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)

NRCB USE ONLY	Application number	Legal land description
☒ Approval ☐ Registration ☐ Authorization ☐ Amendment	RA24030	E1/2 17-34-2 W4 & SW 17-34-2 W4

APPLICATION DISCLOSURE

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

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

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

April 24,2024
Date of signing

[redacted]
Signature

Ference Land & Cattle Corp.
Corporate name (if applicable)

Craig Ference
Print name

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)
Pens 61, 71, 81, 91	238m x 62m (Total)
South Catch basin expansion	61m x 40m x 4m (total dimensions)
N Catch basin expansion	90m x 40m x 4m (total dimensions)
Pens 28, 29, 30	360m x 65m (total)
Pens 12, 13, 20	360m x 65m (total)

see next page

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

Existing facilities	Dimensions (m) (length, width, and depth)	NRCB USE ONLY
North Pen Area	335m x 137m	
North Catch Basin	40m x 70m x 4m	
South Pen Area	198m x 174m	

NRCB USE ONLY

Last updated September 11, 2023

Proposed

- Correct permitted N per area from 335m to 360m long.

Existing

- 5 catch basin 41m x 40m x 4m.

Part 2 – Technical Requirements

NRCB Natural Resources Conservation Board

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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 December 2024

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 Finishers	6000	3000	9000

Last updated September 11, 2023

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 17646, 1435034, 1501879, License 16835, License 14937

Signed this 24 day of April, 2024.

[redacted]

Signature of Applicant or Agent

Last updated September 11, 2023

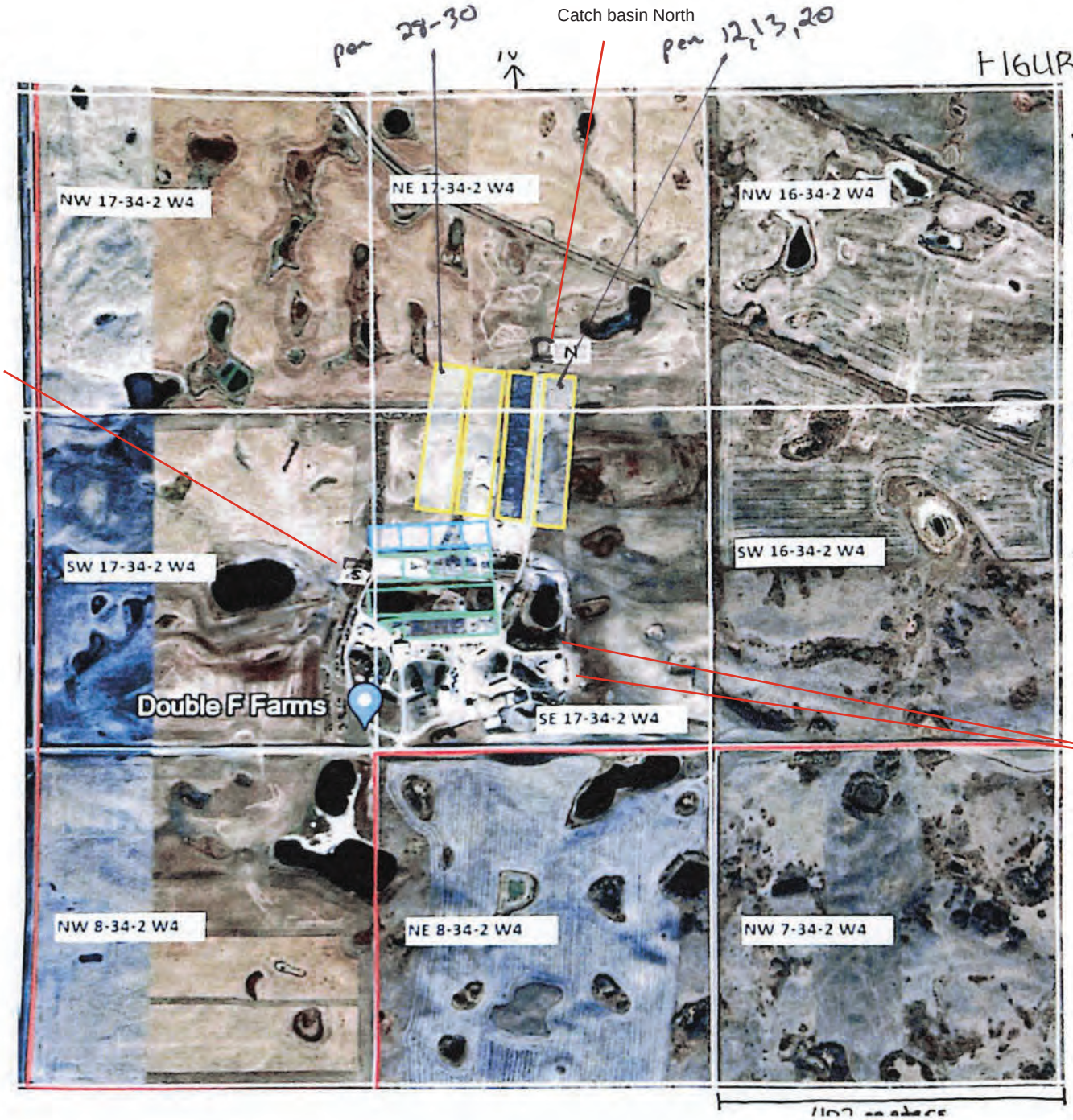
OPTION 4: Uncertain if *Water Act* licence is needed; acknowledgement of risk (for existing CFOs only)

1. At this time, I (we) do not know whether a new water licence is needed from EPA 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** 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 additional 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 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.
7. **Provide**: Water license number(s) or water conveyance agreement details _____

_____

Signed this ____ day of _____, 20____. _____

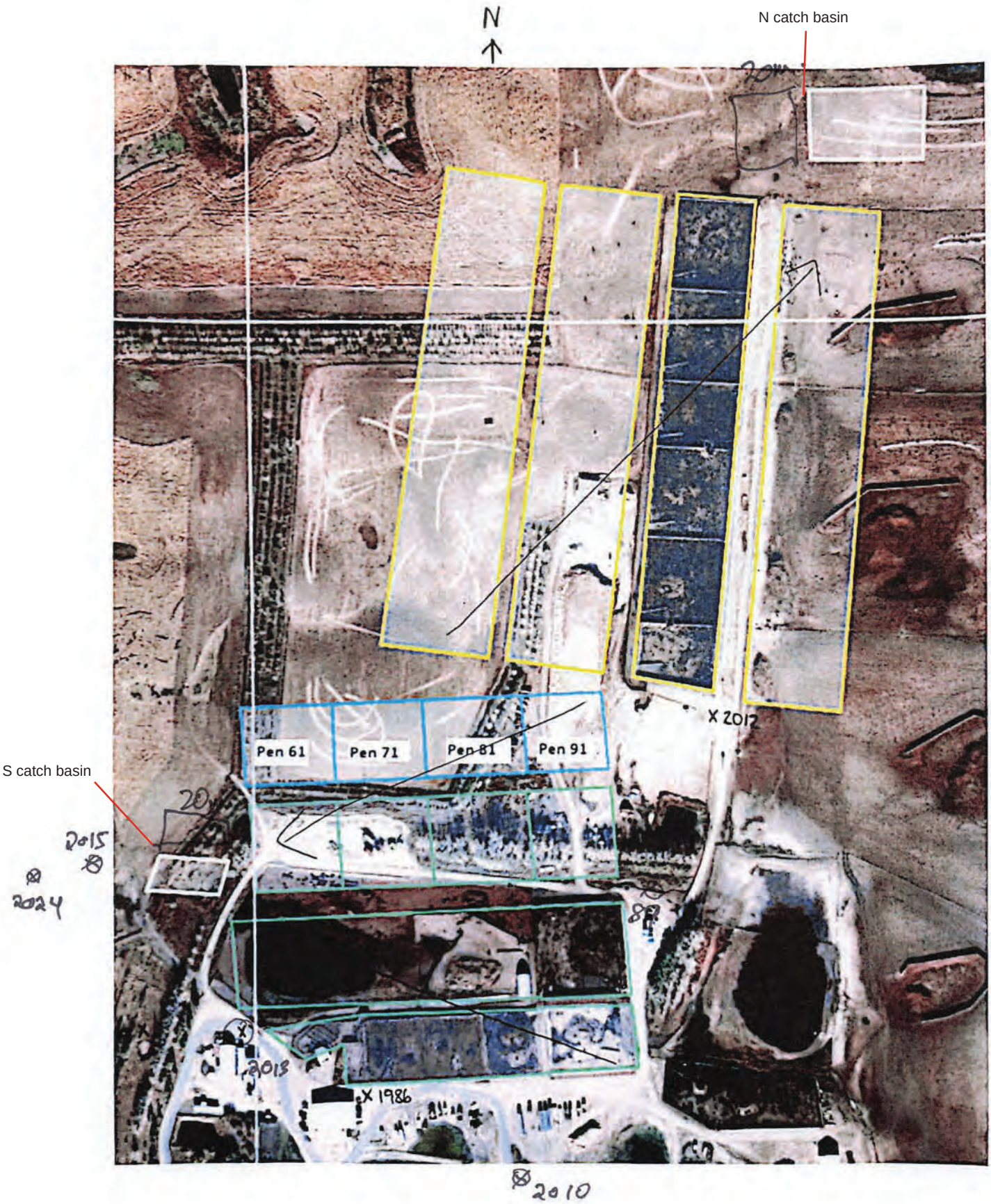
Signature of Applicant or Agent



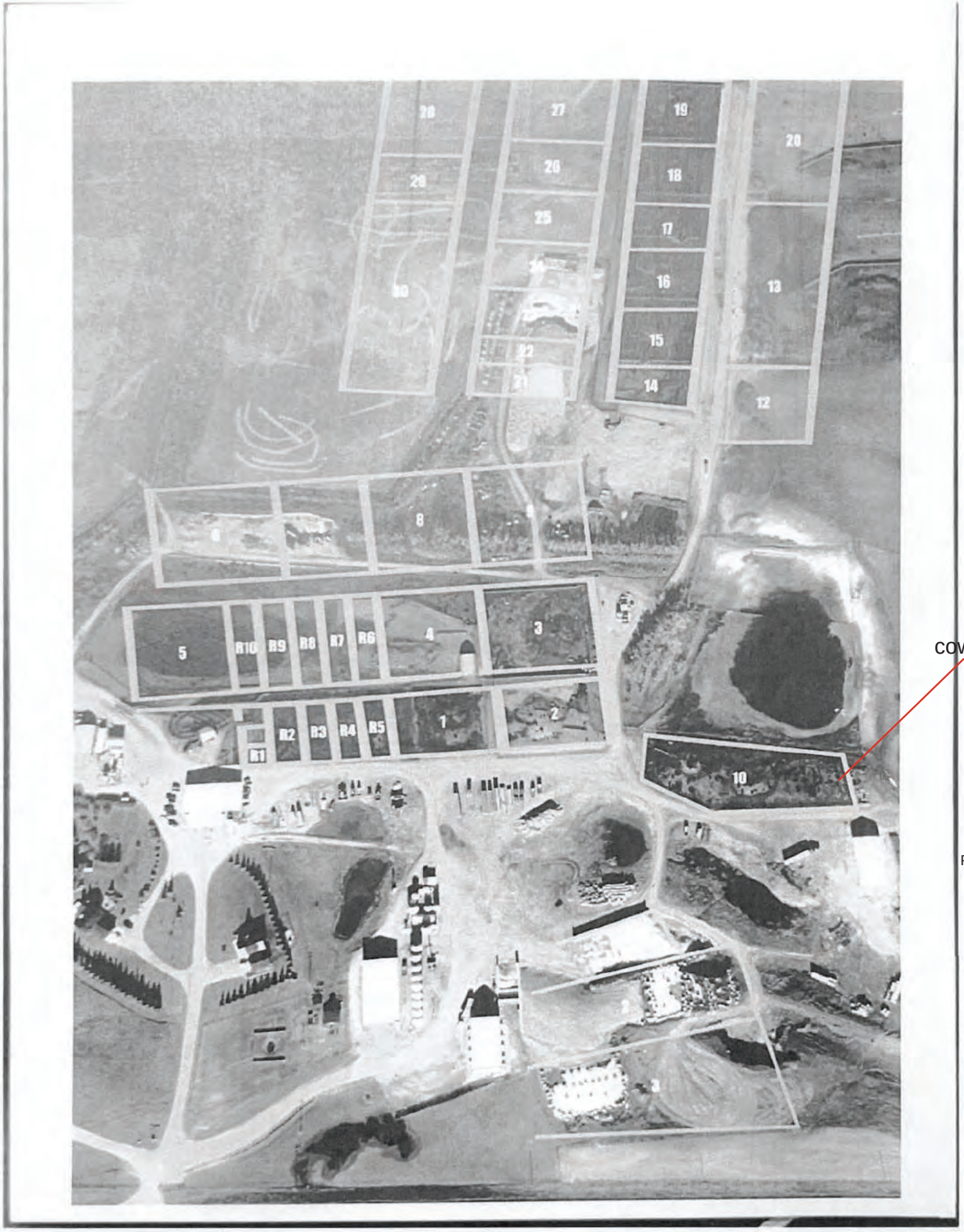
catch basin South

Blue pens 61, 71, 81, 91

Cow calf Pens 10 & 11



x water wells.


cow/calf
Pen 11

Part 2 — Technical Requirements

NRCB Natural Resources Conservation Board

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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: North Pens, South Pens, N+S Catch Basin **Proposed 1:** Pens 61, 71, 81, 91

