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Application under the *Agricultural Operation Practices Act* for a confined feeding operation, manure collection area and/or manure storage facility(ies)

NRCB USE ONLY	Application number	Legal land description
☐ Approval ☐ Registration ☑ Authorization ☐ Amendment	RA19016	SE-2-43-25 W4

APPLICATION DISCLOSURE

This information is collected under the authority of the *Agricultural Operation Practices Act* (AOPA), and is subject to the provisions of the *Freedom of Information and Protection of Privacy Act*. This information is public unless the NRCB grants a written request that certain sections remain private.

Any construction prior to obtaining an NRCB permit is an offence and is subject to enforcement action, including prosecution.

I, the applicant, or applicant's agent, have read and understand the statements above, and I acknowledge that the information provided in this application is true to the best of my knowledge.

Mar. 30 '19
Date of signing

Signature

Kramer Dairy Ltd
Corporate name (if applicable)

Reinder Kramer
Print name

GENERAL INFORMATION REQUIREMENTS

Proposed facilities. List all proposed confined feeding operation facilities and their measurements, including if it is an addition to a an existing facility (attach additional pages if needed)

Proposed manure collection areas & manure storage facilities	Dimensions (m)
addition to existing dairy barn to renovate manure handling	10' x 70' (3.1 m x 21.3 m)
build a Lean to onto a shop for calves	18' x 80'
shop (ancillary structure)	40' x 60' (5.5 m x 24.4 m and 12.2 m x 18.3 m, respectively)

Existing facilities. List **ALL** existing confined feeding operation facilities and their measurements (use additional pages if needed)

Existing barns, manure collection areas & manure storage facility	Dimensions (m)	NRCB USE ONLY
dairy barn	70' x 70' 70' x 128'	39 m x 21 m and 21 m x 25 m
dry cow shelter	30' x 80'	See comment below
calves shelter	12' x 20'	
Heifers shelter	40' x 60'	

NRCB USE ONLY

EMS: 40 m x 31 m, northern pens, includes the heifer and dry cow shelters: 140 m x 60 m, southern pens, includes the calf shelter: 15 m x 37 m

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If a new facility is replacing an old facility, what will be done with the old facility and when? ☒ N/A

Proposed construction completion date: Summer 2022

Additional information:

- addition to barn only for manure pit not for cows.
- shop and lean to will replace the space where ~~the~~ calf hutches and calf shelter are right now

Livestock Numbers: (include all livestock)
Note: Livestock numbers in this table will be used when processing the application)

Livestock type/ category	Existing number	Change in number (if applicable)	Total
milk cows	85		85
dry cows.	15		15
Heifers	55		55
calves	20		20
AO note: there is no proposed increase in livestock with this application.			

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DECLARATION AND ACKNOWLEDGMENT OF APPLICANT CONCERNING *WATER ACT* LICENCE

issued by Alberta Environment and Parks (AEP) for a confined feeding operation (CFO)

Date and sign (or check) one of the following four options

OPTION 1: Applying through the NRCB for both the AOPA permit and the *Water Act* licence

☐ I **DO** want my water licence application coupled to my AOPA permit application.

Signed this ____day of _____, 20____. _____

Signature of Applicant or Agent

OPTION 2: Processing the AOPA permit and *Water Act* licence separately

1. I (we) acknowledge that the CFO will need a new water licence from AEP under the *Water Act* for the development or activity proposed in this AOPA application.
2. I (we) request that the NRCB process the AOPA application **independently of** AEP's processing of the CFO's application for a water licence.
3. In making this request, I (we) recognize that, if this AOPA application is granted by the NRCB, the NRCB's decision will not be considered by AEP as improving or enhancing the CFO's eligibility for a water licence under the *Water Act*.
4. I (we) acknowledge that any construction or actions to populate the CFO with livestock pursuant to an AOPA permit in the absence of a *Water Act* licence will **not** be relevant to AEP's consideration of whether to grant the *Water Act* licence application.
5. I (we) acknowledge that any such construction or livestock populating will be at the CFO's sole risk if the *Water Act* licence application is denied or if the operation of the CFO is otherwise deemed to be in violation of the *Water Act*. This risk includes being required to de-populate the CFO and/or to cease further construction, or to remove "works" or "undertakings" (as defined in the *Water Act*).
6. **CHECK IF RELEVANT** ☐ I (we) acknowledge that the CFO is located in the South Saskatchewan River Basin and that, pursuant to the *Bow, Oldman and South Saskatchewan River Basin Water Allocation Order* [Alta. Reg. 171/2007], this basin is currently closed to new surface water allocations.

Signed this ____ day of _____, 20____. _____

Signature of Applicant or Agent

OPTION 3: Additional water licence not required

1. I (we) declare that the CFO will not need a new licence from AEP under the *Water Act* for the development or activity proposed in this AOPA application.

