

Decision Summary LA19036

This document summarizes my reasons for denying Application LA19036 for an approval under the *Agricultural Operation Practices Act* (AOPA). Additional reasons are in Technical Document LA19036. 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.

Under AOPA this type of application would require an approval. For additional information on NRCB permits please refer to www.nrcb.ca.

1. Background

On August 14, 2019, Arie and Willemina Muilwijk (the Muilwijks) submitted a Part 1 application to the NRCB to change the livestock at an existing swine CFO by getting rid of hogs and replacing the livestock with feeder calves. The application also included adding new covered pens, expanding existing corrals into CFO pens, constructing a runoff control catch basin and converting the use of the existing hog barns to confine feeder calves. The application also included continuing to use the existing earthen liquid manure storage (EMS) facilities and decommissioning an existing concrete manure pit located between the east hog barn and east EMS.

The capacity and facilities of the deemed permit at this site had not been officially determined by the NRCB before. See Appendix E for background and determination of deemed capacity.

The Part 2 application was submitted on October 1, 2019. It was deemed complete on October 9, 2019. Following the public notice period, statements regarding the application were received and provided to the applicant who undertook to review them and get back to the approval officer.

On May 4, 2020, I contacted the applicant to advise him that I had taken over the application file from the original approval officer. I also informed him that I had carried out a quick review of the application and noted that the proposed catch basin was undersized for what was being proposed. On May 6, 2020, I received an email updating the size of the proposed catch basin.

On May 8, 2020, I received a call from the applicant during which he told me that he had already constructed and put into use several of the proposed facilities included in his application. I thanked him for self-reporting and passed on the information to an NRCB Inspector. Enforcement Order 20-01 was issued for unauthorized construction on May 22, 2020.

Also on May 22, 2020, I requested the applicant provide additional information to show how the proposed, and already constructed, roller compacted concrete liner for the covered and open pens can meet the AOPA groundwater protection requirements. The Part 2 application describes the proposed alternative liner as “roller compacted concrete liner” and provides the details as “6” – 7” of roller compacted concrete to make a durable liner, professionally installed”.

No other information was provided to show how the AOPA groundwater protection requirements would be met.

In a conversation later in May 2020, the applicant advised that he was proposing a roller compacted concrete liner because the natural soils were “not suitable for a natural soil liner”. I also reiterated that I needed information to show how the proposed, and already constructed, roller compacted concrete liner could meet AOPA groundwater protection requirements. I also provided several different options for him to consider for his application. The applicant informed me that he would speak with his engineer to discuss what information he could provide.

In July 2020, I sent the applicant copies of the subsoil investigations for manure storage facilities and manure collection areas (Agdex 096-62) and non-engineered concrete liners for manure collection and storage areas (Agdex 096-93) guidelines the NRCB has. Both of which are available on the NRCB website.

On October 29, 2020, I received an email from the applicant which included a copy of a report prepared by Wood Environment and Infrastructure Solutions (Wood) that aimed to show how the roller compacted liner met the AOPA groundwater protection requirements.

On November 4, 2020, I conducted a site visit with Denny Puszkar, an NRCB Inspector. We looked at the proposed facilities and noted that the proposed covered and open pens were constructed and populated with livestock and the roller compacted concrete liners were not visible. They were covered in manure and bedding material to varying depths. I also observed that the hole for the catch basin had been excavated.

During the site visit the applicant confirmed that they had soil drilling logs for the site. I asked the applicant to provide me with copies of these, which he did the following day. I also went through the Wood report with the applicant and identified additional information which would be helpful to substantiate what was in the report.

On November 6, 2020, I received an updated copy of the Wood report. The applicant also sent me twelve photographs which were taken at the time the roller compacted concrete was installed in November 2019. I have included these in the technical document.

On November 17, 2020, the applicant sent an email requesting to amend their application by increasing the size of the proposed synthetically lined catch basin to 36 m x 21 m x 1.8 m deep, and that the concrete manure pit located south of the east hog barn and between it and the east EMS would be decommissioned. This was a second change to the size of the proposed catch basin.

The updated application now proposes:

- Changing permitted livestock at the CFO by getting rid of hogs and changing to a maximum of 3,000 beef feeder calves
- Constructing new covered pens with a roller compacted concrete liner – 82 m x 15 m
- Permitting, expanding and converting existing corrals into open pens – total dimensions 92 m x 37 m
- Constructing a new runoff control catch basin with a synthetic liner for the open feedlot pens - 36 m x 21 m x 1.8 m deep

- Converting two older hog barns for use as beef feeder calf facilities - 50 m x 12 m and 60 m x 12 m
- Continuing the use of two existing earthen liquid manure storages associated with the older hog barns – 40 m x 25 m x 1.75 m deep (east EMS) and 20 m x 20 m x 2.5 m deep (west EMS)
- Decommissioning the concrete manure pit located between the east hog barn and east earthen liquid manure storage.

The calf shelters currently located north of the open pens and east of the covered pens are not included as part of this application. These calf shelters should therefore not be used to house livestock until a permit is issued which allows their use.

a. Location

The CFO is located at NE 10-9-27 W4M in the Municipal District (MD) of Willow Creek, approximately 11 km west of Fort Macleod. The terrain is gently sloping from the north towards the Old Man River located approximately 3 km to the south. The site also has a generally increasing slope from the west towards the east.

b. Permitted Capacity

As the CFO existed on January 1, 2002, the CFO is grandfathered. The grandfathered permit includes the MD of Willow Creek permits 1002-80, 54-82, 31-86 and 118-98, issued in 1980, 1982, 1986 and 1998 respectively.

Because there was some uncertainty about the capacity of the CFO, I undertook a deemed capacity determination as part of this application and determined that the CFO is considered to have a deemed registration with a deemed capacity of either 64 sows - farrow to finish, or 171 sows - farrow to wean. My determination is set out in Appendix E of this document.