Proposed 2: South Catch Basin Expansion. **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?	☒ >1 m ☐ ≤ 1 m	☒ >1 m ☐ ≤ 1 m	☐ >1 m ☐ ≤ 1 m	☐ > 1 m ☐ ≤ 1 m	☑ YES ☐ NO ☐ YES with exemption	Not in flood plain
Surface water information	How many springs are within 100 m of the manure storage facility or manure collection area?	0	0	0		☑ YES ☐ NO ☐ YES with exemption	None known
	How many water wells are within 100 m of the manure storage facility or manure collection area?	5	1	1		☐ YES ☐ NO ☑ YES with exemption	1 within 100 m of proposed pens
	What is the shortest distance from the manure collection or storage facility to a surface water body? (e.g., lake, creek, slough, seasonal)	76m	76m	76m		☑ YES ☐ NO ☐ YES with exemption	75 m to slough on applicants property
Groundwater information	What is the depth to the water table?		30m	30m		☑ YES ☐ NO ☐ YES with exemption	>5 m
	What is the depth to the groundwater resource/aquifer you draw water from?					☑ YES ☐ NO ☐ YES with exemption	WW ID 1501807 41.2 m

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

NRCB Natural Resources Conservation Board

NRCB USE ONLY

WATER WELL AND SURFACE WATER INFORMATION

Well IDs: ID 1435304 ID 177646 ID 1502898
ID 1501807 ID 177647 ID 1435344

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
ID 1435304 (closest to proposed pens)	Low	N/A	Pens

Groundwater or surface water related comments:

NRCB USE ONLY

ENVIRONMENTAL RISK SCREENING INFORMATION

ERST for **proposed** facilities

Facility	Groundwater score	Surface water score	File number
Feedlot pens 61,71,81,91	Low	Low	RA24030
Feedlot pens 12,13,20	Low	Low	RA24030

ERST for **existing** facilities

Facility	Groundwater score	Surface water score	File number
South Feedlot pens	Low	Low	RA24001
South Catch basin	Low	Low	RA24001

ERST related comments:

Water Well Drilling Report

View in Imperial | 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 1502898
GoA Well Tag No. A2142
Drilling Company Well ID
Date Report Received 2024/05/17

Well Identification and Location

Measurement in Metric

Owner Name	Address	Town	Province	Country	Postal Code
DOUBLE F FARMS LTD.	P.O. BOX 707	KIRRIEMUIR	ALBERTA	CANADA	T0C 1R0

Location	1/4 or LSD	SEC	TWP	RGE	W of MER	Lot	Block	Plan	Additional Description
	3	17	34	2	4				WELL #8 MAIN YARD

Measured from Boundary of
m from
m from

GPS Coordinates in Decimal Degrees (NAD 83)
Latitude 51.914165 Longitude -110.255615
How Location Obtained
Phone

Elevation m
How Elevation Obtained
Hand held autonomous GPS 20-30m

Drilling Information

Method of Drilling
Rotary - Mud

Proposed Well Use
Stock

Type of Work
New Well

Formation Log

Measurement in Metric

Depth from ground level (m)	Water Bearing	Lithology Description
0.30		Topsoil
5.49		Brown Rocky Till
14.63		Gray Till
16.46		Medium Grained Sand
24.99		Gray Till
25.30		Boulders
31.09		Gray Silty Till
32.31		Gray Fine Grained Sand
35.97		Gray Till
37.19	Yes	Gray Fine Grained Sand
40.84	Yes	Medium Grained Gravel
44.20	Yes	Gray Fine Grained Sand
45.11		Gray Till
48.77		Gray Shale

Yield Test Summary

Measurement in Metric

Recommended Pump Rate 181.84 L/min

Test Date	Water Removal Rate (L/min)	Static Water Level (m)
2024/05/12	172.75	13.72

Well Completion

Measurement in Metric

Total Depth Drilled	Finished Well Depth	Start Date	End Date
48.77 m	44.20 m	2024/05/11	2024/05/12

Borehole

Diameter (cm)	From (m)	To (m)
22.23	0.00	48.77

Surface Casing (if applicable)
Size OD : cm
Wall Thickness : cm
Bottom at : m

Well Casing/Liner
Plastic
Size OD : 15.24 cm
Wall Thickness : 1.041 cm
Top at : -0.61 m
Bottom at : 36.58 m

Perforations

From (m)	To (m)	Diameter or Slot Width (cm)	Slot Length (cm)	Hole or Slot Interval(cm)

Perforated by

Annular Seal Bentonite Chips
Placed from 0.00 m to 33.53 m
Amount 170.00 Gallons

Other Seals

Type	At (m)

Screen Type Stainless Steel
Size OD : 10.16 cm

From (m)	To (m)	Slot Size (cm)
36.58	44.20	0.038

Attachment Attached To Casing
Top Fittings Coupler Bottom Fittings Plug

Pack
Type Frac Sand Grain Size 16-30
Amount 1500.00 Pounds

Contractor Certification

Name of Journeyman responsible for drilling/construction of well
SHAUN ERB

Certification No
78082A

Company Name
MCALLISTER DRILLING INC.

Copy of Well report provided to owner
Yes

Date approval holder signed
2024/05/17

Alberta Water Well Drilling Report

View in Imperial | Export to Excel

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GOWN ID

GIC Well ID 1502898
GoA Well Tag No. A2142
Drilling Company Well ID
Date Report Received 2024/05/17

Well Identification and Location

Measurement in Metric

Owner Name	Address	Town	Province	Country	Postal Code
DOUBLE F FARMS LTD.	P.O. BOX 707	KIRRIEMUIR	ALBERTA	CANADA	T0C 1R0

Location	1/4 or LSD	SEC	TWP	RGE	W of MER	Lot	Block	Plan	Additional Description
	3	17	34	2	4				WELL #8 MAIN YARD

Measured from Boundary of
m from
m from

GPS Coordinates in Decimal Degrees (NAD 83)
Latitude 51.914165 Longitude -110.255615
How Location Obtained
Phone

Elevation m
How Elevation Obtained
Hand held autonomous GPS 20-30m

Additional Information

Measurement in Metric

Distance From Top of Casing to Ground Level 60.96 cm
Is Artesian Flow
Rate L/min
Is Flow Control Installed
Describe

Recommended Pump Rate 181.84 L/min
Recommended Pump Intake Depth (From TOC) 36.58 m
Pump Installed
Depth m
Type
Make
H.P.
Model (Output Rating)

Did you Encounter Saline Water (>4000 ppm TDS)
Depth m
Gas
Depth m
Remedial Action Taken:
Well Disinfected Upon Completion Yes
Geophysical Log Taken Electric
Submitted to ESRD
Sample Collected for Potability
Submitted to ESRD

Additional Comments on Well
UPDATED WELL NAME AT REQUEST OF DRILLER 2024-05-21.

Yield Test

Taken From Ground Level
Measurement in Metric

Test Date 2024/05/12
Start Time 7:30 AM
Static Water Level 13.72 m

Method of Water Removal
Type Air
Removal Rate 172.75 L/min
Depth Withdrawn From 35.05 m

If water removal period was < 2 hours, explain why

Pumping (m)	Elapsed Time Minutes:Sec	Recovery (m)
	0:00	22.66
	0:30	18.20
	1:00	16.43
	2:00	15.73
	3:00	15.60
	4:00	15.53
	5:00	15.50
	6:00	15.47
	7:00	15.44
	8:00	15.41
	9:00	15.39
	10:00	15.37
	12:00	15.34
	14:00	15.33
	16:00	15.30
	18:00	15.26
	20:00	15.23
	25:00	15.16
	30:00	15.07

Water Diverted for Drilling

Water Source	Amount Taken	Diversion Date & Time
DUGOUT ON SITE	13638.28 L	2024/05/11 8:00 AM

Contractor Certification

Name of Journeyman responsible for drilling/construction of well
SHAUN ERB

Certification No
78082A

Company Name
MCALLISTER DRILLING INC.

Copy of Well report provided to owner
Yes

Date approval holder signed
2024/05/17

Alberta Water Well Drilling Report

View in Imperial | Export to Excel

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GOWN ID

GIC Well ID 177646
GoA Well Tag No.
Drilling Company Well ID
Date Report Received 1986/10/21

Well Identification and Location

Measurement in Metric

Owner Name	Address	Town	Province	Country	Postal Code
DOUBLE F FARMS LTD	KIRRIEMUIR				T0C 1R0

Location	1/4 or LSD	SEC	TWP	RGE	W of MER	Lot	Block	Plan	Additional Description
	SE	17	34	2	4				

Measured from Boundary of
m from
m from

GPS Coordinates in Decimal Degrees (NAD 83)
Latitude 51.914567 Longitude -110.247192
How Location Obtained
Map

Elevation m
How Elevation Obtained
Not Obtained

Drilling Information

Method of Drilling
Rotary

Proposed Well Use
Stock

Type of Work
New Well

Formation Log

Measurement in Metric

Depth from ground level (m)	Water Bearing	Lithology Description
0.30		Topsoil
7.32		Brown Till
12.80		Brown Sand
18.29		Gray Silty Sand
28.65		Gray Till
29.57		Brown Sand
36.58		Gray Till
41.45		Brownish Gray Dirty Sand
42.67		Gray Till
46.33		Brownish Gray Sand

Yield Test Summary

Measurement in Metric

Recommended Pump Rate 0.00 L/min

Test Date	Water Removal Rate (L/min)	Static Water Level (m)
1986/08/19	109.11	10.97

Well Completion

Measurement in Metric

Total Depth Drilled	Finished Well Depth	Start Date	End Date
46.33 m		1986/08/19	1986/08/19

Borehole

Diameter (cm)	From (m)	To (m)
0.00	0.00	46.33

Surface Casing (if applicable)
Plastic
Size OD : 12.70 cm
Wall Thickness : 0.673 cm
Bottom at : 43.89 m

Well Casing/Liner
Size OD : 0.00 cm
Wall Thickness : 0.000 cm
Top at : 0.00 m
Bottom at : 0.00 m

Perforations

From (m)	To (m)	Diameter or Slot Width (cm)	Slot Length (cm)	Hole or Slot Interval(cm)

Perforated by

Annular Seal Sand Pack
Placed from 0.00 m to 42.67 m
Amount

Other Seals

Type	At (m)

Screen Type Stainless Steel
Size OD : 7.62 cm

From (m)	To (m)	Slot Size (cm)
43.89	45.11	0.051

Attachment Attached To Casing
Top Fittings Coupler Bottom Fittings Plug

Pack
Type Artificial Grain Size 10-20
Amount 600.00 Pounds

Contractor Certification

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

Certification No
1

Company Name
MCALLISTER HOLDINGS LTD.

Copy of Well report provided to owner Date approval holder signed

Water Well Drilling Report

View in Imperial | Export to Excel

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GOWN ID

GIC Well ID 177646
GoA Well Tag No.
Drilling Company Well ID
Date Report Received 1986/10/21

Well Identification and Location

Measurement in Metric

Owner Name	Address	Town	Province	Country	Postal Code
DOUBLE F FARMS LTD	KIRRIEMUIR				T0C 1R0

Location	1/4 or LSD	SEC	TWP	RGE	W of MER	Lot	Block	Plan	Additional Description
	SE	17	34	2	4				

Measured from Boundary of
m from
m from

GPS Coordinates in Decimal Degrees (NAD 83)
Latitude 51.914567 Longitude -110.247192
How Location Obtained
Map

Elevation m
How Elevation Obtained
Not Obtained

Additional Information

Measurement in Metric

Distance From Top of Casing to Ground Level cm
Is Artesian Flow
Rate L/min
Is Flow Control Installed
Describe

Recommended Pump Rate 0.00 L/min
Recommended Pump Intake Depth (From TOC) 34.14 m
Pump Installed Yes Depth m
Type Make BERKLEY 3/4 HP H.P
Model (Output Rating)

Did you Encounter Saline Water (>4000 ppm TDS) Depth m
Gas Depth m
Remedial Action Taken
Well Disinfected Upon Completion
Geophysical Log Taken Electric
Submitted to ESRD Electric
Sample Collected for Potability
Submitted to ESRD

Additional Comments on Well
DRILLER REPORTS HARD WATER.

Yield Test

Taken From Ground Level
Measurement in Metric

Test Date	Start Time	Static Water Level	Depth to water level Pumping (m)	Elapsed Time Minutes:Sec	Recovery (m)
1986/08/19	12:00 AM	10.97 m			

Method of Water Removal
Type Air
Removal Rate 109.11 L/min
Depth Withdrawn From 34.14 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
UNKNOWN NA DRILLER
Company Name
MCALLISTER HOLDINGS LTD.

Certification No
1
Copy of Well report provided to owner
Date approval holder signed

Alberta Water Well Drilling Report

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GOWN ID

GIC Well ID 177647
GoA Well Tag No.
Drilling Company Well ID
Date Report Received 1989/08/16

Well Identification and Location

Measurement in Metric

Owner Name	Address	Town	Province	Country	Postal Code
DOUBLE F FARMS	P.O. BOX 707 KIRRIEMUIR				T0C 1R0

Location	1/4 or LSD	SEC	TWP	RGE	W of MER	Lot	Block	Plan	Additional Description
	SE	17	34	2	4				

Measured from Boundary of
m from
m from

GPS Coordinates in Decimal Degrees (NAD 83)
Latitude 51.914567 Longitude -110.247192
How Location Obtained
Map

Elevation m
How Elevation Obtained
Not Obtained

Drilling Information

Method of Drilling
Rotary

Proposed Well Use
Domestic & Stock

Type of Work
New Well

Formation Log

Measurement in Metric

Depth from ground level (m)	Water Bearing	Lithology Description
0.30		Topsoil
6.71		Brown Till & Rocks
20.12		Gray Till & Rocks
23.77		Coarse Grained Sand
43.89		Gray Till
47.24		See Comments Coarse Grained Sand
49.38		Gray Till

Yield Test Summary

Measurement in Metric

Recommended Pump Rate 68.19 L/min

Test Date	Water Removal Rate (L/min)	Static Water Level (m)
1989/08/02	90.92	10.97

Well Completion

Measurement in Metric

Total Depth Drilled	Finished Well Depth	Start Date	End Date
49.38 m		1989/08/01	1989/08/02

Borehole

Diameter (cm)	From (m)	To (m)
0.00	0.00	49.38

Surface Casing (if applicable)
Plastic
Size OD : 12.70 cm
Wall Thickness : 0.739 cm
Bottom at : 43.89 m

Well Casing/Liner
Size OD : 0.00 cm
Wall Thickness : 0.000 cm
Top at : 0.00 m
Bottom at : 0.00 m

Perforations

From (m)	To (m)	Diameter or Slot Width (cm)	Slot Length (cm)	Hole or Slot Interval(cm)

Perforated by

Annular Seal Cuttings
Placed from 0.00 m to 41.15 m
Amount

Other Seals

Type	At (m)

Screen Type Stainless Steel
Size OD : 7.62 cm

From (m)	To (m)	Slot Size (cm)
43.89	46.33	0.051

Attachment Attached To Casing
Top Fittings Coupler
Bottom Fittings Plug

Pack
Type Artificial
Grain Size 12/20
Amount 454.00 Kilograms

Contractor Certification

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

Certification No
1

Company Name
MCALLISTER WATERWELLS LTD.

