

Technical Document LA24022

Part 2 — Technical Requirements



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
<input type="checkbox"/> Approval <input checked="" type="checkbox"/> Registration <input type="checkbox"/> Authorization	LA24022	SW 10-7-19 W4M
<input type="checkbox"/> Amendment		

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.

April 14 2025
Date of signing

Signature

Hilly Billy Farms
Corporate name (if applicable)

Print name

Henk Beckman

GENERAL INFORMATION REQUIREMENTS

Proposed facilities: list all proposed confined feeding operation facilities and their dimensions. Indicate whether any of the proposed facilities are additions to existing facilities. (attach additional pages if needed)

Proposed facilities	Dimensions (m) (length, width, and depth)
Catch basin	20 x 40 x 4m depth 3 m deep
Pens new	61m x 31m
Row 1 with shelters	71m x 20m
Row 2 with shelters	71m x 26m
Row 3 with shelters	80 m x 31m

AO Comment: Row 1 with shelters, row 2 with shelters, and row 3 with shelters are already constructed facilities.

~~Existing facilities:~~ list **ALL** existing confined feeding operation facilities and their dimensions

Existing facilities	Dimensions (m) (length, width, and depth)	NRCB USE ONLY
barn 1 dirt floor	31m x 11m	
barn 2 concrete	25m x 13m	
barn 3 concrete	20m x 10m	

NRCB USE ONLY

AO Comment: The three barns listed are not considered CFO facilities as they are only used for kidding part of the year. This is in accordance with Operational Guideline 2016-9 "Meat Goat CFO Determinations". In an email from August 19, 2025, the applicant updated the depth of the catch basin to 3 m instead of the initially proposed 4 m.

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If a new facility is replacing an old facility, please explain what will happen to the old facility and when.

☒ N/A

Construction completion date for proposed facilities Fall 2027

Additional information

Livestock numbers: Complete only if livestock numbers are different from what was identified in the Part 1 application. Note: if livestock numbers increase in your Part 2 application, a new Part 1 application must be submitted which may result in a loss of priority for minimum distance separation (MDS).

Livestock category and type (Available in the Schedule 2 of the Part 2 Matters Regulation)	Permitted number	Proposed increase or decrease in number (if applicable)	Total
nanntes and billy	0	650	650
Feeder goats	0	1500	1,500
AO Comment: Animal numbers have not changed from Part 1 application.			



Kidding barn (not a CFO facility)

Row 1 with shelters

Row 3 with shelters

Row 2 with shelters

Proposed area for catch basin

Proposed area for new pens

Google Earth

Part 2 – Technical Requirements

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

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 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 depopulate the CFO and/or to cease further construction, or to remove "works" or "undertakings" (as defined in the *Water Act*).
6. **AS 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 14 day of April, 2025.

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 depopulate the CFO and/or to cease further construction, or to remove "works" or "undertakings" (as defined in the *Water Act*).
6. **AS 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

AO Comment: To be confirmed by applicant with Raymond Irrigation District.



Water Well Drilling Report

[View in Imperial](#) [Export to Excel](#)

GIC Well ID 121804
GoA Well Tag No.
Drilling Company Well ID
Date Report Received 1975/07/04

GOWN ID

The driller supplies the data contained in this report. The Province disclaims responsibility for its accuracy. The information on this report will be retained in a public database.

Well Identification and Location										Measurement in Metric
Owner Name GOLDMAN, PETER		Address STIRLING		Town		Province		Country	Postal Code	
Location	1/4 or LSD NE	SEC 5	TWP 7	RGE 19	W of MER 4	Lot	Block	Plan	Additional Description	
Measured from Boundary of _____ m from _____ _____ m from _____					GPS Coordinates in Decimal Degrees (NAD 83) Latitude <u>49.534396</u> Longitude <u>-112.539013</u> How Location Obtained Map			Elevation _____ m How Elevation Obtained Not Obtained		

Drilling Information	
Method of Drilling Rotary	Type of Work New Well
Proposed Well Use Domestic	

Formation Log			Measurement in Metric
Depth from ground level (m)	Water Bearing	Lithology Description	
0.30		Topsoil	
60.96		Blue Clay	
73.15		Shale	
79.25		Sandstone	

Yield Test Summary			Measurement in Metric
Recommended Pump Rate <u>0.00</u> L/min			
Test Date	Water Removal Rate (L/min)	Static Water Level (m)	
1974/12/23	22.73	21.34	

Well Completion				Measurement in Metric
Total Depth Drilled	Finished Well Depth	Start Date	End Date	
79.25 m		1974/12/20	1974/12/23	
Borehole				
Diameter (cm)	From (m)	To (m)		
0.00	0.00	79.25		
Surface Casing (if applicable)		Well Casing/Liner		
		Unknown		
Size OD :	<u>0.00</u> cm	Size OD :	<u>11.43</u> cm	
Wall Thickness :	<u>0.000</u> cm	Wall Thickness :	<u>0.478</u> cm	
Bottom at :	<u>0.00</u> m	Top at :	<u>0.00</u> m	
		Bottom at :	<u>79.25</u> m	
Perforations				
From (m)	To (m)	Diameter or Slot Width (cm)	Slot Length (cm)	Hole or Slot Interval(cm)
Perforated by Unknown				
Annular Seal Cement/Grout				
Placed from <u>0.00</u> m to <u>0.00</u> m				
Amount _____				
Other Seals				
Type		At (m)		
Screen Type				
Size OD : <u>0.00</u> cm				
From (m)	To (m)	Slot Size (cm)		
Attachment _____				
Top Fittings _____		Bottom Fittings _____		
Pack				
Type	<u>Pea Gravel</u>	Grain Size _____		
Amount	<u>4.00</u> Yards			

Contractor Certification	
Name of Journeyman responsible for drilling/construction of well UNKNOWN NA DRILLER	Certification No 1
Company Name UNKNOWN DRILLER	Copy of Well report provided to owner Date approval holder signed



Water Well Drilling Report

[View in Imperial](#) [Export to Excel](#)

GIC Well ID 121804
GoA Well Tag No.
Drilling Company Well ID
Date Report Received 1975/07/04

GOWN ID

The driller supplies the data contained in this report. The Province disclaims responsibility for its accuracy. The information on this report will be retained in a public database.