2. Notices to affected parties

Under section 19 of AOPA, the NRCB notifies (or directs 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:

- In the case where part of a CFO is located, or is to be located, within 100 m of a bank of a river, stream or canal, a person or municipality entitled to divert water from that body within 10 miles downstream
- the municipality where the CFO is located 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 the size of this CFO the specified distance is one mile. (The NRCB refers to this distance as the “affected party radius.”)

A copy of the application was sent to the MD of Willow Creek, which is the municipality where the CFO is located.

The NRCB gave notice of the application in the Macleod Gazette on October 9, 2019. The full application was also available for viewing during regular business hours, and was posted on the NRCB website for public viewing. As a courtesy, 16 letters were sent to people identified by the MD of Willow Creek as owning or residing on land within the affected party radius.

The changes to the size of the catch basin and decommissioning of the concrete manure pit are considered to be minor alterations which will result in minimal change, if any, to the risk posed to the environment, and a minimal change to a disturbance, if any, therefore in accordance with section 19(1.1) of AOPA additional public notification was not required.

3. Notice to other persons or organizations

Under section 19 of AOPA, the NRCB also notifies persons and organizations the approval officer considers appropriate. This includes sending applications to referral agencies which have a potential regulatory interest under their respective legislation.

Referral letters and a copy of the complete application were emailed to Alberta Health Services (AHS), Alberta Environment and Parks (AEP), Alberta Transportation, and the Lethbridge Northern Irrigation District.

4. Alberta Land Stewardship Act (ALSA) regional plan

Section 20(10) of AOPA requires that an approval officer must ensure the application complies with any applicable ALSA regional plan.

As required by section 4(1) of the South Saskatchewan Regional Plan (SSRP), I considered that document's Strategic Plan and Implementation Plan and determined that the application is consistent with those plans. In addition, there are no notices or orders under the Regulatory Details portion of the SSRP that apply to this application.

5. Municipal Development Plan (MDP) consistency

I have determined that the proposed expansion and modification of the CFO is consistent with the land use provisions of the MD of Willow Creek's municipal development plan. (See Appendix A for a more detailed discussion of the county's planning requirements.)

6. AOPA requirements

With respect to the technical requirements set out in the regulations, I have determined that the application has not shown that it can meet the groundwater protection requirements for the covered and open pens.

The applicant proposes to use an alternative liner. In the Part 2 application they describe the proposed alternative liner as a "roller compacted concrete liner" and provided the details for the liner as "6" – 7" of roller compacted concrete to make a durable liner, professionally installed". No other information was provided in the application to show how the AOPA groundwater protection requirements could be met.

The Standards and Administration Regulation Section 9(6) states:

“A liner referred to in subsection (1) if constructed of compacted soil or constructed of concrete, steel or other synthetic or manufactured materials, must provide equal or greater protection than that provided by compacted soil

(c) 0.5 m in depth with a hydraulic conductivity of not more than 5×10^{-7} centimetres per second for a solid manure storage facility or solid manure collection area.”

Additionally, Technical Guideline Agdex 096-93 dated June 2015 provides guidance for the design and construction of non-engineered concrete liners for manure collection and storage areas. The Agdex 096-93 technical guideline provides different categories for liners used for different types of manure collection and storage facilities. Category C is for outdoor solid manure storage and category D for indoor or covered solid manure storage. Both of these categories are applicable for facilities applied for in the application. The technical guideline provides the following options for the design and construction for category C and D concrete liners:

- 1) Engineered by a professional engineer, or
- 2) If not engineered by a professional engineer, the design and construction must be in accordance with the specifications set out in Table 2.

Table 2 in Agdex 096-93 sets out requirements for:

- Depth from bottom of liner to water table
- Concrete strength
- Crack control, and
- Sulphate resistance

There is no information in the Part 2 application to show how either the groundwater protection requirements in the Standards and Administration Regulation section 9(6)(c) or concrete liner options set out in Agdex 096-93 are proposed to be met. Because the applicant has chosen an alternative liner to those that are typically used for groundwater protection, it is the applicants' responsibility to provide information to show how these groundwater requirements can be met.

A report prepared at the request of the AOPA Technical Advisory Group (TAG) to review the research available about roller compacted concrete (RCC) in order to determine if there is enough information to develop a technical guideline, was sent to TAG on December 23, 2020. At the time of writing this decision, this report has not yet been reviewed or formally accepted by TAG. The team who wrote the report included representatives from Alberta Agriculture and Forestry, the NRCB and Alberta Beef Producers. However, the report is classified as Protected A and is therefore not publicly available. While some of the information in the report might have been useful and relevant to my decision, I have not relied on it because it is not a public document.

It should be noted that the roller compacted concrete (RCC) was installed in both the open and covered pens in November 2019 prior to a permit being issued. Under AOPA this is considered to be unauthorized construction. This has significance in that it is now impossible to impose conditions or requirements on what is being proposed. It is also no longer possible to inspect the site or test materials prior to, or during, construction.

A report prepared by Wood Environment and Infrastructure Solutions (Wood) on October 29, 2020 and updated on November 6, 2020 was provided by the applicant to the NRCB to support how the already installed roller compacted concrete complied with the AOPA groundwater protection requirements. This report was prepared at least six months after the roller compacted concrete had been installed, and the engineer who signed the report was not present when the roller compacted concrete was placed and relied on photographs for some of the information in the report. These photographs were not included in the Wood report.

The report includes information on several samples cored from the roller compacted concrete and some surface hardness tests which were carried out using a Schmidt hammer.