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

Alberta Water Well Drilling Report

View in Imperial | Export to Excel

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GOWN ID

GIC Well ID 177647
GoA Well Tag No.
Drilling Company Well ID
Date Report Received 1989/08/16

Well Identification and Location

Measurement in Metric

Owner Name	Address	Town	Province	Country	Postal Code
DOUBLE F FARMS	P.O. BOX 707 KIRRIEMUIR				T0C 1R0

Location	1/4 or LSD	SEC	TWP	RGE	W of MER	Lot	Block	Plan	Additional Description
	SE	17	34	2	4				

Measured from Boundary of
m from
m from

GPS Coordinates in Decimal Degrees (NAD 83)
Latitude 51.914567 Longitude -110.247192
How Location Obtained
Map

Elevation m
How Elevation Obtained
Not Obtained

Additional Information

Measurement in Metric

Distance From Top of Casing to Ground Level cm
Is Artesian Flow
Rate L/min
Is Flow Control Installed
Describe

Recommended Pump Rate 68.19 L/min
Recommended Pump Intake Depth (From TOC) 0.00 m
Pump Installed
Depth m
Type
Make
H.P.
Model (Output Rating)

Did you Encounter Saline Water (>4000 ppm TDS)
Depth m
Gas
Depth m
Remedial Action Taken
Well Disinfected Upon Completion
Geophysical Log Taken Electric
Submitted to ESRD
Sample Collected for Potability
Submitted to ESRD

Additional Comments on Well
155' GRAY WHITE.

Yield Test

Taken From Ground Level
Measurement in Metric

Test Date	Start Time	Static Water Level	Depth to water level Pumping (m)	Elapsed Time Minutes:Sec	Recovery (m)
1989/08/02	12:00 AM	10.97 m			

Method of Water Removal

Type Air
Removal Rate 90.92 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
UNKNOWN NA DRILLER

Certification No
1

Company Name
MCALLISTER WATERWELLS LTD.

Copy of Well report provided to owner

Date approval holder signed

Alberta Water Well Drilling Report

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.

View in Imperial | **Export to Excel**

GOWN ID

GIC Well ID 1435304
GoA Well Tag No.
Drilling Company Well ID 00304789-00-00
Date Report Received 2013/05/10

Well Identification and Location

Measurement in Metric

Owner Name	Address	Town	Province	Country	Postal Code
FERENCE, CRAIG	P.O. BOX 707	KIRRIEMUIR	ALBERTA	CANADA	T0C 1R0

Location	1/4 or LSD	SEC	TWP	RGE	W of MER	Lot	Block	Plan	Additional Description
	SE	17	34	2	4				

Measured from Boundary of
m from
m from

GPS Coordinates in Decimal Degrees (NAD 83)
Latitude 51.914479 Longitude -110.247163
How Location Obtained
Not Verified

Elevation m
How Elevation Obtained
Not Obtained

Drilling Information

Method of Drilling
Rotary - Mud

Proposed Well Use
Domestic

Type of Work
New Well

Formation Log

Measurement in Metric

Depth from ground level (m)	Water Bearing	Lithology Description
0.30		Topsoil
12.80		Brown Till
18.29		Brown Sand
31.70		Gray Till
45.11	Yes	Gray Sandstone
47.24		Gray Shale

Yield Test Summary

Measurement in Metric

Recommended Pump Rate 122.74 L/min

Test Date	Water Removal Rate (L/min)	Static Water Level (m)
2012/02/03	122.74	15.91

Well Completion

Measurement in Metric

Total Depth Drilled	Finished Well Depth	Start Date	End Date
47.24 m	45.72 m	2012/02/01	2012/02/03

Borehole

Diameter (cm)	From (m)	To (m)
19.76	0.00	47.24

Surface Casing (if applicable)
Size OD : cm
Wall Thickness : cm
Bottom at : m

Well Casing/Liner
Plastic
Size OD : 15.24 cm
Wall Thickness : 0.991 cm
Top at : -0.61 m
Bottom at : 36.58 m

Perforations

From (m)	To (m)	Diameter or Slot Width (cm)	Slot Length (cm)	Hole or Slot Interval(cm)

Perforated by

Annular Seal Bentonite Chips/Tablets
Placed from 0.00 m to 36.58 m
Amount 10.00 Bags

Other Seals

Type	At (m)

Screen Type Stainless Steel
Size OD : 12.70 cm

From (m)	To (m)	Slot Size (cm)
36.58	45.72	0.051

Attachment Attached To Casing
Top Fittings Coupler
Bottom Fittings Plug

Pack
Type Artificial
Grain Size 10/20
Amount 39.00 Bags

Contractor Certification

Name of Journeyman responsible for drilling/construction of well
JOHN LARSON

Certification No
5882AD

Company Name
LARSON'S WATERWELL SERVICING LTD.

Copy of Well report provided to owner
Yes

Date approval holder signed
2012/07/03

Water Well Drilling Report

View in Imperial | 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 1435304
GoA Well Tag No.
Drilling Company Well ID 00304789-00-00
Date Report Received 2013/05/10

Well Identification and Location

Measurement in Metric

Owner Name	Address	Town	Province	Country	Postal Code
FERENCE, CRAIG	P.O. BOX 707	KIRRIEMUIR	ALBERTA	CANADA	T0C 1R0

Location	1/4 or LSD	SEC	TWP	RGE	W of MER	Lot	Block	Plan	Additional Description
	SE	17	34	2	4				

Measured from Boundary of
m from
m from

GPS Coordinates in Decimal Degrees (NAD 83)
Latitude 51.914479 Longitude -110.247163
How Location Obtained
Not Verified

Elevation m
How Elevation Obtained
Not Obtained

Additional Information

Measurement in Metric

Distance From Top of Casing to Ground Level 60.96 cm
Is Artesian Flow
Rate L/min
Is Flow Control Installed
Describe

Recommended Pump Rate 122.74 L/min
Recommended Pump Intake Depth (From TOC) 36.58 m
Pump Installed Yes Depth 36.58 m
Type Submersible Make H.P. 1
Model (Output Rating)

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

Sample Collected for Potability Submitted to ESRD

Additional Comments on Well

Yield Test

Taken From Top of Casing

Measurement in Metric

Test Date	Start Time	Static Water Level
2012/02/03	12:00 PM	15.91 m

Method of Water Removal
Type PUMP
Removal Rate 122.74 L/min
Depth Withdrawn From 36.58 m

If water removal period was < 2 hours, explain why

Depth to water level Pumping (m)	Elapsed Time Minutes:Sec	Recovery (m)
15.91	0:00	23.14
20.30	1:00	18.92
21.45	2:00	17.75
21.85	3:00	17.49
22.03	4:00	17.22
22.12	5:00	17.10
22.19	6:00	17.06
22.24	7:00	17.02
22.29	8:00	16.99
22.32	9:00	16.97
22.34	10:00	16.94
22.37	12:00	16.89
22.42	14:00	16.85
22.47	16:00	16.82
22.51	20:00	16.78
22.62	25:00	16.72
22.65	30:00	16.67
22.69	35:00	16.64
22.74	40:00	16.60
22.80	50:00	16.56
22.87	60:00	16.53
22.94	75:00	16.49
23.01	90:00	16.46
23.06	105:00	16.43
23.14	120:00	16.41

Water Diverted for Drilling

Water Source	Amount Taken		Diversion Date & Time
VILLAGE OF ALTARIO	18184.37	L	2012/02/01 10:00 AM

Contractor Certification

Name of Journeyman responsible for drilling/construction of well
JOHN LARSON

Certification No
5882AD

Company Name
LARSON'S WATERWELL SERVICING LTD.

Copy of Well report provided to owner
Yes

Date approval holder signed
2012/07/03

Alberta Water Well Drilling Report

View in Imperial | 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 1501807
GoA Well Tag No.
Drilling Company Well ID
Date Report Received 2010/01/18

Well Identification and Location

Measurement in Metric

Owner Name	Address	Town	Province	Country	Postal Code
DOUBLE F FARMS	P.O. BOX 707	KIRRIEMUIR	ALBERTA	CANADA	T0C 1R0

Location	1/4 or LSD	SEC	TWP	RGE	W of MER	Lot	Block	Plan	Additional Description
	SE	17	34	2	4				

Measured from Boundary of
53.34 m from South
106.68 m from West

GPS Coordinates in Decimal Degrees (NAD 83)
Latitude 51.914479 Longitude -110.247162
How Location Obtained
Not Verified

Elevation m
How Elevation Obtained
Not Obtained

Drilling Information

Method of Drilling
Rotary - Air

Proposed Well Use
Domestic & Stock

Type of Work
New Well

Formation Log

Measurement in Metric

Depth from ground level (m)	Water Bearing	Lithology Description
0.30		Topsoil
7.32		Brown Interbedded Sand & Till
19.51		Gray Till
25.60		Brown Sand
33.22		Gray Till
37.80		Brown Fine Grained Sand
41.15		Gray Till
43.59		Brown Fine Grained Sand
44.50		Gray Till
46.33		Brown Fine Grained Sand
47.55		Gray Till

Yield Test Summary

Measurement in Metric

Recommended Pump Rate 90.92 L/min

Test Date	Water Removal Rate (L/min)	Static Water Level (m)
2009/09/21	81.83	11.89

Well Completion

Measurement in Metric

Total Depth Drilled	Finished Well Depth	Start Date	End Date
47.55 m	47.55 m	2009/09/21	2009/09/21

Borehole

Diameter (cm)	From (m)	To (m)
20.00	0.00	47.55

Surface Casing (if applicable)
Plastic
Size OD : 12.57 cm
Wall Thickness : 0.673 cm
Bottom at : 41.45 m

Well Casing/Liner
Size OD : cm
Wall Thickness : cm
Top at : m
Bottom at : m

Perforations

From (m)	To (m)	Diameter or Slot Width (cm)	Slot Length (cm)	Hole or Slot Interval(cm)

Perforated by

Annular Seal Bentonite Chips/Tablets
Placed from 0.00 m to 39.62 m
Amount

Other Seals

Type	At (m)

Screen Type Stainless Steel
Size OD : 10.16 cm

From (m)	To (m)	Slot Size (cm)
41.45	46.02	0.038

Attachment Attached To Casing
Top Fittings Coupler
Bottom Fittings Plug

Pack
Type Artificial
Grain Size 16/30
Amount 1500.00 Pounds

Contractor Certification

Name of Journeyman responsible for drilling/construction of well
BRYON MCALLISTER

Certification No
VA4003

Company Name
MCALLISTER DRILLING INC.

Copy of Well report provided to owner
Yes

Date approval holder signed
2009/09/21

Water Well Drilling Report

View in Imperial | Export to Excel

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GOWN ID

GIC Well ID 1501807
GoA Well Tag No.
Drilling Company Well ID
Date Report Received 2010/01/18

Well Identification and Location

Measurement in Metric

Owner Name	Address	Town	Province	Country	Postal Code
DOUBLE F FARMS	P.O. BOX 707	KIRRIEMUIR	ALBERTA	CANADA	T0C 1R0

Location	1/4 or LSD	SEC	TWP	RGE	W of MER	Lot	Block	Plan	Additional Description
	SE	17	34	2	4				

Measured from Boundary of
53.34 m from South
106.68 m from West

GPS Coordinates in Decimal Degrees (NAD 83)
Latitude 51.914479 Longitude -110.247162
How Location Obtained
Not Verified

Elevation m
How Elevation Obtained
Not Obtained

Additional Information

Measurement in Metric

Distance From Top of Casing to Ground Level 60.96 cm
Is Artesian Flow
Rate L/min
Is Flow Control Installed
Describe

Recommended Pump Rate 90.92 L/min
Recommended Pump Intake Depth (From TOC) 40.54 m
Pump Installed Yes Depth m
Type Submersible Make Aermotor H.P. 1
Model (Output Rating)

Did you Encounter Saline Water (>4000 ppm TDS) Depth m
Gas Depth m
Remedial Action Taken
Well Disinfected Upon Completion
Geophysical Log Taken Electric
Submitted to ESRD
Sample Collected for Potability
Submitted to ESRD

Additional Comments on Well
PUMP INSTALLED: 20 GPM.

Yield Test

Taken From Ground Level

Measurement in Metric

Test Date	Start Time	Static Water Level
2009/09/21	3:00 PM	11.89 m

Method of Water Removal
Type Air
Removal Rate 81.83 L/min
Depth Withdrawn From 41.15 m

If water removal period was < 2 hours, explain why

Depth to water level Pumping (m)	Elapsed Time Minutes:Sec	Recovery (m)
11.89	0:00	35.02
	1:00	24.48
	2:00	19.87
	3:00	17.66
	4:00	16.48
	5:00	15.90
	6:00	15.52
	7:00	15.30
	8:00	15.15
	9:00	15.03
	10:00	14.93
	12:00	14.78
	14:00	14.67
	16:00	14.58
	20:00	14.46
	25:00	14.32
	30:00	14.22
	35:00	14.14
	40:00	14.10
	50:00	14.02
	60:00	13.96
	75:00	13.90

Water Diverted for Drilling

Water Source	Amount Taken	Diversion Date & Time
SE-17-34-02-04	L	2009/09/21 10:00 AM

Contractor Certification

Name of Journeyman responsible for drilling/construction of well
BRYON MCALLISTER

Certification No
VA4003

Company Name
MCALLISTER DRILLING INC.