Well Identification and Location										Measurement in Metric
Owner Name		Address		Town		Province		Country	Postal Code	
GOLDMAN, PETER		STIRLING								
Location	1/4 or LSD	SEC	TWP	RGE	W of MER	Lot	Block	Plan	Additional Description	
	NE	5	7	19	4					
Measured from Boundary of					GPS Coordinates in Decimal Degrees (NAD 83)					
_____ m from					Latitude 49.534396 Longitude -112.539013					Elevation _____ m
_____ m from					How Location Obtained					How Elevation Obtained
					Map					Not Obtained

Additional Information										Measurement in Metric
Distance From Top of Casing to Ground Level _____ cm										
Is Artesian Flow _____										Is Flow Control Installed _____
Rate _____ L/min										Describe _____
Recommended Pump Rate _____ 0.00 L/min										Pump Installed _____ Depth _____ m
Recommended Pump Intake Depth (From TOC) _____ 73.15 m										Type _____ Make _____ H.P. _____
										Model (Output Rating) _____
Did you Encounter Saline Water (>4000 ppm TDS) _____										Depth _____ m Well Disinfected Upon Completion _____
Remedial Action Taken _____										Gas _____ Depth _____ m Geophysical Log Taken _____
										Submitted to ESRD _____
Additional Comments on Well _____										Sample Collected for Potability _____ Submitted to ESRD _____
DRILLER REPORTS MEDIUM HARD WATER										

Yield Test			Taken From Ground Level	Measurement in Metric
			Depth to water level	
Test Date	Start Time	Static Water Level		
1974/12/23	12:00 AM	21.34 m		
Method of Water Removal			Pumping (m)	Elapsed Time
				Minutes:Sec
Type Air				Recovery (m)
Removal Rate 22.73 L/min				
Depth Withdrawn From 0.00 m				
If water removal period was < 2 hours, explain why				

Water Diverted for Drilling		
Water Source	Amount Taken	Diversion Date & Time
	L	

Contractor Certification	
Name of Journeyman responsible for drilling/construction of well	Certification No
UNKNOWN NA DRILLER	1
Company Name	Copy of Well report provided to owner Date approval holder signed
UNKNOWN DRILLER	

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NRCB USE ONLY

WATER WELL AND SURFACE WATER INFORMATION

Well IDs: 121804 (only used to determine UGR) _____

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

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

Water wells ☒ N/A

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

Surface water ☒ N/A

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

Water Well Exemption Screening Tool ☒ N/A

Water Well ID	Preliminary Screening Score	Secondary Screening Score	Facility

Groundwater or surface water related comments:

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GENERAL ENVIRONMENTAL INFORMATION

(complete this section for the worst case of the existing facility which is the closest to water bodies or water wells and for each of the proposed facilities)

Facility description / name (as indicated on site plan)

Existing: Rows 1 2 3

Proposed 1: catch basin

Proposed 2: new pens

Proposed 3: _____

Facility and environmental risk information		Facilities				NRCB USE ONLY	
		Existing	Proposed 1	Proposed 2	Proposed 3	Meets requirements	Comments
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?	<input checked="" type="checkbox"/> > 1 m <input type="checkbox"/> ≤ 1 m	<input checked="" type="checkbox"/> > 1 m <input type="checkbox"/> ≤ 1 m	<input checked="" type="checkbox"/> > 1 m <input type="checkbox"/> ≤ 1 m	<input type="checkbox"/> > 1 m <input type="checkbox"/> ≤ 1 m	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> YES with exemption	Not in a known flood plain
	How many springs are within 100 m of the manure storage facility or manure collection area?	0	0	0		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> YES with exemption	None observed during site visit
Surface water information	How many water wells are within 100 m of the manure storage facility or manure collection area?	0	0	0		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> YES with exemption	None on site
	What is the shortest distance from the manure collection or storage facility to a surface water body? (e.g., lake, creek, slough, seasonal)	130 m	130 m	130 m		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> YES with exemption	150 m to marsh north of Row 3 pens
Groundwater information	What is the depth to the water table?		6 m	6 m		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> YES with exemption	6 m in attached drilling report
	What is the depth to the groundwater resource/aquifer you draw water from?	30 m	30 m	30 m		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> YES with exemption	60.96 m in WW ID#121804

Additional information (attach supporting information, e.g. borehole logs, records, etc. you consider relevant to your application)

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NRCB USE ONLY

ENVIRONMENTAL RISK SCREENING INFORMATION

ERST for proposed facilities

Facility	Groundwater score	Surface water score	File number
Catch Basin	Low	Low	LA24022
New Pens	Low	Low	LA24022
Row 1 with Shelters	Low	Low	LA24022
Row 2 with Shelters	Low	Low	LA24022
Row 3 with Shelters	Low	Low	LA24022

ERST for existing facilities

Facility	Groundwater score	Surface water score	File number
N/A, application is for a new CFO			

ERST related comments:

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

	Neighbour name(s)	Legal land description	Distance (m)	NRCB USE ONLY			
				Zoning (LUB) category	MDS category (1-4)	Distance (m)	Waiver attached (if required)
1	John McKee	NE 9 719 W4	3300 ft	Ag	1	882	N/A
2	Clarence Kisser	NW 3 719 W4	4300 ft	Ag	1	935	N/A

LAND BASE FOR MANURE AND COMPOST APPLICATION (complete only if an increase in livestock or manure production will occur)

Name of land owner(s)*	Legal land description	Usable area** (ha)	Soil zone ***	NRCB USE ONLY	
				Usable area (ha)	Agreement attached (if required)
Alfred Beckman	South half 26 719 S	320 acres	dry	320 acres	Yes
Mark Beckman	South West 107 19	50 acres	irrigated	50 acres	N/A
Total				320 acres dark brown + 50 acres irrigated	

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

** Available manure spreading area (excluding setback areas from residences, common bodies of water, water wells, etc. as identified in Agdex 096-5 Manure Spreading Regulations)

*** Brown, dark brown, black, grey wooded, or irrigated

Additional information (attach any additional information as required)

AO Comment: Numbers next to neighbours listed correspond with numbers on the map on the following page.

Township Rd 72A

Township Rd 72

Township Rd 72

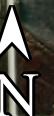
1

Hillbilly Farm

2

Google Earth

Image © 2025 Airbus



1 km

1/4/2022 TD Page 11 of 32

Manure Spreading Agreement

This agreement is between Mark Beckman, manure producer, and
Art Beckman manure receiver.

Length of agreement: This agreement is valid for a time period of 10
(minimum of one year)

Legal land location	Soil type ¹	Acres suitable for manure spreading ²
South half 26-7-14	dryland Dark Brown	320 acres

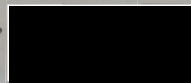
¹ Soil type choices: Dark brown and brown, Grey wooded, Black, Irrigated.

² Land within required setbacks from water bodies, water wells, residences, etc. is not to be included.

Other comments:

Manure producer (Confined Feeding Operation) Legal Land Location SW-10-7-14 W4

April 15 2025
Date of signing

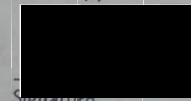

Signature

Mark
Print name

Corporate name(if appl)

Manure Receiver – Landowner(s)³

April 15 2025
Date of signing


Signature

ART BECKMAN
Print name

Corporate name(if appl)

Date of signing

Signature

Print name

Corporate name(if appl)

³ All registered owners of land, or authorized signing authorities must sign.

