Technical Document LA25013

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
☒ Approval ☐ Registration ☐ Authorization ☐ Amendment	LA25013	N½ 6-11-7 W4M

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.

March 18 2025

Date of signing

[redacted]

Signature

Kody Traxel

Print name

Corporate name (if applicable)

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)
Feed Pens North (NE6-11) Area of 13,555.51 M2 Pens& Roads	(Odd Shape, attached)
Feed Pens South (NE6-11) Area of 4401.63 M2 #1	(Odd Shape, attached)
Feed Pens South (NW6-11) Area of 2177.43 M2 #2	(Odd Shape, attached)
New Catch Basin (NE6-11) (catch basin #2)	34M X 22M X 2.7M
Catch Basin (NW6-11) Increased to 1017 M3 from 725 M3 (catch basin #1)	82M X 15.8M X 2.5M

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

Existing facilities	Dimensions (m) (length, width, and depth)	NRCB USE ONLY
Feed Pens (Area of 13100M2)	155M X 90M (Approx)	Existing facilities confirmed
Catch Basin 725M3	15.5M X 82M X 1.5M Depth	

NRCB USE ONLY

Part 2 — Technical Requirements

NRCB Natural Resources Conservation Board

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

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 December 2026

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**
Beef Feeders	1000	800	1800
AO Comment: Applicant has indicated that they are applying to increase livestock numbers at this site by 800 beef feeders, rather than 1,000 beef feeders proposed in Part 1. Total livestock proposed for this site is 1,800 beef feeders.			

Kody Traxel Proposed CFO Figure 1

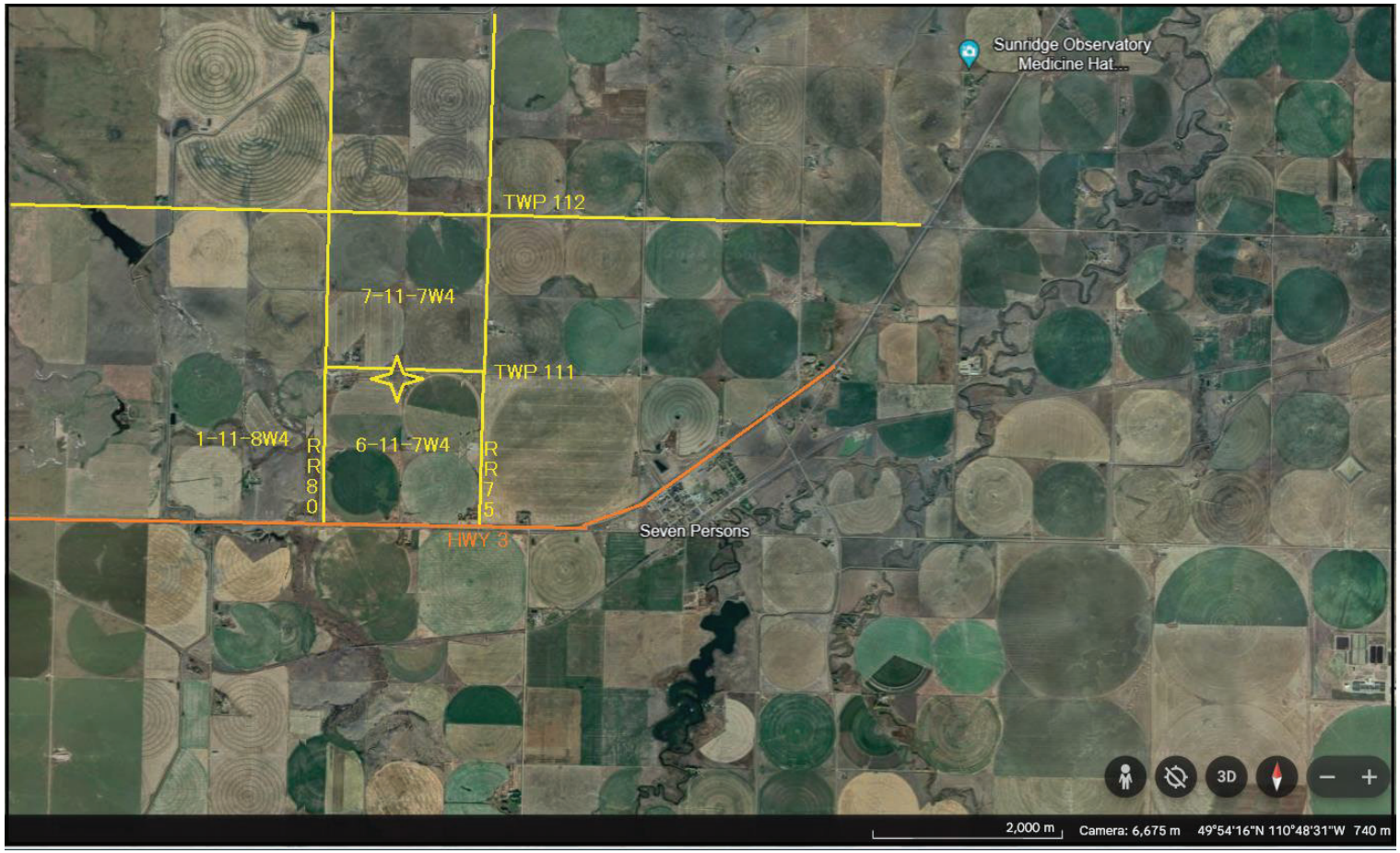
(NE CORNER) NW 6-11-7W4

NE 6-11-7W4

2.8KM West of Seven Persons, AB

Cypress County. Alberta

1800 HD Beef Feeders



Kody Traxel Proposed CFO Figure 2

NW 6-11-7W4 / NE 6-11-7W4 Overview Plans

Catch basin #1 (to be expanded)

Catch basin #2

Area of feed pens north

Cow/calf pen area

Area of feed pens south #1

Area of feed pens south #2

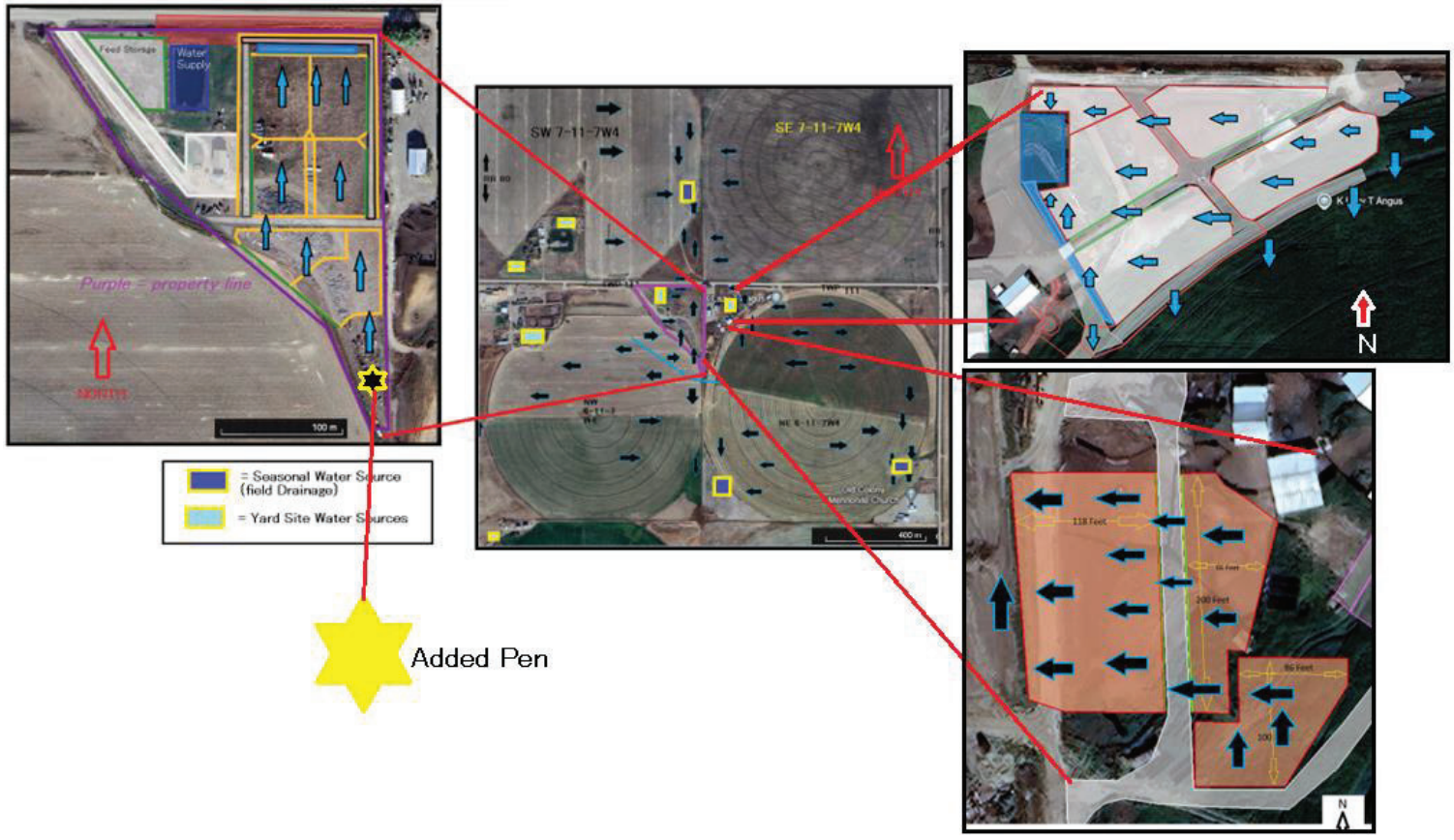
Property line between NW/NE 6-11-7 W4

Kody Traxel Proposed CFO Figure 2

Manure Collection Areas Map

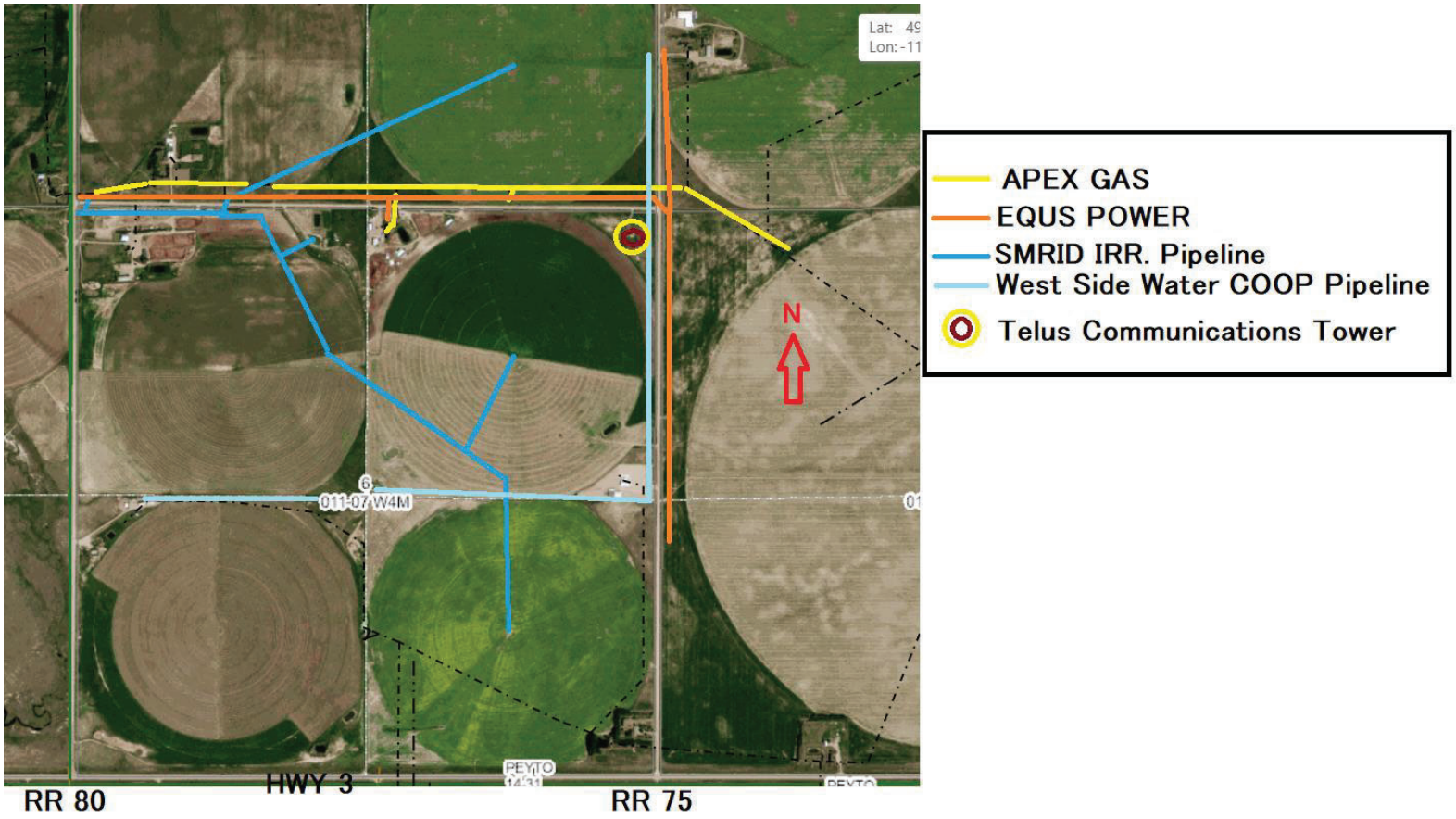
Kody Traxel Proposed CFO Figure 1

Run off patterns of area and site and surrounding water sources.



Kody Traxel Proposed CFO Figure 2

Utilities Map of Property and area.



Part 2 — Technical Requirements

NRCB Natural Resources Conservation Board

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 Protected Areas (EPA) 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 EPA 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** EPA'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 EPA 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 EPA'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.
7. **Provide:** Water licence application number(s) _____

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 EPA under the *Water Act* for the development or activity proposed in this AOPA application.
2. **Provide**: Water license number(s) or water conveyance agreement details _____

Water conveyance agreement acquired and will be increased with SMRID

Signed this 18 day of March, 2025. [redacted]

Signature of Applicant or Agent

WATER CONVEYANCE AGREEMENT - OTHER USES

(New Users)

IRRIGATION DISTRICTS ACT section 21(2) (a.1)

This Agreement dated the 10 day of September 2024

Between:

TRAXEL, KODY EMIL & RACHEL DEMAN
7515 TOWNSHIP ROAD 111
CYPRESS COUNTY, AB
T0K 1Z0

(the "Applicant")

-and-

ST. MARY RIVER IRRIGATION DISTRICT
525 – 40TH STREET SOUTH
LETHBRIDGE, AB
T1J 4M1

(the "District")

BACKGROUND:

1. The Applicant has applied to the District under section 21(2)(a.1) of the *Irrigation Districts Act* R.S.A. 2000, c. I-11 (the "Act"), to enter into a water conveyance agreement with the District to receive the delivery of water from the District for a purpose other than the use on irrigation acres, for use under an alternate parcel delivery agreement, rural water use, or household purposes.

2. The District is the holder of several Licences that authorize the District to deliver water for any of the purposes specified in the Licences.

3. Section 6 of the Act authorizes the District to deliver water in accordance with the terms and conditions of the Licences.

4. The Applicant proposes that the water will be used on the lands legally described as:

NW-06-11-07-W4TH
(the "Lands")

0. The Applicant has applied for the following volume of water: **4 acre-feet .**
(the "Annual Volume")

6. The Applicant proposes to use the water for the following purpose: **Agriculture Water** (the "Purpose")

7. The District is prepared to deliver the Annual Volume to the Applicant on the Lands subject to the terms and conditions contained in this Agreement.

AGREEMENT:

The parties agree as follows:

1. **DEFINITIONS -** In this Agreement:

a. "Agreement" means this Agreement including the Background;

b. "Annual Fee" means the fee applicable to this Agreement established by the District by a fee bylaw pursuant to section 115 of the Act;

c. "Capital Fee" means the fee applicable to this Agreement identified as such in a fee bylaw of the District pursuant to section 115 of the Act;

d. "Default" includes the happening of any of the following events:

i. failure of the Applicant to pay the Annual Fee by the due date;

ii. use of any portion of the Annual Volume for other than the Purpose;

iii. use of any portion of the Annual Volume on a parcel of land other than the Lands;

iv. failure of the Applicant to pay the Capital Charge;

v. the Applicant has used or is using any portion of the Annual Volume in a manner that is causing or may cause loss or damage to property or loss of injury to any person;

vi. waste all or any portion of the Annual Volume or permit all or any portion of the Annual Volume to escape from the Lands;

vii. the Applicant contravenes any provision of the Act or this Agreement; or

viii. the Applicant files an assignment in Bankruptcy;

e. "Delivery" means the delivery by the District of the Annual Volume to the Applicant;

f. "Irrigation Works" means Irrigation Works as defined in the Act;

g. "Licence" means the total of all the licences held by the District pursuant to the provisions of the *Water Act*, R.S.A. 2000 c. W-3;

h. "Point of Delivery" means that location on the Irrigation Works of the District at which the Annual Volume is delivered to the Applicant; and

i. "Turn out Structure" means such structure or works as are required by the District at the Point of Delivery to affect a conveyance the Annual Volume from the Point of Delivery to the Lands.

2. DELIVERY

a. The District agrees to deliver to the Applicant at the Point of Delivery the Annual Volume.

b. The Annual Volume shall be delivered at times, rates and amounts as the District may have water available and capacity in its Irrigation Works for such delivery.

c. The total volume of water delivered in each year under this agreement shall not exceed the Annual Volume.

3. PURPOSE - The Applicant will use the Annual Volume only for the Purpose and only on the Lands.

4. TERM - This Agreement shall continue in full force and effect until terminated by either party in accordance with its terms.

5. CONSIDERATION - In consideration for the Delivery the Applicant agrees to pay to the District fees as established by By-Law pursuant to section 115 of the Act as follows:

a. A one time fee in the sum of [redacted] (plus GST) (the "Capital Fees") to be paid by the Applicant at the time of the execution of this Agreement; and

b. An Annual Fee, due and payable on or before the 31st day of December in each year during the currency of this Agreement,

6. POINT OF DELIVERY - The District shall deliver the Annual Volume to the Point of Delivery. The water shall be removed from the Irrigation Works of the District at the Point of Delivery through the Turnout Structure. The Turnout Structure shall comply with the Districts standard specifications for such Irrigation Works, and shall be installed by the District, at the expense of the Applicant, and at all times material hereto shall be operated and maintained by the District.

7. WORKS - All turnout structures, equipment or works installed on the Irrigation Works of the District by the Applicant pursuant to this Agreement, shall become the property of the District.

8. METERING - The District may require the Applicant to supply, install and maintain a water measurement device approved by the District at the Point of Delivery or such other place as may be designated by the District for the purpose of measuring the amount of the Annual Volume delivered from time to time to the Applicant. The Applicant grants to the District the right and license during the currency of this Agreement to enter upon the Lands and to monitor the use of and record the data collected by the measurement device.

9. ORDERING WATER – The Applicant shall order the delivery of water and call for the termination of such delivery in accordance with the applicable bylaws and policies of the District.

10. INDEMNITY - The Applicant shall indemnify and keep indemnified the District against any liability for losses and expenses of whatever kind or nature, including the establishment or increase of a reserve to cover any possible liability and the fees and disbursements of counsel, and against any losses and expenses, which the District may incur in connection with any one or more of the following events or circumstances (the "Events"):

    a. by reason of having delivered to the Applicant all or any portion of the Annual Volume;

    b. by reason of the inability of the District to deliver to the Applicant all or any portion of the Annual Volume;

    c. by reason of the failure of the Applicant to perform or comply with the terms and conditions of this Agreement; and

    d. in enforcing any of the terms and conditions of this Agreement.

11. The District may pay or compromise any claim, demand, suit, judgment or expense arising out of the Events and any such payment or compromise shall be binding upon the Applicant and included as a liability, loss or expense covered by this indemnity, provided the same was made by the District in the reasonable belief that it was liable for the amount disbursed, or that such payment or compromise was reasonable under all the circumstances.

12. In the event of any such payment or compromise by the District, an itemized statement of it prepared and certified by the manager or assistant manager of the District, itemizing of such payment or compromise shall be prima facie evidence of the fact and amount of the liability of the Applicant under this Agreement, in respect of the payment or compromise

13. The District shall not be liable for any claim either direct, indirect or consequential, for loss, injury or damage whatsoever arising out of the failure or inability of the District to deliver all or any portion of the Annual Volume.

14. COMPLIANCE WITH LAWS - The Applicant shall comply with and be bound by the provisions of all statutes and regulations applicable to the privileges hereby granted, and with all by-laws of the District regulating the supply and distribution of water.

15. DEFAULT - In the event the Applicant is in Default of any of the provisions of this Agreement the District may forthwith stop delivery of water or terminate this agreement and in such case there shall be no abatement or refund of the Annual Fee paid by the Applicant to the District during the term of this Agreement prior to the stoppage or termination.

16. TERMINATION - The Applicant may terminate this Agreement upon providing 30 days written notice to the District of its intention to do so, and following the expiry of the 30 day notice period this Agreement shall be terminated and at an end and from that point forward the Applicant shall have no further right or entitlement to or claim to the delivery of the Annual Volume.

17. REFUND OF CAPITAL FEES - Upon termination of this Agreement pursuant to Clause 15 - Default, or Clause 16 - Termination, and provided the Applicant has paid all amounts due under this Agreement for Capital Fees and for Annual Fees, the District may pay to the Applicant such portion of the Capital Fees paid herein by the Applicant as the District may set out in a bylaw passed from time to time.

18. WATER QUALITY - The Applicant acknowledges that the Irrigation Works of the District is an open ditch system subjecting the water therein to contamination from all manner of environmental, human and animal factors and that the District does not regulate, control or monitor the quality of water in its Irrigation Works.

19. The Applicant acknowledges and agrees that the water in the Irrigation Works of the District may not be potable or may not be suitable for the Purpose, and that the District makes no representation, warranty or guarantee, express or implied that the water delivered under this Agreement is potable and fit for human or livestock consumption or suitable for the Purpose for use by the Applicant.

20. The Applicant agrees to accept the water delivered in the condition in which it may be found at the Point of Delivery from time to time and to provide such testing, treatment or filtering as the Applicant considers necessary for the use by the Applicant for the Purpose.

21. SEASONAL DELIVERY - The Applicant acknowledges that the District can deliver the Annual Volume only during the irrigation season and that the water conveyance capacity of the Irrigation Works of the District is limited and the District will deliver, from time to time, so much of the Annual Volume as it, in its exclusive discretion, deems advisable.

22. NON-ASSIGNMENT OR TRANSFER - Neither this Agreement nor any of the rights and privileges contained in this Agreement is assignable or transferable by the Applicant, in whole or in part, without prior written consent of the District.

IN WITNESS WHEREOF the District has by its proper officers signed this Agreement and has affixed the seal of the District hereto, and the Applicant has hereunto set his hand and seal on the day and year first above written.

ST. MARY RIVER IRRIGATION DISTRICT

[redacted]

St. Mary River Irrigation District

[redacted]

St. Mary River Irrigation District

DocuSigned by:

Witness to Signature of the Applicant

Applicant

Witness to Signature of the Applicant

Applicant

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 Natural Resources Conservation Board

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: Feed Pens /Catch Basin **Proposed 1:** Catch Basin

Proposed 2: Feed Pens NE 6-11-7W4 **Proposed 3:** Feed Pen NW 6-11-7W4

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?	☒ >1 m ☐ 1 m	☒ >1 m ☐ 1 m	☒ >1 m ☐ 1 m	☒ > 1 m ☐ 1 m	☑ YES ☐ NO ☐ YES with exemption	Not in a known flood plain
Surface water information	How many springs are within 100 m of the manure storage facility or manure collection area?	0	0	0	0	☑ YES ☐ NO ☐ YES with exemption	None observed during site visit
	How many water wells are within 100 m of the manure storage facility or manure collection area?	0	0	0	0	☑ YES ☐ NO ☐ YES with exemption	None observed during site visit or EPA database
	What is the shortest distance from the manure collection or storage facility to a surface water body? (e.g., lake, creek, slough, seasonal)	293M	347M	345M	498M	☑ YES ☐ NO ☐ YES with exemption	1 km to intermittent creek
Groundwater information	What is the depth to the water table?	9.2M +	9.2M +	9.2M +	9.2M +	☑ YES ☐ NO ☐ YES with exemption	>9.4 m below grade
	What is the depth to the groundwater resource/aquifer you draw water from?	9.2M +	9.2M +	9.2M +	9.2M +	☑ YES ☐ NO ☐ YES with exemption	20.71 m below grade in well ID 203542

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

Attached is a well report from 1978 on NW 6-11-7W4 and more info on Soils report attached.

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

ENVIRONMENTAL RISK SCREENING INFORMATION

ERST for **proposed** facilities

Facility	Groundwater score	Surface water score	File number
Feedlot pens - North	Low	Low	LA25013
Feedlot pens - South #1	Low	Low	LA25013
Feedlot pens - South #2	Low	Low	LA25013
Catch basin #2	Low	Low	LA25013

ERST for **existing** facilities

Facility	Groundwater score	Surface water score	File number
Existing feedlot pens	Low	Low	LA24001
Catch basin #1	Low	Low	LA24001

ERST related comments:

AO Comment: Water well not located on site of CFO, or within 400 m of CFO facilities. Only used for determining UGR.

Water Well Drilling Report

View in Metric | Export to Excel

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.

GOWN ID

GIC Well ID 203542
GoA Well Tag No.
Drilling Company Well ID
Date Report Received

Well Identification and Location

Measurement in Imperial

Owner Name	Address	Town	Province	Country	Postal Code
SEITZ, LINDA M.	SEVEN PERSONS				

Location	1/4 or LSD	SEC	TWP	RGE	W of MER	Lot	Block	Plan	Additional Description
	NW	6	11	7	4				

Measured from Boundary of
ft from
ft from

GPS Coordinates in Decimal Degrees (NAD 83)
Latitude 49.884008 Longitude -110.954282
How Location Obtained
Not Verified

Elevation 2550.00 ft
How Elevation Obtained
Estimated

Drilling Information

Method of Drilling
Rotary

Proposed Well Use
Domestic

Type of Work
New Well

Formation Log

Measurement in Imperial

Depth from ground level (ft)	Water Bearing	Lithology Description
10.00		Topsoil
32.00		Brown Sandy Clay
54.00		Gray Hard Clay
68.00		Sandy Clay
80.00		Gravel

Yield Test Summary

Measurement in Imperial

Recommended Pump Rate 0.00 igpm

Test Date	Water Removal Rate (igpm)	Static Water Level (ft)
1974/12/28	20.00	28.00

Well Completion

Measurement in Imperial

Total Depth Drilled	Finished Well Depth	Start Date	End Date
80.00 ft		1974/12/27	1974/12/28

Borehole

Diameter (in)	From (ft)	To (ft)
0.00	0.00	80.00

Surface Casing (if applicable)
Steel
Size OD : 4.50 in
Wall Thickness : 0.225 in
Bottom at : 75.00 ft

Well Casing/Liner
Size OD : 0.00 in
Wall Thickness : 0.000 in
Top at : 0.00 ft
Bottom at : 0.00 ft

Perforations

From (ft)	To (ft)	Diameter or Slot Width(in)	Slot Length (in)	Hole or Slot Interval(in)

Perforated by

Annular Seal Cement/Grout
Placed from 0.00 ft to 0.00 ft
Amount

Other Seals

Type	At (ft)

Screen Type Stainless Steel
Size OD : 4.50 in

From (ft)	To (ft)	Slot Size (in)
75.00	80.00	0.020

Attachment Attached To Casing
Top Fittings
Bottom Fittings

Pack
Type Natural
Grain Size
Amount

Contractor Certification

Name of Journeyman responsible for drilling/construction of well
UNKNOWN NA DRILLER

Certification No
1

Company Name
SCHLAGL GAS & OIL

Copy of Well report provided to owner | Date approval holder signed

Water Well Drilling Report

View in Metric | Export to Excel

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.

GIC Well ID 203542
GoA Well Tag No.
Drilling Company Well ID
Date Report Received

GOWN ID

Well Identification and Location

Measurement in Imperial

Owner Name	Address	Town	Province	Country	Postal Code
SEITZ, LINDA M.	SEVEN PERSONS				

Location	1/4 or LSD	SEC	TWP	RGE	W of MER	Lot	Block	Plan	Additional Description
	NW	6	11	7	4				

Measured from Boundary of
ft from
ft from

GPS Coordinates in Decimal Degrees (NAD 83)
Latitude 49.884008 Longitude -110.954282
How Location Obtained: Not Verified

Elevation 2550.00 ft
How Elevation Obtained: Estimated

Additional Information

Measurement in Imperial

Distance From Top of Casing to Ground Level: in
Is Artesian Flow:
Rate: igpm
Is Flow Control Installed:
Describe:

Recommended Pump Rate: 0.00 igpm
Recommended Pump Intake Depth (From TOC): 0.00 ft
Pump Installed:
Depth: ft
Type:
Make:
H.P.:
Model (Output Rating):

Did you Encounter Saline Water (>4000 ppm TDS):
Depth: ft
Gas:
Depth: ft
Well Disinfected Upon Completion:
Geophysical Log Taken:
Remedial Action Taken:
Submitted to ESRD:

Sample Collected for Potability:
Submitted to ESRD:

Additional Comments on Well
DRILER REPORTS HARD WATER

Yield Test

Taken From Ground Level
Measurement in Imperial

Test Date	Start Time	Static Water Level
1974/12/28	12:00 AM	28.00 ft

Depth to water level

Pumping (ft)	Elapsed Time Minutes:Sec	Recovery (ft)

Method of Water Removal

Type: Bailer
Removal Rate: 20.00 igpm
Depth Withdrawn From: 0.00 ft

If water removal period was < 2 hours, explain why

Water Diverted for Drilling

Water Source	Amount Taken	Diversion Date & Time
	ig	

Contractor Certification

Name of Journeyman responsible for drilling/construction of well
UNKNOWN NA DRILLER

Certification No
1

Company Name
SCHLAGL GAS & OIL

Copy of Well report provided to owner

Date approval holder signed

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

WATER WELL AND SURFACE WATER INFORMATION

Well IDs: 203542 (not located on CFO site, 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:

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 Natural Resources Conservation Board

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

				NRCB USE ONLY				
	Neighbour name(s)	Legal land description	Distance (m)	Zoning (LUB) category	MDS category (1-4)	Distance (m)	Waiver attached (if required)	Meets regulations
1	Darcy English	SE 12-11-8W4	768	A-2	1	744	N/A	Yes
2	Keith, Amanda Traxel	NW 6-11-7W4	567	A-2	1	508	N/A	Yes
4	Bob Richardson	E 1/2 SW 7-11-7W4	482	A-2	1	473	N/A	Yes
4	TJ Lovell	E 1/2 SW 7-11-7W4	392	A-2	1	383	N/A	Yes
3	Brian Scholten	SW 6-11-7W4	895	A-2	1	834	N/A	Yes

A-2 = Agricultural District

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

					NRCB USE ONLY	
	Name of land owner(s)*	Legal land description	Usable area** (ha)	Soil zone ***	Usable area (ha)	Agreement attached (if required)
	Kody Traxel. Owner	NE 6-11-7W4	52	Irrigated	52	N/A
	Kody Traxel. Owner	NE 1-11-8W4	28	Irrigated	28	N/A
	Kody Traxel. Owner	SW 7-11-7W4	23	Irrigated	23	N/A
				Total	103	

* 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)

Attached with Figure 2 document: Catch Basin Sizes and Run off areas.

AO Comment: Numbers next to list of neighbours correspond with numbers on map on next page.

Kody Traxel Proposed CFO Figure 1

MDS Seperation.

1: 768M Zoned Country Residential
2: 567M Zoned AG
3: 895M Zoned AG
4: 482M / 392M Zoned AG
5: 1525M Zoned AG
6: 1150M Zoned AG
7: 1430M Zoned CountryResidential
8: 845M Zoned Commercial

Hamlet of Seven Persons 2380M

A: 1665M
B: 1736M
C: 2080M
D: 3900M
E: 2500M
F: 3040M

Notification radius

1 mile

MDS Category for residences on land zoned for:

1. Agricultural Purposes

MDS: 379 m (1243 ft)
MDS with expansion factor*: 292 m (957 ft)

2. Non-Agricultural Purposes

MDS: 505 m (1657 ft)
MDS with expansion factor*: 389 m (1276 ft)

3. High Use Recreational or Commercial Purposes

MDS: 631 m (2071 ft)
MDS with expansion factor*: 486 m (1595 ft)

4. Large Scale Country Residential, Rural, Hamlet, Village, Town or City

MDS: 1010 m (3314 ft)
MDS with expansion factor*: 778 m (2552 ft)

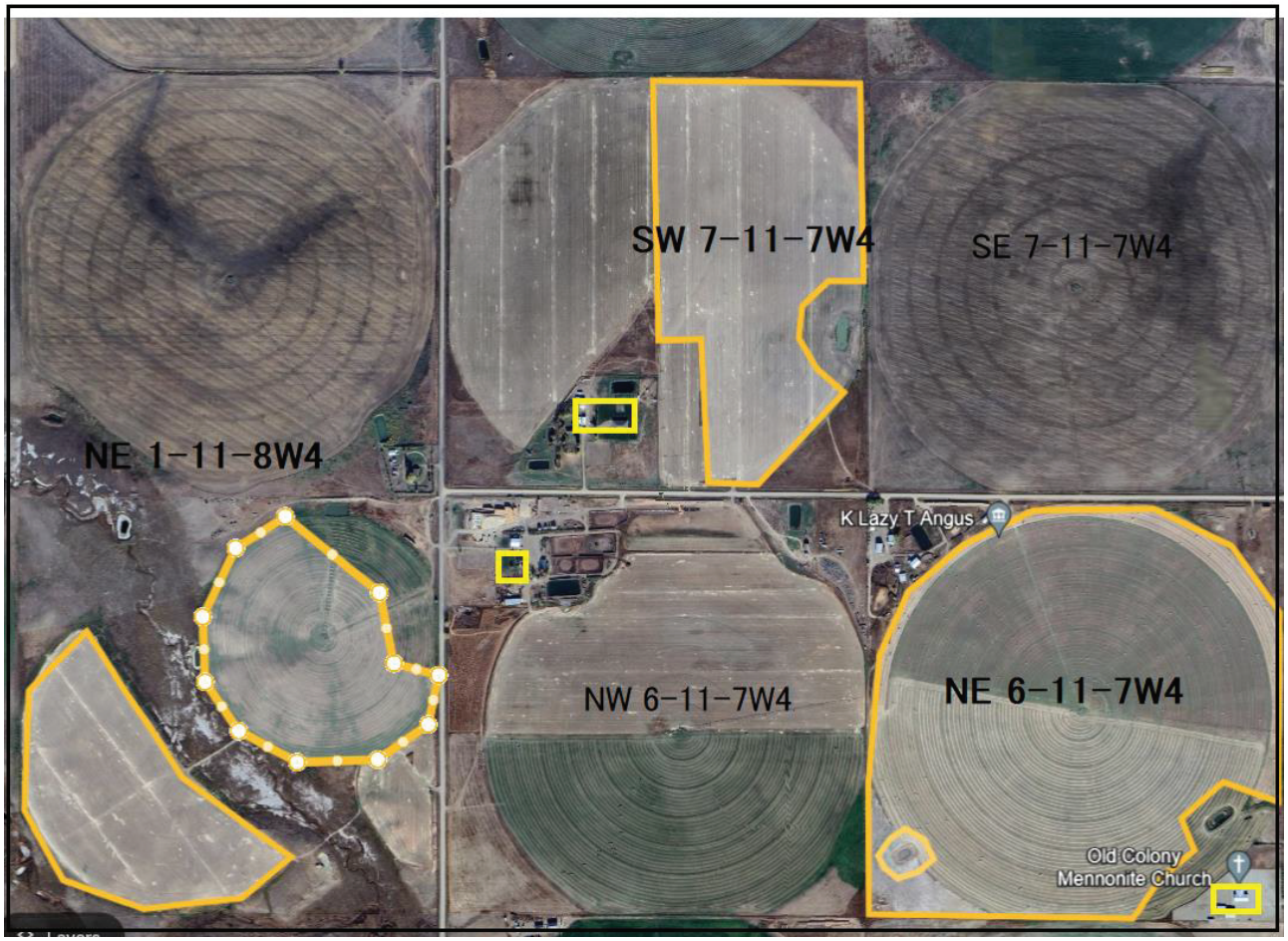
* The expansion factor can only be used if 3 or more years have passed since the completion of the most recent construction arising out of an AOPA permit

Land Base Required - Soil Type	Area
Irrigated (ha)	72.0 hectares (177.9 acres)

Kody Traxel Proposed CFO Figure 2

Manure Application Lands Map

250+ Acres owned by Kody Traxel



Name	Kody Traxel
Address	
Legal Land	
Location	

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	1,800	441.0
	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		-
	Other						-
Dairy (*count lactating cows only)	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		-
	Calves (< 350 lbs)	0.800	0.700	0.200	0.1120		-
	Other						-
Swine Liquid (*count sows only)	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						-
Poultry	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		-
	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		-
	Goats - Feeders	0.700	0.700	0.077	0.0377		-
	Other						-
Cervid	Elk	0.600	0.700	0.600	0.2520		-
	Deer	0.600	0.700	0.200	0.0840		-
	Other						-
Wild Boar	Feeders	2.000	0.800	0.140	0.2240	-	-
	Sow (farrowing)	2.000	0.800	0.371	0.5936		-
	Other						-
					Total		441.0

For New Operations

Dispersion Factor 1

Category	Odour Objective	Distance Feet	Distance Metres
1	41.04	1,243	379
2	54.72	1,657	505
3	68.4	2,071	631
4	109.44	3,314	1,010

For Expanding Operations

Dispersion Factor 1

Expansion Factor 0.77

Category	Odour Objective	Distance Feet	Distance Metres
1	41.04	957	292
2	54.72	1,276	389
3	68.40	1,595	486
4	109.44	2,552	778

Name Kody Traxel
Address 0
Legal Land
Location 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)	1800.0	144.0	120.6	90.0	72.0
	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
	Other	0.0				
Swine Liquid (*count sows only)	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
	Other	0.0				
Swine Solid (*Count sows only)	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
		0.0				
Poultry	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
	Geese	0.0	0.0	0.0	0.0	0.0
	Other	0.0				
Goats and Sheep	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	0.0	0.0	0.0	0.0	0.0
	Goats - Feeders	0.0	0.0	0.0	0.0	0.0
	Other	0.0				
Cervid	Elk	0.0	0.0	0.0	0.0	0.0
	Deer	0.0	0.0	0.0	0.0	0.0
	Other	0.0				
Wild Boar	Feeders	0.0	0.0	0.0	0.0	0.0
	Sow (farrowing)	0.0	0.0	0.0	0.0	0.0
	Other	0.0				
	Total Hectares		144	120.6	90.0	72.0
	Total Acres		356	298.0	222.4	177.9

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): +/- 2 m

Requirements (m): Category 1: 379 Category 2: 505 Category 3: 631 Category 4: 1,010

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: 72 ha irrigated

Land base listed: 103 ha irrigated

Area not suitable: Already accounted for

Available area 103 ha 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

NRCB Natural Resources Conservation Board

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. East Run Area KT 10-25 (Feedlot pens north)

2. _____

Manure storage capacity

	Length (m)	Width (m)	Depth below ground level (m)	**NRCB USE ONLY** Estimated storage capacity (m^3)
1.	Odd Shaped	Total Run area	of 13,555.51m2	
2.				
			TOTAL CAPACITY	Sufficient capacity

AO Comment: Facility to be constructed at grade.

☐ 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 control into catch basin

Naturally occurring protective layer details

Thickness of naturally occurring protective layer	4.4 (m)	Provide details (as required) Attached Report	
Soil texture	48 % sand	28 % silt	24 % clay
Hydraulic conductivity - naturally occurring protective layer	Depth and type of soil tested 3	Hydraulic conductivity (cm/s) 3.8 x 10-7	Describe test standard used Attached Report

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

NRCB Natural Resources Conservation Board

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. West Run Area KT 9-25 KT 12-25

2. _____

Manure storage capacity

	Length (m)	Width (m)	Depth below ground level (m)	**NRCB USE ONLY** Estimated storage capacity (m^3)
1.	Odd Shaped	Total Run area	of 19654.11m2	
2.				
			TOTAL CAPACITY	Sufficient capacity

AO Comment: Applicant listed the total area of proposed feedlot pens south #1 and south #2, combined with the existing permitted feedlot pens.

☐ 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 control into catch basin

Naturally occurring protective layer details

Thickness of naturally occurring protective layer	4.4 (m)	Provide details (as required) Attached Report	
Soil texture	45 % sand	30 % silt	25 % clay
Hydraulic conductivity - naturally occurring protective layer	Depth and type of soil tested 3	Hydraulic conductivity (cm/s) 3.0 x 10-7 / 3.5 X 10-7	Describe test standard used Attached Report

Additional information *(attach copies of soil test reports)*

NRCB USE ONLY

Requirements met: ☑ YES ☐ NO

Condition required: ☑ YES ☐ NO

Report attached: ☑ YES ☐ NO

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: Greater than 9.4 m below grade Requirements met: ☑ YES ☐ NO

Depth to uppermost groundwater resource: 20.71 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 is 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: March 20, 2025, JLECS report shows an approximately 3 m thick naturally occurring protective layer.

Part 2 — Technical Requirements

NRCB Natural Resources Conservation Board

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 EAST KT 6-25 (Catch basin #2)
2. _____
3. _____

Determination of runoff area

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

I calculated the area using provided calculator. This calculates the area and regions Rainfall as per AOPA "Medicine Hat" of 85MM. This calculator designed the size of catch basin. I rounded up the area as well for more capacity than less.

Catch basin capacity

	Length (m)	Width (m)	Total depth (m)	Depth below ground level (m)	Slope run:rise			NRCB USE ONLY
					Inside end walls	Inside side walls	Outside walls	Calculated storage capacity (excl. 0.5 m freeboard) (m^3)
1.	34	22	2.7	2.7	3	3	-	
2.								
3.								
							TOTAL CAPACITY	698 m^3

Naturally occurring protective layer details

Thickness of naturally occurring protective layer	94M (m)	Provide details (as required) See Report attached	
Soil texture	47 % sand	29 % silt	24 % clay
Hydraulic conductivity - naturally occurring protective layer	Depth and type of soil tested: 7.5	Hydraulic conductivity (cm/s): 6.6 X-8 CM /S	Describe test standard used: See Report attached

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

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

NRCB USE ONLY

Catch basin calculator. Total volume @ freeboard level: 698 m^3 Runoff capacity requirements met: ☑ YES ☐ NO

Calculation of the volume attached: ☑ YES ☐ NO

Depth to water table: greater than 9.4 m below grade Requirements met: ☑ YES ☐ NO

Depth to uppermost groundwater resource: 20.71 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: March 20, 2025, JLECS report shows an approximately 7.5 m thick naturally occurring protective layer.

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

Kody Traxel Proposed CFO Figure 2

Catch Basin Size – Total Run Off Area (East)

Total Area Run Off to East Catch Basin
13555.5M2

AO Comment: Calculation for Catch basin #2 provided by applicant.

Kody Traxel Proposed CFO Figure 2

Catch Basin Size – New (East)

Catch Basin Storage Volume Calculator

Construction Dimensions of Catch Basin

* Only cells in blue can be changed.

Overall Dimensions of Catch Basin			Catch Basin Dimensions	
Total Length*4	34.0	m	112	ft
Total Width*4	22.0	m	72	ft
Total Depth*4	2.7	m	9	ft
Design Capacity Depth	2.20	m	7	ft
End Slope*4	3	run:rise	3	run:rise
Side Slope*4	3	run:rise	3	run:rise
Length of Bottom	17.8	m	58	ft
Width of Bottom	5.8	m	19	ft
			Capacity (@fob)	
Capacity @ top of Bank	*1,031*	m^3	*36,412*	ft^3
			226,805	*Imp. Gal.*

Design Capacity of Catch Basin (freeboard level)			Design Capacity (freeboard level)	
Length (design capacity depth)	31.0	m	102	ft
Width (design capacity depth)	19.0	m	62	ft
Total Depth	2.7	m	9	ft
Design Capacity Depth	2.20	m	7	ft
End Slope	3	run:rise	3	run:rise
Side Slope	3	run:rise	3	run:rise
Design Capacity (freeboard level)	698	m^3	24,635	ft^3
			153,445	Imp. Gal.
level)	*589*	m^2	*6,340*	ft^2

CFO Name 1	Traxel
Land Location 1	

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	136	100	13,600.0
7		0	0.0
8		0	0.0
9			0.0
10			0.0
		Total Area (m^2)	13,600

Rainfall (Select Town 3)		
Medicine Hat 85		
AOPA Design Rainfall	85	mm

Minimum Catchbasin Storage Volume Required	
694 m^3 **	24494.2528 ft^3
	152570.61 Imp. Gal.

AO Comment: AO assessment of catch basin capacity.

Catch basin #2

Catch Basin Storage Volume Calculator

Construction Dimensions of Catch Basin

*** Only cells in blue can be changed.**

Overall Dimensions of Catch Basin			Catch Basin Dimensions
Total Length*[4]	34.0	m	112 ft
Total Width*[4]	22.0	m	72 ft
Total Depth*[4]	2.7	m	9 ft
Design Capacity Depth	2.20	m	7 ft
End Slope*[4]	3	run:rise	3 run:rise
Side Slope*[4]	3	run:rise	3 run:rise
Length of Bottom	17.8	m	58 ft
Width of Bottom	5.8	m	19 ft
Capacity @ top of Bank	*1,031*	m^3	*Capacity (@tob)* *36,412* ft^3 *226,805 Imp. Gal.*

Design Capacity of Catch Basin (freeboard level)			Design Capacity (freeboard level)
Length (design capacity depth)	31.0	m	102 ft
Width (design capacity depth)	19.0	m	62 ft
Total Depth	2.7	m	9 ft
Design Capacity Depth	2.20	m	7 ft
End Slope	3	run:rise	3 run:rise
Side Slope	3	run:rise	3 run:rise
Design Capacity (freeboard level)	**698**	m^3	24,635 ft^3
			153,445 Imp. Gal.
level)	*589*	m^2	*6,340* ft^2

CFO Name [1]	Kody Traxel
Land Location [1]	

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	13,556	1	13,555.5
7			0.0
8			0.0
9			0.0
10			0.0
		Total Area (m^2)	**13,556**

Rainfall (Select Town [3])

Medicine Hat 85

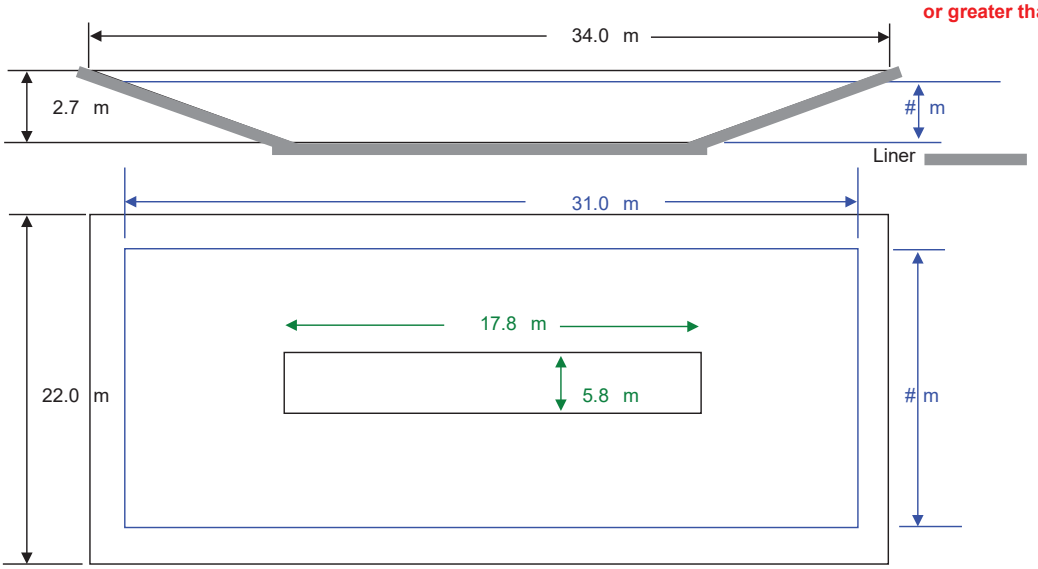
AOPA Design Rainfall **85 mm**

Minimum Catchbasin Storage Volume Required

691 m^3 ** **24414.1242 ft^3**

152071.503 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

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)*

AO Comment: Applicant is proposing to expand already permitted catch basin by increasing width and depth.

1. Catch Basin West KT 4-24 (Catch basin #1)
2.
3.

Determination of runoff area

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

I calculated the area using provided calculator. This calculates the area and regions Rainfall as per AOPA "Medicine Hat" of 85MM. This calculator designed the size of catch basin. I rounded up the area as well for more capacity than less.

Catch basin capacity

	Length (m)	Width (m)	Total depth (m)	Depth below ground level (m)	Slope run:rise			NRCB USE ONLY
					Inside end walls	Inside side walls	Outside walls	Calculated storage capacity (excl. 0.5 m freeboard) (m^3)
1.	82	15.8	2.5	2.5	3	3	-	
2.								
3.								
							TOTAL CAPACITY	1,017 m^3

Naturally occurring protective layer details

Thickness of naturally occurring protective layer	100+ (m)	Provide details (as required) See Report attached	
Soil texture	46 % sand	28 % silt	26 % clay
Hydraulic conductivity - naturally occurring protective layer	Depth and type of soil tested: 7.5	Hydraulic conductivity (cm/s): 2.7X-8 CM /S	Describe test standard used: See Report attached

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

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

NRCB USE ONLY

Catch basin calculator. Total volume @ freeboard level: 1,017 m^3 Runoff capacity requirements met: ☑ YES ☐ NO

Calculation of the volume attached: ☑ YES ☐ NO

Depth to water table: greater than 9.4 m below grade Requirements met: ☑ YES ☐ NO

Depth to uppermost groundwater resource: 20.71 m below grade Requirements met: ☑ YES ☐ NO

ERST completed: ☑ See ERST page for details

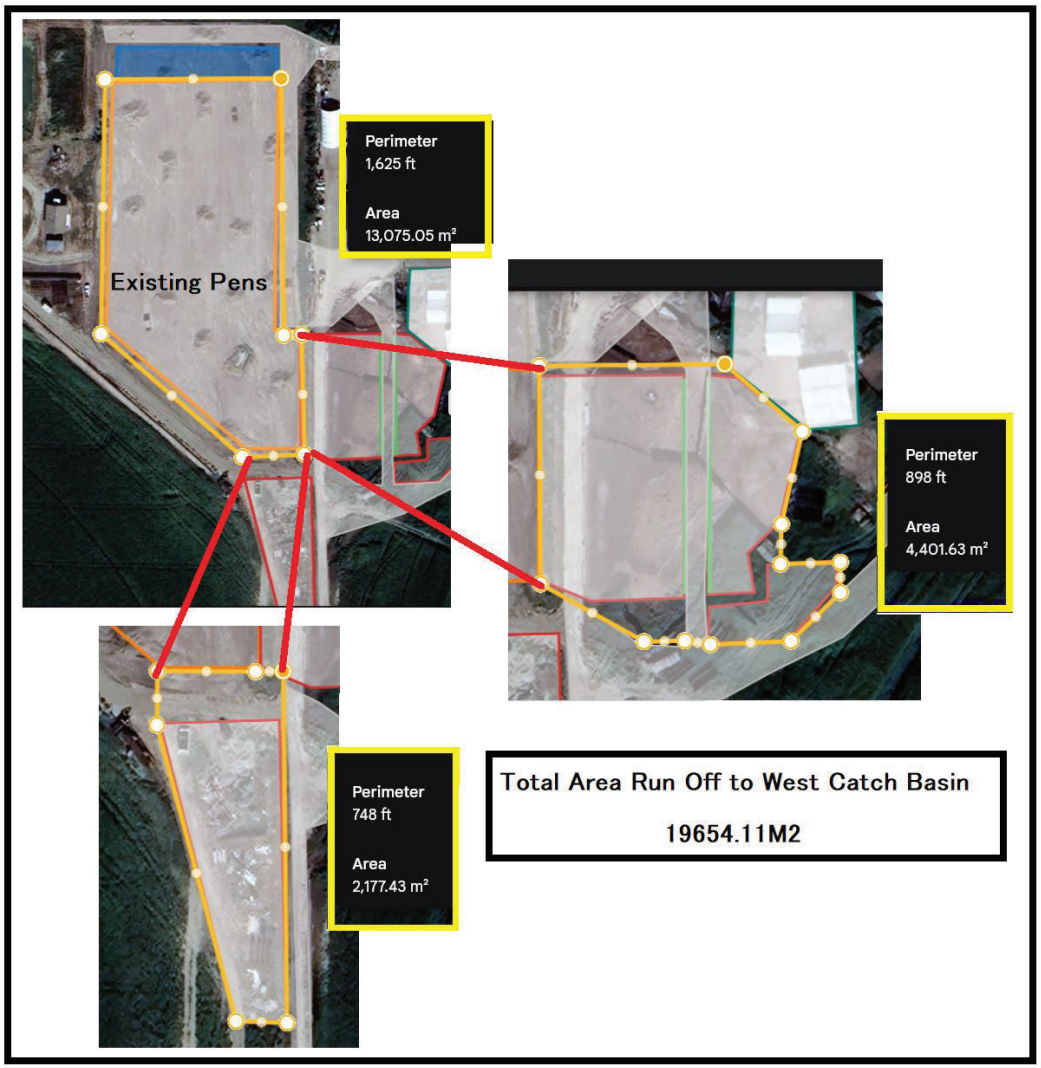
Protective layer specification comments (e.g. sand lenses; layering uniform or irregular; number and location of boreholes):

AO Comment: April 18, 2024, JLECS report shows an approximately 7 m thick naturally occurring protective layer.

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

Kody Traxel Proposed CFO Figure 2

Catch Basin Size – Total Area Run Off (West)



AO Comment: Calculation for capacity of Catch basin #1 provided by applicant.

Kody Traxel Proposed CFO Figure 2

Catch Basin Size – Existing Increased (West)

Catch Basin Storage Volume Calculator

Construction Dimensions of Catch Basin
* Only cells in blue can be changed.

CFO Name [1]: Traxel
Land Location [1]:

Overall Dimensions of Catch Basin			Catch Basin Dimensions	
Total Length*[4]	82.0	m	269	ft
Total Width*[4]	15.5	m	51	ft
Total Depth*[4]	1.5	m	5	ft
Design Capacity Depth	*1.00*	m	3	ft
End Slope*[4]	3	run:rise	3	run:rise
Side Slope*[4]	3	run:rise	3	run:rise
Length of Bottom	73.0	m	240	ft
Width of Bottom	6.5	m	21	ft
Capacity @ top of Bank	*1,289*	m^3	*Capacity (@tob)* 45,516	ft^3
			283,513	*Imp. Gal.*

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	133	100	13,342.0
7		0	0.0
8		0	0.0
9			0.0
10			0.0
		Total Area (m^2)	13,342

Design Capacity of Catch Basin (freeboard level)			Design Capacity (freeboard level)	
Length (design capacity depth)	79.0	m	259	ft
Width (design capacity depth)	12.5	m	41	ft
Total Depth	*1.5*	m	5	ft
Design Capacity Depth	1.00	m	3	ft
End Slope	3	run:rise	3	run:rise
Side Slope	3	run:rise	3	run:rise
Design Capacity (freeboard level)	**725**	m^3	25,603	ft^3
			159,478	Imp. Gal.
level)	988	m^2	10,629	ft^2

Rainfall (Select Town [3])
Medicine Hat 85
AOPA Design Rainfall 85 mm

Minimum Catchbasin Storage Volume Required
680 m^3 ** 24029.5825 ft^3
149676.256 Imp. Gal.

Current Facilities: Catch Basin NW6-11-7w4

Catch Basin Storage Volume Calculator

Construction Dimensions of Catch Basin
* Only cells in blue can be changed.

CFO Name [1]: Traxel
Land Location [1]:

Overall Dimensions of Catch Basin			Catch Basin Dimensions	
Total Length*[4]	82.0	m	269	ft
Total Width*[4]	15.8	m	52	ft
Total Depth*[4]	2.5	m	8	ft
Design Capacity Depth	*2.00*	m	7	ft
End Slope*[4]	3	run:rise	3	run:rise
Side Slope*[4]	3	run:rise	3	run:rise
Length of Bottom	67.0	m	220	ft
Width of Bottom	0.8	m	3	ft
Capacity @ top of Bank	*1,593*	m^3	*Capacity (@tob)* 56,247	ft^3
			350,356	*Imp. Gal.*

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	197	100	19,700.0
7		0	0.0
8		0	0.0
9			0.0
10			0.0
		Total Area (m^2)	19,700

Design Capacity of Catch Basin (freeboard level)			Design Capacity (freeboard level)	
Length (design capacity depth)	79.0	m	259	ft
Width (design capacity depth)	12.8	m	42	ft
Total Depth	*2.5*	m	8	ft
Design Capacity Depth	2.00	m	7	ft
End Slope	3	run:rise	3	run:rise
Side Slope	3	run:rise	3	run:rise
Design Capacity (freeboard level)	**1,017**	m^3	35,908	ft^3
			223,665	Imp. Gal.
level)	1,011	m^2	10,884	ft^2

Rainfall (Select Town [3])
Medicine Hat 85
AOPA Design Rainfall 85 mm

Minimum Catchbasin Storage Volume Required
1,005 m^3 ** 35480.6457 ft^3
221003.017 Imp. Gal.

Proposed Facilities: Catch Basin Increased Size NE 6-11-7w4

AO Comment: AO assessment of catch basin capacity.

Catch basin #1

Catch Basin Storage Volume Calculator

Construction Dimensions of Catch Basin

*** Only cells in blue can be changed.**

CFO Name [1]	Kody Traxel
Land Location [1]	

Overall Dimensions of Catch Basin			Catch Basin Dimensions
Total Length*[4]	82.0	m	269 ft
Total Width*[4]	15.8	m	52 ft
Total Depth*[4]	2.5	m	8 ft
Design Capacity Depth	*2.00*	m	7 ft
End Slope*[4]	3	run:rise	3 run:rise
Side Slope*[4]	3	run:rise	3 run:rise
Length of Bottom	67.0	m	220 ft
Width of Bottom	0.8	m	3 ft
Capacity @ top of Bank	*1,593*	m^3	*Capacity (@tob)* *56,247* ft^3 *350,356 Imp. Gal.*

Design Capacity of Catch Basin (freeboard level)			Design Capacity (freeboard level)
Length (design capacity depth)	79.0	m	259 ft
Width (design capacity depth)	12.8	m	42 ft
Total Depth	*2.5*	m	*8* ft
Design Capacity Depth	2.00	m	7 ft
End Slope	3	run:rise	3 run:rise
Side Slope	3	run:rise	3 run:rise
Design Capacity (freeboard level)	**1,017**	m^3	35,908 ft^3
			223,665 Imp. Gal.
level)	*1,011*	m^2	*10,884* ft^2

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	4,402	1	4,401.6
7	2,177	1	2,177.4
8	13,100	1	13,100.0
9			0.0
10			0.0
		Total Area (m^2)	**19,679**

Rainfall (Select Town [3])

Medicine Hat 85

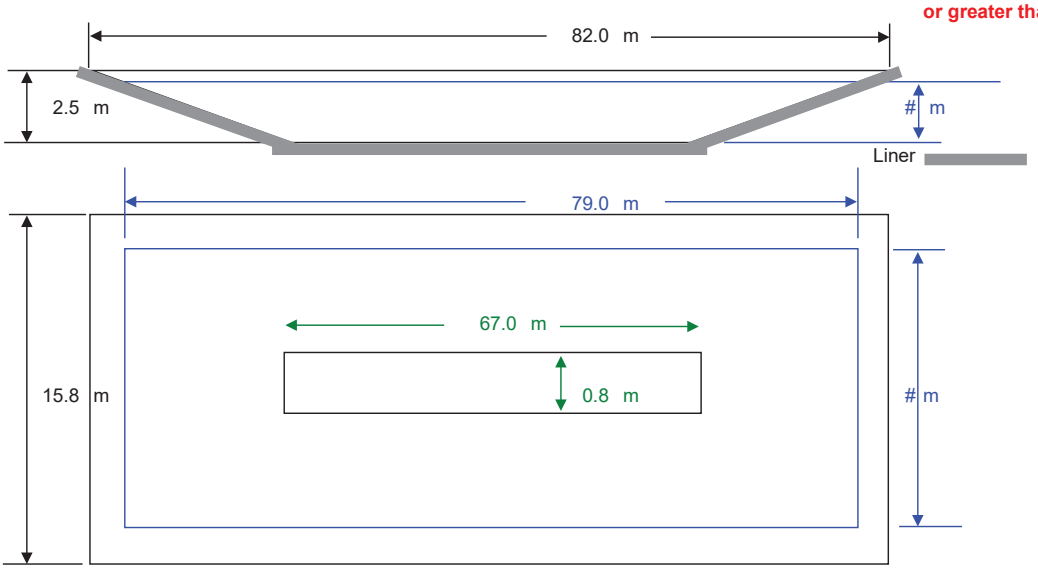
AOPA Design Rainfall **85 mm**

Minimum Catchbasin Storage Volume Required

1,004 m^3 ** **35442.9317 ft^3**

220768.103 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 #1	Capacity 1,017 m^3
Facility 2	
Name / description Catch Basin #2	Capacity 698 m^3
Facility 3	
Name / description	Capacity
Facility 4	
Name / description	Capacity
TOTAL CAPACITY	1,715 m^3
RUNOFF VOLUME FROM CONTRIBUTING AREAS	1,695 m^3
MEETS AOPA RUNOFF CONTROL VOLUME REQUIREMENTS	☑ 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)

NRCB USE ONLY

ALL SIGNATURES IN FILE ☑ YES ☐ NO

DATES OF APPROVAL OFFICER SITE VISITS

February 14, 2025	

CORRESPONDENCE WITH MUNICIPALITIES AND REFERRAL AGENCIES

Date deeming letters sent: April 8, 2025

Municipality: Cypress County

☑ 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: St. Mary River Irrigation District ☐ N/A

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

Other: South Alta Rural Electrification Association Ltd., Apex Utilities Inc. ☐ N/A

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

J Lobbezoo Engineering & Consulting Services Ltd.
Box 96, Monarch, AB T0L 1M0

18 April 2024

JLECS File: P24006

Kody Traxel
7515 TWP 111
Cypress County, Alberta T0K 1Z0

Attention: Kody Traxel

Re: Geotechnical Review and Evaluation
NRCB Permitting of Proposed Feedlot Pens and Catch Basin
NW-06-011-07-W4M, near Seven Persons, 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 site soil conditions to support a permit application related to proposed feedlot pens and a catch basin to be located in the northeast corner area of NW-06-011-07-W4M (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, five boreholes were advanced at the site on March 5, 2024. The boreholes were advanced at the approximate locations denoted as KT1-24 to KT5-24 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 ranging between 3.0 m and 9.2 m below existing grades. The boreholes were logged by Larry Delong of Chilako Drilling Services.

In general, the natural mineral soils encountered within the boreholes consisted of a thin layer of topsoil underlain by stiff medium plastic clay till to the termination depth of the boreholes. No evidence of free groundwater or a groundwater resource (as defined by the AOPA) was identified within the 9.2 m investigation depth at the proposed lagoon site.

Samples of soil collected from the screened zone of boreholes KT1-24 to KT5-24 were subjected to textural analyses, which was carried out by Down to Earth Laboratories in Lethbridge, Alberta. The results indicate a textural breakdown of:

Table 1: Soil Textural Analyses

Borehole/Depth	% Sand	% Silt	% Clay
KT1-24 / 1.5-3.0m	43	28	30
KT2-24 / 1.5-3.0m	34	36	30
KT3-24 / 2.3-3.0m	26	34	40
KT4-24 / 6.5-7.5m	46	28	26
KT4-24 / 6.5-7.5m	44	29	27

JLECS

To measure the *in situ* permeability of the subsurface soils, a 50 mm diameter PVC monitoring well was constructed in boreholes KT3-24 (pen area) and KT4 (catch basin area). Test Well KT3-24 was screened from 2.2 m to 3.8 m depth, while Test Well KT4-24 was screened from 4.4 m to 7.5 m depth. Well saturation of the 50 mm diameter monitoring wells was carried out by filling the monitoring well to the top for several consecutive days. After several days of testing, a 24-hour water drop of 0.43 m was determined at KT3-24, and a 24-hour water drop of 0.66 m was determined at KT4-24.

To calculate the permeability of the screened portion of the clay till strata at the test well locations, 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 report. The results of the permeability testing indicate an *in situ* hydraulic conductivity, k_s, of 5.5×10^{-8} cm/s at KT3-24, and an *in situ* hydraulic conductivity, k_s, of 2.7×10^{-8} cm/s at KT4-24.

Using the measured permeability of the clay stratum, the 1.6 m of clay screened at KT3-24 is estimated to represent the equivalent of approximately 29 m of naturally occurring materials having a hydraulic conductivity of 1×10^{-6} cm/s (the reference standard in AOPA), while the 3.1 m of clay screened at KT3-24 is estimated to represent the equivalent of over 100 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 proposed development at the site, it is JLECS's opinion that the naturally occurring materials at the site satisfy the AOPA requirements for permitting the proposed solid manure storage lagoon and 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.

PROFESSIONAL ENGINEER ALBERTA
JOHN P. LOBBEZOO
ID 110450
18 April 2024

John Lobbezoo, P.Eng.
Principal Geotechnical Engineer

PERMIT TO PRACTICE
J LOBBEZOO ENGINEERING & CONSULTING SERVICES LTD.
RM SIGNATURE:
RM APEGA ID #: 110450
DATE: 18 April 2024
PERMIT NUMBER: P016456
The Association of Professional Engineers and Geoscientists of Alberta (APEGA)

Attachments
Figure 1 Borehole Locations
In Situ Permeability Test Calculations
Soil Profile and Parent Material Description, Chilako Drilling Services

Figure 1
Borehole Locations
Proposed Pens & Catch Basin
Kody Traxel
JLECS File: P24006
April, 2024

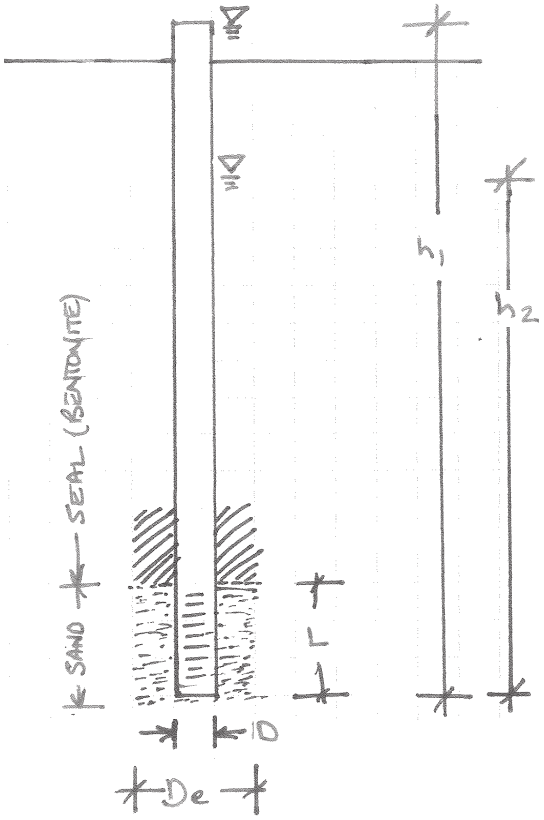
KT3-24

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)



KT3-24 - Kody Traxel

JLECS File: P24006

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	4.20	initial height of water above base of hole (m)
h2	3.77	final height of water above base of hole (m)
t	24.0	time of test (h)

k_s = 5.5E-08 cm/sec

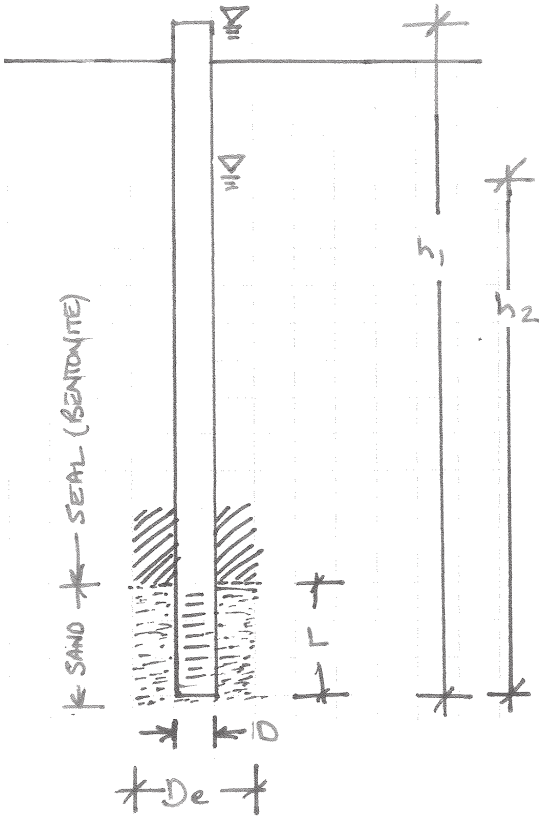
KT4-24

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)



KT4-24 - Kody Traxel

JLECS File: P24006

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	8.10	initial height of water above base of hole (m)
h2	7.44	final height of water above base of hole (m)
t	24.0	time of test (h)

k_s = 2.7E-08 cm/sec

CHILAKO DRILLING SERVICES LTD

Box 942 Coaldale, Alberta, T1M 1M8
(403) 345-3710

SOIL PROFILE AND PARENT MATERIAL DESCRIPTION

Site Location: NW6-11-7W4, Kody Traxel Date: 05-Mar-24

Hole #	Location	Depth	Texture	Moisture	Geological	Sample	Remarks
KT1-24	0503644	0-0.15	CL	F	Topsoil		
	5525978	0.15-0.8	CL	M	Till		Stiff, med plastic, brown, sand streaks
		0.8-3.0	CL	M	Till	1.5-3.0	
KT2-24	0503629	0-0.15	CL	F	Topsoil		
	5526059	0.15-3.0	CL	M	Till	1.5-3.0	Stiff, med plastic, brown, sand streaks
KT3-24	0503654	0-0.15	CL	F	Topsoil		
	5526019	0.15-2.1	CL	M	Till		Stiff, med plastic, brown, sand streaks
		2.1-3.8	CL	M	Till	2.3-3.0	Stiff, med plastic, brown
							50mm H.C. Well installed to 3.8m BGS
							Screen: 3.8-2.3m
							Sand: 3.8-2.2m
							Bentonite: 2.2-0.0m
							Stickup: 0.4m
							Hole Diameter: 0.15m
KT4-24	0503615	0-0.15	CL	F	Topsoil		
	5526142	0.15-3.8	CL	M	Till		Stiff, med plastic, brown
		3.8-7.5	CL-C	M	Till	6.5-7.5	Stiff, med plastic, brown, iron staining
							50mm H.C. Well installed to 7.5m BGS
							Screen: 7.5-4.5m
							Sand: 7.5-4.4m
							Bentonote: 4.4-0.0m
							Stickup: 0.6m
							Hole Diameter: 0.15m
KT5-24	0503658	0-0.15	CL	F	Topsoil		
	5526121	0.15-2.4	CL	M	Till		Stiff, med plastic
		2.4-2.5	CL	M	Till		Sand lensing
		2.5-9.2	CL-C	M	Till	6.5-7.5	Stiff, med plastic, brown, iron staining

Legend:

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

Eg. VFSCL = Very Fine Sandy Clay Loam

----JLECS----

J Lobbezoo Engineering & Consulting Services Ltd.
Box 96, Monarch, AB T0L 1M0

20 March 2025

JLECS File: P24006

Kody Traxel
7515 TWP 111
Cypress County, Alberta T0K 1Z0

Attention: Kody Traxel

Re: Geotechnical Review and Evaluation
NRCB Permitting of Proposed Feedlot Pens and Catch Basin
NE-06-011-07-W4M, near Seven Persons, 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 site soil conditions to support a permit application related to proposed feedlot pens and a catch basin to be located in the northwest corner area of NE-06-011-07-W4M (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, ten boreholes were advanced at the site on February 24, 2025. The boreholes were advanced at the approximate locations denoted as TK1-25 and TK2-25, and TK5-25 to TK12-25 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 ranging between 3.0 m and 9.4 m below existing grades. The boreholes were logged by Larry Delong of Chilako Drilling Services.

In general, the natural mineral soils encountered within the boreholes consisted of stiff medium plastic clay till to the termination depth of the boreholes. No free groundwater or evidence of a groundwater resource (as defined by the AOPA) was identified within the 9.4 m investigation depth at the proposed pen and catch basin site.

Samples of soil collected from the screened zone of boreholes TK6-25, TK9-25, TK10-25 and TK12-25 as well as samples recovered from similar depths at the other boreholes were subjected to textural analyses, which was carried out by Down to Earth Laboratories in Lethbridge, Alberta. The results indicate a textural breakdown of:

Table 1: Soil Textural Analyses

Borehole/Depth	% Sand	% Silt	% Clay
TK1-25 / 6.5-7.5m	48	26	26
TK2-25 / 1.5-3.0m	46	32	22
TK5-25 / 6.5-7.5m	46	30	24
TK6-25 / 6.5-7.5m	47	29	24
TK7-25 / 6.5-7.5m	44	32	24
TK8-25 / 1.5-3.0m	45	30	25
TK9-25 / 1.5-3.0m	48	30	22
TK10-25 / 2.0-3.0m	48	28	24
TK11-25 / 2.0-3.0m	42	30	28
TK12-25 / 2.0-3.0m	37	37	26
Average:	*45*	*30*	*25*

To measure the *in situ* permeability of the subsurface soils, 50 mm diameter PVC monitoring wells were constructed in boreholes TK6-25 (proposed catch basin area), TK9-25 (pen area), TK10-25 (pen area) and TK12-25 (pen area). Test Well KT6-24 was screened from 6.0 m to 9.4 m depth, while the other test wells were screened from approximately 1.5 m to 1.4 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 several days of testing, the following 24-hour water drops were recorded:

1.15 m drop at TK6-25;
1.50 m drop at TK9-25;
2.11 m drop at TK10-25; and
1.70 m drop at TK12-25.

To calculate the permeability of the screened portion of the clay strata at the test well locations, 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 indicate the following *in situ* hydraulic conductivity (k_s) values:

k_s = 6.6×10^{-8} cm/s at KT6-25 (catch basin);
k_s = 3.5×10^{-7} cm/s at TK9-25 (southwest pen area);
k_s = 3.8×10^{-7} cm/s at TK10-25 (northeast pen area); and
k_s = 3.0×10^{-7} cm/s at TK12-25 (west pen area);

Using the measured permeability of the clay stratum, the 3.4 m of clay screened at TK6-25 is estimated to represent the equivalent of approximately 94 m of naturally occurring materials having a hydraulic conductivity of 1×10^{-6} cm/s (the reference standard in AOPA). This represents natural material protection in excess of the minimum requirements outlined by the AOPA for catch basins (minimum 5 m, Section 9.5-b).

The 1.2 m to 1.6 m clay screened at the other boreholes (proposed pen areas) represent the equivalent of 4.0 to 4.4 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).

----JLECS----

Conclusion

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

PROFESSIONAL ENGINEER ALBERTA JOHN P. LOBBEZOO ID 10450

20 March 2025

John Lobbezoo, P.Eng.
Principal Geotechnical Engineer

PERMIT TO PRACTICE
J LOBBEZOO ENGINEERING & CONSULTING SERVICES LTD.
RM SIGNATURE: _____
RM APEGA ID #: 110450
DATE: 20 March 2025
PERMIT NUMBER: P016456
The Association of Professional Engineers and Geoscientists of Alberta (APEGA)

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

Figure 1: Borehole Locations

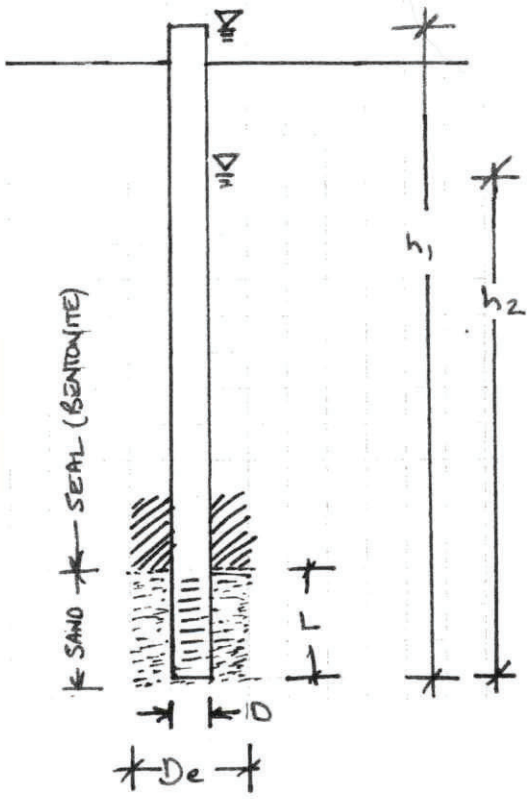
TK6-25

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)



TK6-25 - Kody Traxel

JLECS File: P24006

INPUT VARIABLES

Terms	Value	Definition
D	0.0520	diameter of standpipe (m)
De	0.1500	diameter of borehole (m)
L	3.40	length of sand section (m)
h1	10.00	initial height of water above base of hole (m)
h2	8.85	final height of water above base of hole (m)
t	24.0	time of test (h)

k_s = 3.6E-08 cm/sec

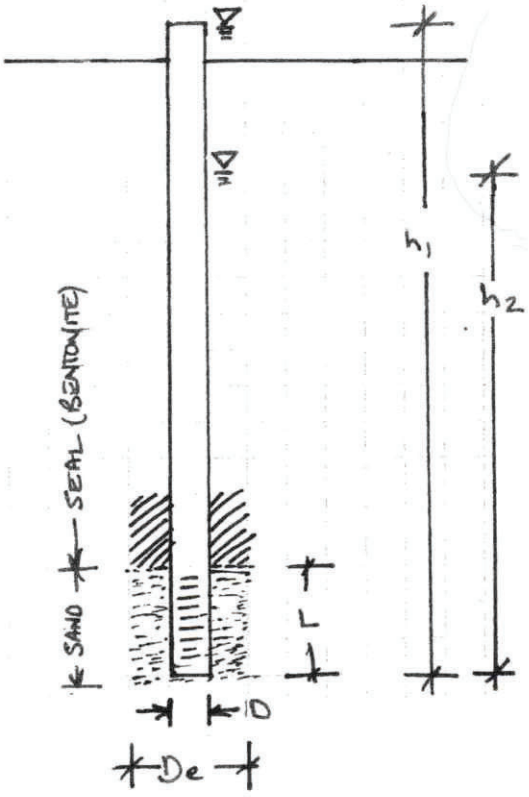
TK9-25

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)



TK9-25 - Kody Traxel

JLECS File: P24006

INPUT VARIABLES	Terms	Value	Definition
	D	0.0520	diameter of standpipe (m)
	De	0.1500	diameter of borehole (m)
	L	1.55	length of sand section (m)
	h1	3.30	initial height of water above base of hole (m)
	h2	1.80	final height of water above base of hole (m)
	t	24.0	time of test (h)

k_s =	3.5E-07	cm/sec

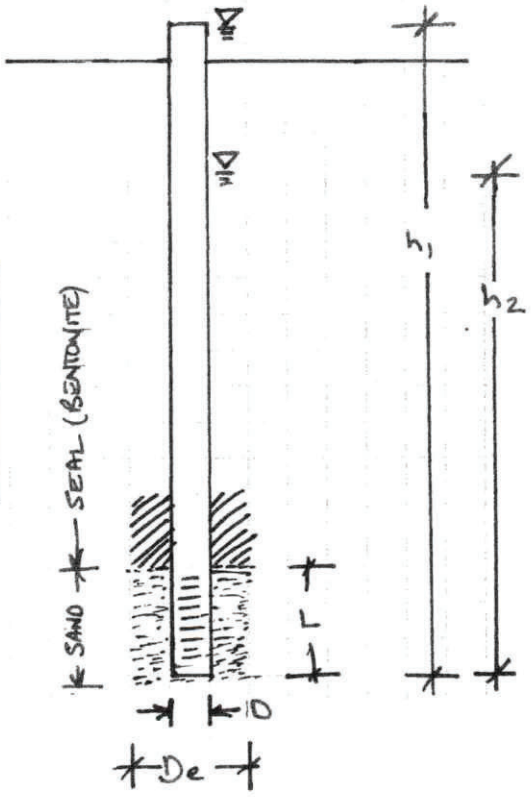
TK10-25

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)



TK10-25 - Kody Traxel

JLECS File: P24006

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	4.20	initial height of water above base of hole (m)
h2	2.09	final height of water above base of hole (m)
t	24.0	time of test (h)

k_s = 3.8E-07 cm/sec

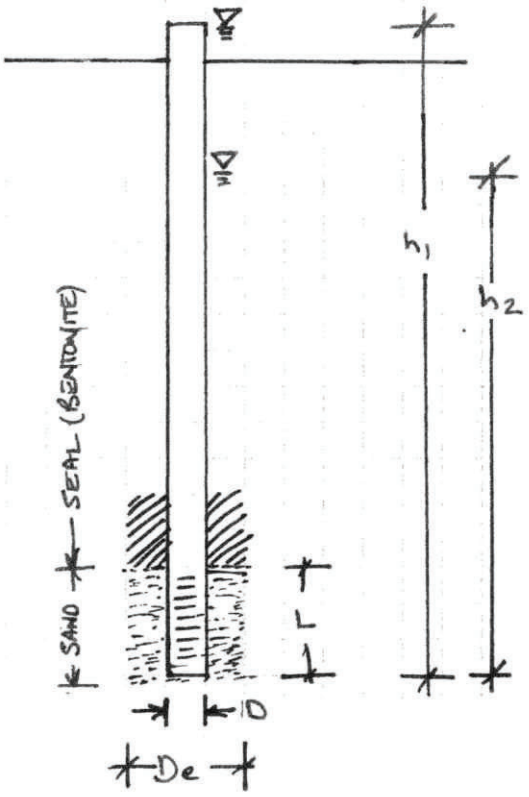
TK12-25

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)



TK12-25 - Kody Traxel

JLECS File: P24006

INPUT VARIABLES	Terms	Value	Definition
	D	0.0520	diameter of standpipe (m)
	De	0.1500	diameter of borehole (m)
	L	1.20	length of sand section (m)
	h1	4.40	initial height of water above base of hole (m)
	h2	2.70	final height of water above base of hole (m)
	t	24.0	time of test (h)

k_s = 3.0E-07 cm/sec

Down To Earth Labs Inc.

The Science of Higher Yields

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

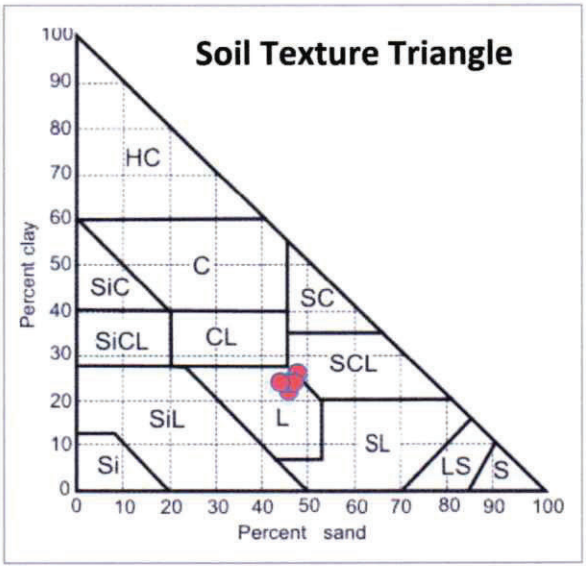
Report #: 202729
Report Date: 2025-03-06
Received: 2025-03-04
Completed: 2025-03-06
Test Done: ST

Project : Traxel

PO:

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

		Sample ID:	250304L005	250304L006	250304L007	250304L008	250304L009
		Cust. Sample ID:	TK1-25	TK2-25	TK5-25	TK6-25	TK7-25
Analyte	Units		6.5-7.5	1.5-3.0	6.5-7.5	6.5-7.5	6.5-7.5
Sand	%		48.0	46.1	46.2	47.2	44.2
Silt	%		26.0	31.9	29.8	28.8	31.8
Clay	%		26.0	22.0	24.0	24.0	24.0
Soil Texture	-		Sandy Clay Loam	Loam	Loam	Loam	Loam



Down To Earth Labs Inc.

The Science of Higher Yields

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

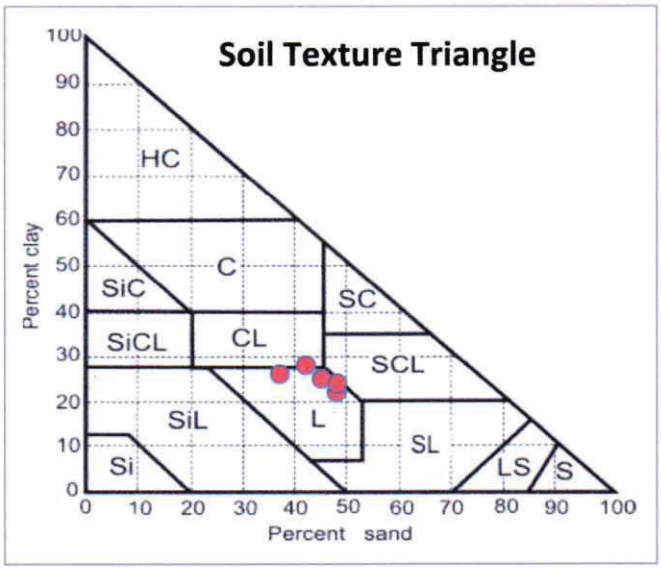
Report #: 202729
Report Date: 2025-03-06
Received: 2025-03-04
Completed: 2025-03-06
Test Done: ST

Project : Traxel

PO:

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

		Sample ID:	250304L010	250304L011	250304L012	250304L013	250304L014
		Cust. Sample ID:	TK8-25	TK9-25	TK10-25	TK11-25	TK12-25
Analyte	Units		1.5-3.0	1.5-3.0	2.0-3.0	2.0-3.0	2.0-3.0
Sand	%		45.2	48.1	48.2	42.2	37.2
Silt	%		29.8	29.9	27.8	29.8	36.8
Clay	%		25.0	22.0	24.0	28.0	26.0
Soil Texture	-		Loam	Loam	Sandy Clay Loam	Clay Loam	Loam



Raygan Boyce - Chemist

CHILAKO DRILLING SERVICES LTD

Box 942 Coaldale, Alberta, T1M 1M8
(403) 345-3710

SOIL PROFILE AND PARENT MATERIAL DESCRIPTION

Site Location: NW6-7-11W4, Kody Traxel Date: 24-Feb-25

Hole #	Location	Depth	Texture	Moisture	Geological	Sample	Remarks
TK1-25	0503807	0-0.4	CL	F	Fill		
	5526046	0.4-1.5	CL	M	Till		Stiff, med plastic, grayish brown
		1.5-6.0	CL-C	M	Till	1.5-3.0	Stiff, med plastic, brown
		6.0-9.2	CL-C	M	Till	6.5-7.5	Stiff, med plastic, brown, iron staining
TK2-25	0503851	0-1.0	CL	F	Till		
	5526060	1.0-3.0	CL	M	Till		Stiff, med plastic, brown
TK5-25	0503802	0-1.7	CL	F	Till		Stiff, med plastic, olive brown
	5526124	1.7-9.2	CL-C	M	Till	6.5-7.5	Stiff, med plastic, brown
TK6-25	0503814	0-1.5	CL	F	Till		Stiff, med plastic, brown
	5526096	1.5-6.3	CL-C	M	Till		Stiff, med plastic, brown
		6.3-9.4	CL-C	M	Till	6.5-7.5	Stiff, med plastic, brown, iron staining
							50mm H.C. Well installed to 9.4m BGS
							Screen: 9.4-6.4m
							Sand: 9.4-6.0m
							Bentonite: 6.0-0.0m
							Stickup: 0.6m
							Hole Diameter: 0.15m
TK7-25	0503764	0-0.5	CL	M	Fill		
	5526059	0.5-3.9	CL	M-VM	Till		Soft-firm, med plastic, grayish brown
		3.9-4.1	CL	M	Till		V. Firm, med plastic, brown, some silt (CL-SicL)
		4.1-6.6	CL-C	M	Till		Stiff, med plastic, brown
		6.6-9.2	CL	M	Till	6.5-7.5	V. Firm, med plastic, brown, increase in silt
TK8-25	0503731	0-0.6	CL	F	Till		
	5525954	0.6-3.0	CL	M	Till	1.5-3.0	V. Firm, med plastic, brown
TK9-25	0503702	0-0.6	CL	F	Till		Stiff, med plastic, brown
	5525930	0.6-3.0	CL	M	Till	1.5-3.0	Stiff, med plastic, brown
							50mm H.C. Well installed to 3.0m BGS
							Screen: 3.0-1.5m
							Sand: 3.0-1.45m
							Bentonite: 1.45-0.0m
							Stickup: 0.3m
							Hole Diameter: 0.15m
TK10-25	0503903	0-0.9	CL	D	Till		
	5526134	0.9-1.5	CL-C	M	Till		Stiff, med plastic, brown
		1.5-1.55	SCL	M	Till		Sand lensing
		1.55-3.6	CL	M	Till		
							50mm H.C. Well installed to 3.6m BGS
							Screen: 3.6-2.1m
							Sand: 3.6-2.0m
							Bentonite: 2.0-0.0m
							Stickup: 0.6m
							Hole Diameter: 0.15m
TK11-25	0503903	0-0.7	CL	F	Till		
	5526093	0.7-3.0	CL	M	Till		Stiff, med plastic, brown
TK12-25	0503705	0-0.6	CL	F	Till		
	5526015	0.6-1.6	CL	M	Till		Stiff, med plastic, brown
		1.6-1.8	CL-FSCL	M	Till		V. Firm, low-medium plastic, brown
		1.8-4.5	CL	M	Till		
							50mm H.C. Well installed to 4.4m BGS
							Screen: 4.4-2.9m
							Sand: 4.0-2.8m
							Bentonite: 2.8-0.0m
							Stickup: 0.4m
							Hole Diameter: 0.15m