Signed this ____ day of _____, 20____. _____

Signature of Applicant or Agent

OPTION 4: Uncertain if *Water Act* licence is needed; acknowledgement of risk (for existing CFOs only)

1. At this time, I (we) do not know whether a new water licence is needed from AEP under the *Water Act* for the development or activity proposed in this AOPA application.
2. If a new *Water Act* licence is needed, I (we) request that the NRCB process the AOPA application **independently of** AEP's processing of the CFO's application for a water licence.
3. In making this request, I (we) recognize that, if this AOPA application is granted by the NRCB, the NRCB's decision will not be considered by AEP as improving or enhancing the CFO's eligibility for a water licence under the *Water Act*.
4. I (we) acknowledge that any construction or actions to populate the CFO with additional livestock pursuant to an AOPA permit in the absence of a *Water Act* licence will **not** be relevant to AEP's consideration of whether to grant my *Water Act* licence application, if a new water licence is needed.
5. I (we) acknowledge that any such construction or livestock increase will be at the CFO's sole risk if the *Water Act* licence application is denied or if the operation of the CFO is otherwise deemed to be in violation of the *Water Act*. This risk includes being required to de-populate the CFO and/or to cease further construction, or to remove "works" or "undertakings" (as defined in the *Water Act*).
6. **CHECK IF RELEVANT** ☐ I (we) acknowledge that the CFO is located in the South Saskatchewan River Basin and that, pursuant to the *Bow, Oldman and South Saskatchewan River Basin Water Allocation Order* [Alta. Reg. 171/2007], this basin is currently closed to new surface water allocations.

Signed this 26 day of Apr., 20 19. _____

~~*Signature of Applicant or Agent*~~

NRCB USE ONLY

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GENERAL WATER INFORMATION – EXISTING **Use the existing manure storage facility that is closest to a common body of water or water well**			**NRCB USE ONLY**	
			Comments	**Meets regulations**
Flood plain information What is the elevation of the floor of the lowest manure storage or collection facility above the 1:25 year flood plain or the highest known flood level?	+1 (m)	☐ Estimated ☐ From records	not in known flood plain	☒ YES ☐ NO ☐ YES with exemption
Springs, wells, and surface water information a. How many springs are within 100 m of manure storage facilities or manure collection areas?		0	none observed at or near the CFO	☒ YES ☐ NO ☐ YES with exemption
b. How many water wells are within 100 m of the manure storage facilities or manure collection areas?		2	three water wells are within 100 m of existing MCAs* or MSFs*	☐ YES ☐ NO ☒ YES with exemption
c. What is the shortest distance from an manure collection or storage facility to a surface water body? (ie, lake, creek, slough, seasonal, etc.)		150 m	175 m to intermittent creek	☒ YES ☐ NO ☐ YES with exemption
Groundwater information a. What is the depth to bedrock?	3 (m)	☐ Estimated ☐ Measured ☐ Drilling reports	N/A	
c. What is the shallowest depth to the uppermost groundwater resource?	25 (m)	☐ Estimated ☐ Measured ☐ Drilling reports	13.7 m in ww ID 98049	☒ YES ☐ NO ☐ YES with exemption

Additional information: (attach borehole logs and records, as required)

* - MCAs and MSFs are manure collection and storage facilities as defined by AOPA

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GENERAL WATER INFORMATION – PROPOSED **Use the proposed manure storage facility that is closest to a common body of water or water well**			**NRCB USE ONLY** **Comments**	**Meets regulations**
Proposed facility name barn addition + lean to				
Flood plain information What is the elevation of the floor of the lowest **proposed** manure storage or collection facility above the 1:25 year flood plain or the highest known flood level?	1 (m)	☐ Estimated ☐ From records	not in known flood plain	☒ YES ☐ NO ☐ YES with exemption
Springs, wells, and surface water information a. How many springs are within 100 m of **proposed** manure storage facilities or manure collection areas?		0	none observed at or near the CFO	☒ YES ☐ NO ☐ YES with exemption
b. How many water wells are within 100 m of **proposed** manure storage facilities or manure collection areas?		2	confirmed	☒ YES ☐ NO ☐ YES with exemption
c. What is the shortest distance from a **proposed** manure collection or storage facility to a surface water body? (ie, lake, creek, slough, seasonal, etc.)		150 m	175 m to intermittent creek	☒ YES ☐ NO ☐ YES with exemption
Groundwater information a. What is the depth to bedrock?	3 (m)	☐ Estimated ☐ Measured ☐ Drilling reports	N/A	
b. What is the depth to the water table?	4 (m)	☐ Estimated ☐ Measured ☐ Drilling reports	estimated by the applicant	☒ YES ☐ NO ☐ YES with exemption
c. What is the shallowest depth to the uppermost groundwater resource?	25~ (m)	☐ Estimated ☐ Measured ☐ Drilling reports	13.7 m in ww ID 98049	☒ YES ☐ NO ☐ YES with exemption