Name **Henk Beekman**
Address
Legal Land
Location **SW 10-7-19 W4**

MDS Spreadsheet based on 2006 AOPA Regulations

Category of Livestock	Type of Livestock	Factor A	Technology Factor	MU	LSU Factor	Number of Animals	LSU
Feedlot Animals	Beef Cows/Finishers (900+ lbs)	0.700	0.700	0.910	0.4459		-
	Beef Feeders (450 - 900 lbs)	0.700	0.700	0.500	0.2450		-
	Beef Feeder Calves (<550 lbs)	0.700	0.700	0.275	0.1348		-
	Horses - PMU	0.650	0.700	1.000	0.4550		-
	Horses - Feeders > 750 lbs	0.650	0.700	1.000	0.4550		-
	Horses - Foals < 750 lbs	0.650	0.700	0.300	0.1365		-
	Mules	0.600	0.700	1.000	0.4200		-
	Donkeys	0.600	0.700	0.670	0.2814		-
	Bison	0.600	0.700	1.000	0.4200		-
Dairy (*count lactating cows only)	Other						-
	Free Stall – Lactating Cows with all associated dries, heifers, and calves*	0.800	1.100	2.000	1.7600		-
	Free Stall – Lactating Cows with Dry Cows only*	0.800	1.100	1.640	1.4432		-
	Free Stall – Lactating Cows only	0.800	1.100	1.400	1.2320		-
	Tie Stall – Lactating Cows only	0.800	1.000	1.400	1.1200		-
	Loose Housing – Lactating Cows only	0.800	1.000	1.400	1.1200		-
	Dry Cow	0.800	0.700	1.000	0.5600		-
	Replacements – Bred Heifers (Breeding to Calving)	0.800	0.700	0.875	0.4900		-
	Replacements - Growing Heifers (350 lbs to breeding)	0.800	0.700	0.525	0.2940		-
Swine Liquid (*count sows only)	Calves (< 350 lbs)	0.800	0.700	0.200	0.1120		-
	Other						-
	Farrow to finish *	2.000	1.100	1.780	3.9160		-
	Farrow to wean *	2.000	1.100	0.670	1.4740		-
	Farrow only *	2.000	1.100	0.530	1.1660		-
	Feeders/Boars	2.000	1.100	0.200	0.4400		-
	Growers/Roasters	2.000	1.100	0.118	0.2600		-
	Weaners	2.000	1.100	0.055	0.1210		-
	Other						-
Swine Solid (*Count sows only)	Farrow to finish *	2.000	0.800	1.780	2.8480		-
	Farrow to wean *	2.000	0.800	0.670	1.0720		-
	Farrow only *	2.000	0.800	0.530	0.8480		-
	Feeders/Boars	2.000	0.800	0.200	0.3200		-
	Growers/Roasters	2.000	0.800	0.118	0.1888		-
	Weaners	2.000	0.800	0.055	0.0880		-
	Other						-
	Chicken - Breeders - Solid	1.000	0.700	0.010	0.0070		-
	Chicken - Layers - Liquid (includes associated pullets)	2.000	1.100	0.008	0.0176		-
Poultry	Chicken - Layers - (Belt Cage)	2.000	0.700	0.008	0.0112		-
	Chicken - Layers - (Deep Pit)	2.000	0.700	0.008	0.0112		-
	Chicken - Pullets/Broilers	1.000	0.700	0.002	0.0014		-
	Turkey - Toms/Breeders	1.000	0.700	0.020	0.0140		-
	Turkey - Hens (light)	1.000	0.700	0.013	0.0091		-
	Turkey - Broilers	1.000	0.700	0.010	0.0070		-
	Ducks	1.000	0.700	0.010	0.0070		-
	Geese	1.000	0.700	0.020	0.0140		-
	Other						-
Sheep and Goats	Sheep - Ewes/Rams	0.600	0.700	0.200	0.0840		-
	Sheep - Ewes with lambs	0.600	0.700	0.250	0.1050		-
	Sheep - Lambs	0.600	0.700	0.050	0.0210		-
	Sheep - Feeders	0.600	0.700	0.100	0.0420		-
	Goats - Meat/Milk (per Ewe)	0.700	0.700	0.170	0.0833		-
	Goats - Nannies/Billies	0.700	0.700	0.140	0.0686	650	44.6
	Goats - Feeders	0.700	0.700	0.077	0.0377	1,500	56.6
	Other						-
	Elk	0.600	0.700	0.600	0.2520		-
Cervid	Deer	0.600	0.700	0.200	0.0840		-
	Other						-
	Other						-
Wild Boar	Feeders	2.000	0.800	0.140	0.2240		-
	Sow (farrowing)	2.000	0.800	0.371	0.5936		-
	Other						-

Total 101.2

For New Operations

Dispersion Factor 1

Category	Odour Objective	Distance	
		Feet	Metres
1	41.04	726	221
2	54.72	968	295
3	68.4	1,210	369
4	109.44	1,937	590

For Expanding Operations

Dispersion Factor 1
Expansion Factor 0.77

Category	Odour Objective	Distance	
		Feet	Metres
1	41.04	559	170
2	54.72	746	227
3	68.40	932	284
4	109.44	1,491	455