For background, a Schmidt hammer is designed for in-situ testing of the surface hardness of concrete and other materials. There are limitations associated with this type of rebound measurement tool including that it should be used against a smooth formed surface (not a rough surface). It is also important to understand that this type of test only evaluates surface hardness. Using the surface hardness to estimate the compressive strength of the material being tested requires both that the instrument is properly calibrated, and that the calibration factor for the material being tested has been determined. For accurate readings the calibration factor should be determined in conjunction with appropriate crush type compressive strength test measurements.

Despite core samples being taken there is no information to confirm whether any of these samples were crushed to determine the compressive strength of the concrete, or if they were submitted for hydraulic conductivity testing. Nor is there information to show how the Schmidt hammer was calibrated. Additionally, from my own experience, roller compacted concrete would be considered to have a rough surface, as opposed to a smooth formed surface, and therefore use of the Schmidt hammer to test surface hardness may not be appropriate for RCC.

The Wood report identifies that density testing on the core samples was carried out. It suggests that this was in line with a RCC target mix density. The only design details for the roller compacted concrete that have been provided are what was included as part of the Wood concrete core report (see page 46 of the technical document). There is no information included from the concrete supplier. As with any concrete, the RCC mixture design will have a significant and direct influence on the workability, strength, permeability, durability and performance of the material. Additionally, I am not aware that the Alberta concrete industry has developed any standards relating to the design, construction processes or curing for specific applications of RCC.

Roller compacted concrete is normally placed without any type of reinforcement. There is no information to suggest that reinforcement was included in the roller compacted concrete installed at this CFO. Reinforcement in concrete is normally used to assist with crack control in addition to assisting in the strength of the concrete. For comparison, Agdex 096-93 requires a nominal amount of reinforcement to be included inside concrete used for liners to control cracking. The only information on crack control related to this application is provided on page 4 of the Wood report (see page 43 of the technical document). While no details of how the calculation was made are in the report, I requested that Scott Cunningham, an Environmental Specialist, who is also a professional engineer, with the NRCB, attempt to recreate the result based upon the information and assumptions provided in the Wood report. Following an analysis using the same assumptions in the report and using Darcy's law, he was unable to

arrive at the same result that was set out in the Wood report (see pages 98-100 of the technical document). Mr. Cunningham's calculation, using the same assumptions, resulted in a hydraulic conductivity significantly higher than that in the Wood report. Additionally, it is not clear to me that the assumptions in the Wood report are accurate or representative for the roller compacted concrete used at this site because of the limited information available.

Joints and cracks in concrete liners would normally be required to be sealed with an appropriate sealer to ensure that the continuity and performance of the liner are able to be maintained. While the Wood report identifies that there will be cracking in the concrete, and makes an assumption about the amount and size of cracks expected, they also identify that the cracks are not proposed to be sealed, rather they are left to fill up with manure and other material from the pen floor. The report suggests that the cracks will fill with bedding material, manure and soil and that this will act have similar properties to that of a gleyed layer found in feedlot pens with compacted soil liners. It should be noted that a compacted soil liner in a feedlot is continually being compacted by the action of livestock hooves on the soil structure. This is not necessarily true in the case of material located in a crack in a RCC liner. This material will likely not see continuous compaction because the RCC on either side of the crack will prevent the livestock hooves from entering the crack and compacting the material in it. I am also not aware of studies that have specifically looked at groundwater protection, hydraulic conductivity or permeability, for RCC.

The preparation of the base on which concrete is placed plays a critical part in determining how a concrete slab will perform over the longer term. This is especially true for roller compacted concrete which does not have reinforcement added to it and is therefore more susceptible to cracking. The combination of movement of the soil under the RCC and that RCC has a low tensile strength significantly increases the potential for cracking to occur in the RCC, thereby creating additional pathways for manure nutrients to migrate to groundwater sources. There is no information on how the soil base under the roller compacted concrete was prepared except for an observation and assumption based on photographs that are not included in the Wood report. The Wood engineer was not on site when the base was prepared for the roller compacted concrete, nor when the roller compacted concrete was placed.

Information on the soils at the site was provided in the form of a soil profile and parent material description in a document prepared by Chilako Drilling services Ltd (see page 33 of the technical document). The soil textures at the site are relatively consistent and identify very fine sandy loam soil in the top approximately five metres of the soil profile with saturated layers at depths ranging from 2.7 – 5.5 metres. Water well reports identify that there are shallow water wells in the area which use this shallow groundwater. The Groundwater Resource and Uppermost Groundwater Resource (UGR) report dated December 3, 2020, prepared as part of the ERST evaluation and included in the technical document starting at page 47 provides more detailed information on the shallow groundwater. This means that a failure of the proposed liner will allow manure constituents to easily migrate into the shallow groundwater.

Based on the information provided, I have concluded that the applicant has not met their burden to demonstrate that the roller compacted concrete liner they have proposed, and constructed without a permit, can meet the AOPA groundwater protection requirements (Section (9)(6)(c) Standards and Administration Regulation).

The soil test information provided also indicates that the bottom of the liner for the proposed catch basin may not meet the requirement to be “not less than 1 m above the water table of the site at the time of construction” (Section 9(3)(a) Standards and Administration Regulation). Because the water table can fluctuate over time this is something that will need to be confirmed if a permit is issued.

The application also cannot meet the required 100 m setback to water wells set out in section 7 of the Standards and Administration Regulation.

In case this decision is overturned following a review hearing, I continued to evaluate the application’s other technical requirements under AOPA and determined that it:

- Meets the required AOPA setbacks from all nearby residences (AOPA setbacks are known as the “minimum distance separation” requirements, or MDS)

Should this decision be overturned following a review hearing, I have included potential terms and conditions information for the board to consider. They are included in part 11 and Appendix D below.

7. Responses from the municipality and other directly affected parties

Directly affected parties are entitled to a reasonable opportunity to provide evidence and written submissions relevant to the application, and are entitled to request an NRCB Board review of the approval officer’s decision. Not all affected parties are “directly affected” under AOPA.

