NRCB Natural Resources Conservation Board

Decision Summary RA19016

This document summarizes my reasons for issuing Authorization RA19016 under the *Agricultural Operation Practices Act* (AOPA). Additional reasons are in Technical Document RA19016. 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 April 26, 2019, Kramer Dairy Ltd. (Kramer Dairy) submitted a Part 1 application to the NRCB to construct a new calf lean-to and to expand the existing dairy barn at an existing dairy CFO. The Part 2 application was submitted on May 2, 2019. On July 5, 2019, I deemed the application complete.

The proposed construction involves:

- Constructing an addition on to the dairy barn (3.1 m x 21.3 m) and a pit below that addition
- Constructing a lean-to to house calves (5.5 m x 24.4 m) attached to a proposed shop (12.2 m x 18.3 m)

The proposed shop noted above is an "ancillary structure," under section 1(1)(a.1) of the *Agricultural Operations, Part 2 Matters Regulation*, because it will not be used to store or collect manure or to confine livestock. Therefore, under section 4.1 of that regulation, this structure does not need to be permitted under the act.

The purpose of the proposed facilities is to improve the housing conditions for calves and to improve how manure is managed in the dairy barn. There is no proposed increase in livestock with this application.

Under AOPA, this type of application requires an authorization. (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 CFO is located at Pt. SE 2-43-25 W4M in Ponoka County, approximately 2,400 m east of the town limits of Ponoka. The terrain slopes gently to the northeast and the closest water body is an intermittent creek located approximately 175 m down slope of the CFO.

b. Existing permitted facilities

Since AOPA came into effect on January 1, 2002, the NRCB received a request from the operator to carry out a grandfathering determination for the operation. This determination (PR19004), issued on July 4, 2019, identified that the operation holds a deemed registration which allows Kramer Dairy to operate a 85 milking cow dairy CFO with 20 calves, 15 dry cows and 55 heifers also allowed on site. The CFO's deemed facilities are listed in PR19004.

2. Notices to affected parties

Under section 21 of AOPA, notice of an authorization application must be provided to municipalities that are "affected" by the application. Section 5 of *AOPA's Part 2 Matters Regulation* lists the categories of municipalities that are affected parties. These categories include the municipality where the existing CFO is located. Under section 21(2) of the act, all affected municipalities are automatically also "directly affected" parties. The NRCB interprets section 21(3) as allowing affected municipalities to provide written submissions regarding whether the application meets the requirements of the regulations under the act. (See Operational Policy 2016-7: *Approvals*, part 7.11.2.)

Ponoka County is both an affected and directly affected party because Kramer Dairy is located within its boundaries.

On July 5, 2019, the NRCB emailed referral letters and a copy of the application to Ponoka County, Alberta Health Services (AHS), Alberta Environment and Parks (AEP), Alberta Agriculture and Forestry (AF), and Alberta Transportation.

3. Responses from the municipality and referral agencies

I received responses from Ponoka County and AF. No response was received from AHS, AEP or Alberta Transportation.

Mr. Tom Webber, the assistant chief administrative officer with Ponoka County, provided a verbal response on behalf of Ponoka County. As noted in section 2, Ponoka County is a directly affected party.

Mr. Webber did not raise any concerns with this application. The application's consistency with Ponoka County's municipal development plan and land use bylaw are addressed in Appendix A, attached.

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

4. 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 collection and 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.)

As noted in Technical Document RA19016, all of the existing and proposed facilities pose a low potential risk to groundwater and surface water. Despite the low ERST results, Technical Document RA19016 notes that the existing EMS still poses a potential risk to groundwater. To better understand that risk, I discussed this file with the NRCB's monitoring review team. That team directed me to have Kramer Dairy complete a soil investigation under the supervision of a qualified geotechnical engineer.