Name Henk Beekman
Address
Legal Land
Location SW 10-7-19 W4

0

Landbase Requirements (hectares) based on 2006 AOPA requirements

Category of Livestock	Type of Livestock	Number of Animals	Dark Brown & Brown (ha)	Grey Wooded (ha)	Black (ha)	Irrigated (ha)
Feedlot Animals	Cows/Finishers (900+ lbs)	0.0	0.0	0.0	0.0	0.0
	Feeders (450 - 900 lbs)	0.0	0.0	0.0	0.0	0.0
	Feeder Calves (<550 lbs)	0.0	0.0	0.0	0.0	0.0
	Horses - PMU	0.0	0.0	0.0	0.0	0.0
	Horses - Feeders > 750 lbs	0.0	0.0	0.0	0.0	0.0
	Horses - Foals < 750 lbs	0.0	0.0	0.0	0.0	0.0
	Mules	0.0	0.0	0.0	0.0	0.0
	Donkeys	0.0	0.0	0.0	0.0	0.0
	Bison	0.0	0.0	0.0	0.0	0.0
	Other	0.0				
Dairy (*count lactating cows only)	Free Stall – Lactating Cows with all associated dries, heifers, and calves*	0.0	0.0	0.0	0.0	0.0
	Free Stall – Lactating Cows with Dry Cows only *	0.0	0.0	0.0	0.0	0.0
	Free Stall – Lactating Cows only*	0.0	0.0	0.0	0.0	0.0
	Tie Stall – Lactating Cows only	0.0	0.0	0.0	0.0	0.0
	Loose Housing – Lactating Cows only	0.0	0.0	0.0	0.0	0.0
	Dry Cow (Solid manure)	0.0	0.0	0.0	0.0	0.0
	Dry Cow (Liquid manure)	0.0	0.0	0.0	0.0	0.0
	Replacements – Bred Heifers (Breeding to Calving)	0.0	0.0	0.0	0.0	0.0
	Replacements - Growing Heifers (350 lbs to breeding)	0.0	0.0	0.0	0.0	0.0
	Calves (< 350 lbs)	0.0	0.0	0.0	0.0	0.0
Swine Liquid (*count sows only)	Other	0.0				
	Farrow to finish *	0.0	0.0	0.0	0.0	0.0
	Farrow to wean *	0.0	0.0	0.0	0.0	0.0
	Farrow only *	0.0	0.0	0.0	0.0	0.0
	Feeders/Boars	0.0	0.0	0.0	0.0	0.0
	Growers/Roasters	0.0	0.0	0.0	0.0	0.0
	Weaners	0.0	0.0	0.0	0.0	0.0
Swine Solid (*Count sows only)	Other	0.0				
	Farrow to finish *	0.0	0.0	0.0	0.0	0.0
	Farrow to wean *	0.0	0.0	0.0	0.0	0.0
	Farrow only *	0.0	0.0	0.0	0.0	0.0
	Feeders/Boars	0.0	0.0	0.0	0.0	0.0
	Growers/Roasters	0.0	0.0	0.0	0.0	0.0
	Weaners	0.0	0.0	0.0	0.0	0.0
Poultry	Other	0.0				
	Chicken - Breeders - Solid	0.0	0.0	0.0	0.0	0.0
	Chicken - Layers - Liquid (includes associated pullets)	0.0	0.0	0.0	0.0	0.0
	Chicken - Layers - (Belt Cage)	0.0	0.0	0.0	0.0	0.0
	Chicken - Layers - (Deep Pit)	0.0	0.0	0.0	0.0	0.0
	Chicken - Pullets/Broilers	0.0	0.0	0.0	0.0	0.0
	Turkey - Toms/Breeders	0.0	0.0	0.0	0.0	0.0
	Turkey - Hens (light)	0.0	0.0	0.0	0.0	0.0
	Turkey - Broilers	0.0	0.0	0.0	0.0	0.0
	Ducks	0.0	0.0	0.0	0.0	0.0
Goats and Sheep	Geese	0.0	0.0	0.0	0.0	0.0
	Other	0.0				
	Sheep - Ewes/Rams	0.0	0.0	0.0	0.0	0.0
	Sheep - Ewes with lambs	0.0	0.0	0.0	0.0	0.0
	Sheep - Lambs	0.0	0.0	0.0	0.0	0.0
	Sheep - Feeders	0.0	0.0	0.0	0.0	0.0
	Goats - Meat/Milk (per Ewe)	0.0	0.0	0.0	0.0	0.0
	Goats - Nannies/Billies	650.0	10.5	8.7	6.5	5.2
Cervid	Goats - Feeders	1500.0	55.5	46.5	34.5	27.0
	Other	0.0				
	Elk	0.0	0.0	0.0	0.0	0.0
	Deer	0.0	0.0	0.0	0.0	0.0
Wild Boar	Other	0.0				
	Feeders	0.0	0.0	0.0	0.0	0.0
	Sow (farrowing)	0.0	0.0	0.0	0.0	0.0
Total Hectares			66	55.2	41.0	32.2
Total Acres			163	136.4	101.3	79.6

Part 2 – Technical Requirements

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

NRCB USE ONLY

MINIMUM DISTANCE SEPARATION

Methods used to determine distance (if applicable): Google Earth

Margin of error (if applicable): +/- 5 m

Requirements (m): Category 1: 221 Category 2: 295 Category 3: 369 Category 4: 590

Technology factor: ☐ YES ☒ NO

Expansion factor: ☐ YES ☒ NO

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

LAND BASE FOR MANURE AND COMPOST APPLICATION

Land base required: 163 acres brown/dark brown

Land base listed: 320 acres dark brown + 50 acres irrigated

Area not suitable: Already accounted for

Available area 320 acres dark brown + 50 acres irrigated Requirement met: ☒ YES ☐ NO

Land spreading agreements required: ☒ YES ☐ NO

Manure management plan: ☐ YES ☒ NO If yes, plan is attached: ☐

PLANS

Submitted and attached construction plans: ☐ YES ☒ NO

Submitted aerial photos: ☒ YES ☐ NO

Submitted photos: ☐ YES ☒ NO

GRANDFATHERING

Already completed: ☐ YES ☐ NO ☒ N/A

If already completed, see _____

Part 2 — Technical Requirements

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

RUNOFF CONTROL CATCH BASIN: Naturally occurring protective layer

(complete a copy of this section for **EACH proposed** runoff control catch basin with a naturally occurring protective layer)

Facility description / name (as indicated on site plan)

1. Catch basin
2. _____
3. _____

Determination of runoff area

Provide a plan and show how you calculated the area contributing to runoff for each catch basin

pens and area around pens

Catch basin capacity

	Length (m)	Width (m)	Total depth (m)	Depth below ground level (m)	Slope run:rise			NRCB USE ONLY Calculated storage capacity (excl. 0.5 m freeboard) (m³)
					Inside end walls	Inside side walls	Outside walls	
1.	<u>48</u>	<u>20</u>	4 3	4 3	<u>3:1</u>	<u>3:1</u>	<u>N/A</u>	<u>938 m³</u>
2.								
3.								
TOTAL CAPACITY								<u>938 m³</u>

Naturally occurring protective layer details

Thickness of naturally occurring protective layer	<u>2</u> (m)	Provide details (as required)	
Soil texture	<u>27</u> % sand	<u>39</u> % silt	<u>35</u> % clay
Hydraulic conductivity - naturally occurring protective layer	Depth and type of soil tested <u>2-5 m clay</u>	Hydraulic conductivity (cm/s) <u>4.8×10^{-8} cm/s</u>	Describe test standard used <u>modified falling headings</u>

Catch Basin – Design and management requirements can be found in Technical Guideline Agdex 096-101

If soil info differs per facility include additional soils page.

NRCB USE ONLY

Requirements met: ☒ YES ☐ NO
 Condition required: ☒ YES ☐ NO
 Report attached: ☒ YES ☐ NO

AO Comment: In an email from August 19, 2025, the applicant updated the depth of the catch basin to 3 m.

Part 2 — Technical Requirements

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

RUNOFF CONTROL CATCH BASIN: Naturally occurring protective layer (cont.)