Additional information: (attach borehole logs and records, as required)

WELL INFORMATION:

Well IDs: House well and Pen well (likely either 98050 or 154215) and Siledge pit well (297975)

Surface water related concerns from directly affected parties or referral agencies: ☐ YES ☒ NO

Ground water related concerns from directly affected parties or referral agencies: ☐ YES ☒ NO

Water Wells

If applicable, exemption for 100 m distance requirements applied: ☒ YES ☐ NO Condition required: ☒ YES ☐ NO

See Appendix B to Decision Summary RA19016.

Surface Water

If applicable, exemption for 30 m distance requirements applied: N/A ☐ YES ☐ NO Condition required: ☐ YES ☒ NO

ERST for **proposed** facilities

Facility	Groundwater score	Surface water score	File Number
Calf lean to	Low	Low	RA19016
Dairy barn addition (includes existing portions of the barn)	Low	Low	RA19016

ERST for **existing** facilities

Facility	Groundwater score	Surface water score	File Number
South pens	Low	Low	RA19016
North pens	Low	Low	RA19016
Earthen Liquid Manure Storage (EMS or Lagoon)	Low *	Low	RA19016

* see discussion on the next page

Groundwater or surface water related comments, see next page

Groundwater or surface water related comments:

The environmental risk screening tool (ERST) relies on site specific input parameters including but not limited to how manure collection areas and storage facilities are constructed, the liner(s) or protective layer(s) (sub-surface soil or geological conditions) that they utilize to protect groundwater and the distances (both horizontal and vertical) to surface water (SW) and groundwater (GW) (especially the shallowest aquifer or uppermost groundwater resource). The result of the tool is a numeric risk score that falls into either a low (< 70 for GW and < 44 for SW), moderate (70 - 90 for GW and 44-58 for SW) or high (> 90 for GW and > 58 for SW) potential risk category. Typically, a low risk score result indicates that actions are not required to address the risk posed by a manure collection or storage facility to the environment. If the risk result is moderate or high risk actions are typically required to address the potential risk to the environment.

I note that the ERST is a tool with some limitations that may not perform well in every situation. In this case, the ERST results for the earthen liquid manure storage (EMS) indicate that it poses a low potential risk to groundwater and surface water. I am of the opinion that despite the tools low screening result to groundwater (67.2 points, a relatively high low risk score), the EMS still poses a risk to groundwater that warrants discussion and actions being taken (see below). I am also of the opinion that the low surface water risk posed by the EMS is representative of conditions at the CFO; Kramer Dairy does not need to take actions to further reduce the low potential risk posed by the EMS to surface water. Further, I am of the opinion that the risk screening results for the pens, dairy barn (including the proposed addition) and the proposed lean-to noted on the previous page do not warrant actions being taken to reduce their potential environmental risk.

As for the EMS, it is *estimated* to be 3.75 m to 4.5 m deep. Between the floor of the EMS and the uppermost groundwater resource are layers of sand (from as shallow as 4.5 m to 11.25 m) and sandstone (depths deeper 11.25 m, based on a geotechnical investigation completed fall 2019 at Kramer Dairy). The sandstone is reported to produce approximately 110 L/minute in local water wells. In one particular water well log (ID# 298704), the sandstone starts at an approximate depth of 3.7 m below ground. The sand and sandstone were used as protective layers for the ERST which resulted in the low numeric risk result for groundwater. However, I also realize that these layers are potential pathways for liquid manure in the EMS to impact groundwater. Based on this, and the direction provided by the NRCB's monitoring review team, I am of the opinion that Kramer Dairy needs to take action that will reduce the risk to the environment posed by the EMS, despite the low risk result from the tool.

In an effort to be sensitive to Kramer Dairy and the environment, I am requiring Kramer Dairy to submit a written plan that will address the risk posed by the EMS to groundwater. That plan must be submitted within six months to the NRCB, and approved by the NRCB for implementation. Once the plan has been approved for implementation by the NRCB, it must be acted upon within five years by Kramer Dairy or whoever may own and operate the CFO at that time. A condition reflecting these requirements will be added to the Authorization RA19016 and is further discussed in Decision Summary RA19016.