Kramer Dairy had a geotechnical engineer complete a soil investigation in fall 2019. Results of that investigation confirmed that the porous sand and sandstone layers below the EMS could act as a potential pathway for manure to migrate into the aquifer or uppermost groundwater

resource (groundwater). Based on this information and a follow up meeting with the NRCB's monitoring review team, I am adding a condition into the authorization that requires the permit holder to address the risk to groundwater posed by the EMS. See a description of that condition in Appendix C, below.

5. Other factors considered

The application meets all relevant AOPA requirements, with the terms and conditions summarized in part 6.[1]

In addition, the proposed lean-to and barn addition are consistent with the land use provisions of Ponoka County'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 barn addition and calf lean-to:

- Meet the required AOPA setbacks from all nearby residences (AOPA setbacks are known as the "minimum distance separation" requirements, or MDS)
- Meet the required AOPA setbacks from springs and common bodies of water
- Have sufficient means to control surface runoff of manure
- Meet AOPA groundwater protection requirements for the design of floors and liners of manure storage facilities

I also determined that the proposed barn addition and calf lean-to are located within the required AOPA setback from existing water wells. However, as explained in Appendix B, these facilities warrant an exemption from the 100 metre water well setback due to the well's construction and location.

6. Terms and conditions

Authorization RA19016 permits the construction of the barn addition and calf lean-to.

Authorization RA19016 also contains terms that the NRCB generally includes in all AOPA authorizations, 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, Authorization RA19016 includes conditions that:

- Set a deadline of November 30, 2022 for the approved construction to be completed
- Require water well monitoring and reporting
- Require the submission of a plan that will address the potential risk posed to the environment by the earthen liquid manure storage
- Require the submission of proof, prepared by a qualified third party, that the concrete used to construct the liner of the manure collection and storage portion of the:
  - calf lean-to be sulphate resistant and have a minimum 28-day compressive strength of 25 MPa
  - the dairy barn addition be sulphate resistant and have a minimum 56-day compressive strength of 32 MPa

1. For a summary of these requirements, please see the 2008 AOPA Reference Guide, available on the NRCB website at www.nrcb.ca/about/documents.

- Require submission of proof, prepared by a qualified third party, that the pipe and sealants used for the pipe used in the barn addition are the same or equivalent to what the applicant has proposed.

For an explanation of the reasons for these conditions, see Appendices B and C.

7. Conclusion

Authorization RA19016 is issued for the reasons provided above, in the attached appendices, and in Technical Document RA19016.

Authorization RA19016 should be read in conjunction with previously issued grandfathering determination PR19004, which remains in effect.

November 20, 2019

(Original Signed)
Jeff Froese
Approval Officer

Appendices:

A. Consistency with the municipal planning documents
B. Exemptions from water well setbacks
C. Explanation of conditions in Authorization RA19016

APPENDIX A: Consistency with the municipal planning documents

Under section 22 of AOPA, an approval officer may approve an application for an authorization 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 22(2.1) 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.")

Kramer Dairy is located in Ponoka County and is therefore subject to that county's MDP. Ponoka County adopted the latest revision to this plan in October 2018, under Bylaw 6-08-MDP. The relevant sections of the MDP are discussed below.

Section 2 of the MDP contains 11 numbered "policies" relating to CFOs. Of these, policies 2.7, 2.9, 2.10 and 2.11 are not relevant to this application for the reasons set out above. The remaining policies in section 2 are discussed below.

Under policy 2.1, the county "encourages" the development of CFOs to add value to crop production and provide "more employment and income per acre of land." However, the policy also states that the environment and neighbours' rights "must be protected." This policy likely isn't a relevant "land use provision" because it relates broadly to economic development, not CFO siting, and it provides a general context for interpreting and applying the other policies in section 2.