NRCB USE ONLY

Catch basin calculator. Total volume @ freeboard level: 914 m³ Runoff capacity requirements met: ☒ YES ☐ NO

Calculation of the volume attached: ☒ YES ☐ NO

Depth to water table: 6 m below grade Requirements met: ☒ YES ☐ NO

Depth to uppermost groundwater resource: 73.15 m below grade Requirements met: ☒ YES ☐ NO

ERST completed: ☒ See ERST page for details

Protective layer specification comments (e.g. sand lenses; layering uniform or irregular; number and location of boreholes):

AO Comment: April 4, 2025, JLECS report shows an approximately 2 m thick naturally occurring protective layer with a hydraulic conductivity of 4.8×10^{-8} cm/s.

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

Catch Basin Storage Volume Calculator

Construction Dimensions of Catch Basin

* Only cells in blue can be changed.

Overall Dimensions of Catch Basin

Total Length* ₄	48.0	m
Total Width* ₄	20.0	m
Total Depth* ₄	3.0	m
Design Capacity Depth	2.50	m
End Slope* ₄	3	run:rise
Side Slope* ₄	3	run:rise
Length of Bottom	30.0	m
Width of Bottom	2.0	m

Capacity @ top of Bank 1,368 m³

Design Capacity of Catch Basin (freeboard level)

Length (design capacity depth)	45.0	m
Width (design capacity depth)	17.0	m
Total Depth	3.0	m
Design Capacity Depth	2.50	m
End Slope	3	run:rise
Side Slope	3	run:rise

Design Capacity (freeboard level) 938 m³

level) 765 m²

Catch Basin Dimensions

157	ft
66	ft
10	ft
8	ft
3	run:rise
3	run:rise
3	run:rise
98	ft
7	ft

Capacity (@top)
48,310 ft³
300,918 Imp. Gal.

Design Capacity (freeboard level)

148	ft
56	ft
10	ft
8	ft
3	run:rise
3	run:rise
3	run:rise

33,108 ft³
206,221 Imp. Gal.
8,234 ft²

CFO Name ₁ Henk Beekman
Land Location ₁ SW 10-7-19 W4

Paved Runoff Catchment Area(s)

Area ₂	Length (m)	Width (m)	Area (m ²)
1			0.0
2			0.0
3			0.0
4			0.0
5			0.0
Total Area (m ²)			0

Unpaved Runoff Catchment Area(s)

Area ₂	Length (m)	Width (m)	Area (m ²)
6	15,256	1	15,256.0
7			0.0
8			0.0
9			0.0
10			0.0
Total Area (m ²)			15,256

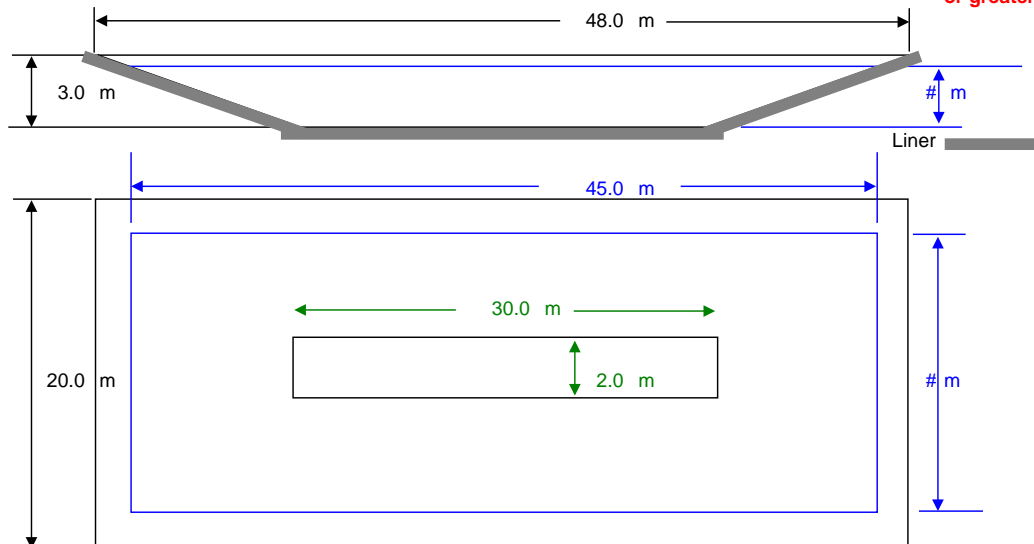
Rainfall (Select Town ₃)

Lethbridge 90
AOPA Design Rainfall 90 mm

Minimum Catchbasin Storage Volume Required

892 m³ ** 31517.492 ft³
196317.2 Imp. Gal.

** Design capacity of catch basin should be equal to or greater than, minimum storage volume required.



Lines in Black - Overall catch basin dimensions
Lines in Blue - Design capacity depth dimensions (excludes freeboard)

NTS - Not To Scale

Part 2 — Technical Requirements

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

NRCB USE ONLY	
RUNOFF CONTROL CATCH BASIN CAPACITY SUMMARY (if applicable)	
Facility 1	
Name / description Catch Basin	Capacity 938 m³
Facility 2	
Name / description	Capacity
Facility 3	
Name / description	Capacity
Facility 4	
Name / description	Capacity
TOTAL CAPACITY	938 m³
RUNOFF VOLUME FROM CONTRIBUTING AREAS	892 m³
MEETS AOPA RUNOFF CONTROL VOLUME REQUIREMENTS	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO

Part 2 — Technical Requirements

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

SOLID MANURE, COMPOST, & COMPOSTING MATERIALS: Barns, feedlots, & storage facilities - Naturally occurring protective layer

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

Facility description / name (as indicated on site plan)

1. New Pens
2. ~~barn 2 dirt floor~~

Manure storage capacity

	Length (m)	Width (m)	Depth below ground level (m)	NRCB USE ONLY Estimated storage capacity (m ³)
1.	<u>61</u>	<u>31</u>	<u>0</u>	
2.	34	11	0	
TOTAL CAPACITY				

☒ I plan to use a short-term solid manure storage (STMS) as part of my manure storage and handling plan for this CFO. (The AOPA requirements for STMS are set out in the NRCB [Short-Term Solid Manure Storage Requirements Fact Sheet](#).)

Surface water control systems

Describe the run-on and runoff control system

run off will go to catch basin

Naturally occurring protective layer details

Thickness of naturally occurring protective layer	<u>3</u> (m)	Provide details (as required)		
Soil texture	<u>27</u> % sand	<u>34</u> % silt	<u>35</u> % clay	
Hydraulic conductivity - naturally occurring protective layer	Depth and type of soil tested <u>3m clay</u>	Hydraulic conductivity (cm/s) <u>9.5×10^{-8} cm/s</u>	Describe test standard used <u>modified falling head</u>	

Additional information (attach copies of soil test reports)

NRCB USE ONLY

Requirements met: ☒ YES ☐ NO
Condition required: ☒ YES ☐ NO
Report attached: ☒ YES ☐ NO

Last updated: 31 Mar 2020

Page ____ of ____

NRCB USE ONLY

Part 2 – Technical Requirements

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

SOLID MANURE, COMPOST, & COMPOSTING MATERIALS: Barns, feedlots, & storage facilities - Naturally occurring protective layer

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

Facility description / name (as indicated on site plan)

1. Row 1 shelters
2. Row 2 shelters
- Row 3 shelters

Manure storage capacity

	Length (m)	Width (m)	Depth below ground level (m)	NRCB USE ONLY Estimated storage capacity (m ³)
1.	70	20	0	
2.	71	26	0	
	80	31	0	TOTAL CAPACITY

☒ I plan to use a short-term solid manure storage (STMS) as part of my manure storage and handling plan for this CFO. (The AOPA requirements for STMS are set out in the NRCB [Short-Term Solid Manure Storage Requirements Fact Sheet](#).)