Municipalities that are affected parties are identified by the act as “directly affected.” The MD of Willow Creek is an affected party (and directly affected) because the CFO is located within its boundaries.

Ms. Chisholm, the manager of planning and development with the MD of Willow Creek, provided a written response on behalf of the MD of Willow Creek. Ms. Chisholm stated that the application is consistent with the MD of Willow Creek’s land use provisions of the municipal development plan. The MD of Willow Creek highlighted that all structures associated with the CFO must meet the setback requirements of the Land Use Bylaw No. 1826, but did not raise any other concerns.

The application’s consistency with the MD of Willow Creek’s municipal development plan, is addressed in Appendix A, attached.

Apart from municipalities, any member of the public may request to be considered “directly affected.” The following parties provided responses to the application’s public notice; Dean and Hannah Brauer, John Green, and Terri McCullough.

All of the people who submitted responses own or reside on land within the one mile notification radius for affected persons. Because of their location within this radius, and because they submitted a response to the application, they qualify for directly affected party status. (See NRCB Operational Policy 2016-7: *Approvals*, part 6.2)

The directly affected parties raised concerns regarding; groundwater quantity and quality, surface water, odours, noise, increased traffic, insects, claimed grandfathered capacity, potential increase in livestock diseases, quality of life, property values, and non-compliance with permit requirements.

These concerns are addressed in Appendix B.

8. Environmental risk of CFO facilities

New facilities

New CFO facilities which clearly meet or exceed AOPA requirements are automatically assumed to pose a low risk to surface and groundwater. However, there may be circumstances where, because of the proximity of a shallow aquifer, or porous subsurface materials, an approval officer may require groundwater or surface water monitoring or construction supervision for the facility.

The proposed liner for the synthetically lined catch basin does meet AOPA groundwater protection requirements. Despite this a risk screening was carried out for the proposed synthetically lined catch basin because of the coarse soil (see Protective Layer report at page 92 in technical document) and shallow water table at the site. The catch basin scored 63.8 or low risk to groundwater and 20 or low risk to surface water.

Despite the above, I am on the opinion that additional groundwater protection measures are warranted due to the high water table and shallow uppermost groundwater resource. Because of the high likelihood of groundwater contamination should the synthetic liner of the catch basin fail or become damaged, if a permit is issued following a review hearing by the board, I recommend that a leakage detection system be installed and monitored. I would also recommend that the construction of the catch basin and installation of the leakage detection system and liner be supervised by a professional engineer.

In this case, based on all of the information available to me, I determined that as proposed, the RCC liners for the covered and open pens do not meet the AOPA groundwater protection requirements (see my discussion in part 6 above). Because of this a risk screening was carried out for these facilities. The open pens scored 80.4 or moderate risk to groundwater and 20 or low risk to surface water. The covered pens score 82.8 or moderate risk to groundwater and 15 or low risk to surface water. The difference in groundwater risk scores is related to the distances of these facilities from the water well.

In discussion with the applicant I was made aware that surface runoff from the open pens will be directed in an earthen channel along the east side of the pens to the catch basin. This channel is located just next to the east edge of the proposed RCC liner. If this decision is overturned following a review hearing by the board, I recommend that the channel be constructed, with a liner, so as to protect groundwater from potential contamination.

Existing facilities

Because of the soils information supplied with the application and the presence of shallow groundwater, an environmental risk screening was conducted for the existing hog barns and earthen liquid manure storages. Limited information was available regarding how these facilities

were originally constructed, therefore a conservative approach to their risk screening was used.

Both the east and west hog barns scored 90 or moderate risk to groundwater and 25 or low risk to surface water. Of note, a score of 90 for groundwater risk is the cutoff point between moderate and high risk classifications.

Both the east and west earthen liquid manure storages scored 95.7 or high risk to groundwater and 30 or low risk to surface water.

If this decision is overturned following a review hearing by the board, I recommend that the risks to groundwater posed by these existing facilities be required to be addressed.

9. Variances

The proposed facilities have been constructed and/or expanded within the required 100 m AOPA setback from an existing water well. If this decision is overturned following a review hearing, this setback requirement will still need to be addressed. One way this may be accomplished is by way of an application for a variance, with supporting rationale, under section 17 of AOPA, since the pens have already been constructed. Whether a variance is appropriate will still need to be determined based on the application and rationale.

10. Other factors

The approval application does not meet the requirements of AOPA and its regulations. Under section 20(1)(a) AOPA, I must deny the application.

However, to assist decision making in the event this permit denial is overturned following a Board review, I have addressed other factors set out in section 20(1)(b) of AOPA. I have considered matters that would normally be considered if a development permit were being issued. Under AOPA this means a development permit issued under the municipality's land use bylaw. Ms. Chisholm, in her response, identified that the property line and road setbacks required by the MD of Willow Creek's land use bylaw (LUB) must be met. I determined that these setbacks are met by the proposed facilities.

I have considered the effects the proposed development may have on natural resources administered by provincial departments and note, based on correspondence with Alberta Environment and Parks, that the CFO does not hold a water licence. As identified elsewhere in this document a water licence is required for this CFO.

Finally, I considered the effects of the proposed CFO modification and expansion on the environment, the economy, and the community, and the appropriate use of land.

Consistent with NRCB policy (Approvals Policy 8.7.3), because the AOPA technical requirements have not been met, I presume that the economic and community effects are not acceptable. Directly affected parties have also raised concerns related to impacts on the community. While most of these impacts on the community identified by directly affected parties are addressed by the application being able to meet specified AOPA technical requirements, because of the potential risk posed by the CFO to shallow groundwater, I am of the opinion that this community impact is not acceptable.

I presumed that the proposed CFO modification and expansion is an appropriate use of land because the application is consistent with the land use provisions of the municipal development plan (See NRCB Operational Policy 2016-7: *Approvals*, part 8.7.3.). In my view, this presumption is not rebutted because this is consistent with the MD of Willow Creek response.