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DISTANCE OF ANY MANURE STORAGE FACILITY (EXISTING OR PROPOSED) TO NEIGHBOURING RESIDENCES

Name	Legal Land Description	Distance (m)	Zoning (LUB) Category	MDS Cat (1-4)	Distance (m)	Meets Regulations
	NE 34 42 25 W4	300	AG	1	245*	Yes
Jack Remyn	SE 2 43 25 W4	400	AG	1	415	Yes
AO added	SW 2-43-25 W4M		AG	1	462	Yes
	SE 2-43-25 W4M		AG	1	743	Yes

Methods used/margins of error to determine distance:

Additional information:

NRCB USE ONLY

Methods used to determine distance (if applicable): Scaled air photo from Google Earth

Margin of error (if applicable): _____

Requirements: Category 1: 244 m Category 2: 326 m Category 3: 407 m Category 4: 652 m

Technology factor: ☐ YES ☒ NO

Expansion factor: ☐ YES ☒ NO

Waivers required: ☐ YES ☒ NO # _____

Waivers attached: ☐ Waivers in file: ☐

MDS related concerns from directly affected parties or referral agencies: ☐ YES ☒ NO

Comments: * Since neither the CFO footprint, nor the existing livestock numbers or annual manure production at the CFO will change with this application, I am of the opinion that the MDS setback requirement is met in accordance with section 3(5)(c) of the Standards and Administration Regulation.

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LAND BASE FOR MANURE AND COMPOST APPLICATION (for approvals and registrations only)

Name of landowner(s)*	Legal Land Description	Area ** (usable hectares)	Soil Zone	NRCB USE ONLY Area unsuitable:
Kramer Dairy Ltd	SE 2 43 25 W4	40	Black	confirmed
"	SW 2 43 25 W4	50	Black	confirmed
"	SE 13 43 25 W4	28	Black	confirmed
"	SW 18 43 24 W4	32	Black	confirmed
"				
	TOTAL	150		

*If you are **not** the registered land owner, please attach copies of land use agreements signed by all landowners.

** Available manure spreading area (do not include required setback areas from residences, common bodies of water, water wells, etc.) (to convert from acres to hectares divide acres by 2.47)

Additional information: (attach copies of all signed land use agreements)

NRCB USE ONLY

Land base required: 58 ha (black)

Land base listed: 150 ha

Area not suitable: _____

Available area 150 ha

This application does not include an increase in livestock or manure production and demonstrating access to adequate land base isn't required. Regardless, the requirement is met.

Requirement Met: ☒ YES ☐ NO

Land spreading agreements required: ☐ YES ☒ NO If yes, Agreements in file: ☐ Agreements attached: ☐

Manure Management Plan: ☐ YES ☒ NO Plan attached: ☐ Plan in file: ☐

PLANS

Submitted and attached construction plans ☐YES ☒NO

Submitted aerial photos ☐YES ☒NO

Submitted photos ☐YES ☒NO

GRANDFATHERING:

On this application: ☐ Yes ☒ No

Comments:

On a previous application/decision: ☒ Yes ☐ No If yes, list application/decision number PR19004

Comments:

DEEMING CAPACITY: ☐Yes ☒No

Comments:

See PR19004

ALL SIGNATURES IN FILE: ☒ Yes ☐ No

DATES OF APPROVAL OFFICER SITE VISITS:

April 26, 2019	June 24, 2019
July 12, 2019	August 5, 2019

CORRESPONDENCE WITH MUNICIPALITIES AND REFERRAL AGENCIES:

Date deeming letters sent June 5, 2019

Municipality: Ponoka County

☒ Letter sent ☒ Response received ☐ written/email ☒ verbal ☐ no comments received

Alberta Health Services:

☒ Letter sent ☐ Response received ☐ written/email ☐ verbal ☒ no comments received

Alberta Environment and Parks: ☐ N/A

☒ Letter sent ☐ Response received ☐ written/email ☐ verbal ☒ no comments received

Alberta Transportation: ☐ N/A

☒ Letter sent ☐ Response received ☐ written/email ☐ verbal ☒ no comments received

