In the matter of a Review by

the Natural Resources Conservation Board

under section 25 of the *Agricultural Operation Practices Act*, RSA 2000, c A-7

held virtually on April 20 & 21, 2021

of a decision by an Approval Officer set out in Decision Summary LA19036

WRITTEN SUBMISSION OF

FIELD SERVICES

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On behalf of Field Services

INTRODUCTION

1. In relation to the Review of the Approval Officer's Decision in LA19036, the panel of the NRCB Board has directed Field Services of the Natural Resources Conservation Board (NRCB) to respond to four questions.

Board Decision RFR 2021-02 Muilwijk (Feb. 24, 2021)

2. To meet that direction, and to assist the Board in its decision making, Field Services provides this submission. The Submission consists of:

A. **Part A**: responses to Questions a) through d) directed by the Board panel at page 3 of the RFR decision, and

B. **Part B:** brief comments on hearing issues 1) through 4) identified at page 2 of the RFR decision.

3. Appendices referenced in the Submission are listed at the end of this Submission. These are documents that do not already appear in Decision Summary and Technical Document LA19036, in the Request for Review ("RFR") filed by the applicant on February 4, 2021, or as part of the Application Record.

PART A: RESPONSES TO THE BOARD'S QUESTIONS

Question a): What, if any, guidelines exist with respect to the specifications necessary for RCC liners to meet AOPA's groundwater protection standards?

4. Field Services is not aware of any guidelines with respect to specifications necessary for roller compacted concrete ("RCC") liners to meet the groundwater resource protection standards set out in section 9(6) of the Standards and Administration Regulation under the *Agricultural Operation Practices Act* ("AOPA").

5. The Approval Officer wrote: "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" and "I am also not aware of studies that have specifically looked at groundwater protection, hydraulic conductivity or permeability, for RCC."

Decision Summary LA19036 pp 6 & 7, respectively

6. RCC is not like other concrete.

*See **Appendix A:** TAG Working Group RCC report at p 4*

7. However, there are resources to assist an approval officer when considering an application that proposes an alternative, such as RCC, as a liner. In proposing an alternative liner, the applicant is responsible for providing information that shows the alternative liner meets the requirements in the legislation. The approval officers, inspectors and environmental specialists at the NRCB have systems to assess information that is presented in individual applications. These systems function equally when new technologies are proposed to meet AOPA requirements.

8. Field Services staff at the NRCB stay abreast of new technologies in continuing professional development, relationships with industry stakeholders, and collaborations and discussions with personnel from Agriculture and Forestry, Alberta Health (and Alberta Health Services), and Environment and Parks. They also lean on each other for professional support – see the response to Question c) below.

Potentially helpful publications

9. There are technical guidelines that may provide context to an approval officer in assessing novel technologies in concrete products. For example:

a. Technical Guideline entitled "Non-Engineered Concrete Liners for Manure Collection and Storage Areas," Agdex 096-93, provides guidance for design and construction of non-engineered concrete liners. If the concrete does not fit within a specified design set out for Categories A-D, the concrete needs to be engineered by a professional engineer. Starting at page 5 of Decision Summary LA19036, the Approval Officer outlined and addressed Agdex 96-93 in relation to this application.

Agdex 096-93, Application Record Reference Document 65

b. Technical Guideline entitled "Subsoil Investigations for Manure Storage Facilities and Manure Collection Areas," Agdex 096-62, provides guidance for consultants to determine depth to the water table and to the uppermost groundwater resource when conducting subsoil investigations. Information from subsoil investigations

> is required to assess a claimed naturally occurring protective layer or a compacted soil liner (p 1).
>
> *Agdex 096-62, Application Record Reference Document 62*

10. In addition, two recent studies on RCC may provide further context.

11. In 2019, a study funded by the Alberta government on the use of RCC on feedlot pen floors was completed. The study focused on cattle health and welfare, economic sustainability, and environmental aspects of surface water runoff. The study explicitly did not assess the potential for RCC liners to protect groundwater quality, and recommended "additional studies… to test the hypothesis that RCC in feedlot pens is protective of groundwater impacts."

Appendix B: *Report: "Impact of amended feedlot pen surface on cattle health and welfare, environmental and economic sustainability" (April 2019) at p 12*

12. In May 2020, the Technical Advisory Group[1] chartered a project for a working group to determine whether there was "sufficient scientifically based information to support the development of a TAG guideline for the construction and maintenance of RCC as a liner under the Standards and Administration Regulation."

Appendix C: *TAG RCC charter at p 1*

13. On December 23, 2020 the working group provided TAG with its report ("TAG Working Group RCC report"). In March 2021, TAG agreed that the TAG Working Group RCC report met the requirements of the project charter. The public version of the TAG Working Group RCC report is provided in **Appendix A**.

Appendix A: *TAG Working Group RCC report*

14. The conclusion in the TAG Working Group RCC report was that the literature did not provide sufficient scientifically based information to support, or oppose, the development of a TAG guideline on the use of RCC as a liner under AOPA's Standards and Administration

[1] The Technical Advisory Group ("TAG") is made up of members from Agriculture & Forestry, the NRCB and the livestock industry. The mandate of TAG is "to manage the development of technical guidelines to clarify AOPA objectives" and "identify issues that cannot be appropriately addressed through the development of technical guidelines process" (TAG Terms of Reference). See https://www.nrcb.ca/about/advisory-groups for more information.

Regulation (p 16). The TAG Working Group RCC report also identified gaps within the available research (pp 10-11).

15. To be clear, at the time of the Approval Officer's decision, the TAG Working Group RCC report was not publicly available, not yet reviewed by TAG, and the applicant Muilwijks had not had an opportunity to look at the report. Accordingly, as explained in Decision Summary LA19036 at page 5, the Approval Officer did not rely on this document in making the decision on application LA19036 and it is not part of the Application Record.

Question b): What resources did the Approval Officer rely upon in assessing RCC liner suitability as a protective liner in this case?

16. Groundwater protection standards for "liners" of a manure collection and storage area, such as the open pens or covered pens, is set out in section 9(6) of the Standards and Administration Regulation under AOPA. The required minimum depth and hydraulic conductivity of the liner vary based on the type of manure storage facility or manure collection area. For a solid manure collection area,

> 9(6) 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.

17. In assessing the suitability of RCC as a protective liner under AOPA, as proposed in application LA19036, the Approval Officer drew on his knowledge and experience. In addition, he consulted the following resources:

Resource	**Location**
LA19036 Part 1	Application Record Doc 8
LA19036 Part 2	Application Record Doc 16

Resource	**Location**
Observations from November 4, 2020 site visit	
November 6, 2020 Wood report (revised), including core sample results	Application Record Doc 41 Technical Document pp 40-46
Agdex 096-93 Non-Engineered Concrete Liners for Manure Collection and Storage Areas (June 2015)	Application Record Reference Doc 65
12 photos provided by A. Muilwijk on November 6, 2020	Application Record Doc 39 Technical Document pp 37-39
Soils information dated August 8, 2019 and provided November 5, 2020: • Test hole location photo • Test hole data	Application Record Doc 38 Technical Document pp 33-36
Water well Drilling Report for well ID 115735	Technical Document pp 9-10
Groundwater Resource and Uppermost Groundwater Resource report (S. Cunningham), in turn relying on resources listed in that report	Technical Document pp 47-91 List of appendices Technical Document p 51
Protective Layer report (S. Cunningham)	Technical Document pp 92-97
Environmental Risk Screening Tool (ERST) info: ERST report and results for covered pens ERST report and results for open pens In turn relying on ERST site information form	ERST Covered pens (Application Record Doc 50) ERST Open pens 2, open pen 1 (Application Record Doc 51) Results summary (Technical Document p 11) ERST site information forms (Application Record Docs 46 & 47)
Calculations made to try to replicate the hydraulic conductivity calculations made in the Wood, Environment and Infrastructure Solutions report (S. Cunningham)	Technical Document pp 98-100

Question c): What experience does Field Services have relating to the technical requirements required for RCC liners?