11. Potential terms and conditions

If following a review by the Board, my denial decision is overturned and a permit is issued, I recommend that the terms and conditions in Appendix D be considered.

For clarity, and pursuant to NRCB policy, if following a Board review and that review directs that a permit be issued, I would also recommend that the following permits be consolidated into the new permit: municipal development permits 1002-80, 54-82, 31-86, 118-98 and NRCB issued permit LA10054N (see NRCB Operational Policy 2016-7: *Approvals*, part 10.5). Permit consolidation helps the permit holder, municipality, neighbours and other parties keep track of a CFO's requirements, by providing a single document that lists all the operating and construction requirements. 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.

12. Conclusion

Based on the information provided I have concluded that the applicant has not met their burden to demonstrate that the roller compacted concrete liners for the covered and open pens they have proposed, and constructed, can meet the AOPA groundwater protection requirements. I have also identified, based on information provided, that the runoff control catch basin may not meet the water table separation requirement at the time of construction, and that the 100 m water well setback requirement for the proposed open and covered pens has not been met.

In accordance with section 20(1)(a) of AOPA, because the requirements are not met, I am required to deny the application. Therefore application LA19036 is denied.

January 14, 2021

(original signed)
Andy Cumming
Approval Officer

Appendices:

- A. Consistency with the municipal development plan
- B. Concerns raised by directly affected parties
- C. Responses from referral agencies
- D. Potential terms and conditions for consideration
- E. Determination of deemed permit capacity

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” 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.”)

The Muilwijk’s CFO is located in the MD of Willow Creek and is therefore subject to that district’s MDP. The MD of Willow Creek adopted the latest revision to this plan on August 2019, under Bylaw #1841. The sections of that MDP which are applicable to this application are discussed below.

Section 2 of the MDP points out that agriculture is a predominant land use in the MD. It states that while it is important to balance other interests that one of the main objectives of the MDP is to mitigate the siting of confined feeding operations (CFOs) to minimize conflicts with adjacent land uses. Policy 2.3 then continues to state that the MD shall establish guidelines with regard to the NRCB for the regulation and approval of CFOs within the MD. These guidelines are found in section 9. While this isn’t a land use provision, it does provide insight for the interpretation of the MDP.

Section 9.1 of the MDP requires setbacks to roads as set out in the municipal land use bylaw, as well as required by Alberta Transportation, be followed.

The CFO facilities proposed in this application meet those setbacks. Additionally Alberta Transportation has issued a roadside development permit for this operation.

Section 9.2 of the MDP directs the NRCB to consider six provisions. These are quoted below (in italics); each one is followed by my discussion of how the provision related to this application. The requested considerations are:

- (a) The cumulative effect of a new approval on any area near other existing CFO’s/ILO’s*

This policy is likely not a “land use provision,” as it calls for project-specific, discretionary judgements about the types of cumulative effects that should be considered and it does not specify the acceptable maximum levels of each of those effects. For this reason, I do not consider the MDP provision to be relevant to my MDP consistency determination.

(b) Environmentally significant areas contained in the MD of Willow Creek: Environmentally Significant Areas in the Oldman River Region report

The Muilwijk's CFO is not within any natural areas designated as of regional, provincial or national significance in the referenced report (Map 1 of the report).

The report also assessed the planning area for major physical constraints such as flood plains, unstable slope potential, and areas of artesian flow. The site does not fall into any of these areas. Because the site is not identified as being in an area of environmental significance, I determined that the application is consistent with this provision.

(c) Providing notice to adjacent landowners including applications for registration or authorization

This is likely not a "land use provision" because of its procedural focus and thus I do not consider it to be relevant to my MDP consistency determination. At any rate, as explained above, the NRCB sent out courtesy letters to people identified by the MD of Willow Creek as owning or residing on land within the AOPA affected party radius of 1 mile, and gave public notice in the Macleod Gazette. The application therefore met the notification requirements of AOPA. (See also Operational Policy 2016-8: *Approvals*, part 6).

(d) Applying minimum distance separation calculations to all country residential development

I interpret "minimum distance separation" as referring to the minimum distance separation (MDS) requirements in section 3 and Schedule 1 of the Standards and Administration Regulation under AOPA. There is no country residential development located within the MDS for the Muilwijk's CFO and the application meets AOPA's MDS requirements.

(e) Restricting development in the flood plain, floodway, the flood way fringe and flood prone, or hazard lands within or adjacent to any watercourse within the MD; and

As discussed in Technical Document LA19036, the Muilwijk's CFO meets the AOPA setbacks to common bodies of water and is not located in a known flood plain according to the 'MD of Willow Creek Environmentally Significant Areas, February 1989'-report, Map 2. I therefore determined that the application is consistent with this aspect of the provision.

(f) Restricting development in any wetland or riparian area

The proposed CFO facility is not located in a wetland or riparian area. This provision is therefore met by the application.

For these reasons, I conclude that the application is consistent with the land use provisions of the MD of Willow Creek's MDP.

In my view, the Land Use Bylaw is clearly incorporated in the MDP in several sections throughout the MDP including section 15.5 which states:

The Development Authority shall require the NRCB to take into consideration the policies adopted in this plan and the Land Use Bylaw, when issuing an approval.

Therefore, I also considered the application's consistency with the land use bylaw. Under the MD of Willow Creek's Land Use Bylaw (#1826 consolidated to Bylaw No. 1849), the subject land is currently zoned as Rural General. CFOs are not listed as a prohibited, permitted, or discretionary land use under this zoning. Ordinarily, a land use bylaw intends to preclude land uses that are not listed as permitted or discretionary (and that do not meet any other relevant criteria). However, the land use bylaw lists "intensive livestock operations" (ILOs), defined essentially as CFOs below AOPA's permit thresholds, as a discretionary use within areas zoned Rural General. ILO's (below AOPA threshold CFOs) are the responsibility of the MD. Because of this distinction and that there is no reference to CFOs in the lists of permitted and discretionary land uses, I interpret this to be the municipality's recognition that, since AOPA came into effect in 2002, the NRCB is responsible for permitting CFOs above AOPA thresholds.