Alberta Regulatory Services: ☐ N/A

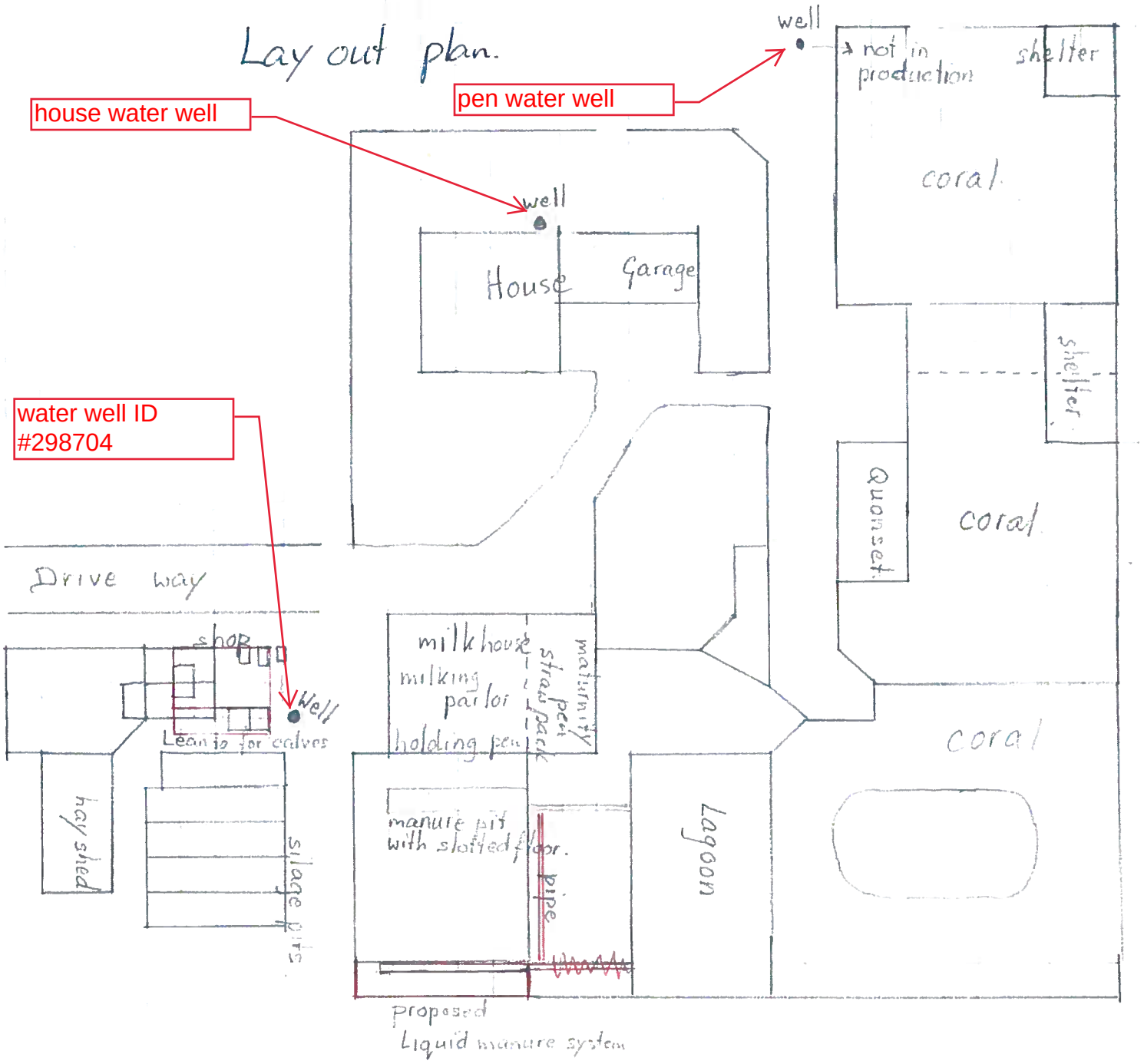
☒ Letter sent ☒ Response received ☒ written/email ☐ verbal ☐ no comments received

Other: _____

☐ Letter sent ☐ Response received ☐ written/email ☐ verbal ☐ no comments received

Other: _____

☐ Letter sent ☐ Response received ☐ written/email ☐ verbal ☐ no comments received


Lay out plan.
house water well
pen water well
water well ID #298704
well
not in production
shelter
coral
well
House
Garage
shelter
Quonset
coral
Drive way
shop
well
Lean to for calves
milk house
milking parlor
holding pen
straw pack
maternity
coral
hay shed
silage pits
manure pit with slotted floor.
pipe
Lagoon
proposed
Liquid manure system
North

Appendix B

SE 2-43-35 W4M
Air photo dated 2017-07-04
(with facilites highlighted)

AO NOTE: this air photo is from grandfathering determination PR19004 and indicates the location of the grandfathered facilities at this CFO.

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SOLID MANURE, COMPOST & COMPOSTING MATERIALS: Barns, feedlots & storage facilities - Concrete liner

*(complete a copy of this section for **EACH** barn, feedlot and storage facility for solid manure, composting materials or compost with a concrete liner)*

Facility description / name *(as indicated on site plan)*

1. Lean to. **2.** _____

Manure storage capacity

	Length (m)	Width (m)	Estimated storage capacity (m^3)	Depth below grade to the bottom of the liner (m)
1.	80'	18'	4-5 mo	0
2.				

NRCB USE ONLY

Depth to water table: 4 m (estimated) Requirements met: ☒ YES ☐ NO

Depth to UGR: 13.7 m Requirements met: ☒ YES ☐ NO

ERST completed: ☒ YES ☐ NO

Groundwater risk level: Low Surface Water risk level: Low

UGR: Uppermost Groundwater Resource as defined under AOPA's *Standards and Administration Regulation*.