Copy of Well report provided to owner
Yes

Date approval holder signed
2009/09/21

Alberta Water Well Drilling Report

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.

View in Imperial **Export to Excel**

GOWN ID

GIC Well ID 1435344
GoA Well Tag No.
Drilling Company Well ID 00304789-00-00
Date Report Received 2015/05/14

Well Identification and Location

Measurement in Metric

Owner Name	Address	Town	Province	Country	Postal Code
FERENCE, HARVEY	P.O. BOX 707	KIRREMUIR	ALBERTA	CANADA	T0C 1R0

Location	1/4 or LSD	SEC	TWP	RGE	W of MER	Lot	Block	Plan	Additional Description
	SE	17	34	2	4				

Measured from Boundary of
m from
m from

GPS Coordinates in Decimal Degrees (NAD 83)
Latitude 51.914475 Longitude -110.247159
How Location Obtained
Not Verified

Elevation m
How Elevation Obtained
Not Obtained

Drilling Information

Method of Drilling
Rotary - Mud

Proposed Well Use
Domestic

Type of Work
New Well

Formation Log

Measurement in Metric

Depth from ground level (m)	Water Bearing	Lithology Description
0.30		Topsoil
2.13		Brown Till
5.49		Brown Sand
7.01		Brownish Gray Coarse Grained Sand
15.54		Gray Till
17.07		Gray Sand
25.30		Gray Sandy Clay
28.04		Brownish Gray Sand
28.35		Hard Ledges
30.78		Brownish Gray Mixed Sand
48.77	Yes	Gray Sand

Yield Test Summary

Measurement in Metric

Recommended Pump Rate 68.19 L/min

Test Date	Water Removal Rate (L/min)	Static Water Level (m)
2014/10/30	68.19	13.11

Well Completion

Measurement in Metric

Total Depth Drilled	Finished Well Depth	Start Date	End Date
48.77 m	48.77 m	2014/10/25	2014/10/27

Borehole

Diameter (cm)	From (m)	To (m)
19.76	0.00	48.77

Surface Casing (if applicable)
Size OD : cm
Wall Thickness : cm
Bottom at : m

Well Casing/Liner
Plastic
Size OD : 15.24 cm
Wall Thickness : 0.991 cm
Top at : 0.00 m
Bottom at : 39.62 m

Perforations

From (m)	To (m)	Diameter or Slot Width (cm)	Slot Length (cm)	Hole or Slot Interval(cm)

Perforated by

Annular Seal Bentonite Chips/Tablets
Placed from 0.00 m to 39.62 m
Amount 8.00 Bags

Other Seals

Type	At (m)

Screen Type Stainless Steel
Size OD : 12.70 cm

From (m)	To (m)	Slot Size (cm)
39.62	48.77	0.051

Attachment Attached To Casing
Top Fittings Coupler Bottom Fittings Plug

Pack
Type Artificial Grain Size 10/20
Amount 39.00 Bags

Contractor Certification

Name of Journeyman responsible for drilling/construction of well
JOHN LARSON

Certification No
5882AD

Company Name
LARSON'S WATERWELL SERVICING LTD.

Copy of Well report provided to owner
Yes

Date approval holder signed
2015/02/01

Water Well Drilling Report

View in Imperial | 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 1435344
GoA Well Tag No.
Drilling Company Well ID 00304789-00-00
Date Report Received 2015/05/14

GOWN ID

Well Identification and Location

Measurement in Metric

Owner Name	Address	Town	Province	Country	Postal Code
FERENCE, HARVEY	P.O. BOX 707	KIRREMUIR	ALBERTA	CANADA	T0C 1R0

Location	1/4 or LSD	SEC	TWP	RGE	W of MER	Lot	Block	Plan	Additional Description
	SE	17	34	2	4				

Measured from Boundary of
m from
m from

GPS Coordinates in Decimal Degrees (NAD 83)
Latitude 51.914475 Longitude -110.247159
How Location Obtained
Not Verified

Elevation m
How Elevation Obtained
Not Obtained

Additional Information

Measurement in Metric

Distance From Top of Casing to Ground Level 45.72 cm
Is Artesian Flow
Rate L/min
Is Flow Control Installed
Describe

Recommended Pump Rate 68.19 L/min
Recommended Pump Intake Depth (From TOC) 42.67 m
Pump Installed Yes
Type Submersible
Depth 42.67 m
Make GOULDS
H.P. Other
Model (Output Rating) 33GS30

Did you Encounter Saline Water (>4000 ppm TDS)
Depth m
Gas
Depth m
Remedial Action Taken
Well Disinfected Upon Completion Yes
Geophysical Log Taken
Submitted to ESRD
Sample Collected for Potability
Submitted to ESRD
Additional Comments on Well

Yield Test

Taken From Top of Casing
Measurement in Metric

Test Date	Start Time	Static Water Level
2014/10/30	1:00 PM	13.11 m

Method of Water Removal

Type Pump
Removal Rate 68.19 L/min
Depth Withdrawn From 43.28 m

If water removal period was < 2 hours, explain why

Pumping (m)	Elapsed Time Minutes:Sec	Recovery (m)
	0:00	37.40
	1:00	35.48
	2:00	32.19
	3:00	29.47
	4:00	27.16
	5:00	25.21
	6:00	23.56
	7:00	22.16
	8:00	20.94
	9:00	19.87
	10:00	18.99
	12:00	17.56
	14:00	16.46
	16:00	15.64
	18:00	
	20:00	14.45
	25:00	13.53
	30:00	13.11
	35:00	13.11
	40:00	
	50:00	13.11
	60:00	13.11
	75:00	
	90:00	13.11
	105:00	
	120:00	13.11

Water Diverted for Drilling

Water Source	Amount Taken		Diversion Date & Time
LARSON'S SHOP	11365.23	L	2014/10/25 10:00 AM

Contractor Certification

Name of Journeyman responsible for drilling/construction of well
JOHN LARSON

Certification No
5882AD

Company Name
LARSON'S WATERWELL SERVICING LTD.

Copy of Well report provided to owner
Yes

Date approval holder signed
2015/02/01

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)

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**
Glen Vert	SW 7-34-02 w4	1800m	Ag	Cat 1	1780m	N/A	Yes

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)**
Ference Land and Cattle Corp.	see attached spreadsheet	734.94	dark brown/brown	Usable acres calculated	
Ference Farms Ltd. Edward Ferenc	see attached spreadsheet	155.7	dark brown/brown		
Koch agreement					Yes
			Total	1152.9 ha	

* 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)

Last updated September 11, 2023

NRCB Natural Resources Conservation Board

NRCB USE ONLY

MINIMUM DISTANCE SEPARATION

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

Margin of error (if applicable): N/A

Requirements (m): Category 1: 848 m Category 2: 1131 m Category 3: 1414 m Category 4: 2262 m

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: 1125 ha

Land base listed: 1152.9 ha

Area not suitable: N/A

Available area 1152.9 ha 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 _____

Name of Land Owner	Legal Land Description	Usable Area **(ha)	Soil Zone ***
Ference Land and Cattle (south harry's)	SE 7-34-02 W4	60.7	Dark brown / brown
Ference Land and Cattle (south of road)	NW 8-34-02 W4	55.4	Dark brown / brown
Ference Land and Cattle (Junk Pile)	SW 18-34-02 W4	46.9	Dark brown / brown
Ference Land and Cattle (west of yard)	SW 17-34-02 W4	54.6	Dark brown / brown
Ference Land and Cattle (n/e Yard)	N 17-34-02 W4	136	Dark brown / brown
Ference Land and Cattle (clarks)	16-34-02 W4	177	Dark brown / brown
Ference Land and Cattle (north hiway 2)	NE 17-34-02 W4	27.1	Dark brown / brown
Ference Land and Cattle (north hiway)	SE 20-34-02 W4	14.6	Dark brown / brown
Ference Land and Cattle (pens 11-18)	SE 17-34-02 W4	46	Dark brown / brown
Ference Land and Cattle (gloria)	SW 2-34-02 W4	48.87	Dark brown / brown
Ference Land and Cattle (gloria north)	NW 2-34-02 W4	12.14	Dark brown / brown
Ference Land and Cattle (hagen)	NE 4-34-02 W4	55.63	Dark brown / brown
Ference Farms Ltd. Edward Ference	E 13-34-03 W4	68	Dark brown / brown
Ference Farms Ltd. Edward Ference	SW 13-34-03 W4	57	Dark brown / brown
Ference Farms Ltd. Edward Ference	NW 13-34-03 W4	31	Dark brown / brown
Karen Koch	NW 5-35-1 W4	53	Dark brown / brown
Karen Koch	SW 5-35-1 W4	33	Dark brown / brown
Karen Koch	SE 10-34-2 W4	49.8	Dark brown / brown
Karen Koch	NW 10-34-2 W4	43.7	Dark brown / brown
Karen Koch	SW 10-34-2 W4	81.75	Dark brown / brown
	Total	**1152.19**	

FERENCE
LAND & CATTLE CORP.

Harvey R. Ference
(780) 753 0353 cell
(403) 552 3753 office
(403) 552 3751 fax

Craig H. Ference, BSc.
(780) 753 1283 cell
craig@doubleffarms.ca

Box 707 Kirriemuir, AB T0C 1R0
www.doubleffarrms.ca

FARM LEASE-CASH RENTAL

Between
Karen Koch (lessor)
and
Ference Land and Cattle Corp, Harvey, Craig Ference
of Box 707, Kirriemuir AB, T0C 1R0 (lessee)

Karen Koch agrees to cash rent the following parcels of land to FLCC.

Section 10-34-2-W4 (393 acres) Gansers (162 acres) and Bouchards (123acres) East (108 acres)
Section 5-35-1-W4 (212 acres) Mackranoffs (N-131 acres, S-81 acres)

The acres total 605 acres.

Yearly rent shall be [redacted]er acre payable on November 1. [redacted]

This is to include all fall grazing.

The lessee shall receive all crop insurance payouts or subsidies on the above lands for grain or feed that the lessee has insured.

The lessee is entitled to any crop damages that arise from oil activity including seismic.

This shall be a three year lease beginning May 1, 2024 and ending on March 1, 2027 with the lessee having a yearly option of renewal

Land taxes will be paid by lessor.

FLCC has first right to future rent. Rent beginning in 2027 will be decided on/or before November 1, 2026.

The lessee will decide how the crop will be taken off (combine, silage, graze or swath graze) as the year progresses and is entitled to make these harvest decisions based on the unforeseen events like drought or hail throughout the growing season.

Grainery use to be included in rental rate. Graineries located at Gansers (NW 10-34-2-W4)

[redacted] [redacted] Date May 17, 2024

(Karen Koch) (Craig Ference for FLCC)

NRCB USE ONLY

ALL SIGNATURES IN FILE ☑ YES ☐ NO

DATES OF APPROVAL OFFICER SITE VISITS

June 11, 2024	
September 3, 2024	

CORRESPONDENCE WITH MUNICIPALITIES AND REFERRAL AGENCIES

Date deeming letters sent: July 3, 2024

Municipality: Special Areas No. 4

☑ 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: Telus, Dry County Gas Co-op Ltd. ☐ N/A

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

Other: _____ ☐ N/A

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

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. pens 61-91
2. pens 28-30 pens 12,13,20

Manure storage capacity

	Length (m)	Width (m)	Depth below ground level (m)	NRCB USE ONLY Estimated storage capacity (m^3)
1.	238	62	0	
XZ 2.	360	65	0	
			TOTAL CAPACITY	Sufficient Storage

☐ 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

runoff directed to catch basin

Naturally occurring protective layer details

Thickness of naturally occurring protective layer	717 (m)	Provide details (as required) see attached	
Soil texture	34 % sand	49 % silt	17 % clay
Hydraulic conductivity - naturally occurring protective layer	Depth and type of soil tested 2-6	Hydraulic conductivity (cm/s) 2.9×10^{-8}	Describe test standard used in situ

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 February 26, 2021

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: >5 m Requirements met: ☑ YES ☐ NO

Depth to uppermost groundwater resource: 41.2 m Requirements met: ☑ YES ☐ NO

ERST completed: ☑ see ERST page for details

Surface water control systems

Requirements met: ☑ YES ☐ NO Details/comments:

Naturally occurring protective layer details

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

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. S catch basin
2. N catch basin
3.