Policy 2.2 states the county's belief that "very large CFOs are inappropriate in this part of Alberta, and requests the NRCB not to allow them here (in Ponoka County)." This policy defines "very large" as "more than ten times" the threshold for approvals in the Part 2 Matters Regulation under AOPA. In this case, the threshold for approvals for dairies are 200 milking cows, so a "very large" dairy CFO in Ponoka County would have at least 2,000 milking cows. This application does not propose an increase in livestock and the CFO is grandfathered with a capacity of 85 milking cows. It is not a "very large" CFO as defined by policy 2.2. The proposed calf lean-to, the dairy barn addition and the CFO as a whole are therefore consistent with this policy.

Policy 2.3 has two parts. The first part states that no new CFO shall be established within specified distances to itemised urban developments, watersheds and land within a CFO exclusion zone in an Area Structure Plan (ASP) that has been adopted by bylaw. This CFO is located within the no new CFO setback to the Town of Ponoka. Despite this, the application is to improve how currently permitted livestock and their manure are managed, not for a new CFO or for an expansion to the amount of livestock or manure production at this CFO. For this reason, the first part of this policy is not applicable to this CFO or this application.

The second part of policy 2.3 of the MDP calls for "very strict" conditions on manure handling and storage in the Chain Lakes and Maskwa Creek watersheds. The CFO is not located within

either of these watersheds (as indicated in the MDP). Regardless, this policy likely isn't a "land use provision" because it calls for discretionary judgements about what conditions are "very strict." In addition, section 22(2.1) of AOPA precludes me from considering MDP provisions "respecting tests or conditions related to the construction of or the site for a confined feeding operation or manure storage facility" and regarding the land application of manure. Even if I did consider this provision, the proposed facilities meet AOPA's technical requirements for manure handling and storage and, in my opinion, those requirements are considered to be "very strict."

Policy 2.4 calls for the NRCB to "set strict rules for the timely incorporation of manure within a mile of any urban municipality or rural residence." Section 22(2.1) of AOPA precludes me from considering this policy because it relates to the land application of manure. The regulations under AOPA regulate the manure application process, including timely incorporation in specified circumstances (see section 24 of the *Standards and Administration Regulation* which sets out the manure incorporation requirements under AOPA for different cropping methods).

Policy 2.5 requests the NRCB not to allow the siting of CFOs within two miles of "any lake" unless the "regulators" are "convinced" that the CFO's manure management system is "fail-safe" and the CFO poses "no reasonable risk of contamination of the lake." This policy is likely not a "land use provision" because its "fail-safe" and "reasonable risk" tests call for discretionary, CFO-specific judgements. The policy may also be a "test or condition," which I am precluded from considering under AOPA's section 22(2.1). Regardless, this is an existing CFO which is not located within 2 miles of a lake identified in the MDP. Further the existing and proposed facilities pose a low potential risk to surface water and groundwater. (See further discussion in Technical Document RA19016 and Appendix C, below, that require Kramer Dairy to take actions that will further reduce the risk to groundwater posed by the earthen liquid manure storage.)

Policy 2.6 states that CFOs "should not be established or expanded" where there is "any risk that runoff will contaminate domestic water supplies." This policy likely is not a "land use provision" because it calls for discretionary judgements about acceptable risks. (The policy's "any risk" test is a low risk threshold, but I read the threshold as more than "minor" or "insignificant.") The proposed facilities meet AOPA's operational and design requirements, which are designed to minimize the risks to surface water and groundwater. Further to this, this is not an application to establish a CFO or to expand the existing one (no application for more livestock or an increase in manure production) at this time. For this reason, this policy is not applicable to this application.

Policy 2.8 applies to new CFOs and uses, but essentially modifies, AOPA's MDS requirements by measuring the AOPA-derived minimum distance of separation to the edge of an adjacent landowner's property. This application is not for a new CFO and it is not applicable to this application.

Based on the above, I conclude that the application is not inconsistent with the land use provisions of the Ponoka County's MDP. The county's verbal response did not raise concern with this application which supports this conclusion.

In my view, the text of Ponoka County's MDP also provides a clear intent to incorporate the land use bylaw (LUB), in sections 1.4, 1.6, 4.10, 10.3, 12.1, 17.5 and in Appendix A. Following the NRCB Operational Policy 2016-7: *Approvals*, part 8.2.3, I also considered Ponoka County's LUB 7-08-LU. Under that bylaw, the subject land is currently zoned Agricultural (AG). CFOs are listed as a permitted land use within this land use zoning, provided that they hold the required

authorization (or permit) under AOPA. As noted in this decision summary, the CFO holds a deemed registration and will hold an authorization for the lean-to and the barn addition.

APPENDIX B: Exemptions from water well setbacks

According to the application, two water wells are located within 100 m of the proposed calf lean-to or the dairy barn (including its proposed addition). I have confirmed during a site visit that there are three water wells at the site, but only two of them are located within 100 m of the proposed facilities. Considering how the scrape alley in the existing barn will direct liquid manure into a common manure pit below the addition, I am considering the existing dairy barn and the proposed addition to be one facility for this assessment[2].

Because of this proximity, the applicant's proposed facilities conflict with a regulation under AOPA, which prohibits the construction of manure collection and storage facilities (MSFs) within 100 metres of water wells.[3] However, the regulation allows approval officers to grant an exemption from this prohibition. I must therefore consider whether an exemption is appropriate in this instance.

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. (According to the regulation, when granting an exemption, an approval officer may require the applicant to implement a "groundwater monitoring program.")

The regulation also makes it clear that the applicant has the burden of proving that an exemption is warranted.

In considering whether an applicant has met that burden, approval officers 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 that meets AOPA's technical requirements should be exempted 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.

Approval officers assess the following factors 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

These presumptions and considerations are based on NRCB Operational Policy 2016-7: *Approvals*, part 8.7.1.

2. The NRCB Operational Policy 2016-7: *Approvals*, part 8.7.1 states that the approval officer will measure the distance from the closest part of the entire facility, not just the proposed addition.
3. Standards and Administration Regulation, Alta. Reg. 267/2001, section 7(1)(b).

The water wells

The first water well at the site is located south of the existing dairy barn, west of the silage bunks and north of the proposed calf lean-to. Based on information provided by the applicant and from the Alberta Environment and Parks (AEP) water well database, this well is likely ID # 298704. (I note that the AEP database indicates that this water well was installed in the adjacent quarter section of land, however, information from the applicant confirmed that this was likely done in error.) This well is reported to have been installed in 2001 and has a perforated zone from 35.1 m to 42.7 m below ground level across sandstone layers. These layers produce approximately 113 litres per minute that is reported to be used for domestic purposes. (The applicant confirmed that this water well is used for domestic and stock purposes.) The well's log identifies till and rocks from ground surface to 6.7 m below ground level. The well has a formation packer seal from ground surface to 33.5 m below ground level. The well appeared to be in good condition at the time of my site visit and its casing stood approximately 0.5 m above ground level. The well is located approximately 14 m from and upslope of the dairy barn and 5 m from and downslope of the proposed calf lean-to.

The second water well at the site is located under the residence. Based on information from the applicant and the AEP database, this well is likely either AEP water well ID # 98049 or 98050. To be conservative for this risk assessment, I used the worst case applicable parameter from both of these water well logs. This well does not have an annular seal, the perforated zone and water removal rates are not reported. Based on the reported soil and bedrock layers from these water well logs, and from water well ID # 298704 (discussed above), sandstone starts at a depth of 3.7 m below ground level is the source of water for this well. A layer of clay and sand or clay and rocks is identified above the sandstone from ground surface to 3.7 m below ground level. The applicant confirmed that this well isn't in use, but it was used historically for domestic purposes. The well is located approximately 45 m from and upslope of the dairy barn and 80 m from and cross slope of the proposed calf lean-to.

As noted above, there is a third water well at this site. However, this third well is not located within 100 m of either of the proposed facilities and is not further discussed here.

An exemption from the 100 m setback to both these wells is warranted as the proposed calf lean-to and the barn addition (including the remainder of the barn) meet the above five test requirements and because they pose a low risk to groundwater when risk screened using the NRCB's environmental risk screening tool (see part four [above] and Technical Document RA19016). Therefore, the risk of manure-contaminated water leaking from these facilities and reaching the uppermost groundwater resource is low.

In addition to the above, 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 m setback to a well is warranted. This tool consists of a two-stage risk screening process; each stage provides a numeric risk "score" based on the information that is input 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 more than 28, the tool recommends taking action and continuing to the second stage screening. If the well scores between 10 and 28, the tool recommends that the approval officer proceed to the

second stage screening, which focuses on the gradient and other factors bearing on the risk of manure run off or leachate reaching the water well. If the risk score at the second stage is more than 20, the tool suggests denying the setback exemption to the subject well.

Results of the water well exemption screening are in the below table:

Water well	First stage risk screening result	Second stage risk screening result	
		Dairy barn (incl. addition)	Calf lean-to
House well	27	8	8
298704	19	9	21

Based on the above risk scores and discussion, an exemption is warranted for the dairy barn including its proposed addition to both water wells. An exemption is warranted for the calf lean-to to the house water well but not to water well ID # 298704 (by a one point exceedance). Despite this one point exceedance for the lean-to which is proposed to have a liner that meets AOPA requirements and is located in close proximity to a well-constructed water well, I am prepared to grant an exemption to the 100 m water well setback requirement on the grounds that the permit holder must test water well ID # 298704 annually. See the condition in Authorization RA19016 and Water Well Monitoring Statement RA19016.

APPENDIX C: Explanation of conditions in Authorization RA19016

Authorization RA19016 includes several conditions, discussed below:

a. Addressing risk posed by earthen liquid manure storage
As noted in Decision Summary RA19016 and Technical Document RA19016, the existing earthen liquid manure storage poses a potential risk to groundwater that warrants actions being taken. For this reason, and consistent with NRCB practice, it is necessary for Kramer Dairy to address this risk. Thus, a condition is included requiring Kramer Dairy 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, the plan must be implemented within five years.

b. Construction above the water table
Under sections 9(2) of *AOPA's Standards and Administration Regulation*, the bottom of a manure storage facility (MSF) liner must be at least one metre above the water table "at the time of construction."

In the application, the applicant estimated that groundwater may be as shallow as four metres below ground. The proposed manure transfer pit is proposed to be 2.4 m below ground.

Based on this information, the proposed pit meets the one m requirement of sections 9(2). However, because the height of the water table can vary over time, a condition is included requiring applicant to cease construction and notify the NRCB immediately if the water table is encountered during construction.

c. Construction Deadline
Kramer Dairy proposes to complete construction of the proposed barn addition and the calf lean-to by summer 2022. This time-frame is considered to be reasonable for the proposed scope of work. The deadline of November 30, 2022 is included as a condition in Authorization RA19016.

d. Post-construction inspection and review
The NRCB's general practice is to include conditions in new or amended permits to ensure that the new or expanded facilities are constructed according to the required design specifications. Accordingly, Authorization RA19016 includes conditions requiring:

- Kramer Dairy to provide proof, prepared by a qualified third party, that the concrete used for the proposed manure collection and storage liners in the:
  - Calf lean-to is sulphate resistant and has a minimum 28-day compressive strength of 25 MPa,
  - Pit in the barn addition is sulphate resistant and has a minimum 56-day compressive strength of 32 MPa.
- Kramer Dairy to provide proof, prepared by a qualified third party, indicating that the manure transfer pipe and its associated sealants in the barn addition are the same or equivalent to what Kramer Dairy has proposed.

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. Authorization RA19016 includes conditions stating that Kramer Dairy shall not place livestock or manure in the manure storage portions of the new calf lean-to or the proposed barn addition

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