Surface water control systems

Describe the run-on and runoff control system

run off will go to catch basin

Naturally occurring protective layer details

Thickness of naturally occurring protective layer	3 (m)			Provide details (as required)
Soil texture	27 % sand	34 % silt	35 % clay	
Hydraulic conductivity - naturally occurring protective layer	3m clay	9.5 x 10 ⁻⁸ cm/s	modified falling head	

Additional information (attach copies of soil test reports)

NRCB USE ONLY

Requirements met: ☒ YES ☐ NO
Condition required: ☐ YES ☒ NO
Report attached: ☒ YES ☐ NO

Part 2 – Technical Requirements

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

SOLID MANURE, COMPOST, & COMPOSTING MATERIALS: Barns, feedlots, & storage facilities - Naturally occurring protective layer (cont.)

NRCB USE ONLY

Nine month manure storage volume requirements met: ☐ YES ☒ YES With STMS ☐ NO

Depth to water table: 6 m below grade Requirements met: ☒ YES ☐ NO

Depth to uppermost groundwater resource: 73.15 m below grade Requirements met: ☒ YES ☐ NO

ERST completed: ☒ see ERST page for details

Surface water control systems

Requirements met: ☒ YES ☐ NO Details/comments:

AO Comment: All run-off directed to catch basin.

Naturally occurring protective layer details

Layer specification comments (e.g. sand lenses; layering uniform or irregular; number and location of boreholes):

AO Comment: April 4, 2025, JLECS report shows an approximately 1.6 m thick naturally occurring protective layer with a hydraulic conductivity of 9.5×10^{-8} cm/s.

Part 2 — Technical Requirements

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

NRCB USE ONLY

ALL SIGNATURES IN FILE

☒ YES ☐ NO

DATES OF APPROVAL OFFICER SITE VISITS

August 7, 2024	

CORRESPONDENCE WITH MUNICIPALITIES AND REFERRAL AGENCIES

Date deeming letters sent: April 23, 2025

Municipality: County of Warner

☒ letter sent ☒ response received ☒ written/email ☐ verbal ☐ no comments received

Alberta Health Services: ☒ N/A

☐ 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: Triple W Natural Gas Co-op Ltd., South East Alberta Water Co-op Ltd. ☐ N/A

☒ letter sent ☒ response received ☒ written/email ☐ verbal ☐ no comments received

Other: Raymond Irrigation District ☐ N/A

☒ letter sent ☐ response received ☐ written/email ☐ verbal ☒ no comments received



4 April 2025

J Lobbezoo Engineering & Consulting Services Ltd.

PO Box 96, Monarch, AB T0L1M0

JLECS File: P25010

Henk Beekman

PO Box 3766

Stirling, Alberta T0K 2E0

**Re: Geotechnical Review and Evaluation
 NRCB Permitting of Goat Pens and Catch Basin
 SW-10-007-19-W4M, near Stirling, Alberta**

As requested, J Lobbezoo Engineering & Consulting Services Ltd. (JLECS) has carried out a geotechnical review and evaluation of the above-captioned site relative to the required protection of the groundwater resource, as required by the Agricultural Operation Practices Act, AB Reg. 267/2001 (hereinafter referred to as "AOPA"). This letter describes the site soil conditions to support a permit application related to a series of existing pens and a proposed catch basin (or catchment area) at the above captioned site (refer to Figure 1, attached).

In order to demonstrate the suitability of the naturally existing soils for consideration as a naturally occurring protective layer to the groundwater resource, seven boreholes were advanced at the site on January 14, 2025. The boreholes were advanced at the approximate locations denoted as HB1-25 to HB7-25 on Figure 1, attached.

The boreholes were advanced by a truck-mounted drill rig owned and operated by Chilako Drilling Services and extended to depths of 3.0 m to 6.2 m below the existing grade. The boreholes were logged by Larry Delong of Chilako Drilling Services.

In general, the natural mineral soils encountered in the boreholes consisted of minor lacustrine clay and silty clay overlying stiff, medium plastic clay till. Minor sand lensing and saturated sandy soil was observed below about 6 m depth in borehole HB5-25. While groundwater (seepage) was identified in the borehole HB5-25 m below 6 m depth, no groundwater resource (as defined by the AOPA) was encountered within the upper 6 m at this site.

Samples of soil collected from the screened zones of boreholes HB1-25 and HB6-25, as well as samples from similar depths at the other boreholes were all subjected to grain size (texture) analyses, which was carried out by Down to Earth Laboratories in Lethbridge, Alberta. The lab report is attached, for reference. The results indicate a soil texture breakdown of:

Table 1: Soil Texture Analyses

Borehole/Depth	% Sand	% Silt	% Clay
HB1-25 / 2.5 – 3.0 m	42	30	28
HB2-25 / 2.5 – 3.0m	14	62	24
HB3-25 / 2.0 – 3.0m	35	31	34
HB4-25 / 2.0 – 3.0m	17	38	46
HB5-25 / 3.0 – 4.5m	30	27	43
HB6-25 / 3.0 – 4.5m	38	24	38
HB7-25 / 3.0 – 4.5m	10	28	32
<i>Average:</i>	27	34	35

To measure the *in situ* permeability of the subsurface soils, 50 mm diameter PVC monitoring wells were constructed in boreholes HB1-25 (pen area) and HB6-25 (catch basin area). Test well HB1-25 was screened from 2.3 m to 3.9 m depth while test well HB6-25 was screened from 1.9 m to 5.0 m depth. Well saturation of the 50 mm diameter monitoring wells was carried out by filling the monitoring wells to the top for several consecutive days. After three days of testing, a 24-hour water drop of 0.76 m was determined at test well HB1-25, and a 24-hour water drop of 0.60 was determined at test well HB6-25.

To calculate the permeability of the screened portion of the clay strata at the test well location, a modified falling head test (as outlined in the USBR Engineering Geology Field Manual Volume 2 [2001]) was used. The input variables and output data are outlined on the attached In Situ Permeability Test reports. The results of the permeability testing indicated an *in situ* hydraulic conductivity (k_s) of 9.5×10^{-8} cm/s at HB1-25, and an *in situ* hydraulic conductivity (k_s) of 4.8×10^{-8} cm/s at HB6-25.