Surface water control systems

☒ Under roof: Surface water will be controlled by the walls and roof of the building and by the finished landscaping.

☐ Outdoor: Describe the run-on and runoff control system proposed for feedlots and outdoor manure storage facilities

NRCB USE ONLY

Requirements met: ☒ YES ☐ NO Details/comments:

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SOLID MANURE, COMPOST & COMPOSTING MATERIALS: Barns, feedlots & storage facilities - Concrete liner (cont.)

Concrete liner details

Concrete thickness 5"	Provide details:
Concrete strength min 25 Mpa	Provide details:
Method of sulphate protection fly ash	Provide details:
Concrete reinforcement size and spacing 15" on centre or fibre mesh.	Provide details:

Additional information:

NRCB USE ONLY

Technical guideline requirements met: ☒ YES ☐ NO

Construction plans approved by professional engineer: ☐ YES ☒ NO Condition required: ☒ YES ☐ NO

Comments:

A condition will be added to the permit requiring submission of proof, prepared by a qualified third party, that the above concrete specifications are met.

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LIQUID MANURE STORAGE: Alternative liner

*(complete a copy of this section for **EACH** liquid manure storage facility with an alternative liner)*

Facility description / name *(as indicated on site plan)*

1. barn addition (pipe across)
2. _____
3. _____

Manure storage capacity

	Length (m)	Width (m)	Estimated manure storage capacity (m^3)	Depth below grade of the bottom of the liner (m)	Filled in lower ¼?
1.	70' or 21 m	3' & .9 m	13.3 m^3 / day, gravity flow.	.9 m	N/A.
2.					
3.					

NRCB USE ONLY

Depth to water table: 4 m (estimated) Requirements met: ☒ YES ☐ NO

Depth to UGR: 13.7 m Requirements met: ☒ YES ☐ NO

Comments:

ERST completed: ☒ YES ☐ NO

Groundwater risk level: Low Surface Water risk level: Low

UGR: Uppermost Groundwater Resource as defined under AOPA's *Standards and Administration Regulation*.

Surface water control systems

Describe the run-on and runoff control system	Provide details:
	Barn addition for renovating manure handling system is going to be part of existing barn, all under 1 roof.

NRCB USE ONLY

Requirements met: ☒ YES ☐ NO Details/comments:

LIQUID MANURE STORAGE: Alternative liner (cont.)

a. Describe the proposed alternative liner ADS Canada N-12 WT IB Pipe	Provide details:
b. Information and calculations used to show equivalency	Provide details:

Additional information:

NRCB USE ONLY

Liner requirements met: ☒ YES ☐ NO Condition required: ☒ YES ☐ NO

Comments:

A condition will be added to the permit requiring submission of proof, prepared by a qualified third party, that the pipe and sealants used in the barn addition are the same or equivalent to what is proposed.

Leakage detection system required: ☐ YES ☒ NO If yes, please explain why.

Comments:

Construction plans approved by professional engineer: ☐ YES ☒ NO

Manufacturer details:

Manufacturer's specifications and sealant requirements are presented on the following pages.

ADS CANADA N-12® WT IB PIPE SPECIFICATION (CSA 182.8

Scope

This specification describes 100 to 1500 mm (4- through 60-inch) ADS Canada N-12 WT IB (per CSA B182.8) pipe for use in gravity-flow drainage applications.

Pipe Requirements

ADS Canada N-12 WT IB pipe shall have a smooth interior and annular exterior corrugations.

- 100 to 1500 mm (4- through 60-inch) shall be certified by an accredited certification body to meet CSA B182.8.
- 100 to 900 mm (4- through 36-inch) shall meet a minimum pipe stiffness of 320 kPa (46.4 psi) when tested in accordance with ASTM D 2412
- 1050 to 1500 mm (42- through 60-inch) shall meet a pipe stiffness requirement that is variable based on the diameter when tested in accordance with ASTM D 2412. Minimum requirements are provided within CSA B182.8
- Manning's "n" value for use in design shall be 0.012.

Joint Performance

Pipe shall be joined with a bell & spigot joint meeting the Watertight Type 1 requirements of CSA B182.8.

100 to 1500 mm (4- through 60-inch) shall be watertight according to the requirements of ASTM D3212. Gaskets shall be made of polyisoprene meeting the requirements of ASTM F477. Gaskets shall be installed by the pipe manufacturer and covered with a removable, protective wrap to ensure the gasket is free from debris. A joint lubricant available from the manufacturer shall be used on the gasket and bell during assembly.

300 to 1500 mm (12- through 60-inch) pipe shall have a reinforced bell with a polymer composite band installed by the manufacturer.

Field Pipe and Joint Performance

To assure watertightness, field performance verification may be accomplished by testing in accordance with ASTM F2487. Appropriate safety precautions must be used when field-testing any pipe material. Contact the manufacturer for recommended leakage rates.