Determination of runoff area

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

S catch basin area 289 m x 255 m
N catch basin area 367 m x 334 m

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.	61	40	4	4	3	3	—	4,534m3
2.	90	40	4	4	3	3	—	7,224m3
3.								
							TOTAL CAPACITY	11758m3

New total dimensions listed above. Additions are N & S: 20 m x 40 m x 4 m

Naturally occurring protective layer details

Thickness of naturally occurring protective layer	>60 (m)	Provide details (as required) see attached	
Soil texture	41 % sand	31 % silt	28 % clay
Hydraulic conductivity - naturally occurring protective layer	Depth and type of soil tested: 5-7.5	Hydraulic conductivity (cm/s): 2.9x10-9	Describe test standard used: insitu

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: 11758 m3 Runoff capacity requirements met: ☑ YES ☐ NO

Calculation of the volume attached: ☑ YES ☐ NO

Depth to water table: >>5 m Requirements met: ☑ YES ☐ NO

Depth to uppermost groundwater resource: 41.2 m 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):

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

NRCB Natural Resources Conservation Board

NRCB USE ONLY

RUNOFF CONTROL CATCH BASIN CAPACITY SUMMARY (if applicable)

Facility 1	
Name / description: Catch Basin S	Capacity: 4534 m3
Facility 2	
Name / description: Catch Basin N	Capacity: 7224 m3
Facility 3	
Name / description:	Capacity:
Facility 4	
Name / description:	Capacity:
TOTAL CAPACITY	11,758 m3
RUNOFF VOLUME FROM CONTRIBUTING AREAS	10,009 m3
MEETS AOPA RUNOFF CONTROL VOLUME REQUIREMENTS	☑ YES ☐ NO

Catch Basin Storage Volume Calculator

Construction Dimensions of Catch Basin

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

CFO Name [1]	S catch basin
Land Location [1]	SW 17-34-2 W4

Overall Dimensions of Catch Basin

			Catch Basin Dimensions	
Total Length*[4]	61.0	m	200	ft
Total Width*[4]	40.0	m	131	ft
Total Depth*[4]	4.0	m	13	ft
Design Capacity Depth	*3.50*	m	11	ft
End Slope*[4]	3	run:rise	3	run:rise
Side Slope*[4]	3	run:rise	3	run:rise
Length of Bottom	37.0	m	121	ft
Width of Bottom	16.0	m	52	ft
Capacity @ top of Bank	*5,680*	m^3	*Capacity (@tob)* *200,587*	ft^3
			1,249,425	*Imp. Gal.*

Design Capacity of Catch Basin (freeboard level)

			Design Capacity (freeboard level)	
Length (design capacity depth)	58.0	m	190	ft
Width (design capacity depth)	37.0	m	121	ft
Total Depth	*4.0*	m	*13*	ft
Design Capacity Depth	3.50	m	11	ft
End Slope	3	run:rise	3	run:rise
Side Slope	3	run:rise	3	run:rise
Design Capacity (freeboard level)	**4,534**	m^3	**160,126**	ft^3
			997,395	**Imp. Gal.**
level)	*2,146*	m^2	*23,099*	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	289	255	73,695.0
7			0.0
8			0.0
9			0.0
10			0.0
		Total Area (m^2)	**73,695**

Rainfall (Select Town [3])

Castor 85

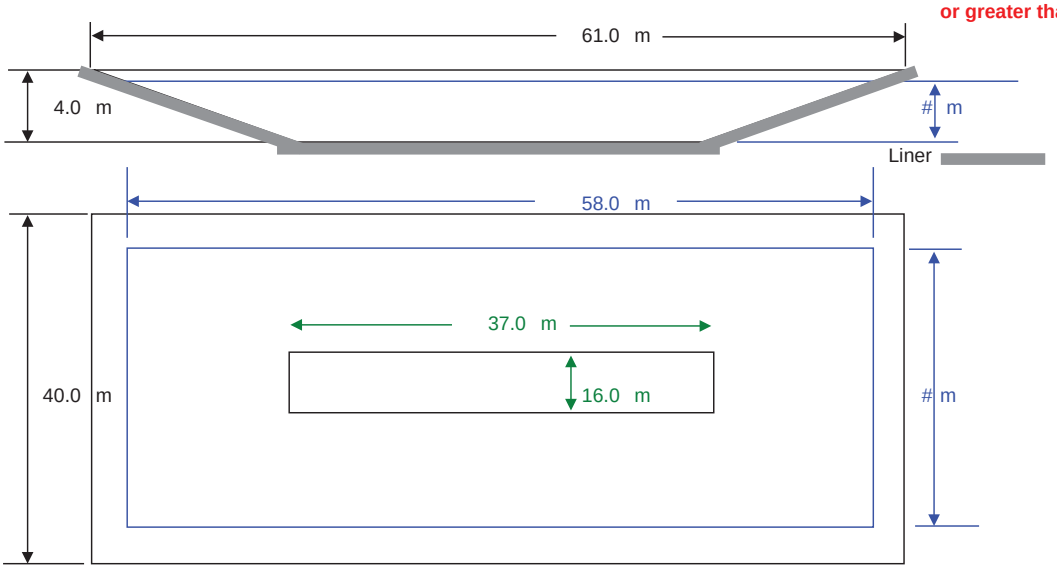
AOPA Design Rainfall **85 mm**

Minimum Catchbasin Storage Volume Required

3,758 m^3 ** **132728.23 ft^3**

826742 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

Catch Basin Storage Volume Calculator

Construction Dimensions of Catch Basin

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

CFO Name [1]	N catch basin
Land Location [1]	SE 17-34-2 W4

Overall Dimensions of Catch Basin			Catch Basin Dimensions
Total Length*[4]	90.0	m	295 ft
Total Width*[4]	40.0	m	131 ft
Total Depth*[4]	4.0	m	13 ft
Design Capacity Depth	*3.50*	m	11 ft
End Slope*[4]	3	run:rise	3 run:rise
Side Slope*[4]	3	run:rise	3 run:rise
Length of Bottom	66.0	m	217 ft
Width of Bottom	16.0	m	52 ft
Capacity @ top of Bank	*8,928*	m^3	*Capacity (@tob)* *315,289* ft^3 *1,963,885 Imp. Gal.*

Design Capacity of Catch Basin (freeboard level)			Design Capacity (freeboard level)
Length (design capacity depth)	87.0	m	285 ft
Width (design capacity depth)	37.0	m	121 ft
Total Depth	*4.0*	m	*13* ft
Design Capacity Depth	3.50	m	11 ft
End Slope	3	run:rise	3 run:rise
Side Slope	3	run:rise	3 run:rise
Design Capacity (freeboard level)	**7,224**	m^3	255,113 ft^3
			1,589,057 Imp. Gal.
level)	*3,219*	m^2	*34,649* 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	367	334	122,578.0
7			0.0
8			0.0
9			0.0
10			0.0
		Total Area (m^2)	**122,578**

Rainfall (Select Town [3])

Castor 85

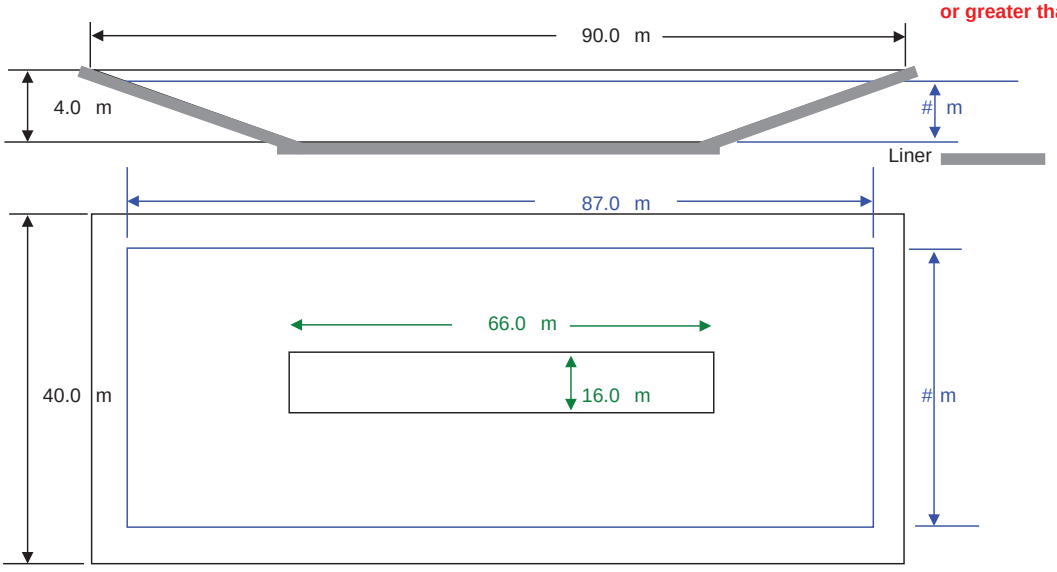
AOPA Design Rainfall **85 mm**

Minimum Catchbasin Storage Volume Required

6,251 m^3 ** **220768.86 ft^3**

1375132.4 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

1 December 2023

WSP File: BX30763

3102 – 12 Avenue North
Lethbridge, Alberta T1H 5V1
T: +1 403 327-7474
www.wsp.com

Ference Land & Cattle Co.
Box 707
Kirriemuir, Alberta T0C 1R0

Attention: Mr. Craig Ference

Re: Geotechnical Review and Evaluation
NRCB Permitting of Existing and Proposed Pens and Catch Basins
Sec-17-034-02-W4M, near Kirriemuir, Alberta

As requested, WSP E&I Canada Limited (WSP) 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 an area of existing and proposed feedlot pens and catch basins within Section 17-034-02-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, fifteen (15) boreholes were advanced at the site on October 17, 2023. The boreholes were advanced at the approximate locations denoted as DF1-23 to DF15-23 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 comprised of a layer of lacustrine silty clay loam, which was generally underlain by stiff medium to high plastic clay till below approximately 3.0 m depth. In addition to the predominant clay loam and clay till, minor sand lenses were noted in several boreholes, resulting in localized perched water conditions. The localized perched water encountered in this area are not considered to be a groundwater resource as defined by the AOPA.

Samples of soil collected from the screened zone of the boreholes DF2-23, DF9-23, DF12-23, and DF14-23 were subjected to laboratory grain size (i.e., hydrometer) analyses. The results (attached) indicate a textural breakdown of approximately:

Table 1: Soil Textural Analyses

Borehole/Depth	% Sand	% Silt	% Clay
DF2-23 / 6.0-7.5m	41	31	28
DF9-23 / 2.5 – 3.0m	34	49	17
DF12-23 / 4.0-4.5m	47	37	16
DF14-23 / 1.6-3.2m	35	47	18

To measure the *in situ* permeability of the subsurface soils, 50 mm diameter PVC monitoring wells were constructed in boreholes DF2-23, DF6-23, DF8-23, DF12-23 and DF14-23. The test wells were screened at

various depths from 2.0 m to 7.5 m below existing grades (see Table 2). 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 saturation, the 24-hour water drop for the wells ranged between 0.08 m and 1.22 m. The 24-hour water drop for each of the monitoring wells are listed in Table 2.

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 *in situ* hydraulic conductivity, k_s, values ranging between 2.9 x 10^{-9} cm/s and 9.7 x 10^{-8} cm/s (see Table 2).

Using the measured permeability of the clay stratum, the equivalent natural soil thicknesses of naturally occurring material having a hydraulic conductivity of 1 x 10^{-6} cm/s (the reference standard in AOPA) at the monitoring well locations was calculated, and those thickness equivalents are presented in Table 2. As indicated, the equivalent thicknesses range between 17 m and greater than 100 m. 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 for catch basins (minimum 5 m, Section 9.5-b).

4,5 34m3

Table 1: Permeability Test Results

Borehole	24-hr Water Drop in Well (m)	Length of Screened Zone (m)	Depth of Screen (m)	Calculated Permeability	Calculated Equivalent 1x10^{-6} cm/s Thickness (m)
DF2-23	0.08	3.20	4.3 – 7.5	2.9 x 10^{-9} cm/s	>100
DF6-23	0.91	2.50	5.0 – 7.5	4.2 x 10^{-8} cm/s	60
DF8-23	1.22	1.60	4.4 – 6.0	9.7 x 10^{-8} cm/s	17
DF12-23	0.30	1.70	2.8 – 4.5	2.9 x 10^{-8} cm/s	59
DF14-23	0.29	1.60	2.0 – 3.6	3.7 x 10^{-8} cm/s	43

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 WSP's opinion that the naturally occurring materials at the site satisfy the AOPA requirements for permitting the existing and proposed pens and catch basins 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,

WSP E&I [redacted]la Limited

1 Dec 2023

John Lobbezoo, P.Eng.
Principal Geotechnical Engineer

Co-authored by:
James Le, EIT
Geotechnical Services

Reviewed by:
Kevin Spencer, P.Eng., M.Eng.
Senior. Associate, Geotechnical Engineer

PERMIT TO PRACTICE
WSP E&I CANADA LIMITED
RM SIGNATUR [redacted]
RM APEGA ID #: 110450
DATE: 1 Dec 2023
PERMIT NUMBER: P004546
The Association of Professional Engineers and Geoscientists of Alberta (APEGA)

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


Figure 1
Borehole Locations
Ference Land & Cattle Co.
WSP File: BX30763
October, 2023
Legend
Feature 1
GS4-23
NE-17-034-02-W4
NW-17-034-02-W4
SW-17-034-02-W4
SE-17-034-02-W4
DF4-23
DF5-23
DF6-23
PROPOSED CATCH BASIN
DF10-23
DF7-23
DF11-23
EXISTING & PROPOSED PEN AREA
DF8-23
DF12-23
DF9-23
DF3-23
DF2-23
DF1-23
PROPOSED CATCH BASIN
EXISTING & PROPOSED PEN AREA
DF13-23
DF14-23
DF15-23
Google Earth
Image © 2023 Maxar Technologies
N
300 m

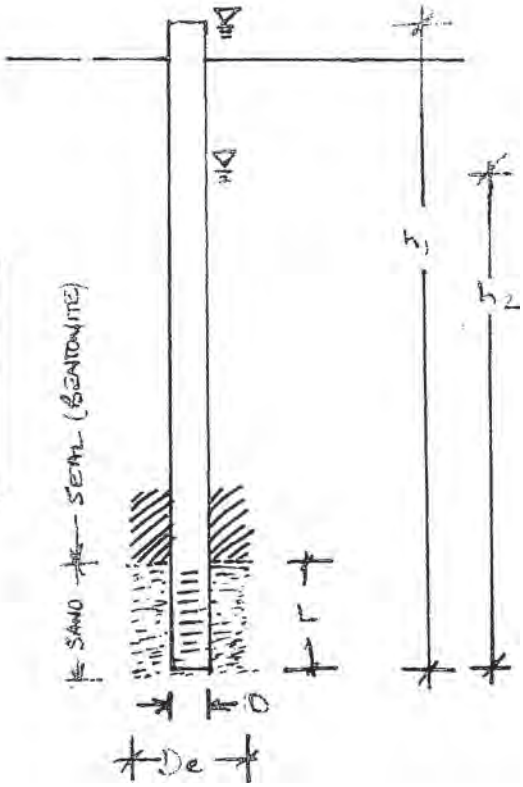
DF2-23

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)



DF2-23 - Double F Farms

WSP File: BX30763

INPUT VARIABLES

Terms	Value	Definition
D	0.0520	diameter of standpipe (m)
De	0.1500	diameter of borehole (m)
L	3.20	length of sand section (m)
h1	8.10	initial height of water above base of hole (m)
h2	8.02	final height of water above base of hole (m)
t	24.0	time of test (h)

k_s = 2.9E-09 cm/sec

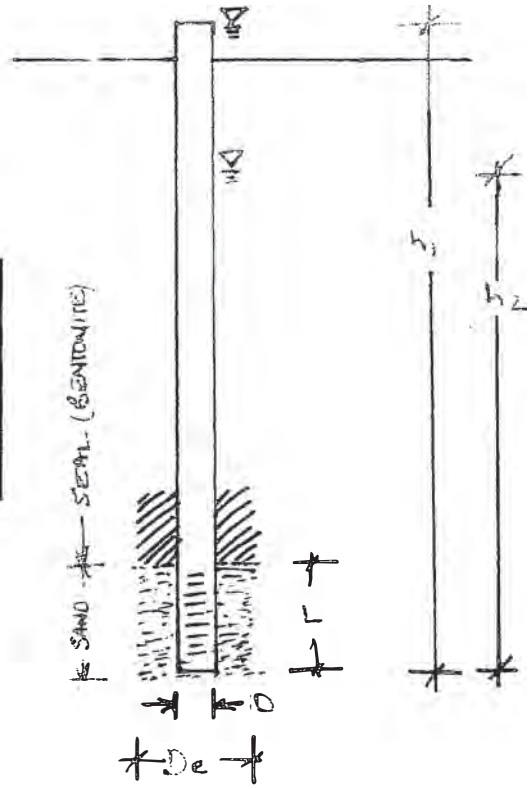
DF6-23

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)



DF6-23 - Double F Farms

WSP File: BX30763

INPUT VARIABLES	Terms	Value	Definition
	D	0.0520	diameter of standpipe (m)
	De	0.1500	diameter of borehole (m)
	L	2.50	length of sand section (m)
	h1	8.40	initial height of water above base of hole (m)
	h2	7.49	final height of water above base of hole (m)
	t	24.0	time of test (h)

k_s =	4.2E-08 cm/sec

DF8-23

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)

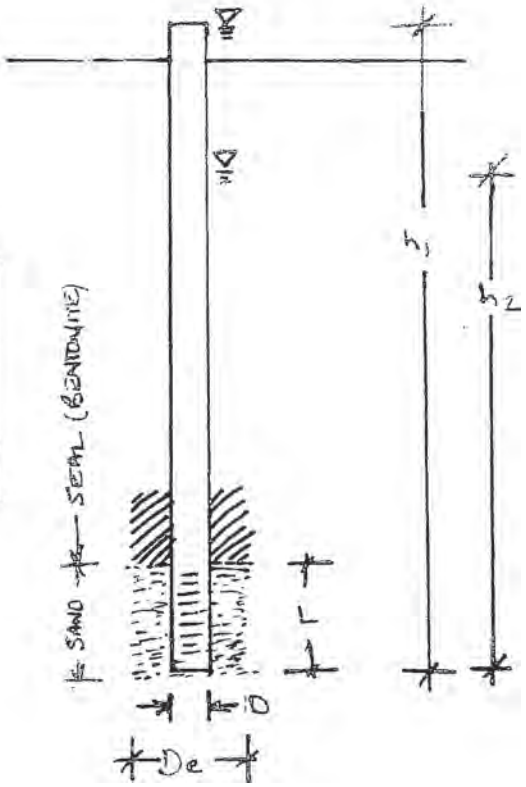
DF8-23 - Double F Farms

WSP File: BX30763

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	6.80	initial height of water above base of hole (m)
h2	5.58	final height of water above base of hole (m)
t	24.0	time of test (h)

k_s = **9.7E-08 cm/sec**



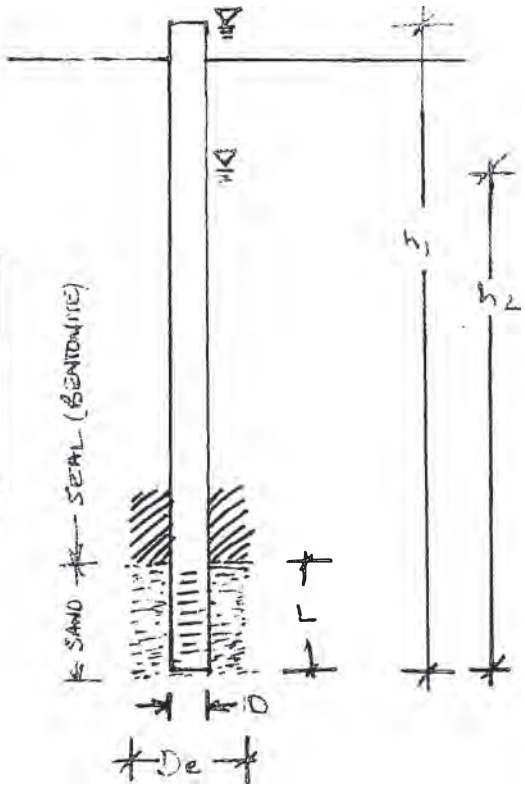
DF12-23

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)



DF12-23 - Double F Farms

WSP File: BX30763

INPUT VARIABLES

Terms	Value	Definition
D	0.0520	diameter of standpipe (m)
De	0.1500	diameter of borehole (m)
L	1.70	length of sand section (m)
h1	5.15	initial height of water above base of hole (m)
h2	4.85	final height of water above base of hole (m)
t	24.0	time of test (h)

k_s = **2.9E-08 cm/sec**

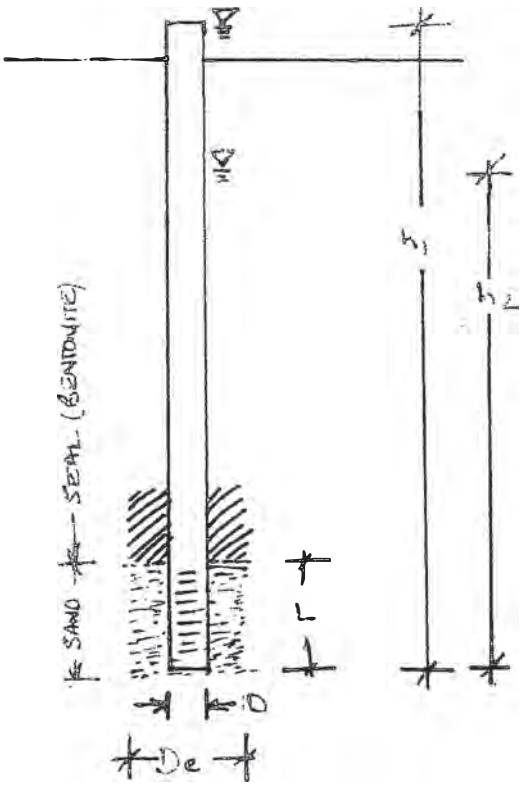
DF14-23

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)



DF14-23 - Double F Farms

WSP File: BX30763

INPUT VARIABLES

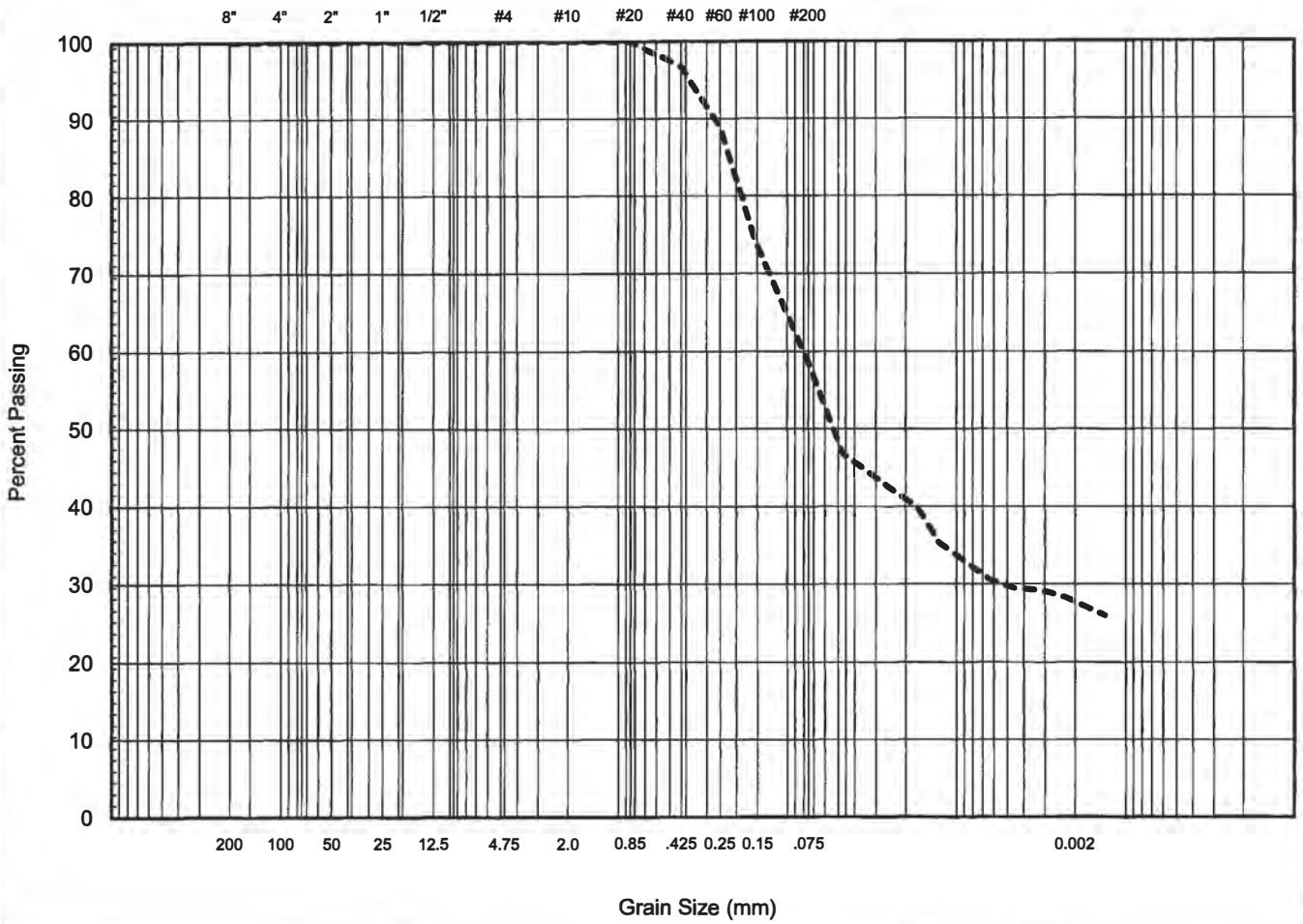
Terms	Value	Definition
D	0.0520	diameter of standpipe (m)
De	0.1500	diameter of borehole (m)
L	1.60	length of sand section (m)
h1	4.20	initial height of water above base of hole (m)
h2	3.91	final height of water above base of hole (m)
t	24.0	time of test (h)

k_s = **3.7E-08 cm/sec**

HYDROMETER TEST

WSP E&I Canada Limited

COBBLES	GRAVEL		SAND			SILT	CLAY
	Coarse	Fine	C	M	F		



Remarks:

Summary					
D10 =	#N/A	mm	**Gravel**	0	%
D30 =	0.0054	mm	**Sand**	41	%
D60 =	0.0824	mm	**Silt**	31	%
Cu =	#N/A		**Clay**	28	%
Cc =	#N/A				

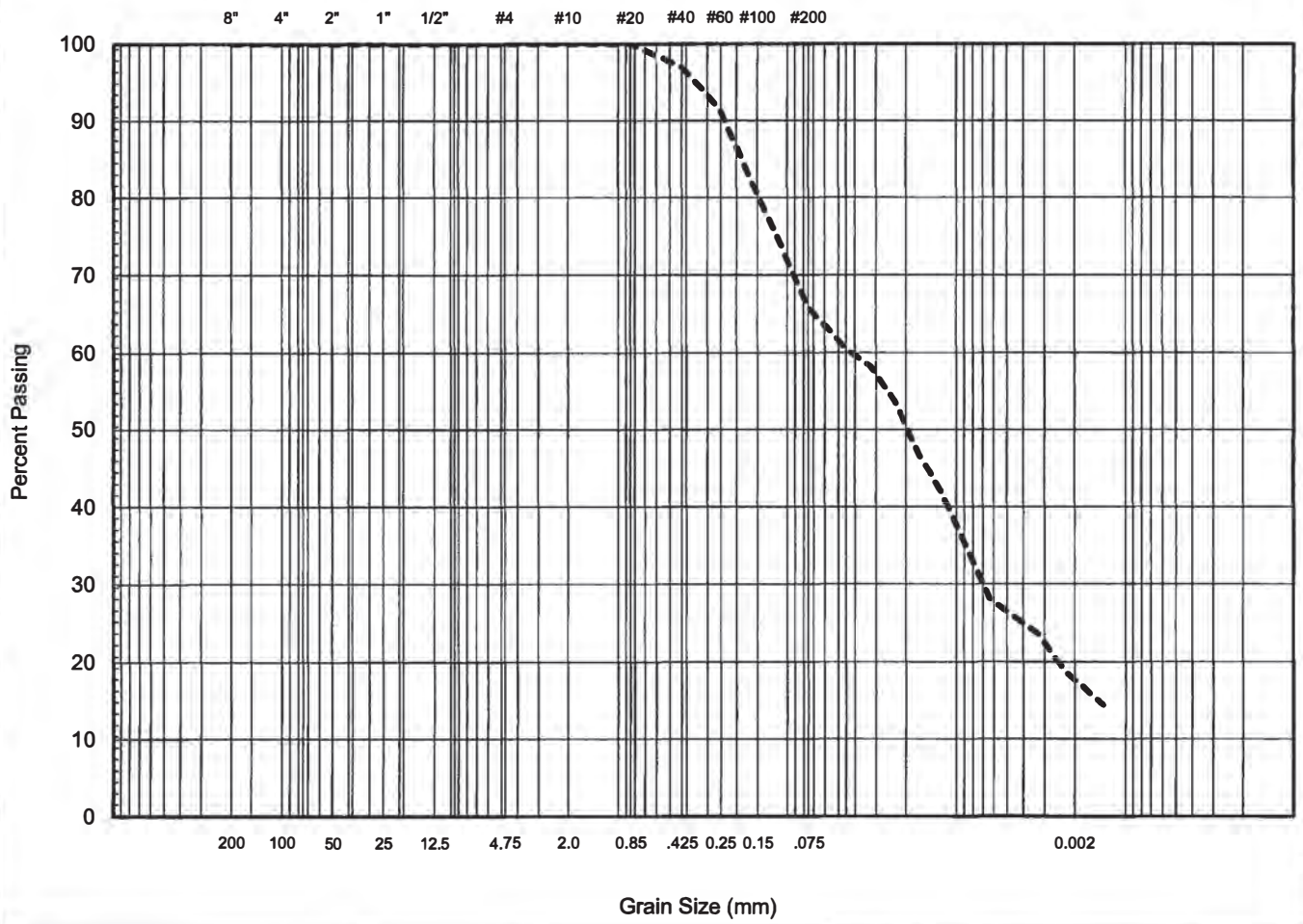
Project No: BX30763
Hole No: DF 2-23
Depth (m): 6.0-7.5

Client: Ference Land & Cattle Co.
Sample: --
Date: November 16, 2023 **Tech:** S.G

HYDROMETER TEST

WSP E&I Canada Limited

COBBLES	GRAVEL		SAND			SILT	CLAY
	Coarse	Fine	C	M	F		



Remarks:

Summary					
D10 =	#N/A	mm	**Gravel**	0	%
D30 =	0.0071	mm	**Sand**	34	%
D60 =	0.0423	mm	**Silt**	49	%
Cu =	#N/A		**Clay**	17	%
Cc =	#N/A				

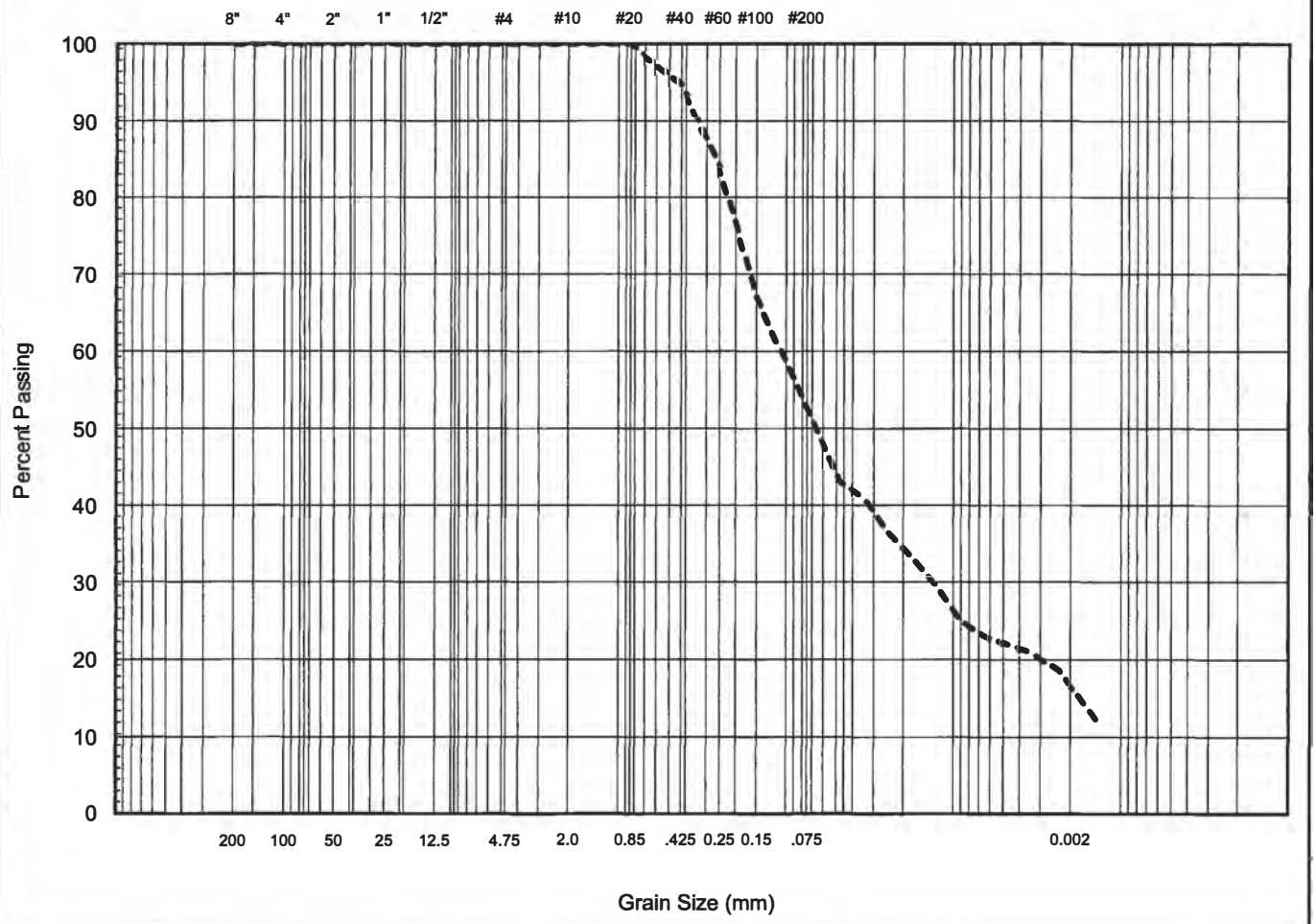
Project No: BX30763
Hole No: DF 9-23
Depth (m): 2.5 - 3

Client: Ference Land & Cattle Co.
Sample: --
Date: November 16, 2023 **Tech:** S.G

HYDROMETER TEST

WSP E&I Canada Limited

COBBLES	GRAVEL		SAND			SILT	CLAY
	Coarse	Fine	C	M	F		



Remarks: 0

Summary					
D10 =	#N/A	mm	**Gravel**	0	%
D30 =	0.0133	mm	**Sand**	47	%
D60 =	0.1132	mm	**Silt**	37	%
Cu =	#N/A		**Clay**	16	%
Cc =	#N/A				

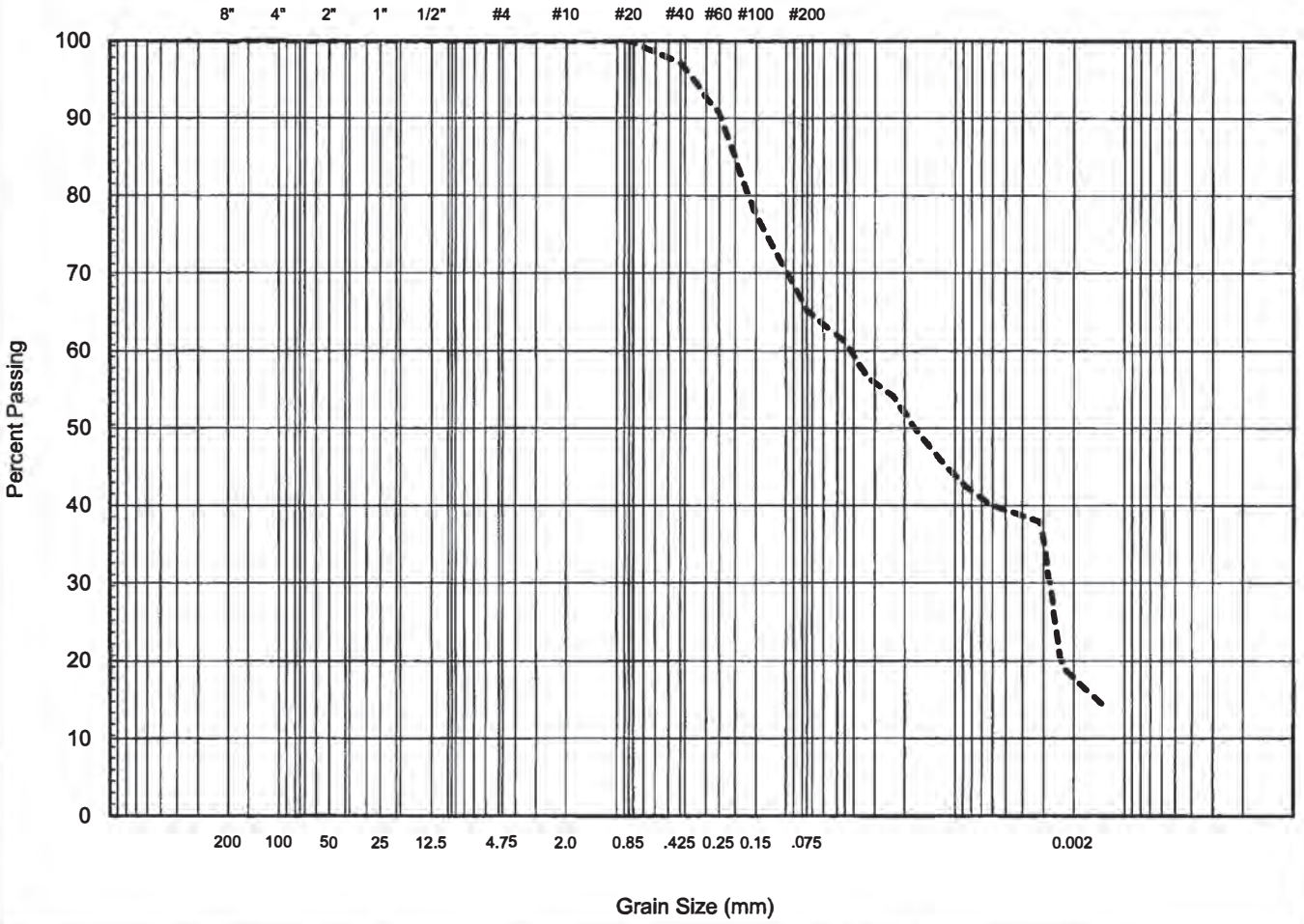
Project No: BX30763
Hole No: DF 12-23
Depth (m): 4.0 - 4.5

Client: Ference Land & Cattle Co.
Sample: --
Date: November 16, 2023 **Tech:** S.G

HYDROMETER TEST

WSP E&I Canada Limited

COBBLES	GRAVEL		SAND			SILT	CLAY
	Coarse	Fine	C	M	F		



Remarks:

Summary					
D10 =	#N/A	mm	**Gravel**	0	%
D30 =	0.0028	mm	**Sand**	35	%
D60 =	0.0420	mm	**Silt**	47	%
Cu =	#N/A		**Clay**	18	%
Cc =	#N/A				

Project No: BX30763
Hole No: DF 14-23
Depth (m): 1.6-3.2

Client: Ference Land & Cattle Co
Sample: --
Date: November 16, 2023 **Tech:** S.G

CHILAKO DRILLING SERVICES LTD

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

SOIL PROFILE AND PARENT MATERIAL DESCRIPTION

Site Location: SE17-34-2W4, Double F Farms Date: 17-Oct-23

Hole #	Location	Depth	Texture	Moisture	Geological	Sample	Remarks
DF1-23	0551289	0-1.3	CL	SM	Till		
	5751792	1.3-4.1	CL	M	Till		V. Firm-stiff, med plastic, brown
		4.1-4.9	CL-C	M	Till		Stiff, high plastic, gray
		4.9-5.0	Sand	Sat	Till		Sat sand lens
		5.0-6.2	C	M	Till		Stiff, med plastic, brown
		6.2-9.2	C	M	Till	7.5-9.0	Stiff, med plastic, gray
DF2-23	0551357	0-0.2	CL	SM	Topsoil		
	5751807	0.2-3.6	CL	M	Till		Stiff, med plastic, brown
		3.6-7.5	C	M	Till	6.0-7.5	Stiff, med-high plastic, gray
							50mm H.C. Well installed to 7.5m BGS
							Screen: 7.5-4.5m
							Sand: 7.5-4.3m
							Bentonite: 4.3-0.0m
							Stickup: 0.6m
							Hole Diameter: 0.15m
DF3-23	0551304	0-0.2	CL	M	Topsoil		
	5751817	0.2-1.5	CL	M	Till		
		1.5-2.0	CL-C	M	Till		Sat sand lens @ 2.0m
		2.0-4.2	CL-C	M	Till		Stiff, med plastic, brown
		4.2-9.2	CL-C	M	Till	6.0-7.5	Stiff, med-high plastic, gray
DF4-23	0551768	0-0.3	FSL	M	Eol		
	5752464	0.3-1.0	FSL	VM	Eol		
		1.0-1.5	SL	Sat	Eol		Free water
		1.5-1.8	SiCL	VM	Lac		Soft, med plastic, olive brown
		1.8-2.9	FSCL	VM	Lac	2.0-3.0	V. Soft, low plastic, olive brown
		2.9-4.5	CL-C	M	Lac		Stiff, high plastic, gray
		4.5-9.2	CL-C	M	Till	6.0-7.0	Stiff, high plastic, gray
DF5-23	0551804	0-1.2	SCL	M	Fill		
	5752446	1.2-1.5	SCL	M	Topsoil		
	on berm	1.5-2.0	LS	VM	VM		
		2.0-3.0	LS	Sat	Sat	2.5-3.0	Free water
		3.0-9.0	CL-C	M	M		Stiff, high plastic, gray
DF6-23	0551782	0-0.6	LS	M	Eol		
	5752367	0.6-1.0	LS	M	Eol		
		1.0-1.6	LS	Sat	Lac		
		1.6-2.7	SiCL	M	Lac		Firm, med plastic, yellow brown
		2.7-3.4	C	M	Lac		Stiff, med plastic, yellow brown
		3.4-4.0	SiCL	VM	Lac		Sat sand lenses, yellow brown
		4.0-7.5	C	M	Till	5.5-6.5	Stiff, med-high plastic, gray
							50mm H.C. Well installed to 7.5m
							Screen: 7.5-5.5m
							Sand: 7.5-5.0m
							Bentonoite: 5.0-0.0m
							Stickup: 0.9m
							Hole Diameter: 0.15m
DF7-23	0551760	0-1.1	SiCL	M	Lac		V. Firm, med plastic, mottled, brown
	5752256	1.1-1.7	C	M	Lac		Stiff, med plastic, varved, brown
		1.7-3.0	C	M	Till		Stiff, med plastic, dark brown

SOIL PROFILE AND PARENT MATERIAL DESCRIPTION (CONTINUED)

Hole #	Location	Depth	Texture	Moisture	Geologica	Sample	Remarks
DF8-23	0551752	0-2.5	S+Gr	M	Lac		
	5752152	2.5-2.9	FSL	M-VM	Lac		
		2.9-4.0	SiCL	M	Lac		V. Firm, med plastic, olive brown
		4.0-6.0	C	M	Lac		Stiff, med-high plastic, gray
							50mm H.C. Well installed to 6.0m BGS
							Screen: 6.0-4.5m
							Sand: 6.0-4.4m
							Bentonite: 4.4-0.0m
							Stickup: 0.8m
							Hole Diameter: 0.15m
DF9-23	0551748	0-1.8	S+Gr	SM	Lac		
	5752047	1,8-2.3	SiCL	M	Lac		V. Firm, med plastic, olive brown
		2.3-3.0	CL-C	M	Till	2.5-3.0	Stiff, med plastic, brown
DF10-23	0551611	0-1.8	SCL	M	Fill		
	5752277	1.8-3.0	CL	M	Till		V. Firm, med plastic
DF11-23	0551602	0-0.4	FSCL	M	Fill		
	5752170	0.4-1.6	LFS	M	Lac		
		1.6-2.5	SiCL	M	Lac		V. Firm, med plastic, olive brown
		2.5-4.1	SIC	M	Lac		Stiff, med-high plastic, olive brown
		4.1-4.5	SCL	VM	Lac		Sat sand pockets
		4.5-4.8	SiCL	M	Lac		V. Firm, med plastic, olive brown
		4.8-6.2	C	M	Till		Stiff, med-high plastic, gray
DF12-23	0551592	0-0.3	CL	M	Fill		
	5752068	0.3-1.6	LS	SM	Lac		
		1.6-4.5	CL-C	M	Till	4.0-4.5	Stiff, med plastic,
							50mm H.C. Well installed to 4.5m BGS
							Screen: 4.5-3.0m
							Sand: 4.5-2.8m
							Bentonite: 2.8-0.0m
							Stickup: 0.65m
							Hole Diameter: 0.15m
DF13-23	0551433	0-3.0	CL	M	Till	2.5-3.0	Stiff, med plastic, brown
	5751721						
DF14-23	0551536	0-3.6	CL	M	Till	1.6-3.2	
	5751704						50mm H.C. Well installed to 3.6m BGS
							Screen: 3.6-2.1m
							Sand: 3.6-2.0m
							Bentonite: 1.9-0.0m
							Stickup: 0.6m
							Hole Diameter: 0.15m
DF15-23	0551630	0-0.7	CL	D	Fill		
	5751708	0.7-3.0	CL	M	Till	1.5-3.0	Stiff, med plastic, dark brown
Owner plans on lining catch basins if needed							

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

Alberta
ENVIRONMENT

LICENCE
to DIVERT AND USE WATER

Pursuant to the
WATER RESOURCES ACT

File No. 22407

Priority No. 1989-12-15-02

Purpose Agricultural

Drainage Basin Manito Lake

First Issued 1994 06 01

Double F Farms Ltd.
PO Box 707
Kirriemuir, Alberta
T0C 1R0

HAVING COMPLIED with the applicable provisions of the Water Resources Act, the Regulations and Interim Licence No. 16835, a copy of which is attached and incorporated herein,

IS GRANTED A LICENCE to divert and use the quantities of water prescribed in the interim licence in accordance with and subject to all other applicable provisions of the Act and the regulations, and the conditions attached, at locations described in the interim licence,

BY MEANS AND THROUGH works and undertakings described in the interim licence.

1994 06 01
Dated at Edmonton

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Alberta
ENVIRONMENT

INTERIM LICENCE

Pursuant to the
WATER RESOURCES ACT
No 16835

Double F Farms Ltd.
P.O. Box 707
Kirriemuir, Alberta
TOC 1R0

File No. 22407
Priority No. 1989-12-15-02

having complied with the applicable provisions of the Water Resources Act and the regulations thereunder is hereby authorized, as soon as right-of-way is obtained:

A. To construct works as shown on plans and reports filed, approved and identified in departmental records as:

22407- Water Transmission System Double F Farms
L.S.D. 2 - S.E. 17-34-2-W4

B To divert and use water as hereinafter specified and described subject to the terms and conditions attached hereto and incorporated herein:

PURPOSE: Agricultural (Feedlot)

SOURCE OF SUPPLY: Aquifer

GROSS DIVERSION: Up to 4 acre-feet (1.1 million Canadian gallons) per annum consisting of:

1. Estimated Consumptive Use: 1.1 million gallons
2. Estimated Losses: NIL
3. Estimated Return Flow: NIL

POINT OF DIVERSION	WELL NUMBER	PRODUCTION INTERVAL	MAXIMUM PUMP RATE	MAXIMUM ANNUAL DIVERSION
2-17-34-2-4	89-12-15-02	144'-152'	15 Cgpm	1. mCg

The term within which construction is to be completed expires on 99 0 22

1990 01 22
Date Issued

Original - Department
Copy - Licensee (See over for excerpts)

w/6212

TERMS AND CONDITIONS INTERIM LICENCE NO. 16835

If deemed necessary by the Controller of Water Resources, the licensee may be required to measure the water levels in the production well(s), while the pump is operating, on a monthly or weekly basis and to make such modifications to the well(s) as necessary to obtain the water level(s).

2. When requested by the Controller of Water Resources, the ~~The~~ production well(s) shall be equipped with a cumulative meter which registers the number of gallons or cubic metres pumped, or the quantity of water pumped from the well(s) each month (in gallons) shall be estimated by multiplying the average number of cattle being watered each month by 360.

3. If deemed necessary by the Controller of Water Resources the licensee shall obtain water samples for purposes of chemical analyses from the production well(s). The analyses must include total dissolved solids, pH, Ca, Mg, Na+K, CO_3, HCO_3, SO_4, Cl, Fe and NO_3.

4. If deemed necessary by the Controller of Water Resources, the licensee may be required to install and equip an observation well or wells, completed in the same aquifer as the production well(s), to provide data for the evaluation of the effect of this withdrawal on the aquifer and the effect on other ground water users.

* AMENDED DATED 1994 06 01

5. When requested by the Controller of Water Resources, the ~~The~~ licensee shall submit an annual return to the Controller of Water Resources on or before January 31 in each year for the preceding year including:

   Monthly estimations or readings of the number of Canadian gallons or cubic metres pumped from the well(s) as per clause 2.

   The total annual quantity pumped expressed in Canadian gallons or cubic metres,

   and such other information as may from time to time be required.

6 When requested to do so by the Controller of Water Resources, the licensee shall have the annual return detailed in clause 5 prepared, in whole or in part, by a qualified ground water consultant who is a member of the Association of Professional Engineers, Geologists and Geophysicists of Alberta.

7 This interim licence and the attached terms and conditions are based on knowledge available at the time of issue and therefore the Controller of Water Resources reserves the right to revise the following portions of the interim licence and attached terms and conditions:

   Gross diversion;

.../2

w/6212

Maximum pumping rate;

Number, type and location of observation wells required;

Frequency and method of measurement of observation wells,

any time that the Controller of Water Resources has information indicating unreasonable interference with water supplies which cannot be satisfactorily remedied or that damage to aquifer(s) is occurring.

8. The rights and privileges hereby granted are subject to periodic review and to modification to ensure the most beneficial use of the water in the public interest and more particularly to ensure preservation of the rights of other water users.

9. The rights and privileges hereby granted can only be extended, modified, transferred or assigned with the approval of the Controller of Water Resources and are subject to cancellation or modification as provided in the Water Resources Act.

10. This interim licence and its terms and conditions shall be attached to and become part of the licence to use water issued pursuant to Section 33 of the Water Resources Act.

1990 01 22
Dated at Edmonton

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Alberta
ENVIRONMENT

LICENCE
to DIVERT AND USE WATER

Pursuant to the
WATER RESOURCES ACT

File No. 22407

Priority No. 1986-09-29-05
1986-09-29-06

Purpose Agricultural

Drainage Basin Manito Lake

First Issued 1988 04 18

Double F Farms Ltd.
P.O. Box 707
Kirriemuir, Alberta
T0C 1R0

HAVING COMPLIED with the applicable provisions of the Water Resources Act and the regulations thereunder and Interim Licence No 14937 , a copy of which is attached hereto and incorporated herein,

IS HEREBY GRANTED LICENCE to divert and use the quantities of water prescribed in the Interim Licence in accordance with and subject to all other applicable provisions of that Act and the regulations thereunder, and the terms and conditions attached hereto and incorporated herein, at locations described in the Interim Licence,

BY MEANS AND THROUGH works and undertakings described in the Interim Licence

1988 04 18
Date

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Alberta
ENVIRONMENT

INTERIM LICENCE

Pursuant to the
WATER RESOURCES ACT

Nº 14937

Double F Farms Ltd.
P.O. Box 707
Kirriemuir, Alberta
T0C 1R0

File No 22407

Priority No. 1986-09-29-05
1986-09-29-06

having complied with the applicable previsions of the Water Resources Act and the regulations thereunder is hereby authorized as soon as right-of-way is obtained:

A. To construct works as shown on plans and reports filed, approved and identified in departmental records as:

22407- Water Transmission System Double F Farms
L.S.D. 2-S.E. 17-34-2-W4

B To divert and use water as hereinafter specified and described subject to the terms and conditions attached hereto and incorporated herein:

PURPOSE: Agricultural (Feedlot)

SOURCE OF SUPPLY: Aquifer

GROSS DIVERSION: Up to 9 acre-feet (2.5 million Canadian gallons) per annum consisting of:

1. Estimated Consumptive Use: 2.5 million gallons
2. Estimated Losses: NIL
3. Estimated Return Flow: NIL

POINT OF DIVERSION	WELL NUMBER	PRODUCTION INTERVAL	MAXIMUM PUMP RATE	MAXIMUM ANNUAL DIVERSION
2-17-34-2-4	86-09-29-05	76'-80'	16 Cgpm	.1 mCg
2-17-34-2-4	86-09-29-06	144'-148'	24 Cgpm	.4 mCg

The term within which construction is to be completed expires on N/A

1987 03 16
Date Issued

02260

Original — Department
Copy — Licensee (See over for excerpts)
WR2 (Aug 84)

File: 22407

TERMS AND CONDITIONS INTERIM LICENCE NO. 14937

1. If deemed necessary by the Controller of Water Resources, the licensee may be required to measure the water levels in the production well(s), while the pump is operating, on a monthly or weekly basis and to make such modifications to the well(s) as necessary to obtain the water level(s).

2. When requested by the Controller of Water Resources, the the production well(s) shall be equipped with a cumulative meter which registers the number of gallons or cubic metres pumped, or the quantity of water pumped from the well(s) each month (in gallons) shall be estimated by multiplying the average number of cattle being watered each month by 360.

3. If deemed necessary by the Controller of Water Resources the licensee shall obtain water samples for purposes of chemical analyses from the production well(s). The analyses must include total dissolved solids, pH, Ca, Mg, Na+K, CO_3, HCO_3, SO_4, Cl, Fe and NO_3.

4. If deemed necessary by the Controller of Water Resources, the licensee may be required to install and equip an observation well or wells, completed in the same aquifer as the production well(s), to provide data for the evaluation of the effect of this withdrawal on the aquifer and the effect on other ground water users.

* AMENDED DATED 1994 06 01

5. When requested by the Controller of Water Resources, the the licensee shall submit an annual return to the Controller of Water Resources on or before January 31 in each year for the preceding year including:

   Monthly estimations or readings of the number of Canadian gallons or cubic metres pumped from the well(s) as per clause 2.

   The total annual quantity pumped expressed in Canadian gallons or cubic metres,

   and such other information as may from time to time be required

6. When requested to do so by the Controller of Water Resources, the licensee shall have the annual return detailed in clause 5 prepared, in whole or in part, by a qualified ground water consultant who is a member of the Association of Professional Engineers, Geologists and Geophysicists of Alberta.

7 This interim licence and the attached terms and conditions are based on knowledge available at the time of issue and therefore the Controller of Water Resources reserves the right to revise the following portions of the interim licence and attached terms and conditions:

   Gross diversion;

./2

02260

(b) Maximum pumping rate;

(c) Number, type and location of observation wells required;

(d) Frequency and method of measurement of observation wells,

any time that the Controller of Water Resources has information indicating unreasonable interference with water supplies which cannot be satisfactorily remedied or that damage to aquifer(s) is occurring.

8. The rights and privileges hereby granted are subject to periodic review and to modification to ensure the most beneficial use of the water in the public interest and more particularly to ensure preservation of the rights of other water users.

9. The rights and privileges hereby granted can only be extended, modified, transferred or assigned with the approval of the Controller of Water Resources and are subject to cancellation or modification as provided in the Water Resources Act.

This interim licence and its terms and conditions shall be attached to and become part of the licence to use water issued pursuant to Section 33 of the Water Resources Act.

1987 03 16
Dated at Edmonton

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