Using the measured permeability of the clay at this site, the 1.6 m of clay screened at test hole HB1-25 is estimated to represent the equivalent of about 17 m of naturally occurring materials having a hydraulic conductivity of 1×10^{-6} cm/s (the reference standard in AOPA). Similarly, the 3.1 m of clay screened at test hole HB6-25 is estimated to represent the equivalent of about 67 m of naturally occurring materials having a hydraulic conductivity of 1×10^{-6} cm/s. This represents natural material protection in excess of the minimum requirements outlined by the AOPA for solid manure storage (minimum 2 m, Section 9.5-c), and catch basins (minimum 5 m, Section 9.5-b).

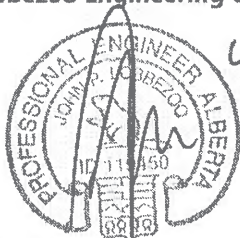
Conclusion

Based on the results of the current investigation, permeability testing, and our understanding of the site and development at the site, it is JLECS's opinion that the naturally occurring materials at the site satisfy the AOPA requirements for permitting the pens at catch basin at this location.

We trust that this report satisfies your present requirements. Should you have any questions, please contact the undersigned at your convenience.

Yours truly,

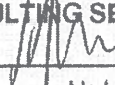
J Lobbezoo Engineering & Consulting Services Ltd.



John Lobbezoo, P.Eng.
Principal Geotechnical Engineer

Attachments

- Figure 1 Borehole Locations
- In Situ Permeability Test Calculations
- Down to Earth Soil Texture Results
- Soil Profile and Parent Material Description, Chilako Drilling Services

PERMIT TO PRACTICE	
J LOBBEZOO ENGINEERING & CONSULTING SERVICES LTD.	
RM SIGNATURE:	
RM APEGA ID #:	110450
DATE:	4 April 2025
PERMIT NUMBER: P016456	
The Association of Professional Engineers and Geoscientists of Alberta (APEGA)	



HB1-25

In Situ Permeability Test

Modified Falling Head Permeability Equation

$$K_s = \frac{r^2}{2\ell\Delta t} \left[\frac{\sinh^{-1} \frac{\ell}{r_e}}{2} \ln \left[\frac{2H_1 - \ell}{2H_2 - \ell} \right] - \ln \left[\frac{2H_1H_2 - \ell H_2}{2H_1H_2 - \ell H_1} \right] \right]$$

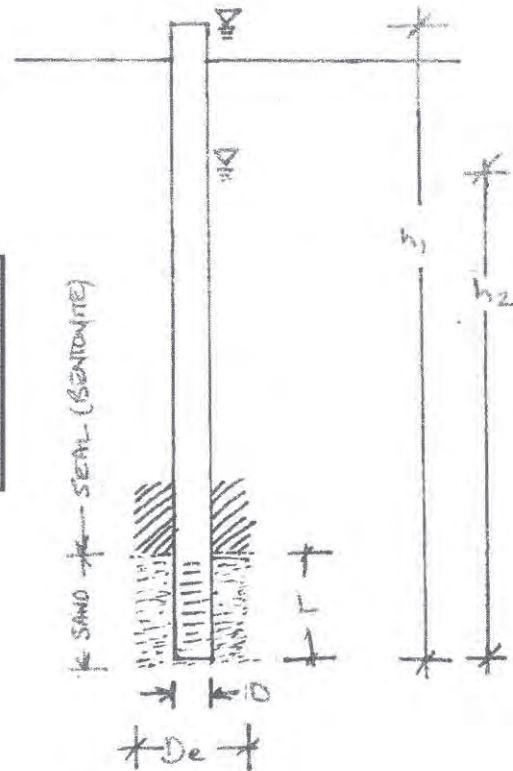
taken from USBR Engineering Geology Field Manual Volume 2 (2001)

HB-25 - Henk Beekman

JLECS File: P25010

INPUT VARIABLES	Terms	Value	Definition
	D	0.0520	diameter of standpipe (m)
	De	0.1500	diameter of borehole (m)
	L	1.60	length of sand section (m)
	h1	4.50	initial height of water above base of hole (m)
	h2	3.74	final height of water above base of hole (m)
	t	24.0	time of test (h)

$$k_s = 9.5E-08 \text{ cm/sec}$$



HB6-25

In Situ Permeability Test

Modified Falling Head Permeability Equation

$$K_s = \frac{r^2}{2\ell\Delta t} \left[\frac{\sinh^{-1} \frac{\ell}{r_e}}{2} \ln \left[\frac{2H_1 - \ell}{2H_2 - \ell} \right] - \ln \left[\frac{2H_1H_2 - \ell H_2}{2H_1H_2 - \ell H_1} \right] \right]$$

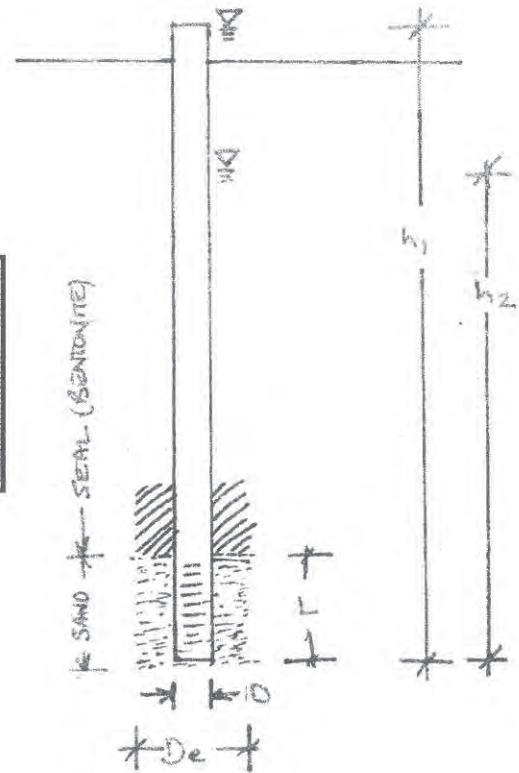
taken from USBR Engineering Geology Field Manual Volume 2 (2001)

HB-25 - Henk Beekman

JLECS File: P25010

INPUT VARIABLES	Terms	Value	Definition
	D	0.0520	diameter of standpipe (m)
	De	0.1500	diameter of borehole (m)
	L	3.10	length of sand section (m)
	h1	5.60	initial height of water above base of hole (m)
	h2	4.90	final height of water above base of hole (m)
	t	24.0	time of test (h)

$$k_s = 4.6E-08 \text{ cm/sec}$$





Down To Earth Labs Inc.

