applications to expand an existing multi-species CFO. These applications were later withdrawn as the colony indicated that they would like to alter the number and type of permitted livestock at the CFO.

On August 28, 2019 a representative of the colony self-disclosed that two calf barns and a series of pens associated with the dairy at the CFO had been constructed without a permit. The approval officer handling the application at that time brought the self-disclosed unauthorized construction to the attention of an NRCB inspector. That inspector indicated that so long as the applicant was working towards getting these facilities permitted compliance actions would not be taken.

On February 12, 2020 the file I took over the application file.

On February 18, 2020, the colony submitted a new Part 1 application to the NRCB which clarified the amount of livestock existing as of January 1, 2002 and to expand the dairy portion of the CFO. The Part 2 application was submitted on March 31, 2020.

While reviewing the Part 2 application it came to my attention that the CFO had constructed two feedlot pens without a permit. I discussed these two pens with an NRCB inspector. On April 17, 2020 that inspector issued Inspection Report 18273 allowing the colony to continue to use the two feedlot pens until June 30, 2020. After June 30, 2020 these pens were not to be used as part of the feedlot (CFO) until they are permitted by the NRCB for CFO purposes.

On May 8, 2020, I deemed the Part 2 application complete. It includes a listing of the CFO's claimed grandfathered livestock capacity along with the associated manure collection areas and manure storage facilities and proposes to:

- Increase the amount of dairy livestock from 130 to 250 milking cows (plus associated dry cows and replacements)
- Construct a dairy barn (35 m x 145 m) including an attached holding area and transfer pit or alley (37 m x 27 m)
- Construct an earthen liquid manure storage (70 m x 50 m)
- Permit three already constructed dairy pens (40 m x 60 m, 35 m x 70 m, and 30 m x 50 m)
- Permit two already constructed dairy (calf) barns (20 m x 40 m and 8 m x 80 m)
- Decommission the old dairy barn (100 m x 16 m)

- Construct a berm along the east, north and west side of the dairy pens to control run on and run-off.

An addendum to the Part 2 application was submitted on July 9, 2020. The addendum includes a variance request (due to the dairy pens' proximity to an existing water well) and plan to address the potential risk to surface water by the CFO's feedlot pens.

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 E 1/2 8-42-3 W4M and W 1/2 9-42-3 W4M in the MD of Wainwright, roughly 17 km southeast of the village of Edgerton, AB. The site of the CFO gently undulates and generally slopes to the west towards Black Creek adjacent to the CFO's feedlot. The land surrounding the CFO generally slopes to the northwest.

b. Existing permitted facilities

The CFO is grandfathered with a deemed approval under section 18.1 of AOPA. This deemed approval allows for the construction and operation of a multi-species CFO. The livestock included in the deemed permit and the associated manure collection areas and storage facilities are listed in Appendix B, below. A list of the CFO's manure collection areas and manure storage facilities that are part of the deemed permit are listed in the appendix to Approval RA20012.

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 individuals 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 "affected party 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 MD of Wainwright is an affected party (and therefore also a directly affected party) because the CFO is located within its boundaries.

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 Wainwright Star Edge News on May 8, 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 MD of Wainwright, Alberta Health Services (AHS), Alberta Environment and Parks (AEP), Alberta Agriculture and Forestry (AF), and Natural Gas Co-op 52 Ltd., Alliance Pipelines, and Pembina Pipelines. Sixteen courtesy letters were sent to people identified by MD of Wainwright as owning or residing on land within the affected party radius.

I note that there is a typographical error in the public notice for this application which states that the claimed layer chicken capacity is 200, not the 300 claimed by the CFO. I am of the opinion that the application addendum received on July 9, 2020 and the typographical error related to layer chicken numbers do not require notification of the public, referral agencies, or the above noted energy companies.

3. Responses to the application

I received responses from the MD of Wainwright (the MD), AF, and Enbridge (who responded on behalf of Alliance Pipelines).

Ms. Kim Christensen, a development officer with the MD of Wainwright (the MD), provided a written response on behalf of the MD. As noted in section 2, the MD is a directly affected party.

Ms. Christensen stated that the application is consistent with the MD's municipal development plan and land use bylaw. The application's consistency with the MD's municipal development plan is addressed in Appendix A, attached. She also listed the front yard setbacks required by the MD's land use bylaw and noted that the application meets the front yard setback.

I note that the proposed manure collection areas and manure storage facilities in this application meet the LUB's Agricultural District's side yard (6 m) and rear yard (7.5 m) setbacks.

Mr. Al Spink, an inspector with AF, did not raise any concerns with this application.

Mr. Matt Martel, a person representing Enbridge and Alliance Pipelines, did not raise any concerns (after it was clarified by the applicant that the proposed facilities are not located in close proximity to the Alliance pipeline).

No responses were received from the general public, AHS, AEP, Natural Gas Co-op 52 or Pembina Pipelines in response to the notice of the application being deemed complete or the courtesy letters that were sent out by the NRCB.

4. Other Directly affected party

Mr. Robert McBride provided a minimum distance separation (MDS) waiver as part of the application. Under NRCB policy, he is presumed to be "directly affected" by the application. See NRCB Operational Policy 2016:7 – *Approvals*, part 6.2.

5. Environmental risk screening of existing and proposed 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.)

For the sake of efficiency, I first assessed the CFO's existing feedlot, old dairy barn and the west broiler barn using the risk screening tool. These appear to be the CFO's highest risk facilities, due to the distance between them and water wells or Black Creek. My risk assessment found that the feedlot poses a low potential risk to groundwater and a moderate potential risk to surface water. The dairy barn and the west broiler barn both pose a low potential risk to groundwater and surface water.

I discussed the feedlot and the potential risk it poses to the creek with the applicant. The applicant has submitted an addendum to the application which includes a request to have six months to come up with a plan to address this risk. After that plan is delivered to the NRCB, three years was requested to implement the plan.

Provided that the plan to address the potential risk posed by the feedlot pens to surface water addresses the risk and is implemented in a reasonable time frame, the risk to surface water posed by the feedlot pens should be reduced. After the plan is submitted, the NRCB will conduct another review of the risk posed by the feedlot pens to surface water. Conditions will be added to the approval requiring the submission of a plan to the NRCB that addresses the risk of the feedlot pens posed to surface water. Once that plan is accepted by the NRCB in writing for implementation, the plan be implemented in a reasonable timeline. (I note in the July 9, 2020 application addendum that a three year time frame has already been committed to implement the plan.)

Because the dairy barn, feedlot and the west broiler chicken barn are presumed to be the CFO's highest risk facilities, and because these facilities pose low risks to surface water and groundwater (with conditions), I presume that the CFO's other existing facilities pose a low risk to both groundwater and surface water. Therefore, a further assessment of the risks posed by these other facilities (using the NRCB's environmental risk screening tool) was not carried out.

I also assessed the proposed new calf barns, dairy pens (including the pre-2002 ones and the ones constructed after 2002 without a permit), new dairy barn and new EMS using the NRCB's risk screening tool, and determined that they all pose a low potential risk to groundwater and surface water.

6. Other factors considered

The application meets all relevant AOPA requirements, with the terms and conditions summarized in part 7.

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

With respect to the act's technical requirements, the proposed CFO expansion:

- Meets the required AOPA setbacks from all nearby residences, with one exception (AOPA setbacks are known as the "minimum distance separation" requirements, or

MDS). The owner of that residence has signed a written waiver of the MDS requirement to their residence

- Meets the required AOPA setbacks from springs and common bodies of water
- With conditions, has sufficient means to control surface runoff of manure
- Meets AOPA's nutrient management requirements regarding the land application of manure
- Meets AOPA groundwater protection requirements for the design of floors and liners of manure storage facilities

I also determined that the dairy pens, including the old pens and the ones that were constructed without a permit, are located within the required AOPA setback from an existing water well. However, as explained in Appendix C, I am prepared to issue a variance to the 100 m water well setback requirement due to the way the pens slope away from the well and the well's construction.

When preparing this decision summary, I received technical assistance from Mr. Scott Cunningham, an Environmental Specialist with the NRCB. Mr. Cunningham assisted me with determining the uppermost groundwater resource for risk screening purposes.

I also discussed the file with Mr. Mike Iwanyshyn, a senior environmental specialist and the chair of the NRCB's Monitoring Review Team. Our discussion related to the CFO's feedlot pens and the result of their ERST screening (they pose a moderate potential risk to surface water). We then discussed how and why the pens poses moderate potential risk to surface water (based on ERST screening results discussed in part five above) and possible ways for the CFO to address the potential environmental risk. After my conversation with Mr. Iwanyshyn, I contacted the CFO's agent, and the agent submitted the July 9, 2020 application addendum which includes a request for time to come up with a plan to address the potential risk posed by the feedlot pens to surface water.

7. Terms and conditions

Approval RA20012 specifies the new permitted livestock capacity as 250 milking cows, plus dry cows and replacements, 2,000 beef feeders (feeder cattle), 24,000 broiler chickens, 300 layer chickens, 1,000 ducks, 200 geese, and 300 broiler turkeys. Approval RA20012 also permits the construction of the new dairy barn and EMS, the already constructed calf barns and dairy pens.

Approval RA20012 also 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 RA20012 includes conditions that:

- Set a deadline of November 30, 2021 for the approved construction to be completed
- Require the concrete used to construct the liner of the manure collection and storage portion of the new dairy barn, including the attached transfer alley and holding area to be sulphate resistant and have a minimum 56-day compressive strength of 32 MPa
- Require submission of proof, prepared by a qualified third party, that the concrete used for the manure collection and storage areas of the dairy barn meets the required specifications
- Require submission of an engineer's completion report for the EMS that it meets the proposed specifications

- Prohibit Ribstone Colony from placing manure or livestock in the new dairy barn and from placing manure in the EMS until these facilities have been inspected by the NRCB following their construction
- Require the old dairy barn and the western most dairy pen (see Technical Document RA20012, page four for the location of the pen) to be decommissioned
- Require berms to be constructed on the east, north and west side of the dairy pens to control run on and runoff
- Require the submission of a plan to address the potential risk to surface water posed by the feedlot pens

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

For clarity, and pursuant to NRCB policy, I consolidated the deemed approval into Approval RA20012 (see NRCB Operational Policy 2016-7: *Approvals*, part 10.5). Consolidating permits generally involves carrying forward all relevant terms and conditions in the existing permits into the new permit, with any necessary changes or deletions of those terms and conditions, and then cancelling all existing permits once the new permit is issued. This consolidation is carried out under section 23 of AOPA, which enables approval officers to amend AOPA permits on their own motion.

8. Conclusion

Approval RA20012 is issued for the reasons provided above, in the attached appendices, and in Technical Document RA20012.

Ribstone Colony's deemed approval, is therefore cancelled, unless Approval RA20012 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.

July 29, 2020

(Original Signed)
Jeff Froese
Approval Officer

Appendices:

- A. Consistency with the municipal development plan
- B. Grandfathering determination
- C. Variance to water well setback requirements
- D. Explanation of conditions in Approval RA20012

APPENDIX A: 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” for 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.”)

Ribstone Colony’s CFO is located in the MD of Wainwright and is therefore subject to that county’s MDP. The MD of Wainwright adopted the latest revision to this plan on May 15, 2007, under Bylaw #1319.

Section one of the MDP relates to agriculture and confined feeding operations, its policies relevant to this application are discussed below:

Policy 1.1 states that most of the MD is designated as agricultural use area and directs the reader to Map 1 which indicates that the CFO and land surrounding it are part of the Agricultural Use Area. Policy 1.2 goes on to state that this area is to be conserved for agriculture and agriculture-related uses, for the most part. Policy 1.3 then states that the primary use of the agricultural use area is for extensive and intensive agricultural uses and for confined feeding operations.

I interpret these three policies to be land use provisions which the CFO does not conflict with based on the CFO’s location in Map 1 from the MDP.

Policy 1.4 states that the minimum parcel size for farming shall normally be a quarter section.

I am of the opinion that this policy is a land use provision, but one that is discretionary and subjective. Under Operational Policy 2016-7: *Approvals*, part 8.2.5, I cannot consider discretionary or subjective land use provisions. This policy suggests, without providing guidance, there could be an exception to the normal. An exception would require substantial subjective evaluation of the merits of an individual development. Therefore I will not consider policy 1.4 as part of my MDP consistency determination.

Policy 1.8 states that CFOs and manure storage facilities (under the jurisdiction of the NRCB) must fully satisfy the requirements and regulations under the Act (AOPA). This policy stresses the importance of the minimum distance separation (MDS) and land base requirements of AOPA.

I recognize that the Ribstone Colony has constructed facilities without a permit (a violation of AOPA and its regulations) and that the CFO’s feedlot poses a potential risk to the environment (surface water) that needs to be addressed. Despite this, the colony has:

- provided proof of how the dairy facilities that were constructed without a permit will meet the liner requirements of AOPA
- ceased using the feedlot pens that were constructed without a permit
- been required to provide a plan to address environmental concerns related to the feedlot
- requested a variance to the AOPA 100 m water well setback requirement for the dairy pens, see Appendix C
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As noted in Technical Document RA20012, and in this document, the CFO has adequate land base available for manure spreading. Also noted in both documents, the CFO effectively meets the MDS requirement under AOPA as the only residence within the CFO's MDS radius has signed a MDS waiver.

Policy 1.9 states that CFOs requiring a registration or approval and that MSFs requiring an authorization shall not be allowed within 2.4 km of select features identified in Map 1.

Ribstone Colony's CFO is not located within the 2.4 km setback of any of the listed features.

For these reasons, I conclude that the application is consistent with the land use provisions of the MD of Wainwright's MDP. The MD's response to the application also supports this conclusion.

In my view, the text of the MD of Wainwright's MDP also provides a clear intent to adopt provisions from the land use bylaw (LUB), in parts 2.6, 2.7, 2.13, 2.16, 2.19, 2.20, 4.6, and 5.2. Following the NRCB Operational Policy 2016-7: *Approvals*, part 8.2.3, I also considered the MD's LUB (most recently amended on May 15, 2007 by Bylaw #1318). Under the LUB, the subject land is currently zoned as Agricultural District.

CFOs are not listed as permitted or discretionary land uses within the Agricultural District. The LUB provides further direction for CFOs in section 6.2.3 where CFOs (ones that require an approval, registration or authorization) under AOPA are exempted from the LUB.

APPENDIX B: Grandfathering determination

Ribstone Colony claims that its CFO is grandfathered (that is, it has a “deemed” permit) under section 18.1 of AOPA.

As I am cross-appointed as an NRCB inspector, under section 11 of AOPA’s *Administrative Procedures Regulation*, I may conduct an investigation into the deemed permit status in this circumstance.

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.

Public notice of the grandfathering determination was included with the public notice for the expansion of the dairy portion of the CFO in the May 8, 2020 copy of the Wainwright Star Edge News. No responses were received from the general public in response to the public notice.

Based on a review of information available during my site visits, from available air photos, and documentation provided by the applicant, I find that the following manure storage facilities and manure collection areas existed at the CFO on or around January 1, 2002. Because of this, these facilities are considered to be grandfathered:

- Layer chicken barn 11 m x 46 m
- Broiler chicken barn (#1) 10 m x 72 m
- Broiler chicken barn (#2) 7 m x 27 m
- Broiler chicken barn (#3) 11 m x 64 m
- Goose and duck barn 9 m x 52 m
- Goose and duck pen 30 m x 30 m
- Turkey barn 7 m x 24 m
- Feedlot, consisting of 16 pens and an overall pen area of 66,280 m² (this area is the total feedlot area as of January 1, 2002 less the portion of a pen that was previously decommissioned)
- Dairy barn 100 m x 16 m
- Dairy pens 200 m x 72 m

The available air photos of the CFO and information collected during my site visits indicate that a swine operation and a portion of a feedlot pen existed at the CFO as of January 1, 2002. It should be noted that the swine operation and the portion of the feedlot pen have been decommissioned or abandoned. The swine operation included two barns (54 m x 11 m and 71 m x 9 m) and a series of associated pens (62 m x 83 m). These facilities were decommissioned around 2014. The decommissioned portion of the feedlot (143 m x 53 m and 32 m x 41 m) was

abandoned at some point between 2015 and 2020. For this reason, these decommissioned facilities will not be discussed further in this grandfathering determination.

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.

In Part 1 and 2 of application RA20012, the colony's claimed livestock capacity is:

- 300 laying chickens
- 24,000 broiler chickens
- 200 geese
- 1,000 ducks
- 200 turkeys
- 3,500 beef feeders (feeder cattle), decreasing to 2,000 after this application (see discussion above and in Part one of this document), and
- 130 milking cows (I assume this to include the dairy's associated dry cows and replacements, not just milking cows, see discussion below)

The colony was not able to provide documentation indicating the number and type of livestock was actually present at the CFO in 2002 to support this livestock capacity claim.

To confirm if the livestock capacity claimed in the Part 1 application is reasonable, I used Technical Guideline Agdex-096-81, "*Calculator for Determining Livestock Capacity of Operations as They Existed on January 1, 2002.*" My assessment has found that all of the applicant's claimed livestock numbers are reasonable.

Layer chicken capacity

Normally, a layer chicken barn's livestock capacity is determined by dividing the cage area by the area requirement per bird multiplied by the number of cages. For biosecurity purposes, and considering the relatively small amount of livestock claimed, I did not enter the barn to confirm the cage setups in this barn. Rather, I am treating this barn as though it is a free run barn (akin to a broiler chicken barn, discussed below) without cages and will be only utilizing the area requirements from Agdex-096-81 for layer chickens. The barn measures 46 m x 11 m. This barn is reported to house 300 layer chickens.

Layer chicken capacity = barn area / bird space allocation

Barn area = 506 m²

Area requirement varies from 0.04129 m² for white birds to 0.04516m² for brown birds

Based on the above, the barn's calculated laying chicken capacity is significantly larger than the claimed capacity of 300 laying chickens (both brown and white birds). I accept the claimed capacity of 300 laying chickens as is.

Broiler chicken capacity

The combined livestock housing areas of the three broiler chicken barns is approximately 1,613 m² and the application claims a livestock capacity of 24,000 broiler chickens.

Broiler chicken capacity = barn area / bird space allocation

Barn area = 1,613 m²

Bird space allocation = 0.06503 m² for larger broilers

Based on the above, the barns' broiler chicken capacity is expected to be approximately 24,800 broilers. The claimed broiler chicken barn capacity is marginally less than the calculated barn capacity so I accept it as it was claimed.

Duck and goose capacity

The duck and goose barn measures 9 m x 18 m and the associated exterior pen measures 30 m x 30 m.

Since ducks and geese are not common animals to grandfather, I was not able to locate literature related to duck and goose animal space requirements from in or around 2002. (For instance, ducks and geese are not listed in Technical Guide 096-81.) As a proxy, I compared this grandfathering to other CFOs with ducks and geese. At one CFO there was an application to construct a new barn with an 18.3 m x 18.3 m area for 1,300 ducks and geese (See Decision Summary RA12057A). In the other, there was a grandfathering determination at an existing (pre-2002) CFO for 200 ducks/geese that were housed in a 6.1 m x 25.8 m barn (with an associated livestock exercise pen, cumulatively approximately 6,000 m², see Decision Summary RA15023). Based on this I am of the opinion that it would be reasonable to expect the barn housing density for ducks and geese to range from 0.1211 m² to 0.2576 m² per bird.

Barn capacity = barn area / bird space allocation

Barn area = 162 m²

Pen area = 900 m²

Bird space allocation = a range from 0.1211 m² to 0.2576 m² per bird

Based on the above, the duck and goose barn and the associated pen could reasonably house significantly more than the claimed duck and goose capacity. Based on this, I accept the claimed capacity as is.

Turkey capacity

The turkey barn measures 7 m x 18 m and has a claimed capacity of 300 turkeys. I note that the claimed "turkey" doesn't specify a sub-type of livestock of toms/breeders, hens, or broiler as per Schedule 2 to the *Agricultural Operations, Part 2 Matters Regulation*. To be conservative, I will use toms/breeders as they are the largest bird type and have the most restrictive space requirements in Agdex 096-81.

Turkey capacity = barn area / bird space allocation

Barn area = 126 m²

Bird space allocation = 0.3252 m² for toms/breeders

Based on the above, the barns' turkey capacity is expected to be approximately 385 toms/breeders. The claimed turkey barn capacity is less than the calculated barn capacity so I accept it as it was claimed.

Feedlot capacity

As of January 1, 2002 the feedlot pens had an approximate area of 75,000m² with approximate 1,000 m of feed bunk and a claimed capacity of 3,500 beef feeders. Despite this, the CFO has decommissioned a pen area of approximately 9,000 m² at some point between 2015 and 2020.

Pen capacity (northern) = pen area (for northern AB) / animal space allocation
Approximate pen area available for livestock = 75,000 m²
Animal space allocation = 16.26 m² per beef feeder
Feed bunk capacity = bunk length / feed bunk space allocation
Approximate feed bunk length available = 1,000 m
Feed bunk space allocation = 0.24 m per beef feeder

The claimed beef feeder capacity, based on available pen space and bunk length, is less than the calculated capacity. I accept the capacity of 3,500 it as it was claimed. Despite this, I note that the applicant has indicated in their Part 2 application that they are reducing the amount of permitted beef feeders to 2,000.

Dairy capacity

The dairy portion of the CFO that can be grandfathered includes a series of dedicated dairy pens and a milking barn (the old one referred to elsewhere in this document) and a claimed capacity of 130 milking cows. The claimed capacity of dairy livestock does not include dry cows or replacements. Based on the presence of dairy pens and a barn, I am of the opinion that the grandfathering determination should include milking cows, plus dry cows and replacements.

Typically, it is common for a dairy to not have more than 1.5 dry cows or replacements for each milking cow. Based on this, I expect there to be approximately 195 dry cows and or replacements based on a claimed capacity of 130 milking cows.

As of January 1, 2002 the dairy pens measured approximately 200 m x 72 m and the barn measured 100 m x 16 m. For biosecurity reasons I did not enter the dairy barn to confirm its layout.

I will calculate the milking cow capacity based on a loose housing system's space requirements and the dry cow and replacement capacity based on dairy pen space. To be conservative, I am treating the dry cows and replacements as beef finishers with regards to space allocation requirements.

Milking cow capacity (loose housing) = barn area / animal space allocation
Approximate barn available for milking cows
(assumed to be three quarters of the barn area) = 1,200 m²
Animal space allocation = 13.94 m² per milking cow

Pen capacity = pen area (northern AB) / animal space allocation
Area available for livestock = 14,400 m²
Animal space allocation = 23.23 m² per beef finisher

The dairy barn has space to house approximately 85 milking cows which is less than the claimed capacity. However, the pens have adequate space to house significantly more than 195 dry

cows or replacements. Based on my experience and discussion with CFO operators, some dairies house milking cows in a pen and milk them in the barn.

While I was onsite I observed a permanent chase alley connecting the dairy barn to the dairy pens. Installation of a permanent chase alley can be an indicator that livestock are regularly moved from the pens to the barn or from the barn to the pens.

Based on the above, I am of the opinion that it is reasonable to conclude that the CFO was capable of housing 130 milking cows in the barn and pens along with related dry cows and replacements in the pens as of January 1, 2002.

Conclusion

The CFO is considered to have a deemed approval and a deemed capacity of:

- 300 laying chickens
- 24,000 broiler chickens
- 200 geese
- 1,000 ducks
- 200 turkeys
- 3,500 beef feeders, decreasing to 2,000 as per the Part 2 application, and
- 130 milking cows (plus associated dry cows and replacements)

APPENDIX C: Variance to water well setback requirements

According to the application, one water well is located within 100 m of existing manure collection areas and manure storage facilities. The application does not specifically state how many water wells are located within 100 m of the dairy pens. Based on a site visit and a review of scaled air photos, I have determined that one water well is located approximately ten metres south of and at the same approximate elevation as the existing dairy pens.

In the NRCB's *Approvals Policy* (Operational Policy 2016-7: part 8.7.1) approval officers are to measure the distance to a water well to a manure collection area or manure storage facility such as a barn, pen or other related manure collection area from the closest part of the entire facility (including the existing and proposed portions). Because of this proximity, the applicant's dairy pens that were expanded without a permit conflict with a section 7(1) of the *Standards and Administration Regulation* under AOPA, which prohibits the construction (and expansion) of manure storage facilities within 100 metres of water wells. The regulation allows approval officers to grant an exemption from this prohibition for proposed facilities but not for existing (already constructed) ones.

As the regulation does not contemplate exemptions for existing facilities, I need to either deny the application or alternatively consider if a variance is warranted under AOPA's section 17(1). It is my opinion that considering a variance is appropriate in this case.

On July 9, 2020 the applicant requested a variance to the water well setback requirement to the dairy pens on the grounds that:

- one of the dairy pens will be decommissioned which will increase the distance from the pens to the water well,
- the dairy pens are sloped so that their runoff will generally run away from the water well.

I note that the decommissioning of one of the dairy pens will increase the distance from the pens to the well from 10 m to approximately 30 m (based on my review of scaled air photos; I note that the applicant states the distance to be approximately 40 m). In addition to this, the feed bunk along the south side of the pens will act to limit runoff to the south (towards the well) and that a commitment was made in application RA20012 to construct a berm along the west, north and east side of the dairy pens.

Approval officers must not grant variances or exemptions lightly or in the absence of substantive evidence they will produce equivalent levels of protection (see Decision 03-04, *AAA Cattle Ltd.* p 24). In considering whether a variance is appropriate for the pens, I have used the same tools that I would normally look at to determine if an exemption is warranted. I consider the water well exemption framework discussed above as useful for assessing the degree of protection for the water well in relation to the pens. In this case I note that the risks of direct aquifer contamination from the dairy pens are low if the MSF/MCA meets AOPA's technical requirements to control runoff and leakage. I also assess whether water wells that are less than 100 metres from the MSF/MCA could act as conduits for aquifer contamination. The results of that assessment are discussed below.

Under the regulation, the test for granting an exemption is whether the "aquifer into which the well is drilled is not likely to be contaminated" by the proposed MSF/MCA.

Approval officers may presume that the risks of direct aquifer contamination from the MSF are low if the applicant's proposed MSF meets AOPA's technical requirements to control runoff and leakage. However, when determining whether an MSF/MCA that meets AOPA's technical requirements should warrant a variance from the 100 metre water well setback requirement, approval officers also assess whether water wells that are less than 100 metres from the MSF could act as conduits for aquifer contamination.

The following factors may help to determine the risk of aquifer contamination via the water well:

- How the well was constructed
- Whether the well is being properly maintained
- The distance between the well and the proposed MSF
- The estimated water well pumping rate
- Whether the well is up- or down-gradient from the MSF and whether this gradient is a reasonable indication of the direction of surface and groundwater flow between the two structures

Based on information provided by the applicant and from the Alberta Environment and Parks (AEP) water well database, the water well located between the dairy pens and the old dairy barn is likely ID # 1501971. Water well is located approximately 30 m southwest of the southwest corner of the dairy pens (where they are to be decommissioned to). This well is reported to have been installed in 2011 and has a perforated zone from 102.7 m to 108.8 m below ground level across siltstone and sandstone layers. These layers produce approximately 91 litres per minute of water and are reported to be used for domestic and other purposes. The well's log identifies a till layer from 0.3 m to 3.1 m below ground level underlain by brown sand to 19.8 m. Between the sand and the well's perforated zone are layers of shale of varying thickness. The well has a bentonite seal from ground surface to 96.6 m below ground level (across the till and shale layers). The well appeared to be in good condition at the time of my site visit and its casing was protected by welded steel cage. The well is at the same approximate elevation as the dairy pens, but I note that the pens are generally sloped to the north away from the water well.

I note that the sand in water well ID# 1501971 has potential to be in direct hydraulic communication with the sand observed in the water well located south of the old dairy barn. The water well south of the dairy barn is likely water well ID # 189474 (based on information provided by CFO representatives). Water well ID # 189474 was used to determine the site's uppermost groundwater resource (UGR) which is in brown sand at a depth of 5.5m. I note that as the soil layers across the CFO change the relative depth of the sand and UGR will also change (based on water well logs available for the site and information provided by Union Street Geotechnical). I also note how water well 1501971 has a bentonite seal from ground surface, across a till layer (0 – 3.1 m), across the sand (3.1 m – 19.8 m), and interbedded shale and sandstone layers to 96.6 m.

I also note that the pens in general slope to the north away from the water well (1501971), that the overall slope of the site is to the west, and that the area surrounding the CFO generally slopes to the north. The immediate slope of the pens is to the north.

The overall slope of the CFO is to the west while the land surrounding the CFO generally slopes to the northwest. The slope within a site such as a CFO and the land surrounding it are often indicators of groundwater flow direction. Based on this, the groundwater flow at the CFO is expected to be to the west or northwest.

In addition, the NRCB has developed a “water well exemption screening tool,” based on the factors listed above, to help approval officers assess the groundwater risks associated with a nearby water well and to decide whether an exemption from the 100 metre setback to a well is warranted. (A complete description of this tool is available under CFO/Groundwater and Surface Water Protection on the NRCB website at www.nrcb.ca.) This tool is also useful for assessing the degree of protection for the water well in relation to the pens. The tool consists of a two-stage risk screening process; each stage provides a numeric risk “score” based on the information inputted into the tool. The first stage focuses on the well’s construction. If the well scores less than 10 at this stage, the tool suggests granting a setback exemption for the subject facility. If the well scores above 28, the tool recommends denying the exemption. Scores between 10 and 28 require applying the second stage of the screening process, which focuses on the gradient and other factors bearing on the risk of manure runoff or leachate reaching the water well. If the risk score at this stage is over 20, the tool suggests denying the setback exemption to the subject well.

For the risk screening process described above, water well 1501971 scored 14 and 18 in the first and second risk screening stages, respectively.