Material Properties

Virgin material for pipe production shall be high density polyethylene conforming with the minimum requirements of cell classification 435400C for 100 to 1500mm (4- through 60-inch) diameters, as defined and described in the latest version of ASTM D3350, except that carbon black content should not exceed 4%. The virgin pipe material shall comply with the notched constant ligament stress (NCLS) test as described in clause 8.5 of CSA standard B182.8. The average failure time of the 5 test specimens shall exceed 24 hours with no single test specimen's failure time less than 17 hours.

Installation

Installation shall be in accordance with CSA B182.11 and ADS published installation guidelines with the exception that minimum cover in trafficked areas for 100 to 1200 mm (4- through 48-inch) diameters shall be 0.3 m (1 ft.) and for 1350 and 1500 mm (54- and 60-inch) diameters shall be 0.6 m (2 ft) in single run applications. Backfill for minimum cover situations shall consist of Class 1, Class 2 (minimum 90% SPD), or Class 3 (minimum 95% SPD) material. Maximum fill heights depend upon embedment material and compaction level; please refer to Technical Note 2.01C. Contact your local ADS representative or visit our website at www.ads-pipecanada.com for a copy of the latest installation guidelines.

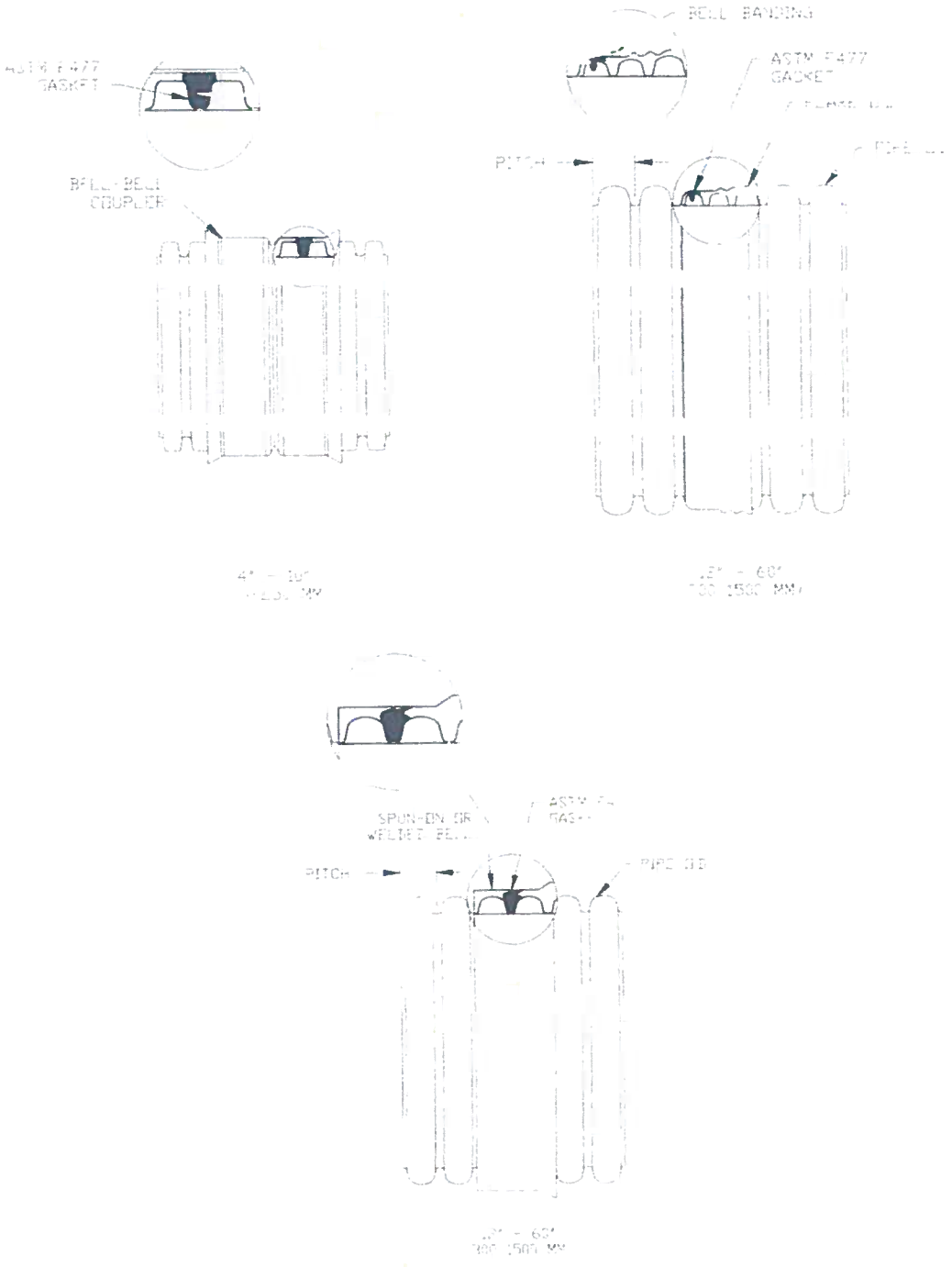
Pipe Dimensions

	Nominal Diameter, mm (in)														
Pipe I.D. mm (in)	100 (4)	150 (6)	200 (8)	250 (10)	300 (12)	375 (15)	450 (18)	525 (21)	600 (24)	750 (30)	900 (36)	1050 (42)	1200 (48)	1350* (54)	1500 (60)
Pipe O.D.** in (mm)	122 (4.8)	175 (6.9)	231 (9.1)	290 (11.4)	368 (14.5)	457 (18)	559 (22)	622 (24.5)	711 (28)	914 (36)	1067 (42)	1219 (48)	1372 (54)	1549 (61)	1702 (67)
Minimum Pipe Stiffness* kPa (Psi)	320 (46.4)	320 (46.4)	320 (46.4)	320 (46.4)	320 (46.4)	320 (46.4)	320 (46.4)	320 (46.4)	320 (46.4)	320 (46.4)	320 (46.4)	140 (20)	125 (18)	110 (16)	95 (14)

*Check with sales representative for availability by region and ordering.
**Pipe O.D. values are provided for reference purposes only, values stated for 300 to 1500 mm are ± 25 mm. Contact a sales representative for exact values.

ADS CANADA N-12 WT IB JOINT SYSTE

...nt configuration & availability subject to change without notice. Product detail may differ slightly from actual product appearance.)



LIQUID MANURE COLLECTION AND/OR STORAGE: In-barn - Concrete liner

*(complete a copy of this section for **EACH** in barn liquid manure storage facility with a concrete liner)*

Facility description / name *(as indicated on site plan)*