The Science of Higher Yields

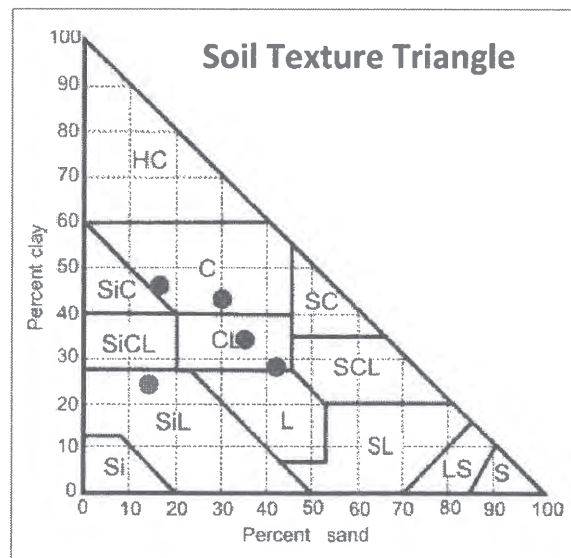
J. Lobbezoo Engineering +
Consulting Services
Box 96
Monarch, Alberta T0L 1M0

Report #: 202586
Report Date: 2025-02-18
Received: 2025-02-13
Completed: 2025-02-18
Test Done: ST

Project :
Beckman
PO:

3510 6th Ave North
Lethbridge, AB T1H 5C3
403-328-1133
www.downtoearthlabs.com
info@downtoearthlabs.com

		Sample ID: 250213O005	250213O006	250213O007	250213O008	250213O009
Cust. Sample ID:		HB1-25	HB2-25	HB3-25	HB4-25	HB5-25
Analyte Units		2.5-3.0	2.5-3.0	2.0-3.0	2.0-3.0	3.0-4.5
Sand	%	42.2	14.2	35.3	16.5	30.3
Silt	%	29.8	61.8	30.7	37.5	26.7
Clay	%	28.0	24.0	34.0	46.0	43.0
Soil Texture	-	Clay Loam	Silt Loam	Clay Loam	Clay	Clay





Down To Earth Labs Inc.

The Science of Higher Yields

J. Lobbezoo Engineering +
Consulting Services
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Monarch, Alberta T0L 1M0

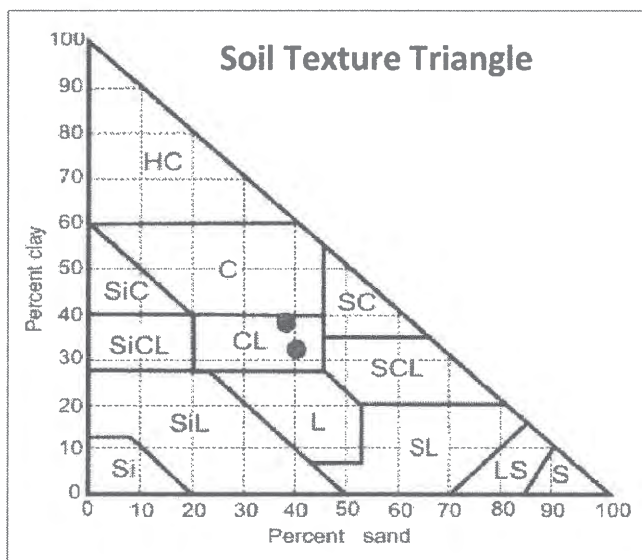
Report #: 202586
Report Date: 2025-02-18
Received: 2025-02-13
Completed: 2025-02-18
Test Done: ST

Project :
Beckman

3510 6th Ave North
Lethbridge, AB T1H 5C3
403-328-1133
www.downtoearthlabs.com
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Sample ID:	250213O010	250213O011
Cust. Sample ID:	HB6-25	HB7-25
Analyte	Units	3.0-4.5

Sand	%	38.4	40.4
Silt	%	23.6	27.6
Clay	%	38.0	32.0
Soil Texture	-	Clay Loam	Clay Loam



Raygan Boyce - Chemist

CHILAKO DRILLING SERVICES LTD

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SOIL PROFILE AND PARENT MATERIAL DESCRIPTION

Site Location: SW10-7-19W4, Hendrick Beekman

Date: 14-Jan-25

Hole #	Location	Depth	Texture	Moisture	Geological	Sample	Remarks
HB1-25	0390816 5488771	0-1.0	CL	SM	Fill		Topsoil layer @ 1.5m Stiff, med plastic, yellow brown 50mm H.C. Well installed to 3.9m BGS Screen: 3.9-2.4m Sand: 3.9-2.3m Bentonite: 2.3-0.5 Stickup: 0.6m
		1.0-1.5	FSCL	SM	Fill		
		1.5-3.9	CL-C	M	Till	2.5-3.0	
HB2-25	0390777 5488762	0-2.2	FSL	SM	Lac	1.0-2.0	V. Firm, med plastic, olive brown
		2.2-4.0	SiCL	M	Lac	2.5-3.5	
HB3-25	0390861 5488747	0-1.0	CL	M	Lac		Firm, med plastic, olive brown Stiff, med plastic, brown
		1.0-1.6	SiCL	VM	Lac		
		1.6-3.0	SiCL	M	Till	2.0-3.0	
HB4-25	0390922 5488809	0-0.15	CL	M	Topsoil		V. Firm, med plastic, olive brown Stiff, med plastic, oxidized
		0.15-1.5	SiCL	M	Lac		
		1.5-3.0	SiCL	M	Lac	2.0-3.0	
HB5-25	0390893 5588685 low area for catch basin proposed 1.0m basin	0-0.15	CL	SM	Topsoil		Stiff, med plastic, olive brown Stiff, med plastic, brown Stiff, med plastic, brown Stiff, med plastic, brown, sat sand lensing, free water
		0.15-1.0	CL	SM	Lac		
		1.0-2.6	CL-C	SM	Till		
		2.6-6.0	C	SM	Till	3.0-4.5	
		6.0-6.2	CL	Sat	Till		
HB6-25	0390866 5588702	0-0.15	CL	SM	Topsoil		Stiff, med plastic, brown 50mm H.C. Well installed to 5.0m BGS Screen: 5.0-2.0m Sand: 5.0-1.9m Bentonite: 1.9-0.0m Stickup: 0.6m
		0.15-0.9	CL-C	SM	Lac		
		0.9-5.0	C	M	Till	3.0-4.5	
HB7-25	0390895 5488711	0-0.15	CL	SM	Topsoil		Stiff, med plastic, olive brown Stiff, med plastic, brown Stiff, med plastic, brown
		0.15-1.7	SiCL	SM	Lac		
		1.7-4.5	CL-C	SM	Till	3.0-4.5	
		4.5-6.0	C	M	Till		

Legend: L Loam
C Clay
S Sand
Gr. Gravel
Si Silt
F Fine (sand)
VF Very Fine (sand)

Eg. VFSCCL = Very Fine Sandy Clay Loam