Based on the above information it is my assessment that varying the 100 m setback rule for the dairy pens would offer the same degree of protection and safety as that provided for by the regulations for the following reasons:

- The dairy pens and the land surrounding them generally slope so that manure impacted runoff would be directed away from water well 1501971.
- There is a commitment in Application RA20012 to construct berms that will help prevent runoff from leaving the dairy pens.
- The applicant has committed to decommission a dairy pen which will increase the distance from the pens to water well 1501971.
- In the unlikely event that any manure did leave the dairy pens, it is unlikely to migrate directly into the UGR because of how the water well 1501971 is constructed (with a casing and a bentonite seal) and due to the till protective layer located above it.

APPENDIX D: Explanation of conditions in Approval RA20012

Approval RA20012 includes several conditions, discussed below:

a. Construction Deadline

Ribstone Colony proposes to complete construction of the proposed new dairy barn and EMS by November, 2021. This time-frame is not considered to be reasonable for the proposed scope of work as poor climatic conditions or a limited availability of contractors may result in this not being an achievable. For this reason, the deadline of November 30, 2022 is included as a condition in Approval RA20012.

b. Post-construction inspection and review

The NRCB's general practice is to include conditions in new permits to ensure that the new or expanded facilities are constructed according to the required design specifications. Accordingly, Approval RA20012 includes conditions requiring the submission of:

- proof, prepared by a qualified third party, that the concrete used to construct the manure collection and storage liner of the dairy barn, including the attached holding area and transfer pit is sulphate resistant and has a minimum 56-day compressive strength of 32 MPa
- a completion report, signed by a qualified engineer, certifying that the EMS has been constructed in accordance with the proposed design including that the:
 - location is the same as proposed
 - inlet to the EMS is located in the lower quarter of the structure,
 - horizontal and vertical dimensions, along with elevations above and below grade and side wall slopes are the same as proposed
 - liner was constructed of the same liner material as what was submitted for hydraulic conductivity testing,
 - liner was constructed in accordance with the specifications stated in Union Street Geotechnical's report # 856.

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 or manure are placed in the newly constructed facilities. Approval RA20012 includes a condition stating that Ribstone Colony shall not place livestock or manure in the manure collection and storage portions of the new dairy barn and new EMS until NRCB personnel have inspected these facilities and confirmed in writing that they meet the approval requirements.

c. Decommissioning of facilities

As part of a variance request, Ribstone Colony has indicated that it will decommission the westernmost dairy pen. The colony has also otherwise committed to decommission the old dairy barn. I interpret this decommissioning to be in accordance the decommissioning of a facility in accordance with Technical Guideline Agdex 096-90, "Closure of Manure Storage Facilities and Manure Collection Areas".

To ensure that the dairy pen and the old barn are decommissioned properly and in a timely order, conditions will be placed in the permit requiring the permit holder to decommission the dairy pens within one year of the issuance of Approval RA20012 and to decommission the old dairy barn within one year of the new one being constructed and approved for use by the NRCB.

The decommissioning must be completed in accordance with the requirements of Technical Guideline Agdex 096-90, for facility type 3, solid manure storage facilities.

After the westernmost dairy pen and the old dairy barn are decommissioned, they will no longer be a permitted facilities and are not to be used for confining livestock or as manure collection or storage facilities.

d. Berms around dairy pens

Application RA20012 committed to construct berms on the east, north and west side of the dairy pens to control run on and runoff. Accordingly, Approval RA20012 includes a condition requiring Ribstone Colony to construct berms to control surface water in and around the dairy pens. The berms must direct non-manure impacted run-on away from the pens and keep manure impacted runoff within them.

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, the construction and an inspection of them must occur in a meaningful timeline. Approval RA20012 includes a condition stating that Ribstone Colony must construct berms that will prevent clean (non-manure impacted) water from entering the dairy pens and berms to prevent manure impacted runoff from leaving them before the colony is allowed to use the new dairy barn to house livestock, collect or store manure. Further, NRCB personnel have to have inspected the berms and confirmed in writing that they meet the approval requirements.

e. Addressing potential risk from feedlot pens to surface water

As noted in this decision summary and Technical Document RA20012, the existing feedlot pens pose a moderate potential risk to groundwater that warrants actions being taken. For this reason, and consistent with NRCB practice, it is necessary for Ribstone Colony to address this risk. Thus, a condition is included in Approval RA20012 requiring Ribstone Colony to submit a written plan to the NRCB within six months that will address that risk within a specified timeline. That plan and any actions resulting from that plan must be approved by the NRCB in writing. Once the plan is approved by the NRCB in writing, it must be implemented within three years, unless otherwise directed by the NRCB in writing.