18. Field Services at the NRCB is made up of:

a. Approval Officers (Applications Division)
b. Inspectors (Compliance & Enforcement Division)
c. Environmental Specialists (Science and Technology Division)
d. Field Office Administrators

19. The use of RCC as a liner is still an emerging technology as it relates to groundwater protection. Field Services has minimal experience relating to RCC being proposed as a liner to meet AOPA groundwater protection standards.

20. However, RCC is popular for other reasons. Field Services personnel are aware of, and have seen, RCC being used for other manure, nuisance, and animal welfare management purposes. **Appendix D** sets out responses from Applications, Compliance & Enforcement, and Science & Technology (all part of Field Services) in relation to experience relating to the use of RCC as a liner, or in other ways.

21. It is worth observing that each member of Field Services has access to the in-house expertise of the NRCB's Environmental Specialists. The Director of the Science and Technology Division is Walter Ceroici. Currently, the NRCB has three Environmental Specialists: Mike Iwanyshyn, Scott Cunningham and Stephanie Fleck.[2] **Appendix E** to this Submission is the *curriculum vitae* of Mr. Ceroici, Dr. Iwanyshyn, Mr. Cunningham and Ms. Fleck.

Question d): What analysis did Field Services undertake with respect to the compliance of the applied-for RCC liner with the AOPA groundwater protection standards?

22. The statutory decision maker on permit applications (under sections 20 and 22 of AOPA) is the approval officer. Approval officers are one part of Field Services. It is the decision of the approval officer whether an applied-for liner complies with AOPA's groundwater protection standards – along with many other technical requirements. This question may be answered with the response to Question b) above.

[2] Mr. Cunningham and Ms. Fleck have also formerly been approval officers with the NRCB.

23. Approval officers sometimes discuss files with other approval officers, with the Director of Applications, with NRCB inspectors and with NRCB environmental specialists – while retaining the authority to make the ultimate determinations.

24. In the case of application LA19036, the Approval Officer:

a. requested that NRCB Science & Technology review the October 29, 2020 report from Wood (Application Record Doc 35) in relation to AOPA groundwater requirements.

Application Record Doc 36

b. requested that NRCB environmental specialist, Scott Cunningham, assist with the environmental risk screening tool ("ERST") for the facilities. Mr. Cunningham did so;

ERSTs – Application Record Docs 48, 49, 50 & 51

and

c. accepted Mr. Cunningham's offer to comment on the hydraulic conductivity estimation made by the consultant in the November 6, 2020 (revised) report from Wood.

Mr. Cunningham's conclusions – Technical Document at pp 98-100

Nov. 6, 2020 Wood report at Technical Document pp 40-46

PART B: COMMENTS ON HEARING ISSUES

Hearing issue 1: RCC liner and AOPA standards

25. The Approval Officer prepared both a Technical Document and a Decision Summary to support his decision on application LA19036. Reasons related to the proposed RCC liner and AOPA's regulatory standards for groundwater protection are found primarily at pages 20-21 of the Technical Document, and at part 6 (pages 4-8) of the Decision Summary.

26. The Board and other Review participants may benefit from two clarifications, however.

27. First, the Legislature has delegated to the approval officer the task of forming an opinion as to whether an application meets the requirements of Part 2 of AOPA and the regulations.

AOPA section 20(1) – for approval applications

28. An NRCB colleague or a professional engineer may develop an opinion that a particular application meets, for example, section 9(6)(c) of the Standards and Administration Regulation. However, under AOPA, only the approval officer[3] decides whether given permit application meets the regulations.

29. Second, in the RFR filed by the Muilwijks, the consultant suggests that "the NRCB was provided with two submissions from Wood that support[ed[this application."

RFR filed Feb. 4, 2021, second part, p 3 [PDF p 10]

30. The RFR characterizes the first submission as a June 18, 2020 Wood report "resulting" from NRCB Enforcement Order EO 20-01. It is clear from the Decision Summary that the Approval Officer did not rely on the June 18, 2020 Wood report in application LA19036. Nonetheless, we provide those two documents for the Board's benefit.

***Appendix F**: June 18, 2020 Wood report*
***Appendix G:** Enforcement Order EO 20-01*

31. The RFR identifies the second submission as the October 29, 2020 Wood report. This was later revised into a November 6, 2020 Wood report, which was to replace the October 29 report. The November 6, 2020 Wood report is what the Approval Officer relied on.

Oct. 29, 2020 Wood report – Application Record Doc 35
Nov. 6, 2020 Wood report – Application Record Doc 41

32. The RFR suggests that the approval officer in file LA19036 and the inspector in Enforcement Order EO 20-01 were not "consistent." This is not surprising. They had different and separate tasks. In issuing Enforcement Order EO 20-01, the inspector aimed to remedy an immediate risk to the environment. He reviewed the June 18, 2020 Wood report to assess if it was acceptable for the purposes of condition 2 of EO 20-01. In a letter dated June 29, 2020, the inspector wrote in bold-face type: "Whether or not these liners meet the requirements of AOPA is not the determination issue in this document."

***Appendix H:** June 29, 2020 letter from inspector to Muilwijks*

[3] And potentially the Board, on a review under section 25 of AOPA.

33. This is a different task from that of the Approval Officer, who aimed to assess if the proposed RCC met AOPA requirements under section 9(6)(c) of the Standards and Administration Regulation.

Hearing issue 2: potential conditions for catch basin and fly control

34. At page 21 of Decision Summary LA19036 (Appendix D), the Approval Officer prepared a list of conditions that a reviewing Board might consider, if the Board were to overturn the permit denial decision and issue a permit itself. See also page 9 of the Decision Summary LA19036 for the rationale related to a leakage detection system for the catch basin.

35. A fly control condition originated in MD Willow Creek Development Permit 118-98 (condition 2), and carried forward into NRCB Approval LA10054N (condition 6).

MD Willow Creek Development Permit 118-98 – Application Record Doc 4
NRCB Approval LA10054N – Application Record Doc 6

36. The Approval Officer, if requested by the Board, would be happy to answer questions or offer more detailed recommendations for conditions related to the catch basin and fly control.

Hearing issue 3: risk associated with water well

37. A photograph of the location of water well ID 115735 is found at Technical Document LA19036 at page 5. The water well drilling report for water well ID 115735 is found at Technical Document LA19036 at pages 9-10.

38. Water well ID 115735 is approximately

a. 21 metres from Barn 1;

See Technical Document p 6

b. 69 metres from the existing open pens;

ERST site info form Nov. 4, visit, 5 facilities at p 2 – Application Record Doc 47

and

c. 50 metres from the covered pens.

ERST site info form Nov. 4 visit, 3 facilities at p 2 – Application Record Doc 46

39. In regard to the Board's determination of environmental risk associated with the existing water well in the yard, the Approval Officer offers to provide the Board with results from the NRCB's water well exemption screening tool that he ran on March 5, 2021.[4] This information could be considered together with the ERST results, and the information from the screening tools used in context of all potential risks at the site.

40. As background, the water well exemption screening tool is used by approval officers to assist in determining whether an exemption to the 100 metre setback between water wells and proposed manure collection areas or manure storage facilities[5] is warranted. Under AOPA's Standards and Administration Regulation, an exemption may be granted if, for example, the CFO owner or operator demonstrates that an aquifer into which the water drilled is not likely to be contaminated by the facility. The legislation expressly requires that the applicant demonstrate this to the approval officer before the facility or area is constructed.

41. In the course of application LA19036, the Approval Officer did not consider an exemption because:

a. he was obliged to deny the permit application for not meeting requirements in AOPA's regulations, and

b. the proposed facilities had already been constructed, so the exemption could not apply.

42. In the case of an existing (permitted) facility located within 100 metres of a water well, approval officers assess the level of risk posed by the existing facility. If the facility will not cause a risk to the environment, the facility does not have to meet AOPA requirements, under section 20(1.2)(a) AOPA. If the facility may cause a risk to the environment, the facility will need to meet requirements set out in AOPA's regulations.

[4] As these results are not germane to the denial of the permit application, they are not part of the Application Record.

[5] This setback is required in section 7(1)(b) of AOPA's Standards and Administration Regulation. The mechanism of exemption from the setback is in section 7(2).

43. To continue using an existing (permitted) facility located within the 100 m setback that may cause risk to the environment, the applicant would need to apply for a variance under section 17(1) of AOPA. To grant the variance, the approval officer would need to come to the opinion that the variance provides the "same or a greater degree of protection and safety as that provided for by the regulations."

Section 17(1) of AOPA

See Decision Summary LA19036 at page 10 (part 9)

Hearing issue 4: deemed permit capacity

44. In his Decision Summary, the Approval Officer calculated the physical capacity of the operation to be 64 sows farrow to finish, or 171 sows farrow to wean.

Decision Summary LA19036 at Appendix E (page 23)

45. At this time, the Approval Officer is willing to concede that the Muilwijk CFO has a permitted capacity of 100 sows farrow to finish, under section 18.1(2)(b) of AOPA.[6]

Sections 18.1(1)(b) and (2)(b) of AOPA

MD Willow Creek Development Permit 1002-80– Application Record Doc 1
MD Willow Creek Development Permit 54-82– Application Record Doc 2
MD Willow Creek Development Permit 31-86– Application Record Doc 3
MD Willow Creek Development Permit 118-98– Application Record Doc 4

46. For clarity, this concession has nothing to do with facilities constructed or expanded after 2002 for which the operation did not hold a permit.

47. If the Board still wishes to review deemed permit capacity as a hearing issue, the Board may wish to consider the impact of a grandfathering determination on this confined feeding operation. The Muilwijks changed from swine to feeder calves in about 2012, and will need an

[6] For more information on "physical" capacity and "permitted" capacity, see in NRCB Operational Policy 2016-5: "Determining Deemed Capacity for Grandfathered Confined Feeding Operations" (January 26, 2016) – *Application Record Reference Doc 59.* Note: "capacity' in that Policy refers to livestock numbers.

NRCB-issued permit to continue with feeder calves at a number greater than the threshold set out in the Part 2 Matters Regulation under AOPA (360 feeder calves).

RESPECTFULLY SUBMITTED THIS 19TH DAY OF MARCH, 2021

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List of Appendices

Appendix	Description
A	TAG working group, "Roller Compacted Concrete (RCC): Investigating the Possibility of Developing a TAG Guideline to use RCC as a Liner Under the *Agricultural Operation Practices Act*" (Dec. 23, 2020)
B	Alberta Agriculture & Forestry, Strategic Research and Development Program Final Report, "Impact of amended feedlot pen surface on cattle health and welfare, environmental and economic sustainability," April 2019 [redacted for personal information]
C	TAG RCC charter final (May 1, 2020)
D	Responses from Applications, Compliance & Enforcement, and Science & Technology (Field Services)
E	*Curriculum vitae* of Mr. Ceroici, Dr. Iwanyshyn, Mr. Cunningham and Ms. Fleck [redacted for personal information]
F	June 18, 2020 Wood report
G	Enforcement Order EO 20-01 (May 22, 2020)
H	June 29, 2020 letter inspector to Muilwijks