As for the lot size restriction, section 2(4) of the Rural General part of the bylaw states that the "parcel size shall remain the same size for which the development approval was originally issued." Lot size provisions are not considered to be land use provisions for determining consistency with the MDP. Additionally, since CFOs are not listed in the LUB, it is my interpretation that the lot size restrictions are not intended to apply to CFOs.

Section 3 of the Rural General part of the bylaw lists several setbacks. The proposed covered pens (already constructed) are the closest proposed facility to Highway 785 and meet the road setback required. Side and rear yard setbacks for the proposed facilities are also met.

For these reasons, I conclude that the application is consistent with the MD's land use bylaw.

APPENDIX B: Concerns raised by directly affected parties

Though I am denying this approval application, I wanted to address concerns raised by people who submitted responses who are directly affected parties. This is partly as a courtesy, and partly to assist in the event this permit denial is overturned on a Board review.

The directly affected parties raised the concerns regarding; groundwater quantity and quality, surface water contamination, nuisance impacts (odours, noise), increased traffic, insects, claimed grandfathered capacity, potential increase in livestock diseases, quality of life, property values, and non-compliance with permit requirements. These are addressed below.

Groundwater quantity and contamination

Concerns were raised with respect to the CFO having an adverse impact on the quantity of available groundwater and the potential contamination of groundwater by manure constituents.

Water supply is a serious concern, particularly in Southern Alberta where surface water allocations are closed. However, this concern is not only outside the regulatory mandate of the NRCB, but is squarely regulated by Alberta Environment and Parks (AEP) who is responsible for licencing the use of surface water and groundwater in the province. Operations or residences that do not hold an AEP water license have to obtain a water license from AEP. Therefore, for efficiency and to avoid inconsistent regulation, NRCB approval officers generally do not consider water supply concerns when reviewing AOPA permit applications, other than ensuring that applicants sign one of the water licensing declarations listed in the Part 2 application form. (This declaration is in Technical Document LA19036. See also NRCB Operational Policy 2016-7: *Approvals*, part 8.10).

The response from AEP confirmed that no water licenses exist for this CFO and that a water license is required. In a follow-up phone call in November 2020, Mr. Gutsell, an AEP hydrogeologist, stated that AEP have not yet received an application for a water license related to this CFO. The applicant has been informed and is reminded that it is their responsibility to ensure that they obtain necessary licenced water for their operation.

Groundwater contamination is a concern raised in several responses. The applicant has not provided evidence to show that the proposed (and constructed) roller compacted concrete liner for the pens can meet the groundwater protection requirements set out in AOPA. Because of this, I have denied the application. Additionally there is a plausible chain of causality, and a potential impact – if groundwater was contaminated it could reasonably be expected to impact at least some of these individuals.

Surface water contamination

Concerns about the potential contamination of surface water were raised in some responses.

The applicant has provided information to show that surface water will either be prevented from coming into contact with manure by having a roof over the covered pens or by capturing surface runoff that has from the open pens and directing it into a runoff control catch basin. The existing barns are under roof and the existing earthen liquid manure storages have berms around them preventing surface water from entering them.

Nuisance impacts

Nuisance impacts such as odours, noxious fumes (interpreted to be offensive odours) and noise were raised as concerns in most responses.

Nuisance impacts depend on many factors, which include but are not limited to operational practices at the CFO, wind direction and speed, and also the perception and the sensitivity of the receptor to the nuisance. The AOPA minimum distance separation (MDS) is a means of mitigating odour and other nuisance impacts from CFOs. The NRCB generally considers the MDS as the distance beyond which the odours and other nuisance effects of a CFO are considered to be acceptable under AOPA. The required MDS from the CFO to the nearest residence is 367 m for land zoned agriculture (Category 1) (Rural General in the land use bylaw). The CFO has demonstrated that it can meet the MDS to neighbouring residences.

Despite this, some parties may experience some odours or other nuisance impacts when manure spreading or pen cleaning takes place. However, the frequency of these exposures will likely be limited and of short duration.

If a person or party has concerns regarding odours, noise or other CFO related issues, those concerns can be reported to the NRCB's 24 hour reporting line (1-866-383-6722). The call will be followed up on by an NRCB inspector.

Increased traffic

Another concern that was raised was an expected increase in traffic on the local roads with the consequence of more traffic noise, a quicker deterioration of county roads and an increased risk of traffic accidents on the local roads.

While it is true that an increase in size of a CFO will likely result in a proportional increase in traffic to and from the CFO it should be noted that there are many users of the local roads in including several quarries which have a large number of trucks moving gravel from their operations. The overall incremental increase in traffic from the proposed increase in size of this operation would likely be relatively small and generally limited to when livestock or feed are being transported. The MD of Willow Creek did not raise any concerns related to traffic or road use for this application. The application was also referred to Alberta Transportation who identified that they had issued a roadside development permit for this CFO in September 2019.

Insects

Concerns regarding a potential increase in the amount of insects that neighbours would experience as a result of the expansion of this CFO were raised.

Similar to other nuisances, potential impacts from insects would depend on many factors, including operational practices at the CFO. The AOPA Standards and Administration Regulation allows the NRCB to require a specific fly control program where appropriate. In this case I am including this requirement as a potential condition for consideration should, a permit be issued following a review hearing. Additionally, the MDS is a means of mitigating nuisance impacts from CFOs.

If a person or party has concerns regarding insects or other CFO related issues, those concerns can be reported to the NRCB's 24 hour reporting line (1-866-383-6722). The call will be followed up on by an NRCB inspector.

Claimed grandfathered capacity

Concerns were raised regarding the claimed grandfathered capacity of the CFO at this location.

A grandfathering capacity determination for this CFO was undertaken as part of this application. See Appendix E for details.

Potential Increase in livestock diseases

A concern was raised regarding the potential increase in the number of livestock diseases as a result of the proposed increase in size of the CFO.

No information was provided to substantiate this concern. It should be noted that the *Animal Health Act* sets out very clear requirements for all livestock facilities to follow. These requirements include notifying authorities if certain diseases are detected. Because of the lack of information to substantiate or clarify the concern, I believe that the current requirements in the legislation governing livestock health are sufficient to address the concern.

Quality of life

Concerns were raised with respect to the proposed CFO expansion negatively impacting the quality of life of neighbours.

This is a matter that I have addressed when addressing community impacts relating to the application earlier in this decision. I did determine that there is a potential adverse community impact because of the potential risk to shallow groundwater.

Property values

Concerns were raised about the proposed expansion having a negative impact on the values of neighbouring properties.

In previous board decisions the NRCB's board members have consistently stated that concerns regarding effects on land or property values are "not a subject for [the board's] review under AOPA or for approval officers' consideration." According to the board, impacts on property values are a land use issue, which is a "planning matter dealt with by municipalities in municipal development plans and land use bylaws." (See, Pigs R Us Inc., RFR 2017-11 / BA17002 at 6).

Non-compliance with permit requirements

Concerns were raised about the applicants' non-compliance with permit requirements for their operation.

Non-compliance with permit conditions and unauthorized construction are matters the NRCB takes very seriously. In this case, in May 2020, an inspector issued an Enforcement Order to the applicant requiring them to take action to come into compliance.

Incidents of non-compliance or unauthorized construction can be reported to the NRCB's 24 hour a day reporting line (1-866-383-6722). The call will be followed up on by an NRCB inspector.

APPENDIX C: Responses from referral agencies

a. Alberta Health Services (AHS)

In a letter dated November 1, 2019, Mr. Rippin, an AHS executive officer/public health inspector, provided several observations and comments.

He commented that:

- There appeared to be no hydraulic conductivity data or testing from the area around the corrals (open pens).
- Recommended that the applicant provide supporting data to verify that there was an aquitard under the corrals or to install a plastic liner under the corrals to prevent groundwater contamination.
- That water well, ID number 115735 is located within 100 m of the proposed corrals, shelter and catch basin and that this may create a nuisance condition with the potential for runoff from these facilities to contaminate the well.
- Recommended periodic chemical monitoring of the water well.
- Recommended that the applicant provide verification to the approving authority that there is sufficient and approved water allocation for the proposed development.

The comments and observations regarding the suitability of the information provided in the application have been addressed as identified elsewhere in this decision summary.

The applicant has also been made aware of the recommendation to have the water in their well tested periodically. As identified elsewhere the applicant has also been made aware of their responsibility to ensure that they have access to sufficient licensed water for their CFO.

b. Alberta Environment and Parks (AEP)

In an email dated November 11, 2019, Mr. Gutsell, an AEP hydrogeologist stated that AEP has no water license on record for this CFO, nor are they aware of any water conveyance agreement for the operation from the Lethbridge Northern Irrigation District. He went on to identify two water wells on this quarter for which AEP has records in its database.

Further it was emphasized that prior to any expansion and diversion of water that the applicants must contact AEP to discuss legal options for the diversion of water for their proposed development.

In a follow-up conversation with Mr. Gutsell on November 26, 2020 he confirmed that the applicant has not yet applied for a water diversion license for this CFO.

As identified previously the applicant has been made aware that they are required to contact AEP to ensure that they have sufficient licensed water for their operation.

c. Alberta Transportation

In a letter dated October 11, 2019, Ms. Olsen, a development planning technologist with Alberta Transportation stated that a roadside development permit had been issued for this operation on September 26, 2019. They indicated that the proposal could be accommodated.

d. Lethbridge Northern Irrigation District (LNID)

In a letter dated October 15, 2019, Mr. Harrold, the General Manager with the LNID stated that the district does not oppose the application. He further advised that the current CFO does not have any agreements registered with the LNID and provided information should the applicant wish to pursue an agreement with the irrigation district.

He further identified that the LNID does not permit the storage or application of manure on land within 30 metres of an irrigation canal or drain, and that manure effluent is not allowed to enter any of the district works. The applicants have been made aware of these restrictions.

APPENDIX D: Potential terms and conditions for consideration

If following a review by the Board, this denial decision is overturned and a permit is issued, I would recommend that the following terms and conditions be considered.

- A term specifying the total permitted livestock capacity.
- 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.
- A condition that addresses the construction completion deadline.
- A condition that requires the preparation and installation of the synthetic liner for the catch basin to be monitored and approved by a qualified representative from the liner manufacturer or professional engineer.
- A condition requiring a leakage detection and collection system, designed by a professional engineer and installed under the engineers supervision, to detect leakage and capture leachate from the synthetically lined catch basin.
- A condition requiring the leakage detection system under the catch basin be monitored twice a year in June and October with the monitoring results provided to the NRCB within 6 weeks of the monitoring having taken place.
- A condition requiring annual monitoring for nitrates and chlorides of water well ID # 115735.
- A condition requiring the decommissioning of the concrete manure pit, located between the east barn and east EMS, in accordance with requirements set out in Agdex 096-90 Closure of Manure Storage Facilities and Manure Collection Areas.
- If the Board determines that the roller compacted concrete is suitable for use as a liner, conditions regarding the ongoing monitoring and inspection of the roller compacted concrete in the covered and open pens for performance and cracking and degradation should be considered. It would be recommended that any inspections be carried out by a professional engineer, after the liner has been thoroughly cleaned, with a signed report listing their observations and findings provided to the NRCB.
- A condition requiring the channel which directs runoff from the open pens into the catch basin on the east side of the open pens include a liner to protect groundwater.
- A condition requiring a fly control program be in place at the CFO.
- Conditions requiring the risk posed by the two existing barns and two existing earthen liquid manure storages to be addressed. Additionally groundwater monitoring for these facilities should be considered.

APPENDIX E: Determination of deemed permit capacity

The Muilwijk's claim that their 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 Administrative Procedures Regulation under AOPA, because I am cross-appointed as an NRCB inspector, I conducted an investigation into the deemed permit status of the CFO.

The investigation was to determine the CFO facilities and CFO capacity that was in place on January 1, 2002.

The permit history for this site dates back to 1980 when a municipal development permit (1002-80) was issued for a 100 sow farrow to finish operation. In 1982 a municipal development permit was issued for construction of a "breeding barn" (54-82). In 1986 a permit (31-86) was issued for the construction of a feeder and dry sow barn. In 1998 a municipal development permit (118-98) was issued to allow alterations to the existing manure storage lagoon. In 2011, the NRCB issued Approval LA10054M to this CFO under the NRCB's Leak Detection Program. This permit set the capacity of the CFO at 250 sows farrow to wean. In March 2011 the NRCB issued Approval LA10054N which replaced Approval LA10054M. This permit corrected some factual errors including removing the capacity stated in Approval LA10054M as that permit contained information relating to another legal land location as well. Approval LA10054N does not include a permitted capacity for the CFO.

Based on municipal permits, the permitted capacity at January 1, 2002 appears to be 100 sow farrow to finish. This capacity was set out in municipal development permit #1002-80 issued in 1980. Since that date, three additional municipal development permits were issued authorizing the construction of additional livestock confinement and manure storage facilities, but not making mention of the permitted capacity at the site. Because of this, there is a question with respect to the facilities and their capacity that actually existed on January 1, 2002. Under NRCB Operational Policy 2016-5 "Determining Deemed Capacity for Grandfathered Confined Feeding Operations" at part 4, an approval officer is to determine the physical capacity of the CFO to confine livestock in such a case.

Under section 11(3) of the Administrative Procedures Regulation under AOPA, the NRCB waived notice for this indoor confined feeding operation.

A Google Earth image dated from approximately 2003 shows that the east and west hog barns with associated earthen liquid manure storages (EMSs) existed at this site. Measurements off of the Google Earth photo show that the barns are the same size today (approximately 60 m x 12 m and 50 m x 12 m). The photographs also show that both the east and west EMSs appear to be approximately the same size today. These facilities are the facilities to which a deemed permit applies.

Google Earth images from 2013 and 2015 both show additional facilities used to confine livestock at this site. These additional facilities are livestock pens or corrals, and what appear to be calf hutches, all of which are not considered to be grandfathered and have not been considered in this determination.

A statement submitted by a neighbour as part of this application process suggests that the grandfathered permit capacity for this operation was for 100 swine. It went on to question the 250 sow farrow to wean capacity claimed by the applicants in the application.

I have inferred that the type of livestock at the facility on January 1, 2002 are the same as indicated in the municipal development permit 1002-80, namely sows – farrow to finish.

In order to calculate the deemed capacity, I referred to Agdex 096-81 (Calculator for determining livestock capacity of operations as they existed on January 1, 2002) which requires knowing the number of farrowing crates in order to determine the capacity. The operator told me that the farrowing crates had been removed some years previously when the barns were converted to accommodate calves.

Because the number of farrowing crates is unknown and in order to make a capacity calculation, I calculated the capacity of the two barns as though they were accommodating feeder hogs (greater than 400 lbs). Agdex 096-81 requires a space allocation of 20 ft² per feeder hog. I then determined the equivalent number of animal units using information in the Matters Part 2 Regulation Schedule 1 and used that to determine the equivalent number of sows farrow to finish, again using the information in that schedule.

The combined overall building size (east and west hog barns) is approximately 1,320 m² (60 x 12 + 50 x 12). In order to determine the area occupied by livestock, the overall building area is reduced by 20%. This is an allowance for walls, feed alleys, livestock walkways, etc. which are not used to confine livestock. This means that livestock would occupy approximately 1,056 m², which equates to 11,366 ft². Based on 20ft² per feeder pig, as per Agdex 096-81, this would mean that 568 feeder pigs could be housed in the two barns.

Converting this number of feeder pigs to animal units requires using the animal unit factor set out in Schedule 1 of the Part 2 Matters Regulation. The animal unit factor in Schedule 1 for feeder pigs is five. Since animal units equals the number of animals divided by the animal unit factor, 568 feeder pigs is equivalent to 114 animal units (568/5).

Using this same equation I calculated the number of sows farrow to finish for the same number of animal units. The animal unit factor for sows - farrow to finish, is 0.56. Doing the calculation, 64 Sows – farrow to finish is equivalent to 114 animal unit's (114 x 0.56).

The application lists the grandfathered livestock type as hogs – farrow to wean. Using the same equation, I calculated the capacity of the facilities to confine sows – farrow to wean, for the same number of animal units. The animal unit factor for sows - farrow to wean is 1.5. Therefore, 114 animal units is equivalent to 171 sows farrow to wean.

Based on these calculations, I have determined that the CFO is considered to have a deemed registration for the two hog barns and associated earthen manure storages with a deemed capacity of either 64 sows - farrow to finish, or 171 sows - farrow to wean.

I have not made any determination on whether the CFO would have been considered to be abandoned at some point. Irrespective, the applicant is proposing to expand the operation and convert it to a 3,000 head feeder calf CFO. This requires an approval under AOPA.