1. barn addition
2.
3.

Manure storage capacity *(use one row in the table for **EACH** in-barn storage. Attach additional pages if you require more rows)*

	Length (m)	Width (m)	Depth (m)	Estimated storage capacity (m^3)	Depth below grade (m)
1.	3	3	2.4	21	2.4
2.					
3.					
			TOTAL CAPACITY		

NRCB USE ONLY

Depth to water table: 4 m (estimated) Requirements met: ☒ YES ☐ NO

Depth to UGR: 13.7 m Requirements met: ☒ YES ☐ NO

Comments:

A condition will be added to the permit requiring the permit holder to cease construction and contact the NRCB immediately if groundwater is observed to be shallower than one metre below the base of the pit's floor.

ERST completed ☒ YES ☐ NO

Groundwater risk level: Low Surface Water risk level: Low

UGR: Uppermost Groundwater Resource as defined under AOPA's *Standards and Administration Regulation*.

LIQUID MANURE COLLECTION AND/OR STORAGE: In-barn - Concrete liner (cont.)

Concrete liner details

a. Scrape alleys or unslatted portions of barn floors (if applicable)	Concrete thickness	Provide details:
	Concrete strength	Provide details:
	Method of sulphate protection	Provide details:
	Concrete reinforcement size and spacing	Provide details:
b. In-barn manure pit floors	Concrete thickness 5"	Provide details:
	Concrete strength 32 mpa.	Provide details:
	Method of sulphate protection fly ash.	Provide details:
	Concrete reinforcement size and spacing 10 mm	Provide details:

LIQUID MANURE COLLECTION AND/OR STORAGE: In-barn - Concrete liner (cont.)

c. In-barn manure pit walls	Concrete thickness 8"	Provide details:
	Concrete strength 32 mpa.	Provide details:
	Method of sulphate protection fly ash.	Provide details:
	Horizontal reinforcement size and spacing 10 mm	Provide details: 16" apart.
	Vertical reinforcement size and spacing 15 mm	Provide details: 1' apart.
d. How will the joints at the junction of the pit walls, pit floors and any other joints be sealed?	Provide details: water stop.	
e. How will the concrete liner to the piping and other extrusions that penetrate it be sealed?	Provide details: threaded steel.	

Additional information:

LIQUID MANURE STORAGE: Concrete thickness

NRCB USE ONLY

Liner requirements met: ☒ YES ☐ NO Condition required: ☒ YES ☐ NO

Comments:

A condition will be added to the permit requiring submission of proof, prepared by a qualified third party, that the above concrete specifications are met.

Leakage detection system required: ☐ YES ☒ NO If yes, please explain why

Comments:

Construction plans approved by professional engineer: ☐ YES ☒ NO

Manufacturer details: